State Department of Geology and Mineral Industries

1069 State Office Building
Portland 1, Oregon

GALENA MINE

Quartzville District
Linn County

Name of claim: Galena #1 and #2.

Owners: Filed by - Leonard W. Oliver and Carl Conrad
Route 1, Box 1820
Sweet Home, Oregon

Others - W. E. Church
1097 - 38th Avenue
Sweet Home, Oregon

Edward L. Meng
499 W. Ash Street
Lebanon, Oregon

(Bull. 14-D, Metal Mines Handbook, Northwestern Oregon, lists the owners as "Northern Pacific Company or Weyerhaeuser Timber Company (patented timberland), formerly owned by Seattle Mining Company.")

Location: The exact location according to section is in doubt but must be very near the corner common to secs. 2, 3, 10, and 11, T. 12 S., R. 4 E. It is probably not in sec. 10. The workings are between 3300 and 3700 feet elevation on the east side of Galena Creek about 1/4 mile from its head.

The property is reached by driving north from Foster, Oregon, on the Quartzville road a distance of 26.2 miles from the bridge crossing the South Santiam River. A good trail leads up Quartzville Creek 1/2 mile from the road's end to a foot bridge crossing that creek, then by trail generally following Galena Creek to its head a distance of about 3 miles. The last 1½ miles are through down timber and the trail is difficult to follow.

General geology: The rocks of the area are mainly andesite flows and flow breccias which have been intruded by dikes and plugs of dacite and diorite porphyry. The dikes are generally less than 50 feet wide, however occasionally they may be several hundred. According to Callaghan and Buddington, Galena Mountain is capped with a light-colored basalt. This may be the High Cascade lavas of Howel Williams.

The structure is not apparent. On the Quartzville road the dips appear to be primary and generally less than 10°. Many of the dikes and mineral veins in the area have occurred in shear zones.

Development: Previous development amounted to two crosscuts totaling 580 feet and with drifts amounting to 185 feet. The upper crosscut at 3650 feet elevation runs due east and is 65 feet long with two drifts totaling about 60 feet in length along veins striking N. 25° W. The lower crosscut at 3380 feet elevation is 515 feet long, runs N. 87° E., and has an 85-foot drift along a vein striking N. 19° W. There is also an open cut at about 3500 feet elevation and another open cut at 3700 feet. Recent development has been limited to sampling the exposed veins in the workings and drilling and opening a vein in the open cut at 3700 feet elevation which strikes NE.

Mineralization: Mineralization at the Galena mine occurs as replacements and fillings in poorly defined brecciated shear zones. The minerals are galena, sphalerite, pyrite, chalcopyrite, bornite, and possibly covellite. G. E. Stowell (1921) states:

> "The face of the lower crosscut, now being driven, is in extremely hard fine-grained andesite of greenish black color. The portal of the upper crosscut shows a coarse grained porphyritic andesite, while still farther up the slope at the upper cut and to the north the volcanic breccia is seen.
>
> "In the lower tunnel ore is found in narrow "tight" veins of irregular habit. It seems that the hard dense character of the country rock confined the mineral bearing solutions to restricted channels, for the mineralization is found only in narrow planes of shearing with the country rocks but little altered.
>
> "At higher elevations the condition is just opposite. Here, due either to rocks of less hardness and to rocks of fragmental porous nature, the mineralized zone may show a width of 20 to 30 feet with ore minerals widely disseminated and replacing the crushed rock fragments."

Analysis of a sample (P-19812) submitted to this office is as follows:

Gold	0.77 oz.	$26.95
Silver	7.70 oz.	$ 6.96
Copper	1.6 %	
Lead	18.5 %	
Zinc	12.14%	

A sample from the open cut at 3700 feet elevation was taken by the owners and tested by Pittsburgh Laboratory as follows:

Gold	.8 oz.
Silver	7.1 oz.
Copper	2.03%
Lead	19.36%
Zinc	20.5%

The following samples were also taken by the owners and tested by the Pittsburgh Laboratory:

1. Vein in the lower cross cut

Gold	.16 oz.
Silver	3.16 oz.
Copper	.21%
Lead	8.62%
Zinc	11.33%

2. Right drift in the lower crosscut

Gold	.12 oz.
Silver	Trace
Copper	.10%
Lead	1.7 %
Zinc	1.47%

All of the veins in the crosscuts and drifts strike approximately N. 20° W. and range in thickness from 2 inches to 10 inches. The vein in the open cut appears to strike northeast and may average a foot thick. According to the assays given above, values in this vein are by far the best.

Recommendations: Before this mine can be developed certain considerations must be made: 1. the proper location and ownership of the property should be determined; 2. more exploratory drilling is necessary; and 3. to get equipment in and to transport ore out, a road will need to be built.

Date of examination: October 17, 1956

Report by: H. G. Schlicker

References: Stowell, G. E., Report on the geology and ore deposits of the Quartzville district, Oregon: Oreg. Bur. Mines and Geology unpublished report, p. 32-38, 1921.

Callaghan, Eugene, and Buddington, A. F., Metalliferous mineral deposits of the Cascade Range in Oregon: U. S. Geol. Survey Bull. 893, p. 106, 1938.

Oreg. Dept. Geology and Min. Ind. Bull. 14-D, Oregon metal mines handbook, northwestern Oregon, p. 99, 1951.

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GEOCHEMICAL SOIL SAMPLING IN THE GALENA MOUNTAIN AREA

Quartzville District
Linn County

Geochemical sampling was done in the area around the Galena mine (NW¼ sec. 11, T. 12 S., R. 4 E.) in connection with the joint project we have with the Northern Pacific Railway Company in the Quartzville-Galena Mountain area.

The accompanying map shows the area and geochemical traverses made during two days of sampling. A total of 53 stations were sampled, and in several cases duplicate soil samples were taken for a check on the method. The method used (Bloom, 1955) is the ammonium citrate extraction of heavy metals, lead, zinc, and copper, and then estimation of the heavy metals available with dithizone in xylene.

Estimation of metal content in this test involves adding dithizone until all of the readily available heavy metal in the sample is reacted to give the desired color. Samples collected away from mineralization would give either the apple green color of unreacted dithizone or blue, which indicates a very slight reaction. Strength of mineralization was measured by the amount of dithizone required to neutralize the metal to a blue color. Samples that required over 20 ml of dithizone were indicated as +20 ml. The U. S. Geological Survey geochemists consider an anomaly as a count at least five times greater than the background. In this project the background is about 2 ml, so 10 ml is considered to be anomalous.

The rapid build-up in areas of known mineralization and equally rapid fall-off when sampling into rocks assumed not to carry value indicated the

method used was successful. In addition to the success of the geochemical tests, a search for float in the area where geochemical anomalies were found produced float showing disseminated sulfides.

The sampling method used in the Galena Mountain area gave every indication of being successful, and I believe this method to be generally applicable to the Western Cascades as it is especially sensitive to lead and zinc. The traverses run generally defined the limits of disseminated mineralization, with the exception of the southeast boundary where we were still getting anomalous soil when we were cut off by a snow covered slide area.

The low total of site samples speaks for the extremely steep (many up to 50°) slopes covered with a dense undergrowth typical of the rain forests of the Western Cascades. The traverses delineated the area of disseminated sulfides only. There was no attempt made to pick up veins or areas of more intense mineralization as this would require detailed sampling on much closer spacing.

I believe this area warrants more work. The most economical way would be to do soil sampling using dithizone extraction on closer spacing, say 50 feet. A four-man crew using a plane table and alidade for horizontal and vertical control could do a thorough sampling job in a week. In addition to giving a good map of the disseminated area, this might also outline the vein structure.

Geophysical work in the nature of an induced polarity survey using portable equipment may be feasible, but because of the extremely steep slopes and thick underbrush, this would be slow. However, I believe an experienced crew could run a survey in about a week.

Report by: R. G. Bowen, June 12, 1962.

Reference: Bloom, Harold, 1955, A field method for the determination of ammonium citrate-soluble heavy metals in soils and alluvium: Econ. Geology, v. 50, p. 533-541.

SEATTLE MINING AND EXPLORATION COMPANY

Office: 332-333 New York Block, Seattle, Washington.

Officers: Milo M. Shier, president and manager, Burt Goelcher, vice-president, Frank A. Kane, treasurer, John Arthur, general counsel, E. E. Harold, trustee.

Incorporated: June 7, 1918, under the laws of the State of Washington. Capital $100,000.00, shares $1.00 par value, all issued and paid up.

Property: 10 full unpatented claims near the head of Galena Creek, Quartzville district, Linn County, Oregon. There is in addition one adjoining claim located by Mrs. Milo Shier.

Development: The development consists of two cross cuts. The upper, No. 1, is 65 feet in length with two drifts totaling 60 feet, and the lower crosscut, No. 2, 515 feet in length with an 85 foot drift. In addition there is a small open cut above No. 1 tunnel and a second open cut between the upper and lower tunnels.

The Waldon claim owned by Mrs. Shier has an old 30 foot drift on a vein showing ore.

(See attached map of property and development, also map of Quartzville district.)

General features: The camp lies at an elevation of 3170 feet by aneroid, while the tunnels and open cuts are between 3300 and 3700 feet in elevation. Timber is abundant for all purposes but Galena Creek, while furnishing water for camp use, could not be depended upon for milling operations of any magnitude.

At the time of the writer's examination, August 14 and 15, 1921, the camp consisted only of tent sleeping and cooking quarters, but plans were underway for the building of permanent log structures.

A pack trail in good condition is the only means of approach to the property.

Ore deposit: The type of ore deposit is typical of Quartzville district, being irregular and poorly defined brecciated shear zones in which the filling and replacement is quartz, together with sulphides of copper, lead, zinc, and iron, with minor amounts of lime carbonate.

The country rocks are andesites and fragmental volcanics of coarse agglomerate or breccia types.

The face of the lower crosscut, now being driven, is in extremely hard fine-grained andesite of greenish black color. The portal of the upper crosscut shows a coarse grained porphyritic andesite, while still farther up the slope at the upper cut and to the north the volcanic breccia is seen.

In the lower tunnel ore is found in narrow "tight" veins of irregular habit. It seems that the hard dense character of the country rock confined the mineral bearing solutions to restricted channels, for the mineralization is found only in narrow planes of shearing with the country rocks but little altered.

At higher elevations the condition is just opposite. Here, due either to rocks of less hardness and to rocks of fragmental porous nature, the mineralized zone may show a width of 20 to 30 feet with ore minerals widely disseminated and replacing the crushed rock fragments.

It is the writer's opinion that it is an effect due to character of rocks rather than one of depth, as might be supposed.

The outcrops show sulphide ore directly on the surface with very little oxidation to be seen. The hill slope varies from 30° to more than 45° and erosion is very rapid, thus giving little opportunity for oxidation and leaching effects.

Upper cut: This cut is at an elevation of 3700 feet or 60 feet above the upper crosscut (No. 1). The cut is 10 x 5 feet and shows a vein that swells and pinches from 6 inches to 2 inches. Coarse crystalline galena (lead sulphide) predominates with smaller amounts of sphalerite (zinc sulphide), pyrite, and chalcopyrite (copper iron sulphide). Comb quartz is common and was apparently the last mineral to be deposited.

Three feet east of this vein a second narrow stringer shows, and further work would probably show up further paralleling or branching small veins.

Upper crosscut (No. 1): (See map.) Elevation 3640 feet.

Thirty feet in from the portal a vein has been drifted on in both north and south directions. In the face of the south drift the vein is 2 inches to 3 inches wide and poorly mineralized, but in the north drift it widens to 1½ feet of quartz material showing sulphides.

A sample taken here across 1½ feet gave the following assay:

Gold - .56 oz., silver - 2.44 oz., copper - .65%
lead - .20%, zinc - 4.25%.

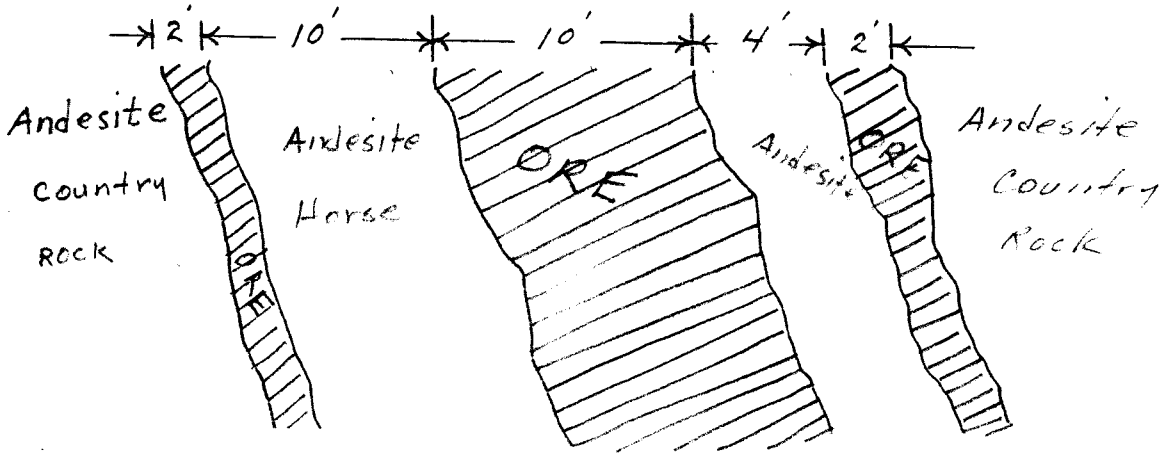
The sample was made up of quartz and kaolin with the sulphide minerals as shown by above assays. The vein here strikes N. 25° W. and dips 75° W. The country rock is rather fine grained andesite and shows the effect of close proximity to a mineralized fissure in that it is somewhat altered and contains scattered grains of pyrite.

Fifteen feet farther in a second 6 foot drift to the south has been driven on a similar zone that shows sulphide minerals. A sample across 12 inches gave the following assay:

Gold - .02 oz., silver - 3.68 oz., copper - .15%,
lead - 8.85%, zinc - 2.4%.

Predominance of lead and lower gold value will be noted. This vein strikes N. 30° W. and dips 85° W.

Middle cut: Elevation 3500 feet. Little work has been done at this point but the ledge croppings show a width of approximately 30 feet. Not all of this width shows ore but is made of roughly paralleling and branching ore bearing veins interspersed with widths of barren country rock or "horses". The following sketch illustrates roughly the conditions:



Some oxidation may be seen but primary sulphides appear practically on the surface.

The ore is coarsely crystalline in texture showing cubes of galena, isometric modifications of sphalerite, together with some chalcopyrite and pyrite.

Comb quartz with characteristic open structure is common. The ore has the appearance of replacement and filling in of open spaces in the brecciated shear zone.

The ledge is not cut across or faced up to allow for taking a good sample, but one sample was taken across a width of 4 feet of average quartz and sulphide material. The assay gave the following results:

Gold - .10 oz., silver - .40 oz., copper - .35%, lead - 4.65%, zinc - 1.6%.

Lower crosscut (No. 2): Elevation 3360 feet (See maps)

The crosscut is in hard rock of dense fine grained texture. Study of thin section from face now being driven showed it to be an altered basic andesite.

Silicification is apparent and pyrite is common. In the vicinity of ore bearing zones the country rock shows considerable alteration. Feldspars are partly changed to kaolin and sericite and dark colored ferromagnesian silicates are chloritized to large extent. Within the ore filled shear zones the crushed rock fragments have been completely altered, with the result that a good portion of the vein filling is soft gougy kaolin.

For a distance of about 50 feet outward from the drift this alteration of country rock is quite marked. Mr. Shier believes that a good portion of this width may be classed as good ore, but a sample by the writer showed only .11 oz. gold and .10 oz. silver.

The vein drifted on for 90 feet shows an irregular occurrence of quartz with gougy kaolin, the quartz carrying base metal sulphides of (lead?) and zinc. The quartz is from 4 inches to 6 inches wide with an average of about 1 foot of kaolin and brecciated rock. A sample across the face of the south drift including 4 inches of good quartz ore and 12 inches of softer gougy material gave the following assay:

Gold - .03 oz., silver - .31 oz, copper - .45%, lead - .20%, zinc - 2.0%. The vein strikes N. 30°W. and dips 80° W.

Beyond the drift three prominent shear planes striking between N. 30° W. and N. 50° W. and dipping 60° to 80° W. are cut by the crosscut. These planes are narrow and show bunches of quartz and gougy material with base metal sulphides with a maximum width of about 4 inches. These planes may be considered as belonging to the same zone of shearing as the vein in the drift.

Due to lack of an accurate survey of underground workings and outcrops, it is impossible to coordinate the various individual veins seen in the lower and upper workings. To the writer it seems highly important that a survey be made before much more development work is attempted.

Mr. Shier stated that the lower crosscut was being continued to cut a ledge whose outcrop showed at an elevation of 3850 feet and which carried high gold values. Examination of this supposed outcrop proved it to be merely an altered outcrop of volcanic breccia(?) and a sample taken showed no values upon assaying.

North cropping: North of the upper cut at an estimated distance of 600 to 700 feet and elevation of 3750 feet an outcrop of ore occurs upon which no development work has been done and which in the writer's opinion may be of greater importance than any other showing on the property.

The hill slope is more than 45° and rapid erosion has planed the surface free from soil exposing unaltered sulphide ore, which occurs disseminated throughout a comparatively soft open-textured volcanic flow breccia or agglomerate. The exposure is for fully 100 feet in a north-south direction and 50 feet thick. Sulphides of zinc, lead, copper and iron are visible over the whole surface exposed. The sulphides are well crystallized generally and show many perfect crystals formed in open cavities. Some comb quartz and calcite are intergrown with the sulphides.

Andesite of more dense hard nature occurs both above and below the fragmental flow rock carrying the ore. The attitude of the flows is indefinite but they probably lie nearly horizontal or dip gently.

The history of this ore deposit may be this: mineral-bearing solutions ascending through restricted channels in the hard andesite below found passage of free circulation in the porous agglomerate. Dissolving action of the waters

removed portions of the groundmass of the rock, forming open cavities which were subsequently filled with base metal sulphides together with calcite and quartz. The material on the surface is soft enough to be readily picked away.

A 4-foot section was thus exposed and sampled, the assays giving as follows:

Gold - .10 oz., silver - .40 oz., zinc - 3.7%
lead - 2.6%, copper - .05%

The ore is not high grade but it is probable that a large tonnage could be developed at low cost.

Waldon Claim

This claim lies on the west side of Galena Creek. An old drift 30 feet in length has been run on a narrow shear zone which strikes N. 30° W. and dips 70° W. Base metal sulphides occur with quartz, with a maximum width of 6 inches. A sample gave the following assay:

Gold - .02 oz., silver - 14.4 oz., copper - 1.15%
lead - 9%, zinc - 9.1%

Conclusions on Property

The ores found on the property of the Seattle Mining & Exploration Company are of very complex and refractory nature, and without pre-treatment could not be mined and sold direct to available smelters at a profit. A pre-treatment process would involve the separation of the copper, the lead, and the zinc into products of a fair degree of purity before the marketing. Such a treatment would be costly and difficult.

A method for local treatment might be worked out whereby the ores might be reduced to metals by the electrolytic process, but it would be necesssry to have a very large tonnage of ore proven to warrant the capital investment necessary to build such a reduction plant.

The writer believes that a moderately large tonnage of ore could be proven with further development work, and with better transportation and improved methods of reducing such complex ores the property might at some future time be worked at a profit.

From:-Report on the geology and ore deposits of the Quartzville district, Oregon, by G. E. Stowell: Oregon Bur. Mines and Geology unpublished report, p. 32-38, 1921.