

UNITED STATES DEPARTMENT OF THE INTERIOR

GEOLOGICAL SURVEY

Reevaluation of the Mineral Resource Potential of Part of the
Little Sand Spring Wilderness Study Area, Inyo County, California

by

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SUMMARY

The U.S. Bureau of Land Management asked the U.S. Geological Survey and the U.S. Bureau of Mines to reevaluate the potential for gold resources in the southern part of the Little Sand Spring Wilderness Study Area, Inyo County, California. This request was made after Intermountain Resources Inc., of Reno, Nevada nominated the Juanita prospect in the Little Sand Spring Wilderness Study Area as an Area of Critical Mineral Potential (ACMP). After evaluating the data presented by this company together with data obtained by the U.S. Geological Survey and the U.S. Bureau of Mines, the area of the Juanita prospect is considered as having a moderate potential for the occurrence of gold resources.

INTRODUCTION

At various times in the period 1981 - 1983 the U.S. Geological Survey and the U.S. Bureau of Mines conducted field examinations to determine the mineral resource potential of the Little Sand Spring Wilderness Study Area, Inyo County, California. The area borders Death Valley National Monument on the south and extends from Death Valley eastward to the California-Nevada state line. Results from this study were released as U.S. Geological Survey Open-File Report 84-557 (Wrucke and others, 1984), in which an area, designated as the Southern Area, was documented as having a low potential for a gold resource.

Independent of the U.S. Geological Survey-U.S. Bureau of Mines study, Intermountain Resources Inc. of Reno, Nevada, conducted an exploration program in the Southern Area between March 1983 and March 1984 on land named the Juanita prospect (Watson, 1984). This property consists of 182 unpatented lode mining claims that cover about half the Southern Area and parts of the adjacent area. Intermountain Resources Inc. has concluded from this exploration work that the Juanita prospect has at least three gold occurrences with possible large tonnages of mineralized rock. The company nominated the Juanita prospect as an ACMP and requested that it be designated as "nonsuitable" for classification as wilderness.

In consideration of the request made by Intermountain Resources Inc., the U.S. Bureau of Land Management asked the U.S. Geological Survey and the U.S. Bureau of Mines to reevaluate the potential for gold resources in the southern part of the Little Sand Springs Wilderness Study Area.

EVIDENCE OF MINERALIZATION

Many disseminated gold deposits in Nevada and elsewhere have been studied and geochemical data on them published. These data have established an elemental suite consisting of mercury, arsenic, antimony, and often, tungsten that is related to this type of deposit.

Geochemical data obtained by Intermountain Resources Inc. and observations made in the area by the company confirm the conclusion reached by the U.S. Geological Survey and the U.S. Bureau of Mines that faulted and brecciated rocks in the Southern Area have potential for the occurrence of

disseminated gold deposits. The gold geochemical suite of elements found by the U.S. Geological Survey, the U.S. Bureau of Mines, and by Intermountain Resources Inc. in the Southern Area indicates that the area has been mineralized by processes known to produce deposits of disseminated gold. Jasperoid reported in the U.S. Geological Survey-U.S. Bureau of Mines study and found to be locally abundant by Intermountain Resources Inc. is additional evidence that hydrothermal processes have been active in the area. Jasperoid and other forms of silica are common features of disseminated epithermal gold deposits. In many instances the silica has been introduced in repeated pulses (Berger and Eimon, 1983; Silberman, 1982), and in the Southern Area this seems to be the case.

Comparison of geochemical data obtained by Intermountain Resources Inc. from the Juanita prospect in the Southern Area with published data from other gold deposits of this type (table 1) reveals that the median concentrations for gold, arsenic, and antimony are lower in the Juanita prospect samples than in samples from other gold deposits. Maximum concentrations detected for gold also were lower in the samples from the Juanita prospect than from the other deposits.

TABLE 1 - - Median and maximum values for gold (Au), silver (Ag), arsenic (As), antimony (Sb), and mercury (Hg) in parts per million (ppm) for some gold properties in California and Nevada.

	Juanita prospect ¹		Preble Mine, Nev. ²		Pinson Mine, Nev. ²		Gold Acres Mine, Nev. ³		Cortez Mine, Nev. ⁴	
	Med.	Max.	Med.	Max.	Med.	Max.	Med.	Max.	Med.	Max.
Au	0.050	1.60	0.15- 0.2	4.5	0.05- 0.1	5	0.5	70	0.5- 1.0	111
Ag	0.2	22		0.8		1.5	0.05	10		
As	30	7300	50- 100	10500	100- 150	10500	70	1000	1000	7000
Sb	7	270	100- 150	500	75- 100	400	10	150	100	1500
Hg	0.16	120	0.5- 1.0	12.5	2.5- 5.0	105	2	10	0.5	3.2

¹ Data from surface samples (Watson, 1984).

² Data from surface samples of fracture coatings (Crone and others, 1984). Median values are within the range given and were determined from histograms.

³ Data from open-pit mine (Wrucke and Armbrustmacher, 1975).

⁴ Data from surface samples (Erickson and others, 1966). Median values are approximate.

The generally lower geochemical concentrations from the Juanita prospect samples could have resulted from weaker mineralization than that found at other disseminated gold deposits or could have resulted from the samples having been collected from the less intensely mineralized outer parts of a higher grade deposit. The median concentration of gold in samples from the

Juanita prospect is of the same order of magnitude as the median values from only one of the deposits described in table 1, the Pinson deposit, but the high values are far below those found at any of the other deposits. Although data from the Juanita prospect support the interpretation that gold mineralization has taken place in the Southern Area, additional geochemical sampling and drilling would be required to determine the existence and the size, grade, and location of a minable gold deposit.

All information available confirm the observation that the genetic model of a disseminated gold deposit is applicable to the Juanita prospect. The gold geochemical suite, solution breccias, solution channels, and alteration minerals, including iron oxide staining are important features of disseminated gold deposits and are all found at the Juanita prospect.

ASSESSMENT OF MINERAL RESOURCE POTENTIAL

The new data available from samples collected at the Juanita prospect by Intermountain Resources Inc. point to the conclusion that the property may be reassessed as having a moderate potential for the occurrence of a gold resource. Using the definitions for resource potential given in Wrucke and others, 1984, the assignment of a low resource potential was reasonable, based on the data collected in the U.S. Geological Survey-U.S. Bureau of Mines study. The low potential designation reflected the positive indications of mineralization found during the study and an environment permissive for a resource occurrence. However, only a small amount of data were indicative of a gold resource (Detra and others, 1985), the concentration of elements in the gold suite was low, and hydrothermal alteration of host rocks was relatively weak. The new data obtained by Intermountain Resources Inc. suggest a higher potential for the occurrence of gold resources than was identified by the U.S. Geological Survey and the U.S. Bureau of Mines. Exactly how high the potential should be is difficult to estimate considering the relatively low concentrations reported for gold and most other elements in the gold geochemical suite. These low concentrations suggest to us that the resource potential should not be classified as high. The main difference between low and moderate resource potential as defined in Wrucke and others, 1984 is that low potential is assigned to areas where there is little evidence of the existence of a resource, whereas moderate potential is designated in areas where the data indicate a reasonable chance for resource accumulation. The term "resource" as used here refers to material for which economic extraction is potentially feasible (U.S. Bureau of Mines and U.S. Geological Survey, 1980). Using the qualitative definitions of resource potential as given by Wrucke and others (1984), the Juanita prospect area can be classified as having a moderate potential for a disseminated-type gold resource.

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