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**Geology of the Wood Gulch Mine Area
and the Doby Prospect,
Northern Independence Range,
Elko County, Nevada**

by

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FIGURES (4 Pages)

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The Wood Gulch Mine and the Doby prospect are located approximately 59 miles north-northwest of Elko, Nevada in Elko County, Nevada (Figure 1). The properties are controlled by Homestake Mining Company (Doby is a 60-40 joint venture with BaRGOLD (of New York, NY) and are within approximately 5 miles of each other in the vicinity of Maggie Summit. Gold mineralization was recognized in both areas in 1983. Subsequent exploration outlined a small, mineable reserve at Wood Gulch and, to date, several small pods of mineralization at Doby.

REGIONAL GEOLOGY

The mineral systems at Doby and Wood Gulch, although contrasting in detail, are developed within the same stratigraphic and structural framework in the northern Independence Mountains and Bull Run Mountains. The terrain is complex, geologically, with the late Paleozoic Schnoonover Formation dominating surface exposures (Figure 2). The Schoonover is comprised of siliceous fine-grained to sandy clastic to calcareous clastic rocks, and was transported from the northwest on Golconda-equivalent thrust faults (Trail Creek Thrust). The "lower plate" assemblage consists of lower to middle Paleozoic units including the Prospect Mountain Quartzite, the Edgemont Formation, and the Van Duzer Limestone. Mesozoic quartz diorite to diorite intrudes both lower and upper plate sequences in an east-west belt extending from the Bull Run Mountains in the west to at least the Wood Gulch Mine area in the east. Two packages of Tertiary volcanic rocks occur in the area as erosional remnants, fault-bound blocks, or more extensive exposures. The older package is a dacitic tuff sequence with local andesitic flows?, and volcanoclastic sedimentary rocks (39.3-42.5 m.y.-Coats). The younger unit is the Jarbidge Rhyolite (15.4-16.8 m.y.-Coats), a welded crystal tuff and flow sequence that becomes regionally extensive immediately east of the Wood Gulch Mine.

In addition to the low-angle structures associated with Golconda-age thrusting, the area is strongly faulted along north-, northwest-, and northeast-trending high-angle faults. Normal, dip-slip movements (Basin and Range?) can be documented on many of the high angle structures. However, detailed work in the Wood Gulch area indicates dip-slip movements were superimposed on earlier developed strike-slip faults and fracture patterns.

Mineralization in the region includes silver, copper, lead and minor gold in the nearby Aura Mining District; gold in the Edgemont District; and minor gold from the Cobb Creek placers. Recent exploration in the region has been largely focused on gold with positive results reported in the Cobb Creek area. Neither Doby nor Wood Gulch had evidence of significant prior prospecting, with only one small prospect shaft evident at Doby.

WOOD GULCH

Discovery History

The Wood Gulch property was submitted to Homestake by local geologists in the summer of 1983. Subsequent followup by Homestake geologists R.R. Kern, R.B. Blakestad and W.R. Stanley led to the leasing of the ground, exploration of the property and discovery of the deposit now in production. Drilling was initiated in the summer of 1984, with significant ore-grade intercepts encountered in the first round of drilling. Continued exploration resulted in the definition of a deposit containing a geologic inventory of 465,000 tons with an average grade of 0.098 opt gold and 0.69 opt silver. The deposit was put into production in the summer of 1988, producing seasonally through 1990. Exploration on the property continues, with the hope of providing additional, incremental reserves or new deposits.

Production

Development of the open-pit, valley leach operation commenced in late June, 1988, with the first production realized in mid-November, 1988. Capital cost of the operation was \$5.0 million. Operations are expected to conclude by the end of 1990.

The total ore mined, crushed and placed on the valley leach pads for the seasonal operation in 1988 and 1989 was 646,250 tons at a head grade of 0.084 opt gold and 0.30 opt silver. Metallurgical recoveries are predicted at 65 percent for gold, and 30 percent for silver. The ultimate pit waste to ore ratio was 2.6:1.

Stratigraphy

The bedrock geology at Wood Gulch is dominated by the upper Paleozoic Schoonover Formation and Tertiary volcanics (Figure 3). The Schoonover Formation is characteristically thin bedded, fine-grained clastic lithologies including siliceous siltstone, chert and fine-grained sandstone. Locally, medium- to coarse-grained sandstone, intraformational conglomerate, limestone and calcareous clastic lithologies are contained within the sequence. Marker units and rock packages are only locally decipherable. High relief and drill hole data indicate the Schoonover is a minimum 3500 feet thick in the project area.

Tertiary volcanic rocks at Wood Gulch occur in two main packages; a pre-mineral dacitic tuff unit, and a post-mineral rhyolitic unit (Jarbidge Rhyolite). The dacitic tuff is a light-colored buff to lavender crystal-lithic tuff containing biotite, plagioclase and minor quartz phenocrysts. Other rock types within the pre-mineral unit include andesitic volcanics and poorly consolidated volcanoclastic sediments and paleo-talus.

The Jarbidge Rhyolite is a light-grey crystal tuff and/or series of flows containing conspicuous K-feldspar and quartz phenocrysts with a notable absence of mafic minerals. The unit is post-mineral relative to the mineralization at Wood Gulch. It caps several hills west of the Tomasina fault (Figure 3), but disappears rapidly to the west. East of the Tomasina fault the Jarbidge Rhyolite is a major, regionally extensive map unit.

Structure

Structure at Wood Gulch was developed in association with an older (Mesozoic) episode of thrust faulting and deformation, as well as Tertiary high angle faulting.

Schoonover sediments generally dip at a moderate angle (20 to 35 degrees) to the north and northwest. Dip variations between 0 and 90 degrees are common, however, and the Schoonover sediments may locally be overturned. Abundant outcrop-scale asymmetric folds with subhorizontal axes and flat to moderately inclined axial surfaces are interpreted as structures associated with Mesozoic thrusting of the Schoonover package from the northwest. Although thrusts are difficult to map on the surface owing to low outcrop density and the ambiguity of the stratigraphy, low-angle tectonics are well-displayed in the Wood Gulch open pit.

High angle structures, developed along northerly, northwest and northeast trends, are abundant at Wood Gulch (Figure 3). The Tomasina fault is the major structural feature on the property. Detailed structural work indicates the north-northwest trending Tomasina fault and associated northwesterly conjugate shears initially developed as strike-slip features. The magnitude of any strike-slip displacement (left-lateral along the Tomasina fault) has not been documented to date. More recently, the existing strike-slip fault pattern accommodated dip-slip movements, resulting in displacement of at least the pre-mineral dacitic volcanics, and possibly the Jarbidge Rhyolite.

Alteration and Mineralization

Gold-silver mineralization is widespread, with anomalous surface samples taken over a two square mile area. Ore grade mineralization is far more restricted with the Tomasina fault and associated structures appearing to be the main focus for mineralization. Mineralized outcrops of Schoonover or dacitic volcanics typically contain weakly to moderately limonitic quartz veins, mimicking the strong structural control on mineralization observed within the Wood Gulch deposit. Within the Wood Gulch deposit, gold-silver values, especially higher grade values, are confined to silicified and quartz-veined structures and breccia zones varying to perhaps ten feet in thickness. Lower grade values are confined to moderately broken and veined zones in the hanging wall to main structures or near structural intersections.

The Wood Gulch deposit is located near the intersection of the Tomasina fault and a major northwest-trending conjugate structure (Figure 3). Mineralization is controlled by both structure and stratigraphy with an apparent floor to mineralization marked by the transition from broken, fine- to medium-grained sandstone and siliceous siltstone to underlying, barren shale/siltstone. The timing of mineralization relative to strike-slip versus dip-slip fault movements is poorly understood. However, evidence leans toward a dip-slip timing, with mineralization concentrated in dilatant dip-deflection zones in more competent host rocks.

Alteration at Wood Gulch varies from strong apparent silicification in Schoonover host rocks to strong argillization of dacitic volcanic rocks. The major difficulty in assessing silicification in the Schoonover revolves around the contrast between siliceous and silicified. The presence of quartz veins, drusy voids and anomalous geochemical values appear to document "alteration" of the Schoonover most adequately.

Dacitic volcanic rocks are altered and mineralized, but are not good host rocks as compared with brittle Schoonover lithologies. Alteration of the dacite produces clay-rich assemblages that confine mineralization to the immediately underlying Schoonover rocks although a small percentage of the Wood Gulch reserve was contained in dacite. On a property-wide basis the dacite is an excellent indicator of the limits of the system. Weak argillization and possible advanced argillic alteration are readily recognized and roughly coincide with the limits of anomalous mineralization.

DOBY

Discovery History

Anomalous gold and trace element data coupled with a regional geologic compilation following the discovery of mineralization at Wood Gulch led Felmont Oil Company geologists under the direction of R.B. Dickerson to acquire leases and stake claims in the Maggie Summit area in 1983. Geologic work followed in late 1983 and 1984, with initial drilling in the summer of 1985 after Homestake's purchase of Felmont. Ore grade intercepts in this first round of drilling provided the encouragement for continued work over the last several years. To date, potentially mineable, low-grade inventories have been defined in three near-surface oxidized pods, with several additional areas providing encouraging or anomalous results. Deeper drilling (to 1600 feet) has encountered anomalous gold in largely calcareous siltstone and fine-grained clastics.

Stratigraphy

Bedrock exposures at Doby are dominated by the Schoonover Formation and Tertiary volcanic rocks, similar to the setting at Wood Gulch (Figure 4). Mappable units within the Schoonover include chert-rich sections, sandstone and siliceous and/or calcareous siltstone. Siltstone appears to be the main host for mineralization at Doby.

Quartz diorite to diorite, assumed to be Mesozoic in age, is exposed in several areas in the northern one-half of the property. Normally fresh to weakly argillized, the diorite is typically strongly anomalous in arsenic and other trace elements. Although gold is locally anomalous within the diorite, substantial mineralization has not been defined.

Tertiary volcanic rocks are clearly post-mineral and consist of dacitic tuff - equivalent to the older pre-mineral volcanic unit at Wood Gulch. As at Wood Gulch, this unit occurs as erosional remnants of a once very extensive sheet of tuffs. Remnant patches may also be structurally bound, or occur as paleo-valley fills.

The Jarbidge Rhyolite has not been identified on the Doby property.

Structure

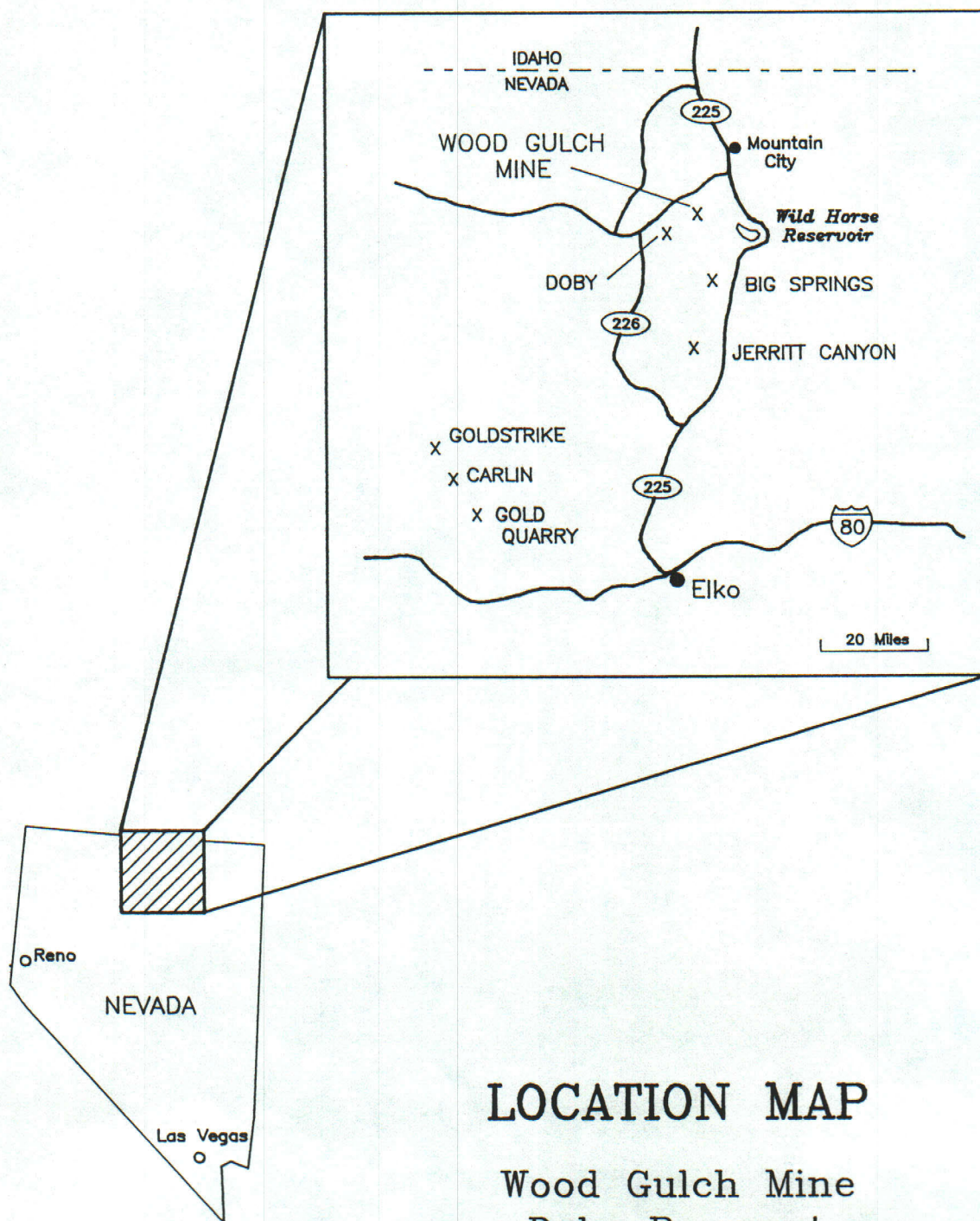
Schoonover sediments strike generally north-northwest to northeast, dipping at shallow to moderate angles to the west. Low angle Golconda-aged structures, prevalent regionally, have not been identified at Doby. The Trail Creek Thrust, the main Golconda-equivalent structure, traverses or underlies at shallow depth, the northernmost portions of the property, but has not been identified in drill holes to date.

Numerous high-angle structures have been mapped or interpreted at Doby. Main trends include north-south, north-northeast and west-northwest. Within the main mineralized portion of the property, these structures are silicified and stand in positive relief. However, attempted structural analysis has not been successful in evaluating the structural history or explaining the location or geometry of mineralized zones.

Alteration/Mineralization

Mineralization at Doby is strongly gold biased in contrast to the higher silver-gold ratios encountered at Wood Gulch. Gold is fine-grained (1-14 microns), occurs in the native state, and is associated with the silicified matrix of siltstone and sandstone. Locally, gold occurs as inclusions within goethite pseudomorphs after pyrite.

Mineralization is controlled by structure and stratigraphy, with grade and thickness increasing toward major structures. Controls on mineralization are locally ambiguous, with

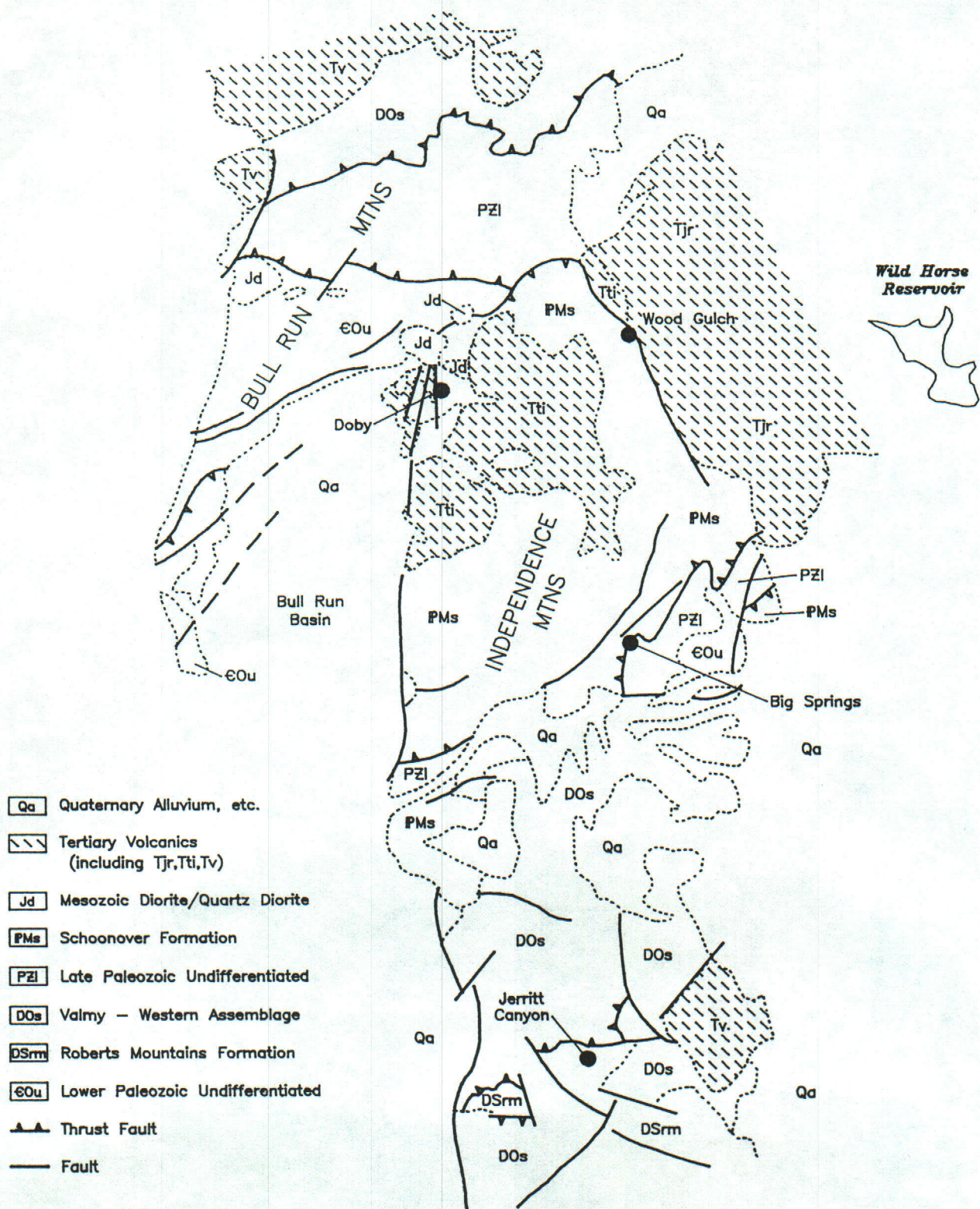


LOCATION MAP

Wood Gulch Mine
Doby Prospect
Elko County, Nevada



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REGIONAL GEOLOGY

Independence Range Elko County, Nevada



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mineralization in small pods traversing stratigraphy with no apparent relationship to recognized structure. Quartz veins commonly accompany mineralization and alteration, with evidence of repeated veining in the silicified structures. It has been demonstrated that not all quartz vein episodes were associated with gold mineralization.

Silicification is the most widely developed macroscopic alteration type, and is generally a good indicator of the possibility of gold mineralization. Sericitization often accompanies the silicification, but has proven definable only in thin section. Three problems exist: the first is the recognition of silicification versus siliceous lithologies; the second is the occurrence of substantial gold mineralization without obvious accompanying alteration, including silicification; and the third is whether host rocks were all originally carbonate-bearing, indicating widespread decalcification in the area.

DISCUSSION

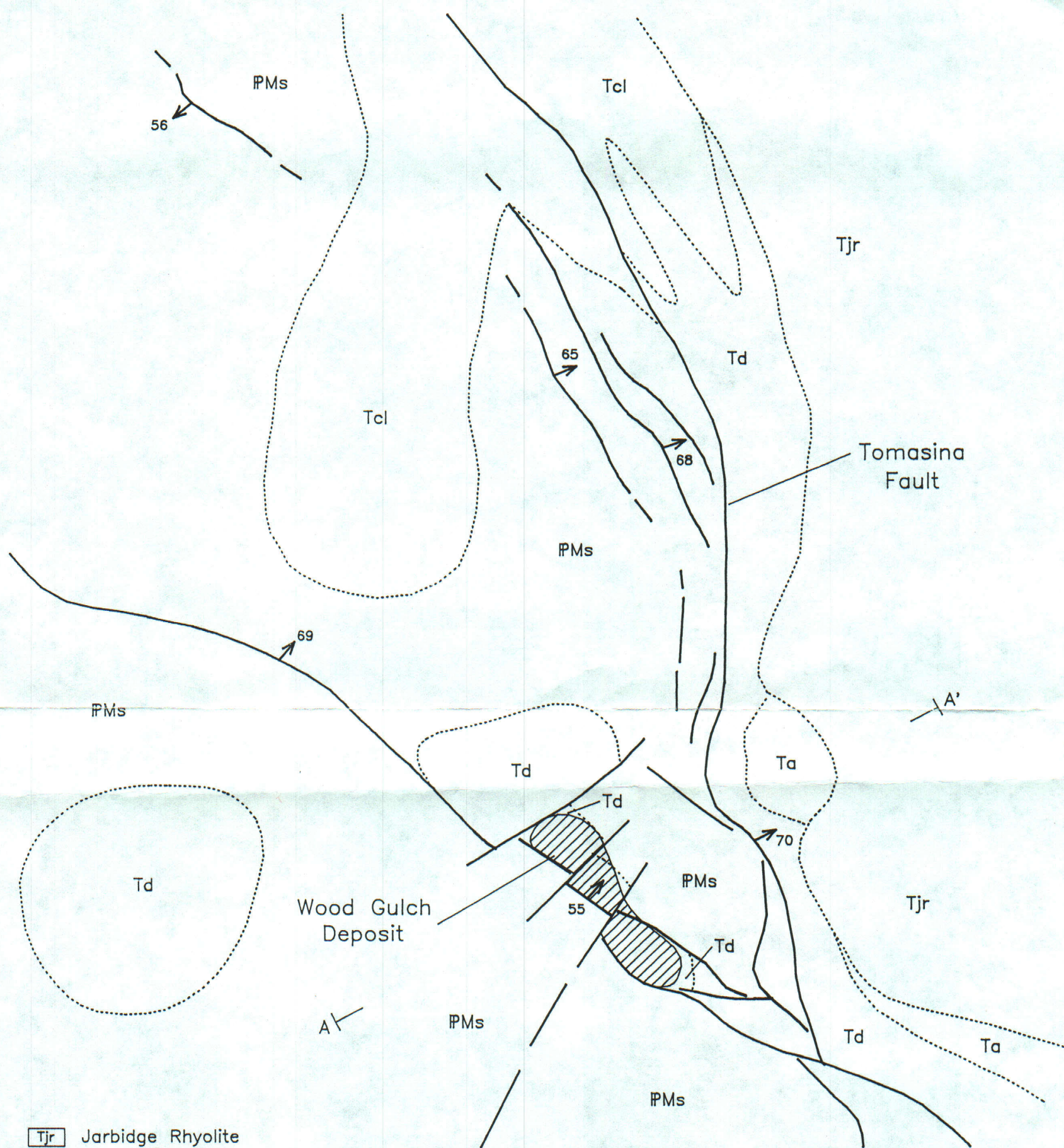
The mineral systems at Wood Gulch and Doby are distinct in their relative timing as well as geologic/geochemical detail. Wood Gulch is distinctly younger as the system affects 40 m.y. old Tertiary volcanics, is strongly structurally controlled, and has a silver-gold signature. Doby, on the other hand, is pre-volcanic, more strongly influenced by Schoonover stratigraphy, and is gold-biased. In effect, Doby is best described as a Carlin-type gold system in a predominantly clastic rock sequence, while Wood Gulch is a structurally confined gold-silver quartz vein system.

ACKNOWLEDGMENTS

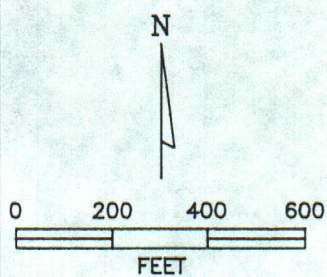
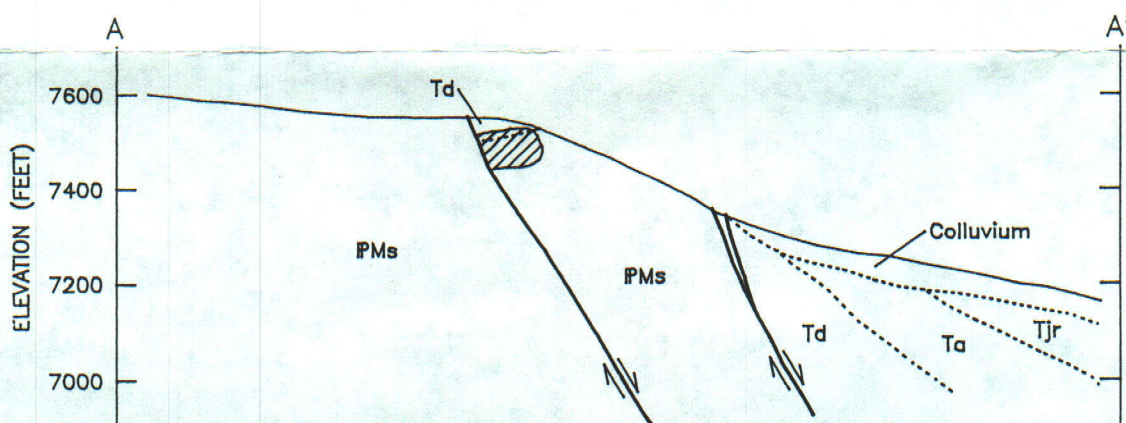
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- Tjr Jarbidge Rhyolite
- Ta Andesite
- Td Dacite
- Tcl Paleo-colluvium and Volcaniclastics
- PMs Schoonover Fm
- Fault
- Lithologic Contact
- Gold Deposit

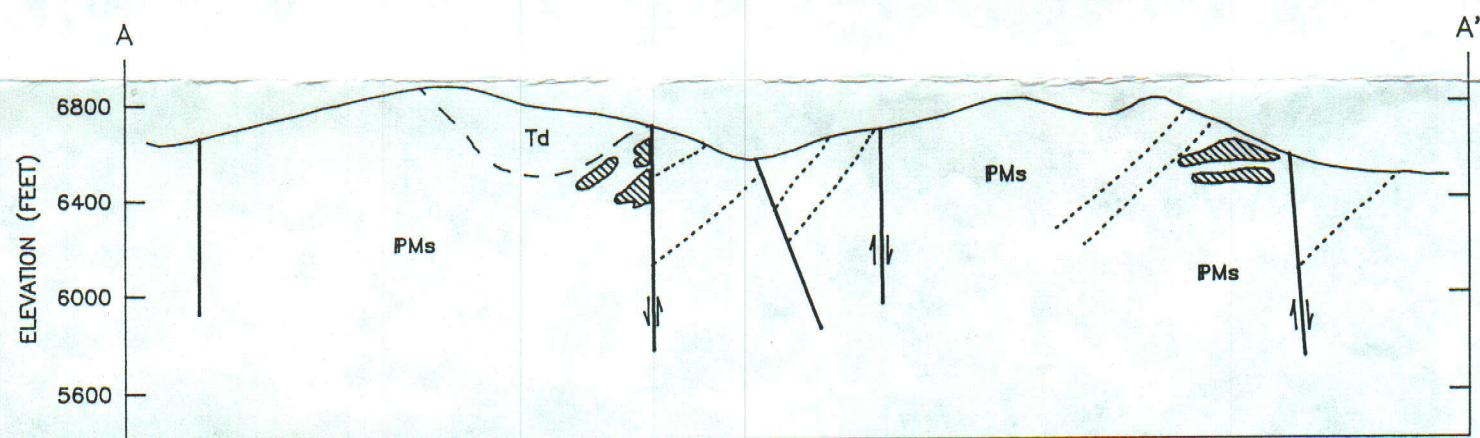
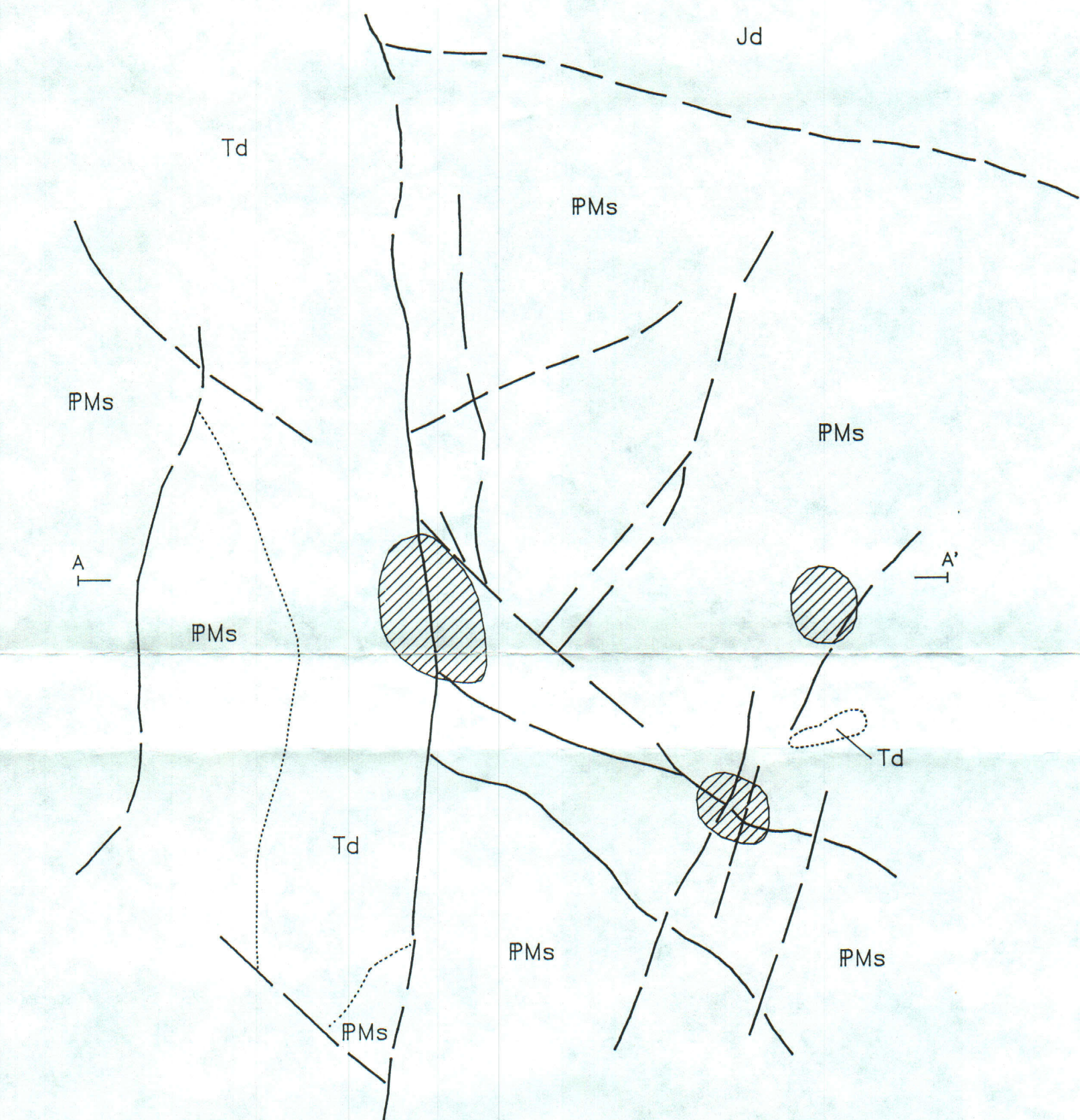


BEDROCK GEOLOGY

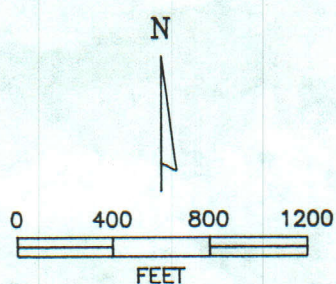
Wood Gulch Mine Site
Elko County, Nevada



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- Td Tertiary Dacite Volcanics
- Jd Jurassic Diorite
- PMs Late Paleozoic Schoonover Fm
- Fault
- Lithologic Contact
- Gold Deposit



BEDROCK GEOLOGY

Doby Prospect
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Figure 4

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