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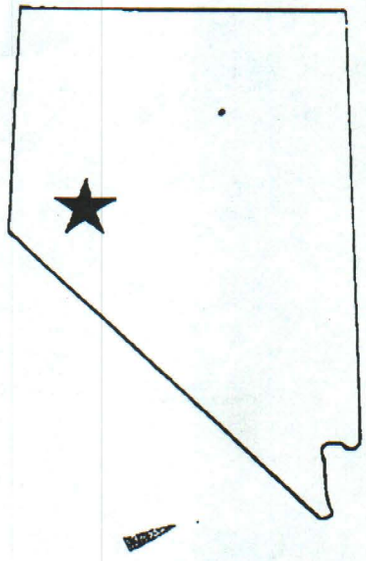
MINERAL RESOURCE EVALUATION OF THE NORTH CORRIDOR ADDITION TO THE PROPOSED MASTER LAND WITHDRAWAL AT NAVAL AIR STATION FALLON CHURCHHILL COUNTY, NEVADA



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BUREAU OF MINES
WESTERN FIELD OPERATIONS CENTER

MINERAL RESOURCE EVALUATION OF THE NORTH CORRIDOR ADDITION TO THE PROPOSED MASTER LAND WITHDRAWAL AT NAVAL AIR STATION FALLON, CHURCHILL COUNTY, NEVADA

by
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1.0 Introduction

The initial resource evaluation and socioeconomic study of the proposed Master Land Withdrawal on 182,000 acres adjacent to NAS Fallon bombing ranges in Churchill County, Nevada was completed in 1990. In 1992, a second mineral evaluation study was completed on 7,000 acres of adjoining land. This area had been identified as a public health hazard and as necessary for continued Naval tactical air training (Thompson and Boleneus, 1990, Thompson, 1992).

The Bureau of Mines (BOM) was contracted (1995) to complete a mineral resource evaluation on 7584 acres of Bureau of Land Management land. The findings and evaluations will be used by the Navy for their revised Environmental Impact Statement, Proposed Master Land Withdrawal.

1.1 Location of the Study Area

The subject lands in this report form a north-south corridor joining Navy lands in T 21 N, R 34,35 E to segregated lands in T 18 N, R 34 E (see attached base map).

1.2 Purpose of the Study

The purpose of this study is to evaluate the mineral resources of known deposits and occurrences and to report the potential for yet unidentified resources within the study area.

Prior to the withdrawal of more than 5,000 acres of public lands from mineral entry, section 204 (c) of the Federal Land Policy and Management Act (FLPMA) of 1976 (43 USC 1714) requires that a mineral evaluation report be prepared. The report is to include information on the geology of known mineral deposits, past and present mineral production, mineral interest in the area, evaluation of future mineral potential, and potential market demands.

1.3 Mechanism of the Study

Exploration activity within the study area is largely influenced by deposit types (models) found to exist in mining districts bordering the study area. The La Plata District, to the west, contains tungsten in skarn deposits, silver, lead, zinc, and copper in vein deposits, and possible disseminated gold mineralization. The Wonder District, to the east, contains gold and silver vein deposits and possible disseminated gold mineralization. This premise assumes similar geologic conditions. (Thompson and Boleneus, 1990).

The 7584 acres were field checked to ascertain general geologic relationships. Also, Bureau of Land Management

(BLM) records were reviewed to locate a record of active mining claims, and/or records of leasing activities.

1.4 Legal

Mineral commodities are classified, by law, into three distinct groups: locatables, leaseables, and salables. Locatable minerals are those minerals which, when found in valuable deposits, can be acquired under the General Mining Laws of 1872, as amended (17 Stat. 91; 30 U.S.C. 22 et seq.). Examples of locatable minerals occurring on public lands adjacent to the study area include, but not limited to, those minerals containing gold, silver, tungsten, fluorite, copper, lead, and zinc. Also locatable are uncommon varieties of limestone and dolomite, diatomite, and other minerals having unique and special values.

Under the General Mining Law of 1872, U.S. citizens have a statutory right to explore vacant, unreserved public lands for locatable minerals. Possessory rights are obtained by staking claims. Upon discovery of a valuable deposit, citizens have a right to mine and remove the minerals. Prospecting and development that involve large disturbances of land are regulated by the BLM through Title 43, Code of Federal Regulations (CFR), part 3800. Mine and reclamation plans are reviewed and contain stipulations to avoid unnecessary or undue degradation of the public land or nonmineral resources.

Leasable minerals are those mineral commodities that may be acquired under the Mineral Leasing Act of 1920, as amended (41 Stat. 437, 30 U.S.C. 185, et seq). Leaseable minerals include coal, oil and gas, some other nonmetallics, and geothermal. These minerals are subject to exploration and development under leases, permits, or licenses granted by the Secretary of the Interior. This authority is presently administered by the BLM, and implemented through regulations under Title 43, Code of Federal Regulations (CFR) at parts 3100 (oil and gas), 3400 (coal), and 3500 (solid leaseable minerals other than coal and oil shale).

Geothermal resources are disposed of by the BLM through permit, lease, and license under the authority of the Geothermal Steam Act of 1970, as amended (84 Stat. 1566; 30 U.S.C. 1001-1025) and implementing regulations of 43 CFR 3200.

Salable minerals are common varieties of sand, stone, gravel, pumice, pumicite, cinders, and clay. Some of the salables occur within the current study area. Though of relative low unit value, these materials often have high commercial or industrial value and importance when located near markets. The salable minerals assume an even greater importance when other sources become unavailable due to depletion and/or lack

of access. Salables are used chiefly for construction materials and road building.

Salable minerals are disposed of by contract or permit under the authority of the Materials Act of July 31, 1947, as amended by the Act of July 23, 1955 (69 Stat. 367; 30 U.S.C. 601 et seq). Disposal of salable minerals from public lands administered by the BLM is totally at the discretion of the BLM and implemented under regulations of 43 CFR 3710.

2.0 Current Mineral Related Activity

A search was conducted at the BLM State Office in Reno looking at the claim staking and leasing records for signs of any current activity. As Table 1 illustrates, there is little evidence of current activity.

Records in the state office did indicate that claim staking activity had occurred in T 19 N, R 34 E and T 18 N, R 34 E as late as 1984. In most cases, it appeared that the claims covered possible pediment extensions of mineralization that occurs in the Wonder Mining District, east of this area.

Appropriate personnel at the BLM district office in Carson City were contacted to verify the existence of plans of operations submitted by claim/lease holders in the study area. There were two plans of operations concerning areas adjacent to the study area. The plans covered activity in sections 7, 8, 18, T 20 N, R 34 E. and section 1, T 18 N, R 34 E, section 30, T 18 N, R 35 E, section 36, T 19 N, R 34 E, and section 31, T 19 N, R 35 E. The case files are closed.

3.0 General Geology

The study area is located in Dixie Valley (base map, attached). The general geologic relationships are illustrated by the geology overlay (attached). The geologic time scale is illustrated by Table 2.

3.1 Rock Types

Older rocks are exposed in the mountains east and west of the project area. The rocks are Triassic in age and consist of limestones, dolomites, shales, and siltstones. This sequence is overlain by Jurassic/Triassic volcanoclastics and meta-sediments. The Jurassic/Triassic rocks were folded, faulted, and then intruded by Cretaceous granitics (Willden and Speed 1974, p. 10-16).

The Tertiary period is represented by intrusive and extrusive rocks with some sediments. The intrusives range in composition from granite to quartz monzonite to granodiorite(Willden

Table 1

BLM Claim/Leasing Records

Township	Range	Status
T 21 N	R 35 E	Claims, current: none Oil & Gas leases, current: none Geothermal leases, current: none
T 21 N	R 34 E	Claims, current: none Oil & Gas leases, current: section 22, NW 1/4, 1995 Geothermal leases, current: none
T 20 N	R 34 E	Claims, current: none Oil & Gas leases, current: none (past activity) Geothermal leases, current: none
T 19 N	R 34 E	Claims, current: none (past activity) Oil & Gas leases, current: none (past activity) Geothermal leases, current: none
T 18 N	R 34 E	Claims current: none (past activity) Oil & Gas leases, current: none (past activity) Geothermal leases, current: none
T 16 N	R 34 E	Claims, current: none Oil & Gas leases, current: none Geothermal leases, current: none (section 5, State of Nevada materials site, north and south of highway)
T 16 N	N 33 1/2 E	Claims, current: none Oil & Gas leases, current: none Geothermal leases, current: none

and Speed, p. 17, 1974). The extrusive rocks range in composition from rhyolite to rhyodacite to latite and occur as flows, flow breccias, and welded tuffs (Willden and Speed, p. 24-26, 1974).

The Tertiary sediments consist of limestones, tuffaceous shales and sandstones, and diatomaceous shales. These rocks occur west of the project area in the southern Stillwater Mountains.

The Quaternary period sediments cover about 95% of the project area. The Quaternary formations are Qoa and Qya. The Qoa (older alluvium) is composed of dissected alluvial fans, landslides, and pediment gravels. The Qya (younger alluvium) is composed of Lake Lahanton sediments, playa deposits, and young fan gravels.

3.2 Structure

The Triassic and Jurassic rocks have been subjected to folding and faulting in two and maybe four tectonic events. The axial trends of the folding are northerly to northeasterly. High angle normal faulting and low angle thrust faulting have mostly northeasterly trends. The structural pattern, both folding and faulting, is the result of horizontal shortening (compression) in an east-west direction (Willden and Speed, 1974).

The compressional regime continued on into the Cenozoic Era. Tertiary rocks are folded into broad north- and northeast-trending folds. A minor fold-trend, striking southeast and plunging southeast, has been noted (Willden and Speed, 1974). This minor trend may be due to strike-slip faulting post-dating the major fold trend.

By late Tertiary time (Pliocene), the structural regime changed to extentional. This change marks the beginning of Basin and Range faulting, creating the mountain ranges and broad valleys now present in the west (Willden and Speed, 1974). The extentional fault pattern continues into the present time.

4.0 Field Work Results

The southern-most proposed area for withdrawal is adjacent to Highway 50 in T 16 N, R 33, 33 1/2, 34 E. As indicated by the geology overlay, the area is covered by Qoa and Qya. As such, economic potential is limited to sand and gravel, and possible clay deposits. In section 7, T 16 N, R 33 E, approximately 0.5 miles west of Nevada Highway 31, a small barrow pit was noted. It is estimated that 50 to 100 yards of sand and gravel have been removed by the state highway department for road

maintenance. The time of the activity is unknown, but it does not appear to have been very recent.

Several small barrow pits were observed south of Highway 50. The pits are located in section 1, T 16 N, R 33 1/2 E. The material was probably used for highway maintenance. It is estimated that the amount of sand and gravel removed was less than 500 cubic yards.

The proposed withdrawal lands in T 18 N, R 34 E contain younger and older alluvium, and rhyolite flows and breccias (Trl). Where observed, the volcanics (Trl) are fractured and faulted but only slightly mineralized. The alluvium (Qya) is composed of fan gravels and could be considered source of sand and gravel. The contact between the flows and the gravels is at least partially a fault (Willden and Speed, 1974).

The project lands in T 19 N, R 34 E occur in a geologic setting similar to the lands in T 18 N, R 34 E. The eastern edge is rhyolite flows and breccias in contact with younger alluvium (Qya). The alluvium is composed of fan gravels and could be considered a source for sand and gravel. Again, the contact between the volcanics (Trl) and gravels may be a fault (Willden and Speed, 1974).

The remaining project lands are covered by older and younger alluvium. Dixie Valley begins to broaden northward and the mountains to the east recede eastward. The effect is noticed by an increase in finer sands and gravels and the presence of silts and clays. Two clay exposures were noted in sections 4 and 5, T 19 N, R 35 E outside of the project area. The clays probably represent playa deposits within the younger alluvium unit. The exposures are quite limited in areal extent and therefore would have no economic significance.

Other clay exposures were noted in T 20,21 N, R 34,35 E. Examination revealed that the clays were contaminated with sands and silts and lacked a thickness that might make them economically attractive.

5.0 Resource Potential

The potential for metallic resources is limited to the pediment areas on the east side of the project area in T 18,19 N, R 34 E. The potential is considered to be low and is based on the possible extension of mineralized trends and/or structures from the Wonder District (Thompson and Boleneus, 1990).

The potential to develop a gravel resource is thought to be moderate to high. This resource would not be economic at this time because gravel is a low unit value/high volume commodity,

sensitive to market location because of transportation costs. However, small lots of gravel will continue to be extracted and utilized by county and state highway maintenance crews.

The economic potential for the development of a clay resource is thought to be low. Limited exposures appear to be areally and thickness restricted. Again, resource location with respect to markets, are an important economic consideration.

6.0 References

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