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**REPORT ON MINERAL SURVEY OF LANDS INCLUDED IN PILOT ROCK LUMBER COMPANY** *be used*

**CONTRACT #1 & #2**

**SUMMARY**

A reconnaissance investigation of the areas included in this survey indicates that:

1. At present there is no commercial production of ore from the properties or those closely adjoining.

2. Excluding road materials, there is no commercial production of non-metallics from the area.

3. Placer gold, vein gold, uranium mineralization, and perlite all occur in the area, and their future commercial production cannot be completely ruled out.

4. For reasons stated in the body of this report, the probability of substantial financial success in the mining or quarrying of materials from these lands is very unlikely, and it is recommended that the mineral rights be sold if the stipulated price of \$10,000 can be obtained.

**INTRODUCTION**

A reconnaissance mineral survey was made on September 14-17, 1956, of lands included in the Pilot Rock Lumber Company Contracts #1 and #2, these lands being located in certain sections of T. 5 S., R. 31 E.; T. 6 S., R. 30 E.; T. 6 S., R. 31 E.; T. 6 S., R. 32 E.; and T. 6 S., R. 33 E. of Umatilla County, and T. 7 S., R. 30 E.; T. 7 S., R. 31 E.; T. 7 S., R. 32 E.; T. 7 S., R. 33 E.; T. 8 S., R. 31 E.; and T. 8 S., R. 32 E. of Grant County. In order to obtain better perspective for estimating the economic mineral potential of the specified lands, it was necessary to study adjoining areas, and to evaluate the general area as a whole. On the other hand, it was not always feasible, due to time limitations,

to examine each parcel of land individually, and indeed it is doubtful that such a procedure would be desirable unless intensive exploration were to be carried out. There is no evidence to indicate that such a program, with a consequent large expenditure of time and money, is warranted.

In making the survey, in addition to data obtained from my own work, advantage was taken of the earlier studies of other geologists. Mr. N. Wagner of Baker was consulted and the use of some of his geologic maps was obtained. Mr. J. Napper and Mr. G. Thomas of Eugene, both of whom had surveyed parts of the area for a major oil company, made maps available and also accompanied me on one trip into the area. As a result, this report actually represents the combined efforts of several people and many more hours of field work than is indicated above.

#### General Geology

Most of the area is covered with basalt flows of the Columbia River basalt (middle Miocene). This rock acts as a blanket, effectively concealing the underlying formations except where erosion has stripped it away, mainly in some stream valleys. In a few places, especially along the Umatilla-Grant County line, there are exposures of acid volcanic rocks and tuffs of the John Day formation. Below these occur some rhyolites of the Clarno formation (Eocene). Older pre-Tertiary metamorphic rocks are found especially along the North Fork of the John Day River and on Desolation Creek. A granitic mass is intruded in T. 6 S. and T. 7 S., R. 33 E. Each of these areas of specific formations or rock types infers certain mineral possibilities and the

formations will be discussed on this basis.

Columbia River Basalt-- The basalt is often used for road metal, but the ubiquity of the rock decreases the value of any specific deposit. The basalt is usually without any mineralization and in general it is safe to assume that nothing of value will be obtained from it. It is not quite so safe to say that it is not covering up valuable mineral deposits, but there is no simple way of determining what underlays the basalt. Even if there were known mineral deposits under the basalt, they would have to be unusually rich or in areas of thin cover before they could be recovered at a profit. Consequently areas covered with the basalt were given a minimum of attention in this survey. This applies, for example, to the lands in T. 5 S. and T. 6 S., R. 31 E.

John Day tuffs and Clarno rhyolites-- The tuffs, together with their welded varieties, and the rhyolites are of great interest and present considerable difficulty in evaluation. They frequently are radioactive and this is especially true of the welded tuff members and the rhyolite. In addition the presence of perlite requires careful scrutiny of areas containing these formations.

Pre-Tertiary metamorphics-- Ore deposits are very likely to be associated with the pre-Tertiary metamorphics. Similar rocks occur in the Sumpter, Baker and other quadrangles and are mineralized there. In addition to metal deposits, there is always the possibility that the basic varieties of rock may contain asbestos or other non-metallics. Consequently all areas containing these rocks deserve careful attention.

Pre-Tertiary granitic rocks-- The granitic intrusive masses are probably related to numerous other granitic masses to the east, many of which contain valuable mineral deposits especially along their

peripheries. There also is the possibility of pegmatites connected with them, and these can yield a variety of minerals, some of which may be radioactive.

The above are the principal rock types to be found in the areas under consideration. For the reasons given above, it was necessary to devote special attention to the areas where the Columbia River lavas were stripped away.

#### Economic Geology

The minerals or mineral products of possible economic importance in the area are discussed in detail below. It is obviously necessary to consider them if they are of possible importance anywhere in the general region, because it is quite likely they might occur on some of the Contract #1 and #2 lands even though not now exposed or known.

Petroleum-- Interest in petroleum in eastern Oregon has centered on the pre-Tertiary rocks. Unfortunately the pre-Tertiary rocks in this area are highly metamorphosed and closely associated with plutonic rocks. There are no known favorable indications of oil, no oil seeps, no good source beds, and there has been no active interest indicated by any of the oil companies even though some of them have made a routine examination of the area. Consequently there is no reason for holding the land as potential oil land.

Perlite-- Associated with Eocene-Oligocene volcanic rocks and tuffs are several areas of perlite. These occur, for example, in Sec. 29, T. 6 S., R. 32 E. and on the line between Secs. 17 and 20, T. 7 S., R. 32 E. Material from the latter locality is used for road surfacing at present and is derived from a quarry probably located on Pilot Rock Contract #1

land! A sample of perlite was submitted the State Dept. of Geology and Mineral Industries and was reported to have a 100% volume increase at 1850° F. Although there is not a large tonnage of this material in sight, it is not beyond the realm of possibility that exploration could develop a fairly large tonnage.

The possibility of developing a profitable perlite industry is relatively remote because of the distance of the material from market, even if sufficient tonnage of good quality material could be found. By way of comparison, the Lady Frances Mine near Maupin, located directly on a railroad, closer to Portland, and with a half million tons of excellent perlite, has been an unsuccessful venture. The Lady Frances perlite had a volume increase of about 7 times, indicating its superiority to that found in this area. Some perlites expand up to twenty times volumetrically. This leads one to the conclusion that if the lands investigated contained large quantities of exceptionally high grade perlite, of which there is no evidence, even then the establishment of an industry for the mining, processing, and marketing of this material would be a hazardous enterprise.

Volcanic ash--- There are numerous limited areas of volcanic ash which might be of some value commercially for abrasives, filler, or aggregate, if in greater quantities and close to a market. It is safe to conclude that the material could not stand shipping costs and at present cannot be considered to be of any value.

Gold--- Most of the gold recovered from the area has been obtained from placer mining along the North Fork John Day River. Various methods of placer mining have been used; the most recent was dredging by the Calhoun Howell Mining Company. They used a Monaghan shovel and a

washing plant, both of which are now inactive and are located in Sec. 13, T. 7S., R. 33 E., at the junction of Bismarck Creek and the North Fork. Dredge gravels extend almost continuously from this point down the river to Sec. 35, T. 6 S., R. 32 E. Much of the North Fork in this area is now posted with notices stating intent to apply for patents, especially in T. 6 S., R. 32 E. and T. 7 S., R. 33 E. It is important to note that most of the gold came down the river from the highlands to the east and not from the tributaries which drain some of the land being investigated.

Although placer gold has yielded the most wealth of any of the mineral deposits, it is interesting to note that up to 1914, it was estimated that the total placer gold obtained from the North Fork was only \$893,000. Assuming that one owned all the land from which these values were taken, and further assuming the usual 10% royalty, the return to the owner would have been \$89,300. This, of course, includes all of the North Fork drainage extending many miles to the east. If all of the lands being examined were concentrated in the stream valleys, they would still occupy only a small percent of the drainage area and could yield only a very small part of the above amount. Since 1914 continued dredging has removed almost all of the gold from the remaining dredgeable lands in those areas of interest to this survey, and placer mining is no longer of any great importance.

There are very few gold quartz claims in the region, and none of these is prosperous. The Blue Bucket mine located in Sec. 7, T. 8 S., R. 33 E., a few miles south of all of the lands involved in this study, is again active, but so far as known it has never been a successful operation. There are some quartz claims (North Star) in Sec. 9, T. 7 S., R. 33 E., but we have no property interest in this section.

In conclusion, although gold is the metal which has yielded the most mineral wealth in the area, no evidence was uncovered to indicate gold deposits of any value on the lands concerned in this survey. Short of discovery of a very rich deposit, the likelihood of realizing a profit on gold mining at the pegged price of gold is very small, and there appears to be no reason for holding the lands in anticipation of either a rich gold discovery or a considerable rise in the price of gold. The fact that this region has been thoroughly prospected, unsuccessfully, and for so long, also stands against it.

Miscellaneous minerals-- As in every area, there are usually some miners working on prospects which are claimed to contain some of the rarer minerals. An example of this is the Colcord mine in Sec. 6, T. 7 S., R. 33 E., adjoining some of the land being investigated. Conversation with Mr. C. J. Colcord indicated he was attempting to develop gold, lead, zinc, nickel, and cobalt, all from the same tunnel. The prospect, known as "Camp Creek Claims", is in pre-Tertiary argillites and at one time showed a little galena and chalcopyrite. So far as could be seen, over 20 years of work has developed no ore, and the prospect appears to be a very poor one. Mr. Colcord also claimed asbestos in back of his house, but this could not be confirmed. Although Sec. 6 is one of the most favorable spots in the area and is of special interest because of the large amount of land included in the Contract, it is significant that careful and intensive prospecting has opened no mineral production in the area.

Uranium-- Uranium of sub-commercial grade (0.008 %  $U_3O_8$ ) had been reported from a pegmatite in an area several miles to the north in Umatilla Co., and it was thought advisable to do some checking in the area under investigation with a Geiger counter. Areas of welded tuff, perlite,

and rhyolite gave positive readings. A sample obtained from Sec. 29, T. 6 S., R. 32 E., analyzed by the State Dept. of Geology and Mineral Industries, gave 0.01%  $U_3O_8$ . This was a fairly average sample. To be commercial, the rock would have to contain 20 to 25 times as much uranium. The mass effect was strong, as is usual in such cases, and it would not be difficult to convince a novice that this area was a "hot" one. It is surprising that there has not been some excitement in the area because undoubtedly it has received some attention from uranium prospectors. It is unlikely that any commercial concentration of uranium ore will be found in this area, if the results of exploration done in other similar areas of the state can be applied to this one. The warning should be given that there would be no reason for undue concern should reports of radioactivity discoveries come from the area, because prospectors and the press usually make no distinction between a slight show of radioactivity and evidence of a commercial ore body.

#### Conclusions

This survey of the minerals on the lands included in Pilot Rock Lumber Co., Contracts #1 and #2, and adjoining areas, indicates that the materials most likely to yield a profit are gold, perlite, and uranium. None of these is known in sufficient quantities or in good enough deposits to be mined at a profit at the present time. For the distant future, the possibility of working the perlite seems most likely to yield a profit, but such an enterprise would be profitable only under market conditions which do not exist today.

It is possible that an extensive and costly prospecting program



might yield a profitable deposit, but since nothing has developed in the past, the chances would be against a good return on the investment. A second possibility is that by holding the properties, new markets might open, new uses be found for material, new prospecting methods developed. To wait for such development would not be feasible.

There is nothing to indicate that the lands concerned contain any minerals valuable enough to result in a highly profitable enterprise to anyone unless he were in an especially favorable position from the standpoint of markets and unless he were willing to take a large gamble on exploration and development. At present I know of no values in these lands which would warrant any such investments. Consequently, it appears to me to be wise to sell the mineral rights to these lands if a favorable price could be obtained. I would consider \$10,000 to be such a favorable price. The possibility of deriving that amount of money, net, from the mineral values known to occur on these lands seems very remote.

In conclusion, it is my opinion that any prudent person or groups, facing the choice of holding these lands for their mineral values or selling them for a substantial consideration, would be following the most sensible course if they were to sell the mineral rights. I therefore recommend their sale.

Respectfully submitted,

Lloyd W. Staples, Geologist

October 7, 1956