MAP NO.: 105 E 2	PLACER ASSESSMENT REPORT X PROSPECTUS CONFIDENTIAL X OPEN FILE	DOCUMENT NO: 120129 MINING DISTRICT: Whitehorse TYPE OF WORK: Trenching

REPORT FILED UNDER: E. Kreft

DATE PERFORMED: May 1989 — **DATE FILED:** April 1990

LOCATION: **LAT.:** 61° 03'N — **AREA:** Laurier Creek

LONG.: 135° 45'W — **VALUE $:** 5000.00

CLAIM NAME & NO.: PL 7928

WORK DONE BY: J. Dickie

WORK DONE FOR: E. Kreft

DATE TO GOOD STANDING:

REMARKS: A trenching program was centred on previous targets outlined by 1988 geochemistry. Anomalous gold was detected within the tributary on the northeast upper end of the lease.

indexed geoscan Dec 19/90

LAURIER CREEK
5-MILE PROSPECTING LEASE 7928

WHITEHORSE MINING DISTRICT 105-E-2

ASSESSMENT REPORT

March 20, 1990

This report has been examined by the Geological Evaluation Unit under Section 41 Yukon Placer Mining Act and is recommended as allowable representation work in the amount of $ 5000.00.

WLeBarge.

for Chief Geologist, Exploration and Geological Services Division, Northern Affairs Program for Commissioner of Yukon Territory.

Contents

Declaration

1. I declare that I am a professional geologist and that I hold no personal interest in Laurier Creek placer lease #7928.

2. The assessment work documented within this report is, to the best of my knowledge, accurate as presented.

Consulting Geologist : John Dickie

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Date: March 20/90

Introduction

Laurier Creek 5-mile Placer Lease (#7928) was staked in 1988 for the purpose of determining the occurrence and economic potential of placer gold within stream sediments of Laurier Creek, Yukon. Preliminary assessment work was completed on the property throughout 1988. This entailed (1) the establishment of a reference baseline for detailed geochemical work, (2) the preliminary mapping of bedrock exposed in and along the creek bed, (3) detailed sedimentologic assessment of the glacial alluvium present within and immediately bordering the creek bed within the confines of the lease boundaries, and (4) the identification of along-stream geochemical trends in stream silt samples.

The property was held in good standing for additional work to be conducted in 1989. Several sites along the creek were targeted for additional work, based primarily on (locally) anomalous geochemical signatures. Assessment work was continued in 1989 to establish the nature and origin of locally high gold values and to determine if surficial gold values could be linked to greater concentrations at depth. The principal aim for 1989 was to reach bedrock with a series of trenches. Heavy equipment was moved onto the property in the early spring of 1989 in order to facilitate trenching. Trench sites were selected on the basis of a combination of multi-element geochemical anomalies (silt), locality with respect to bedrock and estimated depth to bedrock, and drift sedimentology. Trenches served to more adequately assess the mode of placer gold occurrences at depth. Sediment from trenches was panned in the traditional manner as a preliminary approach to

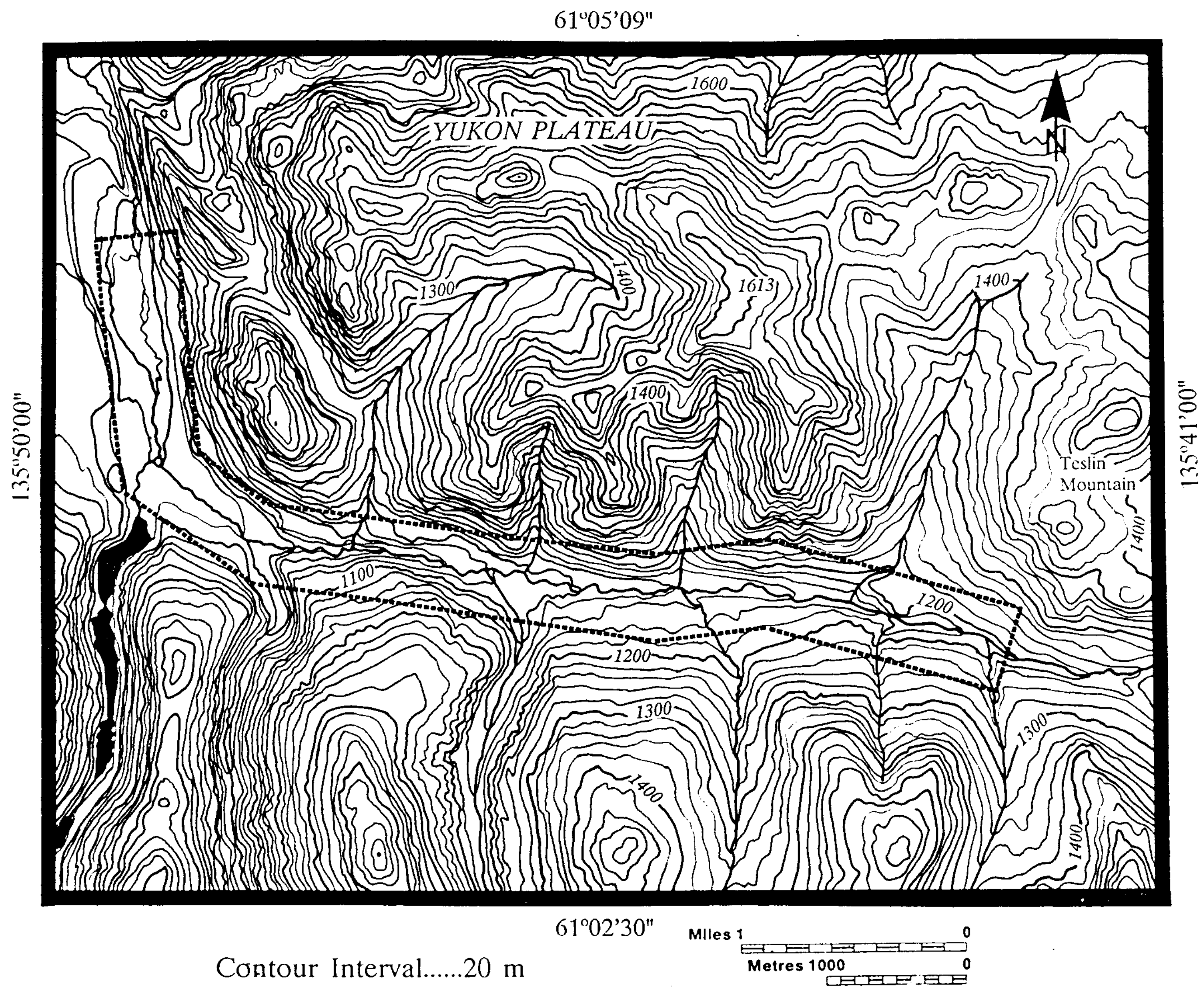

Figure 1. Location map of Laurier Creek drainage basin. Lease boundaries are shown (dashed line) as well as Teslin Mountain and minor lakes to the southwest.

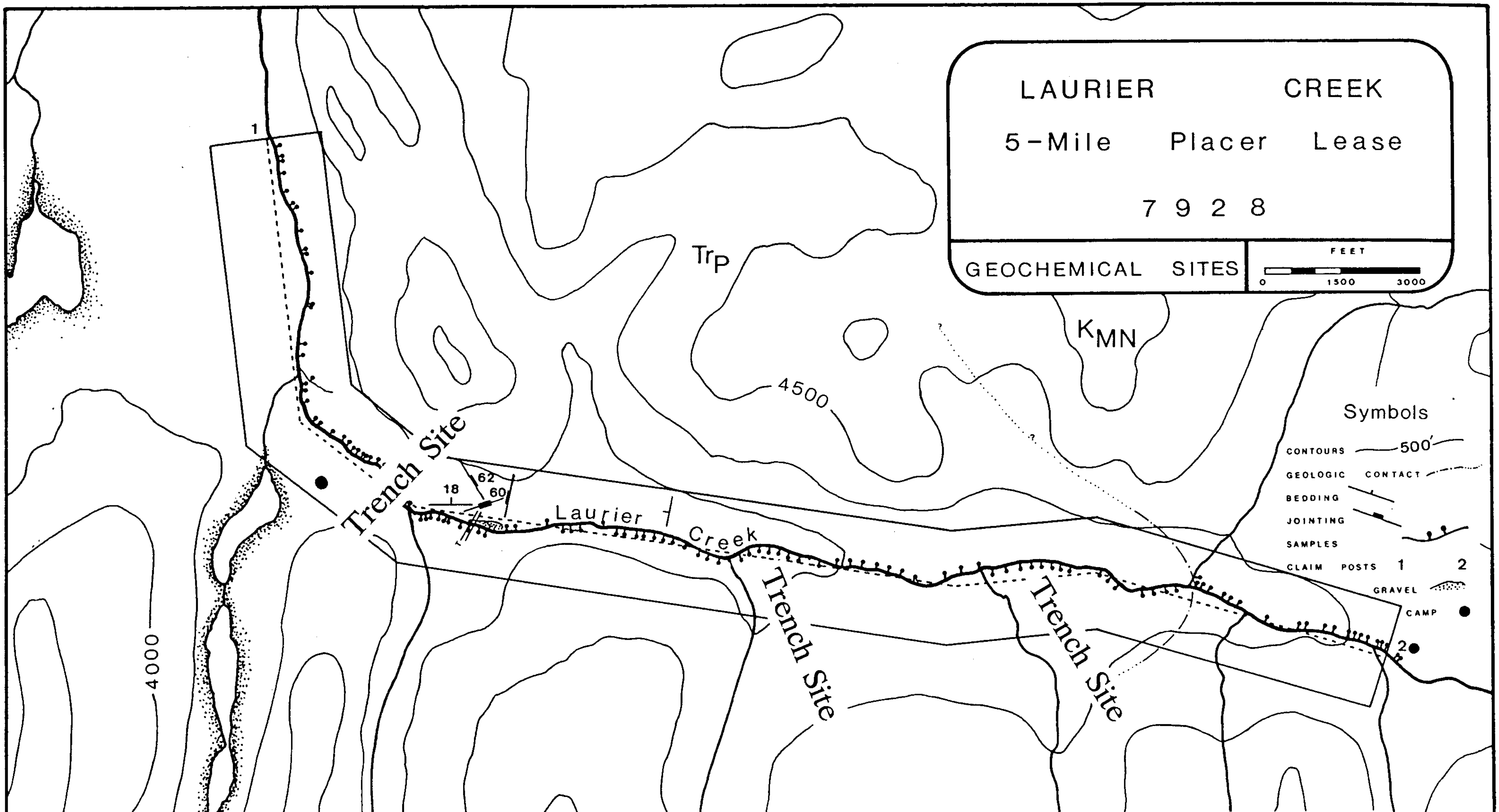

Figure 2. Map of geochemical sampling sites from 1988 survey. Claim posts, camp site and landing area are depicted.

assessing gold content. Larger volumes of gravel were sluiced in order to identify and separate placer gold from stream gravel.

Location and Access

Laurier Creek is situated in Teslin Mountain map-area (Map sheet 105-E-2), approximately 1.5 miles due northeast of Mount Laurier (Fig. 1). The creek originates at Teslin Mountain and drains northwestward through a gently sloping to steep-walled drainage basin. In general, the creek valley broadens downslope until it reaches its confluence with Lake Laberge. The average creek gradient along the length of the leased area (i.e. 5 miles) is approximately 0.029 ft/ ft.

Laurier Creek 5-mile placer lease begins at Claim Post 1 (NTS 094715), roughly 15 miles upstream from the creek outlet on Lake Laberge. The claim extends for 5 miles upstream to Claim Post 2 (NTS 167685). The property extends to a maximum of 1000' on each side of the baseline, beyond which no work may be conducted.

The Laurier Creek placer gold property may be reached by float plane from Schwatka Lake, Whitehorse. Docking facilities were constructed at the eastern end of Thomas Lake, from which the placer camp could be reached by foot along a short trail. The northernmost member of a chain of small lakes to the west was subsequently found to be better suited to the purpose of servicing the base camp (Figure 2). The original base camp, constructed in 1988, was replaced by a semi-permanent facility in the early spring of 1989 in order to more adequately support work on the property. Assessment work was conducted during the 1989 season by Erwin Kreft (lease-holder), Bernie Kreft and a caterpillar tractor operator. In addition to an improved camp facility, several items of heavy equipment were purchased by Mr. Kreft and brought to the property in the early spring of 1989. A D-7 caterpillar tractor was the principal piece of heavy equipment used in 1989.

Geochemistry Summary and Initial Recommendations

Geochemical reconnaissance was undertaken in 1988 for the purpose of identifying anomalous elemental concentrations in stream silt along the length of Laurier Creek. A total of 120 samples from discrete locations along the creek were assayed for Au, plus a suite of 12 other elements (Ag; As; Be; Co; Cu; Mo; Ni; Pb; Sb; Sn; W; Cr). The results of this geochemical work are summarized in Figure 3. In order to identify possible relationships between elemental occurrences, a Pearson correlation matrix was constructed (Fig. 4). While no relationship exhibited a p-value of .10 or less which denotes a high statistical probability for non-randomness, several relationships were judged as distinctive, with marginal statistical evidence for a non-random relationship. There is a fairly strong relationship between Au and Cr. Both Au and Cr may be related by an association with Fe in sulphide deposits. No ultramafic sources for Cr (as $FeCr_2O_4$) were observed in the Laurier Creek basin. The strongest relationship was a tripartite association of Ni--Co--Cu.

This relationship is clearly differentiated by correlation diagrams (Figs. 5-7) and in the Pearson correlation coefficients. Ni is primarily siderophile (chalcophile to a

Element	Minimum	Maximum	Mean	Standard Deviation
Ag	0.300	4.500	0.864	0.401
As	1.000	43.000	11.217	6.326
Be	0.500	2.700	0.856	0.225
Co	12.000	33.000	19.558	5.051
Cu	1.000	53.000	14.850	9.753
Mo	2.000	11.000	4.942	2.832
Ni	1.000	38.000	22.750	5.150
Pb	6.000	20.000	14.292	2.690
Sb	1.000	13.000	1.575	1.376
Sn	1.000	4.000	1.942	0.612
W	1.000	7.000	2.100	0.911
Au	5.000	860.000	19.167	87.234
Cr	41.000	383.000	64.475	31.768

N=120 samples

Figure 3. Statistical summary of geochemical data from 1988.

Pearson Correlation Matrix
Number of Observations = 120

	Ag	As	Be	Co	Cu	Mo
Ag	1.000					
As	0.475	1.000				
Be	-.104	0.135	1.000			
Co	-.305	-.102	0.250	1.000		
Cu	-.225	-.127	0.039	**0.796**	1.000	
Mo	-.230	0.065	-.158	0.535	0.378	1.000
Ni	-.301	-.265	-.143	**0.810**	**0.853**	0.438
Pb	-.011	0.086	-.028	0.449	0.390	0.228
Sb	0.521	0.357	0.216	0.239	0.221	0.319
Sn	0.043	-.016	0.121	0.296	0.205	-.206
W	0.429	0.233	0.026	-.427	-.492	-.444
Au	-.076	0.353	0.656	0.007	-.140	0.093
Cr	-.226	0.261	**0.733**	0.301	0.017	0.375

Ni	Pb	Sb	Sn	W	Au	Cr
1.000						
0.429	1.000					
0.032	0.043	1.000				
0.283	0.179	-.139	1.000			
-.421	0.043	0.021	-.110	1.000		
-.336	-.140	0.241	-.154	-.130	1.000	
-.150	0.001	0.338	-.130	-.184	**0.815**	1.000

Statistically Significant Correlations:
1. Au-Cr
2. Ni-Co
3. Ni-Cu
4. Cu-Co

*Note Ni-Co-Cu relationship

Figure 4. Pearson Correlation Matrix for geochemical data from Laurier Creek.

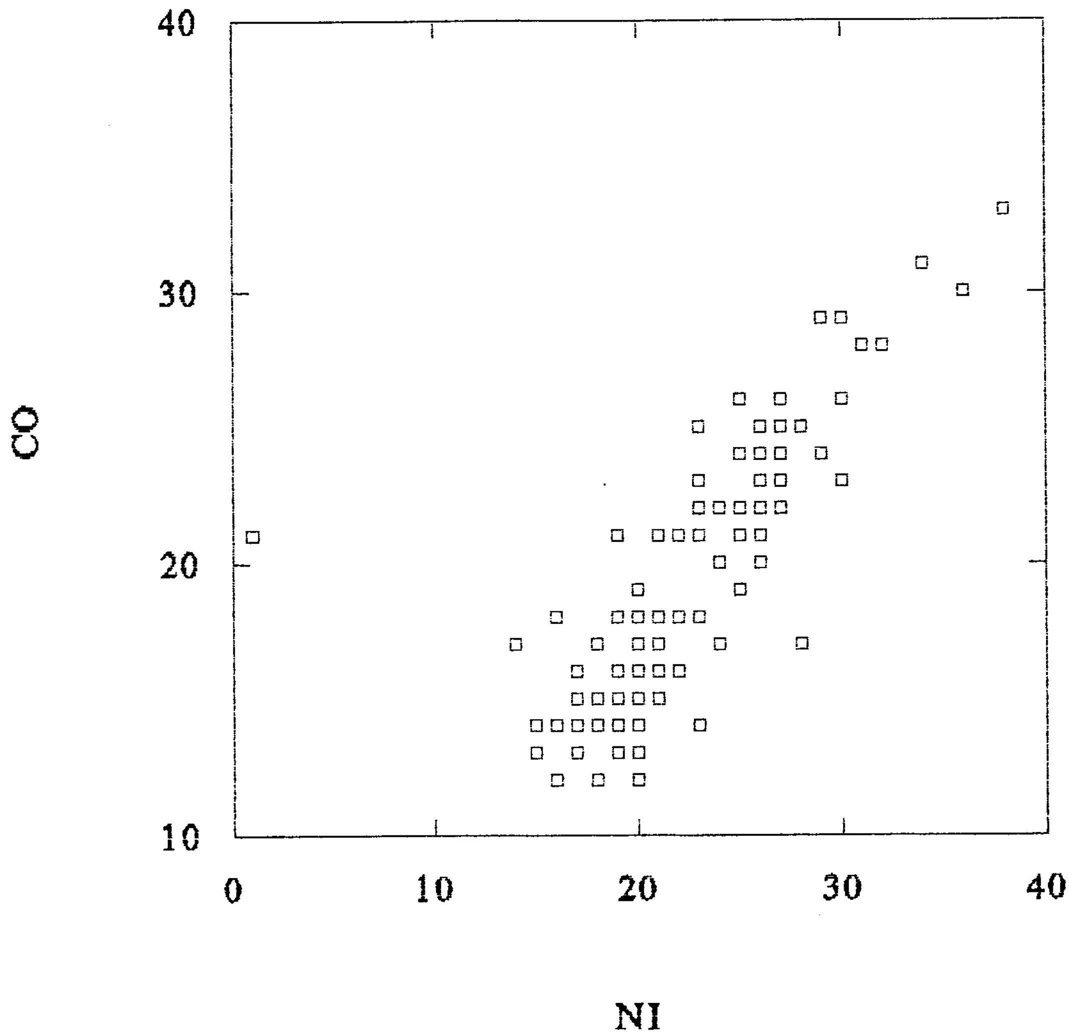

Figure 5. Correlation diagram for Co and Ni.

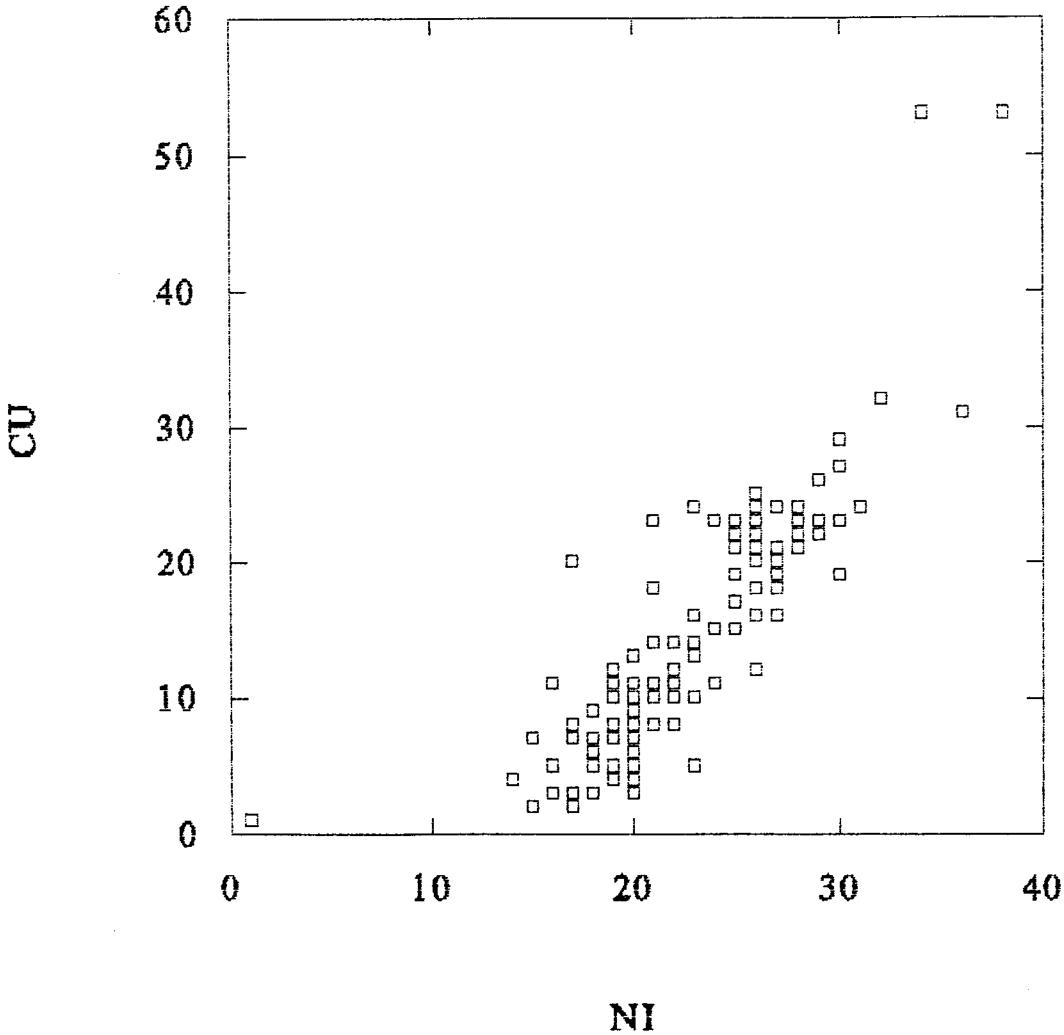

Figure 6. Correlation diagram for Cu and Ni.

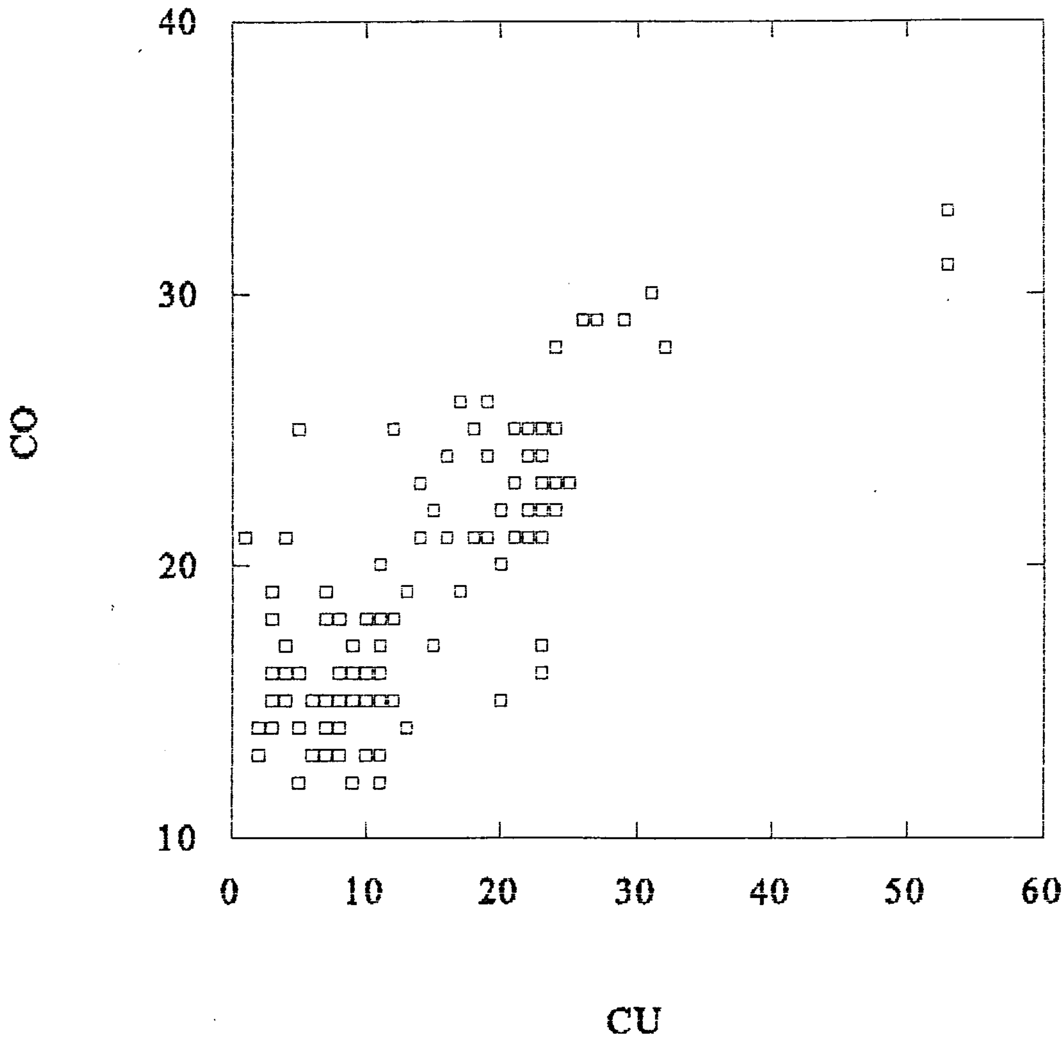

Figure 7. Correlation diagram for Co and Cu.

lesser degree) and proves to be a useful stream survey indicator unless significant outcrops of ultramafic rocks are present. It occurs with Co and Cu (also Pt) when dissociating from a sulphide source. Co is essentially chalcophile, associated with Mg and Ni in mafic and ultramafic sources and tends to be a by-product of sulphide ores. This association suggests pentlandite as a potential source mineral, where $(Fe, Ni)_9S_8$ may contain up to 40.8 weight percent Co. However, no diagnostic mineral assemblage was identified within the bedrock lying within and immediately adjacent to the creek, within the confines of the lease boundaries. Potential sources were not studied extensively during the 1989 season.

Anomalous gold values were observed at several sites along the creek, yet many yielded only background concentrations when duplicate samples were analyzed. An Fe-oxide stain in recharge to the creek at 2800'BL may have been the source of high elemental abundance for up to 1000' in a downstream direction. A parallel trend was observed in several elemental abundance plots (vs. upstream distance). A pronounced peak of anomalous values at 9500'BL was followed by a significant decrease immediately upstream, suggesting that this zone merited close examination. A thick succession of boulder conglomerate beds exposed in a steep cut bank bordering the creek at this locality did not prove to be a potential source, based on systematic sampling and assaying results. Element concentration trends indicate a progressive increase upstream from 9500'BL. This, combined with stream Au data fom other sources (i.e. GSC Open File 1960, 1989), appears to indicate a source-proximality trend. Consistently high Au values exist in the tributary draining the northwest flank of Teslin Mountain. Au values show a progressive increase in concentration upstream in the upper reach of Laurier Creek. It is important to note that tributaries leading into Laurier Creek from the northern side of the basin exhibited higher Au assay results (silt) than did the creek proper or tributaries to the south. As values show a similar trend to those for Au in the upper northeast tributary, yet As values are much less indicative of definable trends and did not show even a marginally significant relationship to Au concentrations. Normally, As is derived from arsenopyrite (FeAsS) or complex sulfarsenides of ore metals. However, there is little evidence in the form of geochemical correlation or stream plot relationships to gold values that would indicate a strong Au-Fe relationship. It appears that, in this case, As is a poor discriminator for Au concentrations.

Silt geochemistry defined areas meriting additional work. The most prospective site (9500'BL) was interpreted to have built a thick succession of stream sediment resulting from flow narrowing during constriction of the stream by bedrock. The area immediately downstream experienced flow expansion, resulting in sudden competence loss and rapid deposition. Coarse-grained bedload and heavy particulate matter (i.e. gold) should have been concentrated at this locality.

In summary, geochemistry served to delineate several possible sites of gold accumulation. Both this study and Geological Survey of Canada (GSC Open File Report 1960, 1989) results strongly suggest the source of elemental anomalies is to the northwest of Teslin Mountain. The tributary containing anomalous Au values drains bedrock exposures of the intrusive contact between volcanic rocks (basaltandesites) of the Late Triassic Casca Member (Lewes River Group) and Cretaceous granodiorites of the Coast Plutonic Complex (Tempelman-Kluit, 1985). It is interesting to note that, while existing government reports indicate Cu-Mo showings near Teslin Mountain, Mo concentrations within Laurier Creek silt are not exceptionally high. The best consistent Au concentrations were within the tributary at the upper end of the lease. The confluence of Laurier Creek and this tributary, lying near 22300'BL[1], is within lease boundaries. In addition to assessment work for 1988, the federal government geochemical survey (GSC Open File Report 1960, 1989) suggests that higher Au values are derived from bedrock to the north of the Laurier Creek claim. As such, it is probable that the intrusive contact between Triassic volcanic and sedimentary strata and the Cretaceous pluton (granodiorite) was the source of the observed geochemical trends within Laurier Creek and its tributaries.

[1]Note: All locality references indicate distance along baseline, in feet, of the geochemical sample site from claim post 1.

Bedrock Geology

Lithologic units crop out in a stratigraphic succession consisting of (1) Late Triassic shales, (2) fine-grained andesite flows and (3) granodiorite. Units 1 to 3 are encountered in a progressively upstream direction. In addition, localized pods of hypabyssal plagiogranite porphyry occur with unit (2) andesites, yet the precise relationship between the two is uncertain due to discontinuous outcrop.

Lithologies encountered up to BL2000' were invariably moderately to very steeply dipping, well-indurated strata of the Late Triassic (Carnian?) Povoas Member of the Lewes River Group (Tempelman-Kluit, 1985). These beds consist of non-graded, finely interbedded (1-5 cm), very fine- to fine-grained, variably stratified volcanic greywacke and dark grey, organic-rich silty mudstone.

Andesitic to basaltic, non-welded, submarine tuffs and lapilli tuffs occur as rare 1-2 m thick interbeds within the sandstone-mudstone sequences. Certain tuffs display either quench rims or hydroplastic deformation fabrics along their basal contacts. Tuffs and their epiclastic equivalents contain subhedral to euhedral plagioclase and augite phenocrysts within a finely comminuted groundmass of the same. Rounded limestone pebbles (2-5 cm), likely derived from the Latest Triassic Hancock Member limestone (Lewes River Group), may indicate a post-Norian age for these strata. Locally, monomictic conglomerate of laharic origin (tuffaceous matrix) occurs interbedded with the heterolithic sequences. Well-rounded, aphanitic andesite clasts are in matrix support, and exhibit moderate sphericity and an apprently chaotic fabric. Such beds appear to be more resistant to erosion than associated finer-grained beds, at least locally, creating riffles in the creek bed.

Well-indurated tuffaceous and interbedded sandstone-mudstone sequences display a prominant and pervasive fracture cleavage expressed in three distinct planes of orientation. Microfaults show either no offset or minor reverse-slip offset of 1-2 mm, indicative of a compressional regime. Calcite and rare quartz stringers within Triassic bedrock tend to follow rare zones of minor dilatation along high angle fractures. Veins are thicker and more abundant within Cretaceous andesites lying unconformably above the Triassic shale succession.

Andesite, exposed from BL20140', is predominantly cryptocrystalline, greyish green andesite of the Late Cretaceous Mount Nansen Volcanic Suite (Tempelman-Kluit, 1985). Andesite shows minor alteration to chlorite. Quartz veins trend roughly perpendicular to the trend of Laurier Creek. Pyrite occurs sporadically as larger crystals and heavily oxidized blebs within andesite.

Trench Description and Interpretation

The primary aim for 1989 was to trench to bedrock at selected sites. This was attempted at several localities identified through stream geochemistry. Trench localities are summarized in Appendix A. Equipment brought to the property and used to excavate trenches during the 1989 season is summarized in Appendix B. During the course of trenching, 300 hours of bulldozer operation were accumulated.

Based on initial recommendations for 1988, surficial gravel covering an area of 200'x 80'was stripped to a depth of approximately 1 m. Adjacent to this cleared zone, the creek was displaced to a new trench with dimensions of 180'x5'x25'. This permitted excavation to depth with reduced recharge/flooding by Laurier Creek. A major trench (1) was excavated at 8600'BL. Trench 2 was excavated nearby at roughly 8600'BL in order to provide a steady source of gravel for the sluices. A small trench was excavated at 12500'BL (Trench 3) and possessed the dimensions 18'x25'x3'. Trench 4 was excavated at 16900'BL along an E-W trend with the dimensions 90'x18'x11.5'.

Trench 1: 8600'BL

This trench (Fig. 8) was based on the geochemical assessment work of 1988. The most distinctive features within this excavation were (1) a 3-5 cm pale grey volcanic ash layer and (2) two continuous, rooted peat horizons. The ash horizon as represents the eastern lobe of the White River Ash, the result of a Holocene pyroclastic event in southeastern Alaska. This horizon is a regional isochron, defining a 1230 Ma horizon that tends to possess a sediment cover of roughly 1 m (Downes, 1985). Laurier Creek sediment 1.5 m thick covers this stratum. Both upper and lower peat horizons are 5-7 cm thick and overlie a zone of muddy gravel possessing gently inclined stratification. The trench stratigraphy is as follows: (1) >1 m massive, poorly sorted pebble-cobble gravel in clast support; (2) 3-5 cm thick ash layer; (3) 5 cm muddy, sandy gravel (pebbles 2-5 cm); (4) 15 cm interlaminated brown organic-rich mud and stratified, medium-grained sand; (5) 1 m interbedded, vaguely stratified coarse-grained sand and pebbly gravel; (6) 25 cm inclined-stratified gravel (small pebbles 3-5 cm); (7) 3-7 cm peat; (8) 50 cm matrix-supported cobble-

Figure 8. Volcanic ash layer (arrow) in Trench 1. Note the roots of contemporary vegetation extending well beneath the surface. Also, the presence of allochthonous peat immediately beneath the ash zone indicates a low energy deposystem, likely responsible for the preservation of the ash horizon at this locality. Bulldozer track for scale.

Figure 9. Detail of Figure 8. Note the cross-stratification in medium to coarse-grained sand beneath the ash layer. Paleoflow was "out of the photograph" and follows the identical trend of the contemporary stream channel.

boulder size gravel (unsorted); (9) 30 cm loose boulders.

The sequence exposed in Trench 1 suggests creek gravel was transported as bedload and emplaced progressively by high energy currents. Volcanic ash overlying this facies indicates possible subaerial exposure or a standing body of water, due to the lateral continuity of the horizon. Low energy deposition followed, indicated by the finer gravel and abundance of silt, clay and organic detritus. Totally quiescent conditions ensued, likely the result of abandonment and lateral migration of the creek channel. This phase permitted colonization by small plants (rooted zone). Interlaminated sand and organic mud suggests cyclic flooding of the previously abandoned reach (possibly an abandoned gravel bar top). The overlying zone of interbedded coarse sand and gravel may be a product of bar construction and lateral migration. Since this grades vertically into a distinctly stratified gravel facies (low-angle), bedform migration related to longitudinal or diagonal bar development during high fluid and high sediment discharge is likely (e.g. Hein and Walker, 1977). A second phase of abandonment is indicated by the overlying, rooted peat horizon. The upper zones of very large boulders and cobbles indicate bedload transport of coarse gravel during peak floods.

Sediment removed from Trench 1 was panned extensively. The most colours (flour gold), including a tiny nugget, were recovered from this site. Extreme boulder size (1-2 m) and the resulting damage to the bulldozer prevented the operator from reaching bedrock. This pit was flooded by creek water as operations were shifted to another area with fewer boulders and a higher chance of success inreaching bedrock.

Trench 2: 8600'BL

Trench 2 (Fig. 9) was excavated in order to provide gravel for the sluice. This was continued until the coarse size of the gravel disabled operations by damaging equipment. Based on lithofacies similarity, this trench may be correlated to Trench 1. Stratigraphic similarities suggest that Trench 2 intersects the edge of the bar nearest the paleochannel, since bar stratification exists but there is absolutely no biogenic material present. A lack of scour features or rooted horizons indicates this section was not abandoned at distinct phases of its evolution, unlike the correlatable equivalent succession in Trench 1. Work on this trench was also discontinued due to outsize boulders and damage to equipment. In addition, while the relative abundance of "flour gold" appeared to be higher than in other sites, the large mean particle size of gravel prevented efficient sluicing.

Cleared Zone: 11200'BL-11500'BL

This area (300'x18') was stripped as part of a relocation of the stream bed and an attempt to isolate zones of finer grade gravel. This region served to provide access between the main operational area and the upper reaches of the creek. No reasonable trench sites could be delineated in this area.

Trench 3: 12500'BL

This small trench (18'x25'x3') was excavated as a test pit. Mean particle size was significantly lower at this locality. Panning revealed an apparent lack of fine gold, and flooding combined with abundant clay to make conditions virtually unworkable with heavy equipment. The material within this trench was essentially

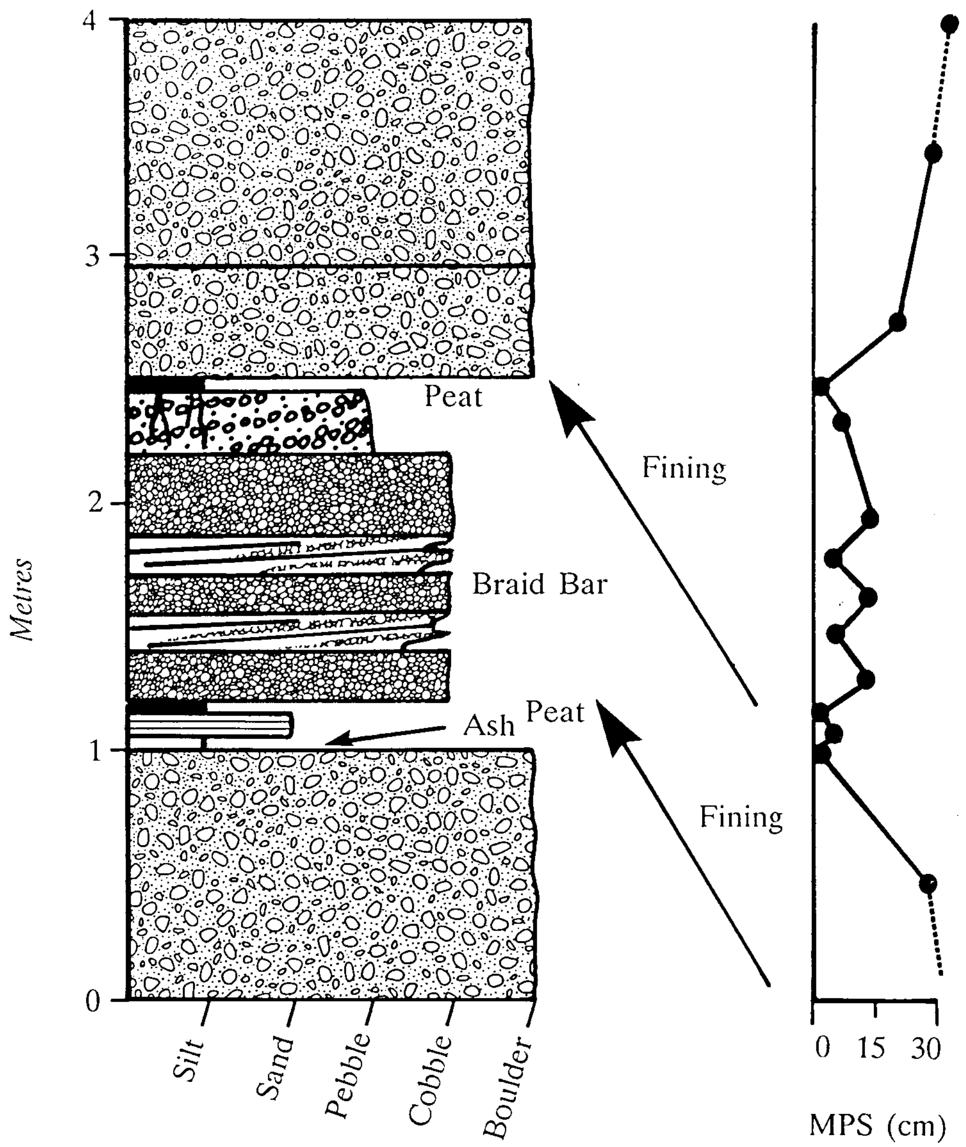

Figure 10. Trench 1 stratigraphy. Note fining-upward cycles defined by maximum particle size plot. Peat horizons mark the top of these cycles, defining braid bar abandonment phases.

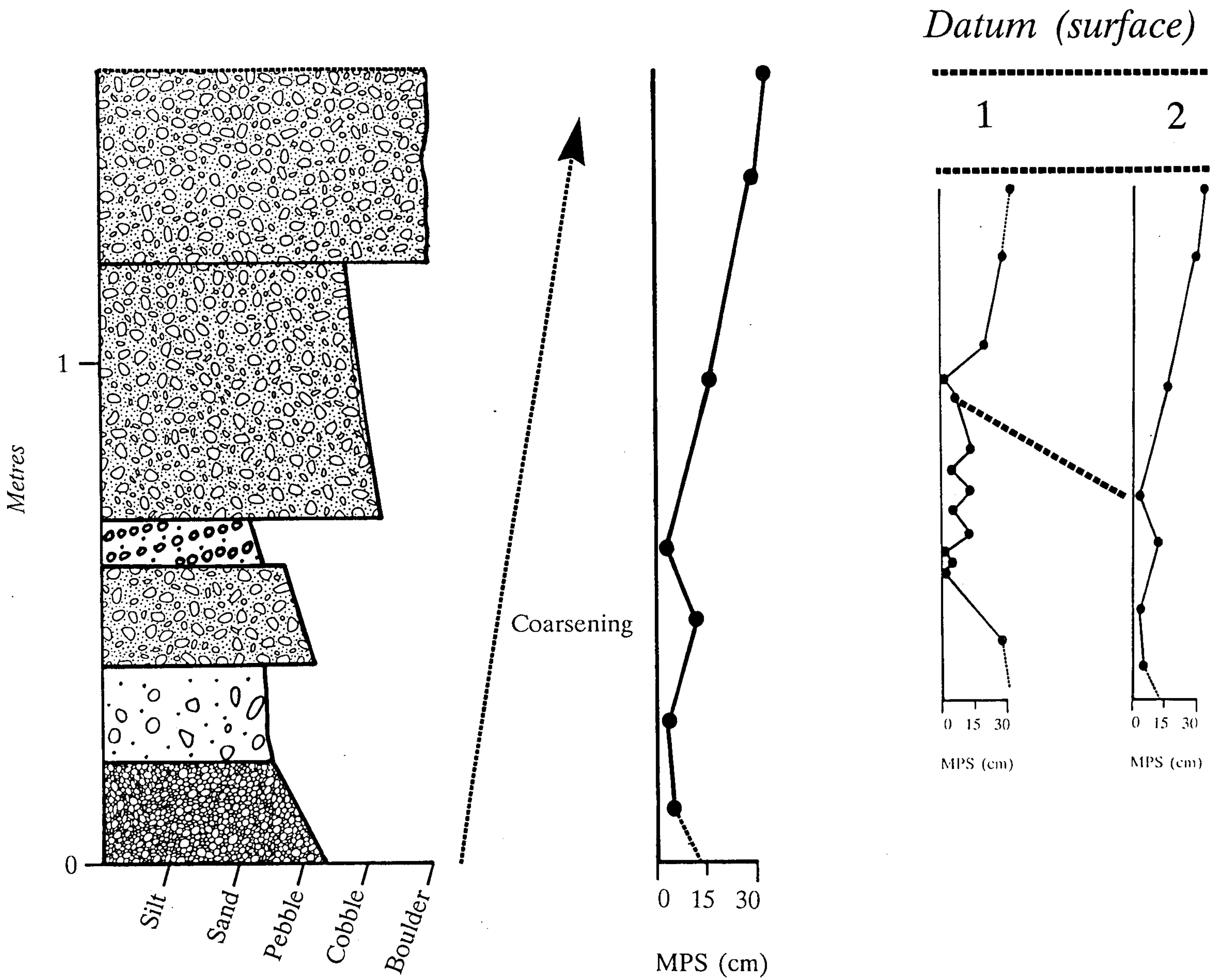

Figure 11. Trench 2 generalized stratigraphy. Broad similarities in lithofacies and spatial association with Trench 1 suggests they may be correlatable (as shown).

homogeneous muddy gravel.

Trench 4: 13400'BL

Trench 4 was selected after a reconnaissance of the creek by the lease holder and consulting geologist in August, 1989. The principal difficulty with earlier trenches was that work tended to be terminated by subsurface flood water from Laurier Creek. Surficial recharge to the creek basin as well as shallow meteoric water above either (1) a clay aquiclude or (2) permafrost horizon appeared to contribute significantly to flooding, raising the potentiometric surface to a significant level above the trench floor. Thus, the creek recharge flow net tended always to intersect any prospective trench at a relatively high level and cause substantial flooding. The topography at this locality permitted trenching across the stream trend such that any drainage toward the creek would be carried along the trench floor and into the creek. This would be assisted by hydraulic pumps in order to keep the trench water level low and permit continued work to bedrock.

An area 200'x100'x14' was excavated[1]. An extensive clay bed was struck at 10' depth, and was uncovered along an area of roughly 50'x15'. Reduced water flow suggested that a shaft might reach bedrock at this locality.

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[1]Trenching at this locality was completed in the autumn of 1989.

Trench 5 Cross-Section

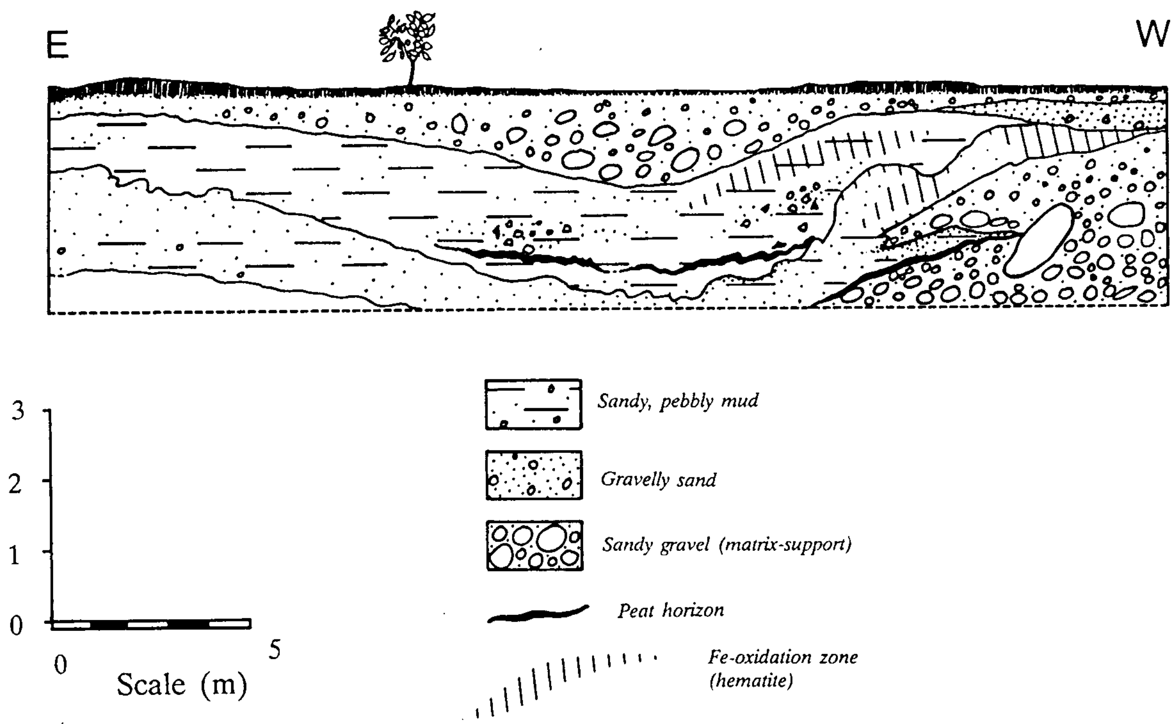

Figure 12 Cross-section of Trench 5. Note lenticular beds.

Figure 13. Trench 4 (13400'BL) with person for scale. Note the abundance of grey clay.

Figure 14. Detail of Trench 4. Melting of exposed permafrost also contributed to additional water in trenches.

Trench 5: 16900'BL

Of all trenches, Trench 5 was excavated at the greatest distance upstream. This pit measured 90'x18'x11.5'and provided a good exposure of several distinctive horizons. Several features were distinctive about lithologic horizons exposed by this trench. First, beds were extremely lenticular. The central bed of sandy, pebbly grey mud pinches out over less than 18' (5.566 m) (i.e. the width of the trench) since it does not appear in the opposing trench wall. Second, heavily oxidized zones (hematite) were observed. These zones yielded exceedingly rare Au grains (silt grade) through panning, suggesting a possible association between mobile Fe and Au. Third, allochthonous peat zones occur within grey sandy clay.

From stratigraphically lowest to highest, beds consist of (1) an extremely coarse-grained, (sand) matrix-supported (rare, local clast-support) cobble-boulder bed; (2) olive green to grey, muddy (locally pebbly) medium-grained sand with an elongate, lenticular peat layer at the western trench margin; (3) a thick, central grey clay (local pockets of angular pebbles) zone with lenticular peat horizons immediately above and parallel to the basal contact; and (4) an upper matrix-supported, pebble-cobble gravel bed. The complex geometry of these layers may have been enhanced by compaction of the central clay zone, particularly where overlain by coarse gravel. A slight curviplanar attitude to the central peat zone may be indicative of compaction. The basal gravel thickens and coarsens in the downstream direction, possibly reflecting a relict, non-stratified gravel bar. A minor peat zone across the eastern end of this bed suggests ponding and accumulation of organic detritus in the lee of the bar. Flocculation and deposition of clay, broken by local incursions of bedload gravel and sand, suggests that flow around the gravel buildup (channel side bar?) was barred, perhaps by a subsequent gravel accumulation across the chute neck. The overlying gravels appear to have been derived from alluvium exposed on higher ground to the southeast.

This trench was rapidly flooded. No additional work was conducted due to the fact that the bulldozer began to sink into the soft clay zone. Panning revealed no appreciable fine-grained Au.

Discussion

A significant volume of gravel was moved during the 1989 season in order to reach bedrock. The extreme coarse particle size and (apparent) depth to bedrock prevented this objective from being met at 9500'BL, which was the site recommended for trenching in 1988. Extreme boulder size and (relative) abundance of "flour" gold beyond 9500'BL indicates that exceptional floods carried this bedload downstream. Narrowing of the creek between bedrock exposed at this location increased flow competence; however, the immediate widening of the valley downstream (flow expansion) led to rapid deposition. Bedding and one bedding-parallel joint plane are oriented roughly perpendicular to the trend of Laurier Creek. This suggests that "natural riffles" in bedrock may have separated auriferous gravels. It was not possible to test this hypothesis.

Peat horizons and extreme bed lenticularity indicates bar development, migration and subsequent abandonment, such that paleochannels may not be readily identified at depth by surficial sediments. Extremely thick deposits compound the matter, since trenching in such coarse gravel means (1) equipment tends to be broken frequently and (2) deep trenches place any potential paystreak well below the present creek level. This introduces critical engineering problems involving trench stability and overall flood control.

High Au values in streams draining into Laurier Creek from the northwest may merit additional investigation, particularly where tributaries lie within lease boundaries. Wheeler (1961) noted that most glacial scour features defined a NW-SE trend. This may have minimalized the removal of pre-glacial gravels by the last ice advance. Should these be auriferous, resulting from erosion of Au-bearing rocks (quartz veins?) related to intrusion of the Cretaceous pluton (?), the logical exploration site would be along these tributaries, particularly where the highest, consistent Au concentrations occur.

Recommendations

1. Au concentrations tend to be extremely irregular along the trend of the placer lease. Duplicate assays of anomalous samples tend to reveal only background values, suggesting that Au exists in fine, particulate form in surficial sediments and is very unevenly distributed. While this may indicate greater concentrations at depth, it must be possible to reach bedrock to test this. Flooding and trenching difficulties show this to be extremely difficult, due to the necessary position of any potential paystreak (i.e. below creek level) and the coarse boulders throughout the creek valley. While one of the more prospective sites is at 8600'BL, the heavy equipment is insufficient for continued work there. Due to a lower flood rate, the trench at 13400'BL may be extended to bedrock by means of a multi-tiered trench dug by back-hoe. Proper trench construction is critical, since water-saturated mud may be liquified by vibrations from the tractor engine, causing immediate collapse. Pumps should be capable of controlling flooding.

2. Geochemical trends in stream sediments indicate that the most probable source of anomalous values is related to the intrusive aureole of the Cretaceous granodiorite. More detailed (i.e. 50' interval with duplicate samples for auriferous results) geochemical sampling of the upper reaches of Laurier Creek, within the lease boundaries, should provide a more reasonable indication of the true potential of the upstream region. This should be complimented by bedrock reconnaissance. A critical factor in the Laurier Creek placer property is the absence of foliated

bedrock. Unlike many economic placer deposits, no foliated bedrock was observed. This suggests that there was no mechanical concentration of Au during the shearing process and that any gold found on the property would be primary-magmatic. A more thorough understanding of the true potential of this property must be reached by realizing source potential.

Executive Summary

Investigations into the placer Au potential of Laurier Creek were continued into 1989. Local, anomalous concentrations appear to be related to tributaries entering the creek valley from the northeast. An attempt should be made to reach bedrock in the vicinity of 13400'BL or near 8600'BL. There is no indication that extensive excavation in the higher reaches of the creek basin would yield superior results, therefore it is strongly recommended that an intensive, closely spaced silt survey is conducted in the uppermost reach of Laurier Creek before trenching can be considered. Trenching should continue upstream only if geochemical results show this type of work is merited. It is not possible to fully assess the potential of the Laurier Creek Placer Lease (#7928) without reaching bedrock or conducting additional geochemical work near the potential auriferous source. As such, it is recommended that additional assessment work of this type is warranted for the 1990 season.

Appendix A: Trench Statistics

TRENCH	DIMENSIONS (feet)		GRAVEL VOLUME (ft^3)
1	90x14x18		22 680
2	18x22x5		1 980
3	18x25x3		1 350
4a	100x100x14		140 000
4b	100x40x14		56 000
5	90x18x11.5		18 630
		Subtotal:	240 640 (8927.74 yds^3)
SURFICIAL STRIPPING			
11200'-11500'BL	300x18x1		5 400
8000'BL*	200x180x1		36 000
9100'BL**	180x25x5		22 500
		Subtotal:	63 900 (2370.69 yds^3)
		Total:	11 298.43 yds^3

Appendix B: Equipment Left On Site

QUANTITY	ITEM
1	D7E Bulldozer (make:Caterpillar)
1	Loader - backhoe (make: Allis Chalmers H4)
1	Dumpbox with grizzly and sluice run (16' long x 2' wide)
1	Sluice run (20' long x 2' wide)
3	Water pumps: -one 6 inch diesel with hose -one 4 inch gasoline with hose -one 1.25 inch gasoline with hose
1	200 Amp welding unit, plus cutting torches and tools for equipment maintenance
1	Travel Trailer with cooking facilities
1	Bunkhouse (12' x 8' on skids)
1	Fuel sleigh on skids with 8 drums deisel

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