



Report
On
Property
Of

HEDLEY STERLING GOLD MINES, Ltd.

By

M. S. Hedley

Resident Mining Engineer

Penticton, B. C.

June 10th, 1937.

92H/8E

92H/SE-47,48

HEDLEY STERLING GOLD MINES, LTD.

Hedley Sterling Gold Mines, Ltd. is a public company with a capitalization of 2,000,000 shares, of which 1,285,132 are issued. The registered office is at 475 Howe Street and the business office is at Suite 6, 815 Hastings Street West, Vancouver, B. C. The directors are E. L. Boulton, A. P. Dawe, James Lightbody, L. J. Richards and H. B. Thomson; R. R. Steeves is secretary.

The property consists of 8 located claims and one fraction situated on the east side of Sterling creek. It is 9,000 feet in length parallel to the creek, extending from below the main fork nearly to Similkameen river.

Sterling creek flows in a narrow, steep-sided valley, the eastern side of which rises in timbered slopes broken by bluffs, at angles between 25 and 40 degrees, from an elevation of about 2,000 feet to some 4,000 feet. The northern and north-eastern part of the property is marked by prominent bluffs that rise precipitously above the Similkameen River flat.

The property is reached by a narrow road that leaves the Hedley - Princeton highway 4 miles west of Hedley. It is $2\frac{1}{2}$ miles from the Similkameen River bridge to the Patsy No. 2 workings at the end of the road. The camp is situated at a point half way up the creek and from

it a trail nearly a mile in length leads north-easterly to the Patsy No. 1 workings.

Geology: The geology consists of a thick series of steeply-tilted argillaceous sediments intruded by dykes and irregular masses of diorite. The sediments strike in general north to north 40 degrees east and dip at medium to steep angles to the east. The detailed structure is not known. The diorite is rather variable in character and is quite irregular in distribution; the whole region contains dykes, stocks and small irregular masses of this rock. There has been no marked contact metamorphism produced by the diorite.

Included in the dark-colored argillites is a band of at least 200 feet thickness which is exposed on the east bank of Sterling creek on the south end of the property and which contains the greater part of the Patsy No. 2 workings. This band consists of light-colored sediments including impure calcareous rocks, cherts, limestones and fine fragmental rocks that are possibly tuffaceous.

Mineralization is of four kinds. In the Patsy No. 1 workings irregular weak fractures in argillites are filled with narrow widths of pyrite, arsenopyrite, sphalerite and traces of chalcopyrite and pyrrhotite in quartz.

Several hundred feet north-easterly from the main camp an irregular and discontinuous vein of white quartz bearing a little pyrite occurs in argillites. In the Patsy No. 2 workings five more or less bedded shear-zones in the lighter-colored sediments are locally mineralized with arsenopyrite and quartz in addition to pyrite and some calcite; the arsenopyrite occurs in quartz-veins and also locally as filling and replacement of cherty (silicified?) rock. One of these zones penetrates the darker argillites and is there mineralized with calcite and pyrite.

Patsy No. 1 Workings.

These workings are on the Patsy No. 1 claim at the north-east corner of the property, on the edge of prominent bluffs at an elevation of about 2,500 feet. The rocks are argillites which dip, at this locality, steeply to the south, and are intruded by diorite of irregular distribution, one apparently extensive body of which makes up the bluff edge. Mineralization is in light fractures and shears that cut across the bedding and appear to die out in diorite.

Two short adits, with a difference in elevation of 40 feet are shown on the accompanying sketch-plan. A third adit, 25 feet long at 25 feet above the higher of the two shown, has been stoped out, above which the vein

is continuously exposed for some 25 feet on the dip. A small underhand stope has been put down on what is here called the No. 1 adit.

There is one principal "vein" exposed on the surface and in No. 1 adit, but it has not been located in No. 2 adit. This vein strikes north 30 degrees east and dips 40 to 55 degrees north-westerly, and attains a maximum width of about 8 inches. It is a zone of light fracturing and shearing in which mineralization occurs as a filling of pyrite, arsenopyrite, sphalerite and rare chalcopyrite and pyrrhotite in or accompanied by quartz and a little calcite. Mineralization is commonly 3 or 4 inches or less wide; it is discontinuous, and locally "jumps" from one fissure to another, and even enters between bedding planes at a large angle to the general trend. When the structure passes into diorite the mineralization is very weak.

A narrow, nearly parallel shear-zone 1 to 4 inches wide is disclosed in No. 2 adit -- mineralization on this zone is very light. A cross-zone 1 to 3 inches wide, dipping flatly south-westerly, contains a little calcite and pyrite. A noticeable system of fissuring or jointing dips about 40 degrees westward and occasionally mineralization may be seen on one of these planes.

A sample of the mineralization in the bottom of the underhand stope returned, gold, 2.44 ounces per ton. A sample of the nearly parallel shear in No. 2 adit returned gold, 0.10 ounces per ton. At the toe of No. 2 dump are 75 sacks (about 4 tons) of sorted ore -- a grab sample from these returned gold, 1.36 ounces per ton.

Some 750 feet north of the main camp, and 40 feet higher in elevation is a series of open-cuts. These are scattered irregularly along the steep grassy sidehill for 150 feet, and disclose dark-colored argillites which strike north 40 degrees east and dip steeply south-east. In two of the open-cuts vitreous quartz, 18 to 20 inches wide and sparsely mineralized appears to follow the bedding, but is evidently discontinuous. Two chip samples, one from each of the cuts, returned each a trace in gold.

Patsy No. 2 Workings.

The Patsy No. 2 workings are on the claim of the same name at the south end of the property. The lowest, or "O" adit is about 20 feet above the creek and the highest open-cut is 200 feet higher on a bluff-covered 40-degree slope. The ground continues to rise steeply to the east in wooded slopes with grassy cover and occasionally broken by bluffs.

The sedimentary rocks strike a little east of north and dip at medium to steep angles into the hillside.

Fine-grained diorite dykes are quite common and some at least are sill-like in attitude; most of the dykes are no more than a few feet in width. The sediments are predominantly dark-colored argillites but the lower part of the hillside, at least as high as the uppermost cut, is made up of light-colored fine-grained rocks which include impure limestone, chert, limestone, and what appear to be tuffs; these last are finely-granular grey rocks containing small fragments of slatey material.

The best structural section is given by the "0" adit-crosscut. At the face dark argillites dip steeply westerly and at 125 feet from the face the dip is steep to the east. From the latter point the dip is increasingly flatter in the same direction, and at the portal is about 40 degrees easterly. The inner 320 feet of the adit is in dark-colored argillaceous rocks and the outer section, about equal in length, is in light-colored assorted sediments. There is no apparent contortion of the sedimentary series, although local changes in strike and dip of several degrees are seen on the surface. There is no appreciable contact metamorphism produced by the diorite dykes.

The "0" adit, 645 feet long at an assumed elevation of 2,500 feet encounters five bedded mineralized shear-zones known as Nos. 1 to 5 from the portal inwards. No. 1 adit and shaft is at an elevation of 2,590 feet directly over the "0" adit at 80 feet from the portal of the latter;

the shaft is sunk 35 feet at 40 degrees on a shear-zone, and the adit is driven 20 feet into the hanging wall. No. 2 adit, elevation 2,630 feet, is 50 feet east of the shaft and is 13 feet long; a mineralized zone shows in its face. No. 3 adit, elevation 2,710 feet, is 180 feet north-easterly from the shaft; it is driven east 105 feet and discloses two mineralized shear-zones and some mineralized cross-fractures in the inner 40 feet. Above No. 3 adit is a 7 by 12-foot open-cut 6 feet deep on one of the shear-zones intersected by the adit. This open-cut is one of a series 300 feet long. Open-cutting has been done for 150 feet north of the shaft on the shaft or No. 2 shear-zone and for 400 feet southerly at scattered intervals on what are probably both No. 2 and No. 1 zones. A study of the accompanying plan and section will show the distribution of the several workings and of the shear-zones.

About 750 feet north along the hillside and 50 feet lower in elevation than the upper line of open-cuts, are three small open-cuts in light greenish cherty and limey sediments containing sparsely disseminated pyrite and a trace of arsenopyrite accompanied by a very little quartz.

As intersected by the "O" adit No. 1 shear-zone is 80 feet from the portal and is drifted on 32 feet south and 126 feet north. No. 2, No. 3 and No. 4, at 150, 190 and 275 feet from the portal are drifted on northerly for

57 feet, 56 feet and 30 feet respectively. No. 5 zone, 400 feet from the portal, is drifted on northerly for 250 feet. An individual description of the five shear-zones follows.

No. 1: Mineralization occurs erratically within a bedded and poorly defined shear-zone of a maximum width of 6 feet in light-colored fine-grained dense sediments. Arsenopyrite and some pyrite occur in quartz accompanied locally by calcite or else as sulphide-filling and replacement in the chert.

At the south end of No. 1 drift is a vague bedded zone of light shearing and shattering containing a seam 1 to 10 inches in width of quartz and arsenopyrite in varying proportion as well as some calcite. At the cross^{cut} a footwall-seam of 2 to 4 inches of gouge is 4 feet below a hanging-wall seam containing 2 to 6 inches of arsenopyrite, pyrite, quartz and calcite. North of the cross^{cut} the hanging-wall seam is similarly mineralized with an inch to several inches of arsenopyrite and of quartz. At the fork in the level mineralization to a maximum width of 10 inches appears irregularly in one or both of the seams, and in the extreme face there is no mineralization except disseminated pyrite in the weakly sheared rock. A steep fault is unmineralized.

No. 1 zone has not been developed on the surface

but is perhaps represented in two open-cuts 400 feet to the south of the "O" adit. These show several inches of oxidized material including arsenopyrite and quartz.

Four samples of selected arsenopyrite from No. 1 drift returned variable values in gold, from 0.04 to 0.90 ounces per ton. Seven channel-samples, shown on the assay plan, returned, nil in gold to 0.04 ounces per ton.

No. 2: No. 2 shear-zone is, on "O" adit-level, poorly defined. Mineralization consists of tight bedded lenses of arsenopyrite and some pyrite in chert accompanied by a little quartz and calcite, $\frac{1}{2}$ inch to 8 inches in width. Although the accompanying maps are not strictly accurate the No. 1 shaft is evidently on the same shear-zone. In the shaft, the zone dips 40 degrees and contains at the collar quartz 12 inches wide bearing lenses of arsenopyrite. Half way down the zone is widest, 6 feet, and contains a foot or more of quartz, weakly mineralized with arsenopyrite. At the bottom of the shaft the zone splits into a hanging wall bedded section 6 to 12 inches wide and a steeper foot-wall section 12 to 36 inches wide, both consisting of oxidized rock. The hanging wall split may connect with No. 3 zone. Open-cutting to the north shows weakly sheared sediments and in one open-cut 40 feet north there is a 2 to 10-inch zone containing quartz and arsenopyrite. Open-cuts to the south are scattered and obscured and give little information.

A selected sample of arsenopyrite in No. 2 drift returned 0.04 ounces gold per ton. Two samples in the shaft on the south wall returned (1) 8 feet from collar 40 inches wide, gold, trace. (2) 18 feet from collar 68 inches wide, gold, 0.16 ounces per ton.

No. 3: On the "O" adit-level this is a 3- to 4-foot zone of weak shearing and light brecciation with local calcite-filling and a little pyrite. The rock is finely-banded dark and light-colored limestone. At the face a sample across a 19-inch shear-zone weakly mineralized with pyrite returned trace in gold, and a selected sample of pyrite from seams in the hanging-wall of this zone returned 0.036 ounces gold per ton.

This zone may connect with No. 2 zone in the shaft, or may steepen and so be intersected by No. 2 adit. In this adit, in the extreme face, is a 1 to 3-inch seam of sulphide dipping at 45 degrees; this seam widens upwards to 12 inches of quartz at the grass-roots.

No. 4: This is a poorly defined shear-zone 3 feet wide on the hanging wall of a 5 $\frac{1}{2}$ -foot sill of diorite. Irregular and small calcite stringers are accompanied by a little pyrite. The zone is not recognized on the surface. No samples were taken.

No. 5. This is a steeply-dipping shear-zone in dark, locally graphitic argillites, following the foot-wall of an altered diorite sill, 7 to 8 feet wide on the "O" adit and 2 feet wide on the No. 3 adit. At the "O" adit-crosscut

the hanging-wall of the 12-foot zone consists of 8 inches of gouge beneath the dyke, between which and the foot-wall is sheared rock. The foot-wall is drifted on for 30 feet, past which the hanging-wall²-zone is followed throughout, and is 4 to 8 feet wide. The foot-wall zone diverges at 30 feet and is lost in the west wall.

In the first 150 feet of drift there is very little mineralization; some calcite and scattered pyrite occurs in the crushed and sheared rock. Twenty-five feet past the first timbered section a lens of quartz and calcite, 10 inches wide and sparsely mineralized with pyrite, occurs in the hanging-wall. At 165 feet considerable calcite in seams and lenses, mineralized with pyrite, appears in the foot-wall, and at 175 feet the calcite is within 3 feet of the hanging-wall. At 190 feet, at the second short westerly crosscut seams and lenses of calcite mineralized with heavy pyrite dip flatter than the main shear-zone and occur over a width of nearly 5 feet in the foot-wall of the zone about 6 feet below the dyke. This zone of calcite-filling becomes weak and poorly defined at the innermost westerly crosscut and the end of the drift is in firmer, grey sediments containing small irregular seams of calcite accompanied by a little pyrite.

No. 5 zone is intersected by No. 3 adit, at the face of which light-colored sediments are weakly sheared for 5 feet in the foot-wall of a 2-foot diorite sill. At

20 feet from the face a 4-foot band of the sediments is weakly sheared and mineralized. At 30 to 40 feet from the face are one bedded seam and one cross-seam of pyrite 1 to 3 inches wide, cut by a steep fault.

No. 5 zone is again seen in the upper open-cut. Strong oxidation obscures the character of material, but there is a foot-wall section 2 to 3 feet wide containing quartz and arsenopyrite, in the hanging-wall of which is 3 to 4 feet of oxidized material. Open-cuts to north and south show only light-colored sediments and a little oxidized material.

Twenty-eight channel-samples were taken across the zone as shown on the assay plan, and 2 selected samples of pyrite, all in No. 5 drift. The highest of all of these returned 0.05 ounces gold per ton. Two channel-samples in No. 3 adit returned each a trace in gold, and one selected sample of pyrite mineralization returned 0.10 ounces gold per ton. Three channel-samples from the upper open-cut returned from trace in gold to 0.40 ounces gold per ton, the latter representing the foot-wall section, 27 inches wide, on the north end of the open-cut.

Diamond drilling.

Ten diamond-drill holes, aggregating 1,360 feet in length, have been drilled from the "O" adit. These holes are plotted on the accompanying plan and section

from approximate measurements taken by the writer.

Holes Nos. 1 and 2 were not located, and are plotted from a blue-print of the company.

The detailed log of these holes is not worth enumerating, although a few points are worthy of mention. Hole No. 8, from the face of the adit, encounters dark-colored argillaceous sediments and one 2-foot and one 23-foot section of diorite; two closely adjacent sections of core are missing at 100 to 110 feet, and have presumably been assayed, but the results are not known. Holes Nos. 6, 7, 9 and 10 are drilled across No. 5 shear-zone, above and below the adit-level, and each cuts the diorite dyke. In hole No. 7 the remainder of the split core is found in the core boxes and shows adjacent to the dyke 2 feet of dark argillaceous breccia containing pyrite cubes next to which is 3 feet of a whitish, apparently bleached, clayey sediments containing pyrite cubes; a split, similar section to the latter is encountered at 34 to 40.5 feet. The presumably sampled core in the other three holes has been removed from the core-boxes. Hole No. 3 was not drilled far enough to intersect No. 4 shear-zone and dyke which indicates a probable warp in the structure. Holes Nos. 2, 4 and 5 do not give any significant information, particularly as in all but one instance the sampled core has been entirely removed.

The 19 sections of core which have presumably been sampled are shown graphically on the accompanying section; most of these clearly represent the several shear-zones. There is split core remaining in the core-boxes in only 5 sections, (Holes Nos. 2, 3 and 7), and none of these contains mineralization materially different from that exposed in the nearby adits. No samples were taken of the split core by the writer.

At the camp, framed and canvas-covered buildings are sufficient to house and feed a small crew of men. At the Patsy No. 2 workings, alongside the creek, a framed structure houses a small diesel-driven compressor-plant as well as a blacksmith shop equipped with steel-sharpener. There is also a core-shed.

Summary.

On the Patsy No. 1 claim a narrow zone of shattering and shearing in argillites is mineralized in widths from a fraction of an inch to a maximum of 8 inches, and other narrow zones carry slight amounts of mineral. The mineralization, when strong, carries good gold values, but these are more than offset by the smallness and irregularity of the deposit.

On the Patsy No. 2 claim are five shear-zones which tend to follow the bedding of light-colored, in part calcareous and cherty sediments. The zones are not

strong, mineralization is discontinuous, and values overminable widths are not commercial. Occasional interesting assays are obtainable of selected arsenopyrite in the lighter-colored sediments. No. 5 zone penetrates the darker argillites at depth and is there seen to be a fairly strong zone mineralized sparsely with calcite and pyrite, and near the inner end of No. 5 drift the foot-wall of the zone contains as much as 5 feet of calcite heavily mineralized with pyrite; values in No. 5 drift are consistently low. Spotty values are indicated in the upper open-cut, but mineralization is not persistent.

The belt of sediments is interesting, because in these arsenopyrite, containing variable gold values, seems to occur in preference to the darker argillites. The mineralization so far encountered, however, is weak and discontinuous. Exploration of the belt might, if it is found to pass across or into an area which has been more structurally active, lead to the discovery of more worth-while mineralization.

Respectfully submitted,

M. S. Hedley

Resident Mining Engineer

Penticton, B. C.
June 10th, 1937.