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HILLSIDE GOLD PROJECT  
YAVAPAI COUNTY, ARIZONA  
FEBRUARY, 1985

*Harrison E Matson*

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Geologist

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## Summary

The Hillside Gold Prospect is in Yavapai County, Arizona, about 85 miles NNW of Phoenix. The property is on Arizona State Land currently held under Arizona State Prospecting Permits by Westworld Inc., of Houston, Texas. Exploratory diamond drilling was conducted by Meridian Minerals Company in August, 1984, under a lease/option agreement with Westworld which was subsequently terminated.

Mineralization containing anomalous gold values occurs in the prospect area principally in an arcuate, generally ENE trending zone of silicification and quartz-pyrite stockwork developed in Precambrian granitic rocks. The anomalous zone dips about 40° south, averages about 75 feet in width, and has a partially covered strike length of about 2000 feet. Surface assay composites of 30 to 60 feet in length ranged from .005 to .073 opt Au with individual assays as high as .625 opt Au.

Six inclined diamond drill holes were drilled to test the mineralization under shallow alluvial cover and also at about 200 feet of depth. The drilling confirmed the presence of a relatively wide zone of mineralization, but indicated the grade to be sub-marginal, averaging for the most part .01 opt Au.

## Conclusions & Recommendations

Drilling beneath the principal geochemical anomalies and also along the projection of these anomalies under shallow cover did not encounter a significant volume of ore grade gold mineralization. The average gold content of the mineralized zone was found to be about .01 opt and silver values averaged less than .2 opt. These values are generally lower than those returned on samples collected from the surface exposures. This variation is doubtless due to the effects of supergene enrichment.

Subsurface exploration tested the area believed to have the maximum grade potential but yielded only discouraging results. It is therefore recommended that no additional exploration work be expended on this prospect.

## Location & Access

The Hillside Gold Prospect is located in Yavapai County, Arizona, approximately 85 miles NNW of Phoenix, and only 1 1/2 miles NE of the village of Hillside. The principal area in which exploration was conducted is in the south 1/2 of Section 28, Township 13 North, Range 6 West, G&SRM, Arizona.

A rutted dirt road leads from Hillside NE to the prospect, but a rancher's gate which is usually locked bars entry. A key may be obtained from the

Indian Rock Ranch at Yava, Arizona, if necessary. A second, easily passable jeep trail accesses the property from the NW at a point 1 1/3 miles N of Hillside on State Route 96.

Topography within the prospect area is moderate with only about 300 feet of relief and an average elevation of approximately 3800 feet. Drill roads and sites were constructed inexpensively and without difficulty.

### Property

Westworld Inc. currently holds 1840 acres of State Land under six State of Arizona Prospecting Permits. The acreage included within these permits is shown in Figure #2. Permits numbered 08-85580, 08-85581, 08-85582 and 08-85583 have an issue or anniversary date of January 11, 1983, while permits numbered 08-90292 and 08-90293 have an issue date of November 27, 1984. State work requirements on these permits must be met and the annual rental fees filed by 4:00 PM on these dates if the permits are to be maintained. Rental fees are one dollar per acre payable for two years upon initial filing, and in one year increments thereafter. A \$50 filing fee is required each year and reclamation bonds must also be filed in an amount determined by the State. Expenditures in exploration must be no less than \$10 per acre in each of the first two years the permit is held, then no less than \$20 per acre for each of the following three years. Expenditures in excess of this yearly amount may be applied toward meeting the following year's requirement.

Prospecting permits are only issued for a maximum term of five years, after which a State Mineral Lease may be obtained. The prospecting permit grants an exclusive right to a mineral lease and any actual mining on State Land requires one. Mineral leases have a term of 20 years with the State, collecting a 5% net royalty from mine production.

Exploration by Meridian Minerals Company on the Hillside property was carried out under a lease/option agreement with Westworld Inc., finalized in August, 1984. After results of drilling on the property were tabulated and studied, Meridian Minerals on November 26, 1984, elected to terminate the agreement.

An itemization of exploration expenditures by Meridian Minerals on the Hillside project from June, 1984, through January, 1985, is appended.

## Geology

The area in and surrounding the Hillside prospect is composed of an extensively exposed Precambrian granitic intrusive complex. The more deeply eroded portions of the complex have been blanketed by Quaternary volcanic flow rocks of basaltic composition. Subsequent erosion of the flows has created local windows exposing the underlying granitic rocks and has also formed isolated remnants of basalt. In some areas, rather thick but local accumulations of alluvial material has been deposited chiefly where the basalt flows have temporarily dammed earlier stream channels.

The rocks which host mineralization in the prospect area are plutonic mostly phaneritic, holocrystalline and equigranular, but with some rare microcrystalline phases. The two predominant rock types with the most areal extent are a biotite granite and a granodiorite. The relative age of these intrusives is uncertain, but they may be the deeply eroded core of the Precambrian complex. Each has a compositional range gradational within itself, such as a quartz monzonite phase of the granite intrusion or a quartz diorite phase of the granodiorite intrusion.

Several smaller intrusives have, along lines of structural weakness, clearly invaded the larger plutonic masses. One, a dark green diabase with hypidiomorphic texture occurs near the center of Section 28 as an approximately N60E trending dike about 80 feet wide. Two partially caved prospect pits on the north contact of this dike with granite expose some very weak quartz pyrite veining. The south contact is obscure, but it appears to also be with a granite.

Intrusive into both the granite and the granodiorite is an irregular shaped mass of alaskite. The alaskite is coarse to fine grained with a distinctive graphic texture. The main mass of alaskite appears to be principally along the footwall of the stockwork vein zone SE of the center of Section 28, but also does occur further south in the hanging wall. Other small angular dikes of alaskite with sharp contacts of N50E and N15E, may be observed to cut granodiorite near the bottom of Bland Creek also in the SE 1/4 of Section 28.

## Structure

Due to the absence of stratigraphic markers in the Precambrian crystalline rocks of the region, structural correlations are difficult and largely incomplete. A portion of one regional study produced by Kennecott Exploration (Allan & Swan, 1972, private report) is reproduced with the addition of some Hillside Project data as Figure #3.

As may be deduced from this Figure, there appears to be three principal sets or patterns of major faulting affecting the region. Perhaps the best documented of these is the WNW trending elements of the Bagdad fault zone. This regionally elongate, deep seated, Precambrian wrench zone has been recurrently activated and is host to both Nevadan and Laramide age intrusives in adjacent areas.

A second structural trend of regional proportions is the NE preferred orientation of numerous intrusive dikes and faults of relatively short strike length. In the Bagdad area this is also the dominant fabric direction of the shistose Precambrian rocks.

Probably the youngest regional pattern of faulting is the trend to the NW which is of Basin and Range equivalent age. This later faulting has overprinted much of the earlier deformation complicating the interpretation of the Precambrian structures. It is, however, the least difficult to decipher at the prospect level.

The principal stockwork zone of mineralization at the Hillside prospect has been broken and offset by a parallel system of NW striking post-mineral faults. These faults are interpreted to be right lateral and presumably normal vertical faults. They have small individual displacements, but may collectively represent several hundred feet of horizontal movement.

Other prominent structures at the prospect area are mostly pre-mineral and have provided the ground preparation required for mineralization. It is believed that the N80W and N60E structures may have been the most effective in that regard.

#### Mineralization & Alteration

Within the granitic rocks, several elongate quartz veins and limonitic flooded quartz stockwork vein zones are developed over an area of approximately 1 1/4 miles in length by several hundred feet wide. In the SE 1/4 of Section 28, one such zone of stockwork quartz veining was found to contain strongly anomalous gold values with individual assays to .6 opt and composite assays to 60 feet of width to .07 opt. This anomalous area was delineated as approximately 80 feet wide by 2000 feet long and partially covered on the western end.

Mineralization containing the anomalous gold values is an oxidized zone of anastomosing quartz-specularite-pyrite veinlets associated with strong pervasive silicification, and local strong argillic alteration, principally affecting the sodic feldspars of the granitic rocks. The higher gold values

appear to be related to the intimate admixture of argillic and silicic alteration rather than follow one alteration type or the other. Some of this argillic alteration was probably derived from supergene affects due to the oxidation of disseminated pyrite. The pyrite which accompanied the siliceous alteration was probably weakly auriferous. Moderate hypogene argillic alteration is also developed in the adjacent granitic rocks, predominantly on the hanging wall and surrounding the silicification.

The anomalous zone of intense silicification and quartz veining forms the spine of the principal ridge in the SE 1/4 of Section 28. The argillically altered rocks flank the ridge and are covered with a thin veneer of colluvium. This mineralization is thought to have been localized by a NE trending normal fault having a southerly dip of 38-40°. An apparent steep dip to the mineralization (50-60°) is probably derived from the filling of tension fractures within the glide plane of the normal fault.

To the south of this main vein zone, about 600 feet, a second area of stockwork quartz veining occurs. This zone of reticulated quartz veinlets in a silicified granitic matrix appears similar to that developed in the main vein zone, but surface gold values were found to be consistently much lower, although still weakly anomalous.

Another different aspect to this area is the presence of milk white massive quartz veins containing few or no other minerals. These veins vary from less than a foot to several feet thick, appear to dip steeply south and form a sub-parallel group which strikes about N80W. The veins appear to die out to the east in a short distance but probably continue west along strike into Section 29. They are for the most part covered by alluvium, but several widely separated prospect pits provide exposure along this trend. Where prospected, the veins were found to contain a few cubic casts after pyrite.

Near the eastern boundary and within Section 29 along the same N80W strike is another very wide silicified ridge in the granitic rocks. A massive white quartz vein up to 10 feet wide forms the hanging wall of this zone which dips about 70° S. Stockwork quartz veining is abundant and the ridge is colored reddish brown from limonite. Much of this limonite is of the exotic variety however, and assay data from the samples collected from this locality reported no significant gold values. No additional areas of veining or silicification were found to the west.

One other area in which anomalous gold values were reported lies in the NE 1/4 of Section 28. An inclined shaft and a few prospects expose a narrow

quartz vein in granite containing locally abundant, powdery limonite after pyrite. The vein strikes N50-60E and dips 30-45°SE. Gold values range to .3 opt, but are restricted to the less than 3 foot wide vein. While this fault vein offers no significant tonnage potential, it is of interest structurally since the stockwork zone containing the principal gold anomalies lies along its projection to the southwest.

### Exploration Methods

Initial exploration activities consisted of reconnaissance sampling of the prospect area by Westworld Inc., followed by Felmont Oil and Amselco Exploration as a submittal property. Approximately thirty-six samples were collected during this phase of activity which began to delineate an area of strongly anomalous gold values.

A detailed surface sampling program was then initiated in the Fall of 1983 by Westworld, along with geologic mapping of the prospect at a scale of 1" = 100' using a plane table and telescopic alidade. This procedure was continued by Meridian Minerals Company after exploration was assigned to that Company by lease/option agreement. The Geologic Map produced is appended as Plate #1 and the Surface Sample Analysis Map is Plate #2.

Each rock chip sample was collected across a measured width and averaged approximately 15 lbs in weight. Samples were collected contiguously across the width of the mineralization as exposed, forming sample lines to 60 feet in length. Each sample number in the line was plainly marked with white and black paint on the outcrop to avoid future ambiguity. Sample analysis was performed by Skyline Labs and Jacobs Assay Office of Tucson, and were cross-checked for accuracy. The majority of samples were crushed to pass 20 mesh (U.S.) before any split, mixed, then fire assayed in one assay ton aliquots.

In late July, 1984, drill roads and sites were prepared and diamond core drilling, contracted to Joy Manufacturing, was begun. Six inclined NX diameter diamond drill holes totalling 1348 feet were completed by August 25. Five holes were spaced at about 300 foot intervals along the dip slope of the main stockwork vein zone and inclined to the north at angles of 50° to 67° from horizontal. The western two of these holes were drilled under the covered portion of the mineralized zone. A sixth inclined hole was located to test a similar area of stockwork quartz veining about 600 feet south of the main stockwork zone.

Core recovery for all holes was generally good with an average recovery of about 95%.

The drill core was logged then split using a diamond saw. The one-half split was then prepared and assayed in the same manner as the surface samples.

### Environmental Protection

In advance of drill road and pad construction, the Arizona State Museum was contacted to schedule an archaeological survey for antiquities. This survey was accomplished by two Arizona State Archaeologists on June 18-20, 1984. Four archaeological sites including some petroglyphs were discovered on the prospect area. The locations are identified in the appended Arizona State Museum Report.

Surface work on the prospect was designed to avoid damage to these sites and was partially monitored by an archaeologist.

Upon completion of drilling, in compliance with Arizona State Department of Water Resources regulations, all drill holes were filled with mud and cemented closed. Also in accordance with State guidelines, mud pits were backfilled and drill sites were recontoured then re-seeded with side oats grama, a local native grass.

### Results of Exploration

Drill holes H-1 through H-5, located along a line about 200 feet south of the principal gold anomalies, intersected from 30 to 75 feet of siliceous replacement and stockwork quartz veining, which was locally strongly limonitic after disseminated pyrite. These holes cut the mineralization at an average depth of 200 feet below the outcrop. The mineralized zone was found to dip 38° to 40° south, considerably less than the surface expression seemed to indicate. The 30 foot width of mineralization cut in hole H-1 was much thinner than expected and is probably non-representative. The difference is thought to be caused by the angle at which the inclined hole intersected a NW right lateral-normal(?) fault.

Assay results from these five holes indicate that the grade of gold mineralization in the stockwork zone is sub-marginal, averaging for the most part, .01 opt Au. Intercepts of five feet containing .110 opt Au and eight feet containing .088 opt Au were cut in holes H-2 and H-4, respectively. These were the easternmost and westernmost holes in the drill line. The .110 opt assay could not be reproduced and may be contributed to either analytic error or to a nugget effect.

The sixth hole which was located to test a similar sub-parallel stockwork zone to the south, intercepted 25 feet and 12.5 feet of siliceous replacement with stockwork quartz veining containing weak to occasionally abundant limonite

after pyrite. These southern stockworks averaged only about .007 and less than .005 opt Au, respectively.

Detailed drill logs are appended to this report while summarized logs with assays are listed below.

Hole H-1 N5°W -50° 200'

		<u>opt Au</u>
0- 10	Alluvium	
- 73.5	Quartz monzonite	
- 93	Alaskite	
-102	Granite	
-131	Granite with argillic alteration and local silicification	.005
-139	Alaskite with str silicification and argillic alteration	.01
-144	Granite, silicified with local argillization	<.005
-200	Biotite granite	

Hole H-2 N10W -50° 197'

0- 5	Alluvium	
- 19	Alaskite with pervasive mod argillic alteration	
- 70	Granodiorite with local argillic alteration	<.005
- 75	Granodiorite with local silicification and argillization	.033
-101.5	Siliceous replacements in argillically altered alaskite	.010
-107	Quartz monzonite with local strong argillic alteration	<.005
-142	Alaskite and granite with local silicification and wk argillization	<.005
-154	Alaskite, argillically altered with local silicification	.013
-190	Biotite granite	<.005
-197	Alaskite	

Hole H-3 N15W -55° 191'

0- 10	Alluvium	
- 59	Granodiorite	
- 93	Granite with weak local argillic alteration	
-118	Granite with pervasive moderate argillic alteration and local silicification	.008
-131	Siliceous replacements in argillically altered granite	.012
-167	Granite, silicified with local argillic alteration	.005
-191	Biotite granite	

Hole H-4 N15W -55° 316'

opt Au

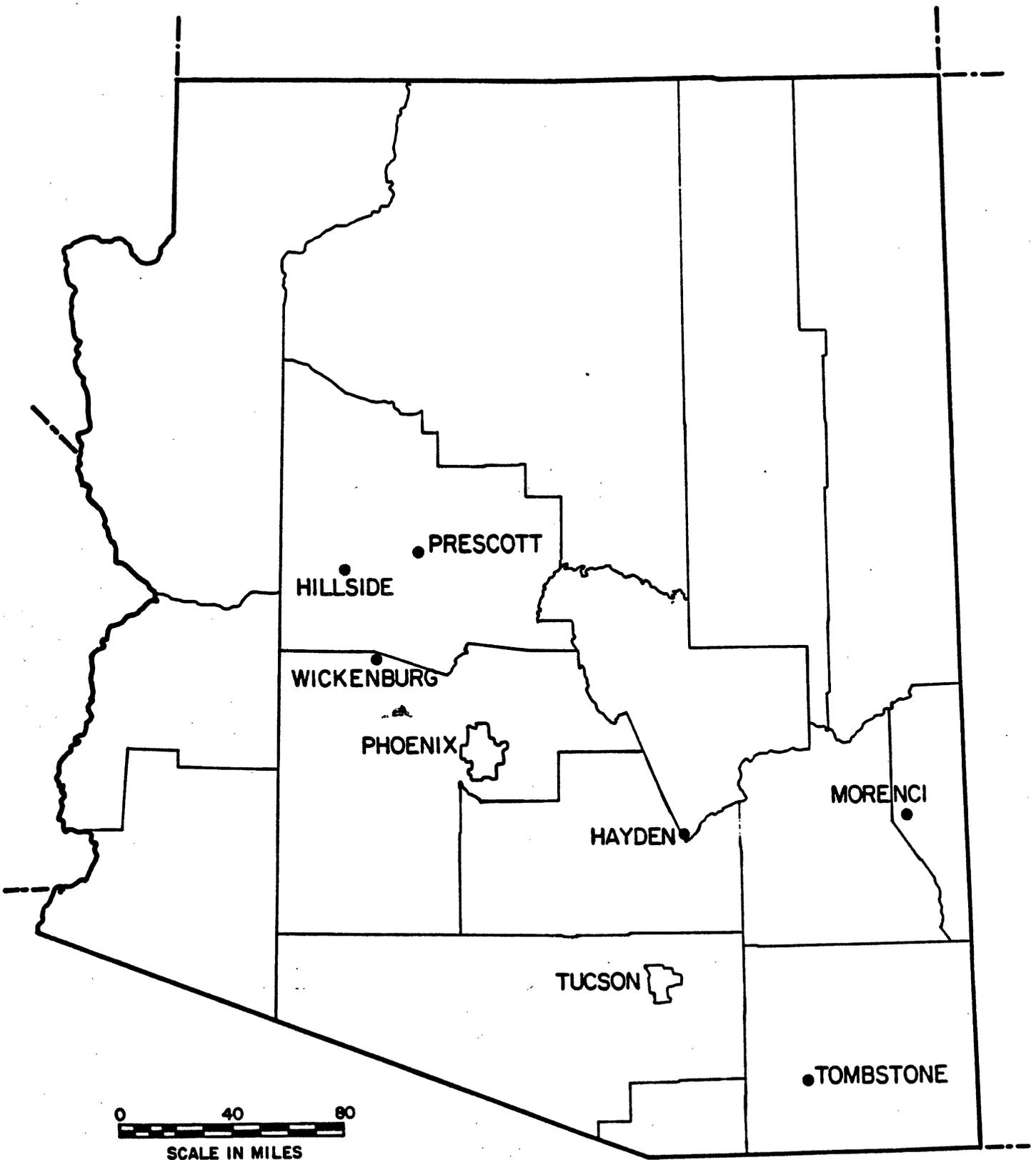
0-103	Alluvium	
-123	Granodiorite	
-208	Granite	
-227	Granite, argillically altered with local str silicification	.005
-242	Siliceous replacements in argillically altered granite	.010 †
-250	Alaskite, silicified with local argillization	.088 †
-288	Biotite granite, local silicification and argillization	.005
-308	Biotite granite, local silicification & argillization	.013 †
-316	Quartz diorite	

Hole H-5 N15W -67° 243'

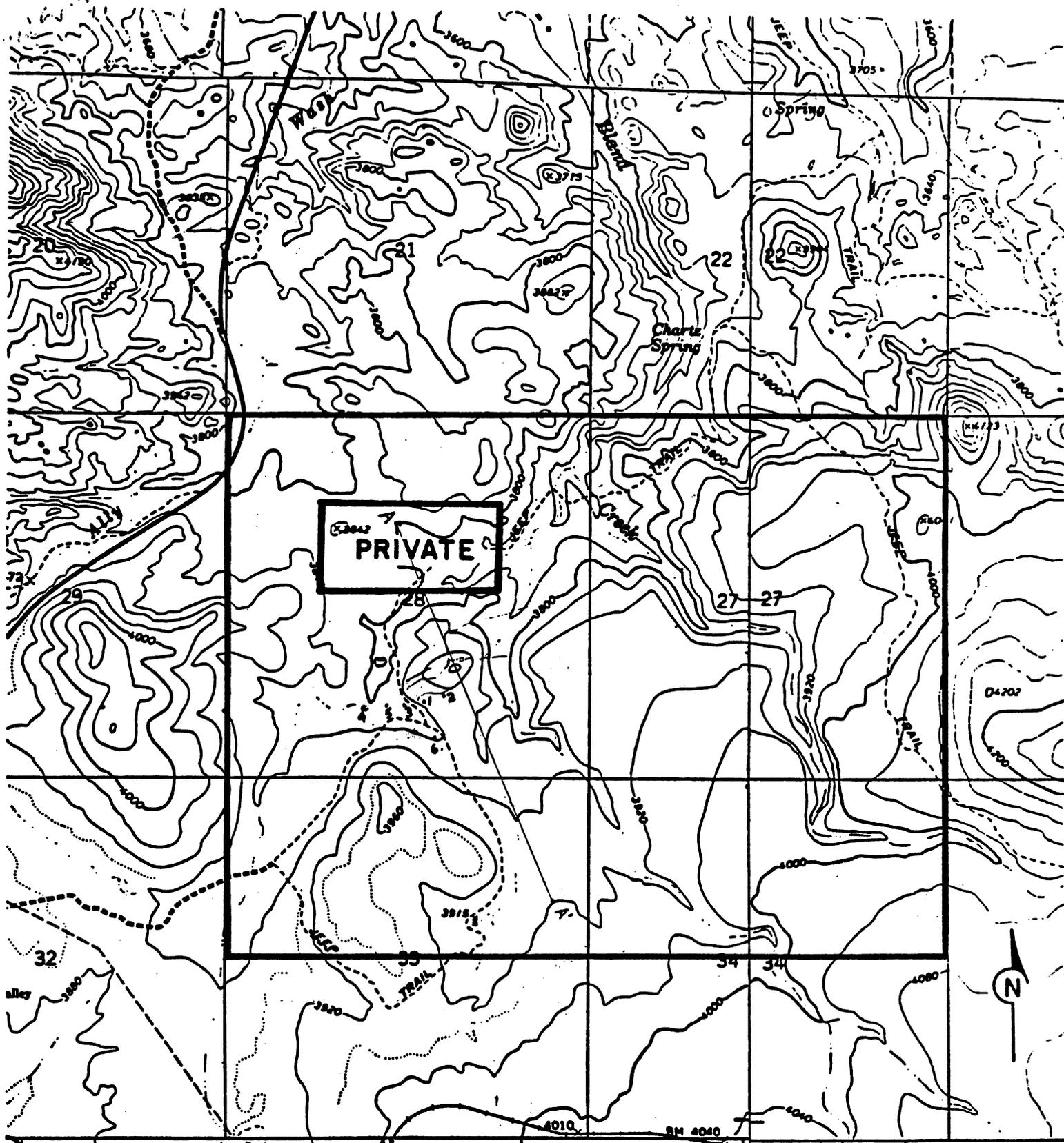
0- 94	Alluvium	
-142	Granodiorite with aplite dikes	
-158	Biotite granite local argillic alteration	<.005
-178	Biotite granite, local silicification and argilliza- tion	.014 †
-186	Siliceous replacements in biotite granite	.005
-204	Biotite granite, silicified with local argillization	.030 †
-213.5	Biotite granite, local silicification & argillization	.006
-229	Quartz diorite	<.005
-243	Biotite granite	

Hole H-6 N25W -48° 201'

0- 11	Alluvium	
- 50	Granodiorite and fault gouge	
- 60	Granodiorite, locally silicified	.030 †
- 71	Siliceous replacement with stockwork quartz veins in granodiorite	.008
- 76	Fault gouge with siliceous granodiorite	.005
- 96	Siliceous replacement in granodiorite with stockwork quartz veins	.007
-107	Fault gouge	<.005
-112	Strongly silicified granodiorite	.005
-122	Quartz monzonite	<.005
-135.5	Alaskite, locally aplitic	<.005
-148	Siliceous replacement with stockwork quartz veins	<.005
-178	Alaskite, silicified with local argillic alteration	<.005
-201	Alaskite, locally silicified	<.005



**LOCATION MAP  
HILLSIDE PROJECT  
YAVAPAI CO., ARIZONA**



**AREA WITHIN ARIZONA PROSPECTING PERMITS**

**HILLSIDE PROJECT**

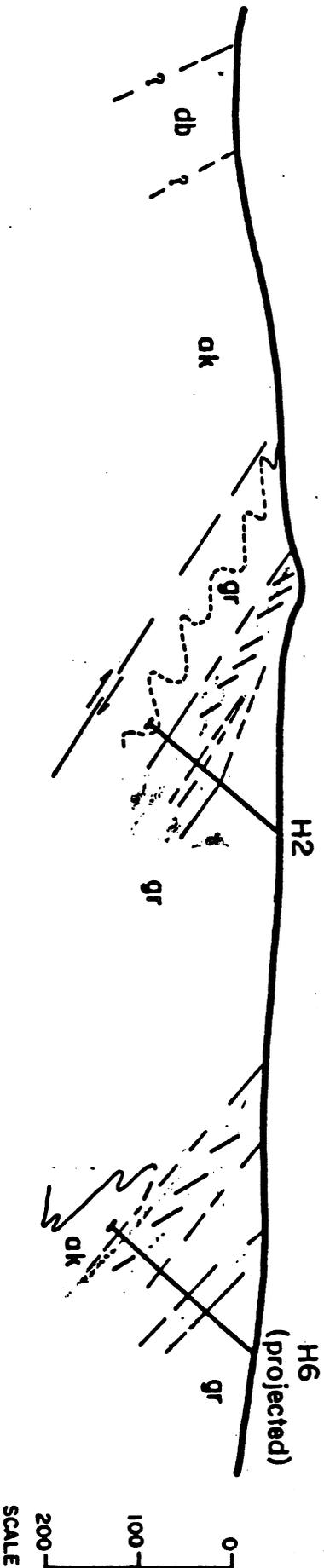
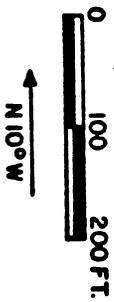
**YAVAPAI CO., ARIZONA**



EXPLANATION

- db DIABASE
- dk ALASKITE
- gr OTHER GRANITIC ROCKS
- QUARTZ - PYRITE MINERALIZATION

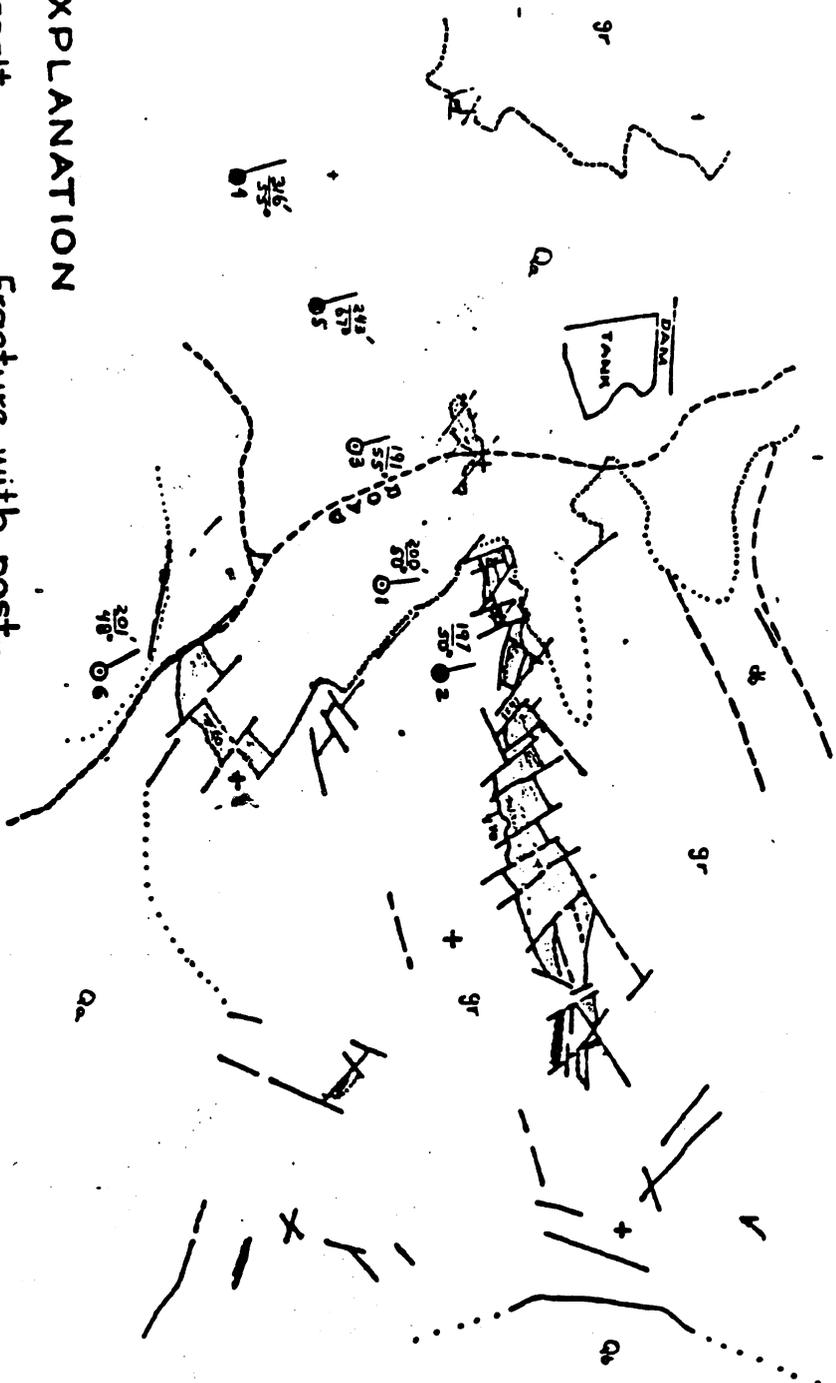
GENERALIZED CROSS SECTION  
HILLSIDE PROJECT  
YAVAPAI CO., ARIZONA



- Qa Cover - basalt &/or alluvium
- db Diabase
- gr Granitic rocks

**EXPLANATION**

- Fracture with post-mineral movement
- Mineralized fracture
- Quartz - pyrite mineralization & silicification



HILLSIDE PROJECT  
 YAVAPAI CO, ARIZONA  
 1-9-64  
 JWA - HEM  
 0 400' 800'  
 1" = 400'