GEOCHEMICAL REPORT

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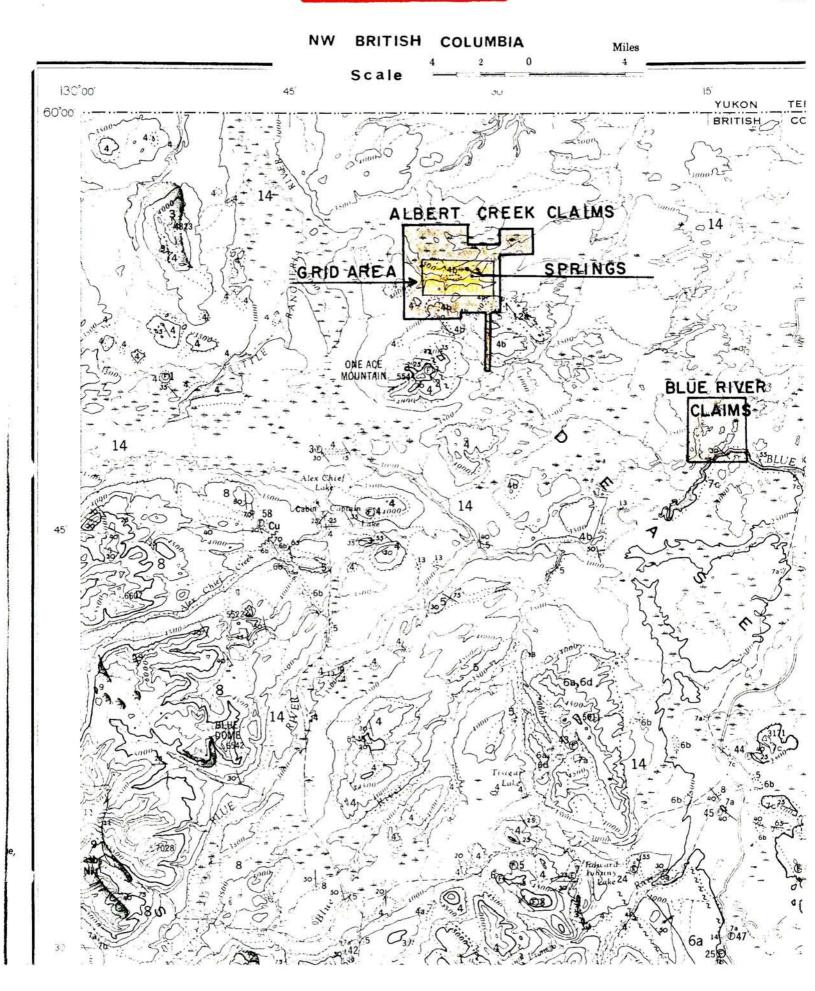
ZAP CLAIMS - ALBERT CREEK AREA

P.N. 079 N.T.S. 104P/13

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I INTRODUCTION

The staking of ZAP claims just south of the B. C. - Yukon border, in an area where the Liard Plain meets the Dease Plateau, was a response to an obnoxiously high silver value (sample #1083, Table #1, in report) in the GSC regional drainage geochemical release of last June.

Traced to an area of silver-rich springs in the main valley of a south branch of Albert Creek, the region of interest was initially investigated with a chain and compass, 2.4 km X 1.5 km soil grid survey by the writer and regional mapping by P. Burns. Later work included grid extensions, regional drainage sampling, and trenching to bedrock a couple of geochemical anomalies. Finally, with help of machinery used for spur road construction into the property, an anomaly in the SW corner of the grid was properly trenched, exposing a two hundred foot wide band of weakly mineralized black argillaceous rock, not seen at surface due to its recessive weathering, in an otherwise predominantly limestone environment.

In addition to the huge silver anomaly in the spring sediments, the soil geochemistry generated either of two types of anomalies: a hydromorphic, multielement anomaly such as that in the main creek valley near the silver-rich springs, or shale-bedrock related anomalies such as that trenched in the SW corner of the grid. Finally, a handful of water samples taken for background readings (Table #2, in report) indicate enriched cadmium in the main stream and elevated zinc values in the spring waters.

While soil samples readily reflect any near surface mineralization and will therefore be used to outline the full extent of the two strong anomalies in the SW and the NE corners

of the grid, as well as to evaluate the rest of the extensively staked ground, hydro-geochemistry likely stands a better chance of detecting mineralization at depth in this glaciated permafrost environment. If the high silver in spring sediments is not simply due to its somewhat greater mobility relative to other elements after their leaching from the near-surface, high-background shales, then the spring waters have travelled at greater depth and distance through 'windows' in the permafrost or along structural conduits and therefore reflect mineralization at depth. An outline of a possible east-west lineament, having its lowest topographic expression in the area of silver-rich springs, can be traced on the air photos, though no evidence for such a feature has been seen thus far on the ground.

It is recommended that samples of stream and spring waters be collected while doing the recce soil lines in order to determine the source of the high silver values in spring sediments and help glean some information concerning mineralization at depth.

II SUMMARY OF WORK DONE IN 1979

A. Initial Evaluation - The ZAP Soil Grid

1. Soil Grid Sampling

Following the initial staking of claims ZAP #1 - #3 in the Albert Creek area in response to the governmental geochemical releases in early June, a crew of four spent ten days in the area in early July to do additional staking and a first-hand evaluation of the acquired ground.

After staking ZAP #4 - #6 claims, Pat Burns carried out reconnaissance geological mapping while the author with two helpers, P. Walker and V. Snucins, laid out and sampled a 2.5 km X 1.5 km chain and compass soil grid which produced some 800 B - horizon samples taken at 50 m. intervals on lines 100 m. apart. Since the results of a handful of stream sediments taken during the initial staking (samples #12111 - 12118) indicated silver-rich spring waters entering the main stream from the south, the soil grid was positioned stradling the main stream, but predominantly on the south side.

Considerations of the type of mineralization to be expected led to selection of Ag, Pb, Zn, and Cd for trace element analysis. The results proved cadmium to be a superior indicator for this area; unfortunately it was not analyzed for by the GSC, making regional comparisons impossible. Mercury was selected to help trace structural features, but as the information-to-cost ratio was low, it was dropped from the follow up sample analyses. It would likely respond more coherently in the A-horizon, but the added cost and scarcity of material didn't justify collecting a second sample at each site.

The results of ZAP grid sampling are presented on maps ZAP #2a -2e as anomaly transparencies to facilitate overlay comparisons. A large scale 1:5000 grid map showing all sample number locations and geochemical values will be overlaid on the topographic contour map presently being processed from air photographs. This map is not included in this report but will serve as a permanent office record as well as be used for assessment reports and further fieldwork. (Later included here as Map # ZAP 5, G-CHEM., In Pocket.)

As can be seen on the enclosed anomaly maps, all trace elements identified the area of the high silver springs, though with no outcrops and only deep overburden present this hydromorphic anomaly could not be readily evaluated. Instead a couple of bedrock-related multielement anomalies at 2N on line 19W and at 12.50N on Line 3W were trenched to bedrock, the results of which work are presented below.

2. Grid Area Stream Sampling

Stream sediments in the ZAP grid area (samples #21381 - 21397) were sampled concurrently with the soils, though lack of tributaries limits the usefulness of this method.

The results, as presented on Map ZAP #3 (in pocket), showed up a highly silver-rich spring (sample #21387) on the north side of Albert Creek as well as re-confirming the very anomalous nature of the nearby springs on the south side of the main creek. Almost all the drainage samples taken in the grid area carry anomalous cadmium values, showing up the usefulness of this tracer and also the extent of the area of interest.

3. Recce Geology in the ZAP Grid Area

During the grid sample collection stage Pat Burns concentrated on geological recce investigations, as discussed in his comprehensive report. Due to a general lack and uniformly limestone nature of the outcrops in the area, no apparent explanations of the high silver values could be found in terms of the geology. A 'brecciated' limey outcrop sample picked up during the initial staking returned 0.3 ppm barely detectable silver, otherwise no outcrop mineralization was detected. The results of rock geochemistry sampling are presented in P. Burns' report and are not included here.

B. The Follow-up Stage - Albert Creek Area

1. Soil Grid Extensions

Once the results of the initial grid sampling were available, P. Burns organized the return to Albert Creek area while the writer was occupied on the Jennings River map sheet.

Both the NE and the SW corners of the ZAP grid were extended for 500 meters over a dozen lines each, yielding some 300 samples. In addition, the SW corner was extended by the writer later for another four 500 meter lines giving 40 more samples. Mercury was not analyzed for in this followup stage, hence on its anomaly map #2e the results apply only to the original grid.

The results of these extensions are incorporated on the anomaly maps ZAP #2a - #2d. They indicate a strong Zn-Cd anomaly, with supportive Ag, in the center of the NE extension and open to the north. As well, the last two lines of the SW extension indicate a Zn-Cd-Ag anomaly near 5N, open to the west, and possibly related to the one on lines 19&20W at 2N, as they are on the regional strike. As these results arrived late in the season, they remain to be followed up this summer.

2. Trenching and Profile Sampling

With help of blasting powder, two of the best bedrock - related anomalies and one of the silver-rich springs were dug up. Two of these, the spring hole at L-4W, 10.50N and the hole on L-19W, 2N were profile sampled and the results are shown on the grid area drainage Map ZAP #3.

The spring hole reached a depth of eight feet but no bedrock was encountered. While there is a general increase in all elements with depth, neither the soil nor the unoxidized sediments collected at the bottom of the hole contained near the anomalous silver values of the surface sediments near the spring outlet. The sudden increase in all four trace elements near a depth of five feet probably indicates the extent of groundwater fluctuation.

Hole #2 reached permafrost at four feet and argillaceous bedrock at six feet depth. As shown on the map, the best values are found just above the bedrock, though the near surface soil remains quite anomalous. Hole #3 on L-3W at 12.50N is located in a steep hillside just north of the swampy main creek valley. Argillaceous bedrock was encountered at a shallow depth of only a couple of feet. Traces of disseminated pyrite and sphalerite were reported in the shale rocks from both holes #1 and #2, thus explaining the soil anomalies. The rock geochemistry is reported on in full in P. Burns' geological report.

3. Peripheral Stream Sampling

The GSC regional drainage survey identified the vicinity of ZAP claims as somewhat anomalous in zinc values as well as containing a specific silver high. The relevant sample numbers and their values are tabulated in Table #1 to indicate regional background range. Unfortunately, these were not analyzed for cadmium, nor were uranium values in water ever released - though these two would have been the best indicators of the regional distribution of shale horizons in the dominantly limestone terrain.

During this followup stage P. Burns and helpers carried out a peripheral stream sediment sampling coverage, the results of which are shown on the regional drainage map ZAP #1. Though the coverage is incomplete, it benfits from additional analysis for Cd, and indicates that most of the eastward draining streams contain silver enriched sections as well as being anomalous in zinc and cadmium, the last one being the most comprehensive indicator.

A sudden increase in zinc and cadmium values in the tributary and the main stream (#9782 & 83) to the NW of the trenched anomaly H #2 suggests the probable extension of the shale rocks along strike, or a similarly mineralized second band.

TABLE =1
The GSC 1979 Regional Drainage Results for Albert Creek Area

						3							
Sample No.	Źn	Cu	Pb	Ni	Со	Ag	Mn	Fe	Мо	W	U	F(w)	pН
1048	500	34	24	60	6	0.2	215	1.6	25		12	130	8.3
1049	176	4.2	6	41	8	0.8	480	1.6	15	_	3	100	8.3
1050	38	1	2	15	5		565	1.4	_	-	2	100	8.2
1051	46	16	3	15	3		220	1.1	3	_	3	110	8.3
1052	56	24	4	20	4		970	1.45	2		2	60	8.1
1053	62	12	6	17	6		540	2.5	2	-	2	50	8.2
1055	146	10	12	19	5		100	1.2		_	3	90	8.1
1056	66	1.2	13	14	6		255	1.5			2	50	8.0
1057	92	6	7	12	5		225	1.1	2	_	2	90	8.1
1058	100	1.2	8	17	5		240	1.2	2		2	100	8.1
1059	54	8	4	12	4		1150	1.3		_	3	60	7.9
1060	78	14	7	16	4	0.2	130	1.2	2		2	110	8.0
1062	74	14	8	20	6		415	1.8	_		2	90	8.0
1063	54	8	4	16	5		495	1.2	_	_	2	90	8.1
1064/5	60	16	5	19	5	0.2	1100	2.9		_	$\frac{2}{2}$	110	8.0
·	64	22	5	20	6		1200	2.8	-2		$\overline{2}$	100	8.1
1070	40	18	3	15	3		1350	1.5	_	-	2	90	8.1
1072	12	4	15	15	5		235	1.0	_	_ ·	2	100	8.0
1073	30	8	2	10	4		245	0.8	_		2	90	8.2
1074	32	6	2	12	6		140	1.0		-	3	80	8.0
1075	46	12	3	10	3		110	0.9	2	_	3	80	7.8
1076	18	6	2	15	4		255	0.8			2	90	8.2
1077	84	16	7	20	6	_	270	1.4	_		2	100	8.3
1077	114	18	8	20	6	0.2	95	1.2	_	_	3	90	7.9
1079	100	12	6	22	5	0.2	260	1.3	_	_	3	100	8.3
			9	20	5	0.2	275	2.0	2	_	3	100	8.2
1080	160	12	-				285	1.3			7	90	8.2
1083/4	$\frac{134}{29}$	$\frac{6}{4}$	16	16	<u>5</u>	$\frac{10.0}{20.0}$		$\frac{1.3}{1.2}$	<u>3</u>	_	$\frac{3}{2}$	$\frac{30}{100}$	$\frac{3.2}{8.1}$
4005	98		12	16		0.2	180		_	_	3	90	8.2
1085	72	12	4	19	5		325	1.4		_	2	100	8.2
1086	60	8	6	16	6		275	1.3				70	8.2
1087	84	12	9	20	8		715	1.6	_		2		
1088	68	10	3	11	4		720	2.1	_	_	2	70	8.0
.089	70	20	5	22	7	_	130	1.5		-	3	80	8.0
.090	70	10	3	15	6		110	1.7	-	-	3	80	8.3
.091	60	12	8	30	13		220	2.3		_	3	100	8.2
.093	68	20	8	36	15	-	1500	3.7		_	2	120	8.3
.094	52	16	5	28	10	_	340	1.8	-	_	3	120	8.2
.095	52	16	6	30	10	-	345	1.9	_	_	2	110	8.2
.096	60	16	3	22	6	_	195	1.5	_		5	90	8.1
.097	48	14	6	29	9	_	410	2.4		_	3	100	8.4
.098	58	14	4	25	9	_	240	2.1	_	_	2	140	8.3
.099	60	14	7	24	10		470	2.3		-	2	90	8.4
100	48	10	3	32	10		1550	1.9	2	_	2	200	8.2
102	40	6	4	34	9		205	1.8	_		2	90	8.2
.103	60	22	4	25	7	0.2	260	3.8			2	80	7.9
104	20	6	2	8	4		320	.8			2	150	7.9
105)	36	4	1	12	6		1100	2.5			3	200	7.9
.106	54	14	3	24	10		230	2.5	_	_	2	140	8.1
.108	54 52	12	4	26	10		245	1.8	•	-	2	150	8.1
.109	56	12	4	27	10	_	220	1.8		_	2	140	8.3
109	30	12	4	21	10	_	220	1.0			4	140	0.3

4. Blue River Claims

A block of four claims totaling 64 units was staked by P. Burns over an area of a couple of anomalously high GSC sediment samples (see Table #1 and Map ZAP #4) just north of the Blue River, as outlined on map ZAP #1. The same results attracted the attention of a BCDM geologist who made a traverse and collected further samples in the area. His recce geology map and notes as well as additional sample locations and results are reproduced here from the current Provincial Report of Activities, and the claim outline superimposed as map ZAP #4. P. Burns is presenting the results of his recce work over these claims in his geological report.

5. Recce Soil Lines - Grid #2

While remaining in the area to oversee the construction of a road extension into the Albert Creek area late in the season P. Burns did a little more recce type of work on the property as well as staking more claims. With K. Christensen's help he collected some 100 soil samples WNW of the ZAP grid at intervals of 100 meters on lines 100 meters apart. This comprises the 'Grid #2' as shown on the regional map ZAP #1.

In general, elevated Cd values are associated with black shale outcrops; the detailed results for this soil grid are presented by P. Burns in his report.

6. Background Water Samples

The analytical results of a dozen water samples collected by P. Burns late in the season in the Albert Creek area for background purposes, whose locations are shown on map ZAP #1, are presented here as Table #2. The waters were analyzed for Cu, Pb, Zn, Cd and Ag.

The useful results of this exercise can be seen from the distinctly anomalous nature of the main stream waters in cadmium (samples #2 & 3), distinguishing them from all others, including the springs. Second, the 'silver springs' waters are clearly anomalous

BACKGROUND WATER SAMPLES

TABLE 2: Water Sample Analyses , Albert Creek Area

Sample No.	Cu ppb	Pb ppb	Zn ppb	Cd ppb	Ag ppb	Comments
1	44	6	10	65	<1	E end claims, main creek
2	20	6	16	210	<1	Main Ck below springs
3	14	4	12	165	<1	Upstream from springs
4	Bottle	Broker	in	Shipment		
5	38	6	12	55	<1	Small creek
6	22	8	8	30	<1	Small creek
7	26	8	8	40	<1	South of Main Creek
8	68	6	6	50	<1	South of Main Creek
9	24	6	8	40	<1	Ck N. of One Ace
13	36	8	30	70	<1	Spring S side Main Ck
14	48	6	32	55	<1	Spring N side Main Ck

(from BCDM 1980 Report of Activities)

BLUE RIVER GEOCHEMICAL ANOMALIES (104P/14)

By A. Panteleyev

The 1978 Federal/Provincial Uranium Reconnaissance Program (URP) geochemical survey in McDame maparea, NTS 104P (Geological Survey of Canada, Open File Report 562) identified a significant stream sediment molybdenum-silver-zinc-(lead) anomaly near Blue River, approximately 5 kilometres west of Highway 37.

The area is covered extensively by glacial and fluvioglacial debris. Bedrock is exposed only where the Blue River, some of the larger tributary creeks, and a few meltwater channels have deeply incised the cover. Bedrocks are sedimentary rocks that appear to be part of the Cambro-Ordovician Kechika Group. Some Tertiary outliers (Tv on Fig. 26) are seen as flat-lying columnar flows. Kechika rocks form a folded sequence of calcareous shale, black shale, siltstone, and black chert.

In Blue River area drainage patterns are poorly defined and swamps, ponds, and kettle lakes are abundant. Only a few streams have any persistent length or flow. Carbonate-rich rocks in the area give rise to mildly alkaline waters (pH 8.2 to 8.3). Calcareous deposits in seepage areas and marl deposits in ponds and lakes are common.

Eight representative specimens of outcroppings along the traverse route (locations shown as X along the dashed line on Fig. 26) were found to have no extraordinary metal content other than in two specimens with 3.9 and 2.4 ppm silver and one with 104 ppm zinc. Molybdenum content in all hand specimens was determined to be <2 ppm. Therefore, the highly anomalous molybdenum-silver-zinc-lead concentrations in stream sediments appear on the basis of the abundance of black nonorganic sediment to be related to recessive-weathering Kechika black shales.

The following data illustrate the geochemical response of stream sediments derived from Kechika rocks in Blue River and Cassiar areas.

STREAM SEDIMENT GEOCHEMICAL DATA, KECHIKA SOURCE ROCKS McDAME MAP-AREA, NTS 104P (IN PPM)

Sample No.	Ag	Cu	Pb	Zn	Со	Mn	Ni	υ	W	Мо
Blue River are	a, URP 1978	B Survey (GSC Open	File 562),	see Figure	e 26				
781048	0.2*	34	24*	500†	6	215	60	12.2	2	25†
781049	0.8†	42	6	176*	8	480	41	3.0	2	15†
781050	0.1	4	2	38	5	565	15	1.4	2	1
Blue River are	a, 1979 (thi	s report),	see Figure	26		•				
S-114	0.6*	20	4	70	5	2 120*	30	7	<6	1
S-115	< 0.5	8	6	43	7	848	24	2	<6	1
S-116	1.7†	46	10	193*	11	573	58	7	14*	20†
Cassiar map-ai	rea, mean of	13 sample	es (this rep	ort)						
composite	0.5*	3 9	29*	496†	12	337	88	7	<6	6*

^{*&}gt;95 percentile and t>99 percentile values of 802 samples in 104P map area reported by URP.

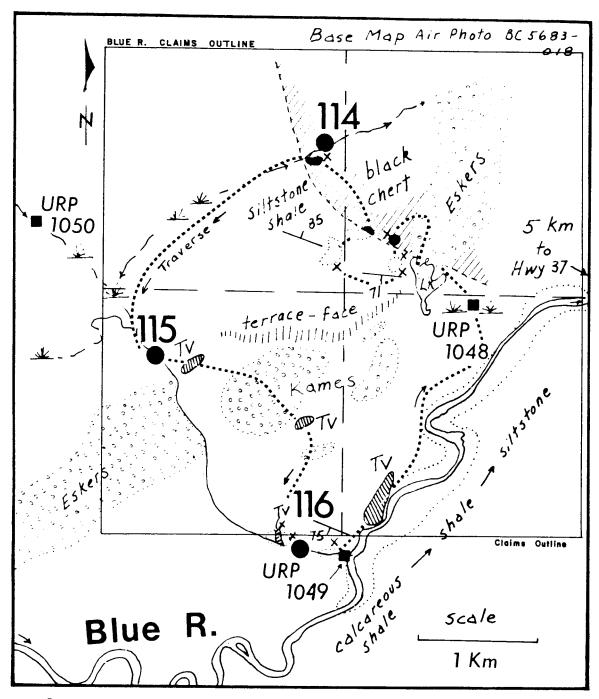


Figure 26 Reconnaissance traverse, Blue River (104P/14), Uranium Reconnaissance Program geochemical anomalies.

(Map from BCDM 1980 Report of Activities)

in zinc (samples #13 & 14) in relation to all others, including the Cd - enriched main stream. Finally, though containing obnoxiously high silver-enriched sediments, the several anomalous springs (one of which, sample #23435, assayed 5.41 oz/ton Ag !) do not contain detectable amounts of silver in water, hence Ag could not be used in a hydrological survey in this area. Conversely, both Zn and Cd in water, and especially the ratio of the two, may offer detecability range and depth beyond that of soil samples, whose values are quickly diluted by distance away from bedrock.

III PLANNED GEOCHEM PROGRAM FOR 1980

A. Grid Extensions

Of immediate interest are extensions of the ZAP soil grid to the NE to completely outline the large Zn-Cd anomaly, and to the West of the grid to determine the extension of the trenched shale horizons. Using the previous spacing of Lines 100 m. apart and 50 m. intervals, this will generate some 200 samples in the NE corner and 100 samples on the west side, as outlined on the regional map ZAP #1. Since these samples will be collected in anomalous environment they will be analyzed for all four elements, Ag, Pb, Zn and Cd; this should adequately define the extent and strength of the presently known anomalies.

Fill-in sampling, or further extensions, will be done in accordance with the results received from this initial work.

B, Recce Soil Lines

Since last season's soil sampling has demonstrated that the weakly mineralized shale rocks, concealed due to their recessive weathering, can readily be detected in the predominantly limestone terrain of Albert Creek area, recce soil sampling will be used this season to solve the problem of evaluating the large expanse of staked real estate while meeting the assessment work requirements.

As the shape of the claims block, consisting of just over 200 units, determines the area to be sampled, it is proposed to collect samples on widely spaced lines 500 m. apart at 100 m. intervals, as shown on Map ZAP #1, totaling some 1300 samples. These should be analyzed for Ag, Cd only, with Zn and Pb added for any resulting followup sampling at greater density.

C. Stream & Spring Water Sampling

The results of background water sampling presented in Table #2 indicate that the silver - rich spring waters, as well as the main stream water in the area of interest, can be distinguished on basis of trace element contents.

Since these spring waters likely travel at greater depth than the stream waters, qualitative comparison could help determine the source of silver in the springs. To this and, any running water encountered while soil sampling the recce lines should be collected in 200 ml. plastic bottles and analyzed for the more abundant tracers, Zn and Cd, and also sulphate and perhaps chloride to show up any excess sulphate derived from oxidizing sulphides.

D. Peripheral Stream Sediment Sampling

Finally, if the high silver spring values are due to economic mineralization at depth rather than leaching of high-background shale rocks, fill in drawnage sampling of all unsampled streams in the vicinity of the greatest regional disturbance, the Once Ace Mtn., may indicate a general trace element zonation pattern. The sampling can be accomplished in one day with four samplers helicoptered into the headwaters to follow one stream each, then all picked up with a single flight.

This combination of soil, water and sediment sampling should adequately explain and confirm the cause of presently known anomalies, or any new ones found, and suggest the likelyhood of locating economic mineralization at depth in so far as that can be achieved using surface geochemical investigations alone.

