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Item 28

COMO PROJECT

Summary Report

Lyon County, Nevada

February 1982

Lance W. Pape
St. Joe American Corp.
2002 N. Forbes Blvd.
Tucson, AZ 85745

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SUMMARY

The Como Project is located in the Pine Nut Range in T15N, R22-23E, Lyon County, Nevada. The property consists of 230 St. Joe American Claims and five leased unpatented claims extending along eight miles of strike length of the Pony Meadows fault, a listric normal fault of similar orientation, dimensions and characteristics to the famous Comstock fault some 15 miles distant to the northwest. St. Joe American, in conjunction with SAGE Associates, Inc., began work on the property in November 1977. Activities have included property acquisition, geologic mapping, geophysical and geochemical surveys, and the drilling of three holes. Exploration efforts have been designed to assess the Pony Meadows fault zone as a target with Comstock lode potential.

CONCLUSIONS

St. Joe American presently holds a commanding land position along the Pony Meadows fault. The lithology, structure, and alteration of the Pony Meadows fault zone are similar in type and extent to those of the Comstock Lode system, which has produced about $4 billion in gold and silver (at 1981 price values). Although drilling to date has not been encouraging, only about 1000 feet of strike length of the 12-15 mile long Pony Meadows fault has been explored. Drilling was not far enough downdip to intersect favorable hosts expected in the hanging wall and several areas of geophysical and geochemical anomalies along the fault trend have yet to be investigated.

There is evidence at Comstock that mineralization was deposited from near-surface to a depth of at least 5,500 feet along the Comstock fault, and that between 2,000 and 2,500 feet of erosion has occurred subsequent to ore deposition. If similar ore deposition at comparable depths has occurred along the Pony Meadows fault, erosion has not stripped off the overlying Kate Peak and Alta volcanics sufficient to "see" this mineralization.

If favorable hanging wall rocks exist down-dip along the Pony Meadows fault and if hydrothermal solutions of sufficient metal content were present to develop deep ore bodies at Como, one may optimistically conjecture their tonnage and grade on

the basis of ore bodies developed at Comstock. One may speculate ore bodies, for example, comparable to the "Big Bonanza" of the Con. Virginia-California mines, whose size (about 1,100 x 400 x 70 feet), ore tonnage (809,275 tons mined 1873-1882), and grade ($75/ton rock at $20.67 Au and $1.29 Ag with Ag/Au ratios ∿ 20:1) produced $29 million in gold and $36 million in silver. In terms of 1981 prices of $400 gold and $8.00 silver, the value of that one ore body would be roughly $800 million. A more realistic projection would be to hope for Como ore bodies comparable to the smaller average grade ore bodies mined at Comstock, which ran roughly 100,000 tons of $20-40/ton rock at an Ag/Au ratio of 20:1 (½-1 oz. Au/ton and 10-20 oz. Ag/ton). The value of these smaller ore bodies would run several million dollars. The potential for Comstock type ore bodies at Como necessitates further exploration on the project.

RECOMMENDATIONS

Exploration drilling at Como has examined only one small area along the Pony Meadows fault. Several good exploration targets remain untested. The potential for large blind ore bodies at depth along the Pony Meadows fault is realistic when considering the many similar characteristics between Como and the Comstock model.

Based on work completed at Como, and considering the time and expenditures already extended, the following recommendations are proposed as options to St. Joe for future work at Como:

1) joint-venture the property, with the intent of expanding exploration and drilling efforts

2) continue St. Joe American exploration activities alone

3) market the project, with or without a retaining interest, or

4) abandon the project.

Of the afore-mentioned options, the first offers the best opportunity for proving the merits of Como. Additional geochemical and geophysical surveying, and further exploratory drilling should be done in the Mill Canyon and Pony Meadows fault areas. Emphasis should be on: 1) intercepting the Alta formation in the hanging wall of the Pony Meadows fault,

2) evaluating the southern area of strong alteration and geochemical and geophysical anomalies adjacent to a prominent flexure in the Pony Meadows fault, 3) investigating the fault split and strong anomalous geochemical trends north of the Pony Meadows mine, and 4) exploring the Mill Canyon area.

ACKNOWLEDGEMENTS

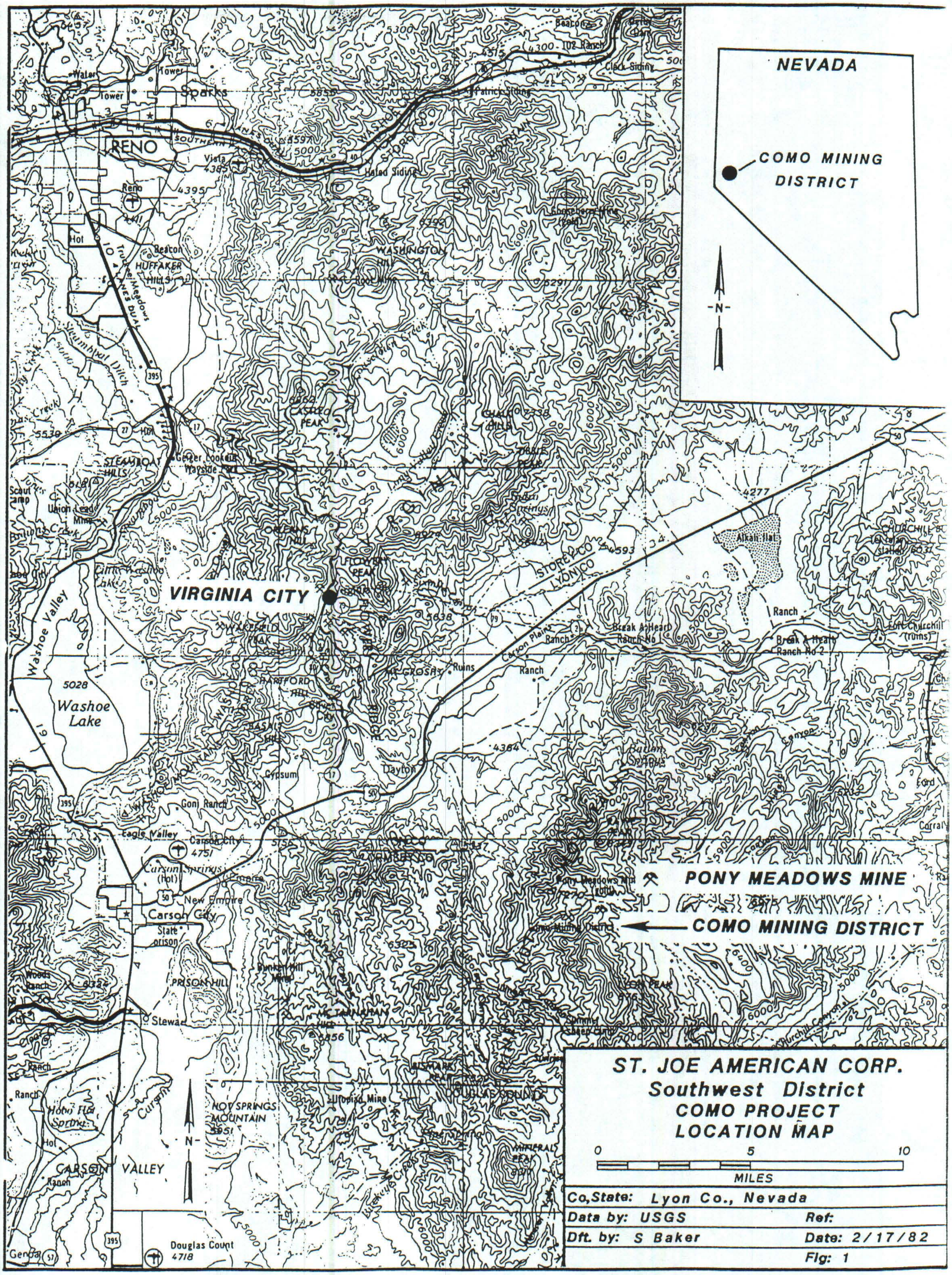
This report draws heavily on material contained in previous reports on the Como Project. Special acknowledgement and appreciation is given to David B. Hackman, author of the Como Report by SAGE Associates, Inc.. Acknowledgement is also given to St. Joe American personnel Wallace N. Clark, Francis X. Sousa, Barbara Cairnduff, and Chris Ludwig for use of their reports and input in preparing the text, for drafting done under the direction of Dick Isherwood, for typing by Jan Fisher, and to Pete Tillman and others for their review of the text. Careful consideration was given to all sources of information in summarizing and evaluating previous work done at Como.

INTRODUCTION

The Como District is located within the Como 15' Quadrangle, in T15N, R22-23E, in the Pine Nut Range, Lyon County, Nevada. The district is about 15 miles due east of Carson City, Nevada, about 15 miles southeast of the Comstock Lode-Virginia City area and accessible by gravel road from the town of Dayton, ten miles to the northwest (Figure 1).

St. Joe American, operating in conjunction with SAGE Associates, Inc. of Tucson, Arizona, has been actively involved in exploration activity in the area since November 1977; subsequent to August 1980, St. Joe has been the sole active participant. Claim-staking began in the spring of 1978 and was completed in the fall of 1979. A total of 230 St. Joe claims and five leased claims constitute the land holdings of the Como Project (Plate 1).

The area of interest has been mapped at a scale of 1"=250' for lithology, structure, mineralization and alteration. Induced polarization and resistivity surveys were conducted in late 1978 and 1979 under the direction of St. Joe American personnel. Extensive geochemical surveys were done by SAGE and St. Joe in 1979 and 1981. Target sites were selected by using results of geologic mapping, and geophysical and geochemical surveys. These sites are along or in close proximity to the Pony Meadows fault. One target area was explored by three drill holes.


NEVADA
COMO MINING DISTRICT
N
RENO
Sparks
VIRGINIA CITY
Washoe Valley
Washoe Lake
5028
Carson City
CARSON VALLEY
Dayton
PONY MEADOWS MINE
COMO MINING DISTRICT
Alkali Flat
ST. JOE AMERICAN CORP.
Southwest District
COMO PROJECT
LOCATION MAP
0
5
10
MILES
Co,State: Lyon Co., Nevada
Data by: USGS
Ref:
Dft. by: S Baker
Date: 2/17/82
Fig: 1

Exploration activity at Como was reduced to a minimum in 1980, as a result of the area being withdrawn for wilderness study by the Bureau of Land Management. Subsequent assessment and evaluation by the BLM of this area has returned it to unrestricted multiple-use status.

The Como District and the famous Comstock District display many similar lithologic, structural, alteration and mineralization characteristics which infer that the Pony Meadows fault system may have potential for ore bodies similar in tonnage and grade to those of the Comstock Lode. Limited drilling along the Pony Meadows fault has not yet substantiated this concept.

This report summarizes the activities of St. Joe American and SAGE Associates on the Como Project and investigates options open to St. Joe for future activities at Como.

HISTORY AND PRODUCTION

Placer gold was discovered in the washes several miles east of the Comstock in 1850, with lode mining commencing in 1859 along the main fault system. In the 1860's, miners from Virginia City discovered the Como District, but activity in the area was minimal until the late 1910's, when the Como and Rapidan mines, under joint management, began limited production. The two mines produced about 25,000 tons of ore in the 1918-20 period and about 57,000 tons during 1925-36, with a total district production to 1940 of 94,673 tons of primarily gold-silver ore yielding a gross value of $511,540.00.

The Pony Meadows mine(s), for which there are no production figures, appears to have produced a few thousand tons of ore in the 1920's and 1930's. The tenor of ore is unknown, but assays reportedly carried roughly equal weight amounts of gold and silver. Both oxide and sulfide ores were mined in the district and small cyanide and flotation mills were built, both at Como and at the Pony Meadows mine. The old Como mill tailings are currently being heap leached.

Although many geologic parallels can be drawn between the Comstock and Como Districts, there has been a great disparity in production. Table 1 includes comparative figures for these two districts.

TABLE 1

Production Figures for the Comstock and Como Districts

Comstock District (including the Silver City Lode and Flowery District)

Period	Tonnage	Yield	%Ag	%Au
1859-1881 (end)	7,189,430	$320,000,000	55	45
1882-1919	3,972,129	55,166,026		
1920-1955	6,470,021	27,331,383		
Totals	17,631,580	$402,497,409		

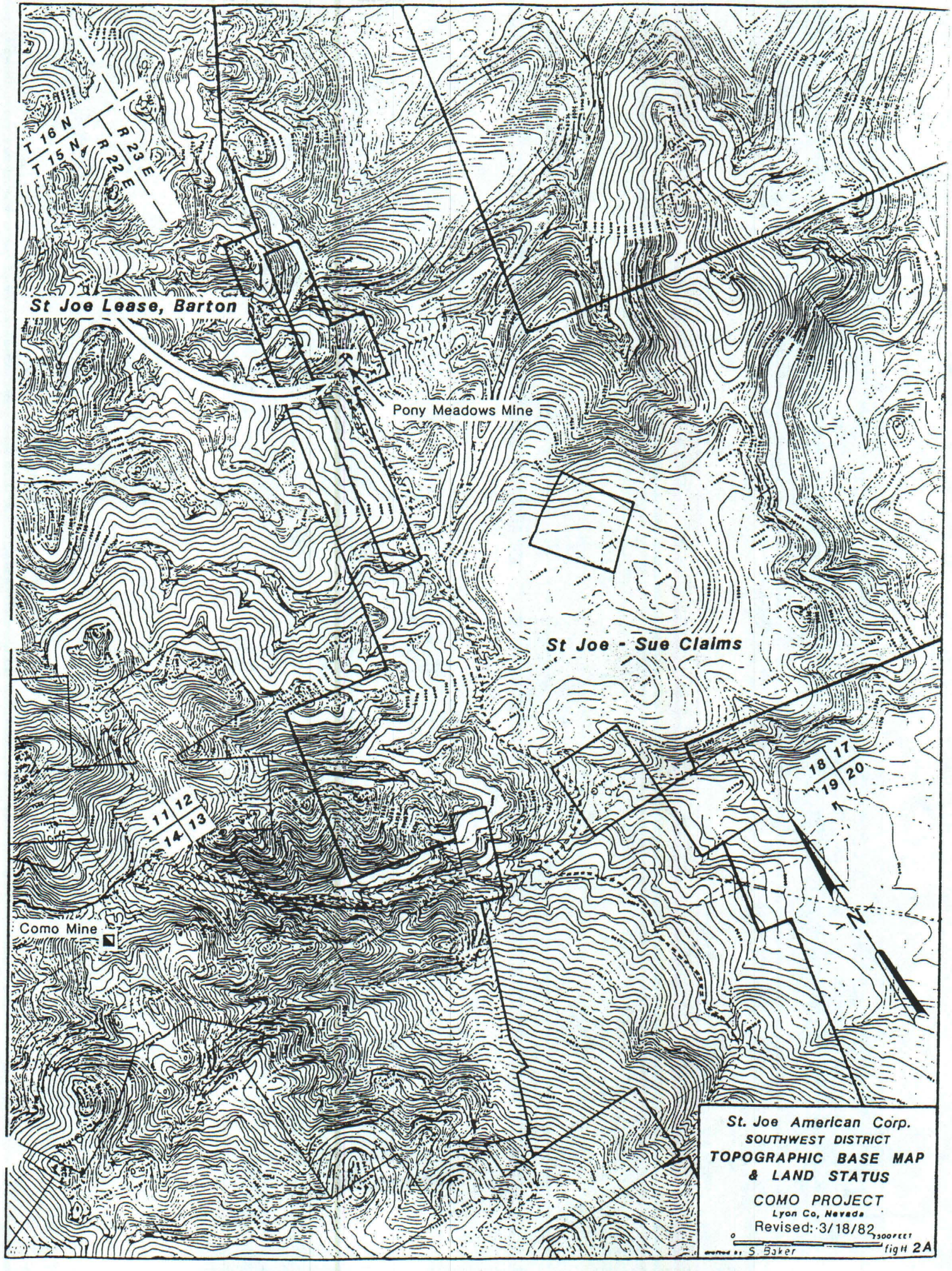
Como District (including the Pony Meadows Mine)

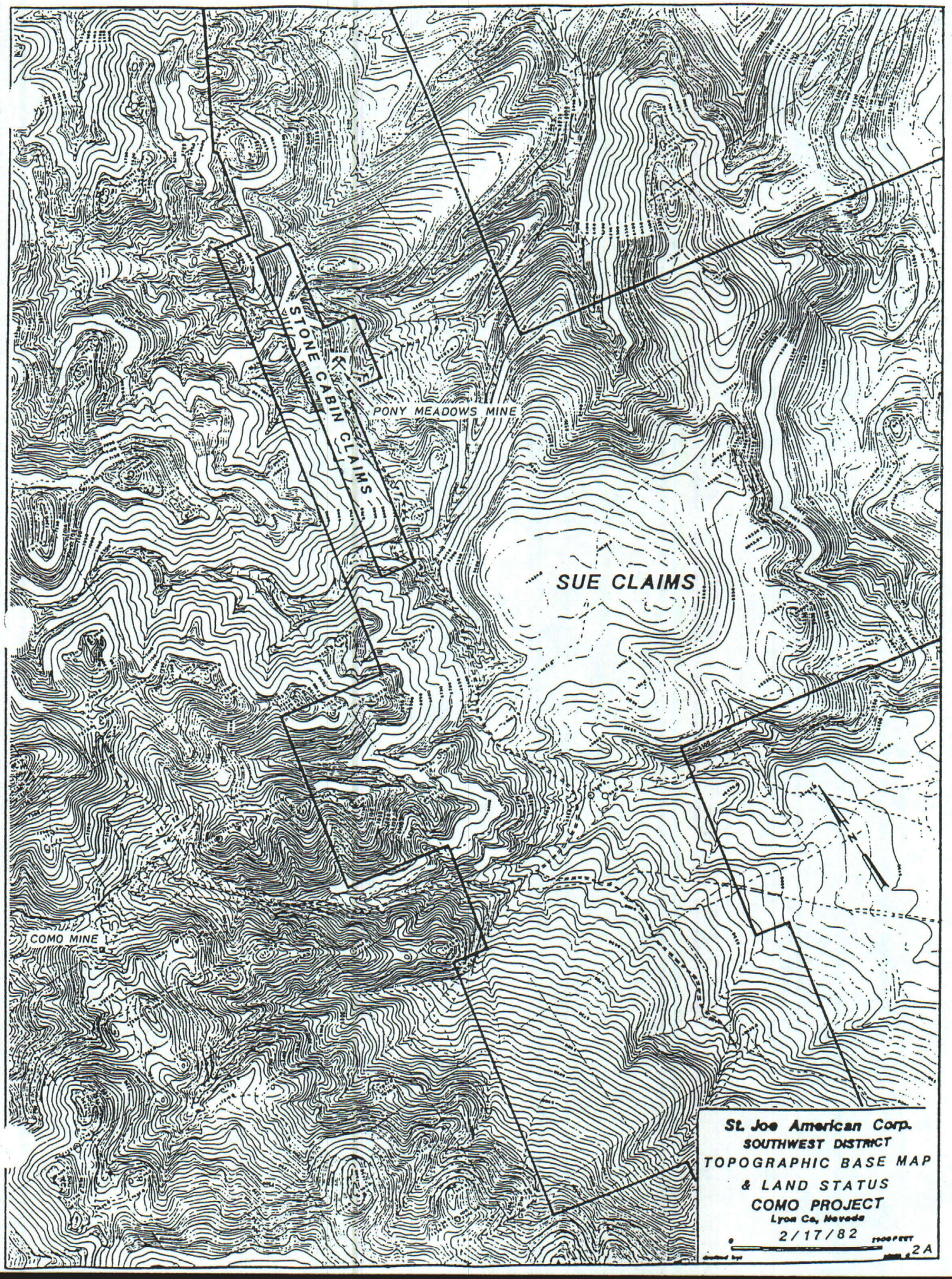
Period	Tonnage	Yield
1900-1940	94,673	$ 511,540

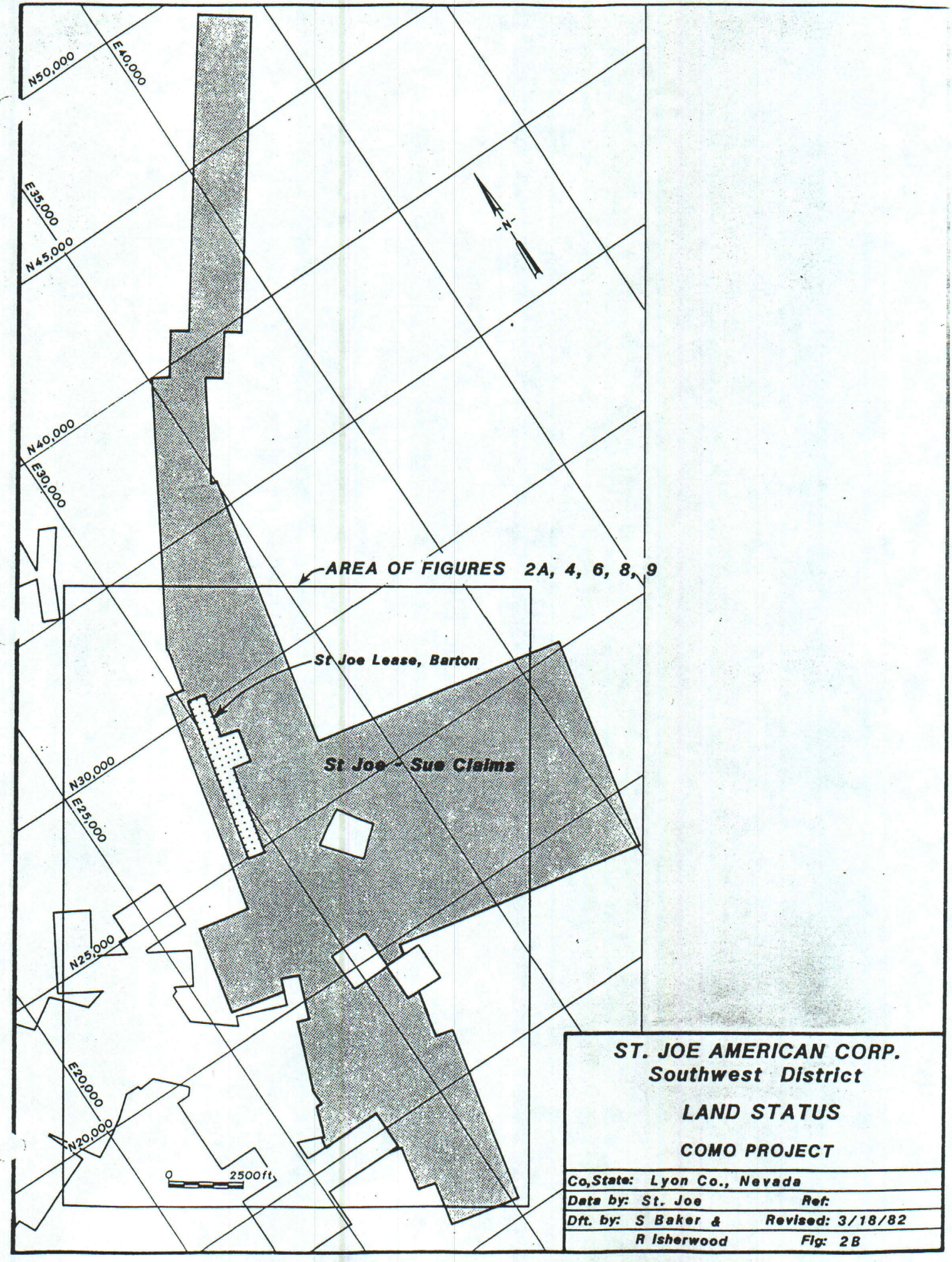
LAND

In September 1976, St. Joe American entered into agreement with SAGE Associates, Inc., whereby St. Joe would use SAGE as a consultant for precious metals exploration (Appendix A). In July 1978, St. Joe and SAGE personnel staked 84 "Sue" claims surrounding five pre-existing Stone Cabin claims at the Pony Meadows mine. A lease-option agreement was concluded for the Stone Cabin claims later that year (Appendix B). In 1979, 146 additional "Sue" claims were staked in the area, enlarging St. Joe's continuous claim block to 235 claims, which extends north and south along the Pony Meadows fault, a distance of eight miles (Figure 2B and Plate 1).

During 1979, the Bureau of Land Management announced its decision to investigate the possibility of establishing two wilderness study areas in the Pine Nut Range that would encompass essentially all of St. Joe's claims in the Como area. Arguments were presented by St. Joe and SAGE to dispute the area's wilderness qualifications and subsequent inventory of the area by the BLM prompted the agency to remove the area from consideration for wilderness status in November 1980 (Appendices D, E, and F).


T 16 N
T 15 N
R 22 E
R 23 E
St Joe Lease, Barton
Pony Meadows Mine
St Joe - Sue Claims
11 12
14 13
18 17
19 20
Como Mine
N
St. Joe American Corp.
SOUTHWEST DISTRICT
TOPOGRAPHIC BASE MAP
& LAND STATUS
COMO PROJECT
Lyon Co, Nevada
Revised: 3/18/82
0 2500 FEET
drafted by S Baker
fig H 2A


STONE CABIN CLAIMS
PONY MEADOWS MINE
SUE CLAIMS
COMO MINE
N
St. Joe American Corp.
SOUTHWEST DISTRICT
TOPOGRAPHIC BASE MAP
& LAND STATUS
COMO PROJECT
Lyon Co, Nevada
2/17/82
2A



ST. JOE AMERICAN CORP.
Southwest District

LAND STATUS

COMO PROJECT

Co,State: Lyon Co., Nevada	
Data by: St. Joe	Ref:
Dft. by: S Baker & R Isherwood	Revised: 3/18/82
	Fig: 2B

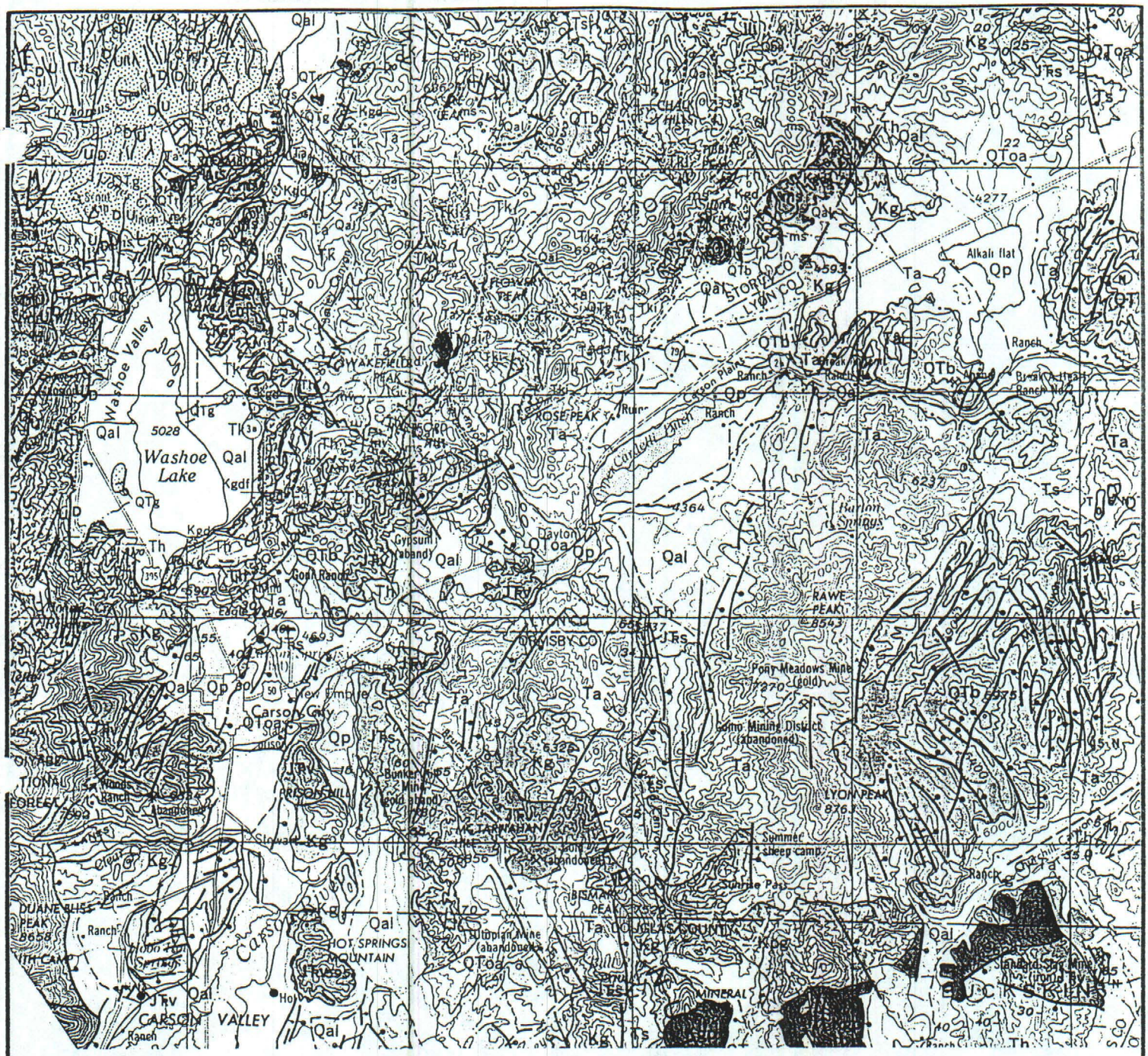
In August 1980, St. Joe American terminated its consulting agreement with SAGE Associates and became the sole active participant at Como (Appendix G). At that time, SAGE transferred the "Sue" claims to St. Joe (Appendix H).

REGIONAL GEOLOGY

The Como Project is located in the northern Pine Nut Mountains in central Lyon County, Nevada. The area lies at the boundary between the Sierra Nevada Province to the west and the Basin and Range Province to the east. It also lies within the Walker Lane Tectonic Zone, an area of structural extension and irregular topography roughly paralleling the southwestern border of Nevada (Figure 3).

The Pine Nut Mountains, including the Virginia Range to the north, and the Wellington Hills and Sweetwater Range to the south are a continuous structural unit with diverse lithology. The northern end of the range is characterized by Tertiary rhyolitic to andesitic pyroclastic and flow volcanics, Quaternary Basaltic flows, and Tertiary sedimentary rocks (lucustrine and fluvial deposits). The central Pine Nut Mountains are composed of Cretaceous granitic rocks on the east and Tertiary sedimentary rocks on the west. The southern part of the range (the Wellington Hills and northern Sweetwater Mountains) is composed of Jurassic and Triassic metasedimentary and metavolcanic rocks, in addition to the afore-mentioned Cretaceous granitic and Tertiary volcanic and sedimentary units.

The Pine Nut Mountains comprise several orographic blocks bounded by north-trending, east-dipping normal faults sharply upfaulted on the east and tilted west. The eastern boundary



LEGEND

Qal	Qal	ALLUVIUM
QTb	QTb	BASALT
Ta	Ta	ALTA AND KATE PEAK
Ts	Ts	SEDIMENTARY ROCKS
Th	Th	HARTFORD HILL RHYOLITE TUFF
Kg	Kg-Kpg	GRANITIC ROCKS
JTrs	JTrs	METASEDIMENTARY ROCKS
JTrv	JTrv	METAVOLCANIC ROCKS

-N-

ST. JOE AMERICAN CORP.
Southwest District
REGIONAL GEOLOGY
COMO PROJECT

Co,State: Lyon Co., Nevada	
Data by: NBMG	Ref:
Dft. by: S Baker	Date: 2//17/82
Scale: 1:250,000	Fig: 3

of the range is characterized by a steep fault scarp, commonly marked with thermal hot springs. The parallel repetitive faulting pattern has broken the range into a series of step-like west-tilting blocks with inter-ridge basins. This structural pattern, also accompanied by listric-normal east-dipping faulting in the northern Pine Nut Mountains, is characteristic of the extensional patterns commonly developed during the late Cenozoic within the Walker Lane. There is also evidence of recent normal fault movement on the western side of the range.

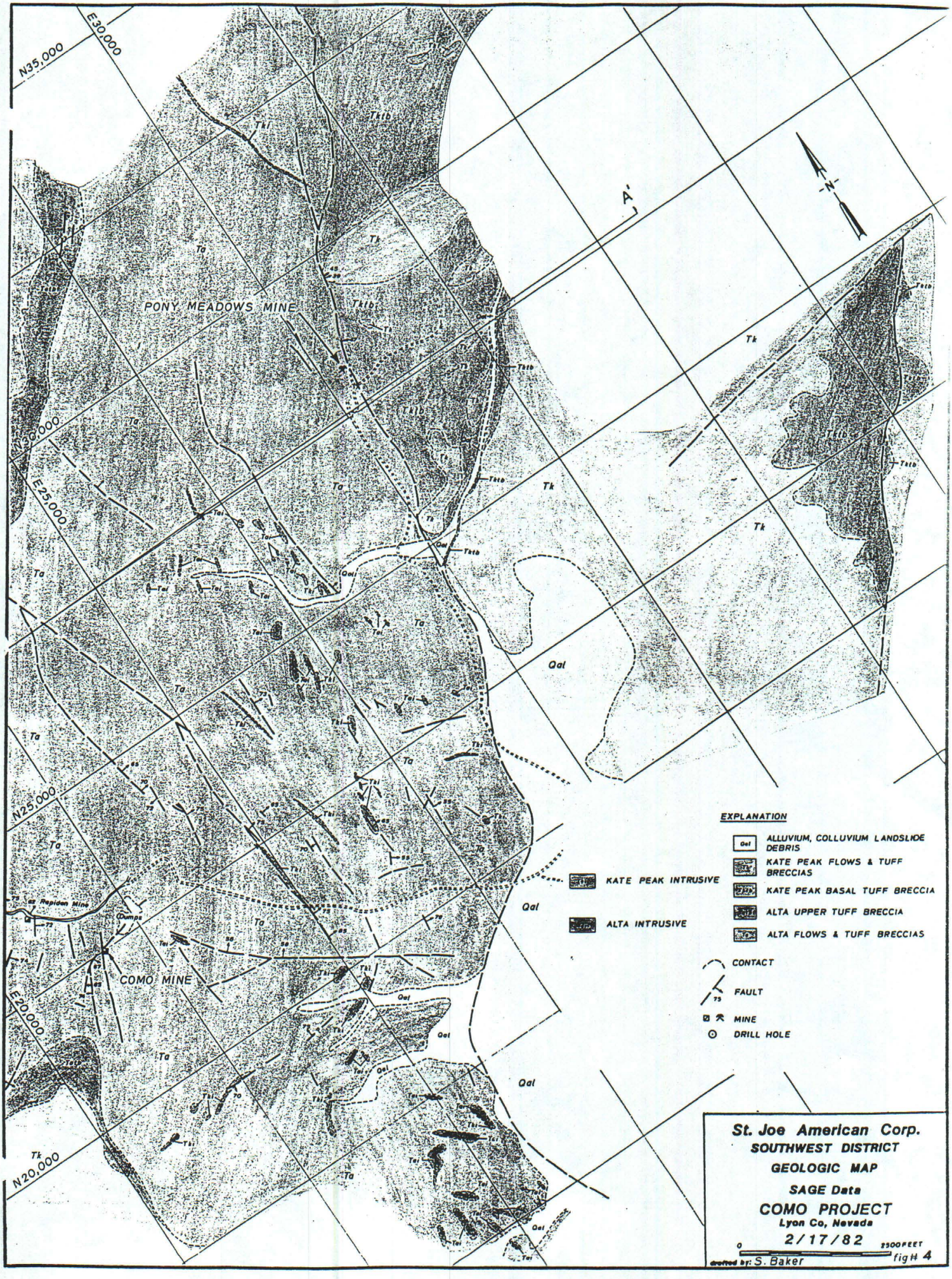
LITHOLOGY

Two rock units, the Alta formation and the overlying Kate Peak formation, outcrop in the Como area (Figure 4 and Plate 2). Both units are volcanic flows and tuff-breccias of Miocene-Pliocene age whose type sections are located in the Comstock-Virginia City area. In addition, the Lower Jurassic Gardnerville formation (intercepted by drill hole C-2) underlies the Alta in the footwall of the Pony Meadows fault.

The Gardnerville formation is a thin-bedded graphitic, pyritic shale containing 5-25% carbon, 1-10% calcite and 0.5-5% pyrite. No surface exposures of this unit exist in the Como area. It is undoubtedly responsible for the strong IP anomaly found in the area of drill hole C-2.

The Alta formation outcrops on the footwall (west side) of the Pony Meadows fault. It consists of interlayered andesitic flows and tuff-breccias which are difficult to differentiate in mapping, being laterally and vertically gradational, and commonly intensely faulted and hydrothermally altered in the vicinity of the main fault. The Alta is extensively covered by alluvium, colluvium and landslide debris, especially in the vicinity of the Pony Meadows fault.

Alta flow units are grey to greenish- or brownish-grey andesite porphyry with 20-40% phenocrysts of andesine plagioclase, hornblende and pyroxene in a finely crystalline groundmass. Magnetite is a common accessory mineral.


N35,000
E30,000
N30,000
E25,000
N25,000
N20,000
E20,000
PONY MEADOWS MINE
COMO MINE
A
A'
Tk
Tkl
Tklb
Ta
Tai
Thi
Qal
Dumps
EXPLANATION
Qal ALLUVIUM, COLLUVIUM LANDSLIDE DEBRIS
KATE PEAK FLOWS & TUFF BRECCIAS
KATE PEAK BASAL TUFF BRECCIA
ALTA UPPER TUFF BRECCIA
ALTA FLOWS & TUFF BRECCIAS
KATE PEAK INTRUSIVE
ALTA INTRUSIVE
CONTACT
FAULT
MINE
DRILL HOLE
St. Joe American Corp.
SOUTHWEST DISTRICT
GEOLOGIC MAP
SAGE Data
COMO PROJECT
Lyon Co, Nevada
2/17/82
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2500 FEET
drafted by: S. Baker
fig # 4

Alta tuff-breccias are composed of andesite flow fragments in a fine crystalline matrix of plagioclase, mafic minerals and small lithic fragments. Breccia fragments may be several feet in diameter, but are generally less than 2-3 inches. Both Alta rock types in the Como area are pervasively propylitically altered with calcite, chlorite and lesser epidote, and are commonly pyritic.

The Kate Peak formation outcrops on the hanging wall (east side) of the Pony Meadows fault. It likewise is extensively covered by erosional debris. The Kate Peak consists of interlayered dacitic to andesitic flows and tuff-breccias.

Kate Peak flow rocks are reddish-brown to tan or grey andesite to dacite porphyry, with 10-40% phenocrysts of andesine plagioclase, hornblende, pyroxene and biotite in a crystalline groundmass of plagioclase, mafic minerals, quartz, and occasional glass particles. In the Como area, the Kate Peak flow units are generally unaltered.

Kate Peak tuff-breccias are composed of volcaniclastic fragments in an unwelded to moderately welded matrix. The tuff-breccias, where encountered at depth in drill holes C-1, C-2, and C-3, are generally argillized.

The Kate Peak tuff-breccias are the least competent volcanic units in the area and exhibit the greatest porosity, susceptibility to argillization and tendency to failure by plastic deformation. The Alta flows, which host the majority of mineralized veins in the Como District, are the most

competent volcanic units and typically yield to brittle failure, making them the most favorable hanging wall rocks for open fracturing and ore emplacement along the Pony Meadows fault. It is noteworthy that many of the principal ore bodies at Comstock were found in hanging wall splits in fractured Alta flow rocks.

STRUCTURE

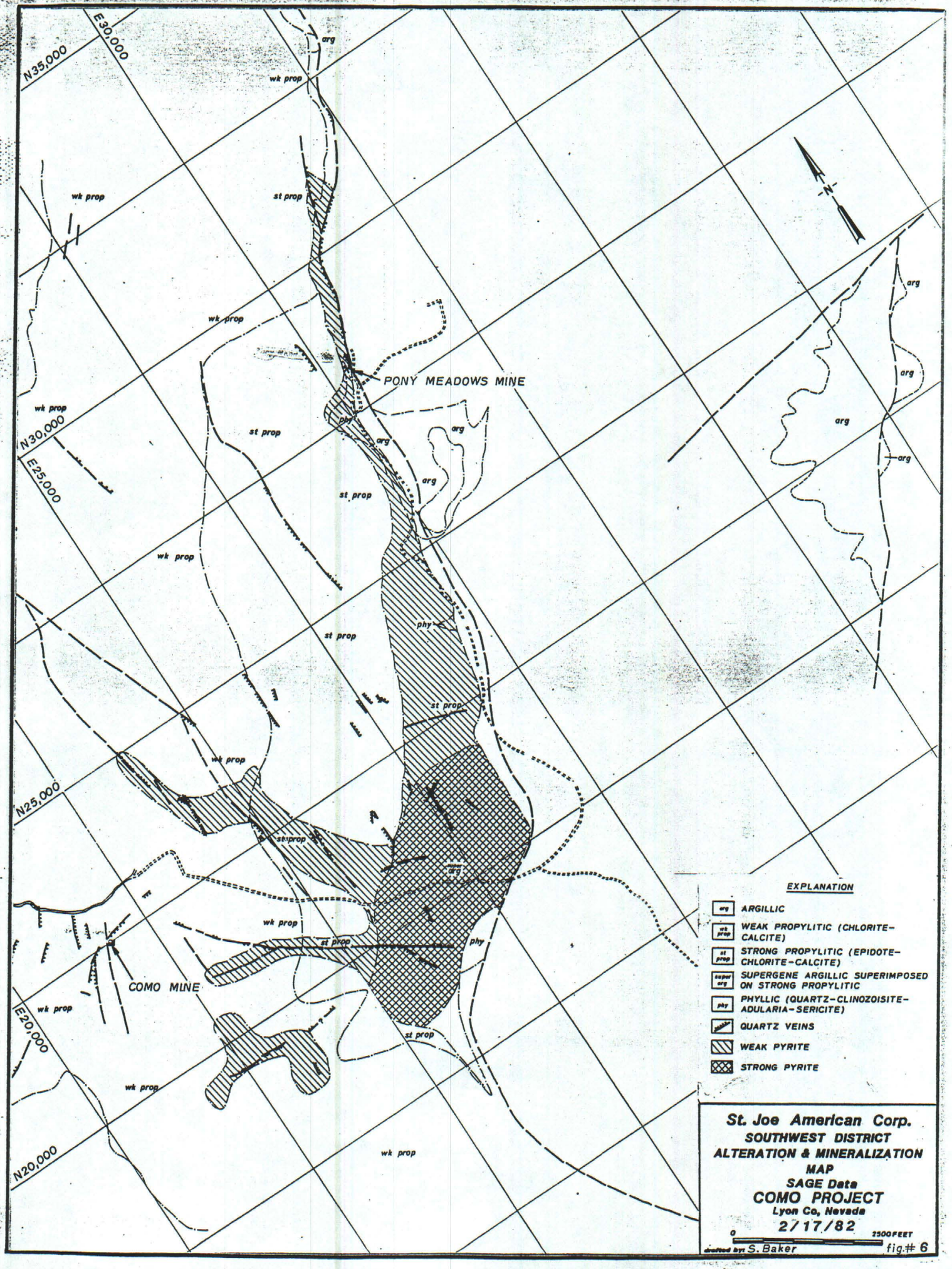
Faulting in the Como District is characterized by strike-slip and listric-normal faults resulting from tensional stresses, presumably generated during dilation of the Walker Lane tectonic zone. Mineralization has accompanied both types of faulting. In the Comstock, Goldfield, and Tonopah Districts, mineralization is associated with listric-normal faults similar in character to the Pony Meadows fault.

The majority of prominent faults at Como are NNE to NNW-trending, east-dipping normal faults typified by (1) steeply dipping mineralized structures at such locations as the Rapidan and Como mines, (2) subparallel, high angle footwall faults, and (3) the moderately dipping, listric-normal Pony Meadows fault. Other fault and fracture sets trend N50W, N45E and E-W, but are typically less persistent than the N-trending structures. The E-W structures are commonly strike-slip faults responsive to the same E-W extensional stresses that generated the north-trending Pony Meadows fault. Drill hole data may indicate block-faulting or hinge faulting in the hanging wall of the Pony Meadows fault, but the paucity of subsurface information plus extensive alluvial cover precludes any definitive interpretation.

The Pony Meadows fault is about 12-15 miles in length, with a northerly strike, and dips 35-50^{o} east. Displacement along the fault may be as much as 4500 feet, but is difficult

to calculate because of numerous footwall faults of undetermined offset between the Alta-Kate Peak contact and the Pony Meadows fault, and because of unknown depth to the Alta-Kate Peak contact in the hanging wall.

The fault is similar in length, orientation and displacement to the Comstock fault and cuts the same volcanic units characterized by similar alteration and mineralization. At the Comstock, many of the principal ore bodies occurred along vertical to steeply dipping hanging wall splits in brittle fractured Alta andesite flow rocks. At Como, however, all three drill holes collared in hanging wall Kate Peak tuff-breccias did not intercept the Alta formation in the hanging wall. The Kate Peak above the Pony Meadows fault has instead yielded to sliding and plastic deformation over a broad shear zone (Figure 5 and 10). The Alta formation is stratigraphically beneath the Kate Peak and should be found in the hanging wall further downdip.


N35,000
E30,000
N30,000
E25,000
N25,000
E20,000
N20,000
PONY MEADOWS MINE
COMO MINE
wk prop
st prop
arg
phy
EXPLANATION
ARGILLIC
WEAK PROPYLITIC (CHLORITE-CALCITE)
STRONG PROPYLITIC (EPIDOTE-CHLORITE-CALCITE)
SUPERGENE ARGILLIC SUPERIMPOSED ON STRONG PROPYLITIC
PHYLLIC (QUARTZ-CLINOZOISITE-ADULARIA-SERICITE)
QUARTZ VEINS
WEAK PYRITE
STRONG PYRITE
St. Joe American Corp.
SOUTHWEST DISTRICT
ALTERATION & MINERALIZATION
MAP
SAGE Data
COMO PROJECT
Lyon Co, Nevada
2/17/82
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2500 FEET
drafted by: S. Baker
fig.# 6

ALTERATION AND MINERALIZATION

In the Como area, alteration of Alta and Kate Peak volcanic units is visible over an irregular area roughly 5 x 8 miles. Weak propylitization (mostly of Alta rocks) is the most pervasive, followed by smaller areas of strong propylitic alteration, argillization, quartz-diaspore alteration, two very small phyllic(?) zones, and a superimposed pyritic zone (Figure 6, 7 and Plate 3).

Weak propylitic alteration is extensive in the Alta formation on the footwall of the Pony Meadows fault, or restricted in Kate Peak rocks to areas in proximity to the fault on the hanging wall side. Calcite and chlorite are the main alteration products.

Strong propylitic alteration (calcite, chlorite, epidote and quartz) occurs within the larger propylitic halo from about 1000 feet north of the Pony Meadows mine south along the footwall side of the fault, a distance of about three miles.

An argillic zone, roughly ½ x 1¼ miles, exists in the footwall to the west of a strong flexure of the southern Pony Meadows fault. This area was described by SAGE personnel as a "supergene argillic superimposed on a strong propylitic zone", implying that argillization developed by supergene weathering of pyritic propylitized rocks. Detailed mapping by St. Joe personnel (Appendix J) concluded that discontinuous argillic

zones are instead a result of selective localized hydrothermal alteration along with and peripheral to quartz-diaspore alteration zones (Figure 7). Argillization abruptly dies out to propylitization where quartz-diaspore alteration dies out. The existence of apophyses of pyritic, propylitically-altered rock within the general argillic zone infers that propylitization with pyritic mineralization continues at depth and would account for the shallow IP anomaly generated in this area. Both the supergene and quartz-diaspore arguments for this argillic alteration zone have merit.

Argillic alteration zones also exist along the Pony Meadows fault zone in the vicinity of the Pony Meadows mine, in the hanging wall Kate Peak formation immediately southeast, and in a one mile square zone in Mill Canyon about two miles southeast.

Superimposed on propylitically-altered and argillized rocks is a pyritic zone roughly 2 x 4 miles which is intensified along faults and quartz veins. The area of strongest pyritization roughly coincides with the area of quartz-diaspore argillic alteration aforementioned. Pyrite content averages less than 1/2%, but may exceed 1% in selected quartz veins and strong fracture zones. Values of greater than 2% pyrite were found in samples at the Pony Meadows mine, in pyritic quartz fragments taken from the fault zone in drill holes C-2 and C-3, and from selected horizons of the Gardnerville formation cored in drill hole C-2.

Sage personnel have mapped two small narrow areas of phyllic alteration immediately adjacent to the Pony Meadows fault that consist of a quartz-clinozoisite-adularia-sericite assemblage. These areas may rather be pockets of strong argillic quartz-diaspore alteration.

Ore mineralization at the Como mines (roughly two miles west of the Pony Meadows fault) consisted of quartz veins with pyrite, native gold, argentite, tetrahedrite, chalcopyrite, stibnite and silver sulfosalts. At the Pony Meadows mine, ore consisted of quartz with pyrite, native gold, minor amounts of silver and probably tennantite-tetrahedrite. With the exception of these localities, the only sulfide observed on the Como property is pyrite, which occurs as disseminations in Alta and Kate Peak formation rocks, strata-bound in the Gardnerville formation, on fractured surfaces of both these units, and in association with quartz veins. Occasionally, pyrite contains very low anomalous gold values.

Although the ore mined at the Como District is a drop in the bucket compared to the Comstock Lode, the pattern of alteration and mineralization of the two areas is very similar, leaving the possibility that larger blind ore bodies may exist at depth along the Pony Meadows fault.

Table 2 summarizes the alteration, mineralization and structural features of the Como and Comstock systems.

TABLE 2

COMPARISON OF THE GEOLOGY OF THE COMSTOCK LODE AND COMO

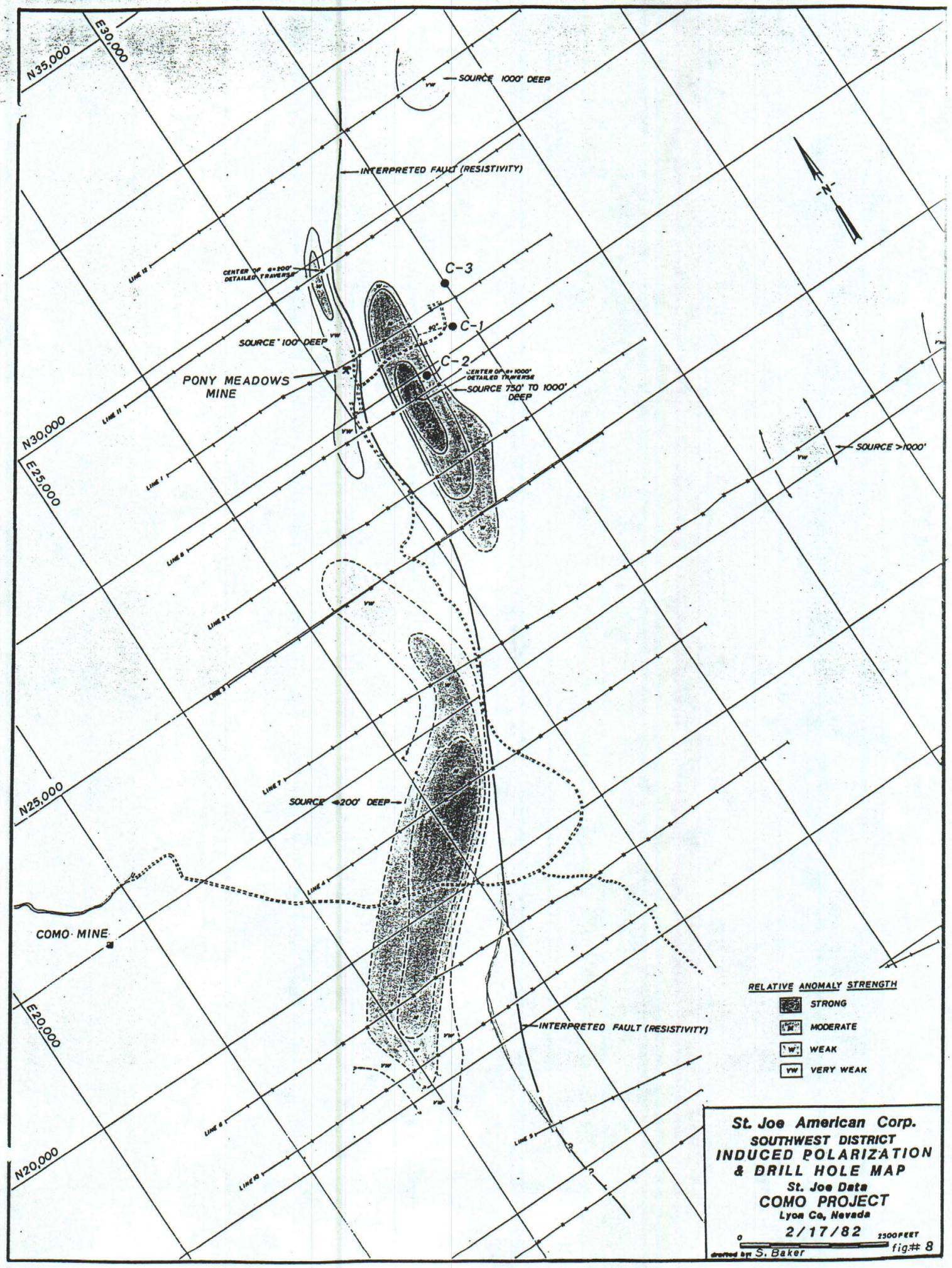
	Comstock Lode	Como-Pony Meadows
Structure	Listric Normal Fault	Listric Normal Fault
Strike direction	North-South arcuate (concave to E)	North-South arcuate (concave to E)
Strike length	10-15 miles	12-15 miles
Dip	30-55° East	35-50° East
Displacement	1500-2000'	2000-4500'
Stratigraphy		
	Kate Peak fm.	Kate Peak fm.
	Alta fm.	Alta fm.
	Harford Hill Rhyolite tuff	
	Davidson Granodiorite	
	Mesozoic Volcanic Rocks	Mesozoic Sedimentary and Volcanic Rocks (south)
Erosion Level Along Fault		
Hanging Wall	Alta fm.	Kate Peak fm.
Footwall	Alta fm.	Alta fm.
Alteration		
Hanging Wall	Phyllic & Argillic	Phyllic(?) & Argillic
Footwall	Phyllic & Argillic, Propylitic	Phyllic(?) & Argillic, Propylitic, Quartz-Diaspore
Mineralization		
	Native Gold (Au) Argentite (Ag_2S)	Native Gold (Au) Argentite (Ag_2S)
	Polybasite ($Ag_{16}SB_2S_{11}$)	Tetrahedrite ($Cu_{12}Sb_4S_{13}$)
	Pearceite ($\{AgCu\}_{16}As_2S_{11}$)	
	Chalcopyrite ($CuFeS_2$)	Chalcopyrite ($CuFeS_2$)
	Galena (PbS)	Proustite (Ag_3AsS_3)
	Sphalerite (ZnS)	Pyrargyrite (Ag_3SbS_3)
Ore Bodies		
	Main fault and hanging wall splits	Minor footwall faults (Como-Rapidan) Main fault (Pony Meadows)
Ore Controls		
	Permeability along fault with Alta fm. in hanging wall	Permeability along fault with Alta fm.(?) in hanging wall

GEOPHYSICS

Twelve induced polarization-resistivity traverses and a few magnetic traverses were made at Como in late 1978 and 1979 under the direction of St. Joe American geophysical personnel (Figure 8 and Plate 4). These surveys were run across the Pony Meadows fault zone (1) to establish the location of the fault, (2) to determine the depth to bedrock in the hanging wall, and (3) to locate anomalous sulfide zones. Details of the mechanics, procedures and data of these surveys are contained in the Como project geophysical report (Appendix K).

Extensive portions of the Pony Meadows fault are hidden by alluvial cover. Surface mapping and geophysical surveying have established the fault trace and defined the fault as an arcuate, listric-normal north-trending structure of at least 12 miles strike length. In some areas where the fault trace and/or Kate Peak formation are obscured by alluvial cover, magnetic surveys indicate that bedrock is at shallow depth. This was confirmed by drilling.

Three substantial and two subtle IP anomalies were found in the Como area. The largest IP anomaly is in the footwall of the Pony Meadows fault at a depth of less than 200 feet. This anomaly roughly overlaps the zone of strongest pyritic and argillic alteration at Como. St. Joe and SAGE personnel attribute this anomaly to propylitized Alta andesite with minor (less than 2%) vein-controlled and disseminated pyrite.


N35,000
E30,000
N30,000
E25,000
N25,000
E20,000
N20,000
SOURCE 1000' DEEP
INTERPRETED FAULT (RESISTIVITY)
CENTER OF 6 x 200' DETAILED TRAVERSE
C-3
C-1
C-2
SOURCE 100' DEEP
PONY MEADOWS MINE
CENTER OF 6 x 1000' DETAILED TRAVERSE
SOURCE 750' TO 1000' DEEP
SOURCE >1000'
SOURCE <200' DEEP
COMO MINE
INTERPRETED FAULT (RESISTIVITY)
LINE 12
LINE 11
LINE 1
LINE 9
LINE 2
LINE 3
LINE 7
LINE 4
LINE 6
LINE 5
LINE 10
RELATIVE ANOMALY STRENGTH
STRONG
MODERATE
WEAK
VERY WEAK
St. Joe American Corp.
SOUTHWEST DISTRICT
INDUCED POLARIZATION & DRILL HOLE MAP
St. Joe Data
COMO PROJECT
Lyon Co, Nevada
2/17/82
0
2500 FEET
drafted by S. Baker
fig# 8

The strongest IP anomaly is centered about 1500 feet southeast of the Pony Meadows mine at a depth of 750-1000 feet, and is an elongate zone parallel to the Pony Meadows fault. There is a steep west gradient to this anomaly, inferred to be a fault-bound west edge. The source of this anomaly was found to be pyritic, graphitic, calcareous Gardnerville shale encountered in drill hole C-2 beneath the Alta formation in the footwall of the fault. Two core sections of Gardnerville with abundant fracture-plane and laminated pyrite, when tested for IP and resistivity, gave a very high chargeability response of 100 to 190 milliseconds, whereas the overlying Alta tuff-breccia containing 2-4% disseminated pyrite has only a 5 millisecond chargeability. The high strength of the Gardnerville anomaly would tend to overwhelm weaker IP anomalies from other possible sources in the area.

The third and smallest IP anomaly occurs along the Pony Meadows fault. This anomaly is shallow (less than 100 feet deep), narrow, and centered at the Pony Meadows mine. This anomaly is probably produced by pyritic mineralization and alteration accompanying quartz veining in the fault zone and footwall at this site.

Two other weak IP anomalies have been identified, one about 1½ miles northeast of the Pony Meadows mine and the other, in Mill Canyon, roughly 2½ miles to the southeast. Both anomalies are subtle and deep.

GEOCHEMISTRY

Two geochemical surveys were made in the Como area, a soil sample survey by SAGE personnel in 1979 and a detailed mapping outcrop/soil survey by St. Joe personnel in 1981. In addition, a selected group of samples taken in the 1979 survey were rerun to corroborate gold-silver values in certain areas.

The 1979 geochemical survey by SAGE was conducted along the Pony Meadows fault zone and a section of Mill Canyon to the east. About 1300 samples were taken at 100' intervals along lines spaced 400-800 feet apart (Figure 9). Samples were assayed for eight elements: gold, silver, copper, lead, zinc, arsenic, antimony and mercury. Southwestern Assayers and Chemists of Tucson assayed roughly every other sample for the first seven elements. St. Joe personnel ran mercury on all 1300 samples. Assay results and statistical analyses are included with the SAGE report (Appendix I). Although anomalous metal values were noted in the Mill Canyon area to the east of the fault, the paucity of samples taken there makes it difficult to interpret that area. The following discussion of anomaly values and patterns, which is limited to data from the Pony Meadows fault area, has been extracted from the SAGE report.

Copper values are generally low, with a range of 9 to 145 ppm and a mean of 22 ppm. The values are stronger in the Alta footwall rocks, with an anomalous high centered in the area of

quartz-diaspore argillic alteration. Another high is partially outlined at the northern edge of the map (Plate 5).

Lead values range from 7 to 142 ppm with a mean of 15 ppm. The stronger lead values occur in the footwall side and slightly north of the main copper anomaly and around the Pony Meadows mine (Plate 6).

Zinc values range from 16 to 192 ppm with a mean of 65 ppm and generally parallel lead distribution (Plate 7). Copper, lead and zinc values show a moderately positive correlation. The base metals correlation along the Pony Meadows fault infers a hydrothermal system of similar chemistry to the Comstock system; however, outcrop base metal sulfides and the strength of geochemical values at Comstock (north of the main mining area) were considerably greater than at the Pony Meadows, implying that ore deposition at Como may have occurred at appreciable depth or that hydrothermal activity was short-lived and/or impoverished in metal content.

Arsenic values range from below the limit of detection to 48 ppm with a mean of 6 ppm. Strongest anomalous values are in the vicinity of the Pony Meadows mine and the strong alteration zone to the south. Values are anomalous on both sides of the fault (Plate 8).

Antimony values range from below the detection limits to 17 ppm with a mean of 4.5 ppm. Strongest values are in the vicinity of the Pony Meadows mine on either side of the fault (Plate 9).

Mercury values range from 13 to 5250 ppb with a mean of 71 ppb. Strongest values are on either side of the fault zone, again in the vicinity of the Pony Meadows mine (Plate 10).

One may cautiously generalize the distribution of these six elements by stating that copper, lead and zinc have anomalous highs on the propylitically-altered Alta footwall side of the fault in the area of strongest alteration and fracturing, and adjacent to a prominent Pony Meadows fault flexure, and that these anomalies extend northward on the footwall side to a second center at the Pony Meadows mine. Arsenic, antimony and mercury show moderate positive correlation, with anomalies centered at the same locations as the base metal highs but with values shifted eastward into the hanging wall argillized Kate Peak side of the fault.

Silver ranges from below detection limits to 4.4 ppm with a mean of 0.5 ppm. Strongest values occur in an elongate zone paralleling the fault trace from about 1000 feet south to 4000 feet north of the Pony Meadows mine. A broader, weaker peripheral zone extends the area of anoamlous silver in all directions, with extension mostly along the fault trace (Plate 11).

Gold values range from below the limit of detection to 1050 ppb with a mean of 15 ppb. Strong values are almost exclusively point source anomalies in the general vicinity of the Pony Meadows mine and in the quartz-diaspore alteration area. High gold values are associated with pyritic and/or hematitic quartz veins (Plate 12). There is a modest positive correlation among gold, silver and mercury values.

The SAGE report, summarizing the results of this geochemical survey, concludes that the values and patterns of anomalies infer a hydrothermal source at coordinates N20,000 and E27,500 (roughly centered in the area of quartz-diaspore alteration) with base-metal zoning and peripheral mercury, antimony, arsenic and silver zoning.

Subsequent to SAGE's geochemical survey work at Como, St. Joe American staff decided to rerun 76 conspicuous gold and silver samples and found a strong discrepancy between Southwestern's results and pulps rerun by Skyline Labs of Tucson. Eventually, several hundred samples were rerun and their values plotted against the original geochemical surveys. Reanalysis indicated that some of the strongest gold and silver anomalies remain, but the strength and extent of the anomalous areas have been substantially reduced (Plates 13 and 14).

Detailed mapping and sampling by St. Joe American staff was conducted in 1981 on the footwall side of the southern Pony Meadows fault in the general area of strong alteration,

irregular geochemical anomalies and the broad, shallow IP anomaly. A total of 210 outcrop rock samples and 145 soil samples taken were assayed for gold and silver (Appendix J). Outcrop assay returns showed little correlation between alteration and mineralization for samples containing less than 50 ppb Au and less than 1 ppm Ag. Samples with greater than 100 ppb Au and 1 ppm Ag are associated with quartz-diaspore veins with hematitic staining. A bimodal distribution of gold values was found, one peak occurring at 2 ppm Au or less, representing background levels, and another peak at 30 ppb Au representing hydrothermal upgrading in association with quartz-diaspore veining. With the exception of a few silver values greater than 1 ppm (associated with anomalies gold-bearing quartz veins), silver values were generally quite low.

In considering the strength and distribution of geochemical anomalies at Como, it is important to consider a similar survey done by the USGS at Comstock in 1966-71 (Geological Survey Professional Paper 936). In that survey, the USGS, in an attempt to find the extension of the Comstock Lode, took about 1100 rock and soil samples and ran IP traverses across the apparent northern extension of the Comstock fault. Four holes were drilled over anomalous areas. No ore or major structures were penetrated. Assays of drill hole samples and surface samples of similar rock types and alteration grades were comparable, indicating that anomalous surface values reflect similar values at depth. Likewise, there was

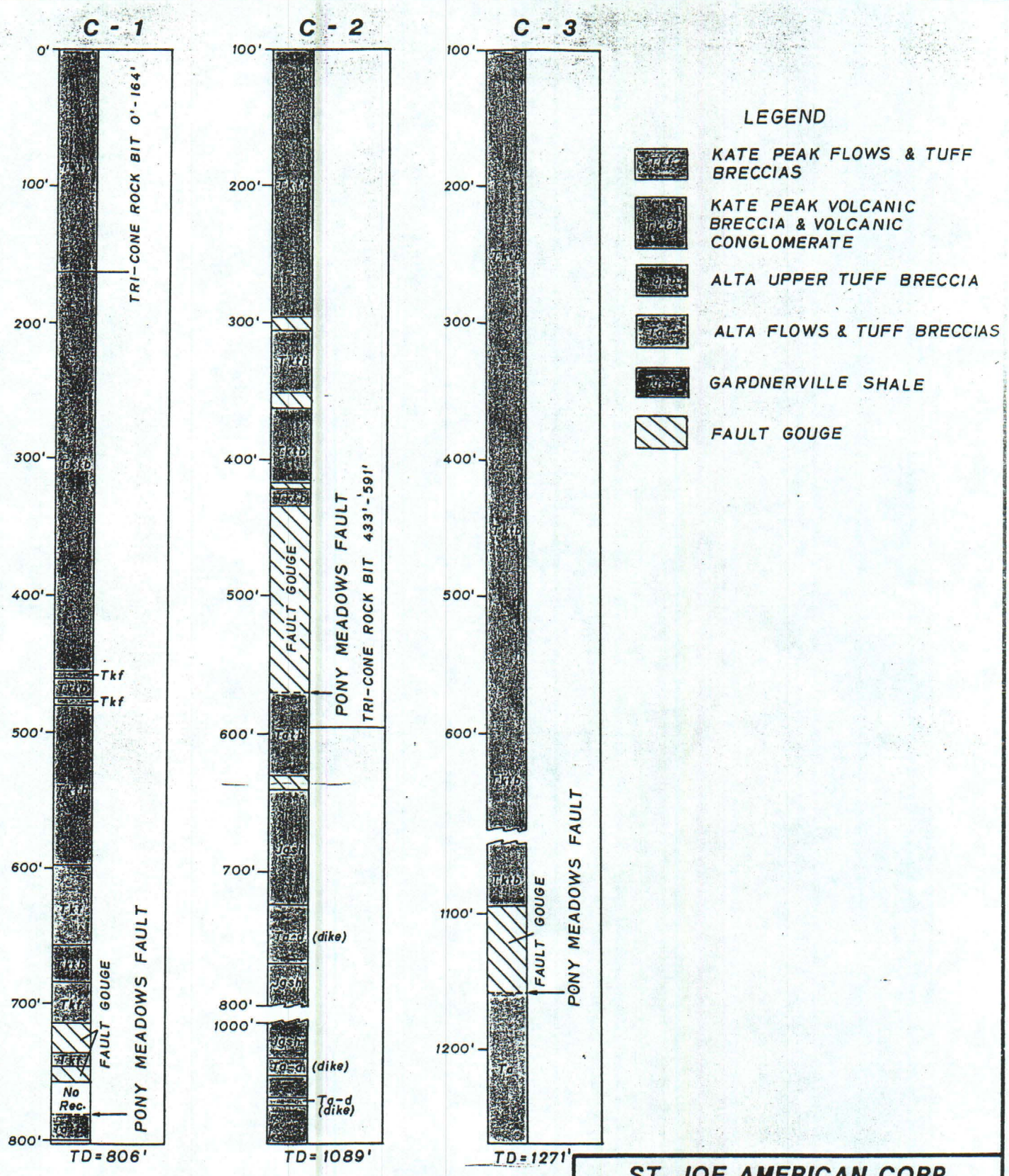
remarkably little vertical zoning or variation of ore grades or mineral assemblages over the 3000+ vertical feet mined along the Comstock Lode. Assays of drill core and surface geochemical values at Como have produced the same pattern, giving little evidence of enrichment with depth in the portion of the fault zone drilled to date.

DRILLING

Three holes have been drilled at Como, C-1 and C-2 in 1979 and C-3 in 1981. Coordinate locations are: C-1, N27,820 and E32,160; C-2, N27,330 and E31,450; and C-3, N28,200 and E32,500 (Figure 8). The holes were drilled (1) to check for mineralization downdip from the Pony Meadows mine (2) to look for favorable Alta flow rocks in the hanging wall of the fault, (3) to determine the source of the IP anomaly east of the Pony Meadows mine, and (4) to evaluate geochemical anomalies in this area. All of the holes were collared in the hanging wall Kate Peak formation and penetrated the Pony Meadows fault. None of the holes intercepted the Alta formation in the hanging wall or encountered any significant mineralization.

Hole C-1 was core drilled at -60° in a westerly direction. It began 4 May 1979 and was terminated 9 June 1979 at a total length of 803 feet because of high artesian water pressure (300 gal./ min. at 120 psi) and fault gouge squeeze.

The upper 685 feet of C-1 is a volcanic conglomerate with Kate Peak fragments in a sand to clay sediment matrix. Beneath this is a 30 foot section of Kate Peak flow resting on fault gouge which continues about 85 feet to the bottom of the hole at 803 feet (Figure 10). Quartz-cemented lithic fragments with disseminated and streaky pyrite were rafted up from the bottom of the hole by high water pressure. The



ST. JOE AMERICAN CORP.
Southwest District
LITHOLOGIC COLUMN
DRILL HOLES C-1-3
COMO PROJECT

Co,State: Lyon Co., Nevada	
Data by: SAGE / St Joe	Ref:
Dft. by: S Baker	Date: 2/17/82
	Fig: 10

stratigraphic relationship of these fragments is uncertain. The most attractive fragments were assayed, with negative results.

Hole C-2 was drilled vertically at a location about 900 feet S60°W of C-1. It began in September 1979 and was completed on 20 November 1979 at a depth of 1084 feet.

The upper 433 feet of C-2 were drilled in poorly welded Kate Peak tuff-breccia. Of that, the upper 360 feet were argillized and oxidized, and the lower 360 to 433 feet were propylitically altered. In a rotary-drilled section from 433 to 591 feet, there was no rock recovery. Presumably, the strata are very soft and weakly consolidated, and represent a shear or gouge zone. This was most likely the Pony Meadows fault zone.

From 593 to 632 feet, silicified and propylitized Alta tuff-breccia with quartz veinlets containing 3-5% pyrite was encountered. The interval from 632 to 641 feet was described in the SAGE log as consisting of fault breccia and gouge containing fragments of shale. However, upon further examination, it appears that this interval may be a weathered surface overlying the Gardnerville shale. Below this zone, the rock is a graphitic, pyritic, calcareous shale. The pyrite occurs as disseminated euhedral cubes, and as sugary to microscopic granular-laminated layers of pyrite concordant to bedding. The pyrite content of the shale may run as high as 15%. The hole was terminated at 1984 1089 feet (Figure 10).

Hole C-3 was drilled vertically at a location about 500 feet N60°E of C-1. It was collared 20 August 1981 and completed 26 September 1981 at a depth of 1271 feet.

From the surface to 1104 feet, the lithology consists of Kate Peak volcanic conglomerate, with interlayered angular to rounded volcanic clasts in mudstone. The interval from 1104 to 1161.5 feet is a zone of sheared, clayey volcanic debris culminating in about 14 feet of gouge - the Pony Meadows footwall contact. Within the gouge zone were rounded knots of pyritic quartz and calcite. Pyritic argillized and/or propylitized Alta andesite porphyry was beneath the fault and continued to the bottom of the hole at 1271 feet. Pyrite content in the Alta ranges from less than 1% to about 5%.

In summary, all three holes were collared in the hanging wall of the Pony Meadows fault in Kate Peak volcanic breccias and/or volcanic conglomerates. The volcanics were argillized and/or propylitized, and intensely sheared for at least 100 feet above the fault. The footwall of the fault is well-defined. The footwall rocks are pyritic, propylitized Alta volcanics or pyritic Gardnerville shale. Geochemical results of assays run on pyritic volcanics, shale and quartz fragments from the fault zone are unimpressive. Analyses have shown that geochemical values at depth are comparable to surface sample values in rocks of similar lithology and alteration.

FINANCIAL STATEMENT AND SUMMARY OF THE COMO PROJECT

The following table is a summary of financial expenditures on the Como Project. To January 1982, $418,873.50 has been invested in Como.

TABLE 3

	1978	1979	1980	1981	Total
SAGE Assoc.	$ 6,609.54	$ 49,728.13	$14,721.96	$ 3,754.92	$ 74,814.55
Salaries	7,004.32	9,008.11	1,120.49	19,935.55	37,068.47
Geophysical	11,696.15	2,822.79			14,518.94
Geological	11,550.03	1,592.91		4,273.28	17,416.22
Drilling	789.59	110,062.53	1,399.16	54,876.31	167,127.59
Land	10,533.99	24,285.03	205.48	117.50	35,142.00
Lease	13,500.00	4,500.00	4,500.00	4,500.00	27,000.00
Legal	1,144.00	669.16	868.00		2,681.16
Assay	1,105.51	14,190.43	3,054.37	3,054.37	25,010.44
Equip. Rent.		6,918.91	51.98	1,109.91	8,080.80
Casual Labor	2,630.15	2,089.94			4,720.09
Travel	172.00	1,832.00	329.50	1,451.00	3,784.50
Misc.	75.62	658.95	12.61	761.56	1,508.74
TOTALS	$66,810.90	$228,358.89	$26,263.55	$97,440.16	$418,873.50

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PONY MEADOWS PROJECT (D-82-106)

DRILL HOLE GEOCHEMISTRY

DRILL HOLE: APM-1

LAB: Barringer Resources

FOOTAGE	Pb (ppm)	Zn (ppm)	Ag (ppm)	Au (ppb)	As (ppm)	Hg (ppb)
160-170			-0.1	-20		
190-200			0.1	20		
210-220			0.6	-20		
230-240			0.4	-20		
250-260			0.3	-20		
260-270			0.3	-20		
270-275			-0.1	-20		

PONY MEADOWS PROJECT (D-82-106)

DRILL HOLE GEOCHEMISTRY

DRILL HOLE: APM-3

LAB: Barringer Resources

FOOTAGE	Pb (ppm)	Zn (ppm)	Ag (ppm)	Au (ppb)	As (ppm)	Hg (ppb)
80-90			-0.1	-20		
100-110			-0.1	-20		
110-117			-0.1	-20		

PONY MEADOWS PROJECT (D-82-106)

DRILL HOLE GEOCHEMISTRY

DRILL HOLE: APM-4

LAB: Barringer Resources

FOOTAGE	Pb (ppm)	Zn (ppm)	Ag (ppm)	Au (ppb)	As (ppm)	Hg (ppb)
140-150			-0.1	-20		
170-180			0.5	-20		
200-210			0.2	40		
230-240			0.9	20		
260-270			2.2	20		
280-290			0.1	-20		
290-300			0.2	-20		

PONY MEADOWS PROJECT (D-82-106)

DRILL HOLE GEOCHEMISTRY

DRILL HOLE: APM-5

LAB: Barringer Resources

FOOTAGE	Pb (ppm)	Zn (ppm)	Ag (ppm)	Au (ppb)	As (ppm)	Hg (ppb)
50-60			-0.1	20		
80-90			-0.1	-20		
110-120			0.6	-20		
150-160			0.1	-20		
170-180			-0.1	-20		
190-200			-0.1	-20		
210-220			0.1	-20		
240-250			0.1	-20		

PONY MEADOWS PROJECT (D-82-106)

DRILL HOLE GEOCHEMISTRY

DRILL HOLE: APM-6

LAB: Bondar-Clegg

FOOTAGE	Pb (ppm)	Zn (ppm)	Ag (ppm)	Au (ppb)	As (ppm)	Hg (ppb)
560-570	34	133	0.2	130	55	40
610-620	31	93	0.2	65	9	20
660-670	21	96	0.2	15	6	10
710-720	42	24	0.2	20	5	20
760-770	9	51	0.2	15	3	30
810-820	28	81	0.2	5	3	30
870-880	23	80	0.2	10	4	50
880-890	12	50	0.2	5	4	50
890-900	11	23	0.2	-5	2	30
900-910	4	4	0.2	5	3	20
910-920	14	7	0.2	30	3	30
920-927	14	21	0.2	-5	2	30

PONY MEADOWS PROJECT (D-82-106)

DRILL HOLE GEOCHEMISTRY

DRILL HOLE: APM-7

LAB: Bondar-Clegg

FOOTAGE	Pb (ppm)	Zn (ppm)	Ag (ppm)	Au (ppb)	As (ppm)	Hg (ppb)
400-410	7	59	0.2	-5	6	20
410-420	12	81	0.9	10	6	-5
420-430	7	87	2.1	10	3	20
470-480	38	69	2.2	15	13	30
480-490	20	106	2.3	15	15	40
490-500	29	111	1.0	5	8	30
510-520	28	117	0.2	-5	6	80
520-530	16	25	0.5	-5	8	70
530-540	13	23	0.2	-5	4	60
540-550	18	58	0.2	-5	4	40
550-560	21	28	0.2	-5	6	30
560-570	36	57	0.2	-5	3	10
570-580	28	46	0.2	-5	7	10
580-590	65	253	0.5	-5	5	50
590-600	267	374	2.0	10	18	270
620-630	74	398	1.0	10	30	570
650-660	9	91	0.4	35	25	80
-680	72	445	1.0	5	8	120
710-720	22	173	0.8	30	21	110

PONY MEADOWS PROJECT (D-82-106)

DRILL HOLE GEOCHEMISTRY

DRILL HOLE: APM-8

LAB: Bondar-Clegg

FOOTAGE	Pb (ppm)	Zn (ppm)	Ag (ppm)	Au (ppb)	As (ppm)	Hg (ppb)
470-480	8	120	0.2	-5	6	40
520-530	98	77	3.7	5	49	130
550-560	8	72	0.3	25	22	40
560-570	10	97	0.2	75	70	100
570-580	20	95	0.6	30	35	150
580-590	15	132	0.6	25	59	460
590-600	12	105	0.8	70	29	230
600-605	9	99	1.0	25	18	320
605-610	8	85	1.6	30	18	230
610-615	11	85	1.1	45	26	110
615-620	9	81	0.5	60	29	100
620-625	21	64	4.5	125	40	480
625-630	7	70	0.6	140	49	90
630-635	9	81	0.7	65	45	160
635-640	8	77	0.5	20	9	150
640-645	8	93	0.9	95	52	120
645-650	7	56	0.7	50	47	440
650-660	9	86	0.3	-5	25	440
660-670	6	76	0.3	-5	-2	230
670-680	6	77	0.3	-5	6	20
680-690	6	78	0.2	-5	3	20

USB CORPORATION
DRILL LOG SUMMARY

PROJECT PONY MEADOWS ANOMALY (Magnetic?)

Lyon COUNTY, NV STATE

GENERAL:

DRILL HOLE NO. PM-6 TOTAL DEPTH 245'

COLLAR ELEVATION _____ COORDINATES _____ N. _____ E.

BEARING N30W INCLINATION 44° LOGGED BY K. Downing

REASON FOR TERMINATION Passed through targeted altered andesite and stopped drilling there at 55' in propylitic andesite

DRILL DATA: (ROTARY) (REV. or CONV.) CORE

DRILLER Stretch Petroleum - Bowles Bros.

DATE STARTED 5-12-89 DATE COMPLETED 5-13-89

FOOTAGE PER SHIFT _____

DRILLING PROBLEMS (Summarize)

None

SAMPLE DATA:

SAMPLE NO. SEQUENCE CO-3, 0-245

NO. OF SAMPLES 49

INTERVAL SAMPLED 5' samples from 0-245'

MINERALIZED INTERVAL:

FROM	TO				

GEOLOGIC SUMMARY:

0-190' Argillic-altered andesite
- trace pyrite
- minor, spotty silicification
oxidized zone from 150-190'

190-245' Propylitic andesite
- 2-30% pyrite
- minor oxidation
- fracturing at 205-215'
- Groundwater at 220

PM-6

Project Como Drill Hole ~~CO-3~~ ? Bearing N30W Angle 44° Total Depth 245' Sheet 1 of ___

Collar Elev. ___ Co. Lyon State NV T. ___ R. ___ Sec. ___ Coordinates ___, ___

Quad. Como Contractor Boyles Bros. Drill Rotary reverse Started 5-12-89 Completed 5-13-89 Geologist K. Dowsing

		ALTERATION							SULFIDES			STRUCTURE				GEOLOGY		REMARKS		
Footage	Recov.	% Fines	% FeOx	% SiO_2	% Ca	% Clay		Graphic	% Py			Graphic	Frac	Graphic	Color (d)	Color (w)	Rock Type	Graphic		ppm Au	ppm Ag
0-5	100	70	1	20	–	40			–						brn	tan-brn	altered andesite		oxidized silicified		
5-10		70	1	30	–	40			–						"	"	"		"		
10-15		70	tr	tr	–	40			–						"	gray-brn	"				
15-20		70	tr	–	–	40			–						tr	grn-brn	"				
20-25		70	tr	–	–	30			–						"	grn-gray	"				
25-30		90	tr	–	–	50			–						brn-gray	"	"				
30-35		70	tr	–	–	30			–						"	"	"				
35-40		60	tr	–	–	20			–						"	"	"				
40-45		50	tr	–	–	40			–						"	white-gray	"		FeO_2 on fractures		
45-50		50	tr	–	–	40			tr						gray	"	"		FeO_2 on fractures		
50-55		40	1	–	–	30			tr						"	grn-gray	"				
55-60		Fri	tr	–	–	30			tr						"	"	"				

Project Como PMP6 Drill Hole CD-3 Bearing N30W Angle 44° Sheet 2 of 4

Footage	Recov	ALTERATION % Fines	% FeOx	% SiO_2	% Ca	% Clay	Graphic	SULFIDES % Py	Graphic	STRUCTURE Frac	Graphic	Color (d)	Color (w)	GEOLOGY Rock Type	Graphic	REMARKS	ppm Au	ppm Ag
60-65	100	60	2	—	—	30		—				brn	brn-grn	altered andesite		hard drilling FeO_2 on fractures		
65-70		60	3	—	—	30		—				"	"	"		FeO_2 on fractures		
70-75		50	tr	—	—	20		tr				"	brn-gray	"		FeO_2 on fractures		
75-80		60	1	—	—	30		tr				"	grn-gray-brn	"		FeO_2 on fractures		
80-85		60	tr	—	—	30		—				"	"	"		FeO_2 on fractures		
85-90		60	1	10	—	20		—				orange-brn	grn-brn	"		FeO_2 on fractures silicification		
90-95		60	2	2	—	20		—				"	"	"		"		
95-100		60	2	—	—	30		—				"	"	"		"		
100-105		50	tr	—	—	20		—				"	"	"		"		
105-110		50	1	—	—	20		—				"	"	"		"		
110-115		50	2	—	—	30		—				"	brn	"		"		
115-120		60	1	—	—	40		—				"	gray-brn	"		"		
120-125		60	1	5	—	40		—				"	brn-brn	"		" silicification		
125-130		60	5	tr	—	40		—				"	"	"		"		

PM-6

Project Como Drill Hole CO-3 Bearing N30W Angle -44° Sheet 3 of 4

Footage	Recov	% Fines	% FeOx	% SiO_2	% Ca	% Clay	Graphic	% Py	Graphic	Frac	Graphic	Color (d)	Color (w)	GEOLOGY Rock Type	Graphic	REMARKS	ppm Au	ppm Ag
	ALTERATION							SULFIDES				STRUCTURE						
130-135	100	70	tr	—	—	40		—				tan	gray-white	altered andesitic		easy drilling Chlorite on fractures		
135-140		60	1	—	—	30		—				"	light gray-tan	"		"		
140-145		60	tr	—	—	30		—				"	gray-tan	"		"		
145-150		60	tr	—	—	30		—				"	"	"		stop drilling for today		
150-155		70	2	—	—	40		—				"	brn-tan	"				
155-160		50	3	—	—	50		—				gray-tan	"	"		argillic alteration		
160-165		90	8	—	—	70		—				"	"	"		"		
165-170		90	15	—	—	70		—				"	"	"		"		
170-175		90	5	—	—	60		—				"	gray-brn	"		"		
175-180		90	40	—	—	70		—				orange	orange-brn	"		extreme oxidation		
180-185		90	30	—	—	70		?				"	gray-brn	"		trace oxidized pyrite		
185-190		90	10	—	—	60		tr				orange-brn	"	"		fresh pyrite		
190-195		70	tr	—	—	50		2				gray	gray	phyllitic andesite		fresh pyrite		
195-200		70	—	—	—	40		5				"	"	"		"		

Project Como Drill Hole PM-6 CD-3 Bearing N30W Angle -44° Sheet 4 of 4

Footage	Recov	% Fines	% FeOx	% SiO_2	% Ca	% Clay	Graphic	% Py	Graphic	Frac	Graphic	Color (d)	Color (w)	GEOLOGY Rock Type	Graphic	REMARKS	ppm Au	ppm Ag
ALTERATION								SULFIDES			STRUCTURE							
200-205	100	70	tr	–	–	40		5				gray	gray	propylitic andesite		easy drilling		
205-210		60	5	–	–	40		8				gray brn	brn-gray	"		oxidized fractured minor		
210-215		60	tr	–	–	40		5				gray	"	"		Fe ox on fractures		
215-220		60	–	–	–	40		15				"	gm gray	"				
220-225		M	tr	–	–	M		20				–	"	"		Groundwater		
225-230		M	tr	–	–	M		30				"	"	"		start wet drilling		
230-235		M	–	–	–	M		15				"	"	"				
235-240		M	tr	–	–	M		20				"	"	"				
240-245		M	tr	–	–	L		10				"	gm	"				
245-250														E.O.H. at 245'				
250-255																		
255-260																		
260-265																		
265-270																		

USBRC CHEMICAL ANALYSIS REPORT

DATE : 21-JUN-89
SET NUMBER : NT89DRS1
SUBMITTER : K.G.ALBERT/RENO
REMARKS :

PROJECT : NV TONOPAH DRILL 89
SUPERVISOR : P.SMITH/EXP
PROPERTY : COMC

PM-6

FIELD NUMBER	AU/AA PPM	AG/AA PPM	AS PPM	SB PPM	HG PPM
CO-3 0-5	0.03	0.6	12.	<5.	0.19
CO-3 5-10	0.03	0.4	11.	<5.	0.19
CO-3 10-15	<0.02	<0.2	3.	<5.	0.09
CO-3 15-20	<0.02	<0.2	3.	<5.	0.05
CO-3 20-25	0.03	<0.2	3.	<5.	0.09
CO-3 25-30	<0.02	<0.2	3.	<5.	<0.05
CO-3 30-35	<0.02	<0.2	2.	<5.	0.05
CO-3 35-40	0.08	<0.2	2.	<5.	<0.05
CO-3 40-45	0.06	<0.2	3.	<5.	0.05
CO-3 45-50	0.05	<0.2	4.	<5.	0.11
CO-3 50-55	0.03	<0.2	2.	<5.	<0.05
CO-3 55-60	<0.02	<0.2	3.	<5.	0.09
CO-3 60-65	0.03	<0.2	2.	<5.	0.13
CO-3 65-70	<0.02	<0.2	2.	<5.	0.07
CO-3 70-75	0.03	<0.2	5.	<5.	0.05
CO-3 75-80	0.03	<0.2	2.	<5.	<0.05
CO-3 80-85	0.03	<0.2	2.	<5.	0.05
CO-3 85-90	0.03	<0.2	<2.	<5.	0.17
CO-3 90-95	0.03	<0.2	4.	<5.	<0.05
CO-3 100-105	<0.02	<0.2	10.	<5.	<0.05
CO-3 105-110	<0.02	<0.2	10.	<5.	0.09
CO-3 110-115	0.05	0.5	2.	<5.	0.15
CO-3 115-120	0.05	0.5	6.	<5.	<0.09
CO-3 120-125	0.05	0.7	7.	11.	0.09
CO-3 125-130	<0.02	0.7	8.	20.	0.15
CO-3 130-135	<0.02	0.5	10.	5.	0.09
CO-3 135-140	<0.02	0.7	8.	<5.	0.11
CO-3 140-145	0.03	0.7	2.	<5.	0.07
CO-3 145-150	0.09	0.7	5.	<5.	0.09
CO-3 150-155	0.06	0.7	2.	5.	0.07
CO-3 155-160	0.05	1.0	13.	<5.	0.19
CO-3 160-165	0.05	0.7	4.	<5.	0.15
CO-3 165-170	0.03	0.7	4.	<5.	0.19
CO-3 170-175	0.08	0.5	<2.	<5.	0.08
CO-3 175-180	0.03	0.5	<2.	<5.	0.05
CO-3 180-185	0.03	0.7	<2.	<5.	0.05
CO-3 185-190	<0.02	0.7	<2.	<5.	0.12
USB-6	1.64	10.8	28.	20.	1.37
CO-3 190-195	<0.02	1.0	4.	<5.	0.08
CO-3 195-200	<0.02	0.5	<2.	<5.	0.22

USBRC CHEMICAL ANALYSIS REPORT

DATE : 21-JUN-89
SET NUMBER : NT89DR81
SUBMITTER : K.G.ALBERT/RENO
REMARKS :

PROJECT : MT TONOPAH DRILL 89
SUPERVISOR : P.SMITH/EXP
PROPERTY : COM.D

FIELD NUMBER	CU PPM	PB PPM	ZN PPM	AG PPM
PM-6				
CO-3 0-5	38.	24.	36.	8.
CO-3 5-10	52.	22.	31.	7.
CO-3 10-15	38.	10.	16.	5.
CO-3 15-20	26.	7.	15.	5.
CO-3 20-25	22.	12.	8.	6.
CO-3 25-30	20.	10.	7.	6.
CO-3 30-35	14.	10.	7.	6.
CO-3 35-40	15.	14.	6.	22.
CO-3 40-45	16.	7.	5.	21.
CO-3 45-50	32.	55.	8.	15.
CO-3 50-55	21.	<5.	9.	14.
CO-3 55-60	53.	<5.	19.	6.
CO-3 60-65	48.	<5.	17.	<5.
CO-3 65-70	49.	12.	11.	<5.
CO-3 70-75	45.	<5.	9.	<5.
CO-3 75-80	63.	<5.	11.	<5.
CO-3 80-85	55.	<5.	7.	<5.
CO-3 85-90	31.	<5.	7.	<5.
CO-3 90-95	78.	<5.	9.	5.
CO-3 100-105	31.	<5.	18.	<5.
CO-3 105-110	32.	<5.	18.	<5.
CO-3 110-115	31.	10.	11.	5.
CO-3 115-120	26.	7.	8.	6.
CO-3 120-125	27.	14.	9.	6.
CO-3 125-130	23.	10.	5.	5.
CO-3 130-135	16.	7.	12.	6.
CO-3 135-140	21.	<5.	6.	<5.
CO-3 140-145	14.	<5.	10.	6.
CO-3 145-150	11.	7.	7.	10.
CO-3 150-155	12.	10.	8.	8.
CO-3 155-160	21.	10.	9.	5.
CO-3 160-165	52.	7.	18.	<5.
CO-3 165-170	57.	7.	17.	<5.
CO-3 170-175	33.	14.	14.	<5.
CO-3 175-180	42.	12.	10.	6.
CO-3 180-185	64.	12.	11.	6.
CO-3 185-190	116.	50.	26.	<5.
USB-6	63.	134.	256.	5.
CO-3 190-195	156.	10.	26.	<5.
CO-3 195-200	20.	14.	26.	<5.

Sec. 13 T 15 N R 22 E

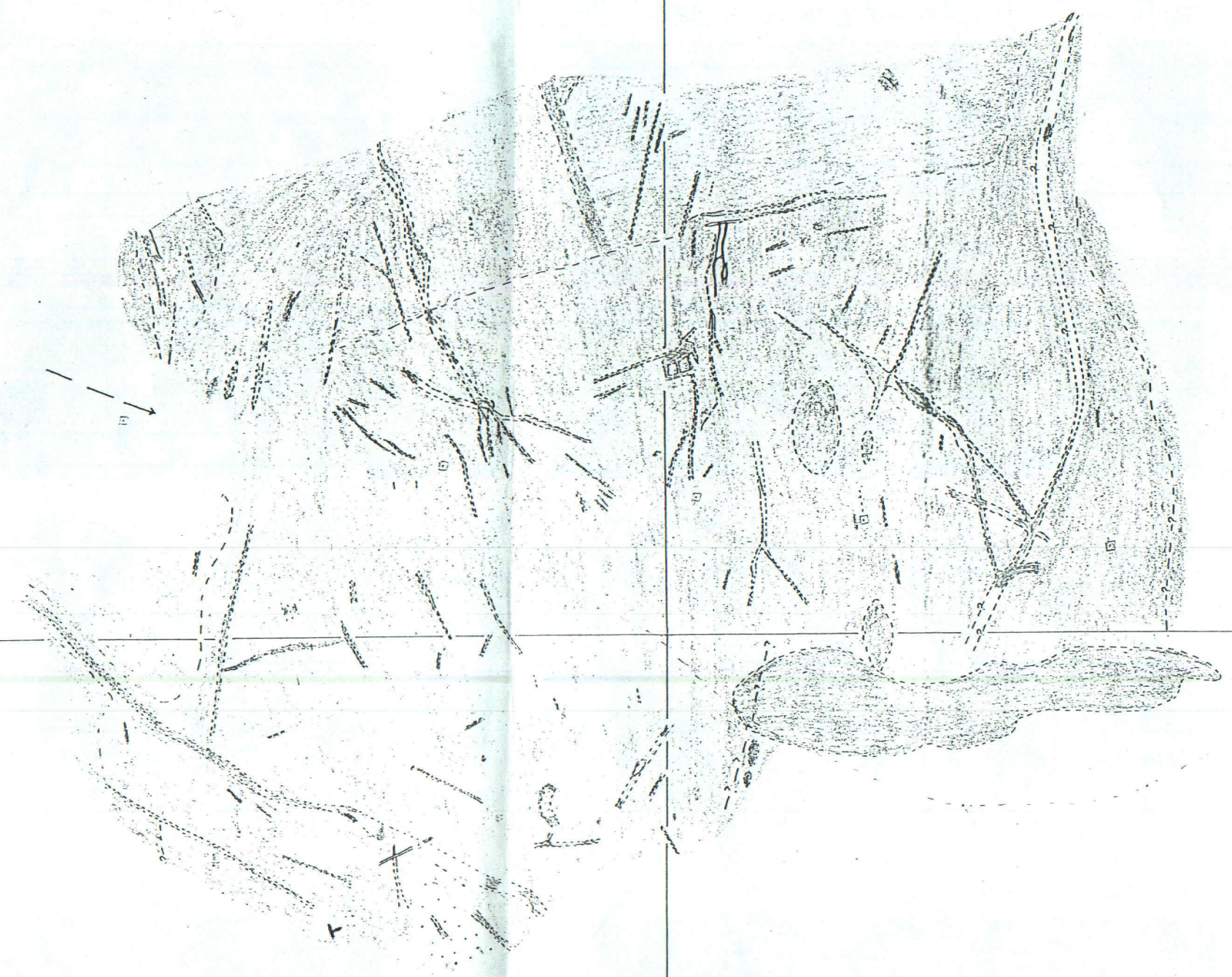
N22,500

N20,000

E25,000

E27,500

E30,000



% of Silicification (quartz - diaspore)

- <10% - Argillically altered
- 10-50%
- 50-90%
- >90%

- Y Qtz. Sericite
- Prop. Alteration
- Fe-Crete

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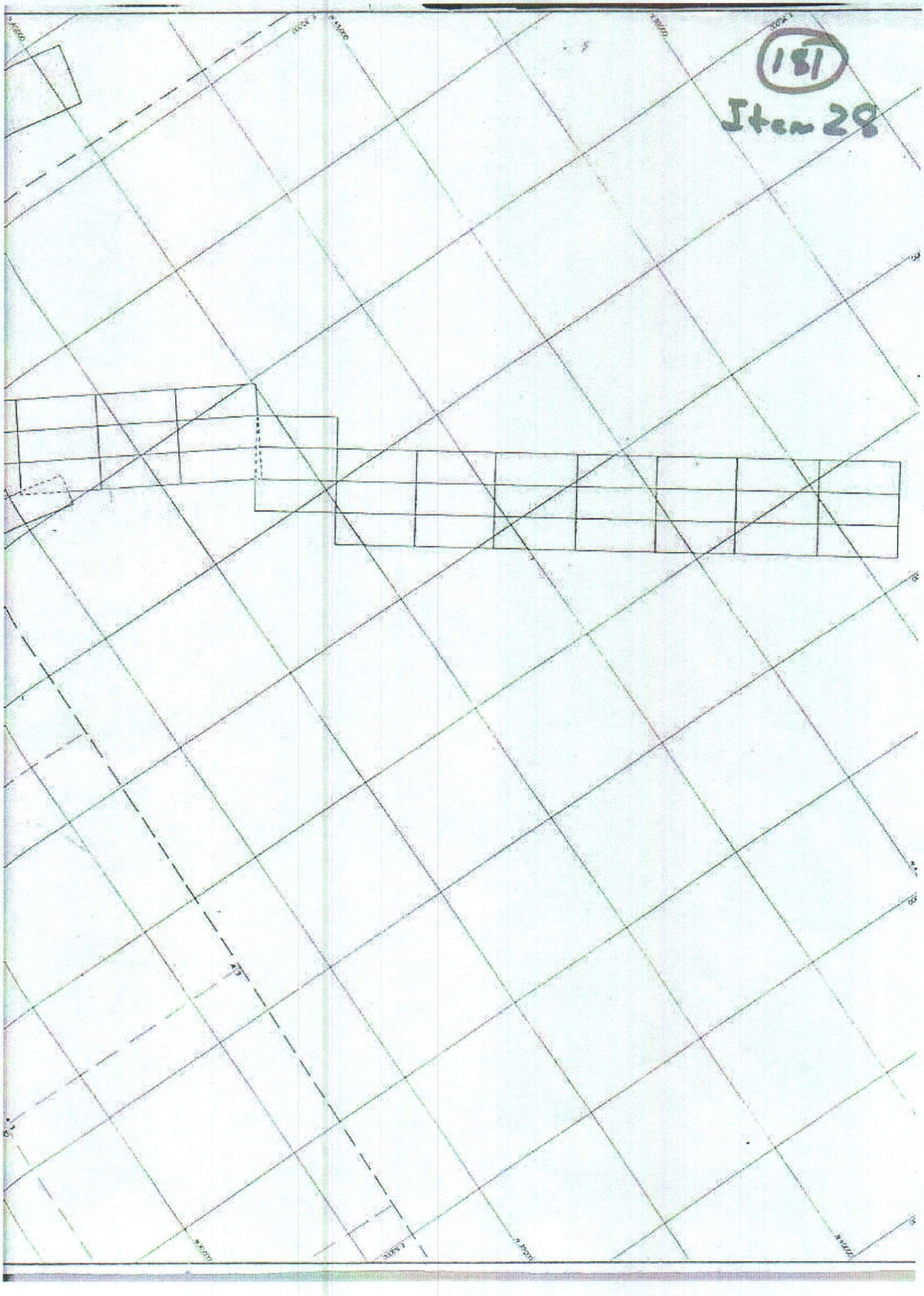
Item28

-N-

ST. JOE AMERICAN CORP.
Southwest District
COMO PROJECT
Interpretive Alteration Map
in the Alta Andesite

Co,State: Lyon County, Nevada	
Data by: F. Sousa	**Ref:**
Dft. by: S.B. Gaul	**Date:** Feb., 1982
Scale: 1"= 500'	**Fig:** 7



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Item 28

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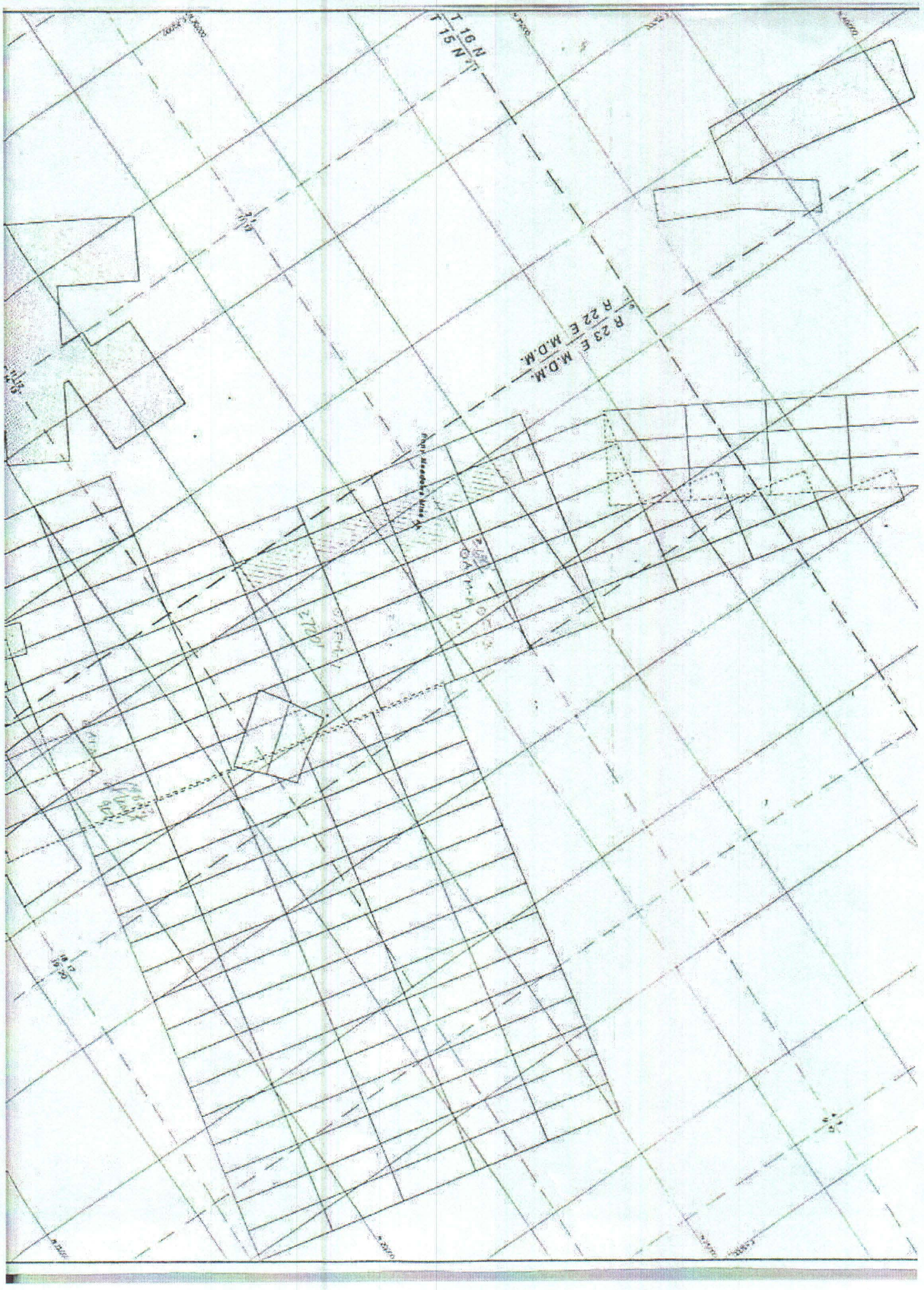


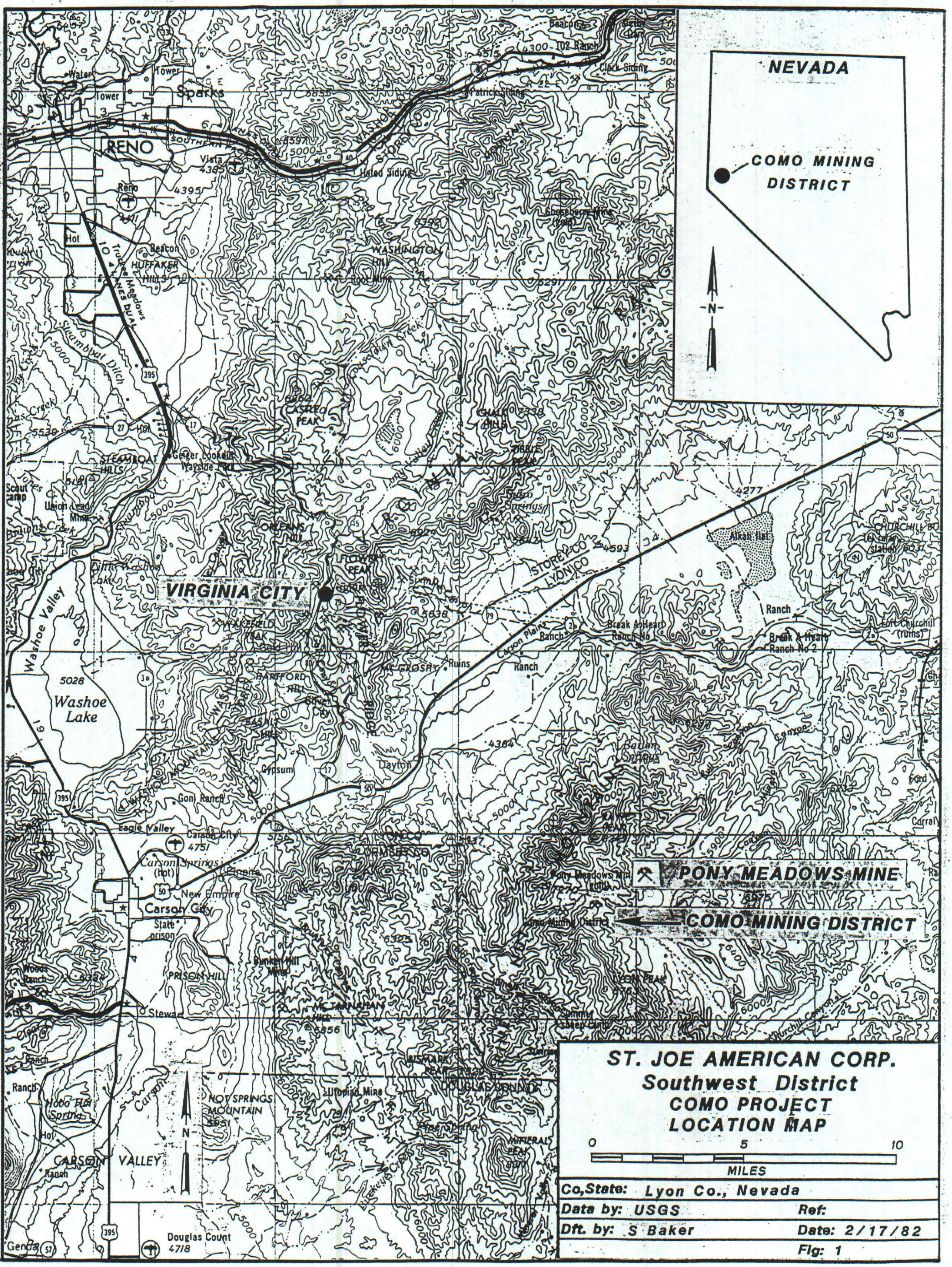
Copy 2


Como Mine
EXPLANATION
St Joe - Sun Claims
St Joe lease, Barton
Pleasant King Claims
Sediment Claims
Surta Fee Land
Allred Fee Land
Undetermined Ownership
St. Joe American Corp.
SOUTHWEST DISTRICT
LAND STATUS MAP
COMO PROJECT
Lyon Co, Nevada
Revised: 3/18/02
N

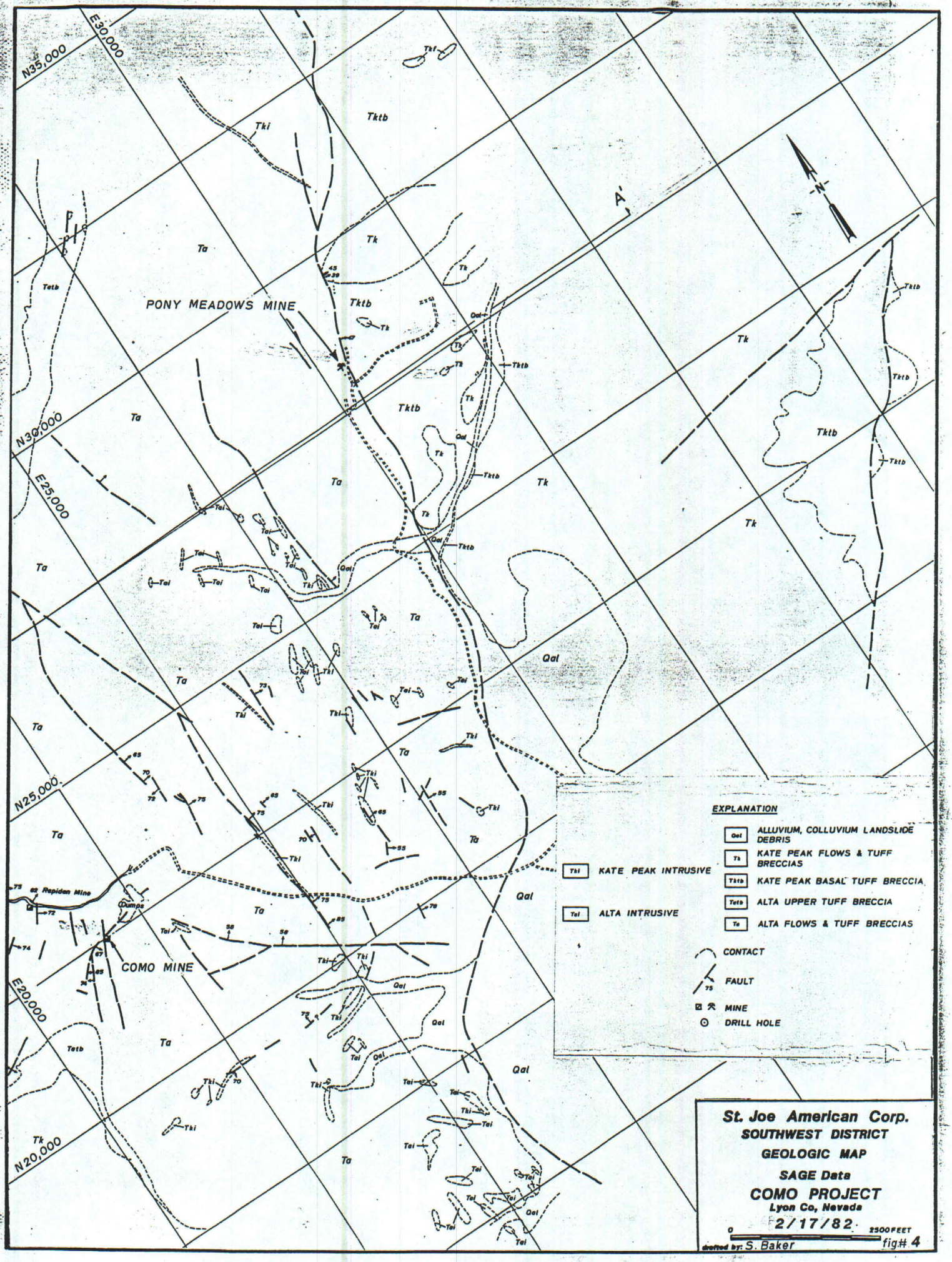
Copy 3

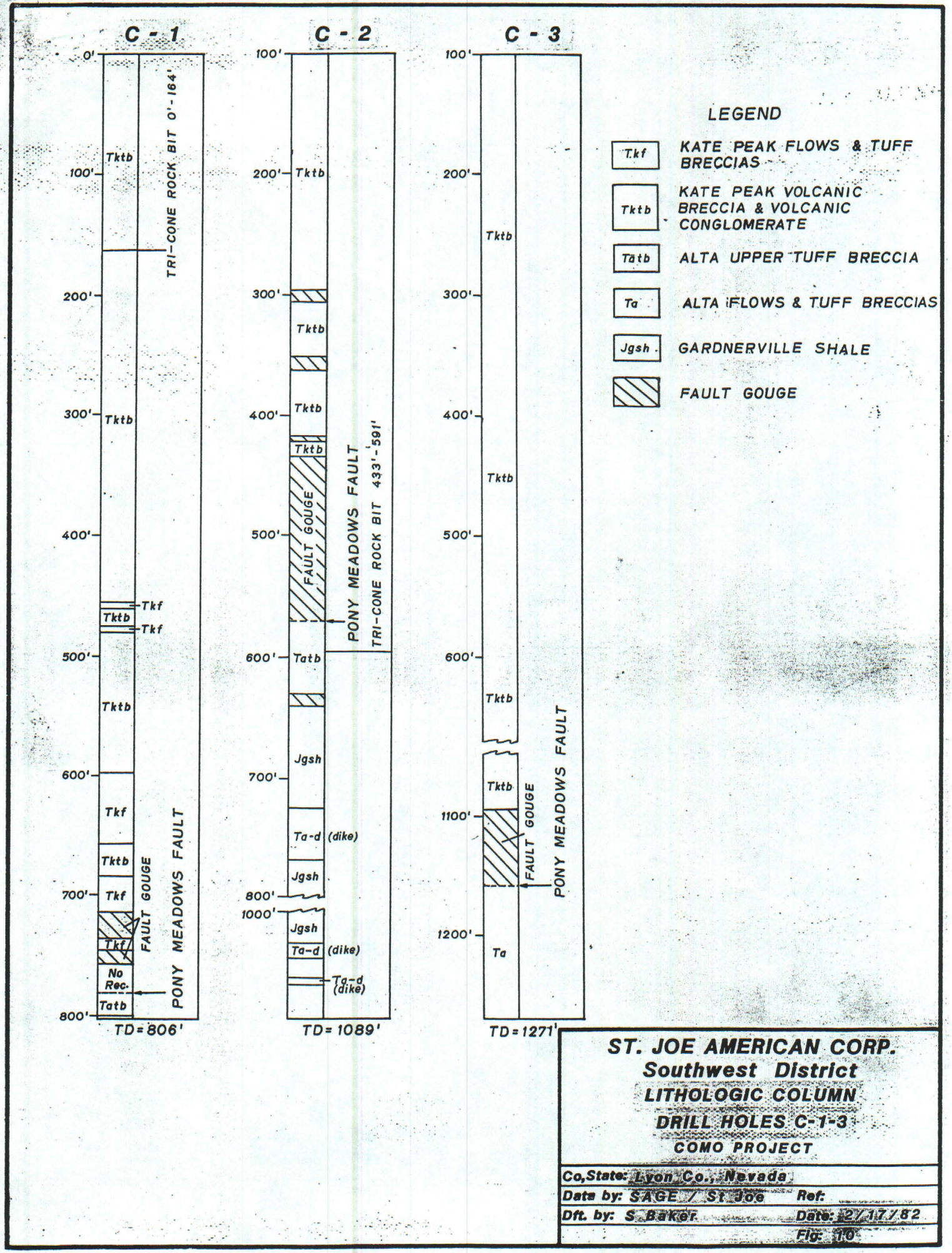

E30,000
N35,000
PONY MEADOWS MINE
N30,000
E25,000
N25,000
COMO MINE
E20,000
SAMPLE INTERVAL 100'
N20,000
N
St. Joe American Corp.
SOUTHWEST DISTRICT
GEOCHEMICAL LINES
COMO PROJECT
Lyon Co, Nevada
2/17/82
0
2500 FEET
drafted by: S. Baker
fig.# 9


N35,000
E30,000
PONY MEADOWS MINE
N30,000
E25,000
N25,000
COMO MINE
E20,000
SAMPLE INTERVAL 100'
N20,000
N
St. Joe American Corp.
SOUTHWEST DISTRICT
GEOCHEMICAL LINES
COMO PROJECT
Lyon Co, Nevada
2/17/82
0
2500 FEET
drafted by: S. Baker
fig.# 9



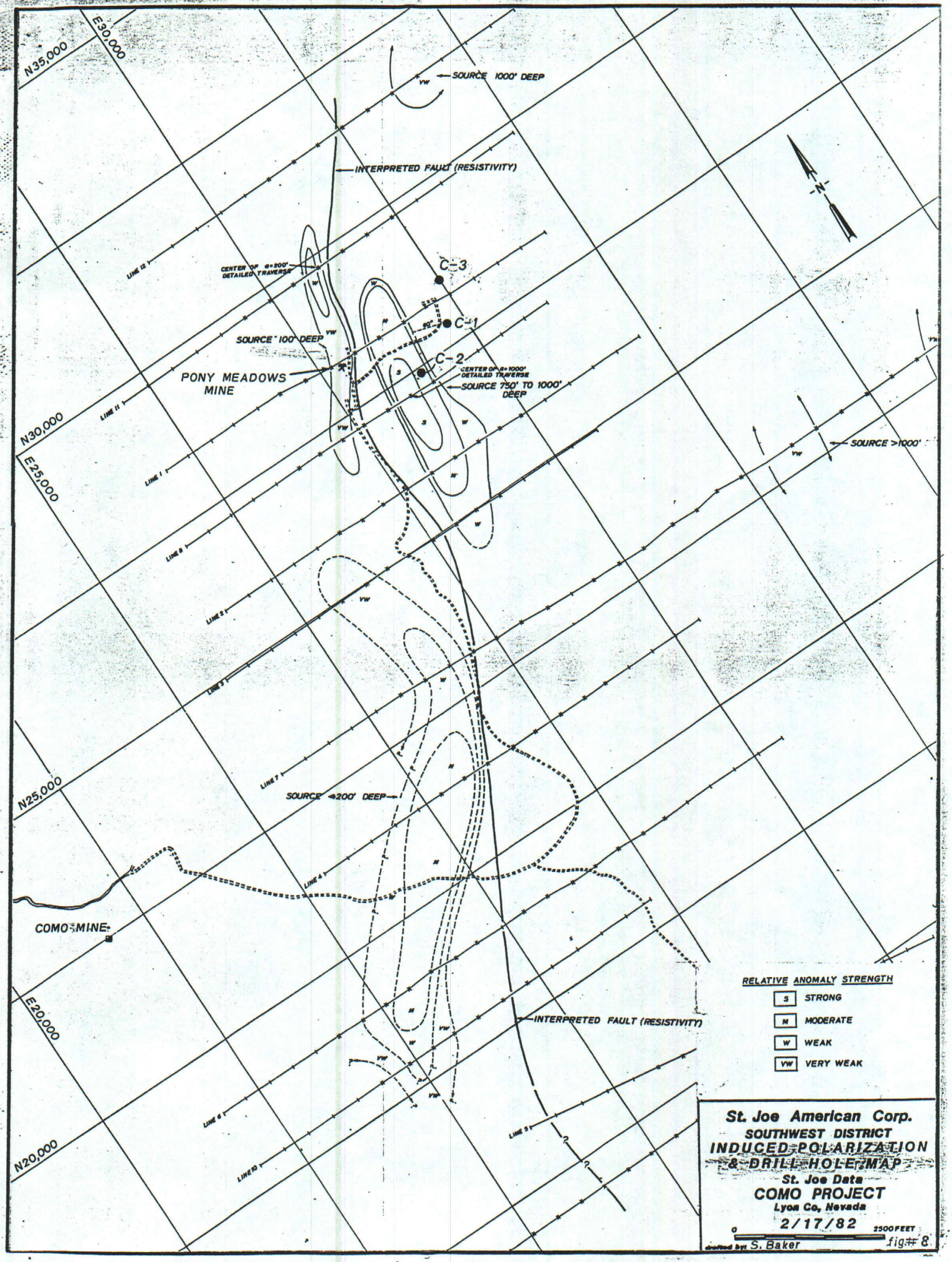
NEVADA
COMO MINING DISTRICT
N
RENO
Sparks
Washoe Lake
Washoe Valley
VIRGINIA CITY
Carson City
PONY MEADOWS MINE
COMO MINING DISTRICT
CARSON VALLEY
ST. JOE AMERICAN CORP.
Southwest District
COMO PROJECT
LOCATION MAP
0
5
10
MILES
Co,State: Lyon Co., Nevada
Data by: USGS
Ref:
Dft. by: S Baker
Date: 2/17/82
Fig: 1


N35,000
E30,000
N30,000
E25,000
N25,000
E20,000
N20,000
PONY MEADOWS MINE
COMO MINE
Rapidan Mine
Dumps
A
A'
Tktb
Tk
Ta
Tetb
Tki
Tai
Qal
EXPLANATION
Qal ALLUVIUM, COLLUVIUM LANDSLIDE DEBRIS
Tk KATE PEAK FLOWS & TUFF BRECCIAS
Tktb KATE PEAK BASAL TUFF BRECCIA
Tetb ALTA UPPER TUFF BRECCIA
Ta ALTA FLOWS & TUFF BRECCIAS
Tki KATE PEAK INTRUSIVE
Tai ALTA INTRUSIVE
CONTACT
FAULT
MINE
DRILL HOLE
St. Joe American Corp.
SOUTHWEST DISTRICT
GEOLOGIC MAP
SAGE Data
COMO PROJECT
Lyon Co, Nevada
2/17/82
0
2500 FEET
drafted by: S. Baker
fig# 4



ST. JOE AMERICAN CORP.
Southwest District
LITHOLOGIC COLUMN
DRILL HOLES C-1-3
COMO PROJECT

Co,State: Lyon Co., Nevada	
Data by: SAGE / St Joe	Ref:
Dft. by: S. Baker	Date: 12/17/82
	Fig: 10


N35,000
E30,000
SOURCE 1000' DEEP
INTERPRETED FAULT (RESISTIVITY)
N
CENTER OF 6=200' DETAILED TRAVERSE
C-3
C-1
C-2
SOURCE 100' DEEP
PONY MEADOWS MINE
CENTER OF 6=1000' DETAILED TRAVERSE
SOURCE 750' TO 1000' DEEP
N30,000
E25,000
SOURCE >1000'
LINE 12
LINE 11
LINE 1
LINE 8
LINE 2
LINE 3
LINE 7
SOURCE <200' DEEP
N25,000
LINE 4
COMO MINE
E20,000
INTERPRETED FAULT (RESISTIVITY)
LINE 6
LINE 5
LINE 10
N20,000
RELATIVE ANOMALY STRENGTH
S STRONG
M MODERATE
W WEAK
VW VERY WEAK
St. Joe American Corp.
SOUTHWEST DISTRICT
INDUCED POLARIZATION & DRILL HOLE MAP
St. Joe Data
COMO PROJECT
Lyon Co, Nevada
2/17/82
0
2500 FEET
drafted by: S. Baker
fig.# 8

USBRC CHEMICAL ANALYSIS REPORT

DATE : 19-JUN-89
SET NUMBER : NTS9DRS2
SUBMITTER : K.G.ALBERT/RENO
REMARKS :

PROJECT : NV TONOPAH DRILL 89
SUPERVISOR : F.SMITH/EXP
PROPERTY : COMO

PM-6

FIELD NUMBER	AU/AA ppm	AG/AA ppm	AS ppm	SB ppm	HG ppm
CO-3 200-205	<0.02	0.4	9.	<5.	0.08
CO-3 205-210	<0.02	0.4	7.	<5.	<0.05
CO-3 210-215	<0.02	0.5	4.	<5.	0.08
CO-3 215-220	<0.02	0.7	2.	<5.	0.06
CO-3 220-225	0.03	0.2	5.	<5.	0.06
CO-3 225-230	<0.02	0.5	4.	<5.	0.08
CO-3 230-235	<0.02	0.5	10.	<5.	0.10
USB-6	1.64	9.8	29.	21.	1.36
CO-3 235-240	<0.02	0.7	6.	<5.	0.06
CO-3 240-245	<0.02	0.7	3.	<5.	0.06

FIELD NUMBER	CU ppm	PB ppm	ZN ppm	MO ppm
CO-3 200-205	29.	37.	31.	<5.
CO-3 205-210	27.	34.	24.	<5.
CO-3 210-215	68.	62.	31.	7.
CO-3 215-220	31.	41.	113.	<5.
CO-3 220-225	34.	26.	20.	5.
CO-3 225-230	24.	36.	20.	<5.
CO-3 230-235	39.	53.	24.	<5.
USB-6	68.	134.	262.	<5.
CO-3 235-240	31.	36.	174.	6.
CO-3 240-245	23.	29.	235.	<5.

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Item 28

Richard W. Thomssen, CPG
Consulting Geologist
P.O. Box 1656
Carson City, Nevada 89702
702 / 883-4312

August 31, 1991

David B. Hackman
SAGE Associates, Inc.
1850 W Grant Rd #108
Tucson, AZ 85745-1212

Per your instructions I have spent three days in Tucson reviewing files, reports and maps pertaining to the Pony Meadows mine, near Como, Lyon County, Nevada. In addition, I spent two days in the field reconnoitering the SUE claims covering the Pony Meadows mine area and one day reviewing core from holes drilled in the general vicinity of the Pony Meadows mine.

I have reached two conclusions regarding the geology of the eastern portion of the Como district which are at variance with conclusions stated by others in reports on work accomplished in the Pony Meadows mine area. These have some bearing on the conduct of any future exploration which may be undertaken in the area and, therefore, will be discussed further.

Your concept of the Pony Meadows fault being a listric normal fault along the lines postulated by John Profett for the Yerington district some 20 miles to the southeast has much to commend it. As I mentioned briefly to you in Tucson, I feel that it does not go as far as the regional geology warrants. The problem of providing space for the downward displaced blocks disappears if they are moving easterly into a caldera. It seems likely to me that this is the situation to the east of the arcuate Pony Meadows fault. Topography indicates that the fault blocks of volcaniclastic Kate Peak rocks in the hanging wall of the Pony Meadows fault extend for several miles easterly. A similar situation is portrayed by McKee for the Northumberland volcanic center in his article in Report 19 of the Nevada Bureau of Mines and Geology. The first and most obvious implication for exploration is that the entire circumferential fault or faults around such a structure become highly prospective. It is significant that at least five miles of the Pony Meadows fault zone is continuously mineralized and that only one half mile has <u>any</u> drill holes through it!

The second point bears on the age of the pyritic, calcareous and carbonaceous shale/argillite penetrated by two of the drill holes (C-2 and APM 7) in the footwall of the Pony Meadows fault under Alta volcanics. The section in drill hole C-2 was cut from 632' to 1089'TD including three sections of Alta dikes. In APM-7 the shale was intersected at 681' and continued to 720'TD. These two holes are situated 1,000' apart in a northeast-southwest direction. Adjacent drill holes were not drilled deep enough to penetrate the Pony Meadows fault and the Alta volcanics and, consequently, did not penetrate the shale.

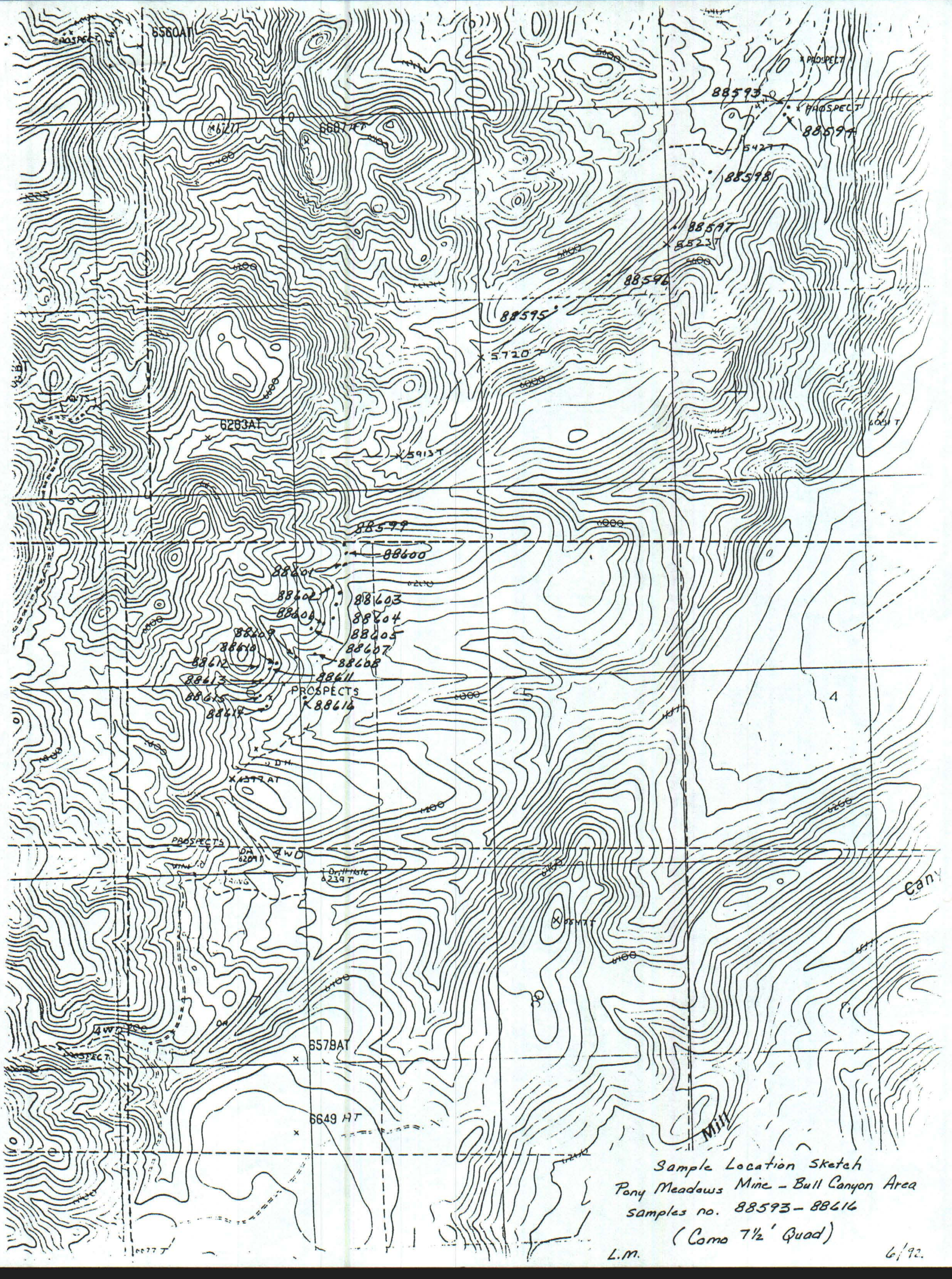
This sedimentary unit has been correlated with the Jurassic Gardnerville formation described by Noble (1962) in the southern Pine Nut Mountains. The descriptions of the Gardnerville from the Buckskin Mountains some seven miles to the southeast of the Pony Meadows mine indicates that in this area the formation is a locally pyritic, calcareous siltstone with no mention of carbon. The Mesozoic age of this unit indicates that it has been subjected to varying degrees of regional metamorphism and, locally, contact metamorphism. The carbonaceous shales penetrated in the two drill holes are unmetamorphosed. It can be argued that there is a facies change between the two localities, but the lack of metamorphism, in particular regional metamorphism, is much more difficult to explain. I would rather consider a Tertiary age for this unit; a moat sediment in an Alta or pre-Alta caldera. I have found a nearly identical rock ranging in thickness from zero up to 400' within a half mile in the Bullfrog caldera interbedded with crystal tuffs.

Here again there are interesting exploration implications with the possible existence of additional Tertiary volcanic units occurring below the shale in the Pony Meadows mine area. These could include more Alta volcanics or Hartford Hill Rhyolite, as well as Oligocene tuffs similar to those described by Profett in the Singatse Range to the southeast. The plastic nature of the shales as demonstrated in the core where numerous carbon-coated slicks are present renders this unit relatively imprevious to hydrothermal solutions and any underlying volcanic rocks would be likely hosts for mineralization. Without a drill hole intersecting the shale, it would be unwise to conclude that the drill holes have bottomed in pre-Tertiary rocks and even with such a penetration, assigning a Mesozoic age without further data would not be justified.

I believe that these two concepts add significant dimensions to the exploration potoential of the Pony Meadows mine area and the SUE claims. It will require some considerable additional geological work to fully evaluate the implications and define targets for additonal work. However, the rewards could be most impressive.

Yours very truly,

Dick Thomsen



Sample Location Sketch
Pony Meadows Mine - Bull Canyon Area
samples no. 88593 - 88616
(Como 7½' Quad)

L.M.

6/92.

CLIENT: Cordex Exploration Co. DATE: June 30,1992 RMGC Job No.: 92-49-10

SAMPLE NO.	oz/ton Gold	oz/ton Silver	ppb Gold	ppm Silver	ppm Arsenic
88593	-0.005	0.67			
88594	-0.005	0.38			
88595	0.032	0.22			
88596	0.010	7.08			
88597	-0.005	-0.10			
88598	0.006	0.19			
88599	0.036	-0.10			
88600	0.010	-0.10			
88601	-0.005	-0.10			
88602	-0.005	-0.10			
88603	-0.005	-0.10			
88604	-0.005	-0.10			
88605	-0.005	-0.01			
88606	0.005	0.20			
88607	-0.005	-0.10			
88608	-0.005	-0.10			
88609	0.056	-0.10			
88610	-0.005	-0.10			
88611	-0.005	-0.10			
88612	-0.005	-0.10			
88613	-0.005	-0.10			
88614	0.006	-0.10			
88615	0.005	-0.10			
88616	-0.005	0.13			
~~88617~~	~~0.536~~		~~2500+~~	~~26.~~	~~1225~~

Pony Meadows / Bull Canyon Area Samples

sample #	type	description
88593	outcrop in dry wash	strongly bleached, oxidized + altered andesite w/ dark gray pyritic quartz stringers
88594	outcrop	same as # 88593 w/ flat dipping veinlets – probably in hangingwall of zone. Some alunite on fractures.
88595	float	bleached, silicified + brecciated andesite w/ abun. fine-grained qtz veining + oxid. pyrite.
88596	float	same as # 88595
88597	float	" " "
88598	subcrop	chip sample from fairly large angular boulders of rusty vein material replacing andesite. V. strong oxidized pyrite.
88599	subcrop	oxidized, pyritized vein material @ or near contact of Alta andesite and rubbly Kate Pk. conglomerate.
88600	subcrop	same as # 88599 – rusty, oxidized vein material.
88601	outcrop	same
88602	outcrop in prospect	same
88603	outcrop	rusty, highly altered Alta and. w/ sparse to mod. comb + fine-grained qtz veining. Approx. 100' further toward east or hangingwall side than previous sample

88604	outcrop	same as # 88603 - also from hangingwall side of trend.
88605	subcrop	rusty, vuggy cockade qtz w/ common bladed qtz after calcite texture sample is from back towards footwall of zone which is possibly 100' or more wide in this area.
88606	float chip	oxidized vein material from area covered & masked by rubbly, unconsolidated Kate Peak Fm.
88607	float chip	tan-gray fine grained & chalcedonic qtz w/ sparse oxid. pyrite.
88608	outcrop in shallow prospect pit	weathered, iron-stained & strongly altered andesite w/ abun. cockade structured qtz.
88609	float chip	rusty, silicified andesite fragment w/ abun. vein qtz - hillside is masked by rubble from Kate Peak Fm.
88610	subcrop	very rusty, gossany andesite w/ abun. vuggy, spongy qtz.
88611	subcrop	rusty, sugary strongly oxidized vein qtz.
88612	float (subcrop?)	Crudely banded, crustiform white sugary qtz w/ dark gray streaks. V. abun. oxid. pyrite.
88613	subcrop	Vuggy, rusty silicified andesite - Common qtz veining.

88614	subouterop	rusty andesite + vein qtz just east of old prospect. Near contact w/ hornblende, biotite porphyry dike.
88615	subouterop	same as # 88614
88616	float	rusty vein material mixed w/ Kate Pk. rubble near base of hill.


T 16 N
T 15 N
R 23 E M.D.M.
R 22 E M.D.M.
Como Mine
Pinto Meadow Mine
POINT OF BEGINNING
EXPLANATION
St Joe - Sue Claims
St Joe Isaac, Benton
Pinenut Ring Claims
Pediment Claims
Serio Fee Land
Allred Fee Land
Undetermined Ownership
St. Joe American Corp.
SOUTHWEST DISTRICT
LAND STATUS MAP
COMO PROJECT
Lyon Co., Nevada
Revised: 3/18/82
2500 feet
drafted by R.Hammond
11900050

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Item 28