

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

MINERAL REPORT

Mineral Potential Report
for the
Goldfield Water Treatment Facility, Esmeralda County, NV

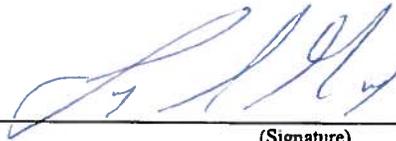
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LANDS INVOLVED

TOWNSHIP 07 SOUTH, RANGE 42 EAST,
MOUNT DIABLO BASE AND MERIDIAN

SECTION 03, E2NESWSE

Prepared by:



(Signature)

Hydrologist

(Title)

12/16/2010

(Date)

Technical Approval:



(Signature)

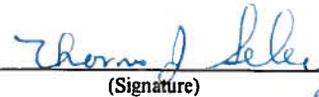
Supervisory Geologist

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12/16/10

(Date)

Management Acknowledgement:



(Signature)

Field Manager, Tonopah

(Title)

12/16/10

(Date)

EXECUTIVE SUMMARY FOR MANAGERS

This report has been prepared for a potential disposal of land for the Goldfield Water Treatment Facility, Goldfield, Esmeralda County, Nevada. The proposed conveyance of approximately five acres will be used for an arsenic treatment facility associated with the Goldfield Water Treatment Facility.

The purpose of this report is to document the findings of an investigation into the mineral potential of the approximately five acre parcel and recommend which mineral resource, if any, should be retained in Federal ownership or can be disposed of in the sale.

The following is a summary of the mineral potential for each class of minerals:

1. There is no potential for discovery of industrial minerals (i.e. bentonite or montmorillonite) on the subject land.
2. The potential for discovery of locatable minerals (i.e. silver, gold, copper, etc.) is low.
3. The subject land is not a potentially valuable source for mineral materials. Basalts and tuffs are abundant in the region and would preclude the need to mine material on the subject land.
4. The potential for uranium and thorium on the subject land is low.
5. The potential for geothermal resource on the subject land is low.
6. The subject land is not a potentially valuable source for oil, gas, coal or other leasable minerals (sodium, potassium and phosphate).

It is recommended that the Bureau of Land Management proceed with the direct sale. It is further recommended that the United States convey all mineral rights to Esmeralda County.

INTRODUCTION

This report will assess the mineral potential of a parcel of land of approximately five acres, near the town of Goldfield. The subject parcel is associated with a direct sale to Esmeralda County, Nevada, for use as an arsenic treatment facility.

Goldfield is an unincorporated community with a population of 440 (2000 census) and the county seat of Esmeralda County, Nevada. Goldfield was founded in 1902 and has been continuously occupied since it was settled. The Goldfield Mining District produced 4.2 Moz of gold, 1.5 Moz silver, and 3,800 tons of copper. Most production occurred from 1904-1919. More than 95% of district production came from a small area, the "main district", near the town of Goldfield. The subject parcel is located north of Rabbit Spring and Pozo Canyon. Wells at the mouth of Pozo Canyon were the first water source for the Town of Goldfield. Some additional water was obtained from Rabbit Spring.

Lands Involved

The following is a legal description of the subject parcel:

Township 03 South, Range 42 East
Section 03: E2NESWSE

Mount Diablo Base and meridian, Nevada

DESCRIPTION OF GEOLOGY

Physiography

The subject parcel lies within the Alkali Spring Valley, and is located in the eastern part of Esmeralda County at the northeastern base of Malpais Mesa just west of the town of Goldfield. The parcel lies within the Great Basin Physiographic Province which is characterized by closed basins with internal sinks separated by ranges, hills and mesas.

Stratigraphy

The Siebert Tuff overlies the Meda Rhyolite and overlaps Oligocene and lower Miocene volcanic rocks in many places on the westside of the Goldfield Hills. It is the most voluminous of the middle and upper Miocene units in and around the hills. The Mira Basalt exposed south of Goldfield is interbedded with the Siebert. The Mira is located at a lower stratigraphic position than the 10-14 my old basalts and therefore is probably of middle Miocene age (Ashley, 1974).

The Spearhead Member of the Thirsty Canyon Tuff flanks the Goldfield Hills on the west, south and east. Exposures of the Spearhead member are found around the edge of the Malpais Mesa. In Pozo Canyon the Spearhead member lies conformably on more than 50 feet of fluvial conglomerate, the Pozo Formation. The Pozo Formation is unconformable on Siebert Tuff. Conglomerates of the Pozo are lithologically similar to conglomerates of the Siebert. The Rabbit Spring Formation (Ransome, 1909), thin patch sandstone and conglomerate deposits, lie between the Spearhead and the Malpais Basalt (Ashley, 1974).

The youngest Tertiary unit in the Goldfield Hills is the Malpais Basalt (Ransome, 1909) which caps Malpais Mesa. It is distinguished from older basalt by an abundance of plagioclase and olivine phenocrysts altered to iddingsite. The Malpais Basalt shows a slight angular discordance with the Spearhead Member of the Thirsty Canyon Tuff exposed directly beneath it on Malpais Mesa, but is near the same age as the Spearhead (Ashley, 1974).

Known Mineral Deposits

The subject parcel lies approximately 1.3 miles southwest of the central area of mining activity within the Goldfield mining district, a 0.5 square mile area within a 15-square-mile area of hydrothermally altered Tertiary volcanic rocks. More than 95% of district production came from the main district (Ashley, 1974).

“Prominent lithologies in the district, Miocene rhyolites, latites and andesites, overlie Mesozoic and Paleozoic granitic and sedimentary rocks. Most production came from silicified, sub-linear fissures, or ledges, in Milltown Andesite and porphyritic andesite (dacite of Ransome, 1909; porphyritic rhyodacite of Ashley, 1974). Ledges consist mainly of microcrystalline quartz that has replaced andesites. Internal breccias constituted most ore and consist of multiple generations of clasts encrusted and replaced by gold, pyrite, and a large number of Cu-As-Sb-Ag-Bi-Sn-Te-Se minerals (e.g., enargite-luzonite, famatinite, goldfieldite, bismuthinite, calverite), minor sphalerite, galena, and chalcopyrite, alunite, kaolinite, and pyrophyllite. Ledges commonly consist of an echelon segments that form a broadly elliptical pattern in the district. Contiguous ledge segments are generally meters to tens of meters in length by meters in width. Ledges are flanked by broad selvages of altered andesite consisting of proximal to distal

quartz±alunite±kaolinite+pyrite, quartz+kaolinite+K-mica+pyrite, montmorillonite+pyrite, and, calcite+chlorite±pyrite, respectively. The abundance of ledges coupled with coalescing alteration selvages resulted in a very large volume (tens of km³) of altered rocks in the district.” (Vikre, 2005)

Known Prospects, Mineral Occurrences and Mineralized Areas

There is no current mining activity within the immediate area of the subject parcel. Exploration disturbances are absent from the subject parcel suggesting the area was not identified as valuable for metallic or other locatable minerals. The nearest mining activity was a silver and gold prospect 0.85 miles east-southeast of the proposed withdrawal.

“Although much potentially ore-bearing altered rock has been eroded from the hydrothermally altered parts of the area into the Siebert Tuff, Pozo Formation, and Quaternary gravels, almost no placer gold has been recovered from these sediments near the district. It is likely that the current erosion cycle has only just reached the lodes, even though much barren altered rock had been removed since middle Miocene time.” (Ashley, 1974).

POTENTIAL FOR THE OCCURRENCE OF MINERAL RESOURCES

Coal

The closest known coal deposit to the subject parcel is at Coaldale, Nevada, approximately 40 miles northwest of the subject parcel. The U.S. Geological Survey mineral resource data map shows no known coal resources within the subject parcel.

Mineral Potential Classification: (O/C)

Oil and Gas

The closest known oil and gas deposits are located in Railroad Valley, Nevada, more than 100 miles northeast. The U.S. Geological Survey mineral resource data map shows no known sites for oil, oil shale, or gas resources in the subject parcel. The geologic setting agrees with the mineral resource map.

Mineral Potential Classification: (O/B)

Metallic Minerals

The U.S. Geological Survey mineral resource data map shows no known potential for metallic mineral resources in the subject parcel. The geologic setting agrees with the mineral resource map. The nearest mining activity was a silver and gold prospect 0.85 miles east-southeast of the subject parcel.

Mineral Potential Classification: (L/C)

Nonmetallic Minerals/Industrial Minerals

Industrial minerals such as sodium chloride, borax, and trona form in playa deposits. The subject parcel is located approximately 12 miles southwest of Mud Lake. The U.S. Geological Survey mineral resource data map shows no known potential for non-metallic mineral resources in the subject parcel. The geologic setting agrees with the mineral resource map.

Mineral Potential Classification: (O/C)

Common Variety Minerals

Basalts and tuffs exist on the subjects parcel. While these materials could be mined for use in roadways and construction, they are abundant in the region.

There are no other known common variety mineral deposits on the subject parcel.

Mineral Potential Classification: (L/C)

Uranium and Thorium

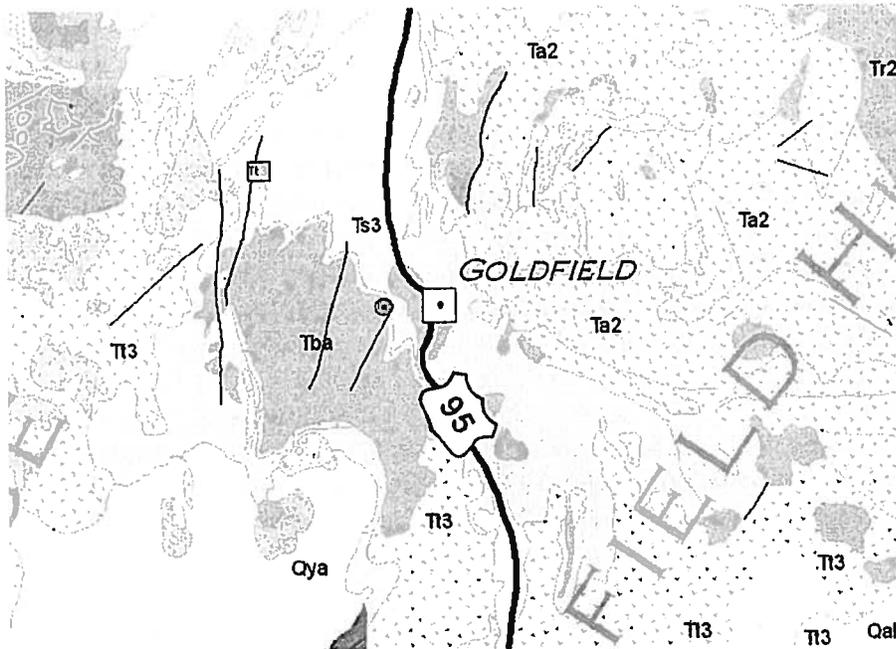
There are no known occurrences on the subject parcel.

Mineral Potential Classification: (L/A)

Geothermal Resources

There are no known occurrences on the subject land. The subject parcel is not included within existing or proposed geothermal leases. The Nevada Bureau of Mines and Geology geothermal resource map shows the nearest geothermal activity, a hot spring ($>37^{\circ}\text{C}$), approximately 10 miles northwest of the subject parcel.

Mineral Potential Classification: (L/A)



Geologic map of the subject parcel and the surrounding area
Tba Malpais Basalt and Rabbit Spring Formation; **Ts3** Siebert Tuff;
Tt3 Spearhead Member, Thirsty Canyon Tuff



Mineral Resource Data System, USGS
 Mineral resource occurrence locations in the area of subject parcel

RECOMMENDATIONS

The parcel involved in the direct sale is an approximately five acre plot in the Alkali Spring Valley east of the town of Goldfield at the eastern base of Malpais Mesa. The proposed conveyance of approximately five acres will be used for an arsenic treatment facility associated with the Goldfield Water Treatment Facility.

It is recommended that the Bureau of Land Management proceed with the direct sale. It is further recommended that the United States convey all mineral rights to Esmeralda County.

REFERENCES

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Ransome, F.L., 1909, The Geology and Ore Deposits of Goldfield, Nevada: U.S. Geological Survey Professional Paper 66, 258 p.

Shevenell, Lisa, Garside, Larry J., Hess, Ronald H., 2000, Nevada Geothermal Resources, Nevada Bureau of Mines and Geology

Vikre, P., Fleck, R., Rye, R., 2005, Ages and geochemistry of magmatic hydrothermal alunites in the Goldfield district, Esmeralda Co., Nevada, U.S. Geological Survey Open-File Report 2005-1258, Version 1.0

U.S. Geological Survey, 2005, Mineral Resources Data System, U.S. Geological Survey, Reston, Virginia

Mineral Potential Classification System*

I. Level of Potential

- O. The geologic environment, the inferred geologic processes, and the lack of mineral occurrences do not indicate potential for accumulation of mineral resources.
- L. The geologic environment and the inferred geologic processes indicate low potential for accumulation of mineral resources.
- M. The geologic environment and the inferred geologic processes reported mineral occurrences or valid geochemical/geophysical anomaly indicate moderate potential for accumulation of mineral resources.
- H. The geologic environment, the inferred geologic processes, the reported mineral occurrences and/or valid geochemical/geophysical anomaly, and the known mines or deposits indicate high potential for accumulation of mineral resources. The "known mines and deposits" do not have to be within the area that is being classified, but have to be within the same type of geologic environment.

II. Level of certainty

- A. The available data are insufficient and/or cannot be considered as direct or indirect evidence to support or refute the possible existence of mineral resources within the respective area.
- B. The available data provide indirect evidence to support or refute the possible existence of mineral resources.
- C. The available data provide direct evidence but are quantitatively minimal to support or refute the possible existence of mineral resources.
- D. The available data provide abundant direct and indirect evidence to support or refute the possible existence of mineral resources.

* As used in this classification, potential refers to potential for the presence (occurrence) of a concentration of one or more energy and/or mineral resources. It does not refer to or imply potential for development and/or extraction of the mineral resource(s). It does not imply that the potential concentration is or may be economic, that is, could be extracted profitably.