INVESTIGATION

OF POTENTIAL PALEOPLACERS IN THE CRETACEOUS STRATA

OF THE NORTH SASKATCHEWAN RIVER WATERSHED

CANADA-ALBERTA M.D.A. PROJECT M93-04-031

GEO-ING Resource Consulting Ltd.

March 1994

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AE940410.DOC

1994-04-10

Dear Ms. Cochrane:

Subject: Project No. M93-04-031

INVESTIGATION OF POTENTIAL PALEOPLACERS IN THE
CRETACEOUS STRATA OF THE NORTH SASKATCHEWAN RIVER WATERSHED

GEO-ING Resource Consulting Ltd. is pleased to submit the report on the prospecting program carried out in the Nordegg and Ram Falls area in July and in the fall of 1993. The program consisted of sampling Cretaceous conglomerates and conglomeratic sandstones in the upper watershed of the North Saskatchewan River with hope of finding among these rocks the source of the river's gold.

Towards this objective a total of 134 samples were collected and assayed. The results are disappointing as the best assay of a sample of the Cadomin Conglomerate shows only 16 ppb of gold, and the best assay of the Brazeau Formations is only 13 ppb of gold.

On the other hand the presence of gold in the coarse rocks of Cretaceous formations shows that these strata could indeed be at least a partial source of placer gold in the North Saskatchewan and other Rivers.

The report includes a general outline of the geological history of post-Jurassic strata and of gold in Alberta as a background to the program, followed by presentation of assays with an elevated gold content, discussion of these gold values, and concludes by pointing out the relationship between findings of this program and the content of gold in the North Saskatchewan River. Recommendations of a possible follow-up are also included. The appendix of the report includes a list of samples with assays and sample locations, a set of individual sample descriptions and a set of maps (1:50000 scale) showing locations of the samples.

I trust that you will find this report satisfactory.

Yours very truly,

Yaro Horachek, P.Eng.
President

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SUMMARY

In the order of one tonne of gold has been produced from the North Saskatchewan River since the middle of the 19th century. Most of this gold probably came from the segment of river between Devon and Elk Point as it is known to contain the richest placers in Alberta. Samples by Alberta Research Council from this area contain from 13.6 ppb to 141 ppb of gold. This portion of the river intersects basal strata of the Scollard Formation, the Horseshoe Canyon Formation and the Belly River Formation. These formations and their equivalents in the foothills are part of a clastic wedge of post-Jurassic sediments that resulted from erosion of the Rocky Mountain and the gold-bearing Omineca Belts which were formed by a Middle Jurassic to Paleocene orogeny in eastern British Columbia.

Depositional environments of the Cadomin, Hoadley, Mountain Park and the Entrance conglomerates, and coarse sandstones and conglomerates of the Brazeau Formation (all part of the post-Jurassic clastic wedge) were locally favourable for deposition of gold. The volcanic grain content of these clastics which is an indicator of their origin in the Omineca Belt ranges from trace amounts to over 60%. Similar rocks contain gold paleoplacers in many parts of the world. In Alberta the Burmis magnetite paleoplacer in the basal sandstone of the Belly River Formation (the lower Brazeau equivalent) is an example of such a deposit.

The Brazeau and Cadomin Formations were the main targets of this prospecting program in which 134 samples were collected from 92 sites.

The Brazeau Formation was sampled at 61 sites from which 78 samples were collected. Most samples are conglomeratic sandstones or conglomerates. The Cadomin Formation was sampled at 25 sites from which 47 samples were collected. All of these samples are conglomerate.

Nine samples were collected from Hoadley and Mountain Park conglomerates from six sites. Thirteen samples contain from 5 to 16 ppb of gold. Five samples assayed between 10 and 16 ppb of gold. Three of the five highest values are from samples of Cadomin conglomerate. The remaining two samples are of the Brazeau Formation and contain 10 and 13 ppb Au. Most of the samples assayed less than 5 ppb which is considered a background value.

In the Brazeau Formation elevated gold values occur as local "concentrations" which are laterally well distributed throughout the area sampled. Most samples were collected from the lower Brazeau. Of the fewer samples taken from the upper Brazeau, one indicated a gold content slightly above background value (7 ppb Au).

In the Cadomin Formation the increased gold values were found at the base of the formation as well as in the middle part of it.

The presence of gold in these formations supports the belief that Cretaceous strata are the source of the placer gold in the North Saskatchewan River.

INTRODUCTION

Discovery of an economic metallic deposit or at least a showing that would indicate a potential for such a deposit would be of benefit to both the Alberta and national economy.

In January 1993 GEO-ING Resource Consulting Ltd. generated a proposal to investigate the source of the placer gold in the North Saskatchewan River by carrying out a prospecting/rock sampling program of the Cretaceous strata in the upper North Saskatchewan River watershed. The depositional histories of the coarse clastics in these strata presented the best possibility of containing economic paleoplacers or at least elevated levels of gold that would encourage further exploration.

The request for funding of this project was submitted to the Research and Technology Branch of Alberta Energy on January 28th 1993. On May 10th 1993 GEO-ING Resource Consulting Ltd. was informed that the Management Committee for the Canada/Alberta Agreement on Mineral Development approved the project.

The field portion of this program was executed in two phases. Phase 1 was undertaken during the latter part of July and Phase 2 from mid September to mid November.

Sampling focused on conglomerates and conglomeratic sandstones of the lower portion of the Brazeau Formation. Some coarse sandstones of the Upper Cretaceous Brazeau Formation were also sampled. A lesser number of samples were collected from the Lower Cretaceous Cadomin Formation and a few samples were collected from the Hoadley and Mountain Park conglomerates. All samples were fire assayed for gold content.

This report provides the results of the program along with an outline of the geological history of the potentially gold-bearing formations that were sampled. This volume includes the text of the report, the list and descriptions of samples in the Appendix 1, and a set of six 1:50000 scale maps showing locations of the samples.

Location And Access

The 1993 program took place in the southern half of the foothills segment of the North Saskatchewan River watershed (Figure 1). The area is located between the North Saskatchewan and Clearwater Rivers south of Nordegg. An approximate center of this area is Twp 38, Rge 13, west of the 5th Meridian, or 52° 15' North latitude and 115° 50' west Longitude. This area is covered by National Topographic System (NTS) 1:50 000 scale maps 83 B/13, 14 and 15, 83 C/1 and 8, and 82 O/14.

The main access to the northern part of the project area was by way of the David Thompson Highway (Hwy 11), and to the southern part of the area by Highway 591. Within the project area, the Forestry Trunk Road provided access from the north to the south, and several gravel roads and trails allowed access to the western or eastern parts of the area. In addition to roads and trails, there were a number of seismic cutlines; many were narrow and could only be traversed by foot while others allowed travel by a motorcycle or an All Terrain Vehicle (ATV). Motorcycles were used in Phase 1 and ATV's were used in Phase 2. The ATV's proved to be more suitable.

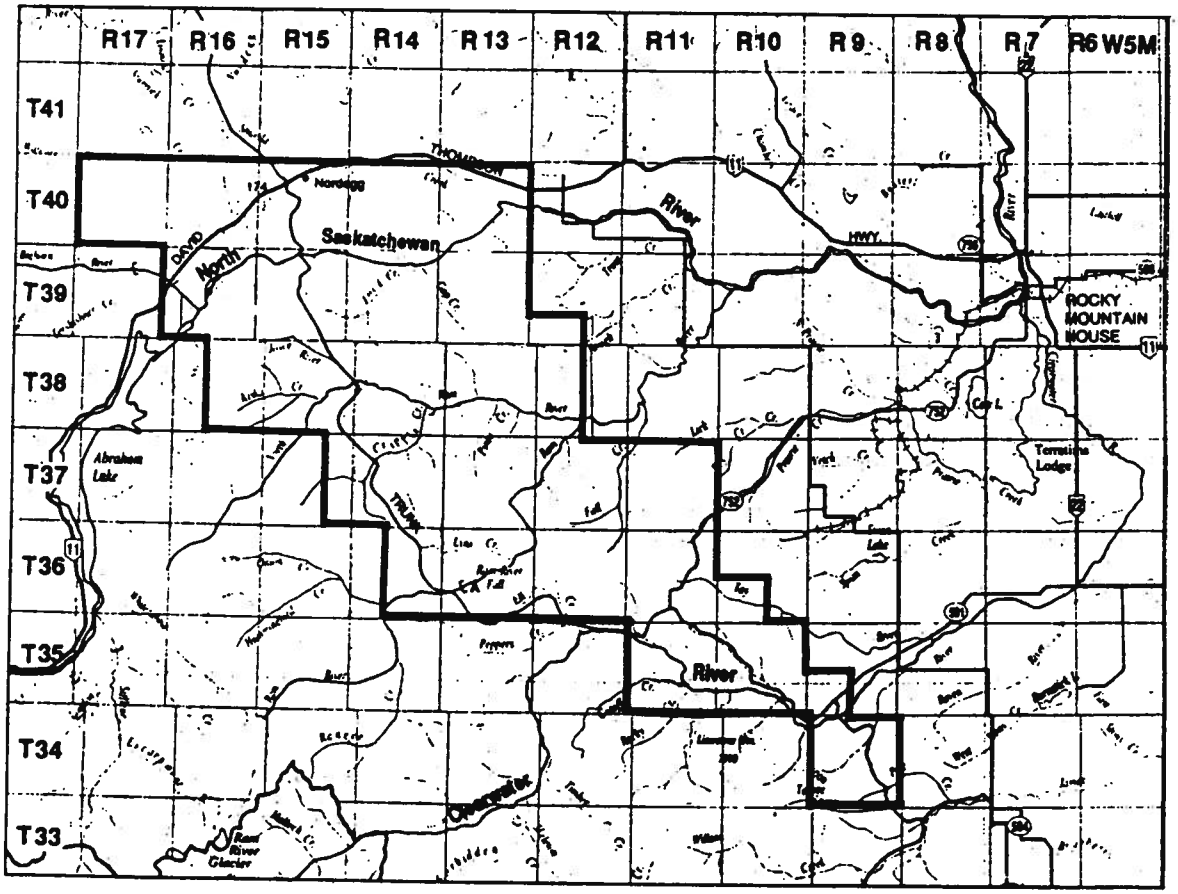


Figure 1. Location map

Physiography

The project area is located in the foothills to the east of the regionally dominating front range of the Rocky Mountains. The northwesterly trending ridges and valleys belong to two geologically controlled domains.

The first domain consists of the hills and lesser mountains of Cretaceous shales, sandstones and conglomerates ranging from around 1400 m in the valleys to 1800 m or occasionally up to 2000 m at the mountain tops. The second domain is defined by the Paleozoic limestone mountains (with the Lower Cretaceous Cadomin conglomerates on their sides) of the Brazeau Range typically reaching elevations above 2000 m.

The North Saskatchewan River and its tributaries, the Ram and Clearwater Rivers, intersect the area in a west to easterly direction.

Most of the area is forested with pine and spruce with local aspen and poplar. The broader valleys are open and covered by dwarf birch and willow.

GOLD IN ALBERTA

Placer Gold

All the major rivers that flow from the Alberta mountains and foothills are at least slightly gold-bearing. The presence of gold in the sands of the North Saskatchewan River was first reported by James Hector, (Hector 1861). Most recently Edwards (1990) compiled a comprehensive data base on placer gold occurrences in Alberta. This data base includes gold assays of samples collected by L.B. Halferdahl in the mid sixties (Halferdahl, 1965), gold content of samples collected in the early eighties by Giusti (1983), data from a site-specific study of the North Saskatchewan River gold by MacGillivray et al. (1984), results of sampling by the Alberta Geological Survey in 1988 and 1989, as well as published data from other related but not specifically gold-oriented projects, such as various reports on gravel and aggregates in Alberta.

The data base compiled by Edwards confirms what is apparent from official publications on gold production in Alberta – the North Saskatchewan contains the highest concentration of gold-bearing sediment. Halferdahl (1965) reports several North Saskatchewan River locations with gold contents ranging from 20 to 208 mg/cu yd (13.6 to 141.5 ppb). The highest values for the rivers ranked second and third are 15.54 mg/cu yd (10.5 ppb) on one location in the McLeod River and 15.9 mg/cu yd (10.8 ppb) on one location in the Red Deer River. A 15.9 mg/cu yd (10.8 ppb) value was also found at one location in the Milk River.

Giusti (1983) studied the nature of gold flakes recovered from the North Saskatchewan, Athabasca, Redwater and Vermilion Rivers, and concluded that the gold was originating from multiple sources or from different lithological horizons in the original source area. He postulated that the original source of gold was located in the mountains which were drained in Cretaceous times by rivers flowing from the west. He adds that the paleoplacer gold in Alberta is the result of many cycles of river erosion and deposition with further complications from glaciation.

Production Of Gold In Alberta

The records of gold production in Alberta are rather incomplete. Giusti (1983) summarized several sources of information covering the period from 1887 to 1981 and concluded that the total amount of gold recovered from the North Saskatchewan River during was about 989 kilograms (31

788 oz). He also refers to Tyrrell (1915), one of the earliest writers on Alberta's placer gold, who estimated that in the interval from 1859 to 1915 almost 30 000 oz (933 kg) of gold was recovered from the sand and gravel bars of the North Saskatchewan River. Giusti (ibid.) further reported two peaks in the official production records – 83 kg (2661 oz) in 1896 and 133 kg (4276 oz) in 1980.

Since official records do not account for all gold recovered it is probably safe to assume that the total amount of gold produced to date from the North Saskatchewan alone is well in excess of one tonne.

Exploration For Gold In Alberta

The most extensive regional exploration program for placer gold was conducted by Halferdahl in 1965 and covered the entire Plains region. The Alberta Geological Survey conducted a detailed sampling program of a 2.5 km section of the North Saskatchewan River in 1983 (MacGillivray, 1984) near a location where Halferdahl (ibid.) found the highest gold values (208 mg/cu yd) 18 years earlier. Olson (1993) refers to an unpublished report on a regional sediment sampling program (Fox, 1991) that indicated gold anomalies on Anderson Creek near Hinton which resulted in the registration of several mineral claims.

In the Athabasca Pass area, on the Alberta-British Columbia border, 60 km south of Jasper, auriferous veins were discovered in the 1980's and documented by Shaw and Morton (1990). Olson (1993) suggests that the conditions necessary for similar, mesothermal gold mineralization, exist in the Clark Range in southwestern Alberta. He speculated that the geological conditions needed for the formation of Carlin type gold deposits may exist in Paleozoic carbonates of the Rocky Mountains and in the strata surrounding the Crowsnest volcanics in southwestern Alberta.

Prospecting and panning for gold by numerous prospector/hobbyists goes on unreported, indicating that in their activities no significant discoveries have been made.

Paleoplacers

Paleoplacers, or fossil placers, are placer deposits buried, together with rocks in which they were deposited, by younger sediments or volcanic rocks, and subsequently consolidated or even metamorphosed to varying degrees.

Boyle (1979) recognizes two types of paleoplacers: the first one, *extensively lithified*, is rich with pyrite or other sulfides and includes Precambrian sandstones, quartzites and quartz-pebble conglomerates. The world's largest gold deposits (which have supplied 60% of the world's gold production in the last 50 years) are of this type, (Boyle, 1979).

The most famous extensively lithified paleoplacers are the Witwatersrand conglomerate of South Africa, the Tarkwa conglomerates in Ghana and the Jacobina conglomerates in Brazil. Boyle (ibid.) states that the average gold content of the Witwatersrand and similar auriferous conglomerates is 8 ppm (8,000 ppb), ranging from 0.4 to 230 ppm (400 to 230,000 ppb). The uranium-bearing and slightly auriferous Elliott Lake - Blind River Conglomerate in Ontario also belongs to this category.

The second type of paleoplacer, *moderately lithified*, are sandstones, conglomerates and quartzites, marked by the presence of only small amounts of pyrite, but often containing abundant hematite and limonite. Boyle (ibid.) lists several occurrences of such paleoplacers in Canada, including the Edmonton Formation along the North Saskatchewan River, and adds that these gold-bearing conglomerates, sandstones and quartzites appear to be relatively common worldwide.

Boyle (ibid) outlined conditions under which paleoplacers may form. Since they are applicable to potential paleoplacers in Alberta, these conditions are quoted in full:

> *"1. An auriferous hinterland that has undergone gradual uplift, weathering, erosion and denudation. The primary source of the gold may have been (a) epigenetic gold-bearing deposits of many types; (b) disseminated gold in rocks, especially those rich in pyrite and arsenopyrite, the gold being an intimate constituent of these sulfides; and (c) a combination of (a) and (b).*
>
> *2. A favourable paleo-environment for the concentration of gold in eluvial and alluvial deposits.*
>
> *Predictions may be difficult, however, where multiple erosion cycles have predominated in the geological history of a district,."*

Potential For Paleoplacers In Alberta

Conditions for the development of paleoplacers in Alberta began about 140 million years ago. The first phase of the Middle Jurassic orogeny compressed and lifted the Omineca Belt of the eastern Cordillera, commenced the development of the folded and thrusted Rocky Mountain Belt (Foreland Belt) and created the Alberta Foreland Basin in its foredeep. These newly uplifted highlands provided the material for deposition of the Kootenay-Fernie Assemblage, the first of the three clastic wedges deposited in the basin from Late Jurassic through middle Tertiary time, Figure 2, (King, 1959; Wheeler et al., 1972; Douglas et al., 1974; Stott, 1984; Mack and Jerzykiewicz, 1989; Gabrielse and Yorath, 1989).

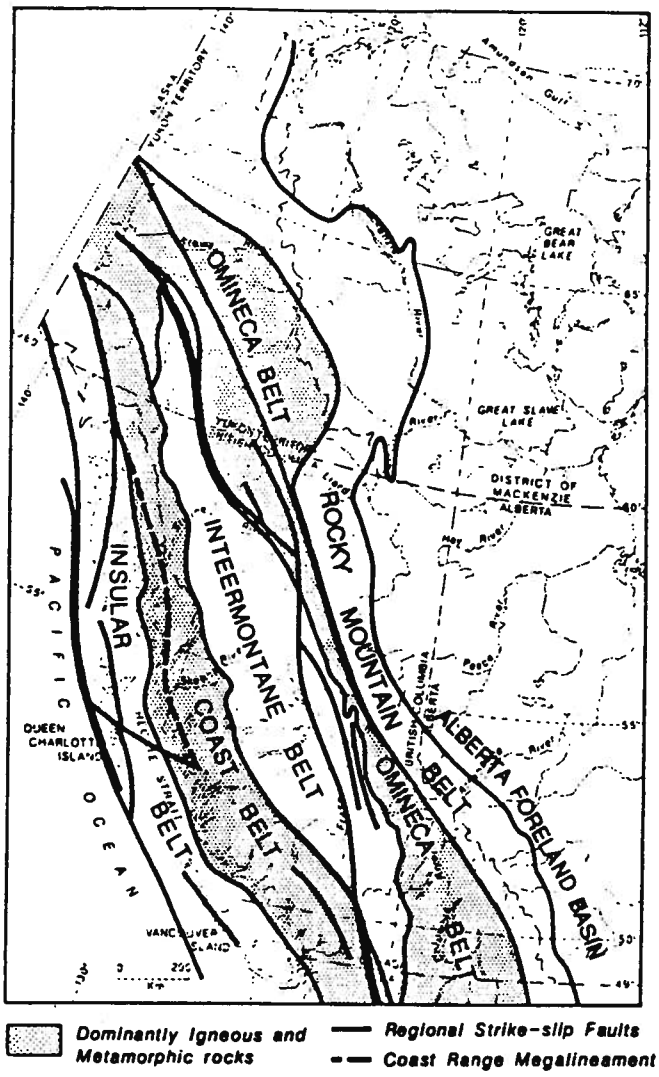


Fig. 2. Morphological belts of the Canadian Cordillera. From Gabrielse and Yorath 1989.

The eastern Cordillera orogeny remained the primary western source of clastic material supplied to the Alberta Foreland Basin during this period. The middle Cretaceous pulse of the orogeny resulted in an increased erosion in the source area and the "dumping" of the second clastic wedge, the Blairmore Assemblage, into the basin. The late Cretaceous to Paleocene period saw the deposition of the Brazeau Assemblage, the third and final clastic wedge.

Figure 3 illustrates the complex interactions of tectonic and sediment supply activities in the Omineca and Rocky Mountain belts. The last orogeny also deformed the sediments of the three clastic wedges in the deep part of the basin along the eastern margin of the Rocky Mountain Belt (Gabrielse and Yorath, 1989; Mack and Jerzykiewicz, 1989).

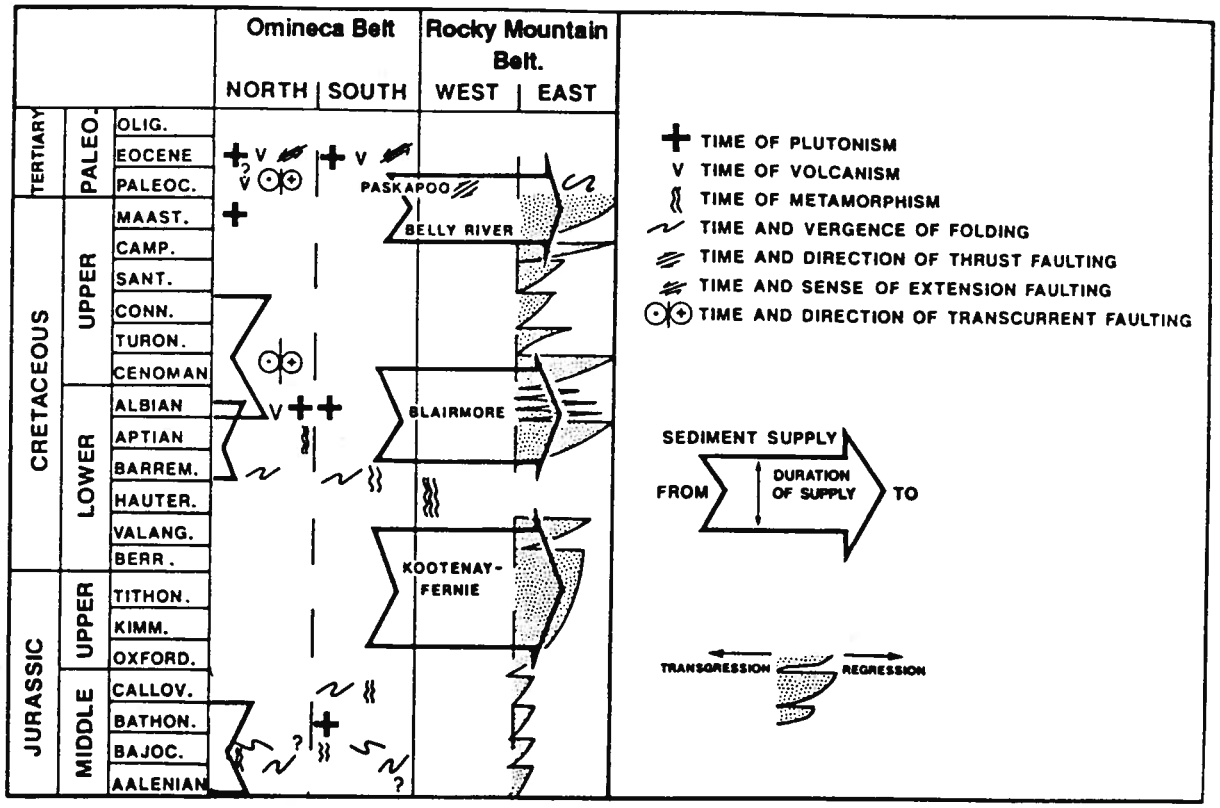


Fig. 3. Principal tectonic events in the Omineca Belt and three clastic wedges in the Rocky Mountain Belt. Modified from Gabrielse and Yorath 1989.

The locally gold-bearing Omineca Belt, (Figure 4; Barr, 1980) meets the criteria of Boyle's first condition; an auriferous hinterland which is the source of placer gold. The piedmont plain with alluvial fans, channels of braided and meandering rivers in the alluvial floodplain, and in some cases the prodelta beaches (Jansa, 1972; Gibson, 1985; McLean, 1977; Mack and Jerzykiewicz, 1989) on the western side of the foreland basin were favourable environments for Boyles second condition of placer deposition. In southwest Alberta the Burmis magnetite deposit in the basal sandstone of the Belly River Formation is an example of such a paleoplacer.

Figure 4 illustrates the three major gold bearing areas in the southern part of the Omineca Belt. These are the Cariboo area, the Sheep Creek-Ymir Gold Camp and the Rossland Camp. In the Cariboo area the gold mineralization is believed to have occurred between the Carboniferous (Mississippian) and early Tertiary (Sutherland-Brown, 1957). In the Sheep Creek-Ymir Gold Camp, the productive rocks are a sedimentary series of Lower Cambrian age, overlain by Triassic (?) volcanic rocks and intruded by acid plutonic rocks of Mesozoic age (Barr, 1980). The Rossland Camp rocks is of Tertiary age (Fyles et al., 1973).

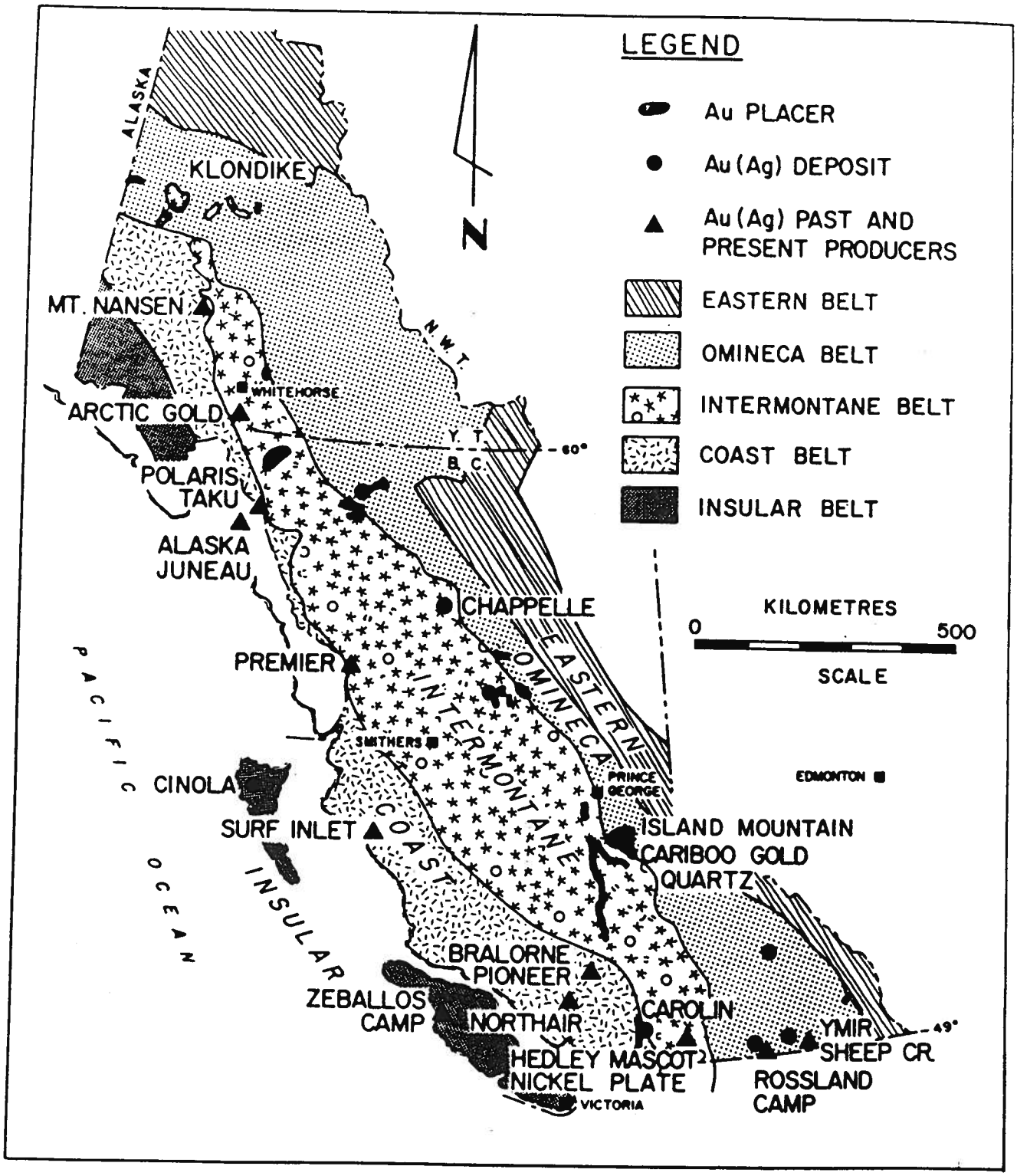


Figure 4. Principal lode and placer gold deposits in the Canadian Cordillera. From Barr 1980.

In addition to these lode gold deposits there are gold placers in the Revelstoke, Fort Steele, Golden and Columbia Lake areas. The source of their gold and its age is uncertain.

Erosion of gold deposits that may have existed in now the denuded strata of the Omineca Belt from the Lower Jurassic to Tertiary time would provide the gold component of the clastic material for deposition of proximal as well as distal gold placers and paleoplacers. Most of the local gold placers are probably known. Distant placers that may have become paleoplacers in combination with extensive conglomerates and conglomeratic sandstones in British Columbia and Alberta remain to be discovered.

The gold content of the sediments derived from the Omineca Belt would naturally decrease with the increasing distance from the source, thus the richness of paleoplacers that may exist in Alberta would be lower than those that may exist in British Columbia.

FORMATIONS OF INTEREST

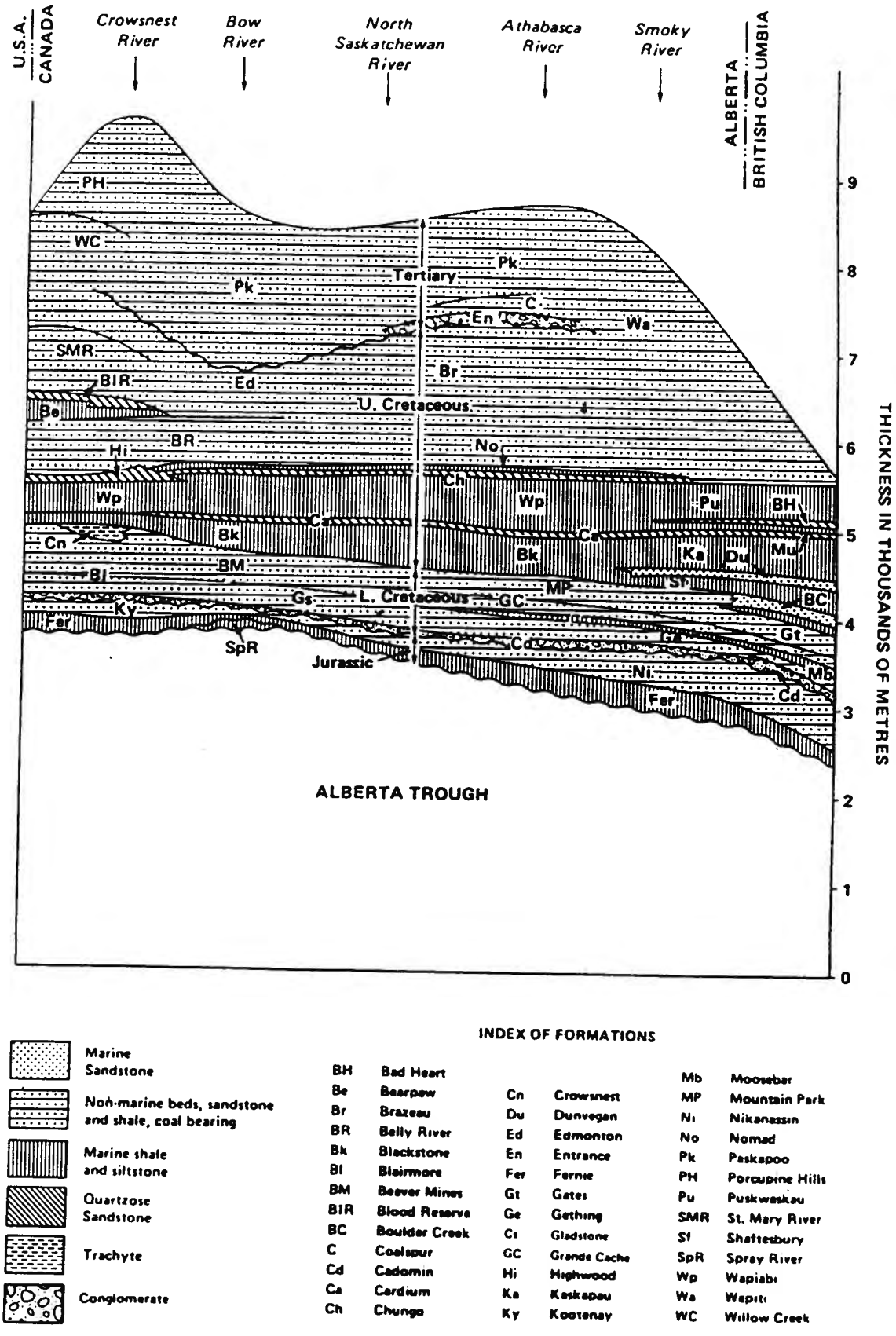
Since the primary gold deposits of the Omineca Belt are associated with plutonic and volcanic activities one measure of the potential of sediments that at least partially originated in this belt is the presence of volcanic and pyroclastic components among their grains. The content of such "indicator grains" in post-Jurassic sandstones ranges from small amounts in the Lower Cretaceous Kootenay Group (Gibson, 1985) to over 60% in the Upper Cretaceous Brazeau Formation (Mack and Jerzykiewicz, 1988).

Descriptions of the formations selected for sampling in this prospecting program are provided below. Figure 5, on the following page, shows their stratigraphic setting among all post-Jurassic sediments.

The Cadomin Formation is a basal conglomerate of the Lower Cretaceous Blairmore Group in the southern Rocky Mountain Foothills, and of the Luscar Group in the North Saskatchewan River area of central Rocky Mountain Foothills (Figures 5 and 6). It is a very useful, widely spread and distinct stratigraphic marker. The Cadomin conglomerate is usually quite resistant and its outcrop easily found, although there are local exceptions.

The conglomerate consists primarily of varicolored, mainly dark chert and white or light grey quartz and quartzite pebbles, cemented by silica and often containing abundant kaolin. Pebbles of volcanic origin have been recognized in it by Stott (1968, p. 19). Rapson (1965, p. 1443) places their origin in the Permian Cache Creek Group of south-central British Columbia. No igneous, metamorphic or vein quartz pebbles were identified by Schulteis and Mountjoy (1978) who allow for only minor contribution by the Omineca geanticline to the Cadomin conglomerate. McLean (1977) concludes that the probable source of the detritus for the Cadomin Formation was an area both to the west of the present-day Rocky Mountain Trench and the thrust sheets to the east. Gibson (1985) agrees with Price and Mountjoy (1970), Schulteis (1970), and Schulteis and Mountjoy (1978) that the Upper Jurassic-Lower Cretaceous sediments (Kootenay and Cadomin) were derived "from the rising thrust sheets east of the Rocky Mountain Trench". Gibson (ibid.) also suggests that the rarely observed grains of pyroclastic volcanic origin may be recycled from the Canadian or Precambrian Shield.

The Cadomin outcrops mainly in the eastern part of the project area. It was sampled at 25 locations.



Marine Sandstone

Non-marine beds, sandstone and shale, coal bearing

Marine shale and siltstone

Quartzose Sandstone

Trachyte

Conglomerate

INDEX OF FORMATIONS

BH	Bad Heart	Cn	Crowsnest	Mb	Moosebar
Be	Bearpaw	Du	Dunvegan	MP	Mountain Park
Br	Brazeau	Ed	Edmonton	Ni	Nikanassin
BR	Belly River	En	Entrance	No	Nomad
Bk	Blackstone	Fer	Fernie	Pk	Peskapoo
Bl	Blairmore	Gt	Gates	PH	Porcupine Hills
BM	Beaver Mines	Ge	Gething	Pu	Puskwaskau
BIR	Blood Reserve	Cs	Gladstone	SMR	St. Mary River
BC	Boulder Creek	GC	Grande Cache	Sf	Shaftesbury
C	Coalspur	Hi	Highwood	SpR	Spray River
Cd	Cadomin	Ka	Kaskapau	Wp	Wapiabi
Ca	Cardium	Ky	Kootenay	Wa	Wapiti
Ch	Chungo			WC	Willow Creek

Figure 5. Longitudinal stratigraphic section along the Rocky Mountain Foothills.
Modified from Stott 1972.

The Hoadley conglomerate is located approximately 160 m stratigraphically above the Cadomin Formation, (Figure 6). It is lithologically similar to the Cadomin Conglomerate (Dawson, 1989). The Hoadley conglomerate may be correlatable with the McDougal-Segur conglomerate of southwestern Alberta which contains igneous pebbles (Anderson, 1951; Norris et al., 1965) and was at least partly derived from the Omineca Belt. The Hoadley conglomerate outcrops in the upper Fall Creek area (Dawson pers. comm., 1993).

The Mountain Park conglomerate, at the top of the Mountain Park Member (Figure 6), is a pebble conglomerate of varying thickness (10 cm to 6 m) with a predominantly mudstone matrix (Dawson, 1989). An outcrop of this unit was not encountered. But another conglomerate that appears to be at the base of the Mountain Park Member was sampled at two locations in the Bighorn area.

The Brazeau Formation is the basal member of the continental deposition (it overlies the marine Wapiabi shales) in the third clastic wedge (King, 1959; Stott, 1984) of the Alberta Foreland Basin. The lower part of the formation is a depositional equivalent of the Belly River Formation which contains magnetite paleoplacers in its basal sandstone near Burmis in southern Alberta.

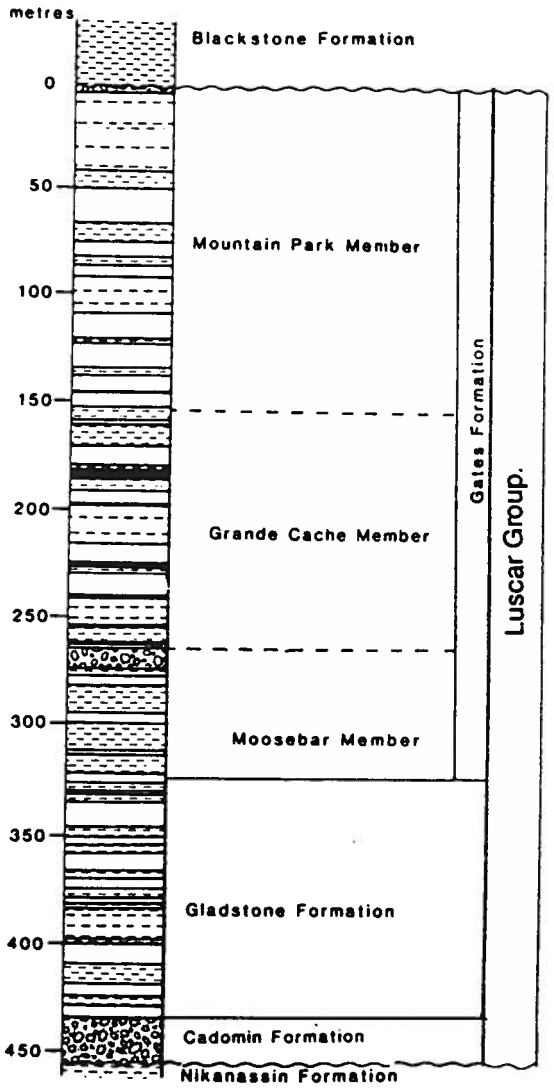


Fig. 6. Stratigraphic positions of the Cadomin, Hoadley and Mountain Park conglomerates in the Luscar Group. Modified from Dawson 1989.

The dominant minerals are quartz, chert and feldspar, with biotite and epidote as common accessory minerals (Allan and Rutherford, 1924).

Along with other post-Wapiabi strata the formation was the subject of a detailed petrographic study by Mack and Jerzykiewicz (1988) from which the following quote is of special significance: "sandstones of the formation contain abundant volcanic detritus, subequal amounts of metamorphic and sedimentary detritus, and a high concentration of carbonate rock fragments and chert (Figure 7).

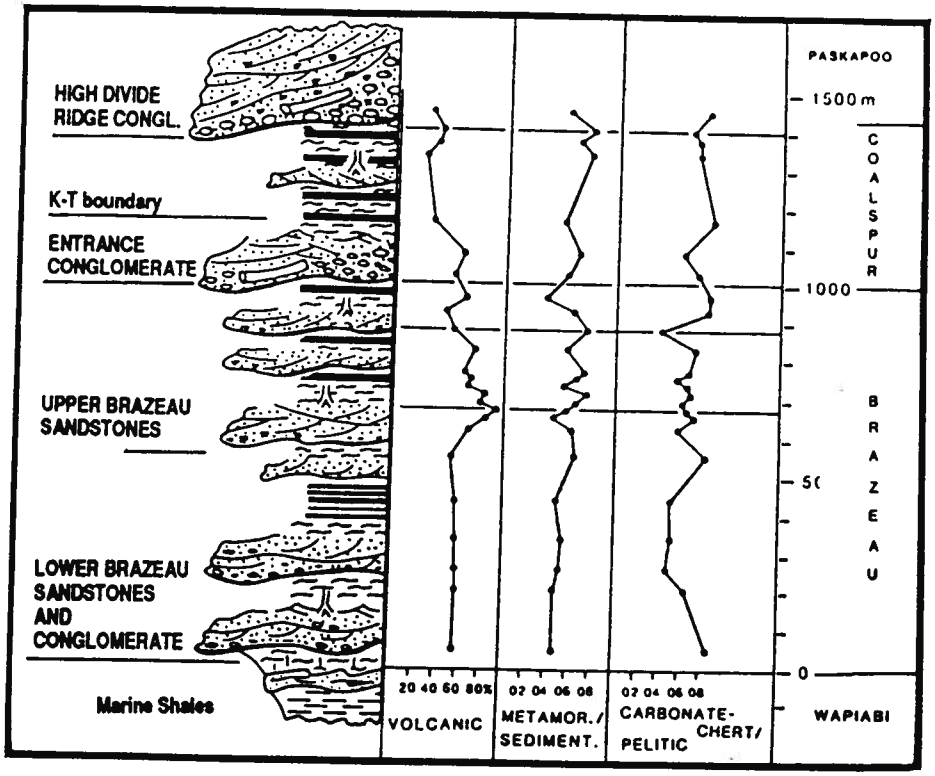


Fig. 7. Petrographic trends in the Brazeau, Coalspur and Paskapoo formations.
Modified from Mack and Jerzykiewicz 1988.

The Cretaceous Crowsnest volcanics or older volcanic rocks are suggested to have covered a wide area of Omineca and Rocky Mountain belts and their erosion supplied the abundance of volcanic material to post-Wapiabi strata. The metamorphic detritus (mica and quartz) was also derived mainly from the Omineca Belt". It must be added Steward (1989) reports that the Crowsnest volcanics are slightly gold-bearing; grab samples assay up to 0.2 g Au/t (200 ppb).

The Brazeau Formation underlies large areas in the western half of the prospected area. It was sampled at 61 locations.

The Entrance conglomerate is the basal unit of the Coalspur Formation (Figures 5 and 7). It is a very coarse conglomerate in the Entrance area west of Hinton, but only a prominent sandstone or conglomeratic sandstone bed further to the south. At Hinton it was sampled and assayed by the Alberta Geological Survey in 1988 (Edwards, 1990); the gold content was nil. The conglomerate consists of

primarily Paleozoic sedimentary clasts but volcanic detritus remain a significant component (Mack and Jerzykiewizc, 1988). The Entrance conglomerate equivalent outcrops in the Alexo - Saunders area (the lower Shunda creek area, MAP 83/B4) as a cobble-conglomerate at the crest of the Stolberg anticline (Crombie and Erdman, 1945).

Two samples of the upper Brazeau sandstone were collected in the lower Shunda Creek area south of Alexo but the Entrance conglomerate was not sampled during this program.

The High Divide Ridge Conglomerate is the basal unit of the Tertiary Paskapoo Formation (Figure 7). The conglomerate is composed primarily of sedimentary detritus and the formation is marked by a decrease in the volcanic and metamorphic component in favour of carbonates and chert (Mack and Jerzykiewicz, 1988).

The conglomerate was sampled and assayed by the Alberta Geological Survey in 1988 (Edwards, 1990) but the gold content was nil. Only one sample of a sandstone of the Paskapoo Formation was collected in this program.

RESULTS

Sampling

One hundred and thirty-four rock samples were collected from 92 sites during the 1993 sampling program. The sampling locations were selected on the basis of geological maps of the area and the Resource Access Maps (1:50 000) of Alberta Forestry, Lands & Wildlife.

Whenever possible, the samples were collected from outcrops. Often the formation was covered at the site of planned sampling and no outcrop was found. If boulders of the rock to be sampled were present a sample was collected. The boulders were present naturally, at some locations, or exposed mechanically on seismic cutlines and bulldozed trails. In four cases samples were collected from boulders in a streambed when outcrop was not found.

The samples were of three kinds:

(1) *Sample of a selected horizon* - collected from an interval judged to have a higher probability of concentrated gold than other parts of an outcrop; e.g. the base of a conglomerate bed, the bottom of a sandstone channel or a conglomerate horizon in a bed of sandstone.

(2) *Channel sample* - collected when the unit was generally homogeneous, the base of the sampled outcrop was buried, the subject of sampling was a large boulder or to supplement a selected horizon sample.

(3) *Sample from boulders* - collected by breaking small fragments from several boulders of similar appearance. Such samples were collected when there was a high degree of confidence that the boulders originated from a nearby subcrop.

At some locations selected or channel samples were collected from large boulders/blocks which in fact were remnants of the formation outcrop.

The amount of rock in individual samples varied, however, it was never less than 1.5 kg and usually ranged from 3 to 5 kg.

Sample Identification

The location of each sample was plotted on both the NTS (National Topographic Series) 1:50,000 scale map and the Resource Access Map. From these maps the sample's location-specific designation was determined according to the Alberta Land Survey (ALS). For example a sample located in Section 10, Township 39, Range 15 (all west of the 5th Meridian) would be designated 10-39-15. If more than one sample was collected from the same site (or section), they were given an appendix sequence number; thus samples designated as 10-39-15-1 and 10-39-15-2 would be samples 1 and 2 in Sec. 10, Twp 39, Rge 15.

Sampled Formations

Most samples were collected from the Brazeau Formation, followed by the Cadomin Formation and a few samples from other strata. Frequently several samples (up to 6) were taken from one sample site. The distribution of samples among different formations is shown in Table 1.

Table 1
Summary of Samples By Formation

Brazeau Formation	78 samples from 61 sites
Cadomin Formation	47 Samples from 25 sites
Hoadley Conglomerate	6 samples from 3 sites
Mountain Park Formation	3 samples from 3 sites
TOTAL	134 samples from 92 sites

Gold Assays

Loring Laboratories Ltd. of Calgary were contracted to perform assay/atomic absorption to determine gold contents.

Initially the intention was to run neutron activation analysis (NAA) on any promising samples, but in the light of very low gold values obtained from fire assays, no NAA was done.

- Most of the samples contain less than 5 ppb of gold.
- Only in 13 samples was the gold content 5 ppb or higher.
- The Cadomin Conglomerate's highest gold value was 16 ppb (in two samples at separate sites).
- The Brazeau Formation' highest gold content was 13 ppb (in only one sample).
- The assay of less than 5 ppb is considered a "background value".

The background value of <5 ppb corresponds to 0.0036 ppm (3.6 ppb) which was reported as an average content of gold in ordinary shales and sandstones by Shcherbakov and Perezhogin (1964).

On the other hand, it is an order of magnitude lower than 0.057 ppm (57 ppb) reported as an average gold content of sandstone, arkose, conglomerate and sedimentary breccias by Boyle (1979), although it does fit into his range of 0.0002 - 0.4300 ppm Au (0.2 - 430 ppb) for these rocks.

DISCUSSION OF THE HIGHER GOLD VALUES

The highest values of gold content found in the samples of the Cadomin Conglomerate, as well as those of the Brazeau Formation, are very low. Boyle (1979) considers a gold content of 0.1 ppm (100 ppb) to be of possible economic interest. The highest gold values in the Cadomin samples are one-sixth this value and the highest gold values in the Brazeau samples are approximately one-eighth Boyle's threshold. They can nevertheless be considered anomalous when compared with the background of less than 5 ppb Au in the majority of samples. As such, they indicate local increases of gold content, laterally as well as vertically, in both formations.

The samples of the Cadomin Conglomerate that assayed 5 ppb or greater are listed below.

Table 2
Gold assays higher or equal to 5 ppb in the Cadomin Formation

Sample	Au ppb	Map	General description
21-35-11-1	16	83 B/4	Sample of the very base of the formation from a cliff in the Cutoff Creek area; 2.5 km north of the sample below.
28-35-11-1 28-35-11-2	5 15	83 B/4	Good outcrop of coarse-pebbled conglomerate at the confluence of Idlewilde Creek with Clearwater River. Both samples are from near the base of the formation.
35-36-11-5	16	83 B/3	Sample of the coarsest conglomerate interval 4.6 m above the formation's base. Located in the Prairie Creek valley this is the best outcrop in the project area.

For a detailed description of these samples, see individual sample descriptions in Appendix 1.

Two of the highest gold values in the Cadomin Conglomerate are located in the area of Cutoff Creek and the confluence of Idlewilde Creek with the Clearwater River (SW corner of MAP 83/B4). In this area, adjacent sample sites with 16 ppb Au and 15 ppb Au are only 2.5 km apart and both samples are from the base of the formation. The two sites may indicate a larger area with an elevated gold content. Samples from site 4-36-11, another 2.5 km further to the northeast, did not yield any increase of gold content.

The third site with an elevated gold content (in the upper part of the formation) is in the Prairie Creek valley in an outcrop next to the main road, (MAP 83 B/3). It is interesting that the assays are practically identical at all three sites.

The samples of the Brazeau Formation which assayed values of 5 ppb or greater are listed below.

Table 3
Gold assays higher or equal to 5 ppb in the
Brazeau Formation

Sample	Au ppb	Map	General Description
35-36-13-1	13	83 B/4	Sample of selected coarsest conglomerate. boulders in an extensive rubble zone in the lower Lynx Creek area.
26-36-14-3	9	83 B/4	Channel sample of 2.1 m thick outcrop of the basal Brazeau conglomerate at the intersection of Lynx Creek and the Forestry Trunk Road.
16-37-14-1 16-37-14-2	5 10	83 B/4	Channel samples from basal Brazeau: sample 1 is of sandstone, sample 2 is from a 1.6 m thick poor outcrop of conglomerate on a cutline NE of the upper Otter Creek.
3-38-15-2	8	83 C/1	Sample of a selected 0.1-0.15 m thick conglomerate in a 6 m thick sandstone near the base of the formation, North Ram River Valley west of the Forestry Trunk Road.
34-38-15-2 34-38-15-3	9 6	83 C/8	Channel sample of a 0.55 m thick boulder of conglomerate. Channel sample of 1.05 m thick boulder of conglomerate. Both samples are from the Joyce River area.
16-38-16	7	83 C/8	Sample of a 0.8 m thick conglomerate approx. 300 m above the base of the formation, Kiska Mountain area.
3-39-15-3	5	83 C/8	Sample of the coarsest parts of a 1.1 m thick conglomerate in a huge sandstone & conglomerate boulder apparently from the basal strata of the formation

For a detailed description of these samples, see individual sample descriptions in Appendix 1.

Samples of the Brazeau Formation were collected mainly from the lower part the formation due to the more frequent occurrence of outcrops of resistant conglomerates and conglomeratic sandstones near the formation's base. Only a few samples are from the upper Brazeau strata. Thus the vertical distribution of any elevated gold content in the formation cannot be judged from the results of this sampling program. However, since sample 16-38-16 (Kiska Mountain area, MAP 83 C/8) from a thin conglomerate in the upper Brazeau assayed 7 ppb Au it can be concluded that the elevated gold content is not limited to the lower part of the Brazeau Formation.

Locations with increased gold content in the Brazeau are spread throughout the sampled area, (MAPS 83 C/8 and 83 B/4). They are separated by distances of no less than 6 km and by sites with less than 5 ppb Au. The topographic distance between the most western and the most eastern sites with gold "anomalies" is 35 km. This indicates that increases of the gold content are local depositional phenomena which are laterally well distributed in the Brazeau formation and similar gold values could be found elsewhere.

The highest value obtained (13 ppb Au) in the Brazeau Formation was in sample 13-5-36-13-1, collected in an extensive rubble zone of the basal Brazeau conglomerate near the end of an east-west cutline in the lower Lynx Creek area (center of MAP 84 B4). At this site local stratigraphic control of the sampled horizon was impossible. The sample is one of four samples collected at the same site and represents the coarsest conglomerate in the rubble zone. Assays of the other samples are less than 5 ppb.

The content of gold in the Brazeau and Cadomin samples is comparable to assays obtained by the Alberta Geological Survey (AGS) from a detailed sampling of a selected area along the North Saskatchewan River (MacGillivray et al., 1984). The AGS sampling program was conducted in a 2.2 km long segment of the river in Twp 56, Rge 12 W 4 M, identified earlier by Halferdahl (1965) as a promising placer area (208 mg Au/cu yd, 141 ppb). Edwards (1990) reports that the assays of the AGS samples range in values from 0.005 g/tonne (5 ppb) to 0.067 g/tonne (67 ppb) and typical higher values are from 0.02 to 0.05 g/tonne (20 to 50 ppb).

The AGS assays are only two to three times greater than the higher values of 10 to 16 ppb, obtained in this program. Such a difference is certainly attributable to the gold concentrating action of the river. The differences are much larger when the best values in this program are compared to 81 ppb Au, the average of five the best assays obtained in the Saskatchewan River by Halferdal (1965).

CONCLUSION AND RECOMMENDATIONS

The presence of gold in the Cretaceous Cadomin and Brazeau Formations in the upper North Saskatchewan River watershed was evaluated by fire assays of 122 rock samples. The content of gold is generally quite low and ranges from less than 5 to 16 ppb. Only 4 Cadomin samples out of 25 exceeded the background value of <5 ppb Au; three of these samples are 15 to 16 ppb Au. Of the 78 Brazeau samples nine exceed the background value of <5 ppb Au but only two are 10 and 13 ppb. These higher values are two to three times greater than the background of 5 or <5 ppb. No exceptionally high gold content was found.

The local small increases of gold content are laterally well distributed in conglomerates of the lower Brazeau Formation and while fewer samples were collected from the upper part of the formation a slight increase of gold content was found there as well.

In the Cadomin formation two sites with values 15 and 16 ppb Au appear to be correlatable, being only 2.5 km apart, with the gold at the base of the formation. The upper part of the formation may also contain gold as was demonstrated by one sample with 16 ppb collected from a layer 4.6 m above the base of the formation.

The five best values obtained in the 1993 sampling program, 10 to 16 ppb Au, are two to four times lower than the 20 to 60 ppb Au measured in the part of the North Saskatchewan River that was extensively sampled by AGS in 1983 (Edwards, 1990). They are also five to eight times lower than the 81 ppb Au which is an average of the five best assays obtained by a regional survey of the gold in the North Saskatchewan River (Halferdahl, 1965).

The locally elevated gold contents of the Cadomin and Brazeau formations at least partly support the widely held belief that the Cretaceous strata are the source of the gold in the North Saskatchewan River. The differences between the gold content of the rocks and that of the river placers are attributable to concentration of the gold by fluvial processes.

During the execution of the project the overall sampling productivity was about half of what had been planned (one and a half sampled sites per field day instead of three). This was due mainly to the distances needed to be traveled to reach many of the sample sites and to the number of times in which such efforts were ineffective because no outcrop was found. Thus the program did not complete the sampling of the sandstones in the upper Brazeau Formation and of the Entrance conglomerate as was hoped.

As a follow up to the 1993 program it is recommended that the following field work be considered:

(a) Low cost program: detailed resampling of the outcrops with elevated gold values discovered in the 1993 program to more accurately locate intervals with the greatest gold content.

(b) Medium cost program: sample the upper Brazeau sandstones in the Kiska Mountain and Blackstone River areas, and the Entrance Conglomerate in the Alexo - Saunders area to determine if gold values in excess of those obtained in the 1993 program are present.

ACKNOWLEDGMENTS

Very able and efficient field assistance was rendered by Boris Vyskocil. Members of the Alberta Forest Service were most helpful in providing advice on accessibility of various trails and seismic lines. Free use of campsites at the Nordegg Ranger Station and the Ram Falls was greatly appreciated. Ms. Kathryn Cochrane, P.Eng. provided excellent administrative liaison with the Department of Energy. Dr. R.Olson's field visit and his advice on sampling was appreciated. Drafting services were provided by Rosemary Neuman. Also appreciated was the assistance of Wade Plachner, P.Geol. in the preparation of this report.

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APPENDIX 1

LIST OF SAMPLES

SAMPLES WITH GOLD CONTENT GREATER THAN <5 ppb

INVESTIGATION OF POTENTIAL PALEOPLACERS IN THE CRETACEOUS STRATA OF THE NORTH SASKATCHEWAN RIVER WATERSHED

MDA Project M93-04-031

Sampled by: G E O - I N G Resource Consulting Ltd.
Assayed by: L O R I N G Laboratories Ltd.

LEGEND

cgl conglomerate
ss sandstone
css coglom. sandstone
OC outcrop
BR boulder
S selected sample
CH channel sample
B boulder sample

SAMPLES WITH GOLD CONTENT GREATER THAN <5 ppb

C A D O M I N F O R M A T I O N

Item	Sample ID	Formation	SAMPLE From	SAMPLE Type	ASSAY Au ppb	UTM LOCATION East	UTM LOCATION North	ALS LOCATION Lsd	Sec.	Twp	Rge	NTS MAP
1	21 35 11 1	Cadomir cgl	OC	S	16	601390	5763400	4	21	35	11	83 B/4
2	28 35 11 1	Cadomir cgl	OC	S	5	601850	5765840	11	28	35	11	83 B/4
3	28 35 11 2	Cadomir cgl	OC	S	15	601850	5765840	11	28	35	11	83 B/4
4	35 36 11 5	Cadomir cgl	OC	CH	16	604990	5777300	11	35	36	11	83 B/3

B R A Z E A U F O R M A T I O N

Item	Sample ID	Formation	SAMPLE From	SAMPLE Type	ASSAY Au ppb	UTM LOCATION East	UTM LOCATION North	ALS LOCATION Lsd	Sec.	Twp	Rge	NTS MAP
1	35 36 13 1	Brazeau ss	BR	B	13	586270	5776970	9	35	36	13	83 B/4
2	26 36 14 3	Brazeau cgl	OC	CH	9	575670	5775600	14	26	36	14	83 B/4
3	16 37 14 1	Brazeau ss	OC	CH	5	571960	5781370	5	16	37	14	83 B/4
4	16 37 14 2	Brazeau cgl	OC	CH	10	572120	5781520	11	16	37	14	83 B/4
5	3 38 15 2	Brazeau cgl	OC	S	8	563625	5788200	12	3	38	15	83 C/1

6	34	38	15	2	Brazeau	cgl	OC	CH	9	:	563650	5796180	:	11	34	38	15	83	C/8
7	34	38	15	3	Brazeau	cgl	OC	CH	6	:	563650	5796180	:	11	34	38	15	83	C/8
8	16	38	16		Brazeau	cgl	OC	CH	7	:	552620	5791680	:	14	16	38	16	83	C/8
9	3	39	15	3	Brazeau	cgl	BR	S	5	:	563370	5797800	:	9	3	39	15	83	C/8

LIST OF ALL SAMPLES

INVESTIGATION OF POTENTIAL PALEOPLACERS IN THE CRETACEOUS STRATA
OF THE NORTH SASKATCHEWAN RIVER WATERSHED

MDA Project M93-04-031 Sampled by: G E O - I N G Resource Consulting Ltd.
Assayed by: L O R I N G Laboratories Ltd.

L I S T O F S A M P L E S

B R A Z E A U F O R M A T I O N

Item	Sample ID	Formation	SAMPLE From	SAMPLE Type	ASSAY Au ppb	UTM LOCATION East	UTM LOCATION North	ALS LOCATION Lsd	Sec.	Twp	Rge	NTS MAP
1	35 36 13 1	Brazeau cgl	BR	B	13	586270	5776970	9	35	36	13	83 B/4
2	35 36 13 1	Brazeau cgl	BR	B	<5	586270	5776970	9	35	36	13	83 B/4
3	35 36 13 1	Brazeau cgl	OC	CH	<5	586270	5776970	9	35	36	13	83 B/4
4	35 36 13 1	Brazeau cgl	OC	S	<5	586270	5776970	13	35	36	13	83 B/4
5	11 36 14 1	Brazeau cgl	OC	S	<5	575750	5770760	14	11	36	14	83 B/4
6	11 36 14 2	Brazeau cgl	OC	CH	<5	575750	5770760	14	11	36	14	83 B/4
7	23 36 14	Brazeau css	BR	B	<5	575180	5773950	13	23	36	14	83 B/4
8	26 36 14 1	Brazeau cgl	BR	CH	<5	575850	5774650	6	26	36	14	83 B/4
9	26 36 14 2	Brazeau cgl	BR	B	<5	575850	5774650	6	26	36	14	83 B/4
10	26 36 14 3	Brazeau cgl	OC	CH	9	575670	5775600	14	26	36	14	83 B/4
11	34 36 14	Brazeau ss	OC	CH	<5	574780	5776460	8	34	36	14	83 B/4
12	35 36 14 1	Brazeau cgl	OC	S	<5	575650	5776010	3	35	36	14	83 B/4
13	35 36 14 2	Brazeau cgl	OC	CH	<5	575110	5776390	5	35	36	14	83 B/4
14	3 37 13 1	Brazeau cgl	OC	S	<5	584600	5777670	1	3	37	13	83 B/4
15	3 37 13 2	Brazeau cgl	OC	S	<5	584600	5777670	1	3	37	13	83 B/4
16	3 37 13 3	Brazeau cgl	OC	S	<5	584600	5777670	1	3	37	13	83 B/4

17	4	37	14		Brazeau	cgl	BR	B	<5	:	573170	5778830	:	16	4	37	14	83	B/4
18	6	37	14	1	Brazeau	cgl	OC	CG	<5	:	568800	5778570	:	12	6	37	14	83	B/4
19	6	37	14	2	Brazeau	cgl	BR	B	<5	:	568900	5778730	:	17	6	37	14	83	B/4
20	10	37	14	1	Brazeau	cgl	BR	B	<5	:	573780	5779630	:	6	10	37	14	83	B/4
21	10	37	14	2	Brazeau	cgl	BR	B	<5	:	573550	5779390	:	4	10	37	14	83	B/4
22	16	37	14	1	Brazeau	ss	OC	CH	5	:	571960	5781370	:	5	16	37	14	83	B/4
23	16	37	14	2	Brazeau	cgl	OC	CH	10	:	572120	5781520	:	11	16	37	14	83	B/4
24	19	37	14	1	Brazeau	cgl	BR	B	<5	:	569630	5783700	:	16	19	37	14	83	B/4
25	19	37	14	2	Brazeau	cgl	OC	S	<5	:	569630	5783640	:	16	19	37	14	83	B/4

BRAZEAU FORMATION CONT.

Item	Sample ID	Formation	SAMPLE From	SAMPLE Type	ASSAY Au ppb	UTM LOCATION East	UTM LOCATION North	ALS LOCATION Lsd	Sec.	Twp	Rge	NTS MAP
26	19 37 14 3	Brazeau cgl	OC	S	<5	569760	5783160	9	19	37	14	83 B/4
27	20 37 14 1	Brazeau ss	OC	S	<5	570100	5783780	13	20	37	14	83 B/4
28	20 37 14 2	Brazeau cgl	BR	B	<5	571020	5782480	2	20	37	14	83 B/4
29	30 37 14 1	Brazeau css	BR	B	<5	568430	5785200	12	30	37	14	83 B/4
30	30 37 14 2	Brazeau cgl	BR	B	<5	568430	5785200	12	30	37	14	83 B/4
31	34 37 16 1	Brazeau cgl	OC	S	<5	554875	5786740	16	34	37	16	83 C/1
32	34 37 16 2	Brazeau cgl	OC	CH	<5	554875	5786740	16	34	37	16	83 C/1
33	3 38 15 1	Brazeau cgl	OC	S	<5	563780	5788550	13	3	38	15	83 C/1
34	3 38 15 2	Brazeau cgl	OC	S	8	563625	5788200	12	3	38	15	83 C/1
35	3 38 15 3	Brazeau cgl	OC	CH	<5	563615	5788090	12	3	38	15	83 C/1
36	4 38 15	Brazeau css	OC	CH	<5	562900	5788150	10	4	38	15	83 C/1
37	9 38 15 1	Brazeau cgl	BR	B	<5	562150	5789680	12	9	38	15	83 C/8
38	9 38 15 2	Brazeau cgl	OC	S	<5	562075	5789830	13	9	38	15	83 C/8
39	9 38 15 3	Brazeau cgl	OC	CH	<5	562075	5789830	13	9	38	15	83 C/8
40	9 38 15 4	Brazeau cgl	OC	CH	<5	562075	5789830	13	9	38	15	83 C/8
41	13 38 15 1	Brazeau ss	OC	CH	<5	567550	5790630	6	13	38	15	83 C/8
42	13 38 15 2	Brazeau cgl	OC	S	<5	567550	5790630	6	13	38	15	83 C/8
43	17 38 15 1	Brazeau cgl	OC	S	<5	560700	5790600	11	17	38	15	83 C/8
44	17 38 15 2	Brazeau cgl	OC	S	<5	560750	5790650	11	17	38	15	83 C/8

45	17	38	15	3	Brazeau	cgl	BR	B	<5	:	560500	5791230	:	11	17	38	15	83	C/8
43	19	38	15		Brazeau	cgl	BR	B	<5	:	559860	5792630	:	9	19	38	15	83	C/8
44	20	38	15	1	Brazeau	cgl	BR	CH	<5		560150	5793040		13	20	38	15	83	C/8
44	20	38	15	2	Brazeau	cgl	BR	B	<5	:	560650	5792220	:	6	20	38	15	83	C/8
45	31	38	15		Brazeau	cgl	BR	B	<5	:	558615	5795070	:	3	31	38	15	83	C/8
46	34	38	15	1	Brazeau	css	B	B	<5	:	563650	5796180	:	11	34	38	15	83	C/8
47	34	38	15	2	Brazeau	cgl	OC	CH	9	:	563650	5796180	:	11	34	38	15	83	C/8
48	34	38	15	3	Brazeau	cgl	OC	CH	6	:	563650	5796180	:	11	34	38	15	83	C/8

BRAZEAU FORMATION CONT.

Item	Sample ID	Formation	SAMPLE From	SAMPLE Type	ASSAY Au ppb	UTM LOCATION East	UTM LOCATION North	ALS LOCATION Lsd	ALS LOCATION Sec.	ALS LOCATION Twp	ALS LOCATION Rge	NTS MAP
49	2 38 16 1	Brazeau cgl	BR	B	<5	555400	5787300	6	2	38	16	83 C/1
50	2 38 16 2	Brazeau ss	OC	S	<5	556800	5788360	16	2	38	16	83 C/1
51	2 38 16 3	Brazeau css	OC	CH	<5	556800	5788360	16	2	38	16	83 C/1
52	2 38 16 4	Brazeau css	OC	S	<5	556800	5788360	16	2	38	16	83 C/1
53	2 38 16 5	Brazeau css	OC	S	<5	556800	5788360	16	2	38	16	83 C/1
54	2 38 16 6	Brazeau cgl	BR	CH	<5	556800	5788360	16	2	38	16	83 C/1
55	13 38 16	Brazeau cgl	BR	B	<5	557920	5790600	7	13	38	16	83 C/8
56	16 38 16	Brazeau cgl	OC	CH	7	552620	5791680	14	16	38	16	83 C/8
57	26 38 16	Brazeau cgl	OC	CH	<5	555520	5794310	5	26	38	16	83 C/8
58	27 38 16	Brazeau cgl	BR	B	<5	555120	5794410	9	27	38	16	83 C/8
59	3 39 15 1	Brazeau cgl	BR	S	<5	563080	5798250	15	3	39	15	83 C/8
60	3 39 15 2	Brazeau cgl	BR	S	<5	563130	5798170	15	3	39	15	83 C/8
61	3 39 15 3	Brazeau cgl	BR	S	5	563370	5797800	9	3	39	15	83 C/8
62	3 39 15 4	Brazeau cgl	BR	B	<5	563680	5797380	8	3	39	15	83 C/8
63	9 39 15 1	Brazeau cgl	OC	S	<5	562070	5799650	16	9	39	15	83 C/8
64	9 39 15 2	Brazeau cgl	OC	S	<5	561770	5799890	15	9	39	15	83 C/8
65	10 39 15 1	Brazeau cgl	OC	S	<5	562565	5798930	6	10	39	15	83 C/8
66	10 39 15 2	Brazeau cgl	OC	S	<5	562550	5798930	5	10	39	15	83 C/8
67	10 39 15 3	Brazeau cgl	OC	S	<5	562300	5798630	4	10	39	15	83 C/8

68	10	39	15	4	Brazeau	cgl	BR	S	<5	:	562140	5798750	:	4	10	39	15	83	C/8
69	11	39	15		Brazeau	cgl	BR	CH	<5	:	564240	5798780	:	3	11	39	15	83	C/8
70	7	40	13		Brazeau	cgl	BR	B	<5	:	576750	5808475	:	4	7	40	13	83	B/5
71	22	40	13		Brazeau	ss	OC	S	<5		582470	5813020	:	15	22	40	13	83	B/5
72	23	40	13		Brazeau	ss	OC	CH	<5		583250	5812300		5	23	40	13	83	B/5
73	16	40	16		Brazeau	cgl	OC	S	<5	:	550750	5809930	:	4	16	40	16	83	C/8
74	24	40	17		Brazeau	cgl	OC	S	<5	:	547400	5812300	:	9	24	40	17	83	C/8
75	25	40	17		Brazeau	cgl	BR	B	<5	:	546380	5813820	:	11	25	40	17	83	C/8
76	35	40	17		Brazeau	cgl	BR	B	<5	:	544200	5815780	:	13	35	40	17	83	C/8

INVESTIGATION OF POTENTIAL PALEOPLACERS IN THE CRETACEOUS STRATA
OF THE NORTH SASKATCHEWAN RIVER WATERSHED

MDA Project M93-04-031 Sampled by: G E O - I N G Resource Consulting Ltd.
Assayed by: L O R I N G Laboratories Ltd.

L I S T O F S A M P L E S

C A D O M I N F O R M A T I O N					UTM LOCATION		ALS LOCATION				NTS MAP
Item	Sample ID	Formation	SAMPLE From	SAMPLE Type	ASSAY Au ppb	East	North	Lsd	Sec.	Twp	Rge
1	3 34 9 1	Cadomircgl	OC	S	<5	624650	5750600	15	3	34	9	82 O/4
2	3 34 9 2	Cadomircgl	OC	S	<5	624650	5750600	15	3	34	9	82 O/4
3	3 34 9 3	Cadomircgl	OC	S	<5	624650	5750600	15	3	34	9	82 O/4
4	7 35 9	Cadomircgl	BR	B	<5	619250	5761360	9	7	35	9	82 O/4
5	21 35 11 1	Cadomircgl	OC	S	16	601390	5763400	4	21	35	11	83 B/4
6	21 35 11 2	Cadomircgl	OC	S	<5	601390	5763400	4	21	35	11	83 B/4
7	21 35 11 3	Cadomircgl	OC	CH	<5	601390	5763400	4	21	35	11	83 B/4
8	21 35 11 4	Cadomircgl	OC	S	<5	601390	5763400	4	21	35	11	83 B/4
9	21 35 11 5	Cadomircgl	OC	S	<5	601390	5763400	4	21	35	11	83 B/4
10	28 35 11 1	Cadomircgl	OC	S	5	601850	5765840	11	28	35	11	83 B/4
11	28 35 11 2	Cadomircgl	OC	S	15	601850	5765840	11	28	35	11	83 B/4
12	28 35 11 3	Cadomircgl	OC	CH	<5	601850	5765840	11	28	35	11	83 B/4
13	28 35 11 4	Cadomircgl	OC	CH	<5	601760	5765930	12	28	35	11	83 B/4
14	34 35 11 1	Cadomircgl	OC	CH	<5	603100	5767650	13	34	35	11	83 B/3
15	34 35 11 2	Cadomircgl	OC	CH	<5	603300	5767550	13	34	35	11	83 B/3
16	9 36 10 1	Cadomircgl	BR	CH	<5	611620	5770615	6	9	36	10	83 B/3
17	9 36 10 2	Cadomircgl	BR	CH	<5	611620	5770615	6	9	36	10	83 B/3
18	9 36 10 3	Cadomircss	BR	CH	<5	611620	5770615	6	9	36	10	83 B/3

19	30	36	10	1	Cadomir	cgl	OC	B	<5	:	608620	5775070	:	2	30	36	10	83 B/3
20	30	36	10	2	Cadomir	cgl	OC	B	<5	:	608620	5775070	:	2	30	36	10	83 B/3
21	4	36	11	1	Cadomir	cgl	BR	B	<5	:	601900	5768370	:	3	4	36	11	83 B/4
22	4	36	11	2	Cadomir	cgl	BR	B	<5	:	601900	5768370	:	3	4	36	11	83 B/4
23	4	36	11	3	Cadomir	cgl	BR	B	<5	:	601900	5768370	:	3	4	36	11	83 B/4
24	4	36	11	4	Cadomir	cgl	BR	B	<5	:	601900	5768370	:	3	4	36	11	83 B/4
25	35	36	11	1	Cadomir	cgl	OC	S	<5	:	604990	5777300	:	11	35	36	11	83 B/3
26	35	36	11	2	Cadomir	cgl	OC	CH	<5	:	604990	5777300	:	11	35	36	11	83 B/3
27	35	36	11	3	Cadomir	cgl	OC	S	<5	:	604990	5777300	:	11	35	36	11	83 B/3
28	35	36	11	4	Cadomir	cgl	OC	S	<5	:	604990	5777300	:	11	35	36	11	83 B/3
29	35	36	11	5	Cadomir	cgl	OC	CH	16	:	604990	5777300	:	11	35	36	11	83 B/3

CADOMIN FORMATION CONT.

Item	Sample ID	Formation	SAMPLE From	SAMPLE Type	ASSAY Au ppb	UTM LOCATION East	UTM LOCATION North	ALS LOCATION Lsd	Sec.	Twp	Rge	NTS MAP
30	29 36 13	Cadomir cgl	OC	CH	<5	580430	5775290	11	29	36	13	83 B/4
31	30 36 13 1	Cadomir cgl	OC	S	<5	579370	5775350	10	30	36	13	83 B/4
32	30 36 13 2	Cadomir cgl	OC	CG	<5	579370	5775350	10	30	36	13	83 B/4
33	30 36 13 3	Cadomir cgl	OC	CG	<5	579370	5775350	10	30	36	13	83 B/4
34	12 37 11	Cadomir cgl	OC	B	<5	606890	5779980	7	12	37	11	83 B/3
35	23 37 11	Cadomir cgl	BR	B	<5	604315	5782890	4	23	37	11	83 B/3
36	20 38 12	Cadomir cgl	BR	B	<5	590900	5792350	1	20	38	12	83 B/5
37	25 38 12 1	Cadomir cgl	O	CH	<5	596950	5784780	7	25	38	12	83 B/4
38	25 38 12 2	Cadomir cgl	O	CH	<5	596950	5784780	7	25	38	12	83 B/4
39	3 39 12 1	Cadomir cgl	OC	CH	<5	591880	5797280	4	3	39	12	83 B/5
40	3 39 12 2	Cadomir cgl	OC	CH	<5	592150	5797450	6	3	39	12	83 B/5
41	6 39 12 1	Cadomir cgl	BR	B	<5	586700	5798915	14	6	39	12	83 B/5
42	6 39 12 2	Cadomir cgl	BR	B	<5	586700	5798915	14	6	39	12	83 B/5
43	12 39 13	Cadomir cgl	BR	B	<5	585725	5799320	6	12	39	13	83 B/5
44	34 38 13	Cadomir cgl	O	CH	<5	583220	5796315	11	34	38	13	83 B/5
45	13 40 15	Cadomir cgl	BR	B	<5	566725	5799320	10	13	40	15	83 C/8
46	22 40 15	Cadomir cgl	BR	B	<5	563400	5812790	16	22	40	15	83 C/8
47	20 40 17	Cadomir cgl	O	CH	<5	539550	5811840	5	20	40	17	83 C/8

INVESTIGATION OF POTENTIAL PALEOPLACERS IN THE CRETACEOUS STRATA
OF THE NORTH SASKATCHEWAN RIVER WATERSHED

MDA Project M93-04-031 Sampled by: G E O - I N G Resource Consulting Ltd.
Assayed by: L O R I N G Laboratories Ltd.

L I S T O F S A M P L E S

Item	Sample ID	Formation	SAMPLE From	SAMPLE Type	ASSAY Au ppb	UTM LOCATION East	UTM LOCATION North	ALS LOCATION Lsd	Sec.	Twp	Rge	NTS MAP
1	18 37 11	Hoadley cgl	OC	S	<5	597830	5782150	12	18	37	11	83 B/4
2	24 37 12 1	Hoadley cgl	OC	S	<5	596550	5783330	11	24	37	12	83 B/4
3	24 37 12 2	Hoadley cgl	OC	S	<5	596550	5783330	11	24	37	12	83 B/4
4	24 37 12 3	Hoadley cgl	OC	S	<5	596550	5783330	11	24	37	12	83 B/4
5	7 38 12	Mtn. Pk ss	OC	S	<5	588280	5789850	11	7	38	12	83 B/5
6	4 40 17	Mtn. Pk cng	BR	B	<5	542110	5807500	15	4	40	17	83 C/8
7	17 40 17 1	Hoadley cgl	OC	S	<5	540100	5809910	7	17	40	17	83 C/8
8	17 40 17 2	Hoadley cgl	OC	S	<5	540100	5809910	7	17	40	17	83 C/8
9	8 40 17	Mtn. Pk cng	OC	CH	<5	540715	5808720	9	8	40	17	83 C/8
10	6 41 11	Paskapc ss	OC	CH	<5				6	41	11	

APPENDIX 2

SAMPLE DESCRIPTIONS

CADOMIN FORMATION

SAMPLE No: 3-34-9-1 **CADOMIN CONGLOMERATE** Field book page: 51

1 of 3

Age: Cretaceous

Type: sedimentary

Collected by: Y.H., 1993

Gold assay: <5 ppb Fire assay by Loring Laboratories Ltd.

Location: NTS Map 82 O/14 UTM Easting 624 650

UTM Northing 5 750 600

Geological map: LIMESTONE MOUNTAIN, G.S.C. MAP 8-1968

Scale used to define location: 1:50000

Location description: On the east flank of the Marble Mountain anticline and on the south bank of the Pole Creek.

Access by: car and by foot

Type of exposure: outcrop

Type of sample: selected

Remarks: Vertical outcrop on the east flank of the Marble Mountain anticline at the Teepee Creek. The sample is a conglomerate from the bottom 40 cm of a 1.7 m thick basal interval the top of which is sandstone.

Description: The conglomerate is grain-supported, cherty; pebbles are semi-rounded to rounded, rusty weathering, ranging from 5mm to 25 mm, occasionally up to 60 mm. The matrix is poorly sorted sand & pepper sandstone with minor carbonaceous traces.

Minisample retained.

SAMPLE No: 3-34-9-2 **CADOMIN CONGLOMERATE** Field book page: 51

2 of 3

Age: Cretaceous

Type: sedimentary

Collected by: Y.H., 1993

Gold assay: <5 ppb Fire assay by Loring Laboratories Ltd.

Location: NTS Map 82 O/14 UTM Easting 624 650

UTM Northing 5 750 600

Geological map: LIMESTONE MOUNTAIN, G.S.C. MAP 8-1968

Scale used to define location: 1:50000

Location description: On the east flank of the Marble Mountain anticline and on the south bank of the Pole Creek.

Access by: car and by foot

Type of exposure: vertical outcrop

Type of sample: selected

Remarks: This sample is from a 70 cm thick conglomerate which overlays the 1.7 m interval (conglomerate grading to sandstone) sampled as 3-34-9-1.

Description: Typical Cadomin Conglomerate with kaolinic sandstone matrix.

Minisample retained.

SAMPLE No: 3-34-9-3 **CADOMIN CONGLOMERATE** Field book page: 52

Age: Cretaceous

Type: sedimentary

Collected by: Y.H., 1993

Gold assay : <5 ppb Fire assay by Loring Laboratories Ltd.

Location: NTS Map 82 O/14 UTM Easting 624 650

UTM Northing 5 750 600

Geological map: LIMESTONE MOUNTAIN, G.S.C. MAP 8-1968

Scale used to define location: 1:50000

Location description: On the east flank of the Marble Mountain anticline and on the south bank of the Pole Creek.

Access by: car and by foot

Type of exposure: outcrop

Type of sample: selected

Remarks: This sample was collected from the coarsest layers of a 1.3 m thick interval of interbedded conglomerate & sandstone located 1.2 m above the sample 3-39-9-2. The interval consists of interbeds of matrix-supported conglomerate, conglomeratic sandstone and very coarse, pebbly salt & pepper sandstone at the very top of this interval.

Description: The sampled rock is a rusty-weathering matrix-supported conglomerate with pebbles of chert of variable colors (dominating black) up to 10 mm in size. The matrix is kaolinic, coarse-grained, salt & pepper sandstone.

SAMPLE No: 7-35-9 **CADOMIN CONGLOMERATE** Field book page: 51

Age: Cretaceous

Type: sedimentary

Collected by: Y.H., 1993

Gold assay: <5 ppb Fire assay by Loring Laboratories Ltd.

Location: NTS Map 82 O/14 UTM Easting 619 250

UTM Northing 5 761 360

Geological map: LIMESTONE MOUNTAIN, G.S.C. MAP 8-1968

Scale used to define location: 1:50000

Location description: East flank of the Marble Mountain anticline 1.8 km from the Clearwater Ranger Station

Access by: foot

Type of exposure: boulders

Type of sample: boulders

Remarks: No outcrop was found and the sample was taken from fragments and boulders of Cadomin Conglomerate found in a minor creek.

Description: Typical Cadomin Conglomerate: cherty, matrix-supported, brown-rusty weathering, chert pebbles are up to 25 mm, rounded and sub-rounded.

SAMPLE No: 21-35-11-1 **CADOMIN CONGLOMERATE** Field book page: 45

Age: Cretaceous

Type: sedimentary

Collected by: Y.H., 1993

Gold assay : 16 ppb Fire assay by Loring Laboratories Ltd.

Location: NTS Map 83 B/4 UTM Easting 601 390

UTM Northing 5 763 400

Geological map: FALL CREEK, G.S.C. MAP 883A

Scale used to define location: 1:50000

Location description: Cutoff Creek area

Access by: Cutoff Creek road, car and foot

Type of exposure: outcrop

Type of sample: selected

Remarks: Sample of conglomerate collected at the very base of the formation where it abruptly overlies black Nikanassin mudstone.

Description: Conglomerate, dense, pebble-supported with limited matrix. The pebbles are mainly chert (black, grey, light brown and tan) and some quartz, rounded or sub-rounded, poorly sorted, up to 25 mm in size. This rock is tectonicly stressed, pebbles are jointed and the rock tends to break along the lines of stress rather than to separate along pebble contacts; some fragments of this rock have breccia appearance.

Compression and silification resulted in large massive "blocks" of quartzite-like chert fused from the original pebbles. The rock is cemented by silica and a limited amount of white kaolin filler, about 15% of the intergranular space. It also includes occasional fragments of carbonaceous mudstone. The rock weathers mottly light and dark brown.

Minisample retained

SAMPLE No: 21-35-11-2 **CADOMIN CONGLOMERATE** Field book page: 45

Age: Cretaceous

Type: sedimentary

Collected by: Y.H., 1993

Gold assay : <5 ppb Fire assay by Loring Laboratories Ltd.

Location: NTS Map 83 B/4 UTM Easting 601 390

UTM Northing 5 763 400

Geological map: FALL CREEK, G.S.C. MAP 883A

Scale used to define location: 1:50000

Location description: N/A

Access by:

Type of exposure: outcrop

Type of sample: selected channel

Remarks: Sample at the base of a conglomerate channel, 1.2 m thick, overlying 0.9 m of sandstone in the lower part of the Cadomin cliff.

Description: Conglomerate, dark grey, mottled, pebble and partly matrix-supported framework. Pebbles are chert (black, grey and tan), some quartz and a few are quartzite. The conglomerate also includes fragments of yellowish-grey or very light tan, fairly soft, homogeneous, argillitic non- carbonaceous rock.

The matrix is silicified sandstone of quartz (clear, semi-clear and grey) and chert grains with moderately abundant kaolin filler.

Minisample retained

SAMPLE No: 21-35-11-3 **CADOMIN CONGLOMERATE** Field book page: 45

Age: Cretaceous

Type: sedimentary

Collected by: Y.H., 1993

Gold assay : <5 ppb Fire assay by Loring Laboratories Ltd.

Location: NTS Map 83 B/4 UTM Easting 601 390

UTM Northing 5 763 400

Geological map: FALL CREEK, G.S.C. MAP 883A

Scale used to define location: 1:50000

Location description: see map

Access by:

Type of exposure: outcrop

Type of sample: channel

Remarks: Sample of massive conglomerate bed representing 2.1 m of thickness. Taken as a channel sample. Cutoff Creek area.

Description: Similar to Sample 25-35-11-2.

SAMPLE No: 21-35-11-4 **CADOMIN CONGLOMERATE** Field book page: 45

Age: Cretaceous

Type: sedimentary

Collected by: Y.H., 1993

Gold assay: <5 ppb Fire assay by Loring Laboratories Ltd.

Location: NTS Map 83 B/4 UTM Easting 601 390

UTM Northing 5 763 400

Geological map: FALL CREEK, G.S.C. MAP 883A

Scale used to define location: 1:50000

Location description: see map

Access by:

Type of exposure: outcrop

Type of sample:

Remarks: Sample of a most pebbly layer of conglomerate found at this location. The layer is 0.6 m thick. Cutoff Creek area.

Description: Conglomerate, pebble-supported with pebbles up to 45 mm, usually asymmetrical, rounded and sub-rounded, varicolored chert (dark dominates) and some quartz. The rock is friable and breaks easily into gravel. The matrix is a silicified coarse-grained sandstone of mosaic texture; it consists of clear quartz and a lesser amount of chert. The amount of kaolin is limited.

Minisample retained

SAMPLE No: 21-35-11-5 **CADOMIN CONGLOMERATE** Field book page: 45

Age: Cretaceous

Type: sedimentary

Collected by: Y.H., 1993

Gold assay: <5 ppb Fire assay by Loring Laboratories Ltd.

Location: NTS Map 83 B/4 UTM Easting 601 390

UTM Northing 5 763 400

Geological map: FALL CREEK, G.S.C. MAP 883A

Scale used to define location: 1:50000

Location description: see map

Access by:

Type of exposure: outcrop

Type of sample:

Remarks: Sample of the base of a conspicuous layer of conglomerate. The layer is 0.8 m thick. This rock is a little different from Samples 25-35-11-1 to 4 as it weathers pinkish-grey. Cutoff Creek area.

Description: Conglomerate, black and gray, mottled; the pebbles are up to 25 mm in size, chert and quartz, and occasional quartzite. The rock is matrix-supported. The matrix is coarse-grained, silicified, moderately porous sandstone of mosaic texture. It includes angular grains of clear and light grey quartz and sub-rounded chert. Kaolin is present in small quantities.

Minisample retained.

SAMPLE No: 28-35-11-1
28-35-11-2

CADOMIN CONGLOMERATE

Field book page: 21

Age: Cretaceous

Type: sedimentary

Collected by: Y.H., 1993

Gold assay: 5 ppb (sample 1) Fire assay by Loring Laboratories Ltd.
15 ppb (sample 2)

Location: NTS Map 83 B/4 UTM Easting 601 850

UTM Northing 5 765 840

Geological map: FALL CREEK, G.S.C. MAP 883A

Scale used to define location: 1:50000

Location description: confluence of the Idlewilde Creek with the Clearwater River.

Access by: main road and on foot

Type of exposure: outcrop

Type of sample: selected

Remarks: These samples are from an outcrop of Cadomin Conglomerate found at the river level near the confluence of Idlewilde Creek with the Clearwater River.

Sample 28-35-11-1 is from the upper conglomerate unit, 50 - 80 cm thick. Sample 28-35-11-2 is from the middle conglomerate unit, 30 - 60 cm thick. In both cases the samples were taken from near the bottom of the conglomerate units and from the layer with the largest pebbles.

Description: Sample 28-35-11-1 is a coarse-pebbled conglomerate with a coarse sandstone matrix. The rock is pebble-supported with mainly chert and some rock (mudstone or siltstone) pebbles. The pebbles are up to 40 mm (40 x 20 x 15), in size, rounded and subrounded, black, grey, brown and tan. The sandstone matrix is a coarse-grained mosaic of black, grey and clear grains of chert and quartz.

The sandstone is silicified with a moderate quantity of white or yellow stained grains of kaolin. The rock weathers rusty-brown (limonite). The matrix grains are angular (clear quartz) or subangular and subrounded (chert). There are a number of rusty-brown limonite fragments and soft mudstone as well as greyish-black, micromicaceous mudstone.

Sample 28-35-11-2 is similar. It also includes pebbles of tan quartzite and pale green chert.

SAMPLE No: 28-35-11-3 **CADOMIN CONGLOMERATE** Field book page: 21

Age: Cretaceous

Type: sedimentary

Collected by: Y.H., 1993

Gold assay: <5 ppb Fire assay by Loring Laboratories Ltd.

Location: NTS Map 83 B/4 UTM Easting 601 850

UTM Northing 5 765 840

Geological map: FALL CREEK, G.S.C. Map 883A

Scale used to define location: 1:50000

Location description: confluence of the Idlewilde Creek with the Clearwater River.

Access by: main road and on foot

Type of exposure: outcrop

Type of sample: selected channel

Remarks: This is a sample of the lowest, 3.6 m thick 90% conglomerate interval at the same location.

The sample was taken as a channel sample, as the bottom of this conglomerate interval could not be reached; it is either in the river or buried in the river bank or in the slope upstream.

Description: Similar to Samples 28-35-11-1 and 28-35-11-2.

SAMPLE 28-35-11-4 **CADOMIN CONGLOMERATE** Field book page: 21

Age: Cretaceous

Type: sedimentary

Collected by: Y.H., 1993

Gold assay : <5 ppb Fire assay by Loring Laboratories Ltd.

Location: NTS Map 83 B/4 UTM Easting 601 760

UTM Northing 5 765 930

Geological map: FALL CREEK, G.S.C. Map 883A

Scale used to define location: 1:50000

Location description: confluence of the Idlewilde Creek with the Clearwater River.

Access by: main road and on foot

Type of exposure: outcrop

Type of sample: channel

Remarks: Sample from a 5.1 m thick outcrop of conglomerate located approximately 200 m to the NW of the location of samples 28-35-11-1, 2 and 3. This outcrop is stratigraphicly.

Description: Similar to samples 28-35-11-1, 2 and 3 but generally larger pebbles - a lot of pebbles are over 15 mm and some are up to 50 mm. The silicification of the matrix appears to be more extensive and the amount of kaolin is limited. Pebbles of quartzite are more frequent and there are no fragments of mudstone or siltstone.

SAMPLE No: 34-35-11-1 **CADOMIN CONGLOMERATE** Field book page: 44

Age: Cretaceous

Type: sedimentary

Collected by: Y.H., 1993

Gold assay: <5 ppb Fire assay by Loring Laboratories Ltd.

Location: NTS Map 83 B/3 UTM Easting 603 100

UTM Northing 5 768 650

Geological map: TAY RIVER G.S.C MAP 840A

Scale used to define location: 1:50000

Location description: see map

Access by: seismic line, ATV

Type of exposure: outcrop

Type of sample: channel

Remarks: Sample of Cadomin Conglomerate from the upper part of an outcrop most of which is buried. The sample represents 1 m of the conglomerate. The crest of the Idlewilde Mountain.

Description: N/A

SAMPLE No: 34-35-11-2 **CADOMIN CONGLOMERATE** Field book page: 44

Age: Cretaceous

Type: sedimentary

Collected by: Y.H., 1993

Gold assay : <5 ppb Fire assay by Loring Laboratories Ltd.

Location: NTS Map 83 B/3 UTM Easting 603 300

UTM Northing 5 767 550

Geological map: TAY RIVER G.S.C MAP 840A

Scale used to define location: 1:50000

Location description: NW end of the crest of the Idlewilde Mountain

Access by: cutline, ATV

Type of exposure: outcrop

Type of sample: channel

Remarks: Sample of Cadomin Conglomerate, approximately 150 m north of Sample 34-38-11-1. It appears that this sample is of a different stratigraphic interval, separated from 34-38-11-1 by sandstone. The crest of the Idlewilde Mountain.

Description: N/A

SAMPLE No: 9-36-10-1 **CADOMIN FORMATION** Field book page: 53

Age: Cretaceous

Type: sedimentary

Collected by: Y.H., 1993

Gold assay: <5 ppb Fire assay by Loring Laboratories Ltd.

Location: NTS Map 83 B/3 UTM Easting 611 620

UTM Northing 5 770 615

Geological map: TAY RIVER G.S.C. MAP 840A

Scale used to define location: 1:50000

Location description: The western flank of the Marble Mountain anticline in the valley of Tay River.

Access by: ALL TERRAIN VEHICLE, trail

Type of exposure: boulders

Type of sample: channel

Remarks: At this location the Cadomin "outcrop" is a small field of boulders scattered in the forest. The sample is from a 1.2 m thick boulder of pebble-supported coarse conglomerate.

Description: Conglomerate, reddish weathering, grey-black and mottled when fresh, cherty, pebble-supported; pebbles range from <2 mm to 20 mm. The matrix is kaolinic sandstone with extensive quartz overgrowth; the fine sparkle (quartz and kaolin) is visible without magnification. The rock has fairly high porosity.

Minisample retained.

SAMPLE No: 9-36-10-2 **CADOMIN FORMATION** Field book page: 53

Age: Cretaceous

Type: sedimentary

Collected by: Y.H., 1993

Gold assay: <5 ppb Fire assay by Loring Laboratories Ltd.

Location: NTS Map 83 B/3 UTM Easting 611 620

UTM Northing 5 770 615

Geological map: TAY RIVER G.S.C. MAP 840A

Scale used to define location: 1:50000

Location description: The western flank of the Marble Mountain anticline in the valley of Tay River.

Access by: trail, ATV

Type of exposure: boulders

Type of sample: channel and boulders

Remarks: At this location the Cadomin "outcrop" is a small field of boulders scattered in the forest north of the river. The sample is from a 0.8 m thick boulder of a smaller-pebbled, grain-supported conglomerate.

Description: Similar to sample 9-36-10-2, but with less matrix and more kaolin.

SAMPLE No: 9-36-10-3 **CADOMIN CONGLOMERATE** Field book page: 53

Age: Cretaceous

Type: sedimentary

Collected by: Y.H., 1993

Gold assay: <5 ppb Fire assay by Loring Laboratories Ltd.

Location: NTS Map 83 B/3 UTM Easting 611 620

UTM Northing 5 770 615

Geological map: TAY RIVER G.S.C. MAP 840A

Scale used to define location: 1:50000

Location description: The western flank of the Marble Mountain anticline in the valley of Tay River.

Access by:

Type of exposure: boulders

Type of sample: channel at a boulder

Remarks: At this location the Cadomin "outcrop" is a small field of boulders scattered in the forest north of the river. The sample is from a boulder of small-pebbled, matrix-supported conglomerate.

Description: Conglomerate, mainly matrix and only partly grain-supported; chert pebbles up to 15 mm, but generally smaller than in Samples 9-36-10-1 and -2. The matrix is silicified sandstone with about 25% chert, kaolinic and with quartz overgrowth. There are a few grains of green chert. The conglomerate is quite porous.

Minisample retained.

SAMPLE No: 30-36-10-1 **CADOMIN CONGLOMERATE** Field book page: 32

Age: Cretaceous

Type: sedimentary

Collected by: Y.H., 1993

Gold assay: <5 ppb Fire assay by Loring Laboratories Ltd.

Location: NTS Map 83 B/3 UTM Easting 608 620

UTM Northing 5 775 070

Geological map: TAY RIVER, G.S.C. MAP 840A

Scale used to define location: 1:50000

Location description: top of Baseline Mountain

Access by: road and trail

Type of exposure: outcrop

Type of sample: boulder

Remarks: Sample of conglomerate fragments from an outcrop in the roadcut in the vicinity of the base of the formation.

Description: Cherty conglomerate, grain-supported, porous, poorly sorted conglomerate with 20% or less sandstone matrix.

SAMPLE No: 30-36-10-2 **CADOMIN CONGLOMERATE** Field book page: 32

Age: Cretaceous

Type: sedimentary

Collected by: Y.H., 1993

Gold assay : <5 ppb Fire assay by Loring Laboratories Ltd.

Location: NTS Map 83 B/3 UTM Easting 608 620

UTM Northing 5 775 070

Geological map: TAY RIVER, G.S.C. MAP 840A

Scale used to define location: 1:50000

Location description: top of Baseline Mountain

Access by:

Type of exposure: outcrop

Type of sample: boulder

Remarks: Sample taken from fragments of conglomerate found in the roadcut; it is a stratigraphicly higher unit than sample 30-36-10-1.

Description: This rock contains 40 to 50% of coarse sandstone matrix. Specimen sample kept.

SAMPLE No: 4-36-11-1 CADOMIN CONGLOMERATE Field book page: 32

Age: Cretaceous

Type: sedimentary

Collected by: Y.H., 1993

Gold assay: <5 ppb Fire assay by Loring Laboratories Ltd.

Location: NTS Map 83 B/4 UTM Easting 601 900

UTM Northing 5 768 370

Geological map: FALL CREEK, G.S.C. MAP 883A

Scale used to define location: 1:50000

Location description: north end of Idlewilde Mountain

Access by: cutline, ATV

Type of exposure: boulders on a cutline

Type of sample: boulders

Remarks: No outcrop was found; grab sample was taken from several boulders of the same type of conglomerate.

Three other samples were collected from the same location.

Description: Cadomin conglomerate, ochre weathering with abundant kaolin.

Minisample retained.

SAMPLE No: 4-36-11-2 **CADOMIN CONGLOMERATE** Field book page: 32

Age: Cretaceous

Type: sedimentary

Collected by: Y.H., 1993

Gold assay : <5 ppb Fire assay by Loring Laboratories Ltd.

Location: NTS Map 83 B/4 UTM Easting 601 900

UTM Northing 5 768 370

Geological map: FALL CREEK, G.S.C. MAP 883A

Scale used to define location: 1:50000

Location description: north end of Idlewilde Mountain

Access by: cutline, ATV

Type of exposure: cutline

Type of sample: boulders

Remarks: No outcrop, but an abundance of boulders and fragments of various sizes and several grades. Grab sample was taken from several boulders of conglomerate of the same grade.

Three other samples were collected from the same location.

Description: Reddish-weathering conglomerate, black, gray and green chert, little or no kaolin.

Minisample retained

SAMPLE No: 4-36-11-3 **CADOMIN CONGLOMERATE** Field book page: 32

Age: Cretaceous

Type: sedimentary

Collected by: Y.H., 1993

Gold assay : <5 ppb Fire assay by Loring Laboratories Ltd.

Location: NTS Map 83 B/4 UTM Easting 601 900

UTM Northing 5 768 370

Geological map: FALL CREEK, G.S.C. MAP 883A

Scale used to define location: 1:50000

Location description: north end of Idlewilde Mountain

Access by: cutline, ATV

Type of exposure: cutline

Type of sample: boulders

Remarks: No outcrop was found; grab sample was taken from several boulders of the same type of conglomerate.
Three other samples were collected from the same location.

Description:

SAMPLE No: 4-36-11-4 **CADOMIN CONGLOMERATE** Field book page: 32

Age: Cretaceous

Type: sedimentary

Collected by: Y.H., 1993

Gold assay: <5 ppb Fire assay by Loring Laboratories Ltd.

Location: NTS Map 83 B/4 UTM Easting 601 900

UTM Northing 5 768 370

Geological map: FALL CREEK, G.S.C. MAP 883A

Scale used to define location: 1:50000

Location description: north end of Idlewilde Mountain

Access by: seismic cutline

Type of exposure: boulders

Type of sample: grab

Remarks: No outcrop was found; grab sample was taken from several boulders of the same type of conglomerate.

Description: Similar to sample 4-36-11-1, ochre weathering but larger pebbles and less kaolin.

SAMPLE No: 35-36-11-1 **CADOMIN CONGLOMERATE** Field book page: 30

1 of 5

Age: Cretaceous

Type: sedimentary

Collected by: Y.H., 1993

Gold assay: <5 ppb Fire assay by Loring Laboratories Ltd.

Location: NTS Map 83 B/3 UTM Easting 604 990

UTM Northing 5 777 300

Geological map: TAY RIVER, G.S.C.MAP 840A

Scale used to define location: 1:50000

Location description: junction of the Prairie Creek road (#752) and the Fall Creek trail; west flank of the Baseline Mountain anticline

Access by: car

Type of exposure: outcrop

Type of sample: selected

Remarks: The sample was collected from a 10-15 cm thick interval at the very base of an 8.5 m thick outcrop of Cadomin conglomerate on the west flank of the Baseline Mountain Anticline.

Description: The sampled interval is a layer of "pebbly mudstone", i.e. pebbles of mainly chert and some quartz are mixed with the underlying mudstone. The pebbles are well rounded, 5-15 mm in diameter. The underlying rock is a black mudstone.

SAMPLE No: 35-36-11-2 **CADOMIN CONGLOMERATE** Field book p.: 30

2 of 5

Age: Cretaceous

Type: sedimentary

Collected by: Y.H., 1993

Gold assay: <5 ppb Fire assay by Loring Laboratories Ltd.

Location: NTS Map 83 B/3 UTM Easting 604 990

UTM Northing 5 777 300

Geological map: TAY RIVER, G.S.C.MAP 840A

Scale used to define location: 1:50000

Location description: junction of the Prairie Creek road (#752) and the Fall Creek trail; west flank of the Baseline Mountain anticline

Access by: car

Type of exposure: outcrop

Type of sample: channel

Remarks: This sample is from a 0.90 m thick layer of conglomerate above sample 35-36-11-1

Description: Conglomerate with black & white chert pebbles, grain-supported, pebbles are subrounded to rounded ranging from <5 mm to 15 mm in size, a few are over 15 mm.

SAMPLE No: 35-36-11-3 **CADOMIN CONGLOMERATE** Field book p: 30

3 of 5

Age: Cretaceous

Type: sedimentary

Collected by: Y.H., 1993

Gold assay: <5 ppb Fire assay by Loring Laboratories Ltd.

Location: NTS Map 83 B/3 UTM Easting 604 990

UTM Northing 5 777 300

Geological map: TAY RIVER, G.S.C.MAP 840A

Scale used to define location: 1:50000

Location description: junction of the Prairie Creek road (#752) and the Fall Creek trail; west flank of the Baseline Mountain anticline

Access by: car

Type of exposure: outcrop

Type of sample: selected

Remarks: This sample is from the base of the second (0.65 m thick) layer of conglomerate above sample 35-36-11-1.

Description: Conglomerate fining upwards into finer conglomerate and very coarse-grained pebbly sandstone.

SAMPLE No: 35-36-11-4 **CADOMIN CONGLOMERATE** Field book page: 30

4 of 5

Age: Cretaceous

Type: sedimentary

Collected by: Y.H., 1993

Gold assay: <5 ppb Fire assay by Loring Laboratories Ltd.

Location: NTS Map 83 B/3 UTM Easting 604 990

UTM Northing 5 777 300

Geological map: TAY RIVER, G.S.C MAP 840A

Scale used to define location: 1:50000

Location description: junction of the Prairie Creek road (#752) and the Fall Creek trail; west flank of the Baseline Mountain anticline

Access by: car

Type of exposure: outcrop

Type of sample: selected

Remarks: This sample is from a 0.35 m thick layer of conglomerate located stratigraphicly above the layer of sample 35-36-11-4 and it is the fourth conglomerate unit above the base of Cadomin outcrop at the sampled location.

Description: Conglomerate, coarser than any below, consists of chert pebbles of black, white, grey, and some pale green colour. The pebbles range from around 5 mm to 30 mm, most are 10-20 mm. The rock is mainly grain and locally sandstone supported. Overall color is grey mottled black and white.

SAMPLE No: 35-36-11-5 **CADOMIN CONGLOMERATE** Field book page: 30

5 of 5

Age: Cretaceous

Type: sedimentary

Collected by: Y.H., 1993

Gold assay: 16 ppb Fire assay by Loring Laboratories Ltd.

Location: NTS Map 83 B/3 UTM Easting 604 990

UTM Northing 5 777 300

Geological map: TAY RIVER, G.S.C. MAP 840A

Scale used to define location: 1:50000

Location description: junction of the Prairie Creek road (#752) and the Fall Creek trail; west flank of the Baseline Mountain anticline

Access by: road

Type of exposure: outcrop

Type of sample: channel

Remarks: This is the last sample in the group of 5 (35-36-11-1 to -5). The sample is from the top conglomerate layer (4.2 m thick) at this location. This interval includes some pebbly sandstone and also the coarsest conglomerate at the outcrop.

Description: Cherty conglomerate, gray, mottled black & white. Pebbles of chert up to 40 mm.

SAMPLE No: 29-36-13 **CADOMIN CONGLOMERATE** Field book page: 21-A

Age: Cretaceous

Type: sedimentary

Collected by: Y.H., 1993

Gold assay : <5 ppb Fire assay by Loring Laboratories Ltd.

Location: NTS Map 83 B/4 UTM Easting 580 430

UTM Northing 5 775 290

Geological map: FALL CREEK, G.S.C. Map 883A

Scale used to define location: 1:50000

Location description: see map

Access by:

Type of exposure: outcrop

Type of sample: selected channel

Remarks: Channel sample of a 3.6 m thick zone, tectonicly stressed and sheared. Its base is covered.

Description: The conglomerate is generally grey, but mottled black, dark and light. The pebbles are <2 mm to 30 mm, 2/3 chert and 1/3 quartz. The chert is black, dark grey, light brown, grey and pale green; the quartz is off-white, light beige and pink.

The rock is pebble-supported; the matrix is extensively silicified with an abundance of white and yellow kaolin. The rock is locally porous with quartz crystals in the vugs.

SAMPLE No: 30-36-13-1 **CADOMIN CONGLOMERATE** Field book page: 22

Age: Cretaceous

Type: sedimentary

Collected by: Y.H., 1993

Gold assay: <5 ppb Fire assay by Loring Laboratories Ltd.

Location: NTS Map 83 B/4 UTM Easting 579 370

UTM Northing 5 775 350

Geological map: FALL CREEK, G.S.C. Map 883A

Scale used to define location: 1:50000

Location description: north bank of Lynx Creek 4.5 km east of the trunk road

Access by: Lynx Creek Trail, ATV

Type of exposure: outcrop

Type of sample: selected

Remarks: The sample is from the bottom of the conglomerate layer 1.8 m thick above black, silty, carbonaceous mudstone.

Description: The conglomerate is made up of densely packed chert pebbles, 5 to 40 mm in diameter, occasionally even larger - up to 8 cm. The weathered rock's color is dark grey-brown and rusty brown. The pebbles are composed of chert, mostly grey, dark grey, brown, some black, grey-tan, and some semi-clear quartz. There is essentially no sandstone matrix; the cementing agent is silica and kaolin (mainly white and yellowish) often mixed with carbonaceous matter. The rock contains an abundance of rusty weathering iron oxide.

The pebbles are rounded or subrounded with tectonicly induced fractures. There is an abundance of soft carbonaceous shale fragments.

The rock tends to break along the lines of stress rather than following the structure of the pebbles.

SAMPLE No: 30-36-13-2 **CADOMIN CONGLOMERATE**

Age: Cretaceous

Type: sedimentary

Collected by: Y.H., 1993

Gold assay: <5 ppb Fire assay by Loring Laboratories Ltd.

Location: NTS Map 83 B/4 UTM Easting 579 370

UTM Northing 5 775 350

Geological map: FALL CREEK, G.S.C. Map 883A

Scale used to define location: 1:50000

Location description: north bank of Lynx Creek 4.5 km east of the trunk road

Access by: Lynx Creek trail, ATV

Type of exposure: outcrop

Type of sample: selected channel

Remarks: Channel sample of the conglomerate at 30-36-13-1

Description: Conglomerate, same as 30-36-13-1, but the interval above the very basal layer (sampled as 30-36-13-1) contains about 20% of sandstone matrix which is very silicified, and consists of angular grains of clear or semi-clear quartz and light tan-grey and minor black chert. It also includes pebbles of beige quartzite. Locally the rock is intensively silicified with coarse quartz overgrowth and crystals in vuggy spaces between pebbles and in open fractures and joints.

Minisample retained

SAMPLE No: 30-36-13-3 **CADOMIN CONGLOMERATE**

Age: Cretaceous

Type: sedimentary

Collected by: Y.H., 1993

Gold assay : <5 ppb Fire assay by Loring Laboratories Ltd.

Location: NTS Map 83 B/4 UTM Easting 579 370

UTM Northing 5 775 350

Geological map: FALL CREEK, G.S.C. Map 883A

Scale used to define location: 1:50000

Location description: north bank of Lynx Creek 4.5 km east of the trunk road

Access by: Lynx Creek trail, ATV

Type of exposure: outcrop

Type of sample: selected channel

Remarks: Channel sample of another conglomerate 3 m above sample 30-36-13-2; this could be a structural repeat fo the unit sampled as 1 and 2

Description: Conglomerate

SAMPLE No: 12-37-11 **CADOMIN CONGLOMERATE** Field book page: 31

Age: Cretaceous

Type: sedimentary

Collected by: Y.H., 1993

Gold assay: <5 ppb Fire assay by Loring Laboratories Ltd.

Location: NTS Map 83 B/3 UTM Easting 606 890

UTM Northing 5 779 980

Geological map: TAY RIVER, G.S.C.MAP 840A

Scale used to define location: 1:50000

Location description: see map

Access by:

Type of exposure: boulders/outcrop

Type of sample: boulder

Remarks: Sample from a poorly exposed outcrop of the Cadomin Conglomerate. The outcrop is collapsed into a rubble of several large boulders. The rock that appears to be in place is of quite limited extent. The sample was taken from two layers and one large boulder of conglomerate.

Description: Grey conglomerate, mottled black and grey. Pebbles are black, grey and tan-grey chert, grain and partly matrix-supported, with pebbles ranging from <2 mm to 15 mm, exceptionally up to 20 mm. The matrix is coarse-grained, kaolinic sandstone with grains of quartz and chert. There are also a few pebbles or grains of very light pale-green chert. The rock weathers rusty-brown.

Minisample retained

SAMPLE No: 23-37-11 **CADOMIN CONGLOMERATE** Field book page: 33

Age: Cretaceous

Type: sedimentary

Collected by: Y.H., 1993

Gold assay: <5 ppb Fire assay by Loring Laboratories Ltd.

Location: NTS Map 83 B/3 UTM Easting 604 315

UTM Northing 5 782 890

Geological map: TAY RIVER, G.S.C. MAP 840A

Scale used to define location: 1:50000

Location description: see map

Access by: road

Type of exposure: boulders

Type of sample: grab

Remarks: Grab sample from several large boulders of conglomerate found in the roadcut at the base of a sandstone outcrop.

Description: Grain-supported black & grey mottled non-calcareous conglomerate with pebbles ranging in size from less than 2 mm to 25 mm, occasionally larger. The rock contains only a limited amount of sandstone matrix. Pebbles are rounded or sub-rounded chert: black, grey, some tan-grey and a few are pale green. The sandstone matrix is kaolinic.

Minisample retained

SAMPLE No: 20-38-12 **CADOMIN FORMATION**

Age: Cretaceous

Type: sedimentary

Collected by: Y.H., 1993

Gold assay : <5 ppb Fire assay by Loring Laboratories Ltd.

Location: NTS Map 83 B/5 UTM Easting 590 900

UTM Northing 5 792 350

Geological map: SAUNDERS G.S.C. MAP 885

Scale used to define location: 1:50000

Location description: see map

Access by: road

Type of exposure: boulders in the road

Type of sample: grab

Remarks: Grab sample from the road.

Description: Conglomerate, cherty, poorly sorted, with pebbles from 2 mm to 50 mm. The pebbles are subrounded and rounded, the coarse-grained matrix is cherty sandstone. The rock is grain and matrix supported, some fragments are reddish weathering, some ochre weathering. High kaolin content was found in some fragments.

Minisample retained

SAMPLE No: 25-38-12-1 **CADOMIN CONGLOMERATE** Field book page: 56

Age: Cretaceous

Type: sedimentary

Collected by: Y.H., 1993

Gold assay : <5 ppb Fire assay by Loring Laboratories Ltd.

Location: NTS Map 83 B/4 UTM Easting 596 950

UTM Northing 5 784 780

Geological map: FALL CREEK, G.S.C. MAP 883A

Scale used to define location: 1:50000

Location description: see map

Access by:

Type of exposure: outcrop

Type of sample: channel

The western flank of the Marble Mountain anticline on the south side of the Fall Creek valley.

Remarks: Two samples were collected from a 3.5 m thick outcrop of the Cadomin Conglomerate. The bottom contact of the conglomerate with the underlying strata is covered. This sampled interval is from the lower 1.1 m part of the outcrop.

Description: Typical Cadomin, cherty, grey with black pebbles, reddish weathering. The rock is matrix-supported with pebbles up to 30 mm. The matrix is a coarse-grained, silicious sandstone, consisting mainly of quartz and 20-30% of black chert, with extensive quartz overgrowth and moderately abundant kaolin. Pebbles are chert (predominantly black) and some quartz.

Minisample retained.

SAMPLE No: 25-38-12-2 **CADOMIN CONGLOMERATE** Field book page: 56

Age: Cretaceous

Type: sedimentary

Collected by: Y.H., 1993

Gold assay : <5 ppb Fire assay by Loring Laboratories Ltd.

Location: NTS Map 83 B/4 UTM Easting 596 950

UTM Northing 5 784 780

Geological map: FALL CREEK, G.S.C. MAP 883A

Scale used to define location: 1:50000

Location description: see map

Access by:

Type of exposure: outcrop

Type of sample: selected channel

The western flank of the Marble Mountain anticline on the south side of the Fall Creek valley.

Remarks: Two samples were collected from a 3.5 m thick outcrop of the Cadomin Conglomerate. The bottom contact of the conglomerate with the underlying strata is covered. The sampled interval is from the upper 1.7 m thick part of the outcrop.

Description: Conglomerate, very similar to the conglomerate in sample 15-38-12-1 except that it does not weather red and contains more sandstone matrix. The interval between samples 1 and 2 is pebbly sandstone, about 50:50 sandstone and pebbles. (It was not sampled.)

Minisample retained.

SAMPLE No: 3-39-12-1 Cadomin Conglomerate

Age: Cretaceous

Type: sedimentary

Collected by: Y.H., 1993

Gold assay: <5 ppb Fire assay by Loring Laboratories Ltd.

Location: NTS Map 83/B5 UTM Easting 591 880

UTM Northing 5 797 280

Geological map: SAUNDERS, G.S.C. MAP 885

Scale used to define location: 1:50000

Location description: see map, North Ram River Road in the upper Rush Creek area

Access by: road

Type of exposure: outcrop

Type of sample: channel

Description: Sample of the lower bed (1.8 m thick), a conglomerate outcrop overlying coarse-grained, grey, rusty weathering sandstone.

The conglomerate is massive, poorly sorted with pebbles ranging from 2 mm to 50 mm; typical pebble size is 6 to 15 mm. Pebbles are mainly chert of various colours with a large proportion being black. The quartz is mainly white.

SAMPLE No: 3-39-12-2 CADOMIN CONGLOMERATE

Age: Cretaceous

Type: sedimentary

Collected by: Y.H., 1993

Gold assay : <5 ppb Fire assay by Loring Laboratories Ltd.

Location: NTS Map 83 B/5 UTM Easting 592 150

UTM Northing 5 797 450

Geological map: SAUNDERS, G.S.C. MAP 885

Scale used to define location: 1:50000

Location description: see map, North Ram River Road in the upper Rush Creek area

Access by:

Type of exposure: outcrop

Type of sample: channel

Remarks: N/A

Description: The upper bed, a 2.2 m thick conglomerate is similar to the lower bed sampled in 13-39-12-1.

This bed is overlain by over 5 m of sandstone - salt & pepper, cross-bedded, the middle 1.5 m of this sandstone is highlighted by rusty weathering iron oxide.

SAMPLES: 6-39-12-1 & 2 **CADOMIN FORMATION**

Age: Cretaceous

Type: sedimentary

Collected by: Y.H., 1993

Gold assay: <5 ppb Fire assay by Loring Laboratories Ltd.

Location: NTS Map 83 B/5 UTM Easting 586 700

UTM Northing 5 798 915

Geological map: SAUNDERS G.S.C. MAP 885

Scale used to define location: 1:50000

Location description: see map

Access by: cutline, ATV

Type of exposure: boulders

Type of sample: boulder

Remarks: The samples are of conglomerate fragments found where outcrop was expected. Sample 6-39-12-1 is from the upper part of the cutline while Sample 6-39-12-2 is from the lower part of the cutline that also included some conglomerate.

There were two areas on the cutline that were strewn with numerous conglomerate fragments. The overall length of this scattering of fragments along the cutline was on the order of 70 m.

Description: Sample 6-39-12-1: Conglomerate, poorly sorted, silicified; with pebbles of chert of light and dark colors, sub-angular, subrounded, ranging from less than 2 mm to 20 mm, and a few even larger. The rock is grain as well as matrix supported, and is non-calcareous.

Some fragments weather dark red due to iron oxide content.

Sample 6-39-12-2: Conglomerate similar to above.

Minisamples were retained.

SAMPLE No: 12-39-13 **CADOMIN FORMATION**

Age: Cretaceous

Type: sedimentary

Collected by: Y.H., 1993

Gold assay : <5 ppb Fire assay by Loring Laboratories Ltd.

Location: NTS Map 83 B/5 UTM Easting 585 725

UTM Northing 6 799 320

Geological map: ALEXO, G.S.C. Preliminary Map 45-23

Scale used to define location: 1:50000

Location description: see map

Access by: trail to the fire lookout, ATV

Type of exposure: boulders

Type of sample: boulder

Remarks: Grab sample of conglomerate fragments found on the road over a distance of 40 m.

Description: The conglomerate is cherty (light, dark, black and pale green), poorly sorted, silicified, mainly matrix but also grain supported. Grains are sub-angular and sub-rounded. Pebbles range from less than 2 mm to 20 mm. The non-calcareous matrix is composed of coarse sandstone with grains up to 1 mm. The sample also includes very coarse salt & pepper sandstone.

SAMPLE No: 34-38-13 **CADOMIN CONGLOMERATE**

Age: Cretaceous

Type: sedimentary

Collected by: Y.H., 1993

Gold assay: <5 ppb Fire assay by Loring Laboratories Ltd.

Location: NTS Map 83 B/5 UTM Easting 583 220

UTM Northing 5 796 315

Geological map: ALEXO, G.S.C. preliminary MAP 45-23

Scale used to define location: 1:50000

Location description: see map

Access by: road

Type of exposure: outcrop

Type of sample: channel

Remarks: Sample from SW dipping outcrop on the south bank of upper Rough creek below the North Ram River road.

Description: Conglomerate and coarse sandstone beds. Pebbles are less than 10 mm: black and dark chert and some green chert; salt and pepper sandstone matrix with grains of chert and quartz.

SAMPLE No 13-40-15 **CADOMIN CONGLOMERATE**

Age: Cretaceous

Type: sedimentary

Collected by: Y.H., 1993

Gold assay : <5 ppb Fire assay by Loring Laboratories Ltd.

Location: NTS Map 83 C/8 UTM Easting 566 725

UTM Northing 5 799 320

Geological map: NORDEGG G.S.C. 55-34

Scale used to define location: 1:50000

Location description: 4.5 km southeast of Nordegg, east of an abandoned open pit coal mine

Access by: 4x4 truck

Type of exposure: boulders

Type of sample: boulder

Remarks: Grab samples from conglomerate fragments found on the surface.

Description: The sample represents the sandier part of the Cadomin Formation. The matrix is a coarse sandstone and forms about 30% of the rock.

Minisample was kept.

SAMPLE No: 22-40-15 **CADOMIN FORMATION**

Age: Cretaceous

Type: sedimentary

Collected by: Y.H., 1993

Gold assay : <5 ppb Fire assay by Loring Laboratories Ltd.

Location: NTS Map 83 C/8 UTM Easting 563 400

UTM Northing 5 812 790

Geological map: G.S.C. Map 55-34 NORDEGG

Scale used to define location: 1:50000

Location description: see map, 1 km southeast of Nordegg

Access by: cutline, 4x4 truck

Type of exposure: boulders

Type of sample: grab

Remarks: Grab sample from conglomerate fragments found on the cutline.

Description: Similar to sample 13-40-15.

SAMPLE No: 20-40-17 **CADOMIN FORMATION**

Age: Cretaceous

Type: sedimentary

Collected by: Y.H., 1993

Gold assay: <5 ppb Fire assay by Loring Laboratories Ltd.

Location: NTS Map 83 C/8 UTM Easting 539 550

UTM Northing 5 811 840

Geological map: Geological map: NORDEGG, G.S.C. MAP 55-34

Scale used to define location: 1:50000

Location description: see map, in the valley of Shankland Creek, on the west side of the Bighorn Range

Access by: cutline and old coal exploration trail, ATV

Type of exposure: outcrop

Type of sample: channel

Remarks: The sample was taken from a poor outcrop on a steep slope.

Description: Conglomerate, mottled grey and black, very poorly sorted, mainly chert pebbles (<2 mm to 25 mm), occasionally up to 35 mm, subrounded and rounded, grain-supported, non-calcareous, partly kaolinitic, partly reddish weathering, locally quite porous.

Minisample retained

APPENDIX 3

SAMPLE DESCRIPTIONS

BRAZEAU FORMATION

SAMPLE No: 35-36-13-1 **BRAZEAU FORMATION** Field book page: 23

1 of 4

Age: Cretaceous

Type: sedimentary

Collected by: Y.H., 1993

Gold assay : 13 ppb Fire assay by Loring Laboratories Ltd.

Location: NTS Map 83 B/4 UTM Easting 586 270

UTM Northing 5 776 970

Geological map: FALL CREEK, G.S.C. Map 883A

Scale used to define location: 1:50000

Location description: 2.5 km north of the confluence of the Lynx Creek and Ram River

Access by: lower Lynx Creek winter road, trail and E-W seismic line or by Shell pipeline access and the SE-NW seismic line.

Type of exposure: outcrop in the form of an extensive rubble zone

Type of sample: selected coarse conglomerate boulders

Remarks: Large ruble zone of BRAZEAU FORMATION. The area of this zone is about 3 acres. Individual blocks tend to strike to the NW.

Description: The sample was taken of the coarsest conglomerate found, in an ascending manner from the lower to the upper part of the rubble area.

The conglomerate is dark reddish brown weathering; it is matrix and partly pebble-supported. The pebbles are dark and light chert, some quartz and occasional quartzite, rounded and subrounded, ranging in size from <2 mm to 20 mm. The matrix is coarse, poorly sorted sandstone with sub-angular and angular grains of mainly clear quartz and light with some dark chert. Kaolin is abundant.

All rock sampled is weathered. Fresh broken rock is dark mottled with abundant light specks of kaolin. There are also rare flakes of mica.

Minisample retained

SAMPLE No: 35-36-13-2 **BRAZEAU FORMATION** Field book page: 23

2 of 4

Age: Cretaceous

Type: sedimentary

Collected by: Y.H., 1993

Gold assay: <5 ppb Fire assay by Loring Laboratories Ltd.

Location: NTS Map 83 B/4 UTM Easting 586 270

UTM Northing 5 776 970

Geological map: FALL CREEK, G.S.C. Map 883A

Scale used to define location: 1:50000

Location description: 2.5 km north of the confluence of the Lynx Creek and Ram River

Access by: lower Lynx Creek winter road, trail and E-W seismic line or by Shell pipeline access and the SE-NW seismic line.

Type of exposure: outcrop in the form of an extensive rubble zone

Type of sample: boulder

Remarks: This is a sample of the very coarsest block of conglomerate found in the rubble zone.

Description: Conglomerate. Some pieces are mottled light greenish-brown, others are mottled reddish-brown, with abundant iron oxide; the rock consists of pebbles of chert and quartz in coarse-grained sandstone matrix of light and some dark chert, and quartz. There is moderately abundant kaolin and traces of mica. The conglomerate is fairly porous with extensive quartz overgrowth.

SAMPLE No: 35-36-13-3 **BRAZEAU FORMATION** Field book page: 23

3 of 4

Age: Cretaceous

Type: sedimentary

Collected by: Y.H., 1993

Gold assay: <5 ppb Fire assay by Loring Laboratories Ltd.

Location: NTS Map 83 B/4 UTM Easting 586 270

UTM Northing 5 776 970

Geological map: FALL CREEK, G.S.C. Map 883A

Scale used to define location: 1:50000

Location description: 2.5 km north of the confluence of the Lynx Creek and Ram River

Access by: lower Lynx Creek winter road, trail and E-W seismic line or by Shell pipeline access and the SE-NW seismic line.

Type of exposure: outcrop

Type of sample: selected

Remarks: This is a sample of a 45 cm thick conglomerate that appears to be part of an outcrop found in the forest 100 m east of the rubble zone of Samples 1 and 2.

Description: conglomerate

SAMPLE No: 35-36-13-4 **BRAZEAU FORMATION** Field book page: 23

4 of 4

Age: Cretaceous

Type: sedimentary

Collected by: Y.H., 1993

Gold assay: <5 ppb Fire assay by Loring Laboratories Ltd.

Location: NTS Map 83 B/4 UTM Easting 586 270

UTM Northing 5 776 970

Geological map: FALL CREEK, G.S.C. Map 883A

Scale used to define location: 1:50000

Location description: 2.5 km north of the confluence of the Lynx Creek and Ram River

Access by: lower Lynx Creek winter road, trail and E-W seismic line or by Shell pipeline access and the SE-NW seismic line.

Type of exposure: outcrop

Type of sample: selected

Remarks: This is a sample of conglomerate similar to sample 3 but with more qartz.

Description: As above

SAMPLE No: 11-36-14-1 **BRAZEAU FORMATION** Field book page: 19

Age: Cretaceous

Type: sedimentary

Collected by: Y.H., 1993

Gold assay: <5 ppb Fire assay by Loring Laboratories Ltd.

Location: NTS Map 83 B/4 UTM Easting 575 750

UTM Northing 5 770 760

Geological map: FALL CREEK, G.S.C. Map 883A

Scale used to define location: 1:50000

Location description: N/A

Access by:

Type of exposure: outcrop

Type of sample: selected

Remarks: Sample of a 15 cm thick, reddish-brown weathering pebbly layer located above several metre thick bed of turbated, stormy sandstone and 1.5 m above a 10 cm thick layer rich with ironstone (sideritic sandstone). The sample was taken from the very base of the pebbly horizon.

Further up the section, there is an oyster rich layer, 8 - 17 cm thick, indicting marine origin of the sandstone.

Description: Pebbly sandstone - pebbles compose about 20% of the rock; they are rounded and less than 10 mm in diameter. The sandstone is coarse-grained, poorly sorted; it consists of rounded and sub-rounded quartz and chert, light grey-green grains dominate.

Minisample retained

SAMPLE No: 11-36-14-2 **BRAZEAU FORMATION** Field book page:19

Age: Cretaceous

Type: sedimentary

Collected by: Y.H., 1993

Gold assay : <5 ppb Fire assay by Loring Laboratories Ltd.

Location: NTS Map 83 B/4 UTM Easting 575 750

UTM Northing 5 770 760

Geological map: FALL CREEK, G.S.C. Map 883A

Scale used to define location: 1:50000

Location description: see map

Access by:

Type of exposure: outcrop

Type of sample: selected

Remarks: Sample from the base of a 0.8 m thick layer of conglomerate.

Description: Conglomerate, matrix-supported with rounded pebbles up to 60 mm (most pebbles are between 10 and 20 mm), includes fragments of coal (up to 15 mm). The sandstone matrix is greenish-grey and coarse-grained.

The outcrop is vertical, located east of a major structural disturbance where the sandstone underlying the sampled conglomerate is sheared and tectonicly stressed.

SAMPLE No: 23-36-14 **BRAZEAU FORMATION** Field book page: 23

Age: Cretaceous

Type: sedimentary

Collected by: Y.H., 1993

Gold assay: <5 ppb Fire assay by Loring Laboratories Ltd.

Location: NTS Map 83 B/4 UTM Easting 575 180

UTM Northing 5 773 950

Geological map: FALL CREEK, G.S.C. Map 883A

Scale used to define location: 1:50000

Location description: see map

Access by:

Type of exposure: boulders

Type of sample: bouler

Remarks: Grab sample of conglomeratic, pebbly sandstone.

Description: Medium-brown, rusty-weathering; it contains black and some light chert and clear quartz pebbles and grains. Abundant iron oxide.

Minisample retained

SAMPLE No: 26-36-14-1 **BRAZEAU FORMATION**

Age: Cretaceous

Type: sedimentary

Collected by: Y.H., 1993

Gold assay : <5 ppb Fire assay by Loring Laboratories Ltd.

Location: NTS Map 83 B/4 UTM Easting 575 850

UTM Northing 5 774 650

Geological map: FALL CREEK, G.S.C. Map 883A

Scale used to define location: 1:50000

Location description: N/A

Access by:

Type of exposure: boulder

Type of sample: channel

Remarks: Sample of a very large boulder of conglomerate and conglomeratic sandstone boulder (2.6 m of strat. interval).

Description: Conglomerate, greenish - brown with distinct black chert pebbles, mottled, partly matrix and partly pebble supported, pebbles are of vary-coloured chert (black, gray, gray-green, tan) and lesser amounts of quartz, ranging from <2mm to 15 mm; the rock weathers brownish red, the matrix is silicified coarse-grained poorly sorted sandstone of clear and pale tan quartz and dark or light chert; the grains of sandstone are angular and subangular, pebbles are rounded and subrounded and some subangular; hematite coats pebbles and granules in the weathered part of the rock.

There is a considerable amount of white kaolin; no trace minerals were noticed. The rock has considerable intergranular porosity.

Minisample and a specimen retained.

SAMPLE No: 26-36-14-2 **BRAZEAU FORMATION**

Age: Cretaceous

Type: sedimentary

Collected by: Y.H., 1993

Gold assay : <5 ppb Fire assay by Loring Laboratories Ltd.

Location: NTS Map 83 B/4 UTM Easting 575 850

UTM Northing 5 774 650

Geological map: FALL CREEK, G.S.C. Map 883A

Scale used to define location: 1:50000

Location description: see map

Access by:

Type of exposure: boulders

Type of sample: selected coarse conglomerate boulders

Remarks: Grab sample of numerous boulders of conglomerate.

Description: Similar to 26-36-14-1, except for increased content of kaolin. Minisample and a specimen sample were retained.

SAMPLE No: 26-36-14-3 **BRAZEAU FORMATION** Field book page: 17

Age: Cretaceous

Type: sedimentary

Collected by: Y.H., 1993

Gold assay : 9 ppb Fire assay by Loring Laboratories Ltd.

Location: NTS Map 83 B/4 UTM Easting 575 670

UTM Northing 5 775 600

Geological map: FALL CREEK, G.S.C. Map 883A

Scale used to define location: 1:50000

Location description: Lynx Creek, see the remark below

Access by: near main road

Type of exposure: outcrop

Type of sample: channel

Remarks: Sampled a 2.1 m thick outcrop of the BRAZEAU FORMATION that crosses the Lynx Creek approximately 100 m west of the trunk road in NW1/4-26-36-14.

Description: Typical BRAZEAU FORMATION, mottled greenish-grey, cherty, with white quartz pebbles. The size of pebbles is from less than 2 mm to 30 mm in a coarse sandstone matrix which is mainly quartz and chert with significant content of white kaolin. This sample does not show reddish weathering.
Minisample was kept.

SAMPLE No: 34-36-14 **BRAZEAU FORMATION**

Age: Cretaceous

Type: sedimentary

Collected by: Y.H., 1993

Gold assay : <5 ppb Fire assay by Loring Laboratories Ltd.

Location: NTS Map 83 B/4 UTM Easting 574 780

UTM Northing 5 776 460

Geological map: FALL CREEK, G.S.C. MAP 883A

Scale used to define location: 1:50000

Location description: on the Forestry trunk road

Access by: road

Type of exposure: outcrop

Type of sample: selected

Remarks: Sample from the base of a 2.8m thick outcrop of coarse-grained massive sandstone in sharp contact with an underlying siltstone horizon of unknown thickness

Description: Sandstone, coarse-grained, greenish-grey.

SAMPLE No: 35-36-14-1 **BRAZEAU FORMATION**

Age: Cretaceous

Type: sedimentary

Collected by: Y.H., 1993

Gold assay : <5 ppb Fire assay by Loring Laboratories Ltd.

Location: NTS Map 83 B/4 UTM Easting 575 650

UTM Northing 5 776 010

Geological map: FALL CREEK, G.S.C. MAP 883A

Scale used to define location: 1:50000

Location description: see map

Access by:

Type of exposure: outcrop

Type of sample: selected, coarser fraction

Remarks: Sample of conglomeratic sandstone/conglomerate; the exposed interval is 1.4 m thick. The bed consists of conglomerate and coarse sandstone; 40 m to the south along the strike, this unit grades into coarse-grained sandstone.

Description: N/A

SAMPLE No: 35-36-14-2 **BRAZEAU FORMATION**

Age: Cretaceous

Type: sedimentary

Collected by: Y.H., 1993

Gold assay : <5 ppb Fire assay by Loring Laboratories Ltd.

Location: NTS Map 83 B/4 UTM Easting 575 110

UTM Northing 5 776 390

Geological map: FALL CREEK, G.S.C. MAP 883A

Scale used to define location: 1:50000

Location description: see map

Access by:

Type of exposure: outcrop

Type of sample: channel

Remarks: Sample of conglomerate outcrop 2.2 m thick;

Description: typical Brazeau conglomerate, reddish weathering

SAMPLE No: 3-37-13-1 **BRAZEAU FORMATION** Field book page: 24

Age: Cretaceous

Type: sedimentary

Collected by: Y.H., 1993

Gold assay: <5 ppb Fire assay by Loring Laboratories Ltd.

Location: NTS Map 83 B/4 UTM Easting 584 600

UTM Northing 5 777 670

Geological map: FALL CREEK, G.S.C. Map 883A

Scale used to define location: 1:50000

Location description: see map

Access by:

Type of exposure: outcorp

Type of sample: selected from the lower part

Remarks: Sample of a 40 to 60 cm thick, reddish-weathering conglomerate. Its lower 2/3 are matrix-supported conglomerate with 30% pebbles; The upper 1/3 is grain and partly matrix-supported conglomerate.

Description: Conglomerate with poorly sorted, rounded and subrounded pebbles 3 - 15 mm in size and exceptionally up to 25 mm. They are mainly chert and some quartz in a coarse sandstone matrix consisting of quartz and chert. The sandstone is silicified with quartz overgrowth and significant content of white kaolin.

Minisample retained

SAMPLE No: 3-37-13-2 **BRAZEAU FORMATION** Field book page: 24

Age: Cretaceous

Type: sedimentary

Collected by: Y.H., 1993

Gold assay : <5 ppb Fire assay by Loring Laboratories Ltd.

Location: NTS Map 83 B/4 UTM Easting 584 600

UTM Northing 5 777 670

Geological map: BALL CREEK, G.S.C. Map 883A

Scale used to define location: 1:50000

Location description: see map

Access by:

Type of exposure: outcrop

Type of sample: selected

Remarks: Two layers of conglomerate, about 100 m to the E of 3-37-13-1. This sample is from the lower 20-30 cm thick layer.

Description: Conglomerate with pebbles up to 20 mm. The pebbles are chert (25% black, 75% light) and quartz. The matrix is porous, silicious, coarse sandstone with significant kaolin content. The sandstone grains are mainly quartz and less chert, mainly subangular, poorly sorted.

Minisample retained

SAMPLE No: 3-37-13-3 **BRAZEAU** Field book page: 24

Age: Cretaceous

Type: sedimentary

Collected by: Y.H., 1993

Gold assay: <5 ppb Fire assay by Loring Laboratories Ltd.

Location: NTS Map 83 B/4 UTM Easting 584 600

UTM Northing 5 777 670

Geological map: FALL CREEK, G.S.C. Map 883A

Scale used to define location: 1:50000

Location description: see map

Access by:

Type of exposure: outcrop

Type of sample: selected

Remarks: Sample of a 15 cm thick layer of conglomerate separated by 0.7 m of sandstone from the conglomerate sampled as 3-37-13-2.

Description: similar to 3-37-13-2

SAMPLE No: 4-37-14 **BRAZEAU FORMATION** Field book page: 18

Age: Cretaceous

Type: sedimentary

Collected by: Y.H., 1993

Gold assay: <5 ppb Fire assay by Loring Laboratories Ltd.

Location: NTS Map 83 B/4 UTM Easting 573 170

UTM Northing 5 778 830

Geological map: FALL CREEK, G.S.C. Map 883A

Scale used to define location: 1:50000

Location description: see map

Access by: all terrain vehicle

Type of exposure: boulders

Type of sample: grab

Remarks: Grab sample from boulders in the seismic line.

Description: Conglomeratic, coarse-grained pebbly sandstone The rock differs from previous samples by its significant content of dark green siltstone and silty mudstone fragments (up to 40 mm long). The pebbles are mainly rounded. The sandstone is very coarse grained, cherty (black chert dominates), silicified (with quartz overgrowth), and with a moderate amount of kaolin and fragments of mudstone. The individual grains are sub-rounded and subangular. Iron oxide is abundant.

Minisample retained

SAMPLE No: 6-37-14-1 **BRAZEAU FORMATION** Field book page: 27

Age: Cretaceous

Type: sedimentary

Collected by: Y.H., 1993

Gold assay: <5 ppb Fire assay by Loring Laboratories Ltd.

Location: NTS Map 83 B/4 UTM Easting 568 800

UTM Northing 5 778 570

Geological map: FALL CREEK, G.S.C. MAP 883A

Scale used to define location: 1:50000

Location description: see map

Access by:

Type of exposure: boulders

Type of sample: grab

Remarks: Grab sample of the first occurrence of conglomerate fragments found above the base of the Brazeau that is marked by a major sandstone outcrop at the end of the cutline (on the western limb of the Brazeau syncline).

Description: Reddish-brown weathering, ochre-colored dark mottled conglomerate with chert and quartz pebbles <2 to 25 mm in size. Some pieces are quite porous. Sandstone matrix of chert and quartz is moderately silicified with a significant amount of kaolin. One grain of light red garnet (almandin?) observed in one fragment. Also an unidentified piece (8 mm) of light grey-green, soft material of earthy lustre, easily picked with a needle.

Minisample retained

SAMPLE No: 6-37-14-2 **BRAZEAU FORMATION** Field book page: 27

Age: Cretaceous

Type: sedimentary

Collected by: Y.H., 1993

Gold assay: <5 ppb Fire assay by Loring Laboratories Ltd.

Location: NTS Map 83 B/4 UTM Easting 568 900

UTM Northing 5 778 730

Geological map: FALL CREEK, G.S.C. MAP 883A

Scale used to define location: 1:50000

Location description: on cutline

Access by: all terrain vehicle

Type of exposure: boulder

Type of sample: grab

Remarks: Grab sample of several large boulders of conglomerate which look to be close to the place of origin.

Description: Conglomerate with fairly large pebbles ranging from 30 to 70 mm. On one boulder there is an imprint of a stone 11 cm in diameter. The rock is matrix-supported, darkly mottled, greenish-grey.

Minisample was kept.

SAMPLE No: 10-37-14-1 **BRAZEAU FORMATION** Field book page: 18

Age: Cretaceous

Type: sedimentary

Collected by: Y.H., 1993

Gold assay: <5 ppb Fire assay by Loring Laboratories Ltd.

Location: NTS Map 83 B/4 UTM Easting 573 780

UTM Northing 5 779 630

Geological map: FALL CREEK, G.S.C. Map 883A

Scale used to define location: 1:50000

Location description: see map

Access by: all terrain vehicle

Type of exposure: boulders

Type of sample: grab

Remarks: Grab sample from 14 fragments of conglomerate ranging in size from 10 x 10 x 5 cm to 80 x 50 x 30 cm. The fragments and boulders of conglomerate and sandstone were found on a seismic cutline.

In the adjacent forest only an outcrop of cross-bedded sandstone was found. It was approximately 3 m thick.

Description: The conglomerate is dark mottled yellowish-brown to grey-olive, poorly sorted, cherty and mainly grain-supported. The matrix is a coarse and very coarse sandstone; less than 25% of it are pebbles, including chert and quartz of various colors: black, grey and white; few pebbles are greyish-green and reddish-brown. Pebbles are rounded and sub-rounded, some are sub-angular, ranging in size from less than 5 mm to 30 mm, some over 50 mm.

The rock also includes fragments of dark grey-green siltstone and pebbles of ironstone (siderite?).

SAMPLE No: 10-37-14-2 **BRAZEAU FORMATION** Field book page: 18

Age: Cretaceous

Type: sedimentary

Collected by: Y.H., 1993

Gold assay: <5 ppb Fire assay by Loring Laboratories Ltd.

Location: NTS Map 83 B/4 UTM Easting 573 550

UTM Northing 5 779 390

Geological map: FALL CREEK FALL G.S.C. Map 883A

Scale used to define location: 1:50000

Location description: N/A

Access by:

Type of exposure: boulders

Type of sample: grab

Remarks: Grab sample from rocks found on seismic line and on adjacent forest floor.

Description: Typical BRAZEAU FORMATION and conglomeratic sandstone.

SAMPLE No: 16-37-14-1 **BRAZEAU FORMATION**

Age: Cretaceous

Type: sedimentary

Collected by: Y.H., 1993

Gold assay : 5 ppb Fire assay by Loring Laboratories Ltd.

Location: NTS Map 83 B/4 UTM Easting 571 960

UTM Northing 5 781 370

Geological map: FALL CREEK, G.S.C. Map 883A

Scale used to define location: 1:50000

Location description: East flank of the Kiska-Ram Falls syncline, on seismic cutline in the upper Otter Creek area

Access by: cutline

Type of exposure: outcrop

Type of sample: channel at the lower part

Remarks: Sample of 4.8 m thick outcrop of sandstone.

Description: The lower 3 m of the sandstone is medium-grained, grey, partly cross-bedded and thick-bedded (5 - 40 cm).

The upper 1.6 m is partly covered. The top 1 m is medium-grained and grades to coarse-grained and thinner-bedded (2 - 10 cm). The unweathered color is grey, weathering to light grey.

SAMPLE No: 16-37-14-2 BRAZEAU FORMATION (base)

Age: Cretaceous

Type: sedimentary

Collected by: Y.H., 1993

Gold assay : 10 ppb Fire assay by Loring Laboratories Ltd.

Location: NTS Map 83 B/4 UTM Easting 572 120

UTM Northing 5 781 520

Geological map: FALL CREEK, G.S.C. Map 883A

Scale used to define location: 1:50000

Location description: East flank of the Kiska-Ram Falls syncline, on seismic cutline in the upper Otter Creek area

Access by: cutline

Type of exposure: outcrop

Type of sample: channel

Remarks: Rather poor outcrop, 1.6 m thick conglomerate

Description: The rock is rusty-reddish weathering with metallic (hematite) coating on some fragments.

SAMPLE No: 19-37-14-1 **BRAZEAU FORMATION** Field book page: 20

Age: Cretaceous

Type: sedimentary

Collected by: Y.H., 1993

Gold assay: <5 ppb Fire assay by Loring Laboratories Ltd.

Location: NTS Map 83 B/4 UTM Easting 569 630

UTM Northing 5 783 700

Geological map: FALL CREEK, G.S.C. Map 883A

Scale used to define location: 1:50000

Location description: see map

Access by:

Type of exposure: boulders

Type of sample: boulder

Remarks: Sample of conglomerate boulders in close proximity to outcrop.

Description: Conglomerate, greenish-grey, mottled black and brown, with pebbles of chert and quartz (mainly light, and also dark gray and black (15 - 20%). Pebbles are rounded and sub-rounded, 2 - 15mm in size. The rock is pebble-supported, silicified (with quartz overgrowth crystals in the space between pebbles) and partly matrix-supported. It contains considerable amount of kaolin and abundant iron oxide as evidenced by its reddish-brown weathering.

Minisample retained

SAMPLE No: 19-37-14-2 **BRAZEAU FORMATION** Field book page: 20

Age: Cretaceous

Type: sedimentary

Collected by: Y.H., 1993

Gold assay : <5 ppb Fire assay by Loring Laboratories Ltd.

Location: NTS Map 83 B/4 UTM Easting 569 630

UTM Northing 5 783 640

Geological map: FALL CREEK, G.S.C. Map 883A

Scale used to define location: 1:50000

Location description: see map

Access by:

Type of exposure: outcrop

Type of sample: selected

Remarks: Sample of conglomerate outcrop, 1.1 m thick. Sample was taken from its contact with the underlying sandstone.
This sample site is located about 60 m along the line of subcrop from sample 19-37-14-1 (in the downhill direction along the subcrop).

Description: Conglomerate with pebbles of chert and quartz ranging in size from less than 2 mm to 15 mm.

Minisample retained

SAMPLE No: 19-37-14-3 **BRAZEAU FORMATION** Field book page: 20

Age: Cretaceous

Type: sedimentary

Collected by: Y.H., 1993

Gold assay : <5 ppb Fire assay by Loring Laboratories Ltd.

Location: NTS Map 83 B/4 UTM Easting 569 760

UTM Northing 5 783 160

Geological map: FALL CREEK, G.S.C. Map 883A

Scale used to define location: 1:50000

Location description: see map

Access by:

Type of exposure: outcrop

Type of sample: selected channel

Location: Sample of 1.2 to 2 m thick conglomerate outcrop that consists of two units of conglomerate with a 40 - 80 cm thick sandstone unit separating them. The sample was taken from the bottom 10 - 20 cm interval of the lower conglomerate unit which is in erosional contact with an underlying sandstone bed.

Remarks: N/A

Description: Conglomerate, mottled, greenish-grey, pebble and partly matrix-supported. Pebbles range from <2 mm to 20 mm; they are chert and quartz, dark and light, rounded and subrounded. The matrix is coarse-grained, silicified, sandstone with abundant kaolin.

Minisample retained

SAMPLE No: 20-37-14-1 **BRAZEAU FORMATION**

Age: Cretaceous

Type: sedimentary

Collected by: Y.H., 1993

Gold assay : <5 ppb Fire assay by Loring Laboratories Ltd.

Location: NTS Map 84 B/4 UTM Easting 570 100

UTM Northing 5 783 780

Geological map: FALL CREEK GSC MAP 883A

Scale used to define location: 1:50000

Location description: see map

Access by:

Type of exposure: outcrop

Type of sample: selected

Description: There are four pebbly intervals in a 4.2 m thick outcrop of coarse-grained, slightly pebbly sandstone. The sample represents the 4th sandstone above the contact with black concretionary mudstones. The sandstone is massive, evenly bedded and salt & pepper in color. The pebbly horizons are up to 30 cm thick. The pebbles are less than 20 mm in size and are composed mainly of black and dark grey chert with minor white and gray quartz.

SAMPLE No: 20-37-14-2 **BRAZEAU FORMATION** Field book page: 27

Age: Cretaceous

Type: sedimentary

Collected by: Y.H., 1993

Gold assay: <5 ppb Fire assay by Loring Laboratories Ltd.

Location: NTS Map 83 B/4 UTM Easting 571 020

UTM Northing 5 782 480

Geological map: FALL CREEK, G.S.C. MAP 883A

Scale used to define location: 1:50000

Location description: on a seismic cutline, Cripple Creek area

Access by: all terrain vehicle

Type of exposure: boulders

Type of sample: boulder

Remarks: Grab sample of more than 10 medium and large fragments of conglomerate found in the vicinity of a subcrop; no outcrop was found.

Description: Conglomerate, greenish-grey and brown & black mottled, reddish weathering. Pebbles up to 15 mm, are varicolored chart and quartz, the rock is pebble and matrix-supported, the matrix is silicified and kaolinitic coarse sandstone, porous, with abundant iron oxide and trace amounts of mica.

Two specimen samples were kept.

SAMPLE No: 30-37-14-1 BRAZEAU FORMATION Field book page: 28

Age : Cretaceous

Type: sedimentary

Collected by: Y.H., 1993

Gold assay : <5 ppb Fire assay by Loring Laboratories Ltd.

Location: NTS Map 83 B/4 UTM Easting 568 430

UTM Northing 5 785 200

Geological map: FALL CREEK, G.S.C. MAP 883A

Scale used to define location: 1:50000

Location description: see map

Access by:

Type of exposure: boulders

Type of sample: boulder

Remarks: Sample of the most conglomeratic boulders in the zone of sandstone and pebbly sandstone. Outcrop not found.

Description: BRAZEAU FORMATION; mottled light greenish-ochre, reddish weathering, pebbles and coarse sandstone matrix consisting mainly of light and dark chert and quartz; pebbles are <2 mm to 15 mm; fairly abundant kaolin.

SAMPLE No: 30-37-14-2 BRAZEAU FORMATION Field book page: 28

Age: Cretaceous

Type: sedimentary

Collected by: Y.H., 1993

Gold assay: <5 ppb Fire assay by Loring Laboratories Ltd.

Location: NTS Map 83 B/4 UTM Easting 568 430

UTM Northing 5 785 200

Geological map: FALL CREEK, G.S.C. MAP 883A

Scale used to define location: 1:50000

Location description: see map

Access by:

Type of exposure: boulders

Type of sample: boulder

Remarks: Sample of conglomerate boulders. An outcrop not found.

Description: Typical BRAZEAU FORMATION; pebbles of quartz and chert of various colors, more light than dark, including light green and pink. Abundant kaolin.

SAMPLE No: 34-37-16-1 **BRAZEAU FORMATION**

Age: Cretaceous

Type: sedimentary

Collected by: Y.H., 1993

Gold assay : <5 ppb Fire assay by Loring Laboratories Ltd.

Location: NTS Map 83 C/1 UTM Easting 554 875

UTM Northing 5 786 740

Geological map: WHITERABBIT CREEK, MAP 1388A

Scale used to define location: 1:50000

Location description: see map

Access by:

Type of exposure: outcrop

Type of sample: selected interval at the base

Remarks: 15 cm interval at the base of a conglomerate outcrop sampled;

Description: Conglomerate, greenish grey, mottled, pebble-supported at the very base, sandstone-matrix-supported above. The pebbles are black, grey, greenish-grey, tan and light brown chert; about 10% of the pebbles are quartz. The pebbles are subrounded to rounded, ranging from less than 2 mm to 10 mm in size.

The matrix is coarse grained sandstone consisting of quartz and chert with extensive quartz overgrowth. The sparkle of crystals of quartz visible with the naked eye. The grains are angular and sub-angular, coarse and poorly sorted. 25% of the chert is black, the rest is various light shades. There are a few reddish grains.

Minisample retained

SAMPLE No 34-37-16-2 **BRAZEAU FORMATION**

Age: Cretaceous

Type: sedimentary

Collected by: Y.H., 1993

Gold assay : <5 ppb Fire assay by Loring Laboratories Ltd.

Location: NTS Map 83 C/1 UTM Easting 554 875

UTM Northing 5 786 740

Geological map: WHITERABBIT CREEK, MAP 1388A

Scale used to define location: 1:50000

Location description: see map

Access by:

Type of exposure: outcrop

Type of sample: channel

Remarks: Channel sample of a 2.3 m thick outcrop at creek level.

Description: The conglomerate consists of interbedded layers of grain-supported pebbly conglomerate with pebbly, conglomeratic to very coarse sandstone. Six to ten layers of dense pebbles separate the entire unit into "individual" beds.

The matrix of the conglomerate is greenish-grey, very coarse cherty sandstone. The pebbles are up to 5 cm in diameter, but such large pebbles (over 3 cm) are rather few: common size is 5 to 15 mm. The pebbles are multicolored chert and quartz, including black, white, green, grey and some red pebbles. Dip and dip direction: 18 /280 .

The rock is similar to sample 34-37-16-1, but the quartz pebbles are more frequent in the upper part of the outcrop. Traces of mica. There are a few red grains of undetermined mineral and an occasional granule of coal.

Minisample retained

SAMPLE No: 3-38-15-1 **BRAZEAU FORMATION** Field book page: 43

Age: Cretaceous

Type: sedimentary

Collected by: Y.H., 1993

Gold assay: <5 ppb Fire assay by Loring Laboratories Ltd.

Location: NTS Map 83 C/1 UTM Easting 563 780

UTM Northing 5 788 550

Geological map: WHITERABBIT CREEK, MAP 1388A

Scale used to define location: 1:50000

Location description: North Ram River valley, east flank of Brazeau syncline, south of the 5th ford.

Access by:

Type of exposure: outcrop

Type of sample: selected

Remarks: Sample of an 8 cm thick layer of conglomerate at the footwall of a major sandstone bed.

Description: Conglomerate, weathered, mottled greyish red. The rock is matrix supported with pebbles of chert and quartz up to 20 mm in size. The matrix is coarse-grained porous sandstone, partly silicified, with considerable amount of kaolin. The grains of the sandstone are sub-rounded to sub-angular, poorly sorted.

SAMPLE No: 3-38-15-2 **BRAZEAU FORMATION** Field book page: 43

Age: Cretaceous

Type: sedimentary

Collected by: Y.H., 1993

Gold assay: 8 ppb Fire assay by Loring Laboratories Ltd.

Location: NTS Map 83 C/1 UTM Easting 563 620

UTM Northing 5 788 200

Geological map: WHITERABBIT CREEK, G.S.C. MAP 1388A

Scale used to define location: 1:50000

Location description: East flank of the Kiska-Ram Falls syncline - on the south slope of the North Ram River valley west of the Forestry trunk road.

Access by: ALL TERRAIN VEHICLE along the North Ram River trail.

Type of exposure: outcrop

Type of sample: selected layer

Remarks: Sample of a 10-15 cm thick layer of conglomerate in a 6 m thick sandstone bed.

Description: Conglomerate, mottled, light olive-grey, consisting of chert and quartz pebbles, black, grey, light brown, tan and greenish-grey, up to 15 mm in size. The matrix is coarse-grained silicified sandstone with limited porosity, quartz overgrowth and abundant yellow kaolin filler. The rock is fractured with fine fissures filled with white quartz.

SAMPLE No: 3-38-15-3 **BRAZEAU FORMATION** Field book page: 43

Age: Cretaceous

Type: sedimentary

Collected by: Y.H., 1993

Gold assay: <5 ppb Fire assay by Loring Laboratories Ltd.

Location: NTS Map 83 C/1 UTM Easting 563 615

UTM Northing 5 788 090

Geological map: WHITERABBIT CREEK, MAP 1388A

Scale used to define location: 1:50000

Location description: see map

Access by:

Type of exposure: outcrop

Type of sample: channel

Remarks: Sample of a 60 - 80 cm thick conglomerate outcrop.

Description: Conglomerate, black mottled, light olive-grey. This rock looks different from most other sampled BRAZEAU FORMATIONs, mainly because it lacks the reddish or yellowish hues. It is pebble-supported with mainly rounded pebbles of numerous black and some light chert and grey quartz, 5 - 25 mm in size. The matrix is medium-grained sandstone with moderately abundant mica. The sandstone is mainly light-grey and clear quartz with a moderate amount of chert.

SAMPLE No: 4-38-15

BRAZEAU FORMATION

Age: Cretaceous

Type: sedimentary

Collected by: Y.H., 1993

Gold assay : <5 ppb

Fire assay by Loring Laboratories Ltd.

Location: NTS Map 83 C/1

UTM Easting 582 900

UTM Northing 5 788 150

Geological map: WHITERABBIT CREEK, MAP 1388A

Scale used to define location: 1:50000

Location description: see map

Access by:

Type of exposure: outcrop

Type of sample: channel

Remarks: N/A

Description: conglomeratic sandstone, detail missing

SAMPLE No: 9-38-15-1 **BRAZEAU FORMATION** Field book page: 25

Age: Cretaceous

Type: sedimentary

Collected by: Y.H., 1993

Gold assay : <5 ppb Fire assay by Loring Laboratories Ltd.

Location: NTS Map 83 C/8 UTM Easting 562 150

UTM Northing 5 5 789 680

Geological map: NORDEGG, G.S.C. MAP 55-34

Scale used to define location: 1:50000

Location description: see map

Access by:

Type of exposure: boulders

Type of sample: boulder

Remarks: Sample of random boulders of BRAZEAU FORMATION and conglomeratic sandstone.

Description: Conglomerate, reddish weathering, pebble as well as matrix-supported. Pebbles range from <2 mm to 20 mm.

Minisample retained

SAMPLE No: 9-38-15-2 **BRAZEAU FORMATION** Field book page: 25

Age: Cretaceous

Type: sedimentary

Collected by: Y.H., 1993

Gold assay: <5 ppb Fire assay by Loring Laboratories Ltd.

Location: NTS Map 83 C/8 UTM Easting 562 075

UTM Northing 5 789 830

Geological map: NORDEGG, G.S.C. MAP 55-34

Scale used to define location: 1:50000

Location description: see map

Access by:

Type of exposure: remnant at an outcrop; 2 m boulder

Type of sample:

Remarks: Conglomerate boulder 2 m thick sitting on a crossbedded sandstone. The sample is from the base of the conglomerate.

Description: Conglomerate with quartz and chert pebbles up to 20 mm in size, the pebbles are vari-colored: black, grey, brown, red and white.

The matrix is a coarse-grained sandstone, silicified, with abundant kaolin.

Minisample was kept.

SAMPLE No: 9-38-15-3 BRAZEAU FORMATION Field book page: 25

Age: Cretaceous

Type: sedimentary

Collected by: Y.H., 1993

Gold assay : <5 ppb Fire assay by Loring Laboratories Ltd.

Location: NTS Map 83 C/8 UTM Easting 562 075

UTM Northing 5 789 830

Geological map: NORDEGG, G.S.C. MAP 55-34

Scale used to define location: 1:50000

Location description: see map

Access by:

Type of exposure: boulder - remnant at an outcrop

Type of sample: channel

Remarks: Channel sample of the same conglomerate block as 9-38-15-2

Description: Typical BRAZEAU FORMATION. See description of 9-38-15-2.

Minisample was kept.

SAMPLE No: 9-38-15-4 **BRAZEAU FORMATION** Field book page: 25

Age: Cretaceous

Type: sedimentary

Collected by: Y.H., 1993

Gold assay: <5 ppb Fire assay by Loring Laboratories Ltd.

Location: NTS Map 83 C/8 UTM Easting 562 075

UTM Northing 5 789 830

Geological map: NORDEGG, G.S.C. MAP 55-34

Scale used to define location: 1:50000

Location description:

Access by:

Type of exposure: outcrop

Type of sample: selected channel

Remarks: Sample of a conglomerate block stratigraphicly above samples of conglomerate in 9-38-15-1 and 2. This is a channel sample representing a 2.2 m thickness.

Description: Conglomerate, mottled greyish-brown with pebbles of dark and light chert and quartz, up to 24 mm, rounded and sub-rounded. Matrix is a silicified and kaolinitic coarse sandstone. Traces of mica.

Minisample was kept.

SAMPLE No: 13-38-15 1 & 2 **BRAZEAU FORMATION**

Age: Cretaceous

Type: sedimentary

Collected by: Y.H., 1993

Gold assay : <5 ppb Fire assay by Loring Laboratories Ltd.

Location: NTS Map 83 C/8 UTM Easting 567 550

UTM Northing 5 790 630

Geological map: NORDEGG, G.S.C. MAP 883A

Scale used to define location: 1:50000

Location description: see map

Access by: road

Type of exposure: oucrop

Type of sample: selected channel

Remarks: Conglomerate in the road cut.

Description: SAMPLE 1; taken from a bed of 5 m thick conglomerate under a 10 m thick sandstone overlaying the conglomerate.

SAMPLE 2; bottom part of the 5 m conglomerate.

The conglomerate rests on an erosional contact with an underlying black mudstone unit.

The conglomerate portion consists of cherty, grey to greenish grey rounded to sub-rounded chert and quartz pebbles: 2 to 15 mm in diameter, occasionally up to 25 mm; the conglomerate is poorly sorted and is 75% grain supported. The chert is mainly black and dark grey with occasional grey-beige and a rarer reddish and green pebbles; the quartz component is white or light grey in color

Contact with the overlying pebbly to conglomeratic sandstone is gradational.

SAMPLE No: 17-38-15-1 **BRAZEAU FORMATION** Field book page: 26

Age: Cretaceous

Type: sedimentary

Collected by: Y.H., 1993

Gold assay: <5 ppb Fire assay by Loring Laboratories Ltd.

Location: NTS Map 83 C/8 UTM Easting 560 700

UTM Northing 5 790 600

Geological map: NORDEGG, G.S.C. MAP 55-34

Scale used to define location: 1:50000

Location description: see map

Access by:

Type of exposure: outcrop

Type of sample: selected

Remarks: Sample of a layer of conglomerate, 0.4 m thick, in a several meters thick outcrop of sandstone.

Description: Conglomerate with medium-sized pebbles; the rock is partly grain-supported and partly matrix-supported.

SAMPLE No: 17-38-15-2 **BRAZEAU FORMATION** Field book page: 26

Age: Cretaceous

Type: sedimentary

Collected by: Y.H., 1993

Gold assay : <5 ppb Fire assay by Loring Laboratories Ltd.

Location: NTS Map 83 C/8 UTM Easting 560 750

UTM Northing 5 790 650

Geological map: NORDEGG, G.S.C. MAP 55-34

Scale used to define location: 1:50000

Location description: see map

Access by:

Type of exposure: outcrop

Type of sample: selected

Remarks: This sample is from a 0.5 m thick bed of conglomerate located in the same thick sandstone as the sample 9-38-15-6 but it is stratigraphicly above the layer sampled as 17-38-15-1.

Description: Conglomerate, 0.5 m thick, with small pebbles (1-4 mm) in a coarse-grained sandstone matrix.

No other conglomerate was found.

SAMPLE No: 17-38-15-3 **BRAZEAU FORMATION** Field book page: 29

Age: Cretaceous

Type: sedimentary

Collected by: Y.H., 1993

Gold assay : <5 ppb Fire assay by Loring Laboratories Ltd.

Location: NTS Map 83 C/8 UTM Easting 560 500

UTM Northing 5 791 230

Geological map: NORDEGG, G.S.C. MAP 55-34

Scale used to define location: 1:50000

Location description: see map

Access by:

Type of exposure: boulders

Type of sample: grab

Remarks: Grab sample of conglomeratic sandstone boulders.

Description: Coarse-grained salt & pepper sandstone with pebbles of chert and quartz up to 10 mm. The sandstone consists of quartz and chert, the rest is grey, tan and a few grains of pale grey-green. The quartz is clear or semi-clear and white. The grains of the sandstone are angular or sub-angular; the pebbles are rounded and sub-rounded. There are a few undetermined orange-red grains and one brightly green.

Kaolin is present in small quantity, and there are traces of mica. One piece of this sandstone includes a pebble of rock that consists of opaque white, slightly greenish quartz and muscovite.

Minisample retained

SAMPLE No: 19-38-15 **BRAZEAU FORMATION** Field book page: 40

Age: Cretaceous

Type: sedimentary

Collected by: Y.H., 1993

Gold assay: <5 ppb Fire assay by Loring Laboratories Ltd.

Location: NTS Map 83 C/8 UTM Easting 559 860

UTM Northing 5 792 630

Geological map: NORDEGG, G.S.C. MAP 55-34

Scale used to define location: 1:50000

Location description: Kiska Mountain

Access by: ALL TERRAIN VEHICLE

Type of exposure: boulder

Type of sample: boulder

Remarks: Sample of an erratic conglomerate boulder unlike any other sampled and listed herein.

Description: Conglomerate, silvery greenish-grey with large pebbles of white and clear quartz. The rock is pebble-supported with a matrix of phyllitic appearance. The pebbles are sub-rounded and rounded, mainly almost clear, clear or light grey quartz. Most pebbles are around 10-15 mm, few are up to 40 mm in size. The matrix is intensely silicified silvery olive-grey quartzite with abundant mica and abundant soft rusty-brown filler.

There are few different pebbles: a 30 mm pebble which consists of white quartz with large crystals of muscovite; pebble of quartz interspersed with completely weathered, soft, rusty-brown material; and a flat 15 mm pebble of glassy white feldspar.

Specimen sample was retained.

SAMPLE No: 20-38-15-1 **BRAZEAU FORMATION** Field book page: 40

Age: Cretaceous

Type: sedimentary

Collected by: Y.H., 1993

Gold assay : <5 ppb Fire assay by Loring Laboratories Ltd.

Location: NTS Map 83 C/8 UTM Easting 560 150

UTM Northing 5 793 040

Geological map: NORDEGG, G.S.C. MAP 55-34

Scale used to define location: 1:50000

Location description: see map

Access by:

Type of exposure: boulder near subcrop

Type of sample: channel

Remarks: Channel sample of a boulder block representing 1.4 m of stratigraphic thickness. The boulder is eroded on the top and its bottom is buried.

Description: Typical BRAZEAU FORMATION, mottled yellowish light olive grey, reddish weathering, porous. The principal components are varicolored chert (dark and light, including green) and quartz. In both pebble fraction and matrix the rock is silicified with quartz overgrowth and abundant pale yellow and reddish-stained kaolin.

SAMPLE No: 20-38-15-2 **BRAZEAU FORMATION** Field book page: 40

Age: Cretaceous

Type: sedimentary

Collected by: Y.H., 1993

Gold assay: <5 ppb Fire assay by Loring Laboratories Ltd.

Location: NTS Map 83 C/8 UTM Easting 560 650

UTM Northing 5 799 220

Geological map: NORDEGG, G.S.C. MAP 55-34

Scale used to define location: 1:50000

Location description: see map

Access by:

Type of exposure: several boulders

Type of sample: boulder

Remarks: Several boulders from a subcrop that appears to be stratigraphicly higher than sample 20-38-15-1.

Description: Typical BRAZEAU FORMATION, reddish weathering.

SAMPLE No: 31-38-15 **BRAZEAU FORMATION** Field book page: 35

Age: Cretaceous

Type: sedimentary

Collected by: Y.H., 1993

Gold assay: <5 ppb Fire assay by Loring Laboratories Ltd.

Location: NTS Map 83 C/8 UTM Easting 558 615

UTM Northing 5 795 070

Geological map: NORDEGG, G.S.C. MAP 55-34

Scale used to define location: 1:50000

Location description: see map

Access by:

Type of exposure: boulders

Type of sample: boulder

Remarks: Sample of BRAZEAU FORMATION from selected abundant boulders of conglomerate where an outcrop was expected.

Description: The conglomerate is dark mottled, light olive grey, reddish-brown weathering, pebble-supported and partly matrix-supported with pebbles of dark and light chert and quartz, from <2 mm to 20 mm. The pebbles are rounded and sub-rounded, the matrix is silicified and kaolinic coarse-grained sandstone consisting of quartz and chert grains; kaolin is quite abundant.

Some of the rock fragments are very porous with quartz crystal growth in the pores and extensive coating of iron oxide. The conglomerate includes an occasional fragment of yellowish-gray quartzite and also grayish-pink powdery mass with grains of undetermined orange mineral or the same mass without the orange mineral but with abundant mica.

SAMPLE No: 34-38-15-1 **BRAZEAU FORMATION** Field book page: 34

Age: Cretaceous

Type: sedimentary

Collected by: Y.H., 1993

Gold assay: <5 ppb Fire assay by Loring Laboratories Ltd.

Location: NTS Map 83 C/8 UTM Easting 563 650

UTM Northing 5 796 180

Geological map: NORDEGG, G.S.C. MAP 55-34

Scale used to define location: 1:50000

Location description: see map

Access by:

Type of exposure: boulders

Type of sample: boulder

Remarks: Sample from several large boulders of conglomeratic sandstone.

Description: Matrix-supported conglomerate to conglomeratic pebbly sandstone, dark olive-grey with dark and light rounded pebbles (up to 15 mm in size). The pebbles are chert and quartz; the matrix is coarse-grained, silicified sandstone consisting of quartz and chert grains with abundant white kaolin.

Minisample retained

SAMPLE No: 34-38-15-2 **BRAZEAU FORMATION** Field book page: 34

Age: Cretaceous

Type: sedimentary

Collected by: Y.H., 1993

Gold assay : 9 ppb Fire assay by Loring Laboratories Ltd.

Location: NTS Map 83 C/8 UTM Easting 563 650

UTM Northing 5 796 180

Geological map: NORDEGG, G.C.S. MAP 55-34

Scale used to define location: 1:50000

Location description: Northeast slope of the lower Joyce River valley; south end of the Cougar Ridge.

Access by: ALL TERRAIN VEHICLE by Joyce River Trail and by foot.

Type of exposure: boulder from a rubble zone in an outcrop area.

Type of sample: channel

Remarks: Sample of a 0.55 m thick boulder of conglomerate.

Description: Typical BRAZEAU FORMATION, mottled greyish medium brown, reddish-brown weathering, pebble-supported. The pebbles are rounded and sub-rounded chert (dark and light) and quartz, up to 15 mm, occasionally up to 20 mm.

The matrix is coarse grained, silicified sandstone of poorly sorted, angular and subangular grains of quartz and subangular to subrounded chert. White kaolin is abundant as a filler between grains or pebbles.

The rock contains a rare granule of coal and traces of mica. Parts of the rock are weathered reddish-brown. The iron oxide coats the grains, pores and kaolin quite extensively.

SAMPLE No: 34-38-15-3 BRAZEAU FORMATION Field book page: 34

Age: Cretaceous

Type: sedimentary

Collected by: Y.H., 1993

Gold assay : 6 ppb Fire assay by Loring Laboratories Ltd.

Location: NTS Map 83 C/8 UTM Easting 563 650

UTM Northing 5 796 180

Geological map: NORDEGG, G.C.S. MAP 55-34

Scale used to define location: 1:50000

Location description: Northeast slope of the lower Joyce River valley; south end of the Cougar Ridge.

Access by: ALL TERRAIN VEHICLE by Joyce River Trail and by foot.

Type of exposure: boulder from a rubble zone in an outcrop area.

Type of sample: channel

Remarks: Sample of conglomerate stratigraphicly higher than sample 34-38-15-2. The conglomerate is a 1.05 m thick unit (top is eroded) underlain by sandstone. The contact is rapidly gradational.

Description: Typical BRAZEAU FORMATION, no unusual features. Pebbles of chert and quartz up to 15 mm, matrix-supported, dark mottled grey-brown.

SAMPLE No: 2-38-16-1 **BRAZEAU FORMATION**

Age: Cretaceous

Type: sedimentary

Collected by: Y.H., 1993

Gold assay: <5 ppb Fire assay by Loring Laboratories Ltd.

Location: NTS Map 83 C/1 UTM Easting 555 400

UTM Northing 5 788 300

Geological map: WHITERABBIT CREEK, MAP 1388A

Scale used to define location: 1:50000

Location description: see map

Access by:

Type of exposure: boulders

Type of sample: boulder

Remarks: Sample from boulders of conglomerate in the valley of a minor creek flowing into the South Fork of Kiska Creek.

Description: N/A

SAMPLE No: 2-38-16-2 **BRAZEAU FORMATION** Field book pg. 15

Age: Cretaceous

Type: sedimentary

Collected by: Y.H., 1993

Gold assay: <5 ppb Fire assay by Loring Laboratories Ltd.

Location: NTS Map 83 C/1 UTM Easting 556 800

UTM Northing 5 788 360

Geological map: WHITERABBIT CREEK, MAP 1388A

Scale used to define location: 1:50000

Location description: slope above south fork of Kiska Creek

Access by:

Type of exposure: outcrop

Type of sample: selected from the bottom part

Remarks: Sample of a 1.7 m thick outcrop of sandstone overlying mudstone and grading to mudstone.

Description: The sandstone is light greenish-grey to grey, cherty, coarse-grained, argillaceous, crossbedded to laminated. The bottom part is more massive with glauconite and traces of mica. Minisample was kept.

SAMPLE No: 2-38-16-3 **BRAZEAU FORMATION** Field book page:15

Age: Cretaceous

Type: sedimentary

Collected by: Y.H., 1993

Gold assay: <5 ppb Fire assay by Loring Laboratories Ltd.

Location: NTS Map 83 C/1 UTM Easting 556 800

UTM Northing 5 788 360

Geological map: WHITERABBIT CREEK, MAP 1388A

Scale used to define location: 1:50000

Location description: slope above south fork of Kiska Creek

Access by:

Type of exposure: outcrop

Type of sample: channel

Remarks: Sample of a 0.45 m thick conglomeratic sandstone 11 m above sample 2-38-16-2. Another 4 samples were collected from this location.

Description: N/A

SAMPLE No: 2-38-16-4 **BRAZEAU FORMATION** Field book page: 15

Age: Cretaceous

Type: sedimentary

Collected by: Y.H., 1993

Gold assay: <5 ppb Fire assay by Loring Laboratories Ltd.

Location: NTS Map 83 C/1 UTM Easting 556 800

UTM Northing 5 788 360

Geological map: WHITERABBIT CREEK, MAP 1388A

Scale used to define location: 1:50000

Location description: slope above south fork of Kiska Creek

Access by:

Type of exposure: outcrop

Type of sample: selected conglomeratic intervals

Remarks: Sample of a 2.4 m thick interval of conglomeratic sandstone 5.5 m above sample 2-38-16-3. Another 4 samples were collected from this location.

Description: The conglomeratic sandstone was crossbedded, individual conglomerate intervals were from few a cm to 40 cm thick, pebbles are rounded to subrounded and up to 40 mm diameter.

SAMPLE No: 2-38-16-5 **BRAZEAU FORMATION** Field book page:15

Age: Cretaceous

Type: sedimentary

Collected by: Y.H., 1993

Gold assay: <5 ppb Fire assay by Loring Laboratories Ltd.

Location: NTS Map 83 C/1 UTM Easting 556 800

UTM Northing 5 788 360

Geological map: WHITERABBIT CREEK, MAP 1388A

Scale used to define location: 1:50000

Location description: slope above south fork of Kiska Creek

Access by: foot

Type of exposure: outcrop

Type of sample: selected

Remarks: sample from several conglomeratic horizons combining total thickness of 1.5 m. Another 4 samples were collected from this location.

Description: Conglomeratic sandstone with a matrix of quartz and chert, argillaceous with abundant kaolin. The rock is quite porous with some quartz overgrowths, grains range from black through various tones of gray, tan to white and light green; one pebble of dark violet-gray, soft tufa like rock and a few grains of light red mineral (garnet?), traces of mica.

SAMPLE No: 2-38-16-6 **BRAZEAU FORMATION** Field book page:15

Age: Cretaceous

Type: sedimentary

Collected by: Y.H., 1993

Gold assay : <5 ppb Fire assay by Loring Laboratories Ltd.

Location: NTS Map 83 C/1 UTM Easting 556 800

UTM Northing 5 788 360

Geological map: WHITERABBIT CREEK, MAP 1388A

Scale used to define location: 1:50000

Location description: slope above south fork of Kiska Creek

Access by:

Type of exposure: large boulder, 70 cm thick

Type of sample: channel

Remarks: Sample of a very large boulder of typical BRAZEAU FORMATION found above the sandstone beds sampled as 2-38-16 2 to 5

Description: N/A

SAMPLE No: 13-38-16 **BRAZEAU FORMATION** Field book page: 29

Age: Cretaceous

Type: sedimentary

Collected by: Y.H., 1993

Gold assay : <5 ppb Fire assay by Loring Laboratories Ltd.

Location: NTS Map 83 C/8 UTM Easting 557 920

UTM Northing 5 790 600

Geological map: NORDEGG, G.S.C. MAP 55-34

Scale used to define location: 1:50000

Location description: see map

Access by:

Type of exposure: boulders

Type of sample: boulder

Remarks: Sampled BRAZEAU FORMATION boulders in the bed of Kiska Creek.

Description: Typical BRAZEAU FORMATION.

SAMPLE No: 16-38-16 **BRAZEAU FORMATION** Field book page: 41

Age: Cretaceous

Type: sedimentary

Collected by: Y.H., 1993

Gold assay : 7 ppb Fire assay by Loring Laboratories Ltd.

Location: NTS Map 83 C/8 UTM Easting 552 620

UTM Northing 5 791 680

Geological map: NORDEGG, G.C.S. MAP 55-34

Scale used to define location: 1:50000

Location description: Kiska Mountain area, 4 km SW of the top.

Access by: ALL TERRAIN VEHICLE

Type of exposure: outcrop

Type of sample: channel

Remarks: Sample of a 0.8 m thick conglomerate on top of an 8 m thick, massive and partly cross-bedded sandstone cliff in the lower part of a large sandstone rubble zone.

This is, stratigraphicly, the highest sample collected in the 1993 program.

Description: Dark greenish-grey, mottled conglomerate with sub-rounded and rounded pebbles of mainly varicolored chert and some quartz, up to 30 mm in size. The matrix is coarse, poorly sorted, silicified sandstone of quartz and chert grains.

Minisample retained

SAMPLE No: 3-39-15-1 **BRAZEAU FORMATION** Field book page: 48

Age: Cretaceous

Type: sedimentary

Collected by: Y.H., 1993

Gold assay: <5 ppb Fire assay by Loring Laboratories Ltd.

Location: NTS Map 83 C/8 UTM Easting 563 080

UTM Northing 5 798 250

Geological map:

Scale used to define location: 1:50000

Location description: see map

Access by:

Type of exposure: boulder block remnant at an outcrop

Type of sample: selected

Remarks: Sample of the lower 0.5 m thick interval from 0.9 m thick layer of conglomerate overlaying thinly cross-bedded sandstone, which is part of a rock block moved about 60 m downhill from the crest of the ridge. It is in a normal structural position. Cougar Ridge area.

Description: Typical BRAZEAU FORMATION, reddish weathering, greyish-brown and black, mottled, (partridge colors). The pebbles are chert and quartz ranging in size from <2 mm to 15 mm or occasionally 20 mm. The chert is black, grey, greyish-light-brown and tan; the quartz is semi-clear and glassy white. The rock is pebble-supported with a matrix of coarse-grained, poorly sorted sandstone that consists mainly of sub-angular and sub-rounded grains of quartz, 20 - 25% of chert, and abundant white kaolin. The pebbles are rounded and sub-rounded.

The rock is porous with fairly extensive quartz overgrowth and clear quartz crystals in open spaces between some pebbles. There are occasional fragments (up to 5 mm) of beige color, quartzite?. One pebble of fine-grained white quartzite was observed, and one pink one. Muscovite is present in trace quantity.

Minisample retained.

SAMPLE No: 9-39-15-2 **BRAZEAU FORMATION** Field book page: 47

Age: Cretaceous

Type: sedimentary

Collected by: Y.H., 1993

Gold assay: <5 ppb Fire assay by Loring Laboratories Ltd.

Location: NTS Map 83 C/8 UTM Easting 561 770

UTM Northing 5 799 890

Geological map: NORDEGG G.S.C. MAP 55-34

Scale used to define location: 1:50000

Location description: see map

Access by:

Type of exposure: outcrop

Type of sample: selected

Remarks: Sample of selected coarse pebble horizon. Cougar Ridge area.

Description: Conglomerate, pebbles 5 to 35 mm, pebble-supported, with intensively silicified sandstone matrix.

SAMPLE No: 10-39-15-1 **BRAZEAU FORMATION** Field book page: 46

Age: Cretaceous

Type: sedimentary

Collected by: Y.H., 1993

Gold assay : <5 ppb Fire assay by Loring Laboratories Ltd.

Location: NTS Map 83 C/8 UTM Easting 562 565

UTM Northing 5 798 930

Geological map: NORDEGG G.S.C. MAP 55-34

Scale used to define location: 1:50000

Location description: see map

Access by:

Type of exposure: outcrop

Type of sample: selected channel

Remarks: Sample of a conglomerate layer, 40 cm thick, located in the lower half of a 3.8 m thick outcrop of massive sandstone with pebbly intervals. The conglomerate is underlain by thickly crossbedded coarse-grained sandstone. Cougar Ridge area.

Description: Conglomerate, dark olive-brown, mottled, poorly sorted, pebbles of chert and quartz range in size from 2 to 25 mm. Pebble and partly matrix-supported. The matrix is coarse-grained, poorly sorted, silicified sandstone of quartz and chert with abundant kaolin filler and traces of mica.

Minisample retained.

SAMPLE No: 10-39-15-2 **BRAZEAU FORMATION** Field book page: 47

Age: Cretaceous

Type: sedimentary

Collected by: Y.H., 1993

Gold assay: <5 ppb Fire assay by Loring Laboratories Ltd.

Location: NTS Map 83 C/8 UTM Easting 562 550

UTM Northing 5 798 930

Geological map: NORDEGG G.S.C. MAP 55-34

Scale used to define location: 1:50000

Location description: see map

Access by: ALL TERRAIN VEHICLE

Type of exposure: outcrop

Type of sample: selected channel

Remarks: Sample of a conglomerate bed stratigraphicly higher than sample 10-39-15-1. It is 0.6 m thick, overlying 1.8 m of thinly cross-bedded, reddish weathering coarse-grained sandstone. This site is on the cutline, on the very crest of a ridge.

Description: Conglomerate, dark olive-brown, mottled, reddish weathering, quite porous. Pebble-supported, with silicified and kaolinic coarse-grained sandstone matrix (porous with quartz overgrowth).

SAMPLE No: 10-39-15-3 **BRAZEAU FORMATION** Field book page: 47

Age: Cretaceous

Type: sedimentary

Collected by: Y.H., 1993

Gold assay: <5 ppb Fire assay by Loring Laboratories Ltd.

Location: NTS Map 83 C/8 UTM Easting 562 300

UTM Northing 5 798 630

Geological map: NORDEGG G.S.C. MAP 55-34

Scale used to define location: 1:50000

Location description: see map

Access by:

Type of exposure: boulder

Type of sample: selected

Remarks: Sample of a very large boulder (2.5 x 3.5 m) of conglomerate, possibly moved from the same layer sampled on location 10-39-15-2. It could also be a remnant of a yet higher conglomerate than that in location 10-39-15-2. The conglomerate boulder is at least 0.6 m thick. The sample was taken from the two coarsest horizons within the 0.6 m thickness. The rock is entirely a conglomerate, with no sandstone intervals.

Description: Similar to Sample 10-39-15-2. Quite reddish - abundant iron oxide. Pebbles up to 25 mm. One pebble of dark olive-grey quartzite. The matrix is silicified sandstone with quartz overgrowth and kaolin filler.

Specimen sample kept.

SAMPLE No: 10-39-15-4 **BRAZEAU FORMATION** Field book page: 47

Age: Cretaceous

Type: sedimentary

Collected by: Y.H., 1993

Gold assay : <5 ppb Fire assay by Loring Laboratories Ltd.

Location: NTS Map 83 C/8 UTM Easting 562 140

UTM Northing 5 798 750

Geological map: NORDEGG G.S.C. MAP 55-34

Scale used to define location: 1:50000

Location description: see map

Access by:

Type of exposure: boulder

Type of sample: selected

Remarks: Sample of selected coarsest intervals from a 2.2 m thick conglomerate boulder. Cougar Ridge area.

Description: Yellowish, light olive-brown, dark mottled, partly reddish weathering, porous conglomerate of poorly sorted pebbles ranging in size from <2 mm to 25 mm. The pebbles are rounded and sub-rounded vari-colored chert and light quartz. The matrix is coarse-grained, poorly sorted sandstone with grains of mainly quartz and chert with abundant white kaolin.

The sandstone is partly silicified with quartz overgrowth; microcrystals in pores are abundant. The cement is a combination of silicification and kaolin filler. One pebble of chalcedony and a few pebbles of rather soft, grey or light pink or white and earthy ash-like rock were observed.

Minisample retained.

SAMPLE No: 11-39-15 **BRAZEAU FORMATION** Field book page: 34

Age: Cretaceous

Type: sedimentary

Collected by: Y.H., 1993

Gold assay: <5 ppb Fire assay by Loring Laboratories Ltd.

Location: NTS Map 83 C/8 UTM Easting 564 240

UTM Northing 5 798 780

Geological map: NORDEGG, G.S.C. MAP 55-34

Scale used to define location: 1:50000

Location description: see map

Access by: road

Type of exposure: boulder

Type of sample: channel

Remarks: Erratic boulder of BRAZEAU FORMATION representing a stratigraphic thickness of 1.2 m. The rock is very typical of its kind. On the east side of the forestry trunk road.

Description: very typical BRAZEAU FORMATION, reddish-brown weathering

SAMPLE No: 7-40-13 **BRAZEAU FORMATION**

Age: Cretaceous

Type: sedimentary

Collected by: Y.H., 1993

Gold assay : <5 ppb Fire assay by Loring Laboratories Ltd.

Location: NTS Map 83 B/5 UTM Easting 5076 750

UTM Northing 5 808 475

Geological map: ALEXO, G.S.C. preliminary MAP 45-23

Scale used to define location: 1:50000

Location description: see map

Access by:

Type of exposure: boulders

Type of sample: boulder

Remarks: Looked for an outcrop of BRAZEAU FORMATION; found and sampled several conglomerate boulders, but their source is uncertain. The boulders could be Cadomin conglomerate eroded from the east slope of the Brazeau Range.

Description: Conglomerate, predominantly grey with black chert pebbles. Mainly matrix, but partly grain supported. The matrix is composed of a coarse-grained salt & pepper sandstone. Chert pebbles were black, grey or tan in color and ranged in size from less than 2 mm to 25 mm.

Minisample retained

SAMPLE No: 16-40-16 **BRAZEAU FORMATION** Field book page: 37

Age: Cretaceous

Type: sedimentary

Collected by: Y.H., 1993

Gold assay : <5 ppb Fire assay by Loring Laboratories Ltd.

Location: NTS Map 83 C/8 UTM Easting 550 750

UTM Northing 5 809 930

Geological map: NORDEGG, G.S.C. MAP 55-34

Scale used to define location: 1:50000

Location description: see map

Access by:

Type of exposure: outcrop

Type of sample: selected

Remarks: Sample of a conglomerate layer, 0.3 to 0.6 m thick, in an outcrop of massive sandstone. The conglomerate is a channel in the upper part of the sandstone. Contact with the sandstone is very abrupt.

Description: Conglomerate: greenish-grey, mainly grain-supported, with multicolored chert pebbles and also quartz pebbles, <2 mm to 20 mm in size. The coarse-grained sandstone matrix contains a considerable amount of kaolin and traces of coal or carbonaceous plant matter.

Minisample retained

SAMPLE No: 22-40-13 **BRAZEAU FORMATION**

Age: Cretaceous

Type: sedimentary

Collected by: Y.H., 1993

Gold assay : <5 ppb Fire assay by Loring Laboratories Ltd.

Location: NTS Map 83 B/5 UTM Easting 582 470

UTM Northing 5 813 020

Geological map: ALEXO, G.S.C. preliminary MAP 45-23

Scale used to define location: 1:50000

Location description: see map

Access by:

Type of exposure: outcrop

Type of sample: selected

Remarks: Sample of a 6 m thick, approximately 40 m wide sandstone channel. The sample was taken at about 2 m intervals along the bottom of the channel, at its contact with an underlying siltstone unit.

Description: The sandstone is coarse to medium grained, greenish-grey, hard, with minor plant debris, argillaceous with minor kaolin and mica. Slightly carbonaceous on bedding planes, non-calcareous. The location is approximate.

Minisample retained

SAMPLE No: 23-40-13 **BRAZEAU FORMATION**

Age: Cretaceous

Type: sedimentary

Collected by: Y.H., 1993

Gold assay : <5 ppb Fire assay by Loring Laboratories Ltd.

Location: NTS Map 83 B/5 UTM Easting 583 250

UTM Northing 5 812 300

Geological map: ALEXO, G.S.C. Preliminary Map 45-23

Scale used to define location: 1:50000

Location description: see map

Access by:

Type of exposure: outcrop

Type of sample: selected channel

Remarks: Sample of a sandstone channel up to 10 m thick - 4.3 m thick at the sample location. The sandstone outcrops on both sides of the Saskatchewan River, approximately 200 m downstream from its confluence with the Shunda Creek.

Description: Sandstone, greenish grey, coarse grained; shaly and calcareous; salt & pepper under magnification (16x), horizontal, but cross-bedded with minor content of plant debris. Ochre-grey when weathered. Grains are black chert and quartz.

Minisample retained

SAMPLE No: 24-40-17 **BRAZEAU FORMATION** Field book page: 36

Age: Cretaceous

Type: sedimentary

Collected by: Y.H., 1993

Gold assay : <5 ppb Fire assay by Loring Laboratories Ltd.

Location: NTS Map 83 C/8 UTM Easting 547 400

UTM Northing 5 812 300

Geological map: NORDEGG, G.S.C. MAP 55-34

Scale used to define location: 1:50000

Location description: see map

Access by:

Type of exposure: outcrop

Type of sample: selected

Black Mountain

Remarks: Sample of 0.35 m thick layer of conglomerate from the second major sandstone outcrop, 3-4 m thick, in the uphill direction. Contact between the sandstone and the conglomerate is abrupt.

Description: Dark greenish-grey mottled conglomerate, mainly matrix and partly grain-supported. Pebbles of chert are mainly black and grey, some are to greenish-gray and almost white. They are poorly sorted, range in size from less than 2 mm to 30 mm, most are rounded and subrounded , some are subangular. Some pebbles are coated with hematite. The matrix is medium to coarse grained sandstone.

Minisample retained

SAMPLE No: 25-40-17 **BRAZEAU FORMATION** Field book page: 37

Age: Cretaceous

Type: sedimentary

Collected by: Y.H., 1993

Gold assay : <5 ppb Fire assay by Loring Laboratories Ltd.

Location: NTS Map 83 C/8 UTM Easting 546 380

UTM Northing 5 813 820

Geological map: NORDEGG, G.S.C. MAP 55-34

Scale used to define location: 1:50000

Location description: see map

Access by:

Type of exposure: boulders in a creek

Type of sample: boulder

Remarks: Sample of boulders of the BRAZEAU FORMATION from Sturrock Creek. The creek intersects the eastern limb of a syncline formed by the Brazeau Formation about 1 km from the location of sampling.

Description: Conglomerate: greenish-grey with multicolored chert pebbles including black, grey, grey-brown, grey-green, tan, and also white quartz. Coarse sandstone matrix dominates the rock; pebbles are less than 50%. The pebbles are poorly sorted, rounded and sub-rounded, ranging from <2 mm to 15 mm in size.

SAMPLE No: 35-40-17 **BRAZEAU FORMATION** Field book page: 37

Age: Cretaceous

Type: sedimentary

Collected by: Y.H., 1993

Gold assay: <5 ppb Fire assay by Loring Laboratories Ltd.

Location: NTS Map 83 C/8 UTM Easting 544 200

UTM Northing 5 815 780

Geological map: NORDEGG, G.S.C. MAP 55-34

Scale used to define location: 1:50000

Location description: Northwest end of the Black Mountain

Access by: foot

Type of exposure: boulders in a creek

Type of sample: boulder

Remarks: No outcrop was found; the sample was taken from a few conglomerate boulders found in a creek.

Description: The rock is very similar to 25-40-17.

Minisample retained

APPENDIX 4

SAMPLE DESCRIPTIONS

HOADLEY AND MOUNTAIN PARK

SAMPLE No: 18-37-11 **HOADLEY CONGLOMERATE** Field book page: 57

Age: Cretaceous

Type: sedimentary

Collected by: Y.H., 1993

Gold assay: <5 ppb Fire assay by Loring Laboratories Ltd.

Location: NTS Map 83 B/4 UTM Easting 597 830

UTM Northing 5 782 150

Geological map: FALL CREEK, G.S.C. MAP 883A

Scale used to define location: 1:50000

Location description: see map

Access by: Sunkay Creek Trail and old coal exploration trail, ATV

Type of exposure: oucrop

Type of sample: selected

Remarks: Sample from the bottom of a 1.6 m thick interval, overlying coarse-grained sandstone. Roadside exposure.

Description: conglomerate, detail N/A

SAMPLE No: 24-37-12-1 **HOADLEY CONGLOMERATE** Field book page: 55

Age: Cretaceous

Type: sedimentary

Collected by: Y.H., 1993

Gold assay: <5 ppb Fire assay by Loring Laboratories Ltd.

Location: NTS Map 83 B/4 UTM Easting 596 550

UTM Northing 5 783 330

Geological map: FALL CREEK, G.S.C. MAP 883A

Scale used to define location: 1:50000

Location description: Well exposed, almost horizontal outcrop of major Conglomerate on the north bank of the Fall Creek 0.5 km downstream from where the Fall Creek raod crosses the creek

Access by: car and foot

Type of exposure: outcrop

Type of sample: selected

Remarks: The sampled interval of conglomerate overlies (abruptly) a coarse-grained, light brown weathering sandstone. The conglomerate is 4-3.8 m thick, massive, with pebbles of mainly chert and also quartz. The rock is partly matrix and partly pebble-supported.

Three samples were collected. This sample is from the 0.4 m thick basal interval.

Description: Conglomerate, grey, mottled, with pebbles of black and gray chert and occasional quartz, matrix and partly grain-supported. The pebbles are up to 35 mm; the matrix is coarse-grained silicious sandstone with abundant chert grains and abundant kaolin.

Minisample retained.

SAMPLE No: 24-37-12-2 **HOADLEY CONGLOMERATE** Field book page: 55

Age: Cretaceous

Type: sedimentary

Collected by: Y.H., 1993

Gold assay: <5 ppb Fire assay by Loring Laboratories Ltd.

Location: NTS Map 83 B/4 UTM Easting 596 550

UTM Northing 5 783 330

Geological map: FALL CREEK, G.S.C. MAP 883A

Scale used to define location: 1:50000

Location description: Well exposed, almost horizontal outcrop of a major conglomerate on the north bank of Fall Creek 0.5 km downstream from where the Fall Creek road crosses the creek

Access by: car and foot

Type of exposure: outcrop

Type of sample: selected

Well exposed, almost horizontal outcrop of the Cadomin Conglomerate on the north bank of the Fall Creek.

Remarks: The sampled interval of conglomerate overlies (abruptly) a coarse-grained, light brown weathering sandstone. The conglomerate is 3.8-4 m thick, massive, with pebbles of mainly chert and also quartz. The rock is partly matrix and partly pebble-supported.

Three samples were collected. This sample is from a 0.6 m thick coarse-pebbled interval, 1.6 to 2.2 m above the base.

Description: Similar to sample 24-37-12-1.

Minisample retained.

SAMPLE No: 24-37-12-3 **HOADLEY CONGLOMERATE** Field book page: 55

Age: Cretaceous

Type: sedimentary

Collected by: Y.H., 1993

Gold assay : <5 ppb Fire assay by Loring Laboratories Ltd.

Location: NTS Map 83 B/4 UTM Easting 596 550

UTM Northing 5 783 330

Geological map: FALL CREEK, G.S.C. MAP 883A

Scale used to define location: 1:50000

Location description: Well exposed, almost horizontal outcrop of a major conglomerate on the north bank of Fall Creek 0.5 km downstream from where the Fall Creek road crosses the creek

Access by: car and foot

Type of exposure: outcrop

Type of sample: selected

Remarks: The sampled interval of conglomerate overlies (abruptly) a coarse-grained, light brown weathering sandstone. The conglomerate is 3.8-4 m thick, massive, with pebbles of mainly chert and also quartz. The rock is partly matrix and partly pebble-supported.
Three samples were collected. This sample is from a 0.7 m interval of very pebbly, coarse conglomerate near the top.

Description: Conglomerate, coarser than samples 24-37-12-1 and 24-37-12-2. It consists mainly of chert and a few quartz pebbles, less than 2 mm to 30 mm in size, with a coarse, salt & pepper sandstone matrix. The rock is grain-supported; pebbles are mainly rounded and partly sub-rounded, black, grey and some tan-grey colored chert.

The matrix is a coarse sandstone consisting of mainly quartz and some chert grains cemented by silica and kaolin. Quartz overgrowth is quite noticeable. There is an occasional grain of glauconite, traces of carbonaceous & coaly material and rare fragments of soft claystone (shale). The rock weathers rusty-brown.

Specimen sample was kept.

SAMPLE No: 7-38-12

MOUNTAIN PARK FORMATION

Age: Cretaceous

Type: sedimentary

Collected by: Y.H., 1993

Gold assay: <5 ppb

Fire assay by Loring Laboratories Ltd.

Location: NTS Map 83 B/5

UTM Easting 588 280

UTM Northing 5 789 850

Geological map: SAUNDERS G.S.C. MAP 885

Scale used to define location: 1:50000

Location description: see map, North Ram River valley

Access by:

Type of exposure: outcrop

Type of sample: channel

Remarks: N/A

Description: Coarse-grained sandstone, grey with some plant debris.

SAMPLE No: 4-40-17 **MOUNTAIN PARK (?) OR HOADLEY CONGLOMERATE**

Age: Cretaceous

Type: sedimentary

Collected by: Y.H., 1993

Gold assay : <5 ppb Fire assay by Loring Laboratories Ltd.

Location: NTS Map 83 C/8 UTM Easting 542 110

UTM Northing 5 807 500

Geological map: Geological map: NORDEGG, G.S.C. MAP 55-34

Scale used to define location: 1:50000

Location description: see map, Bighorn Basin

Access by: Sunkay trail and old coal exploration trail

Type of exposure: boulders

Type of sample: channel

Remarks: The sample was taken from large, blocks of conglomerate. Actual outcrop not found.

Description: The rock is similar to the conglomerate at 17-40-17.

SAMPLE No: 8-40-17 **MOUNTAIN PARK FORMATION**

Age: Cretaceous

Type: sedimentary

Collected by: Y.H., 1993

Gold assay : <5 ppb Fire assay by Loring Laboratories Ltd.

Location: NTS Map 83 C/8 UTM Easting 540 715

UTM Northing 5 808 720

Geological map: NORDEGG, G.S.C. MAP 55-34

Scale used to define location: 1:50000

Location description: see map

Access by:

Type of exposure: outcrop

Type of sample:

Remarks: 3.6 m thick bed of a conglomerate overlying coarse-grained, cross-bedded sandstone. The conglomerate consists of several beds separated by less resistant intervals.

Description: The conglomerate is greenish-grey when fresh and reddish when weathering. It is mainly supported by a very coarse grained sandstone matrix. The matrix contains a significant amount of kaolin. Pebbles are composed of chert and quartz and are up to 7 cm in diameter. Some layers weather dark reddish brown from their relatively high iron oxide content.

Minisample retained

SAMPLE No: 17-40-17-1 **HOADLEY CONGLOMERATE**

Age: Cretaceous

Type: sedimentary

Collected by: Y.H., 1993

Gold assay : <5 ppb Fire assay by Loring Laboratories Ltd.

Location: NTS Map 83 C/8 UTM Easting 540 100

UTM Northing 5 809 910

Geological map: Geological map: NORDEGG, G.S.C. MAP 55-34

Scale used to define location: 1:50000

Location description: see map, Bighorn Basin

Access by: Sunkay trail and old coal exploration trail

Type of exposure: outcrop

Type of sample: selected

Remarks: The sample is of the bottom part of the conglomerate layer, which overlies a 2.4 m thick sandstone unit.

Description: Conglomerate, mottled black and grey, partly reddish weathering, cherty (black and light pebbles, 50/50). The rock is matrix to grain supported poorly sorted with subrounded and rounded pebbles, up to 25 mm in size. The kaolinitic content of the coarse sandstone matrix ranges from slight to rich.

Minisample retained

SAMPLE No: 17-40-17-2 **HOADLEY CONGLOMERATE**

Age: Cretaceous

Type: sedimentary

Collected by: Y.H., 1993

Gold assay : <5 ppb Fire assay by Loring Laboratories Ltd.

Location: NTS Map 83 C/8 UTM Easting 540 100

UTM Northing 5 809 910

Geological map: Geological map: NORDEGG, G.S.C. MAP 55-34

Scale used to define location: 1:50000

Location description: see map, Bighorn Basin

Access by: Sunkay trail and old coal exploration trail

Type of exposure: outcrop

Type of sample: selected from bottom

Remarks: This sample is of the upper, 3.5 m thick, segment of the conglomerate bed at the location of sample 17-40-17-1.

Description: Conglomerate, similar to 17-40-17-1. The rock has abundant kaolin in the matrix. It is partly ochre and partly reddish weathering.

23 37 11

12 37 11

Kcd

16 ppb As

35 36 11-1,2,3,4,5

30 36 10-1,2

9 36 10-1,2,3

34 35 11-1

34 35 11-2

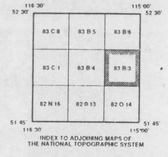
PH

LEGEND

9 35 11	SAMPLE LOCATION & NUMBER
Kbz	BRAZEAU FORMATION
Kbr	BELLY RIVER FORMATION
Kwp	WAPIABI FORMATION
Kgmp	MOUNTAIN PARK MEMBER
Kgl	GLADSTONE FORMATION
Kcd	CADOMIN FORMATION
JKn	NIKANASSIN FORMATION
	THRUST FAULT
	TEAR FAULT
	ANTICLINE
	SYNCLINE

Geology of the Cadomin Formation from J.F. Henderson (1943): G.S.C. Map 840A, Tay River, Alberta.

The topographic base map produced by the Surveys and Mapping Branch, Department of Energy, Mines and Resources.



ALBERTA
WEST OF FIFTH MERIDIAN
Scale 1:50 000

0 1 2 3 4 Miles
0 1 2 3 4 5 6 Kilometres

CANADA/ALBERTA AGREEMENT ON MINERAL DEVELOPMENT

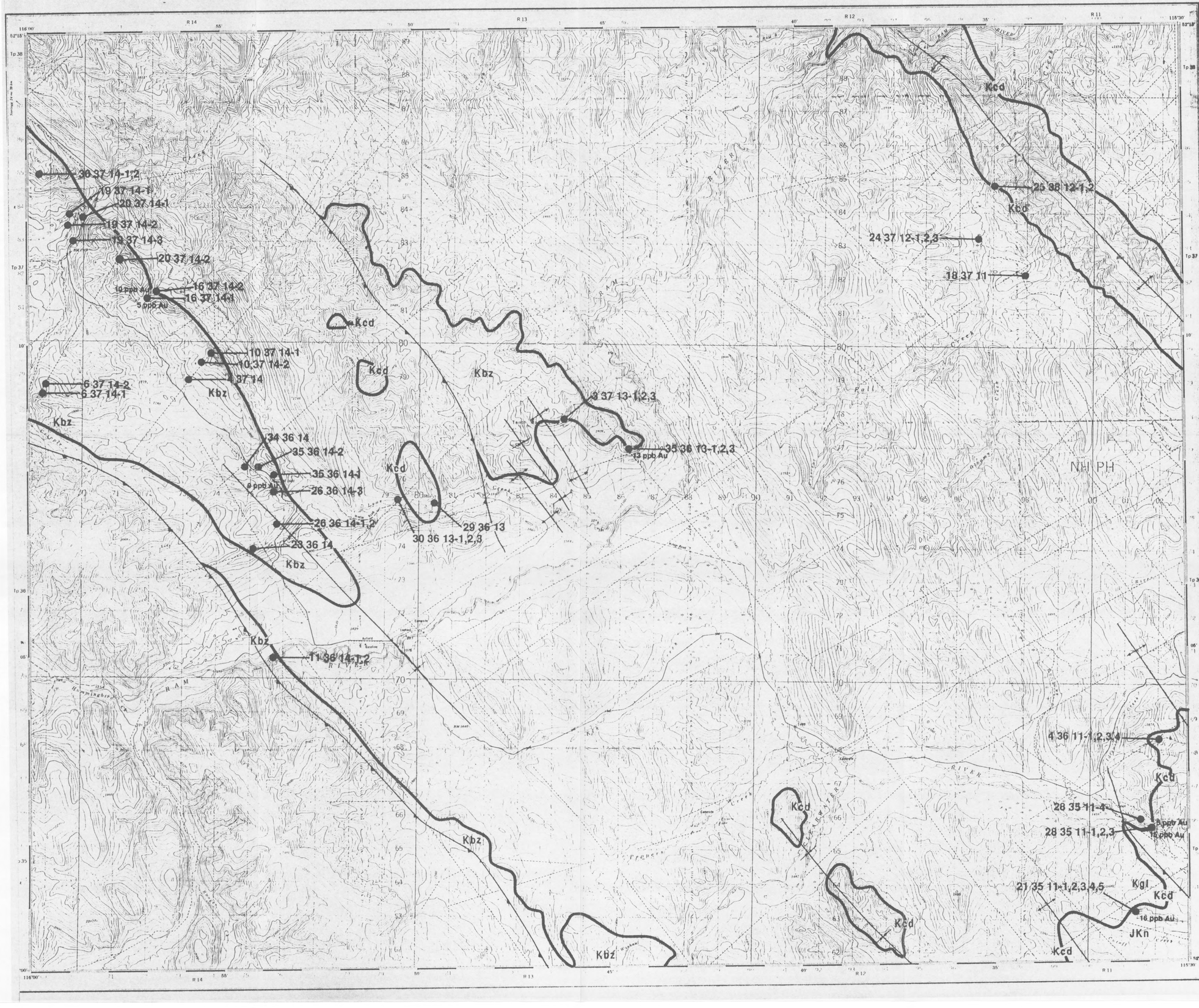
MAP 83 B/3
LOCATIONS OF SAMPLES

TAY RIVER AREA

GEO-ING RESOURCE CONSULTING LTD.

Report: Investigation of Potential Paleoplacers in the Cretaceous strata of the North Saskatchewan River Watershed.

Feb. 1994
Dwn by FIN
Chk'd by

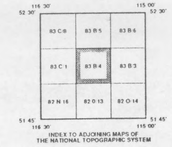


LEGEND

- 9 35 11 — SAMPLE LOCATION & NUMBER
- Kbz — BRAZEAU FORMATION
- Kbr — BELLY RIVER FORMATION
- Kwp — WAPIABI FORMATION
- Kgmp — MOUNTAIN PARK MEMBER
- Kgl — GLADSTONE FORMATION
- Kcd — CADOMIN FORMATION
- JKn — NIKANASSIN FORMATION
- THRUST FAULT
- TEAR FAULT
- ANTICLINE
- SYNCLINE

Geology of the Cadomin and Brazeau Formations from J.F. Henderson (1944): G.S.C., Map 883A, Fall Creek, Alberta.

The topographic base map produced by the Surveys and Mapping Branch, Department of Energy, Mines and Resources.



ALBERTA
WEST OF FIFTH MERIDIAN
Scale 1:50 000

0 1 2 3 4 Miles
0 1 2 3 4 5 6 Kilometres

CANADA/ALBERTA AGREEMENT ON MINERAL DEVELOPMENT

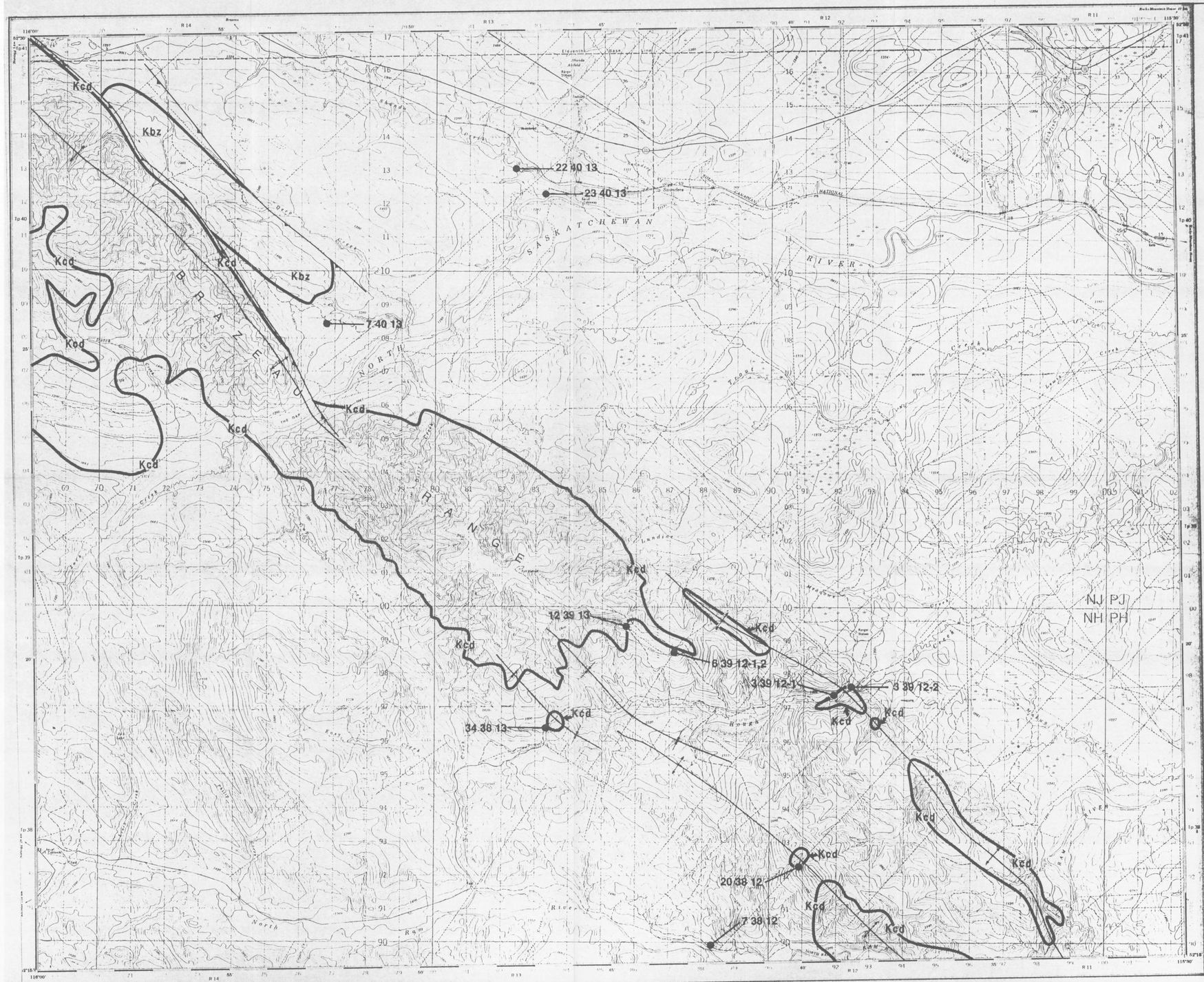
MAP 83 B/4
LOCATIONS OF SAMPLES

ELK CREEK AREA

GEO-ING RESOURCE CONSULTING LTD.

Report: Investigation of Potential Paleoplacers in the Cretaceous strata of the North Saskatchewan River Watershed.

Feb. 1994
Dwn by RN
Chk'd by

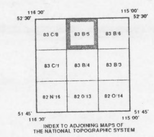


LEGEND

- 9 35 11 — SAMPLE LOCATION & NUMBER
- Kbz — BRAZEAU FORMATION
- Kbr — BELLY RIVER FORMATION
- Kwp — WAPIABI FORMATION
- Kgmp — MOUNTAIN PARK MEMBER
- Kgl — GLADSTONE FORMATION
- Kcd — CADOMIN FORMATION
- JKn — NIKANASSIN FORMATION
- THRUST FAULT
- TEAR FAULT
- ANTICLINE
- SYNCLINE

Geology of the Cadomin and Brazeau Formations from
1. G.P. Crombie (1943), O.A. Erdman (1944): G.S.C. Preliminary Map 45-23, Alexo, Alberta
2. O.A. Erdman (1944): G.S.C. Map 885A, Saunders, Alberta.

The topographic base map produced by the Surveys and Mapping Branch, Department of Energy, Mines and Resources.



INDEX TO ADJOINING MAPS OF THE NATIONAL TOPOGRAPHIC SYSTEM

ALBERTA
WEST OF FIFTH MERIDIAN
Scale 1:50 000

0 1 2 3 4 Miles
0 1 2 3 4 5 6 Kilometres

CANADA/ALBERTA AGREEMENT ON MINERAL DEVELOPMENT

MAP 83 B/5
LOCATIONS OF SAMPLES

SAUNDERS AREA

GEO-ING RESOURCE CONSULTING LTD.
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Feb. 1994
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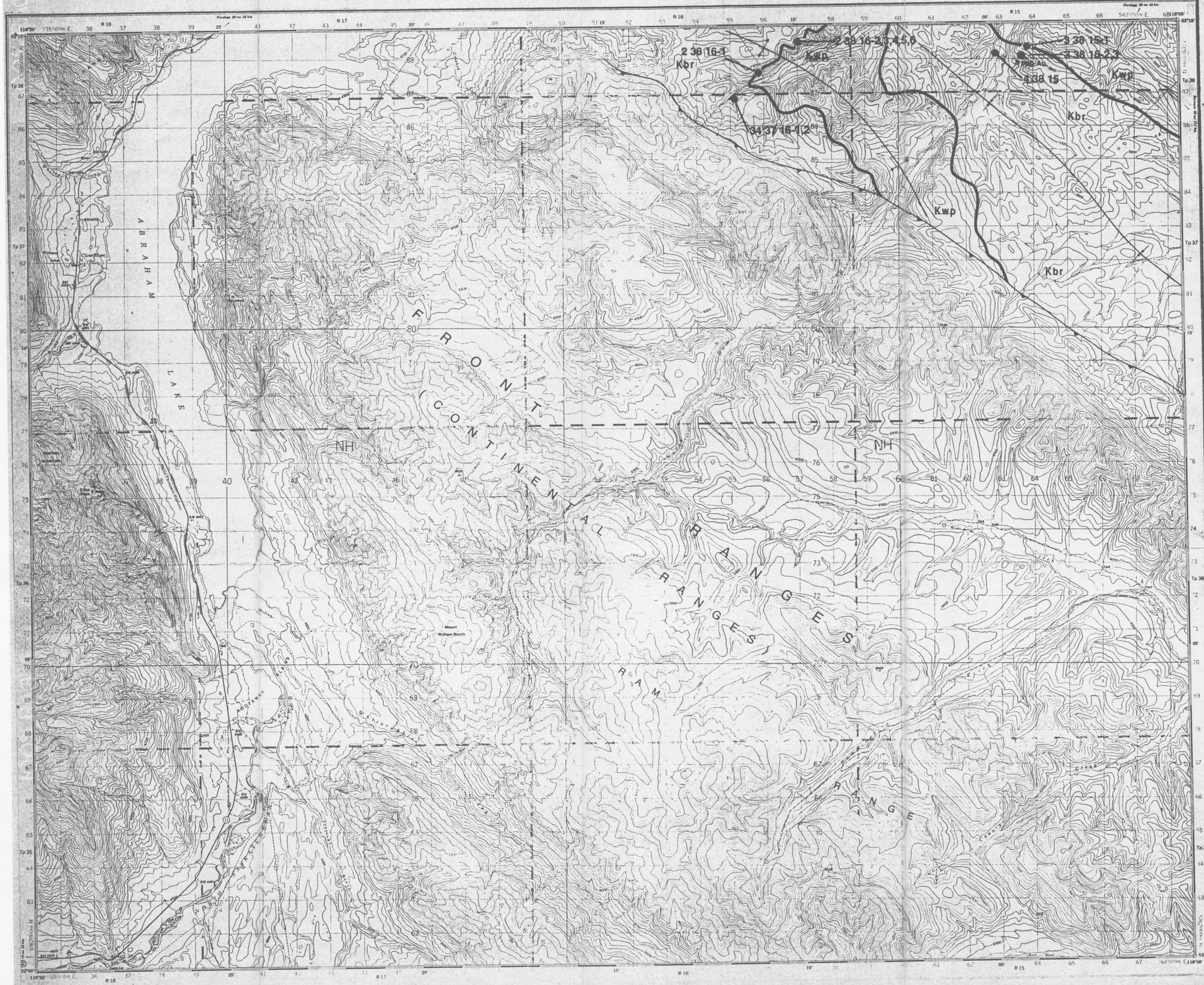

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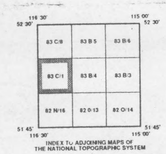
Geology of the Belly River Formation from E.W. Mountjoy and R.A. Price (1974). Geology of the Whiterabbit Creek Area, Alberta, G.S.C. Map 1388A.

The topographic base map produced by the Surveys and Mapping Branch, Department of Energy, Mines and Resources.



ALBERTA
WEST OF FIFTH MERIDIAN
Scale 1:50 000

0 1 2 3 4 Miles
0 1 2 3 4 5 6 Kilometres

CANADA/ALBERTA AGREEMENT ON MINERAL DEVELOPMENT

MAP 83 C/1
LOCATIONS OF SAMPLES

WHITERABBIT CREEK AREA

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LEGEND

- 9 35 11 — SAMPLE LOCATION & NUMBER
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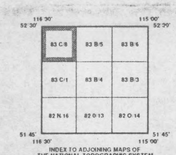
- JKn — NIKANASSIN FORMATION
- THRUST FAULT
- TEAR FAULT
- ANTICLINE
- SYNCLINE

Geology of the Cadomin and Brazeau Formations from B.R. MacKay (1940) and R.J.W. Douglas (1955). Geology of the Nordegg Area, Alberta, G.S.C., Preliminary Map 55-34.

The topographic base map produced by the Surveys and Mapping Branch, Department of Energy, Mines and Resources.



INDEX TO ADJOINING MAPS OF THE NATIONAL TOPOGRAPHIC SYSTEM

ALBERTA
WEST OF FIFTH MERIDIAN
Scale 1:50 000

0 1 2 3 4 Miles
0 1 2 3 4 5 6 Kilometres

CANADA/ALBERTA AGREEMENT ON MINERAL DEVELOPMENT

MAP 83 C/8
LOCATIONS OF SAMPLES

NORDEGG AREA

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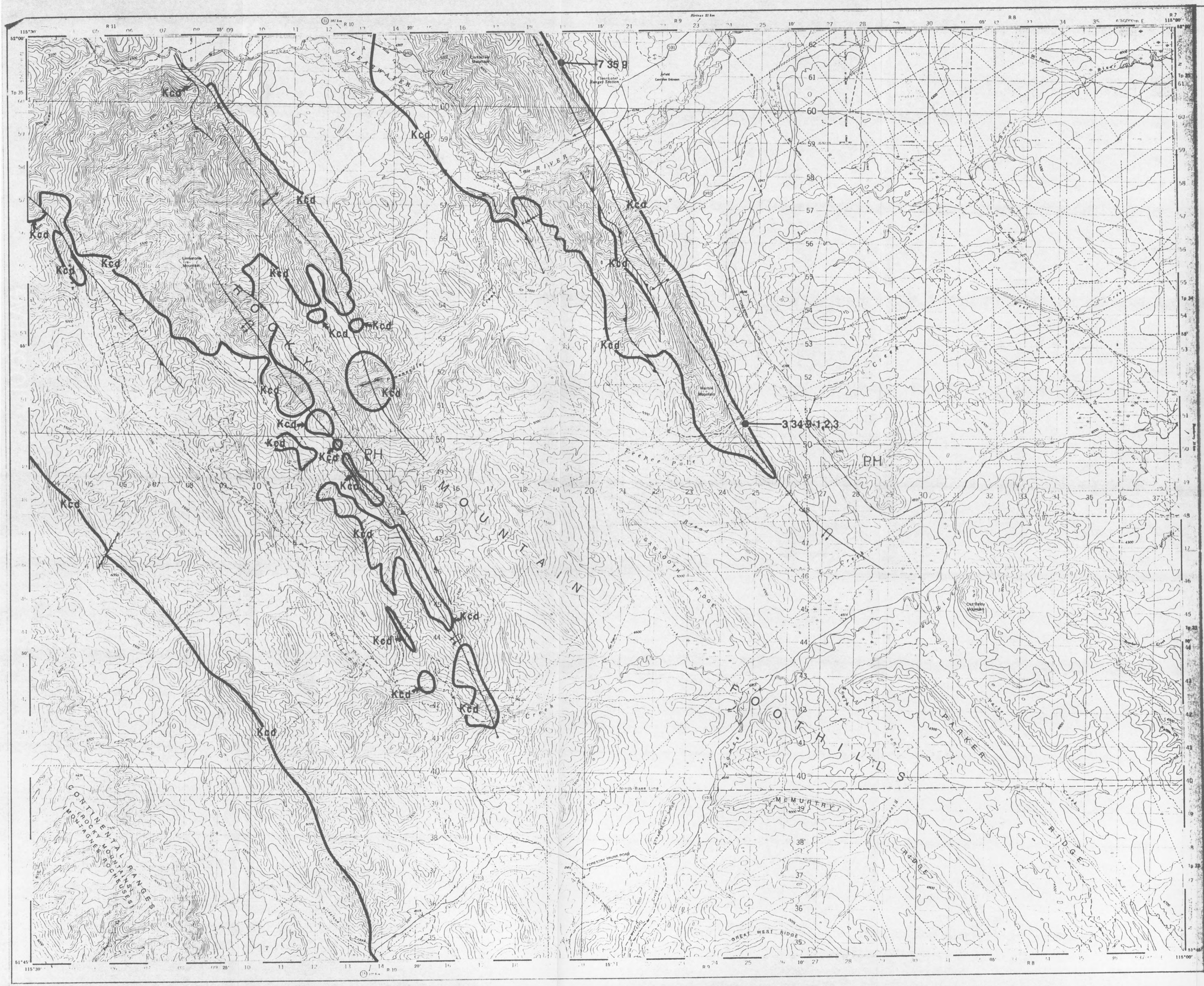

LEGEND

● 9 35 11	SAMPLE LOCATION & NUMBER
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Kbr	BELLY RIVER FORMATION
Kwp	WAPIABI FORMATION
Kgmp	MOUNTAIN PARK MEMBER
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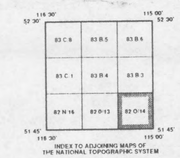
Kcd	CADOMIN FORMATION
JKn	NIKANASSIN FORMATION
	THRUST FAULT
	TEAR FAULT
	ANTICLINE
	SYNCLINE

Geology of the Cadomin Formation from N.C. Ollerenshaw (1968): Geology of the Limestone Mountain Map Area, G.S.C., Map 8-1968; and N.C. Ollerenshaw (1970): Geology of the Marble Mountain Map Area, Alberta, G.S.C., Map 7-1969.

The topographic base map produced by the Surveys and Mapping Branch, Department of Energy, Mines and Resources.



ALBERTA
WEST OF FIFTH MERIDIAN
Scale 1:50 000

0 1 2 3 4 Miles
0 1 2 3 4 5 6 Kilometres

CANADA/ALBERTA AGREEMENT ON MINERAL DEVELOPMENT

MAP 82 O/14
LOCATIONS OF SAMPLES

LIMESTONE MOUNTAIN AREA

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Report: Investigation of Potential Paleoplacers in the Cretaceous strata of the North Saskatchewan River Watershed.

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