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# ENGINEER'S REPORT

ON

# LODE MINING CLAIMS

Fairbanks, Alaska.

## THE ESTER DOME GROUP.

C O P Y .

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Mr. G. B. Stevens,

Fairbanks, Alaska.

Dear Sir:

As per your instructions, I have made a cursory examination of the Ester Dome lode mining camp and enclose a summary of the results of my survey.

Having only three days for this work, I was under the necessity of spending a considerable part of the time in mapping - no maps being available. A comprehensive sampling of the workings would require several days. I was able to approximately check assay reports by panning grab samples from stoped ore but assay and tonnage data was obtained from milling reports from the custom mill which treated the ore. I consider the results reliable as far as they go.

Respectfully submitted,

Signed Chas. F. Williams.

Fairbanks, Alaska.

July 25th, 1922.

Engineer's report on Lode Mining Claims, Fairbanks, Alaska, the

ESTER DOME GROUP

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LOCATION.

Ester Dome lies 10 miles due west of the town of Fairbanks, between the headwaters of Eva Creek and St. Patrick Creek. Ester Siding, the nearest point on the Tanana Valley Railroad (now part of the Alaska Railroad) is three and one-half miles distant and all producing claims are connected by wagon roads having easy grades.

TOPOGRAPHY.

The hills are rounded and seldom more than 2000 feet in elevation and the bedrock is everywhere mantled by several feet of wash. A limited amount of water is available the year round from creeks rising on the east flank of the Dome within a few hundred feet of most of the mining operations.

GEOLOGY.

The bed rock of this area is known as the Birch Creek Schist. This formation is of a sedimentary origin and is made up of a series of metamorphosed strata differentiated by predominance of quartz, mica, and horneblende, and alternating with beds of blocky quartzite.

The basement is a gneisoid intrusive mass which has produced sharp folding in the overlaying schists which dip into the hill at an angle of about 45 degrees and strike northeasterly. The strata are small cut in several places by altered porphyritic dikes. Minor faults of small displacement are occasionally met with in development. These are post-mineral.

LODES.

Seven strong fissure veins have been uncovered on the east flank of Ester Dome. They arerroughly parallel and strike about north 20 degrees east dipping 60 degrees vertical. The outcrops when the surface wash is removed show a mass of crushed schist and quartzite with

considerable quartz mixed with gouges, all containing free gold.

MINEROLOGY.

Sulphides of silver, arsenic, antimony, iron, zinc, and lead were observed below the zone of oxidation which descends to an average depth of about 150 feet. Stibnite is most prominent and contains notable amounts of gold. The oxidized surface portions of the lodes have been enriched through residual concentration by broken down sulphides. The lode below the zone of oxidation is uniform in gold content and no impoverishment was noted to a depth of 300 feet and is not likely to be found at considerable greater depths. The gold in the sulphide zone is being successfully treated by amalgamation.

THE MOHAWK (Billy Sunday) LODE.

The Mohawk Lode was located by the Smith Brothers in 1915 and has been a steady producer of high grade milling ore for eight years. Five claims have been staked on the lode and it has been uncovered for about one mile though mining operations have been confined to two small blocks, one about 200 feet long an the Billy Sunday claim opened to a depth of 200 feet, and the other on the Mohawk No. 1, about 100 feet by 60 feet.

The output has been small due to the limited capital of the operators but the ore is high grade and has enabled the operators to make a profit during the war years of high mining costs.

The Billy Sunday block has produced to date 1456 tons of ore from which $40,283 was recovered by amalgamation at a small custom mill one mile distant. This mill is equipped with a Lane mill crushing to 80 mesh and amalgamation plates and has a capacity of about 18 tons per day. The ore is handled by wagons at a cost of about $1.25 a ton and milled for $6.00. The average return per ton on the ore milled was $27.60. There are estimated to be about 5,000 tons of ore and waste on the dump which will assay better than $7.00 a ton. This dump would then in itself pay for the erection of a small stamp mill on the property. The mine is making 2,000 gallons of water per day which is now hoisted and would be available for milling purposes.

The mine plant consists of a hoist and compressor house, blacksmith shop and bunk and mess house. A small Ingersoll-Rand Air Compressor driven by a gasoline motor supplies air for one jackhammer and one

steping drill. Hoisting is done in th3 200 feet incline shaft by gasoline hoist using one ton self dumping bucket.

The Mohawk No. 1 block has been prospected to a depth of 60 feet by two shafts, one on the main lode and the other on what is believed to be a sput from it. This mine has just commenced to ship ore to the custom mill at time of visit, 100 tons just milled were said to return $40.00 a ton in gold. This ore was mined in a short drift at the bottom of the shaft. A cross cut to the spur vein at this point is said to expose 40 feet of milling ore.

## THE RYAN LODE.

The Ryan lode is of the stringer-lode type and can be steped to an average width of 14 feet throughout its explored length of 5,000 feet and to a depth of 200 feet. This gives roughly 1,000,000 tons of possible ore said to average $4.35 a ton for the first two hundre feet.

While this lode contains considerable ore sufficiently high in grade to make selective mining on a small scale profitable, it is obviously a low grade big tonnage proposition.

The remaining five lodes have been prospected to a limited extent but lack of capital and milling facilities have retarded development.

## RECOMMENDATIONS.

The seven lodes on the east flank of Ester Dome are covered by a group of 28 claims, any or all of which can be bonded at a reasonable figure.

The Mohawk lode, covered by five claims, can be mined economically as one unit.

An accurate plot of claims, showing trace of lodes as well as a systematic sampling of all workings, is recommended to determine probable value of individual claims before bonding.