Sampling Evaluation of the
Barrington River Placer Claims

861860

GEOLOGICAL REPORT

30 October 1986

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INTRODUCTION

The Barrington River Placer Group now comprises PML 840 and PLs 6945, 8259, 8260 and 9893, plus 4 additional PL applications made in June and October, 1986. Refer to B.C. Placer Titles Map 104G12 (west half). The reader is referred to a Geological Report by the writer dated 20 June, 1986 entitled "Initial Evaluation of the Barrington River Placer Claims", as the present report serves in part to update the former one.

An evaluation program on parts of PML 840 and PL 9893 was carried out from September 21 to October 17, 1986. The 4 person crew comprised John Hope - president of Integrated Resources Ltd., the writer, Tony Bennett - junior geologist, and Gabriela Mendez - junior mining engineer. The crew was frequently assisted by Wayne Eberg - the leaseholder, who was present throughout the program.

Of the 27 day total, approximately 4 days were taken up at the beginning by helicopter transport to the property, establishing camp and reassembling machinery. Three more days were accounted for at the end of the program by storing machinery and closing camp, waiting on weather, and helicopter transport. During the remaining 20 days approximately 2.2 miles of trail were bulldozed and 38 samples were collected and processed. The mapped area was also extended, 0.7 miles of access road route was laid out on the ground in Area "D", and a variety of information was collected about the property.

Of the 2.2 miles of trail and 38 samples, 1.2 mile (56%) of trail and 26 samples (68½%) were from Area "A", 0.5 mile (22%) and 7 samples (18½%) were from Area "B", and 0.5 mile (22%) and 5 samples (13%) were from Area "C". A graphical presentation of the assays appears on Appendix Sheet 1. No additional statistical treatment has been applied because of the small populations of data which are drawn from dissimilar situations.

EQUIPMENT AND PROCEDURES

A Case 350 crawler tractor with a 6-way blade was used to make trails for a 3-wheeled Honda All Terrain Vehicle. The Honda towed a small hydraulic backhoe ("Cricket", manufactured by Ayer's Cliff Industries Inc.) to sample sites and transported samples for concentration in drums carried in a 2-wheeled trailer. Sample material was collected in most cases at a depth of about 6 feet below the surface with only minus approximately 5 inches diameter material being retained. A Denver Gold Saver, which has a trommel mounted above a vibrating sluice was run over a 25 inch long stationary sluice and the recovered gold values were distributed on a weighted basis among the processed samples. The concentrates were seived, panned and amalgamated before weighing the gold on a beam balance having a sensitivity of 0.01 gram.

ACCESS

Property access was by helicopter from Dease Lake or Telegraph Creek. A Bell 204 from Whitehorse was employed to sling load the heavier equipment including the Case 350 which was disassembled into 3 loads. All of the heavier equipment was left on the property and departure was made with 4 shuttle flights of a Hughes 500-C to Glenora. One walking trip out was made by 2 members to Chutine Landing where river transport to Glenora was provided by a local resident.

COMMUNICATIONS

A rented radio telephone with access to one usually free channel (channel 3,) provided excellent contact with the outside. A 6 ft. reflector type directional antenna was mounted on a 50 ft. high wooden pole.

TOPOGRAPHY

The tested area at the head of the valley has been divided into Areas "A", "B", "C" and "D". Area "A" is north of the Goat Walk and east of the river. Area "B" constitutes the island. Area "C" is south of the island and west of the river. Area "D" is south of the Goat Walk and east of the river.

The hummocky terrain around the beaver ponds in Area "D" is due to slumping of a high lateral moraine left by the last major ice advance down the Barrington River. Two contained beaver ponds could provide ideal settling basins for tailings, but it is recommended that testing should precede such use. Extensive shallow workings exist in the general vicinity of the beaver pond which is closest to the river. A new road course was marked out to avoid swampy ground between the lower beaver pond and the river. According to Mr. Eberg, all of the beavers were removed by trapping during the 1985-86 winter. No recent beaver activity was evident in October, 1986 although the dams were found to be in good condition.

Clay exposed in the west bank of the river near sample site 37 occurs as slabs up to 5 feet in length. These have been transported from a local source, such as a cutoff channel, and do not form a continuous bed. Lake sediments, if they exist at depth, would likely be made up of boulder-free sand from reworked till and alluvium, or possibly clay and silt. Such a bed could constitute a significant marker horizon, as generally barren material which might be stripped and discarded, and as an indicator of the possible occurrence of gold bearing beach deposits, especially at the north end of the lower valley.

At a higher elevation than the top of the steep, glaciated walls of the present valley can be seen the remains of a gentler topography, but one which has still been modified by glaciation. Apparently, the glaciation occurred during an earlier Pleistocene advance.

The valley is narrower in the northern 60% of PML 840 than in the southern part. A smaller, later glacier appears to have occupied the northern part and it is surmised that the bedrock base is higher there than to the south.

An attempt was made to determine the fall of the river from the north end to the south end of the island (Area "B") with sightings through a hand-supported Suunto clinometer. The procedure is a crude one which yielded a "best-guess" answer of 16 feet.

GOLD VALUES

About half of the samples (20 out of 38) were calculated to run at or above $3.64 per yd^3(minus 5 inch material) before distribution of the secondary sluice values. The reported losses could be significantly lower than actual because the secondary sluice dried out between samples, especially overnight, and losses due to skin flotation are probable. Whether the secondary sluice values are fairly distributed is difficult to determine. One might at first suspect that the richer samples contributed the most. However, it should be noted that some of the richer samples contained very little fine gold whereas the poorest samples contained only fine gold. It is possible, therefore, that the largest losses came from the poorest samples. This might not be the case, but it illustrates just one of a number of problems in determining true values.

Placer gold values are notorious for their erratic distribution which becomes increasingly erratic as the values increase. Only large, bulk samples can come close to providing a true picture, and small samples (5¼ ft^3 is small) do not provide results which can be regarded with confidence. Small samples which yield high results can be taken as justification for running bulk samples, while small samples which yield poor results do not prove that the ground is poor although one often has little choice than to accept the results.

The richest samples, as compared to the poorest samples, were typified by more magnetite, coarser gold, less fine gold, more clay, and more boulders.

The sample results are presented in dollars (Canadian, $550.00 per ounce Troy, 80% fine) per cubic yard. The cubic yards are loose, of minus approximately 5 inch diameter material. The amount of oversize was not recorded but in some cases it was considerable. To simply dilute the sample results by a factor reflecting the amount of oversize could be misleading and the writer favours subtracting an amount which reflects the cost of removing the oversize on a production scale. Of course, the method employed must be made clear.

Information required to account for oversize was not available from this program, nor would it be very meaningful to apply it given the sample size and site distribution. In the case of a bulk sampling program a deduction for the cost of removing oversize would be appropriate. In the case of marginal material this would be essential.

The benches are what remains of valley-wide alluvium that has sometimes been reworked, frequently in a braided stream environment, so that an exposed cross section reveals a complex pattern of channel scouring and bar deposition. Values are higher in the channels but average out over a given area. In this model, lower grade benches where fewer channels are found would have undergone less reworking. This leads one to question whether gold might have been continually introduced from the canyon to increase the gold content of originally lower grade alluvium in the lower valley.

Some of the gold is very flat, which is typical of a braided stream environment, but some appears very irregular as might reflect recent release. The gold is typically resistant to amalgamation due to some coating (iron oxide or iron carbonate ?) which is readily removed by nitric acid. Some samples alongside the river contained gold coated with fresh appearing mercury, and it is possible that a quantity of mercury was lost when the dredge was wrecked.

THE CANYON

The canyon provides an environment of rapid erosion with almost no deposition, and the lower valley offers one of the few signifioant opportunities for deposition of gold and other heavy minerals released over an area of roughly 130 square miles. In particular, the contact zone of a 6 mile^2 quartz diorite intrusive within folded volcanics and sediments on the northeast flank of Mt. Barrington is only 1½ miles upstream from the mouth of the canyon and is bounded almost entirely by steep slopes. Some 4 miles of contact contribute material to the canyon either directly or via the deeply incised course of Spann Creek.

The canyon is also notable for a sizeable zone of gossan occurring within a series of folded volcanic flows near the entrance of Jimmie Creek. The gossans warrant investigation as they hold definite possibilities for hardrock mineralization. Access should be by helicopter at a time of lowest river level.

CAVE CREEK

This stream is a tributary of the Barrington River which enters below the main area of investigation. It could be significant in that its headwaters might drain up to about a mile of contact near the southwest end of the quartz diorite intrusive, just west of the summit of Mt. Barrington. If this is so, the presence of gold values in Cave Creek would tend to confirm the hypothesis that the intrusive contact zone is contributing gold to the Barrington River, especially since Cave Creek flows through limestone terrain for much of it's course. A suitable place to test for gold (by panning) would be on Cave Creek just above the entry of a tributary from the west which flows from Tuffa Lake. This point is about one mile from the mouth of Cave Creek at the Barrington River. Weak contamination from glacial drift above the sample point is possible.

The absence of placer gold in Cave Creek would not disprove the hypothesis as it is often the case at a contact that only a certain lithotype, such as a specific sediment, is favoured with mineralization and our hypothetical lithotype might not occur within the restricted Cave Creek drainage area.

FUTURE WORK

ROADBUILDING

The most important next step is a road to the property. Additional sampling, bulk sampling, drilling, and production on any practicable scale are all dependent upon a road. An application to procede with construction was pending in October, 1986. The planned road constitutes a 12 mile extension to the road down the Stikine Valley from Glenora and Telegraph Creek.

SEISMIC

One of the results of the 1986 program has been improved understanding of the geological history of the claim group, at least on a speculative level, which enables one to specify a number of seismio traverses.

Seismic reflection is the preferred mode as it might reveal subtle sedimentary discontinuities such as those reflecting lacustrine deposition. Seismic refraction surveys are faster and cheaper and are good for mapping bedrock, which reflection also does well. Only a field test will determine whether good reflection profiles are obtainable. Refraction data is almost certainly obtainable. Several times as much explosives are required for reflection work with a corresponding increase in time and cost.

Seismic traverses are required to determine the valley profile, depths to bedrock, position of a lower cirque if it exists, possible mouth of a hanging valley at the entrance to the Chutine Valley, investigation of possible buried alluvial fans at the mouth of the canyon and below a lower cirque and at the entrance to the Chutine Valley, depth of any significant lake sediments at the valley walls (especially at the north end where gold could occur in beach deposits), and thickness of slumped material (especially in Area "D").

Seismic information can be useful in correlating and extrapolating drilling results, which provide information on depths, type of material, and gold content, in order to calculate economic reserves, establish the limits of uneconomic material, determine pit depths and configurations, and identify bedrock limits.

DRILLING

Drilling should follow the seismic surveys to determine actual depths and to provide samples for identification of material type and assay of gold values. Several systems are available, none of which work well under all conditions. However, the writer has employed a Becker drill under comparable conditions with acceptable results. Information on grades provided by drilling is not always reliable and interpretation is often required.

DEEPER SAMPLING

A larger backhoe will be required to obtain deeper samples and to section the benches. It would also be used to dig bulk samples for larger scale testing and in the production of certain types of ground.

A front end loader is normally used with a backhoe on sampling programs to transport material and feed the concentrator.

TESTING PLANT

A small plant capable of running bulk samples will be required to enable testing to proceed ahead of mining. A hopper over a shaking screen with high pressure water jets, plus concentrating equipment which might consist of a vibrating sluice or a jig or centrifugal separator, and a small shaking table, are the main items required.

PRODUCTION PLANT

Boulders and black sand are major considerations influencing a choice in the type of plant. The writer favours a vibrating grizzly, vibrating screen with high pressure water jets, and a gravel pump as constituting the main items of a mobile sizing plant. Oversize would be stacked or else trucked away. Undersize would be pumped to the concentrator.

The concentrator might use a hydrocyclone, primary jigs or centrifugal concentrator, secondary jigs or centrifugal concentrator, a shaking table, and a gravel pump for tailings. A future, larger capacity concentrator, especially one processing sandy material from the higher benches might employ variable cross-section spirals.

CONCLUSIONS AND DISCUSSION

The 1986-fall program on the Barrington River Placer Group was regarded by those who participated, including the writer, as a success. Logistical challenges inherent in conducting a mechanized program in a remote area were faced and overcome, during what was reportedly one of the wettest autumns on record.

Any investigation of a placer property that is based upon small samples from shallow depths over a wide area must be recognized as having limited objectives. Our major objective was to collect enough data so as to be able to determine whether additional work could be economically justified. That objective was met, the determination was positive, and the results of the program can be regarded with satisfaction.

The writer concludes the following:

1. Widespread continuity of material type and grades appears to occur.
2. Higher benches might not be economic to mine unless rich ground underlies them.
3. Lower benches could contain economic material above the present level of the river. In particular, the benches of Area "C" have promising potential as they contain large reserves while the surface has been barely scratched with the collection of 5 small samples, 3 of which indicated economic or close to economic grades.
4. Areas "A" and "B" adjacent to the old dredge cut, which yielded consistently high values, constitute a logical place to obtain a bulk sample and to plan to commence mining, as practically no overburden would need to be removed.
5. The method used has probably exaggerated the values reported. On the other hand, values are widespread and there seems little reason to doubt that higher values (employing the same approach) remain to be found. In particular, the fact that the lowest samples, topographically, yielded the best results, contributes to an improved prognosis for the outcome of deeper sampling and drilling programs.

The writer's first geological model incorporated the concept of higher grades at depth, as deeply weathered (enriched) and glaciated gold-bearing material from a nearby source was deposited in a glaciated valley and then buried by increasingly dilute material.

The second model incorporates a continual introduction of gold by the river to enrich formerly low grade alluvium. Both models may apply, but the writer leans toward the second model at least as being partially established. If so, then higher grade material is the result of more reworking by the river, has a higher black sand and boulder content, and should be recognizeable by geophysical means (sensitive magnetometer and seismic reflection, depending upon the depth). Higher benches may be poorer because the river cut through them faster, and whether enrichment occurred, or to what extent, may have depended more upon the character of the river at that time than upon any other factor.

Gold from an eroding bench may be added to the stream to increase the grade of that horizon. But if this were a major factor in explaining the presence of gold in the stream bed then the higher grades should not continue beneath an adjoining bench, which is what it does in Area "A".

While the volume of flow of the river has undoubtedly fluctuated over the past several thousand years, no evidence indicates that the high benches were built and rebuilt as a result. The writer suspects that sediments below the present river level have had a much more active history than those above it. This would be encouraging for the prospect of encountering increasing grades with depth, and would focus attention on the question of whether high bench material should be processed or discarded. Much of it would have to be moved regardless, in such case, and a different circuit might treat it more efficiently.

The second model also places a higher priority upon exploration of the canyon to locate an economic hardrock source.

RECOMMENDATIONS

Further investigation of this property is definitely recommended, as itemized below:

1. A road to provide access from Glenora is required.
2. A testing plant capable of processing samples of several cubic yards is required, with a backhoe to obtain the samples and a front end loader to transport them, feed the plant, and remove tailings.
3. Seismic and drilling programs should precede general development.
4. The gossan zone in the canyon should be sampled.
5. Cave Creek and the canyon tributaries should be panned and the intrusive contact prospected if it is found to be a source of gold.

RECOMMENDATIONS (Continued).

6. Other targets may occur within the Barrington River drainage basin. They could be investigated by panning streams and collecting sediment samples for geochemical analysis, and by sampling gossans and talus. Helicopter support would be essential.

CERTIFICATE

1. I am a professional geologist and a member of the Association of Professional Engineers, Geologists & Geophysicists of Alberta (APEGGA).

2. I am a graduate of the Provincial Institute of Mining, Haileybury, Ontario (Diploma in Mining Technology granted 1962) and Michigan Technological University, Houghton, Michigan (B.Sc. Geology, honours, granted 1966; completed M.Sc. Geology course 1967).

3. I have served as an executive director of a placer mining company listed on a public stock exchange, and I am familiar with the evaluation of placer prospects and placer mining activities.

4. I have worked on and am familiar with the Barrington River Placer Claims which are the subject of this report.

5. I have no beneficial interest in this claim group and do not expect to receive any return, direct or indirect, from any mining activity that might take place there.

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BARRINGTON RIVER PLACER GOLD PROSPECT

SAMPLE RESULTS

1986

Area Designation	Sample #	Wt of Au (g) recovered	Volume of sample (ft^3)*	× factor $\left(\frac{27}{x}\right)$ =	Wt of Au in g/yd^3	÷ 31.1 = oz Tr/yd^3	@ 80% fine: oz Tr/yd^3	@ \$550.00/oz Tr = \$/yd^3	
"A"	1	<.01	8.25	3.273				<.46	
	2	0.04	8.25	3.273	.1308	.0042	.0034	1.85	
	3	0.10	8.25	3.273	.3270	.0105	.0084	4.63	
	4	<.01	8.25	3.273				<.46	
	5	0.01	8.25	3.273	.0327	.0011	.0008	0.46	
	6	<.01	5.25	5.143				<.73	
	7	0.15	2.75	9.818	1.473	.0474	.0379	20.84	
	8	0.05	2.75	9.818	.4910	.0158	.0126	6.95	
	9	0.03	5.25	5.143	.1542	.0050	.0040	2.18	
	10	<.01	5.25	5.143				<.73	
	11	0.07	5.25	5.143	.3598	.0116	.0093	5.09	
	12	0.02	5.25	5.143	.1028	.0033	.0026	1.45	
	13	0.24	5.25	5.143	1.234	.0397	.0317	17.45	
	14	0.02	2.75	9.818	.1964	.0063	.0051	2.78	
	15	0.01	5.25	5.143	.0514	.0017	.0013	0.73	
	16	0.05	5.25	5.143	.2571	.0083	.0066	3.64	
	SLUICE #1.	0.10	64.5	0.419	.0419	.0013	.0010	0.59	Add 59¢/yd^3 to above
	17	0.01	5.25	5.143	.0514	.0017	.0013	0.73	
	18	<.01	5.25	5.143				<.73	
	19	0.01	5.25	5.143	.0514	.0017	.0013	0.73	
	20	<.01	5.25	5.143				<.73	
	21	0.05	5.25	5.143	.2571	.0083	.0066	3.64	
	22	0.05	5.25	5.143	.2571	.0083	.0066	3.64	
	23	0.10	5.25	5.143	.5143	.0165	.0132	7.28	
	24	0.40	5.25	5.143	2.057	.0661	.0529	29.10	
	25	0.43	5.25	5.143	2.211	.0711	.0569	31.29	
	26	0.28	5.25	5.143	1.440	.0463	.0370	20.37	
	SLUICE #2.	0.04	42.0	0.643	.0257	.0008	.0007	0.36	Add 36¢/yd^3 to above
"B"	27	0.10	5.25	5.143	.5143	.0165	.0132	7.28	
	28	0.01	5.25	5.143	.0514	.0017	.0013	0.73	
	29	0.03	5.25	5.143	.1543	.0050	.0040	2.18	
	30	0.05	5.25	5.143	.2571	.0083	.0066	3.64	
	31	0.93	5.25	5.143	4.783	.1538	.1230	67.67	
	32	0.20	5.25	5.143	1.029	.0331	.0265	14.55	
	33	0.08	5.25	5.143	.4114	.0132	.0106	5.82	
"C"	34	0.15	5.25	5.143	.7714	.0248	.0198	10.91	
	35	0.02	5.25	5.143	.1029	.0033	.0026	1.46	
	36	0.08	5.25	5.143	.4114	.0132	.0106	5.82	
	37	0.01	5.25	5.143	.0514	.0017	.0013	0.73	
	38	0.08	5.25	5.143	.4114	.0132	.0106	5.82	
	SLUICE #3.	0.02	63.0	0.429	.0086	.0003	.0002	0.12	Add 12¢/yd^3 to above

* loose; minus approx. 5"

BARRINGTON RIVER PLACER GOLD PROSPECT
DISTRIBUTION OF VALUES
1986

AREA "A"

CORRECTED WT (g)			ACTUAL OCCURRING CALCULATED VALUES (\$/yd^3)	
<.01	1 4 6 10 18 20	6	< .46 (8.25 ft^3 sample); < .73 (5.25 ft^3)	
.025	5 15 17 19 12 2	6	0.46 - 1.85	
.050	9 14 16 21 22	5	2.18 - 3.64	
.075	3 11	2	4.63 - 5.09	
.100	8 23	2	6.95 - 7.28	
.125				
.150				
.175				
.200				
.225				
.250	13	1	17.47	
.275				
.300	26 7	2	20.37 - 20.84	
.325				
.350				
.375				
.400	24	1	29.11	20% reported spilled. Recalculation is \$36.39/yd^3
.425				
.450	25	1	31.29	+50¢/yd^3 to all above from sluice recovery

AREA "B"

ACTUAL WT (g)				
.01	28	1	0.73	
.10	29 30 33 27	4	2.18 - 7.28	
.20	32	1	14.55	
.30				
.40				
.50				
.60				
.70				
.80				
.90				
1.00	31	1	67.67	

AREA "C"

ACTUAL WT (g)				
.01	37	1	0.73	
.03	35	1	1.46	
.05				
.07				
.09	36 38	2	5.82	
.11				
.13				
.15	34	1	10.91	+12¢/yd^3 to "B" and "C" samples from sluice recovery.

BARRINGTON RIVER

PLACER GOLD PROPERTY

BASE MAP

(PLOTTED TO OCTOBER - 1986)

SCALE: 1 INCH = 200 FEET

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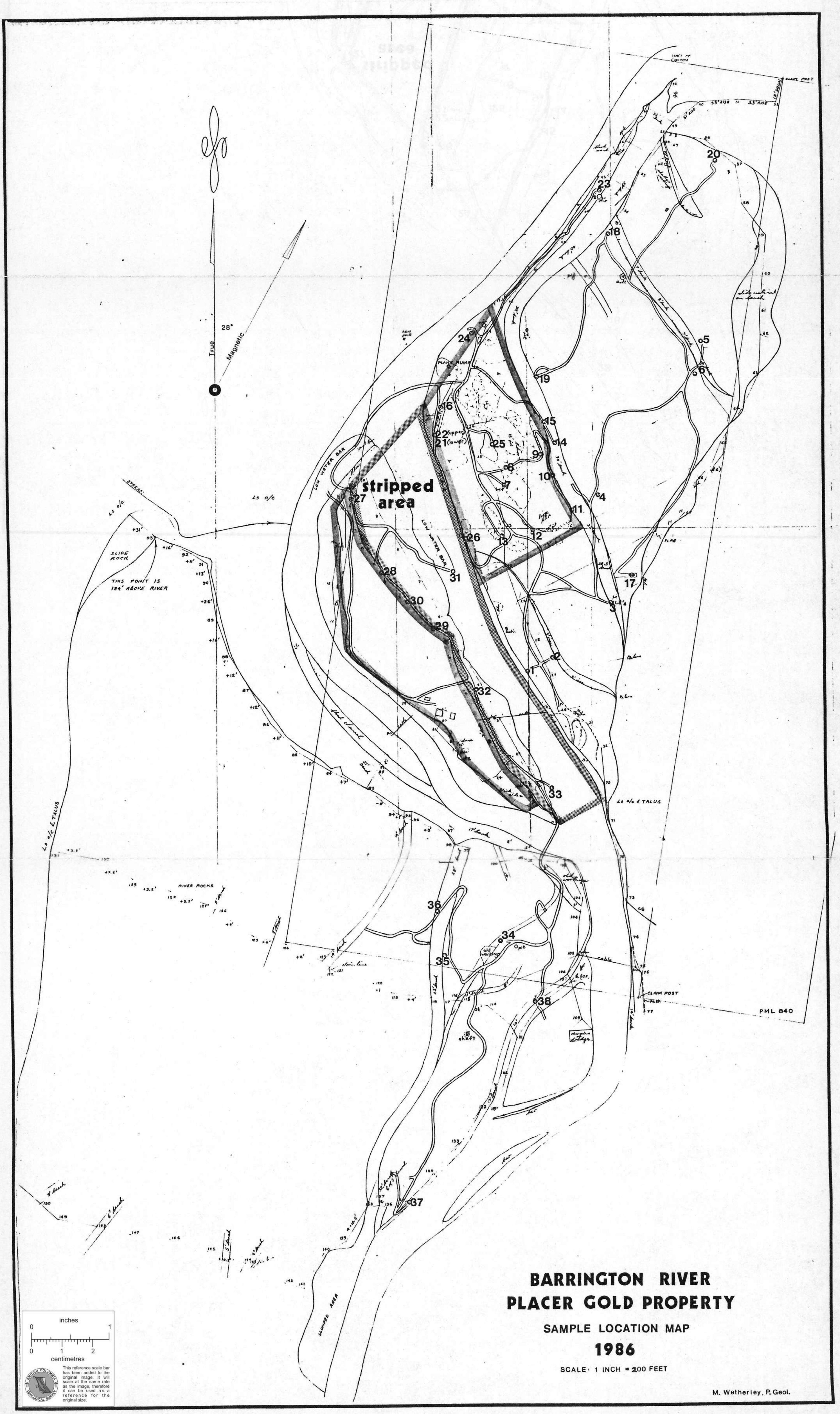

BARRINGTON RIVER
PLACER GOLD PROPERTY

SAMPLE LOCATION MAP

1986

SCALE: 1 INCH = 200 FEET

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