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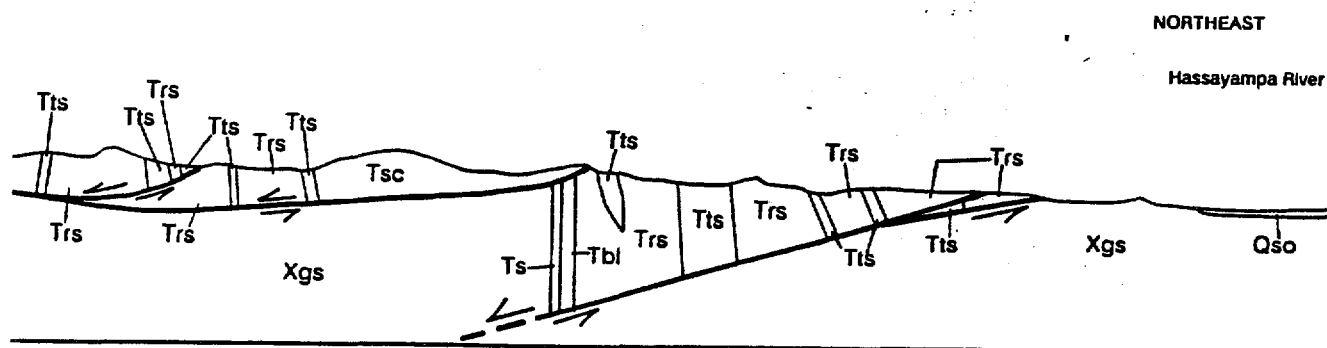
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Field Guide to the New Waddell Dam Site,
Vulture-Hieroglyphic Mountains area,
and Mystic, Clemōntine, Newsboy, and Yarnell
gold deposits, Central Arizona

Edited by
Stephen J. Reynolds
Arizona Geological Survey

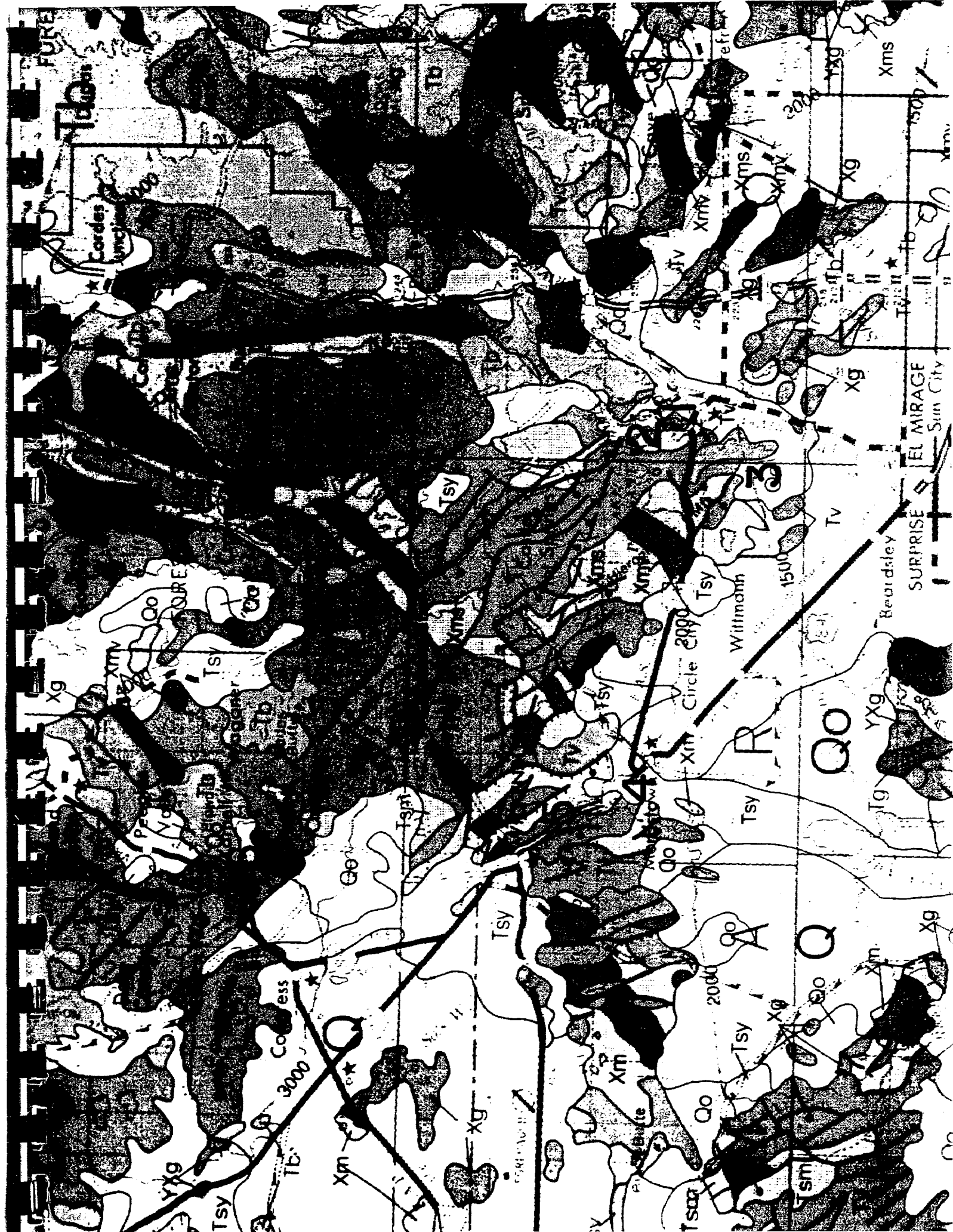


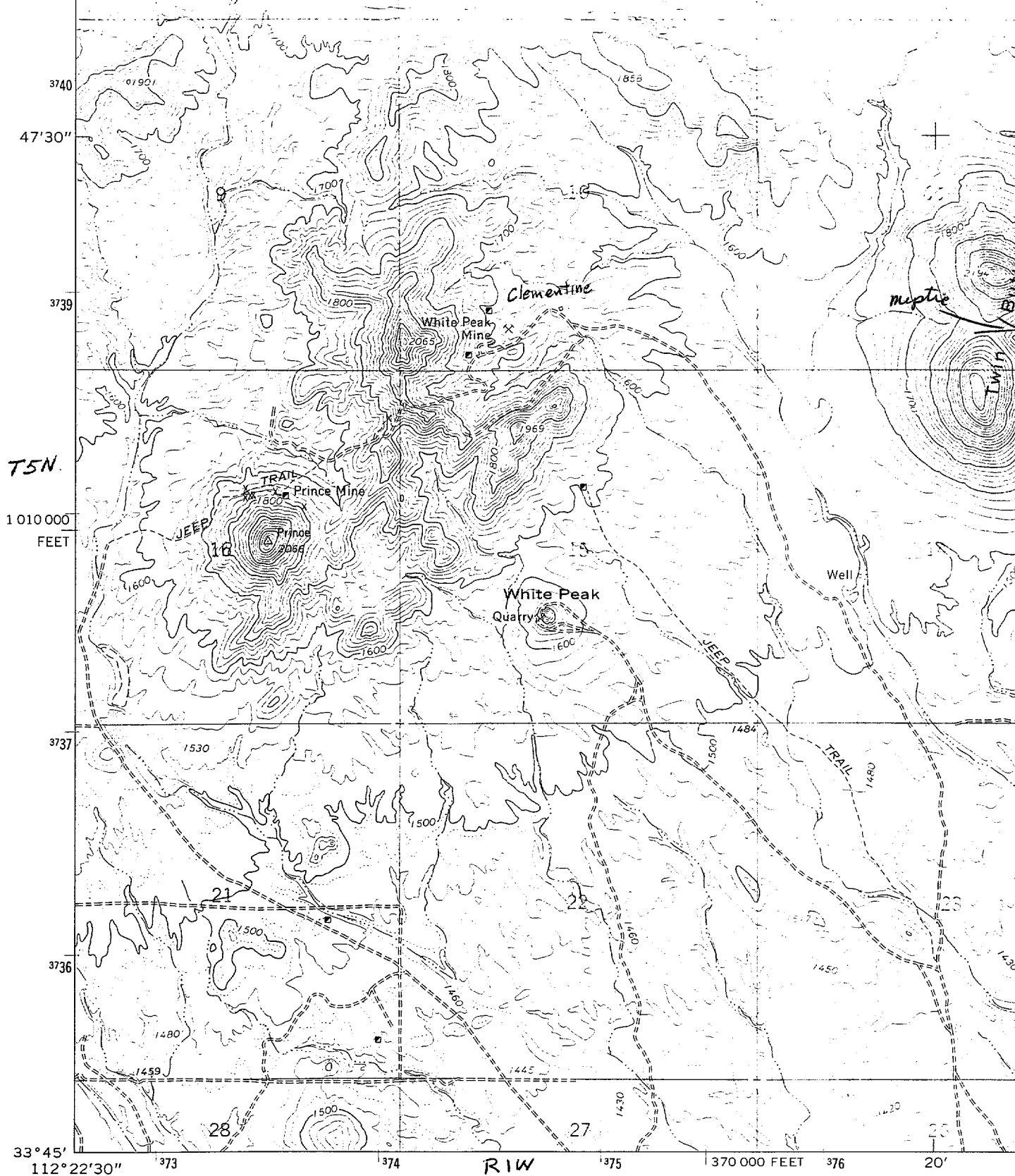
Arizona Geological Society Field Trip
December 8 and 9, 1990

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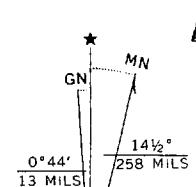
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Mapped, edited, and published by the Geological Survey
 Control by USGS and USC&GS
 Topography by photogrammetric methods from aerial
 photographs taken 1962. Field checked 1964
 Polyconic projection. 1927 North American datum
 10,000-foot grid based on Arizona coordinate system,
 central zone
 1000-meter Universal Transverse Mercator grid ticks,
 zone 12, shown in blue
 Fine red dashed lines indicate selected fence lines
 Areas covered by dashed light-blue pattern
 are subject to controlled inundation



UTM GRID AND 1964 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

CLEMENTINE MINE AREA, MARICOPA COUNTY, ARIZONA

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Baldy Mtn 7 1/2' quad.

Introduction: The Clementine mine is located within SW/4 Section 10, T. 5N, R. 1W, G&SRPM, in the southern Hieroglyphic Mountains approximately ten miles north of Sun City, Arizona. The Clementine mine is a small inactive open pit that was operated briefly in the early 1980's by Copper Lake Mining Company. Copper Lake reports reserves of slightly more than 900,000 tons grading ca. 0.05 oz/ton Au in the inactive pit area. Approximately 70,000(?) tons of mine-run, uncrushed material were cyanide heap-leached, and precious metal recovery was low. In late 1981, this worker spent about fifteen field days mapping Clementine project area geology and collecting seventy-nine samples for gold analysis.

Geologic Synopsis: Oldest exposed rocks in the Clementine area are subvertical, variably foliated northeast-trending members of Early Proterozoic Yavapai schist whose protolith may represent a strand line to marine volcanic basin facies tract. Strand line facies rocks are characterized by quartz-rich metasiltstones and metasandstones. The deeper-water facies is composed of carbonate-rich metasediments (marls, shales, volcanoclastics) that contain cherty iron formations and recrystallized silica/carbonate exhalites. A Late Proterozoic(?) granodioritic plug intrudes schist approximately one mile south of the Clementine open pit.

Mid- to late-Tertiary volcanic rocks unconformably overlie and intrude the Proterozoic units. Basal andesites are locally altered and contain mineralized dark carbonate veins. Younger silicic flows and tuffs originated from at least two vents in the Clementine mine study area. The largest vent is located approximately one mile northeast of the Clementine pit. Although most exposed silicic rocks are not altered, small pods of altered intrusive(?) rhyolite have been observed. Youngest rocks in the project area are late Tertiary/Quaternary basalt caps, and colluvial-alluvial cover that occurs most extensively as valley fill.

Structure: Proterozoic rocks are isoclinally folded, and three distinct fault systems exist within the Clementine area. Generally steep, NW- to N60W-trending faults are regionally extensive, and high angle NE-oriented faults are locally well-developed. A low- to moderate-angle EW-trending fault with possible right lateral offset is exposed at the Prince mine.

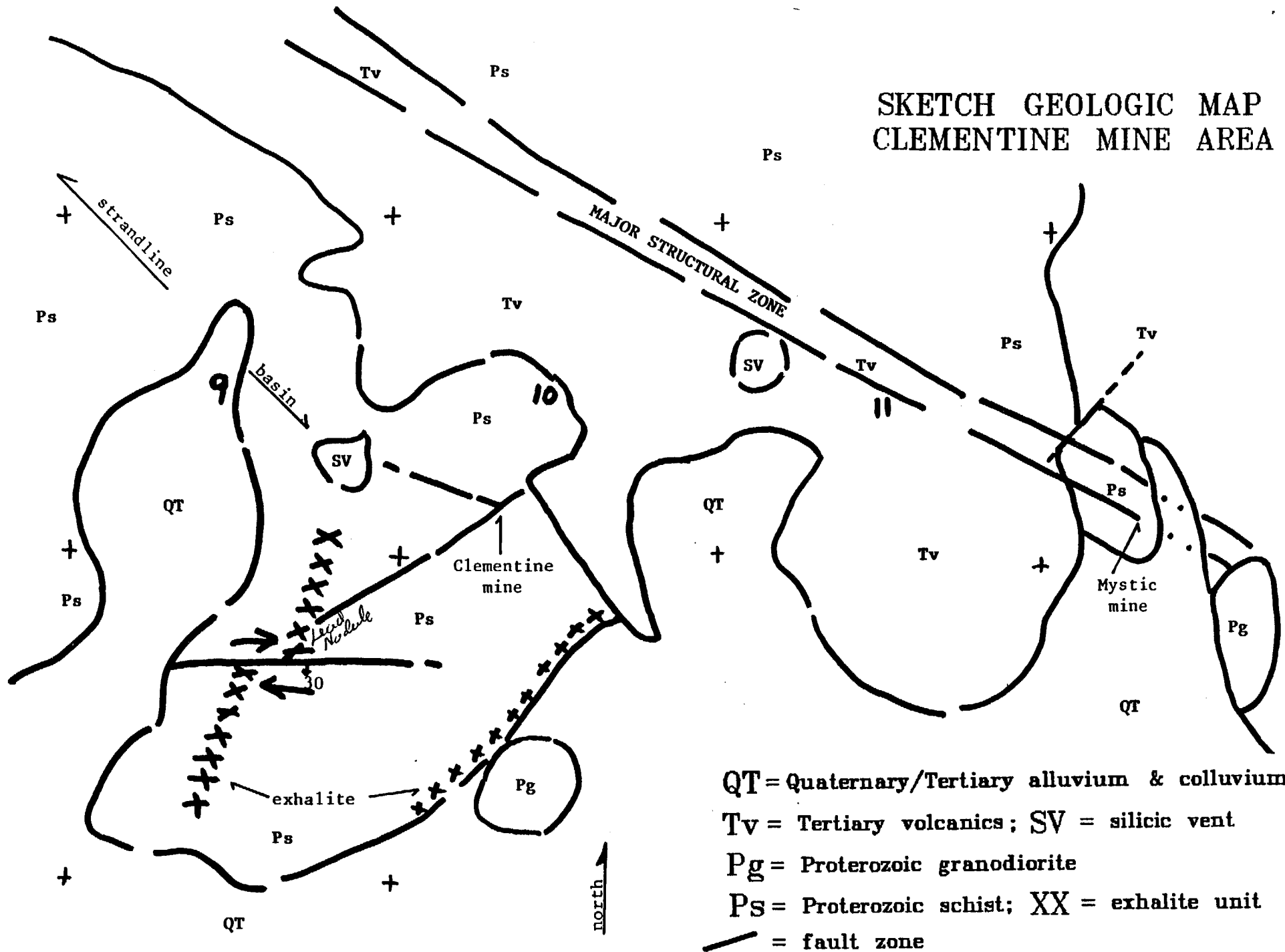
Mineralization: Clementine open pit mineralization appears to be concentrated in quartz/calcite veinlets within a shattered zone at the projected intersection of N60W and NE fault zones. Copper Lake Mining Company drill information suggests that a metamarl may be a favorable host rock in the pit area. Major pit mineralization dips SSE at 35 to 40 degrees.

My limited property-wide sampling (all analytical work done in house by Copper Lakes Mining Company) suggests that certain Proterozoic stratigraphic units are gold-enriched, and could have been at least a partial source for gold mineralization found in later vein systems. The carbonate-rich, gold-anomalous low angle vein at the Prince mine is best developed where it cuts a Proterozoic carbonate-rich exhalite layer.

Source of hydrothermal fluids which produced mineralized quartz/carbonate veining is uncertain. Although fluids migrated along fault zones associated with regional tectonism, it is possible that local volcanic vent zones and buried intrusive feeders could have affected hydrothermal fluid generation and transport.

Field Trip Objective: My experience in the Clementine mine area is limited. The main objective of this mine visit is to compare Clementine area mineralization with nearby better-understood mineralized systems that will also be visited during this field trip (Mystic mine, Armstrong; Newsboy mine, Bickford). Comments from other workers on Clementine area mineralization, structure, stratigraphy, etc., are actively solicited.

SKETCH GEOLOGIC MAP CLEMENTINE MINE AREA



QT = Quaternary/Tertiary alluvium & colluvium

Tv = Tertiary volcanics; SV = silicic vent

Pg = Proterozoic granodiorite

Ps = Proterozoic schist; XX = exhalite unit

— = fault zone

Scale $\approx 1:24,000$

DEW 11/15/90