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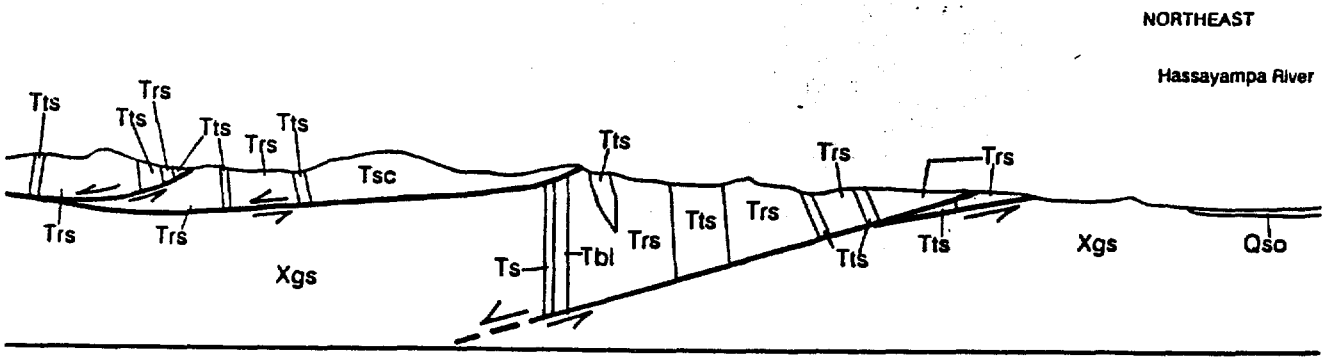
Field Guide to the New Waddell Dam Site, Vulture-Hieroglyphic Mountains area, and Mystic, Clemøntine, Newsboy, and Yarnell gold deposits, Central Arizona

Edited by
Stephen J. Reynolds
Arizona Geological Survey



Arizona Geological Society Field Trip
December 8 and 9, 1990

Arizona Geological Society
P.O. Box 40952
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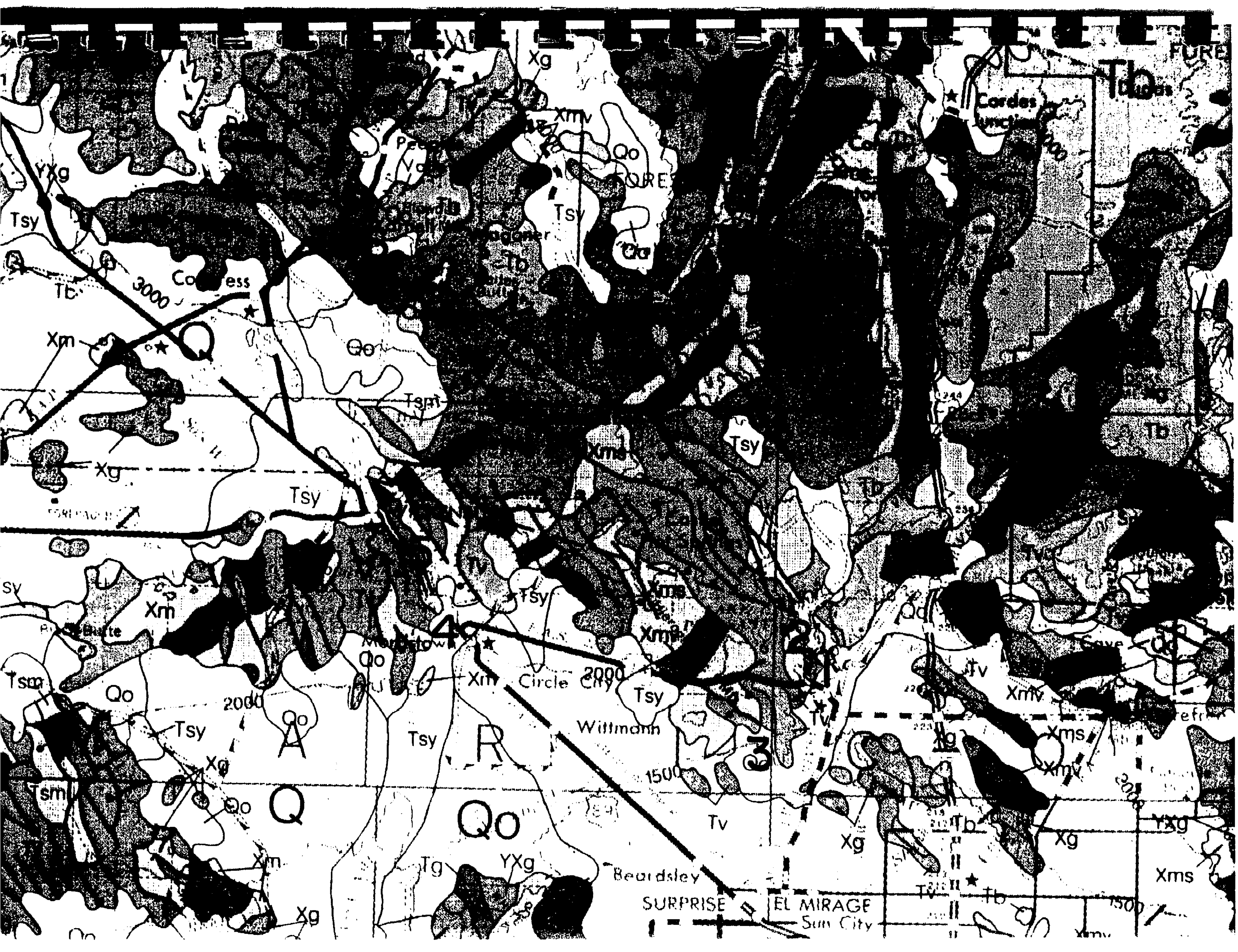

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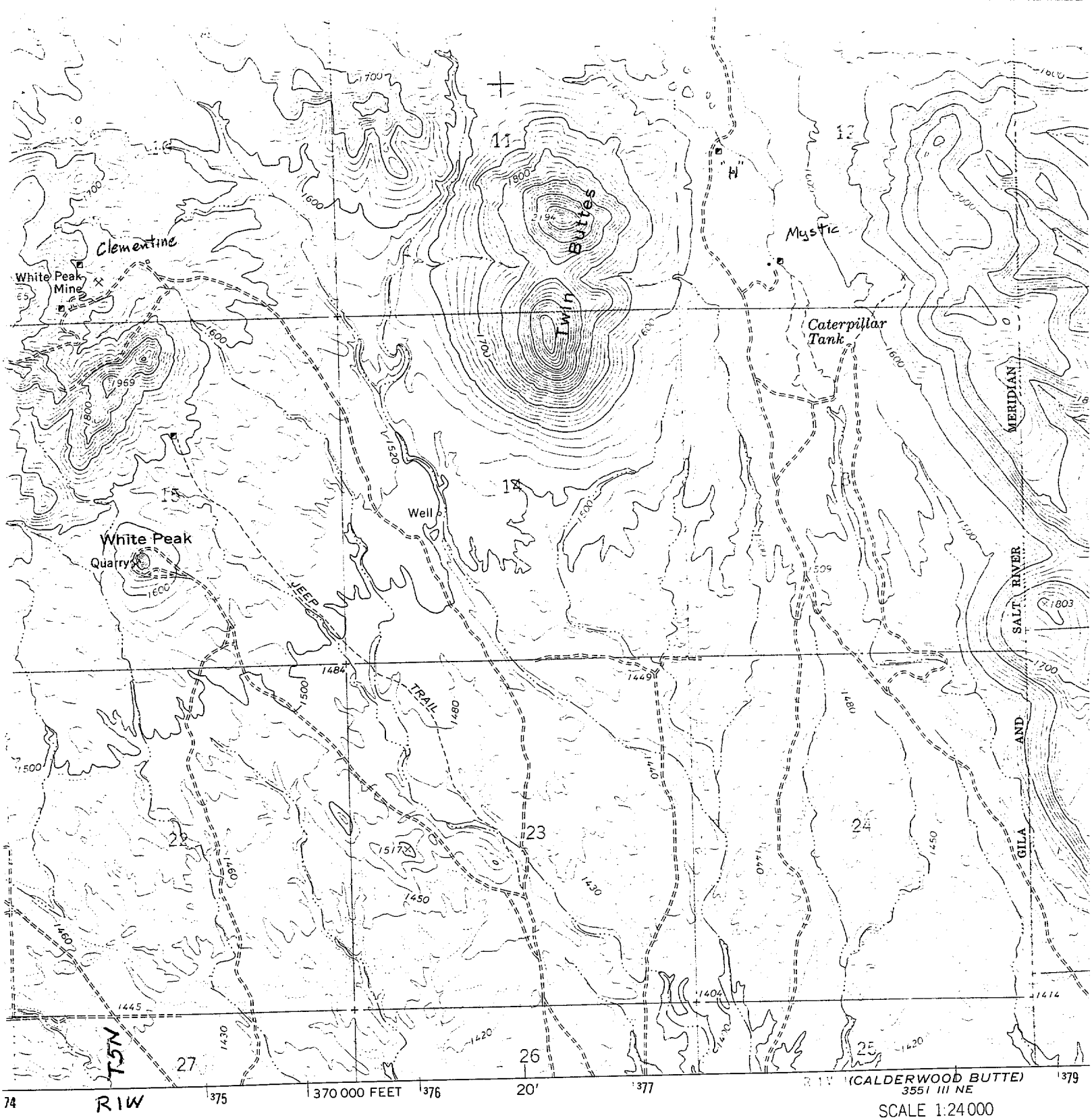

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Baldy Mtn 7½' Quad

Geological Survey

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31

GOLD MINERALIZATION AT THE MYSTIC MINE MARICOPA COUNTY, ARIZONA

Dale G. Armstrong
Consulting Geologist
Tucson, Arizona

Baldy Mtn 7½' Quad

Introduction

Section 12

The Mystic Mine is located approximately 12 miles north of Sun City, Maricopa County, Arizona; Township 5N north Range 1 west, within the southern end of the Hieroglyphic Mountains, Figure 1. It is situated in a boundary region between Tertiary aged felsic to intermediate volcanics and Proterozoic meta-volcanics and metasediments. Gold mineralization occurs within wide northwest trending shear zones. The property is currently managed by Fisher-Watt Gold Co. Inc.

Historically, gold exploration was concentrated in the vicinity of the "Mystic Shaft," resulting in the discovery of approximately 26,000 tons of 0.7 opt Au known as the Harding Pod. Subsequent drilling done by Ranchers Exploration in the late 1970s and early 1980s extended the limits of the gold-bearing host environment several hundred feet to the west. Reserves for the Harding Pod were not improved.

18,200 oz Au in Harding Pod.

An exploration program during 1987 and 1988 undertaken by a joint venture between Terra Technologies, Sovereign Explorations Inc., and Fisher-Watt Gold Co. Inc. consisted of 2460 feet of backhoe trenching and sampling, 6440 feet of reverse circulation drilling, 2160 feet of airtrack drilling, a 28.5 line mile ground magnetometer survey, and surface and trench geologic mapping.

This new drill data coupled with the data from the past drilling, indicates a geological gold reserve surrounding and including the Harding Pod of 37,600 tons grading 0.423 opt. = 15,905 oz Au

ooo, last gold bearing this drilling!

Geology

The geologic setting of the Mystic property is within the Transition Zone separating the Colorado Plateau from the Basin and Range Province. Proterozoic metavolcanics are the predominant country rocks within the property, Figures 2-4. They consist of mafic to intermediate volcanics, as perhaps flows and crystal lithic pyroclastics metamorphosed to lower amphibolite facies. A retrograde greenschist overprint of chlorite and epidote is pervasive.

Deformation accompanying the metamorphism resulted in the development of no fewer than two foliations. S_1 predominates over S_2 to such a degree that S_2 is rarely observed. S_1 generally

trends N 45°-65° E with dips of -50° to -80° SE and generally defines compositional layering.

These Precambrian rocks are found to be both in fault contact and unconformably overlain by the Tertiary volcanics. These volcanics are seen as ash to lapilli tuffs of generally felsic composition. They are capped by a younger basalt flow. The felsic volcanics may be correlative to the Hells Gate latite found in the northern Hieroglyphic Mountains.

These pyroclastics are involved in the structural setting at the Mystic as well as some of the mineralization. Feeder dikes of the volcanics are present throughout the property.

All of these lithologies are to a large degree covered by late Tertiary-aged fanglomerates. The thickness of these fanglomerates ranges from a few feet to in excess of 30 feet. An estimated 70% of the project area is covered by these recent sediments.

Structural Setting.

The area is host to at least two regional-sized fault zones. These zones are defined by broad but linear environments of intense shearing and brecciation. Width of these zones is customarily 30 to 50 feet but may exceed 100 feet.

Two predominant fault trends seen at the surface are N 60° W and N 10°-25° W. The offset on both fault systems is complex. Apparent reverse movement is indicated by the position of the displaced volcanics.

These fault systems are probably synkinematic. Conjugate shear fabrics both synthetic and antithetic were observed in some of the trenches.

Magnetics.

The main structural features can be recognized from the contoured magnetic data, Figure 5. Magnetic gradients are observed over the Mystic at N 60° W as well as along the N 20° W fault zone to the east. They may also reflect some of the more subordinate faults and structurally disturbed areas covered by Tertiary fanglomerates.

As a result of these geophysical and structural observations the host environments for the gold mineralization becomes apparent. They are large areas of structural disturbance acting as environments within which hydrothermal cells could exist. Due to the localized hydrothermal alteration of the host lithologies, weak to moderate magnetic contrasts were developed. These hydrothermally derived contrasts are a major contributor to the linear features identified by the magnetics survey.

Gold Mineralization

The structural setting as outlined above was the predominant control for the gold mineralization at the Mystic. Drilling indicates that the predominant trend for the highest grade gold is sub-parallel to the N 60° W trend of the Mystic shear. Mineralization is present over intervals of from 5' to 60' in width. There are complicating factors within the Mystic shear which have affected the location of the highest grade gold zone(s). These factors are probably synthetic faulting and fracturing and the near-surface supergene enrichment of hypogene gold mineralization.

The gold system developed at the Mystic is associated with an alteration assemblage of hematite, clays, sericite, calcite, dolomite, manganocalcite, quartz, adularia, ilmenite, chlorite and perhaps epidote. A crude zoning of these minerals is observed as a clay, sericite, quartz, chlorite core surrounded by epidote and chlorite.

The hematite development is thought to be predominantly hypogene. There is a complete lack of limonite pseudomorphs and a near total lack of other sulfide derived limonite, namely jarosite and goethite. Hematite is the most pervasive of the alteration assemblage.

Clay and sericite are easily the next most wide spread but are still confined to the main shear zone. The degree of clay development at the surface may exceed 75%. In drill cuttings it was observed to be slightly less.

Sericite alteration within the clay zone was difficult to discern during visual inspection of the cuttings. In thin section it was observed to make up as much as 50% of the "clay" alteration.

Carbonate alteration was observed to be represented by three species. Calcite the most common, followed by dolomite and then by a manganese-rich calcite. All of the carbonate was seen as veins and micro veinlets in the drill cuttings. Calcite flooding is very pervasive and thought to reflect a regional overprint.

Dolomite is associated with other carbonate veins and is considered to be part of a quartz-calcite-dolomite vein system independent from the regional calcite overprint.

The remaining carbonate in the vein system is seen as psilomelane-rich calcite. The psilomelane is present as inclusions within the calcite.

Silicification is found in several different modes. The most pervasive is microveinlets of milky white quartz distributed generally within the central portion of the Mystic shear complex.

Additionally there are quartz selvages within the mixed carbonate veins. The timing of the quartz alteration phase is complex. Some of the veinlets cross-cut the shear foliation while a high percentage of the quartz within the veins exhibit a fault-induced fabric, seen as a cleavage.

Adularia is observed only within quartz carbonate veins as cross-cutting microscopic veinlets. It appears to be late in the overall alteration paragenesis. The abundance of adularia is fairly minor when compared with clay, sericite, and quartz.

Chlorite and epidote veinlets and flooding were found in the trenches and the drill cuttings. The degree to which these minerals are a relict of greenschist metamorphism is not clear. Certainly the chlorite within the most intense portion of the clay-sericite alteration is probably hydrothermal. The epidote and chlorite peripheral to the Mystic shear is of questionable origin.

Visible gold in the drill cuttings is present only within the Mystic shear zone. It can be located virtually anywhere within the shear however. It is present as very coarse-to fine-grained particles generally only partially coated by clays and iron oxides. Samples of panned concentrates from the drill cuttings indicate that about 15% of the gold contains quartz "matrix". The rest is free of "matrix" minerals.

Alteration mineral association with gold is not absolutely confirmed. Factor analysis of the drill log data and assays indicates that gold has only one direct association, which is silver. A subset of the data from the deeper portions of the drill holes, below most of the apparent effects of supergene enrichment, begin to indicate that there is a quartz-gold association.

During an SEM investigation of panned concentrates from drill samples, quartz, ilmenite, and hematite were found to be attached to some of the gold.

The coarse-grained nature of the gold is partially responsible for the large nugget effect reflected in the assay results. The degree to which the reserve calculations reflect this problem is unknown. The true degree of the nugget effect on the sampling can not be determined until bulk samples are collected and analyzed.

Summary

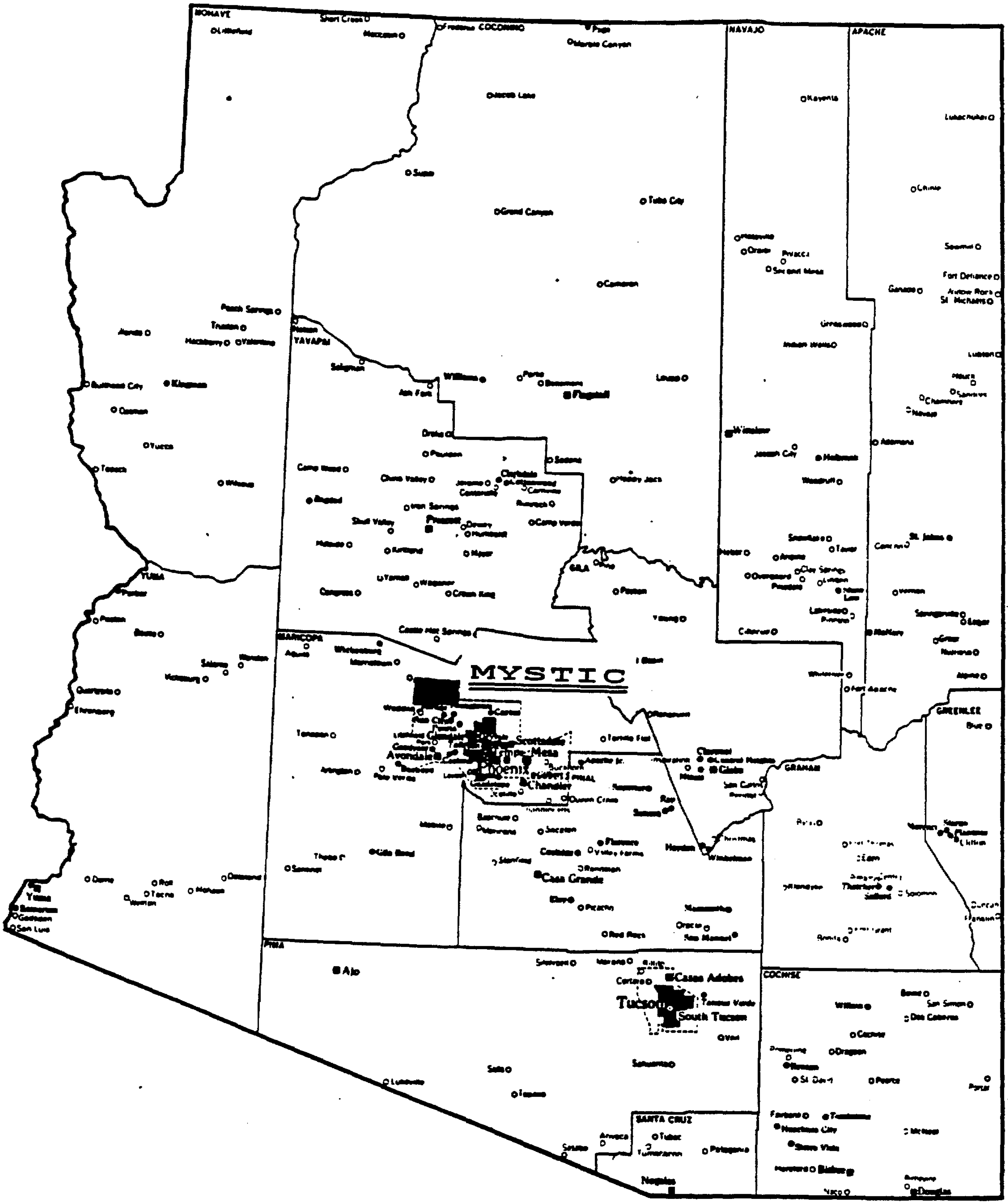
The mystic project has encompassed several phases of exploration. As a result a "probable" reserve of gold ore exists at the Mystic of 37,600 tons of 0.423 opt Au, using a conservative calculation based on cross section and long section data. Potential for increasing these reserves exists along strike to the west as well as at depth directly adjacent to the Harding pod.

This geologic environment depicts a Tertiary-aged epithermal gold system localized along and within a wide and northwest trending fault system that overprints and juxtaposes Precambrian metamorphics and Tertiary volcanics. The associated alteration of quartz, sericite, clays, and hematite is fairly typical of some epithermal gold deposits of the Southwest.

Potential for additional reserves exist both to the west and in a down dip direction.

Acknowledgements.

The author wishes to thank Fisher-Watt Gold Co. Inc. for permission to publish these data. Additionally my deepest gratitude to Mark C. Olm and J. Vance Longley. Without their keen insight and drive this project would have never been undertaken or completed.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Casa Grande
Ajo
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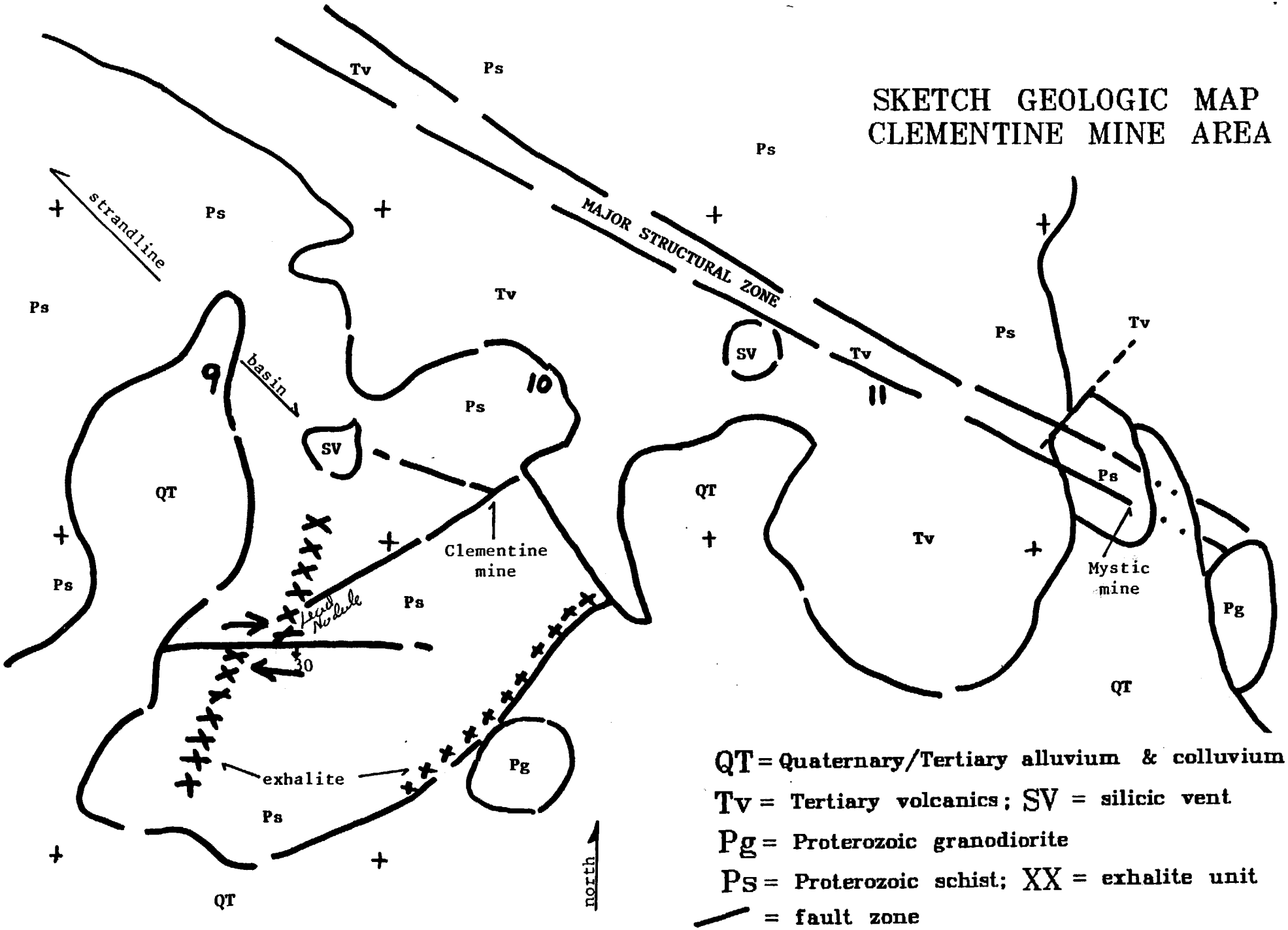
Figure 1


SKETCH GEOLOGIC MAP
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QT = Quaternary/Tertiary alluvium & colluvium
Tv = Tertiary volcanics; SV = silicic vent
Pg = Proterozoic granodiorite
Ps = Proterozoic schist; XX = exhalite unit
= fault zone
Scale ≅ 1:24,000
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Fischer-Watt Joint Ventures Explore Arizona Gold Prospects

Galactic Resources To Acquire

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See: Gold Mineralization at the Mystic Mine, Maricopa Co, AZ, by Ada G Armstrong in AZ GEOL SOC Field Trip Dec 8-9, 1990, Sec. 11-12, T5N, R1W

SIN JUN 14 1991

Harding pod: 37,600 tons @ 0.423 oz/ton. ≈ 16,000 g

SPARKS, NEVADA - JUNE 14, 1991

FOR IMMEDIATE RELEASE

Maricopa Co.,

Story subject: Mining Operations Begin At Mystic; Joint Venture Plans to extract over $8 Million in Gold

Fischer-Watt Gold Company, Inc. and Mining, Drilling and Milling, Inc. in a 50/50 joint venture have begun mining operations at the Mystic Mine located just north of Phoenix, Arizona in anticipation of removing a minimum of $8 million dollars in gold within the next nine months.

The main Mystic mineralized zone has been extensively drilled. Assay reports from independent laboratories have identified high grade zones containing up to $7,000 in gold values per ton. Although the distribution of gold within the zone is erratic the joint venture estimates that at least $8 million dollars worth of gold can be extracted from the 80 to 300 foot level alone. Based on today's gold price of $369 per ounce and with mining and milling costs of only about $100 per ounce, the mine is expected to produce profits of at least $6 million.

Additional gold might be mined below the 300 foot level and in parallel veins which are known to contain high gold values.

Fischer-Watt's Chief Executive Officer Tim Watt explained that "The Mystic Mine is a mine which has rich, concentrated values. Nuggets were recovered from drilling which is extremely unusual. We are hopeful that in mining we will recover nuggets which will be museum quality which will have much greater value."

A 12 foot by 12 foot tunnel, of sufficient size to accommodate large equipment, has been driven 700 feet into the main Mystic zone. Mining operations are proceeding at a fast pace with two shifts working seven days a week. An on-site laboratory is housed above ground. Fresh air is continuously pumped into the tunnel.

Watt says the joint venture plans to either contract with a mill located 67 miles from the site, or recover the gold by gravity and chemical separation. Located in a known gold-producing area, the Mystic Mine represents one of the few active underground gold mines in the United States.

Fischer-Watt Gold Company, Inc. (NASDAQ - FWGO) is a company specializing in exploring for precious and base metals. It has extensive holdings within the Western United States, Mexico and Central America.

For further information, call Tim Watt, Chief Executive Officer of Fischer-Watt Gold Company, Inc. at 702-358-0947.

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FISCHER-WATT GOLD
Company, Inc.

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1991 Annual Report

Excellence in Exploration

Western Minerals Activity Report

JDS

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SPARKS, NEVADA - JANUARY 15, 1992

MYSTIC MINE PRODUCING GOLD

Fischer-Watt Gold Company, Inc., announces first production from milling operations at the Mystic Mine, northwest of Phoenix. The company has shipped 367 ounces of gold doré, estimated to contain over $100,000 of gold, to Handy & Harman for refining and sale.

According to Tim Watt, Chief Executive Officer of Fischer-Watt, "The Mystic is now producing on a commercial scale. We will now concentrate on improving mill efficiency, adding more circuits to decrease the size of the ore feeding the mill. Additional costs should be minimal."

Milling began December 23, and is currently proceeding at 65% of the engineered capacity to handle 400 tons of ore per day. Fischer-Watt Gold has 100% of the operating interest in the Mystic, subject to a 3% Net Smelter Return Royalty and a 16.67% net profits interest.

Mine development has continued during mill production, and has located additional veins not identified through exploratory drilling. This increases the recoverable ounces of gold originally estimated when development work began at the Mystic.

Watt continued, "The additional veins and high grade pods we are finding lead us to believe that our original estimates of tonnage and grade are conservative. The mine is now at the 275 foot level."

Fischer-Watt Gold Company, Inc. (NASDAQ - FWGO) specializes in mining and exploring for precious and base metals. It has holdings in the western United States, Mexico, Honduras and Costa Rica.

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flow base for years to come.

The property lies adjacent to

of diamond drilling is planned