R E P O R T

on

HYDRAULIC TEST BORING

ON #164 S. P. M. L. - FORSTER CREEK

BUGABOO PLACERS

GOLDEN MINING DIVISION, BRITISH COLUMBIA

1 9 5 4

by

HUGH D. HUGHES, GEOLOGIST

Vancouver, B. C.
March 16th, 1955

R E P O R T
on
HYDRAULIC TEST BORING
ON #164 S. P. M. L. - FORSTER CREEK
SUGARCO PLACERS
GOLDEN MINING DIVISION, BRITISH COLUMBIA
1 9 5 4

The original plan for 1954 development on #164 S.P.M.L. (BB2) on Forster Creek consisted of a few churn drill holes to test the depth and grade of granite alluvium fill formed behind slumps, caused by the action of side streams on lateral moraine piles. The largest of these is about 1/2 mile upstream from the end of the logging road up Forster Creek.

The original plan had been based on the use of a track-mounted churn drill, that later proved to be unavailable. When the truck-mounted drill was substituted and drilling started at the Mouth of Forster Creek, it became apparent that the expenditure allotted to #164 S.P.M.L. would all have to be used to provide access. Various alternatives were considered and eventually a suggestion by Bud Henning, drilling contractor on Forster Mouth, was adopted. It is called "Hypodermic rotary testing.

A "hypodermic rotary test rig" consists of a diamond drill pump, water swivel, and "A" drill rod with a home-made wing bit welded to the bottom coupling. In operation the rod is twisted with pipe wrenches and the bit cuts a hole larger than the rod. The pump water returns to surface through the space between the rod and the wall of the hole, bringing a fairly representative sample of sand and fines,

which is collected in a shallow depression at the collar and panned. Coarser materials can be estimated by feel and by loss of circulation. Drilling mud has to be used to seal off permeable beds, but presents difficulties in reclaiming fines.

Before starting the program, accuracy of the method was checked by putting down several test holes alongside churn drill holes on Forster Mouth. Since placer values often vary considerably over a few feet, the results of such checks must be used with caution. However, these checks indicated that the method does give approximate true values when drilling mud is not used; with an estimated maximum error factor of 2: That is, in extreme cases, the indicated value may be half or twice the true value. When drilling mud is used, recovery depends on degree of dilution and on fineness of values. For test hole #19, drilling mud was used throughout, and results appear reasonable without correction, but are probably a little low. On the other hand, checks on Forster Mouth with poor dilution, gave 1/10 to 1/20 of churn drill values. Therefore, when drilling mud is used grade should be estimated from type of ground rather than by panning samples.

This method of hydraulic testing has considerable merit for preliminary work in areas where water is close at hand and the ground is not too permeable. It can eliminate barren areas and delimit other areas for churn drilling. Since all Bugaboo Placer ground has the water table close to

surface, it may be possible to use double drill rod and positive jet pump or suction return to allow penetration and sampling of permeable beds without using drilling mud.

The pattern of test holes is shown on the accompanying plan. The program was aimed at determining whether volume and grade were sufficient to permit profitable dredging in the only large creek flat within #164 S.P.M.L. The results show that most of the valley fill is barren or too low grade to be of interest. The shallow deposit of recent granitic alluvium that is related to the present creek channel was considered too small to warrant special attention during the program. Its grade, depth and boundaries as shown on the section and plan are only approximate, but could easily be determined by shallow test holes and surface pits.

The lower and larger part of the post-glacial valley fill consists of glacial outwash, varying from 5 to 60% granitic, usually brown (rusty) to greenish (epidote), and often containing pyrite. Its grade is too low to be of interest on the #164 S.P.M.L., but it should improve on leases upstream if appreciable depth of outwash exists.

An optimistic view of the results gives about 0.3 million yards of ground above .07 lb.Nb_2O_5/yd averaging 0.1 lb.Nb_2O_5/yd. This total is probably too small, and much of the ground too shallow, to be considered dredging ground. It could be worked by some other method such as dragline and doodlebug, but the grade is probably too low to support the higher cost. It may be possible, however, to

select the best portion of this ground, and other high grade shallow pockets, such as that indicated by test hole No. 1 and one near the west end of #164 S.P.M.L. to obtain perhaps 0.1 million yards averaging 0.2 to 0.3 lb.Nb_2O_5/yd; and thus justify a small, high cost per yard operation.

Development work required on the #164 S.P.M.L. is $1,500. for 1955 and $1,950. per year thereafter. Annual rental is $240. The cost of holding this lease for five years would probably wipe out any present potential profit. Therefore, it seems best to drop #164 S.P.M.L. - that is, to do no further work on this lease, and let it lapse in December, 1955.

Hugh D. Hughes
Geologist

Vancouver, B. C.
March 16th, 1955

FORSTER CREEK #164 S.P.M.L.

SAMPLE RESULTS

(Note - 270-12" Pans = 1 cu. yd.±)

Test Hole No.	Depth of Sample	Sample Volume (Pans)	Wt. Conc.	% Heavy Minerals (Est.)	% Nb_2O_5 (Est.)	lb. Nb_2O_5/Yd (Approx)
SAMPLE #439 (QMI) .59% Nb_2O_5 .010% U_3O_8? $\frac{Nb_2O_5}{U_3O_8}$ = 59?						
	50% Heavy Minerals (Est.) - Raw Sands 40-80% Granitic					
Composite of:						
6	15½' to 17½'	1	8	35	.4	.02
8	12½' to 17½'	1	12	25	.3	.02
9	16' to 18'	1	7	90	.7	.03
15	12½' to 32'	1	3.5	95	.8	.02
16	28' to 32'	1/4	4.5	55	.5	.05
17	10' to 21½'	1/3	7	35	.4	.05
SAMPLE #440 (QMI) .30% Nb_2O_5 .020% U_3O_8? $\frac{Nb_2O_5}{U_3O_8}$ = 15?						
	50% Heavy Minerals (Est.) - Raw Sands 5-15% Granitic					
Composite of:						
3	10' to 20'	1/3	2.5	95	.5	.02
4	17' to 20'	1/3	8	40	.3	.04
	20' to 32'	1/3	11	40	.3	.06
12	15' to 19½'	1/2	2.5	75	.4	.01
13	14' to 30'	1	3	50	.3	.01
	30' to 40'	1/3	3.5	30	.2	.01
	40' to 50'	1/2	2.5	35	.2	.01
14	12' to 20'	1/3	5	80	.4	.04
SAMPLE #441 (QMI) .41% Nb_2O_5, .065% U_3O_8, $\frac{Nb_2O_5}{U_3O_8}$ = 6.3						
	50% Heavy Minerals (Est.) - Raw Sands 90 to 95% Granitic					
Composite of:						
11	2' to 9'	1/3	8	65	.5	.07
15	5' to 12½'	1	68	35	.3	.12
17	0' to 10'	1	17	90	.6	.06
SAMPLE #442 (QMI) .59% Nb_2O_5 .060% U_3O_8? $\frac{Nb_2O_5}{U_3O_8}$ = 10?						
	80% Heavy Minerals (Est.) - Raw Sands 90-95% Granitic					
(First hole put down on known rich bar to check return of high values to surface)						
1	0' to 5'	.012	555	95	.59	.60
	5' to 7½'	.004	94	95	.59	.30

SAMPLE RESULTS

(Note - 270-12" Pans - 1 cu. yd.±)

Test Hole No.	Depth of Sample	Sample Volume (Pans)	Wt. Cone	% Heavy Minerals (Est.)	% Nb_2O_5 (Est.)	lb. Nb_2O_5/Yd. (Approx.)
Streambed beside #1 Test Hole - Nb_2O_5 assumed = #442 Sample						
	0' to 9'	.0033	109	95	.6	.4
SAMPLE #443 (QMI) .37% Nb_2O_5, .10% U_3O_8? $\frac{Nb_2O_5}{U_3O_8}$ = 3.7?						
		Raw Sand 90% Granitic				
18	0' to 11'	1/2	8	35	.37	.04
SAMPLE #444 (QMI) .30% Nb_2O_5 .020% U_3O_8? $\frac{Nb_2O_5}{U_3O_8}$ = 6?						
		Raw Sand 20% Granitic				
18	20' to 30'	1/2	9	40	.30	.03
SAMPLE #445 (QMI) .66% Nb_2O_5, .11% U_3O_8? $\frac{Nb_2O_5}{U_3O_8}$ = 6?						
		95% Heavy Minerals (Est.) - Raw Sand 90% Granitic				
Composite of:						
19	2' to 10'	3/4	17	95	.66	.09
	10' to 15'	1/3	1.5	95	.66	.02
SAMPLE #446 (QMI) .43% Nb_2O_5, .030% U_3O_8? $\frac{Nb_2O_5}{U_3O_8}$ = 14?						
		Raw Sand 75% Granitic				
19	17' to 24'	1	12	50	.43	.03
SAMPLE #447 (QMI) .29% Nb_2O_5, .040% U_3O_8? $\frac{Nb_2O_5}{U_3O_8}$ = 7.5?						
		Raw Sand 50% Granitic				
19	24' to 33'	3/4	14	65	.29	.03
CONCENTRATES NOT ANALYSED - % Nb_2O_5 estimated from % Heavy Minerals						
16	0' to 7' 17½' to 28'	1	4.5	65	.5	.03
Stream bar near #1 hole		1	56	80	.6	.2
Stream bar near #13 hole		1	33	100	.7	.1
Raw Sand 40%, 95% & 95% granitic, respectively.						

FORSTER CREEK #164 S.P.M.L.

TEST HOLE SECTIONS

Test Hole No.	Dpth.	SECTION (LC = lost circulation)		Sample Depth	lbNb$_2$O$_5$ Yd.	Section Depth	Ave. Grade lbNb$_2$O$_5$ Yd.
1	0'			0'			
	1'	topsoil	Recent Alluvium		.60		
	3½'	grey sand	(95% granitic)	5'			
	7'	gravel			.30		
	7½'	boulders & fines	Glacial Till	7½'		0'-7½'	.50
Stream bed 2½' below #1 TH	0'			0'			
	3'	grey sand	Recent Alluvium		.4		
	6'	gravel (LC 5½')	(95% granitic)				
	9'	fine sand (LC)		9'		0'-9'	.4
2	1'		Barren Side Wash				
	4'	clay & swamp		No Sample			
	9'	slate pebbles & swamp (LC)					
	14'	slate pebbles & gr.sand (LC)					
3	0'	slate pebbles & clay some gr. sand	Barren side wash	10'			
	14'	sand 10% gr.	Glacial outwash		.02	0'-20'	.01
	20'			20'			
4	0'	slate pebbles & clay	Barren side wash				
	14'	ditto some gr. sand					
	17½'	sand 15% gr. (LC 30')	Glacial Outwash	17'	.04		
				20'	.06		
	32'			32'		0'-32'	.03

FORSTER CREEK #164 S.P.M.L.

TEST HOLE SECTIONS

Test Hole No.	Dpth.	SECTION (LC - lost circulation)		Sample Dpth	lbNb$_2$O$_5$ Yd.	Section Depth	Ave. Grade lbNb$_2$O$_5$ Yd.
5	0'	swamp	Barren side wash		No Sample		
	6'	grey clay					
	16'	clay & slate pebbles - - - - - - - - - - - - - - -			Est. same as #4		
	18'	sand 15% gr.	Glacial outwash			0'-32'	.03
6	0'	swamp clay slate pebbles (Old surface 12' wood & soil)	Barren side wash	15½'	.02		
	16'	- - - - - - - - - - - - - - - -					
	18'	rusty sand & gravel 40% gr. (LC in coarse gravel)	Glacial outwash	17½'		0'-17½'	.00
7	0'	swamp					
	5'	clay swamp gravel	Barren side wash				
	12'	clay slate pebbles some gr. sand			No Sample Est.	0'-15½'	.00
	15½'	boulders at base - - - - - - - - - -	Glacial Moraine				
8	0'	swamp clay marl slate pebbles 12½' old sfc. - - - - - - some gr. sand		12½'	.02		
	15'	- - - - - - - - - - - - - - - -					
	18'	rusty sand 40% gr. (LC)	Glacial outwash	17½'		0'-17½'	.01
9	0'	swamp clay slate pebbles 11' old sfc. - - - - - - some gr. sand	Barren side wash				
	16'	- - - - - - - - - - - - - - - -		16'			
	18'	rusty gravel 60% gr. (LC)		18'	.03	0'-18'	.00

FORSTER CREEK #164 S.P.M.L.
TEST HOLE SECTIONS

Test Hole No.	Dpth	SECTION (LC - lost circulation)		Sample Dpth	lbNb$_2$O$_5$ Yd.	Section Depth	Ave. Grade lbNb$_2$O$_5$ Yd.
	0'						
10		swamp	Barren side wash		No Sample		
	3'	clay					
		marl 11' old sfc.					
		slate pebbles					
	13'	- - - - - - - - - - - - -					
		slate fragments clay	Glacial Moraine				
	15'	(LC) large rocks.				0'-15'	.00
	0'						
11		swamp	Recent Alluvium	2'			
	2'	fine grey sand (90% granitic)			.07		
	7'	rusty gravel					
	9'	(LC)		9'		0'-9'	.06
	0'						
12		sand (LC)	Barren side wash				
	5'	clay					
		slate pebbles					
	15'	- - - - - - - - - - - - - - - - -		15'			
		some slate pebbles fine sand (10% gr. then gravel(	Glacial outwash		.01		
	19½'	boulders at base - - - - - - -		19½'		0'-19½'	.00
	0'						
13		swamp clay slate pebbles	Barren side wash				
	11'						
		- - - old sfc.(wood & soil)- -					
	14'	- - - - - - - - - - - - - - - - -		14'			
		some slate pebbles mainly sand 10% gr.	Glacial outwash		.01		
	20'	(LC) gravel 10% gr.		30'	.01		
	30'						
		fine sand 15% gr. minor clay		40'	.01		
	50'			50'		0'-50'	.01

FORSTER CREEK #164 S.P.M.L.
TEST HOLE SECTIONS

Test Hole No.	Dpth	SECTION (LC - lost circulation)		Sample Dpth	lbNb$_2$O$_5$ Yd.	Section Depth	Ave. Grade lbNb$_2$O$_5$ Yd.
	0'						
14		swamp	Barren side wash				
	4'						
		clay					
	9'						
		- - old sfc. - - - -					
	11'	- - - - - - - - - - - - - - -		12'			
		sand gravel fine sand (5% gr.) some slate pebbles at base	Glacial outwash		.04		
				20'			
	21'	(LC)				0'-20'	.02
	0'						
15		swamp, clay	Recent Alluvium	5'			
	5'						
		white silt some clay gr. sand	(95% granitic)		.12		
	10'						
	12½'	- - old sfc.(wood) - - - - -		12½'		0'-12½'	.07
	17'	greenish bro.sand mainly granite	Glacial Outwash		.02		
		ditto & gravel (LC 18')	(40% gr.				
	22'	Hard gravel layer bro. sand		32'		0'-32'	.04
	34'	(LC)					
	0'						
16		gr.sand	Recent Alluvium	0'			
	7'		(40% granitic)		.03		
		clay		7'			
	11'	- - old sfc. - - - - - - - -		No Sample	Est. .00		
		clay slate & cgl.pebbles	Barren side wash				
	17½'	- - - - - - - - - - -		17½'			
		bro. sand & gravel (40% gr.	Glacial outwash	26'	.03		
	32'	(LC 29' & 32')		32'		0'-32'	.02

FORSTER CREEK #164 S.P.M.Lse.

TEST HOLE SECTIONS

Test Hole No.	Dpth	SECTION (LC - lost Circulation)	Sample Dpth	lbNb$_2$O$_5$ Yd.	Section Depth	Ave. Grade lbNb$_2$O$_5$ Yd.
	0'		0'			
17		fine white sand				
	5'	Recent		.06		
		rusty gr.gravel Alluvium				
		(LC 10') (96% granitic)				
	13'					
	14'	- - - old sfc. - -	10'			
		gray sand				
		clay				
	19'	LC - - - - - - - - - - - -				
		Bro.		.05		
		& gravel Glacial				
		some clay 60% gr. Outwash				
	21'	(LC)				
		Bro.sand				
	24'		21½'		0'-21½'	.05
	0'	Recent Alluvium (90% granitic)	0'			
18		fine white 12'-13' old sfc.		.04		
		sand & clay - - - - - - - -	11'			
	15'	- - - - - - - - - - - - - -				
		slate pebbles Barren	No	Est.		
		some gr.sand side	Sample	.00		
		& gravel wash				
	20'	- - - - - - - - - - - - - -	20'			
		rusty sand				
		& gravel Glacial		.03		
		(LC 23') 20% Gr. Outwash				
	25'	(LC)				
		gr. sand				
	30'	(LC)	30'		0'-30'	.03
		Used drilling mud 23'-30'-Results may be low				
	0'		0'			
		Topsoil Recent No Sample		.00		
19	2'	white sand Alluvium	2'			
	5'	(95% granitic)		.09		
		gr.gravel	10'		0'-10'	.07
	15'	- - - - - - - - - - - - - -		.02		
		slate pebbles Barren	15'			
	17'	- - - - - - - Side Wash - -	No sample	.00		
		rusty gravel 60% gr.	17'			
		coarse & fine		.03		
	33'	Glacial	24'			
		Outwash	33'	.03	0'-33'	.04
		Drilling Mud used 0' to 33' - Results may be low				