

# PORCHER ISLAND GOLD MINES LTD.

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This memorandum has been prepared by T.M. (Tim) Waterland, P.Eng., who is a well-recognized Canadian Mining Engineer and Mine Operator. Its purpose is two-fold:

- (1) To provide a logical explanation for the somewhat checkered career of the property, and
- (2) To provide the basis for the planning of a sound development program.

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Porcher Island Gold Mines Ltd. owns 14 mining claims on the extreme northern tip of Porcher Island - 25 miles south-west of Prince Rupert, B.C. Six of these are crown grants and include the two former Timmins claims - the Trixie and Western Hope. The remaining have rentals paid and work recorded on them to hold until 1984.

The Surf Point Mine was owned and operated by the Timmins Mining Corp. of Montreal. This went into operation on a small tonnage basis, in 1933. It was under the management of R.E. Legg, P.Eng. During the next five years, it produced 20,333 ounces of gold and plus 7,000 ounces of silver. This came from ore mined from the mill adit level where the average distance through to the surface was less than 100 feet.

Timmins sold their Porcher Island assets to the Reward Mining Co. of Vancouver in 1937. Timmins had obtained inconclusive results from some of their down hole diamond drilling. They had been unable to, or at least failed to develop a sound geological structure picture - no faulting is shown on their maps.

Prior to this purchase the Reward Company had invested quite heavily in their Edge Pass property which lay adjacent and to the north of the two Timmins claims. This included the driving of a 2,300 foot cross-cut that had been collared at a point 42 feet above tidewater and on the north side of the Point. It was driven up to the Western Hope claim and lay over 300 feet lower than the Surf Point mining level. The Reward company was forced into bankruptcy in November 1939, largely due to poor financial management and problems emanating from the onset of the 2nd World War.

Tombill Mines Ltd. of Toronto optioned the property on a joint venture basis in 1975. They carried out an extensive diamond drilling program from a point near the south end of the long low level cross cut but failed to come up with any positive results. This was partly due to the serious error made in their underground and surface transit survey. Also they failed to interpret the geological structure of the area.

Caroline Mines Ltd. of Vancouver purchased an option on the property in 1976. Cochrane Consultants of Ladner were commissioned to make a survey and study of the property. This group did an excellent engineering and geological mapping job but their geo-chem. and geo-physical work came up negative. Partly due to the fact tht their financial backers railed them at about this time, Caroline gave up their Porcher Island option.

Mr. Waterland, a former manager of operations on Porcher for Reward, has accumulated a great deal of factual data on the Porcher Island property. This includes:

- (1) All the monthly operating reports from the Timmins regime; also their smelter returns and milling data.
- (2) A set of Timmins and Reward assay and geological plans.
- (3) Engineering reports on the property from Dr. Alex Smith, Dr. V. Dolmage and Messrs. N.E. Nelson and M. Richmond, P.Eng.s.
- (4) A complete set of reports from the British Columbia Dept. of Mines Annual reports dating back to 1917.
- (5) A complete set of logs on all the Timmins and Tombill diamond drill holes.
- (6) Copies of the Tombill and Caroline reports and maps.
- (7) Several large scale government aerial maps of the immediate area - scale approximately 800'/in.

This data plus his personal knowledge of the property has enabled him to develop a sound geological structure picture, one that answers all the equations. Based on this, an underground development program has been laid out that should hit all targets.

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THE DATA

- (1) The Surf Point operation produced 20,333 ounces of gold and + 7,000 ounces of silver. Several thousand tons of broken ore were left in stopes and new areas readied for mining when the mill was destroyed by fire in mid 1938. The several stopes averaged less than 100 feet through to the surface. The four engineers, previously referred to, were unanimously convinced that the Surf Point veins would extend down to the 400 foot level and probably well below. This could mean that the \$4,000,000.00 worth of precious metals (at today's prices) would be trebled from the block above the 400 foot level in the Surf Point area. Added to this is the large potential in the Edge Pass section where several strong and long veins have been proven. However, most of the latter would have to be mined from lower levels.
- (2) According to observations made by Dr. Alex Smith, all the veins have a general north-east rake and at - 70°.
- (3) The top of the block fault in the mine area was mapped by Alex Smith in 1938. It is shown on a map in his report "Control of Ore by Primary Igneous Structures, Porcher Island, British Columbia". This was his thesis for obtaining his Doctorate at Cal Tech and was later published in a bulletin of the Geological Society of America. (1947). It indicates a movement of +140' in a north easterly direction and at +48°. He failed to note a parallel fault near the face of the 'G' drift on the same level which is some 350 feet to the north. This was mapped by Cochrane Consultants in 1976. This came through at an angle of +35° and is considered to be the bottom of the block movement.
- (4) Two major vertical faults, with a strike nearly normal to the thrust fault, were also noted and mapped by the Cochrane group. No. 1 was mapped in the south end of the Surf Point workings, a bit to the south of the 'B' vein. No. 2 lies nearly parallel to the No. 1 at a point approximately 800 feet to the north. This was in the vicinity of the Dawson tunnels.
- (5) The large scale aerial pictures shows the surface outline of the several faults. Although they came through in a rough terrain, they scale out quite close to that shown on the mine maps. These photos also show a series of thrust faults on the barren ridge several thousand feet to the south.
- (6) The 8 flat diamond drill holes (2,400') that were put in by Tombill, were collared 140' to the east of where they were planned. This was the result of a rather serious error that their engineers made in their underground and surface survey. This was proven by a very careful check survey by Cochrane Consultants, under good weather conditions. This group doubled all their angles and used a measured chain pull. The Cochrane map shows the relative positions of the face of the long cross-cut and the Surf Point more nearly as shown on the Reward map.

(7) Data from the logs of several of the Timmins down holes gives two positive markers re the top and bottom of the thrust fault block.

- (a) D.D. Hole #31, which was drilled from a position in the south end of the 100 level struck a major fault at minus 68'. At this point they lost several feet of core and their return water. A 5" bit of core assayed 11.0 oz. Au./T.
- (b) D.D. Hole #35, which was drilled from same latitude but some distance to the west, intersected 18.5 feet of 0.34 ox. of Au. per ton. This corresponds to a similar width of ore in the 'D' vein stope above the mining level. The pre-fault position of the 'D' vein lay directly below this D.D. intersection.
- (c) D.D. Hole #33 was drilled at an angle of  $-48^\circ$  from a position to the north of the upper fault line. This hole intersected several feet of fine grained green dike at minus 150'. A similar dike was found in three of the Tombill holes on the 400 level. This projects to a point directly below.
- (d) D.D. Hole #32 was drilled from the same station and on the same vertical plane but at a flatter angle ( $-35^\circ$ ). This hole did not cut the green dike.

Thus it can be inferred that the bottom of the faulted block lies midway in between or approximately 130 feet below the 100 level.

(8) Four 50 scale vertical sections were then bult up to incorporate all available data. These were at 50' intervals and on a line normal to the strike of the block fault. (i.e.  $N-57^\circ-E$ ). These, in turn, were condensed into two sections spaced at a 100' distance and transferred to glass. This picture confirms the new structure theory.

#### CONCLUSIONS

- (1) The block fault shows a rotating action. The block moved 240' on the north side and 160' on the south side.
- (2) When the 'S' lense is projected down to the 400 level from its pre-fault position, using the  $-70^\circ$  rake, it strikes the strong vein zone encountered near the face of the low level cross-cut. Significantly, when this is projected from its present out-crop, it strikes the 400 level 240 feet to the east.
- (3) The thrust fault cut through the 'B' vein on the 100 level sill. Of interest is the fact that the 'B<sub>1</sub>' which lies to the north of the fault, lines up with the downward projection of the 'B' when in its pre-fault position.

(4) The A & B veins on the 100 level are known to have a dip to the south ( $-80^{\circ}$ ). They are now considered to be one vein structure. They lie in their original position inasmuch as they are on the south of the block movement on the 100 level. These, projected down the 300 feet to the 400 level horizon, using this dip and the normal rake, line up with the series of quartz stringers noted near the south end of Tombill's longest D.D. Hole (#3). Several narrow sulfide stringers in #3 and #4 and #8 are identified as extreme extensions of the C-D and the  $C_1$ . Neither of these veins are expected to reach this far to the east in strength.

(5) The wide section of mineralization cut by D.D. Hole #35 - (18.5' at 0.34 oz.Au), tallies with the wide 'D' vein stope above the 100 level. In its pre-fault position, the 'D' lies directly below this intersection.

(6) The lower Dawson tunnel cut the #2 vertical E-W fault. The cross-cut to the south of this found only limited values. A series of tunnels that were driven several hundred feet to the north of this and at a higher elevation found several narrow but high-grade sulfide stringers. Several tons of good ore were noted in a nearby dump. A muck grab assayed 1.75 oz.Au/T/

(7) When taking the block movement into consideration, it is proven that the Tombill D.Drill holes on the 400 level were drilled over 250' too far to the east to hit the downward extension of any of the Surf Point veins. Tombill engineers did not do any geological mapping, failed to inspect the readily accessible Surf Point mine workings and failed to note the fault shown on the A. Smith map they had in their possession.

(8) Timmins did some mining in the 'S' and 'R' area but found a very limited downward extension. Their D.D. Hole #13 drew a blank at -30' below. They failed to note the fault that cut through a short distance to the N.E. of the out-crop of the 'S'.

(9) The new mapping of the Surf Point veins on the 400 level promises a more favourable picture for mining. The A and B, the C and D, and the G, R, and S are now combined as three single vein structures, not a series of short lenses as before.

(10) The interesting values noted in the upper Dawson tunnels enhance the potential of the large block of unexplored ground to the west of the Edge Pass 80 and 90 zones. Here a large shear zone with some good gold values was encountered in the cross-cut.

EXPLORATION AND MINE DEVELOPMENT PROGRAM

and

COST ESTIMATE

- (1) Surface preparatory work will consist of clearing the camp and portal area, preparing a berth for loading and unloading medium-size scows, setting up the camp units and installing and housing the compressor unit and shop equipment.
- (2) The underground exploration and development program will consist of the following: (Shown in some detail on 50 Scale plan)
- (a) Drifting west on the S-G Vein -- Approx: 200' at 6'x 7.5'
  - (b) Cross-cut south to AB Vein Approx: 500' at 6'x 7.5'
  - (c) Drive 4' x 12' raise on 'S' Approx: 300'
  - (d) Sub-drift on all vein structures at 4'x 6' ---+700'
- (3) The minimum equipment required is listed below. Much of this can be obtained on a rental purchase basis; i.e. 24% plus 10% per month. As such, any earnings from direct shipping ore can be of assistance.
- (a) Cook and Rec unit, wash and bunk unit, and a warehouse and engineering wand office unit. These are best obtained as trailer units.
  - (b) Equipment for surface work - cat (part-time), power saws, front end loader and miscellaneous small tools.
  - (c) Equipment for underground program: 600 cfm diesel compressor, Delco plant for lighting, rock drilling equipment, mucking machine, scoop tram, slusher units, pipe and miscellaneous small tools.
- (4) Time Schedule - With two 3-man underground crews working on two shifts:
- (a) 750' of 6'x 7' drift and cross-cut - (8'/shift)- 100 crew shift
  - (b) 300' of stull raise - 4'/ 12' - Double Chute & My- 80 " "
  - (c) 700' of 4'x 6' sub-drifts(@ + 6')on vein structure 90 " "

Total Underground crew shifts 270

Total days for underground schedule ----- 135

" " " 4-man surface crew-cook, mechanic,  
swamper, and Engineer-supervisor ----- 135

(5) Cost Estimate

Equipment and preparatory work-----	\$ 60,000.00
Underground Labour - 270 crew shifts @ \$330-----	89,000.00
Surface labour cost - 135 days @ \$350-----	47,000.00
Total direct cost-----	\$196,000.00
Add 30% for supplies and Maintenance -----	49,000.00
Total -----	<u>\$245,000.00</u>

(6) Probable Ore Production from above program

300' of 4'x 12' raise in ore	-----1,200	Tons	---+0.40	oz.Au
900' drifting in vein zones	-----1,600	"		
Assume 50% of this in ore material	--- 800	"	-- "	"
Total ore produced	<u>2,000</u>	"	"	"

This 2,000 tons when passed over a 6" grizzly, where +40% will be screened out as coarse Quartz diorite wall rock (waste), should produce 1,200 tons of high silica ore grading +0.60 oz. Au/ton.

Asarco at Tacoma has agreed to accept this as fluxing ore and will treat free of charge - less 7.5% of Au.

At \$150/oz. Au - this will net P.Is. Mines --- +\$100,000.00  
(After deducting a \$20.00/ton barging cost)