

**SUMMARY REPORT -
GEOLOGY OF THE SILVER CLOUD PROPERTY,
ELKO COUNTY, NEVADA, USA
WITH RECOMMENDATIONS FOR GOLD EXPLORATION
OUTSIDE OF THE IMMEDIATE SILVER CLOUD MINE AREA**

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SUMMARY

The 4350 hectare Silver Cloud property, located in the southern portion of the Ivanhoe Hg-Au district in Elko county, Nevada, covers at least five areas of high level mercury-bearing epithermal alteration in Miocene volcanic rocks. Drilling programs in 1999 and 2000 by Teck confirmed that a zoned hydrothermal system is present at the historic Silver Cloud mercury mine. Highlights of the the 1999 and 2000 drilling programs include 1.5 meters @ 157.7 g/t Au, 3 meters @ 3.0 g/t Au and 4.6 meters @ 5.0 g/t Au at depths between 300-450 meters below surface. Gold is hosted within narrow blind structures cutting a thick rhyolite unit and is associated with silica-pyrite, kaolinite, illite, buddingtonite and possibly adularia. Trace element analyses show a positive correlation between gold, silver and selenium. A ~1500 meter drill program was conducted in July and August, 2001 to confirm and offset gold mineralization discovered in 2000. The results of the 2001 program were pending at the time of this writing. A separate report will be prepared by G. Kuzma which will discuss the results of the 2001 drilling program and make recommendations regarding the Silver Cloud mine area.

Gold mineralization is essentially blind at the Silver Cloud mine with surface sampling returning ≤ 180 ppb Au. Surface alteration, which is intermittently exposed throughout the seven km² area Main area surrounding the mine, consists of bedded opal and chalcedony, clay and local structurally controlled silica. Four other areas within the claimblock - the Quiver, North, NE and Section 12 prospects – have similar but less extensive alteration. The goal of this investigation was to 1) characterize the surface geology above gold mineralization at the Silver Cloud mine and 2) delineate drill targets within the Silver Cloud claimblock outside of the immediate Silver Cloud mine area.

Additional geologic mapping and geochemical sampling is recommended on the Quiver prospect, on a moderate priority basis, and on the North, NE and Section 12 prospects, on a low priority basis.

In the western part of the Main area, two drill targets have been identified. In the 817 zone, bedded silica has returned highly anomalous trace and base metal element values from surface rock chip samples and a 210 meter drill hole, which bottomed in 3m @ 1.0 g/t Au, has not been offset. In the Canyon zone, a prospective NW trending structural zone has been inferred from intense opal-chalcedony alteration exposed within a linear, 1.5+ km long valley. If results from the 2001 drilling program at the Silver Cloud mine are encouraging, a two hole, 720 meter rotary drill program is strongly recommended in these two targets.

In the NW Canyon area, a structurally controlled silica body returned 1.7 g/t Au and highly anomalous trace elements from a surface rock chip sample. Additional mapping and geochemical sampling is strongly recommended here, regardless of the results of the 2001 drilling program at the Silver Cloud mine.

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INTRODUCTION

The 4350 hectare Silver Cloud property consists 544 unpatented lode claims located in Elko County, Nevada. The property was acquired in September, 1998 from Carl Pescio, an Elko based geologist as part of a generative exploration program for epithermal Au-Ag vein targets in Northern Nevada. The property was recognized as having potential for discovery of a high-grade vein system at depth under a large volume of high level, mercury-bearing epithermal alteration. Geologic mapping, alteration studies and rotary drilling by Teck since 1998 has enhanced understanding of the surface and subsurface geology. Drill hole SCT-6, returning 1.5 m @ 156 g/t Au, confirmed that high grade gold mineralization occurs at depth at the Silver Cloud mine.

LOCATION AND ACCESS

Tecks' property position covers the historic Silver Cloud mercury mine in the southern portion of the Ivanhoe Au-Hg mining district within T. 37 N., R. 47 E. M.D.B.M. and is located approximately 20 km northwest of Barrick's Goldstrike/Meikle mine complex in the Carlin trend, approximately 20 km southeast of Franco/Euro-Nevada's Ken Snyder Mine at Midas, approximately 8 km south of the idle Hollister Au mine and approximately 60 km northeast of the town of Battle Mountain (figure 1). Access to the property can be made via maintained dirt roads from Battle Mountain. Wet conditions can occasionally make access difficult over the last 5 km of road leading to the property. Conditions are optimal for drilling between June and November.

HISTORY/PAST PRODUCTION

The Ivanhoe district has a reported production of 2180 flasks of Hg between 1915 and 1973. The Silver Cloud mine is reported to have been the largest mercury producer in the district, producing at least 866 flasks. Almost all of the production occurred between 1941 and 1944, when open cut and underground operations fed a rotary furnace located on the property. The mine was run by a subsidiary of Newmont Mining Co.

GEOLOGIC SETTING/DISTRICT MINERALIZATION

The Ivanhoe district is underlain on the surface by a mid-Miocene aged sequence of basaltic andesite flows and rhyolitic flows, tuffs and intrusives (figure 1). This volcanic section is part of the northern Nevada rift, a distinct, narrow, northwest trending alignment of mid-Miocene volcanic and hypabyssal rocks which host at least five known epithermal Au deposits including Midas, Hollister, Mule Canyon, Buckhorn and Fire Creek. The aggregate total reported geologic resources and past production from the northern Nevada rift currently stands at 6.5 million oz. Au.

Gold mineralization in the Hollister deposit, located in the central part of the Ivanhoe district, occurs as 1) dissemination in argillized and silicified tuffs and flows below cinnabar bearing opalite bodies and 2) electrum in W-NW trending quartz-adularia-clay veins, similar to those at Midas, hosted in Paleozoic basement quartzite, chert and argillite of the Valmy formation which underlies the Tertiary section. A total geologic inventory of 3 million oz. Au is reported in the Hollister Resource area, based on 900 drill holes. Great Basin Gold Ltd. conducted an extensive rilling program during 1997-2000 exploring at least three basement hosted high-grade vein systems beneath the Hollister Resource. Numerous high grade intercepts have been announced but no resource estimates have been made public by Great Basin Gold Ltd at the time of this writing.

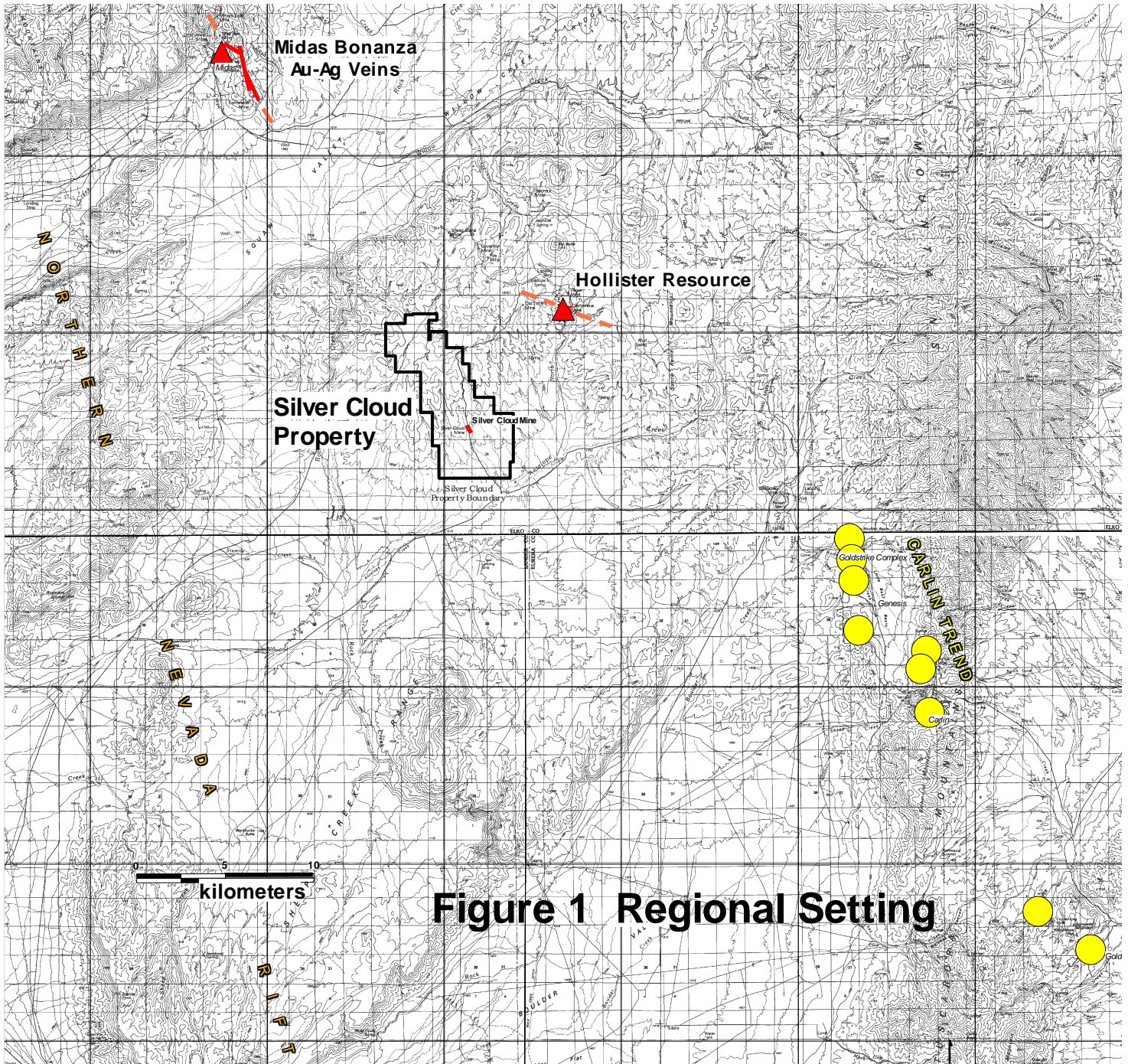


Figure 1 Regional Setting

The main mine area of the Silver Cloud property is underlain by a 400 meter thick sequence of felsic tuffs and rhyolite flows. At depths of > 400 meters, quartzite of the Lower Paleozoic Valmy Formation were encountered in drilling. Post-mineral tuffs and alluvium cover the southern quarter of the property. Cinnabar-bearing bedded silica bodies are hosted in tuff at the Silver Cloud mine. Gold mineralization found to date is associated blind, N-NW (?) trending narrow structures within the rhyolite, a lower tuff unit and Valmy formation quartzite.

MODERN EXPLORATION 1982-1994

In 1982 Placer Dome conducted a shallow (<450 ft. depth), 14 hole rotary drilling program at the Silver Cloud mine exploring for mercury. Cuttings from at least six holes were analyzed for gold, which returned a high of @ .197 g/t Au over a 10 ft. interval. Summary drill assay data and logs for six holes were obtained by Teck.. Hole locations (SC series) are plotted on plate 3.

In the mid 1980's, the shallow, bulk mineable Hollister gold deposit (18 mt @ 1.2 g/t Au) was outlined by USX Corp. in the central part of the Ivanhoe district and subsequently put into production by Touchstone Resources in 1990. The heap leach operation shut down in 1992 after producing approximately 100,000 oz. Newmont Exploration, in a joint venture with Touchstone, conducted an extensive exploration program near the Hollister mine and performed some reconnaissance drilling on outlying properties, including Silver Cloud, between 1989 and 1994.

Newmont/Touchstone drilled eight holes (IV and DDH series) in the Silver Cloud mine area, three holes (IV series) in the western Main area, and two holes (IV series) in the eastern Main area and eleven holes (IV series) in the Quiver prospect (see figure 2 and plates). The program focused on probing beneath exposed silica bodies with angle drill holes. Two of the holes located just southeast of the mine (see plates 1- 4) intersected anomalous gold over significant widths at depths of less than 400 ft, including 25 ft @ .74 g/t Au (including 5 ft. @ 3.1 g/t), 45 ft. @ .25 g/t Au and 115 ft. @ .3 g/t Au. Drill logs and assays for 22 holes and some selected reports from this effort were obtained by Teck. Geologic mapping, surface geochemical surveys and geophysics were apparently performed by Newmont/Touchstone. As of August, 2001, this data had not been obtained.

EXPLORATION BY TECK 1998 – 2000

After acquisition of the property in September, 1998, reconnaissance mapping, minor rock sampling and CSAMT resistivity geophysics were conducted in and near the main mine area by Teck. A 1480 meter, five hole, phase one rotary drilling program was conducted in the summer of 1999, followed by alteration studies using petrography, PIMA and x-ray diffraction. A 1040 meter, two hole, phase two rotary drilling program was conducted in August and September, 2000 followed by a PIMA alteration study. Detailed geologic mapping and geochemical sampling of selected areas of the claimblock was undertaken during Spring and Summer, 2001 by this writer. A ~1500 meter combined rotary/core drilling program was undertaken during July and August, 2001.

Drilling A total of 4935' (1480m) of rotary drilling in five holes was conducted by Teck in July and August, 1999. Holes SCT-1, SCT-2, SCT-3 and SCT-4 probed N-S structures at the Silver Cloud mine (see plate 1) inferred from previous drilling and CSAMT resistivity. Hole SCT-5 probed the southern projection of a structure inferred from CSAMT resistivity surveys. A total of 3470' (1041m) of rotary drilling in two holes was conducted by Teck in August and September 2000. Holes SCT-6 and SCT-7 probed the down-dip projection of a structural zone(s) ("Ridge zone" on plate 1) with anomalous Au intersected in previous drilling. The ~5000' (1500m), three hole core rotary program conducted in July and August, 2001, twinned and probed inferred strike extensions of high grade gold mineralization found in hole SCT-6. Results of the 2001 program will be discussed in a separate report by G. Kuzma. Table 1 highlights drilling results for the 1999 and 2000 programs. Cross-sections showing the 1999 and 2000 drilling are show on plate 10. Gold assay and trace element analyses are located in appendices 6, 7, and 8.

Drill Hole (T.D.)	Interval
SCT-1 (1065')	365'-805' (440') (132.0m) anomalous including 370'-395' (25') (7.5m) @ 0.24 g/t Au 710'-760' (50') (15.0m) @ 0.36 g/t Au
SCT-2 (1085')	555'-825' (270') (81.0m) anomalous including 790'-800' (10') (3.0m) @ 0.25 g/t Au
SCT-3 (935')	180'-735' (555') (166.5m) anomalous including 270'-345' (75') (22.5m) @ 0.35 g/t Au including 315'-330' (15') (4.5m) @ 0.71 g/t Au
SCT-4 (1065')	355'-375' (20') (6.0m) anomalous 410'-500' (90') (27.0m) anomalous
SCT-5 (785')	no detectable gold
SCT-6 (1745')	740'-1745' (1005') (301m) anomalous including 1045'-1050' (5') (1.5m) @ 157.7 g/t Au 1430-1440' (10') (3m) @ 3.4 g/t Au 1465'-1480' (15') (4.5m) @ 5.0 g/t Au
SCT-7 (1725')	585'-1250' (665') (199.5m) anomalous including 1085'-1175' (90') (27m) @ 0.48 g/t Au including 1160'-1165' (5') (1.5m) @ 2.58 g/t Au

Table 1 Gold assay summary, 1999 and 2000 drill programs

Geologic Mapping Reconnaissance geologic mapping was undertaken by consultant Donald Hudson in late 1998. Lithology and alteration were mapped at 1:6000 scale over the Main area and the Quiver prospect. Hudson's report is attached in appendix 1. Detailed 1:2400 and 1:6000 scale mapping was undertaken over 7 km² in the Main area and 0.5 km² on the North prospect by this investigator during parts of May, June and July 2001, the results of which are described in the geology section of this report. Reconnaissance mapping of silica bodies over parts of the Quiver and NE prospects was also done as part of this study. Interpretations by this writer differ from D. Hudson's on certain points.

Mapping during 2001 utilized a Garmin *GPS 12 XL* GPS unit. Mapping was done on computer generated (MapInfo) vector and raster topo maps with registered UTM meter coordinates. Accuracy of located points is estimated to range between 4 and 8 meters.

Geochemical Sampling Rock sampling was undertaken by C. Pescio, D. Hudson, T. Percival and this investigator in 1998 and 2000. A total of 117 surface rock chip samples and 8 stream sediment samples were taken, primarily from the Main area. Fire assay and trace element

analyses were performed on all samples. Results are attached in appendix 3. The highest gold assay returned was 1.7 g/t Au from the western Main area.

Geophysical Surveys A total of 8.64 line-miles (14.4 line-km) of controlled source audio-frequency magnetotelluric (CSAMT) resistivity surveys were performed in 10/98 and 1/99 in the Main area. The surveys consisted of a total of eight separate, 2400'-12,000' (720m-3600m) long E-W lines spaced 500'-1000' (150m-300m) apart. Results of the surveys are available in Teck's property file. The surveys show exposed rhyolite as distinct resistors (≤ 1259 ohm-m) in contrast to relatively conductive nonwelded tuffs and sediments (≥ 9 ohm-m). Structural zones at the Silver Cloud mine and in the western Main area were originally inferred at the transition from highly resistive lobate bodies to volumes of low resistivity. The surveys appears to map contrasts at surface contacts and vertically project these contacts to depth.

Remote Sensing Images using 1999 Landsat TM data covering the Silver Cloud claimblock and surrounding lands were produced by P. Donkersloot. Three registration points with exposed bedded silica and four registration points with argillic alteration in float were incorporated in the study. Images are stored in Teck's property file.

X-Ray Diffraction Analyses X-ray diffraction analyses were performed on altered chip samples from six 5' intervals in hole SCT-1 and from four 5' intervals in hole SCT-2 by D. Hudson. Quartz was the major (>25%) constituent in nine of the samples. Other constituents found were kaolinite, dickite, alunite, pyrite, ammonioalunite, sanidine, orthoclase, buddingtonite and randomly interstratified illite/smectite. Illite/smectite ratios in two of the samples indicate temperatures of formation ranging from 122°C to 145°C. The presence of ammonium in the illite structure, however, may complicate this interpretation.

Petrography Thin-section study was performed on seven fragments of vein material from hole SCT-3, 320'-325' (685 ppb Au) by D. Hudson (see Teck office file). Three of the fragments consisted of chalcedony and four fragments consisted of anhedral quartz. Hudson reports the presence of vapor-dominated fluid inclusions in some of the fragments suggests that boiling occurred the hydrothermal fluid from which the quartz precipitated.

PIMA Analyses Two hundred and seventy-three drill chip samples from holes SCT 1-7 were submitted for PIMA short-wave infrared spectrometer analyses in order to determine alteration assemblages found in drilling. Analyses were performed in 1999 and 2000 by PetraScience of Vancouver, B.C. Reports are attached in appendix 4. Major minerals observed in the study were K-alunite, kaolinite, montmorillite, buddingtonite (NH₄- feldspar), NH₄-illite and opaline quartz. The study revealed that thick zones of kaolinite+alunite alteration are present. The highest gold values are associated with kaolinite, alunite, quartz and smectite. PetraScience reports (1999) that "the assemblages found in the study are consistent with the development of a near-surface steam-heated (advanced argillic) zones that overly alteration characteristic of a low-sulfidation environment".

GEOLOGY

Main Area

Rock Units Six units were mapped by outcrop and float on the surface in the Main area (plates 1 and 2). Two additional units were encountered below 425 meters depth in drilling (see plates) at the Silver Cloud mine. The oldest surface unit and most widespread is a

porphyritic rhyolite, which may consist of four or more flow units (G. Kuzma, pers. com.) Drill data indicates an aggregate thickness of the rhyolite of approximately 375 meters. Lying depositionally on top of the rhyolite is a locally waterlain, fine grained tuff ≤ 70 meters thick. Bedded silica bodies, ≤ 4 meters thick, are formed as replacement of the tuff and are abundant in the Main area, with exposures totaling approximately 0.3 km². Post-mineral lithic tuff and alluvium covers about 30% of the Main area on lower elevations. Descriptions of the rock units are below.

Alluvium/Colluvium (*Qc*) stream gravels and talus

Lithic Tuff (*Tlt*) Cream to pale gray, non-welded, fine-grained, lithic tuff. Lithic fragments comprise ~50% of rock, and generally are ≤ 1 mm across, however local fragments may reach ≤ 10 mm. Not altered.

Bedded Silica (*sib*) Gray, brown and white opaline and chalcedonic silica, ≤ 4 meters thick with local euhedral quartz vug filling and Fe oxides; rarely laminated and cinnabar bearing; geometry of silica bodies strongly suggest a replacement origin; all mappable bedded silica on the surface occurs on or immediately above the depositional contact of tuff and underlying rhyolite. Generally appears to consist of single stage silica, with irregular, local conversion of opal to chalcedony due to dehydration.



Figure 1.1 Mappable bedded silica horizon 250 meters east of Silver Cloud open pit

Structurally Controlled Silica (*si*) Gray and white chalcedonic silica, ≤ 1 meter thick, occurring in small <5 meter long linear bodies with sub-vertical dips. Rare and mappable in three locations: 0532102mE, 4545160mN; 0531105mE, 4544408mN; and 053000 mE, 4544800 mN (see plate). The highest Au value returned from surface sampling, 1.7 g/t Au, came from an outcrop of structurally controlled silica located in the northern part of the western Main area (near 053000 mE, 4544800 mN).

Tuff (Ti) Nonwelded, crystal-poor, fine-grained vitric tuff. Contains trace to 1% quartz phenocrysts, ≤ 1 mm long, trace to 1% lithics, ≤ 2 mm across, and trace to 20% uncollapsed pumice fragments, ≤ 5 mm across. In the Silver Cloud open pit, the unit is locally laminated and hosts rare soft sediment (?) deformation features. Where fresh, the unit is cream to orange-red. The unit rarely crops out. Where altered, the unit is white to pale gray. The tuff is the host for mercury mineralization at the Silver Cloud mine.

Rhyolite (Tr) Porphyritic rhyolite with sanidine phenocrysts. Sanidine phenocrysts range from 1-6 mm long and make up 5-15% of the rock. Quartz phenocrysts, ≤ 1 mm long, are rare but locally make up to 1% of the rock. Where fresh, the groundmass ranges from locally spherulitic black glass to gray brown and reddish brown stony material. Flow banding is locally developed and preserved even where the unit is strongly altered. The unit forms bold outcrops where it is fresh and has a stony groundmass.

Hudson (1998) considered part of the rhyolite to be intrusive into the tuff unit. The relatively planar nature of the rhyolite-tuff contact over most of the Main area strongly suggest that the contact is depositional. The rhyolite-tuff contact 1-2 km north of the Silver Cloud mine appears to have irregular geometry and may be locally high angle. This contact geometry can be explained by local paleo-relief formed in the rhyolite.



Figure 1.2 Unaltered rhyolite outcrop, 800 meters north of Silver Cloud open-pit

Lower Basalt Subsurface only in SCT-7. Fine grained basalt

Valmy Formation (Ov) Subsurface only in SCT-6 and SCT-7. Predominately gray quartzite with minor interbedded argillite.

Surface Alteration As previously noted, PIMA, thin section and x-ray diffraction analyses were performed on drill cuttings. None of these analyses have been made on altered surface

samples however some inferences can be made regarding surface alteration from drill cuttings from shallow depths.

Opal-chalcedony alteration could be mapped by float and outcrop over approximately three km² in the main area and is hosted in both the rhyolite and tuff units (see plate) The bedded silica unit occurs within this alteration facies. Where present, the host units are typically bleached white to pale gray. Feldspars in the rhyolite are altered to clay and alunite (?) or completely replaced by silica. In the Silver Cloud open pit above a 2 meter thick, mappable bedded silica horizon, 5-10% of the tuff is replaced along bedding planes by white, laminated opaline silica, $\leq .25$ m thick.. Opaline silica is locally converted to pale gray chalcedony. On the ridge located 300 meters southeast of the Silver Cloud open-pit, the rhyolite is partially silicified and hosts irregular chalcedonic stringers ≤ 30 cm wide. Many of the stringers appear to follow fractures controlled by primary flow banding.



Figure 1.3 Bedded silica, Silver Cloud open pit.

PIMA studies on drill cuttings from the top 30 meters of holes SCT 1-7 showed montmorillonite, smectite and kaolinite to be abundant ($\sim >10\%$) clay species within the opal-chalcedony alteration facies. Alunite was found to be abundant in the top 30 meters of hole SCT-4.

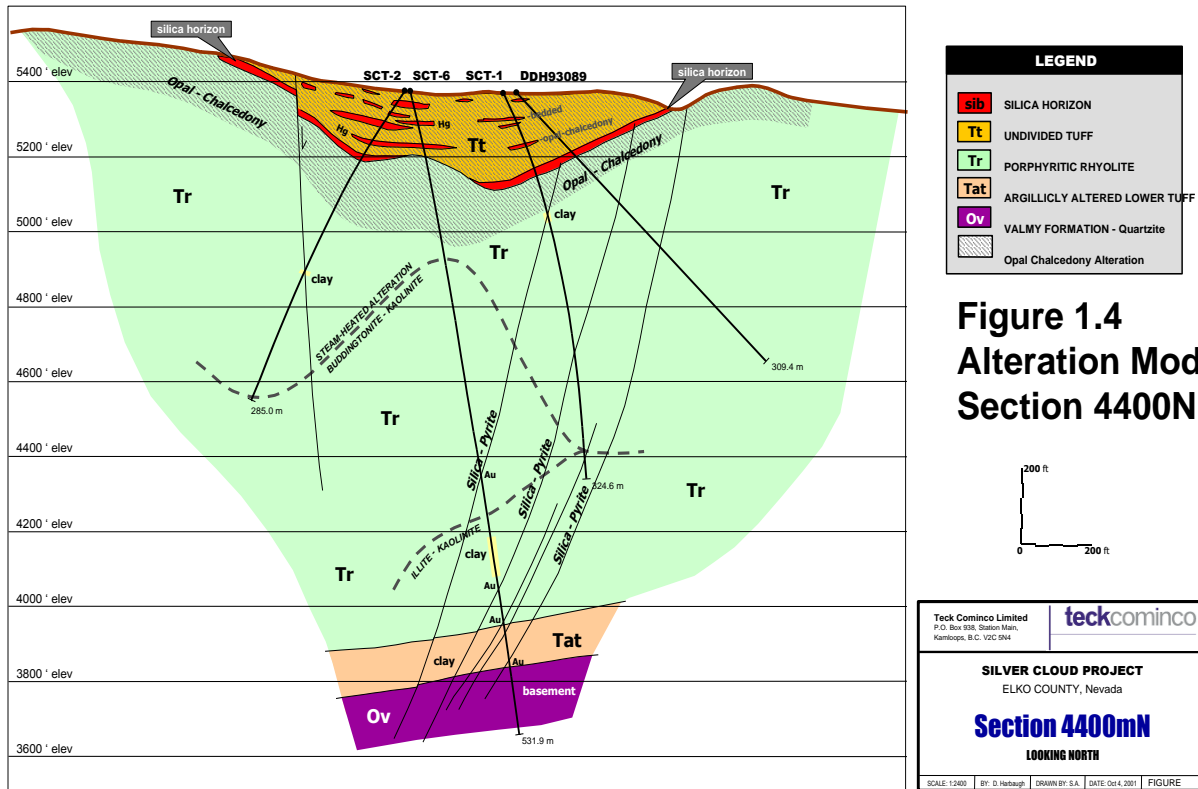
Subsurface Alteration As previously mentioned, PIMA (273 samples) and XRD (10 samples) analyses were performed on selected drill cuttings. This writer visually examined cuttings from holes SCT 1, 2 and 6. Analyses by XRD and PIMA generally correlated well. D. Hudson (1999) suggested that buddington abundance may be exaggerated in the PIMA analyses because the technique analyses fracture surfaces where XRD analyses the entire rock.

The subsurface alteration studies revealed three stacked alteration zones. PIMA results are shown in table 2. An integrated model of alteration in cross-section 4400 mE is shown in figure 1.4. A 106 – 303 meter thick steam heated alteration zone, consisting of kaolinite +alunite+silica, overlies a 0 – 210 meter thick buddingtonite+kaolinite zone which in turn overlies a +151 meter thick NH₄-illite-kaolinite zone. Opaline silica is found only within the steam-heated alteration zone, at depths of ≤123 meters. Silica-pyrite alteration occurs at depths ≥ 90 meters. In holes SCT 6 and SCT 7, thick anomalous gold zones with local multigram values occur below the 4500' (1350m) elevation level within the buddingtonite+kaolinite and NH₄-illite-kaolinite zones. G. Kuzma reported the occurrence of adularia in hole SCT-6 in fractures in quartzite of the Valmy formation.

The stacked alteration zones suggest that ascending, near neutral, NH₄-rich hydrothermal fluids boiled, forming an overlying, acidic steam-heated zone where H₂S oxidized to H₂SO₄ (Hudson, 1999).

TABLE 2. SILVER CLOUD PIMA SUMMARY

SCT-1		
Footage	Dominant Alteration	High Au Interval
45-1010	kaolinite+alunite+silica	745-750 (595ppb)
1010-1065	NH ₄ -illite	
SCT-2		
Footage	Dominant Alteration	
35-995	silica+kaolinite+alunite	790-795 (210ppb)
995-1040	buddingtonite	
SCT-3		
Footage	Dominant Alteration	
85-785	silica+kaolinite+alunite	655-660 (525ppb)
785-930	NH ₄ -illite	
SCT-4		
Footage	Dominant Alteration	
30-355	kaolinite+alunite+silica	360-365 (185ppb)
335-1045	kaolinite+N _H ₄ -illite	
SCT-6		
Footage	Dominant Alteration	
25-450	silica-alunite+kaolinite	1045-1050 (157,746ppb)
450 -1150	buddingtonite+kaolinite	
1150-1725	NH ₄ -illite+kaolinite	
SCT-7		
Footage	Dominant Alteration	
45-600	kaolinite+alunite+silica	1160-1165 (2580ppb)
600-1275	buddingtonite	
1250-1725	kaolinite+N _H ₄ -illite	



**Figure 1.4
Alteration Model -
Section 4400N**

Structure Poor exposure and few stratigraphic markers limit the mapping of structure. No faults could be mapped with certainty in the main area. Three of eight faults mapped (see plates) are based primarily on the position of clay zones and gold mineralization in subsurface drill data; the remainder are inferred from recessive topography and alignment of bedded silica. Displacements, if any, could not be determined. All of the inferred fault azimuths lie within 30° of north and are primarily NW trending.

Two folds could be inferred in the Main area (see plates). A N 80° W trending, +1 km long syncline appears to exist in the valley hosting the Silver Cloud mine. Opposing dips, $\leq 30^\circ$, could be measured in bedded silica and tuff on each side of the valley suggesting a fold wavelength of about 500 meters. A smaller north trending syncline could be inferred in the western Main area near grid line 052990 mE. Mapping of a 150 meter long high wall in the Silver Cloud open pit did not reveal any faults or fractures with visible displacement in laminated tuff beds. Dips in the pit vary from 8° to 17°. The tuff appears to have suffered only ductile deformation and may have behaved as a “wet blanket” on top of the more brittle rhyolite during extension (J. Thompson, pers. comm).

Quiver Prospect

The Quiver prospect lies approximately 6 km northwest of the Silver Cloud mine, in the SW¼ of section 3, SE¼ of section 9, W½ of section 10, and NE¼ of section 16, T. 37 N. R. 47 E. (see figure 2). The prospect covers approximately 4 km of a northeast trending topographic lineament, which can be seen readily on airphotos and Landsat imagery. One day was spent by this writer mapping outcrops with silicification (see plate 4). Newmont/Touchstone drilled a total of eleven rotary drill holes on the prospect, testing the

down-dip extension of structurally controlled silicification in two locations and testing beneath bedded silica in seven locations (see plate 1).

North Prospect

Approximately 0.5 km² was mapped at 1:6000 scale over the North prospect, which is located 6 km north of the Silver Cloud mine (see figure 2) in the SE¹/₄ of section 2, T. 37 N. R. 47 E. Reconnaissance 1:12000 scale alteration mapping was also performed by T. Percival (see report in appendix 5). A 330 meter long, N 50° W trending chalcidonic stockwork zone is hosted in tuff. The stockwork consists of ≤ 1cm wide veinlets of beige to gray silica. Bedded silica hosted in tuff crops out to the northwest, northeast and southeast of the stockwork zone. A tan-brown weathering, fresh, aphanitic basalt (?) flow lies south of the stockwork zone as well as an outcrop of opalized rhyolite (?).

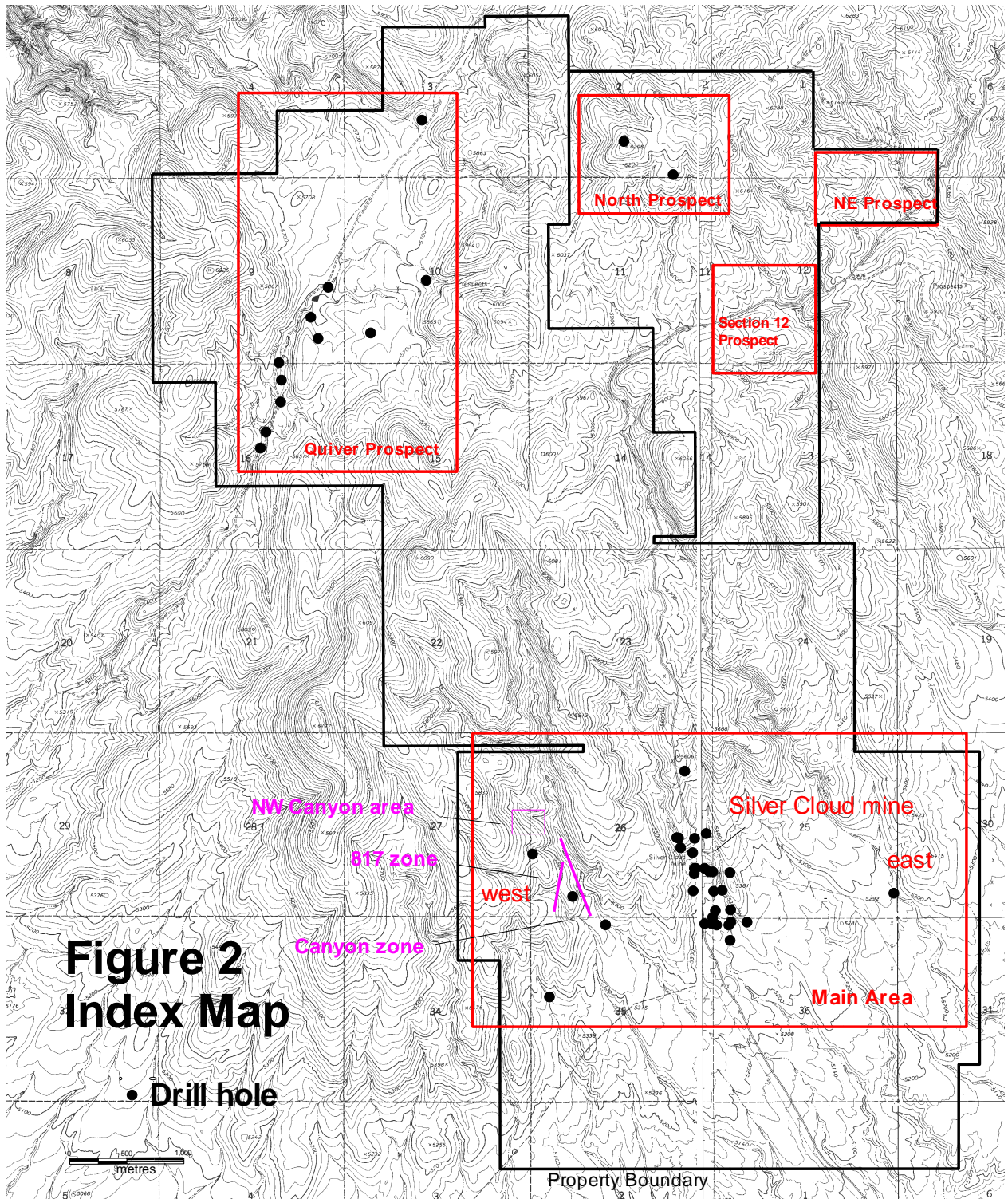
Two rotary drill holes, ≤ 120 meters deep, were drilled by USX in 1984 (?). Assays and logs were not available. One hole, located at gridpoint 0531105 mE, 4550283 mN, appears to test the northwest projection of an isolated cinnabar-bearing bedded silica outcrop. Another hole, located at gridpoint 0530844 mE, 4550725 mN, was collared near bedded silica outcrops north of the northwest end of the stockwork zone.

A total of ten rock chip samples were taken from the North prospect (see plate and appendix 3). Samples returned a high of 15 ppb Au, 30 ppm As and 35.4 ppm Hg. The relatively short strike length of the stockwork zone, the relatively thin and discontinuous nature of bedded silica and lack of any distinct topographic lineaments in the North prospect do not make it an attractive target for drilling at this time. Additional prospecting, mapping and sampling, however, is warranted, on a low priority basis, to completely evaluate the prospect.

NE Prospect

The NE prospect lies approximately 6 km northeast of the Silver Cloud mine (see figure 2) and covers the extreme northeast part of the Silver Cloud claimblock in the SE¹/₄ of section 1 and the NE¹/₄ of section 12, T. 37 N. R. 47 E. The prospect lies immediately south of a small open-pit mercury mine. Obvious outcropping silica bodies were mapped at 1:6000 (see plates), and a general outline of alteration is shown on T. Percival's 1:12000 reconnaissance (appendix). Bedded silica hosted in tuff is exposed in at least two locations. A bedded silica outcrop centered at gridpoint 0532815 mE, 4550240 mN is anomalously thick, up to ~5 meters. One silica body is interpreted to be structurally controlled. No geochemical sampling has been performed as part of this study.

More prospecting, mapping and sampling is warranted on a low priority basis on the NE prospect. The status of claims surrounding the prospect to the east, north and south should be checked after August 31, 2001. Additional claimstaking may be desirable after further geologic evaluation.



Section 12 Prospect

The Section 12 prospect lies in the SW¼ of section 12, T. 37 N. R. 47 E. T. Percival reports replacement silicification, breccias, veining and argillic alteration (see appendix 5). Percival’s reconnaissance map shows alteration over approximately 0.3 km². No geochemical sampling has been performed. The prospect had not been examined by this writer at the time of this writing. An examination of the Section 12 is warranted.

GEOCHEMISTRY- MAIN AREA Analytical results for 107 surface rock chip samples, 8 stream sediment samples and 1682 Teck rotary drill samples taken in the Main area were available for this study. In addition, geochemical analyses from 23 Newmont/Touchstone drill holes located within the claimblock were also available. All analytical work was performed by Chemex Labs, Inc. Gold concentrations were determined using standard fire assay techniques for all of the samples. A 50 element, ICP-MS trace element analysis was performed on 66 surface rock chip samples and all of the stream sediment samples. A nine element trace analysis was performed on 55 of the surface rock chip samples. All stream sediment samples were sieved to minus 80 mesh.

Location maps of surface samples showing sample number, Au values, Ag values, As values, Se values and Hg values accompany this report (plates 5-9). All analytical results are attached as an appendix 3. Below is a discussion of each group of samples.

Surface Rocks No statistics were applied to the surface rock chip data. Inspection of the data suggests that Ag, Sb, and As have a crude positive correlation with Au. Mercury is widespread. Anomalous selenium is present in the western Main area. The area near drill hole IV92817 (the “817 zone”) is consistently anomalous in Cu, Pb, Zn and Bi.

Gold: The highest surface value found (sample hr01-35) was 1.7 ppm Au from a small, structural controlled silica body located in the northern part of the western Main area in the extreme northwestern part of the mapped area. All other samples returned ≤ 235 ppb Au, with seventeen returning >10 ppb Au. At the Silver Cloud mine, the highest Au value returned was 180 ppb Au from rhyolite with strong opal-chalcedony alteration near the surface projection of the Ridge zone. Three samples from the Silver Cloud open-pit returned 4 - 44 ppb Au. The eastern Main area returned a high of 235 ppb Au from bedded silica.

Silver: The highest surface value found was from sample hr01-35 (also highest surface Au) which returned 6.03 opt (207.9 g/t) Ag. A total of seven samples returned ≥ 1.0 ppm Ag, with most samples returning <0.2 ppm Ag. There appears to be a crude, positive correlation of Ag with Au values.

Arsenic: The highest As value returned was 58 ppm at the Silver Cloud mine. Fourteen samples returned >10 ppm As. Most samples returned < 5 ppm As.

Selenium: Selenium data was available for sixty-three samples (hr01 series only). The highest value returned was 2.2 ppm Se from sample hr01-35. Eight samples returned > 0.2 ppm Se. Four samples collected near drill hole IV92817 in the western Main area returned 0.6 – 1.6 ppm Se.

Mercury: Mercury data was available for ninety-six samples (hr01- and 75- series). The highest value returned exceeded 100 ppm Hg. Thirty-three samples returned >10 ppm Hg.

Antimony: Antimony data was available for seventy-five samples (hr01- and HSC-series). Antimony data from the 75- series samples was not entered into a digital database, but is available in hardcopy format in Teck’s file. The highest value returned

was 11.05 ppm Sb, from sample hr01-35. Ten samples returned >1.0 ppm Sb. There appears to be a crude, positive correlation of Sb with Au values.

Copper: Copper data was available for sixty-three samples (hr01- series only). The highest value returned was 129 ppm Cu from sample hr01-35. Four samples collected near drill hole IV92817 in the western Main area returned 12.4 –35.2 ppm Cu. All other samples returned <10.0 ppm Cu.

Bismuth: Bismuth data was available for sixty-three samples (hr01- series only). Four samples collected near drill hole IV92817 in the western Main area returned 1.19 – 4.77 ppm Bi. All other samples returned <0.4 ppm Bi.

Gallium: Gallium data was available for sixty-three samples (hr01- series only). The highest value returned was 3.75 ppm Ga from the Canyon zone in the western Main area. Fourteen samples returned \geq 1.0 ppm Ga.

Molybdenum: Molybdenum data was available for sixty-three samples (hr01- series only). The highest value returned was 2.05 ppm Mo from hr01-35. Three samples returned > 1.0 ppm Mo.

Lead: Lead data was available for seventy-five samples (hr01- and HSC- series). Four samples collected near drill hole IV92817 in the western Main area returned 75.6 – 329.3 ppm Pb. All other samples returned < 21 ppm Pb.

Zinc: Zinc data was available for seventy-five samples (hr01- and HSC- series). Four samples collected near drill hole IV92817 in the western Main area returned 46-82 ppm Zn. A total of seven samples returned \geq 40 ppm Zn. Eleven other samples returned < 22 ppm Zn.

Stream Sediments And Soils A total of seven stream sediment samples and one soil sample were taken; three stream sediment and one soil sample from the western Main Area and four stream sediment samples taken downstream from the Silver Cloud mine (see plates). The stream sediment samples consisted of a blend of three samples taken within a 2 meter radius from drainages. Sample hr01-66(s) was a soil sample taken near drill hole IV92817. No statistics were applied to this data.

Inspection of the data showed Cu, Ga, Ce, Cs, Th, V and Zn values to be consistently high relative to those values from rock chip samples. Gold values returned were 2-3 ppb Au from the western Main area and 4-8 ppb Au from the Silver Cloud mine area.

Subsurface Drill Cuttings One thousand, six hundred and eighty-two rotary drill samples were assayed for gold in the Main area by Teck as part of the 1999 and 2000 drilling programs. In addition, assays and trace element analyses from 12 Newmont/Touchstone drill holes located in the Main were also available as hardcopy. The following discussion is based on data from the Teck drilling only.

Splits from coarse reject material from twenty-four selected intervals from holes SCT-6 and SCT-7 with original standard 30 gram fire assays ranging from .07-106.6 g/t Au were subjected to screen (aka “pulp and metallic”) fire assay (see appendix 8). Original 30 gram standard assays from 23 of 24 intervals appeared to be reproduced within acceptable limits.

Fifty-element geochemical analysis was performed on thirty-six selected Teck drill samples from various depths. Except for averaging selected intervals with anomalous gold as shown in table 1, no statistics were applied to this data. Inspection of the data suggests that Ag, As, Se, and Zn have a crude positive correlation with Au. Relative to the surface rock chip values, Au, As, Mo, Se and Zn are elevated; Hg is suppressed..

Gold: Values range from <5ppb Au to 157.7 g/t Au over a 1.5 meter interval. Large thicknesses of anomalous gold were intersected in holes SCT-6 and SCT-7 below 225 meters depth (~4500' elevation). In SCT-6, without including the 1.5m @ 157.7 g/t Au interval, a 298 meter thickness from 225m – 523m (T.D.) averaged 375 ppb Au. In SCT-7, a 124 meter thickness from 249m- 373m averaged 249 ppb Au.

Silver: Values range from 0.06 to 107.25 g/t Ag over a 1.5 meter interval. Inspection of the data suggests that silver values have a crude positive correlation with Au values.

Arsenic: Values range from 4.7 to 195 ppm As over a 1.5 meter interval. Twenty-seven samples returned >50 ppm As. Inspection of the data suggests that arsenic values have a crude positive correlation with Au values.

Mercury Values range from 0.09 to 44.4 ppm Hg over a 1.5 meter interval. Eight samples returned >2.0 ppm Hg. Mercury values are suppressed compared to the surface rock chip values. The highest Hg values returned from drilling were from the tuff and in the rhyolite immediately beneath the contact with the overlying tuff.

Selenium: Values range from 0.2 to 30.6 ppm Se over a 1.5 meter interval. Twenty-five samples returned ≥ 2.0 ppm Se. Inspection of the data suggests that selenium values have a crude positive correlation with Au values.

Molybdenum: Values range from 0.5 to 44.05 ppm Mo over a 1.5 meter interval. Twenty-two samples returned ≥ 5.0 ppm Mo.

Zinc: Values range from 12 to 962 ppm Zn over a 1.5 meter interval. Twenty-five samples returned >100 ppm Zn. Inspection of the data suggests that zinc values have a crude positive correlation with Au values.

TARGETS As mentioned previously, additional work is recommended on the Quiver prospect, on a moderate priority basis, and on the North, NE and Section 12 prospects, on a low priority basis. Areas which warrant additional exploration on a higher priority basis are discussed below.

Silver Cloud Mine A ~1500 meter drill program was conducted in July and August, 2001 to confirm and offset high grade gold mineralization discovered in 2000. The results of the 2001 drilling program and recommendations for future exploration at the Silver Cloud mine will be discussed in a separate report by G. Kuzma.

817 Zone A prospective NNE (?) trending structural zone centered near gridpoint 0530250mE, 4544300mN in the western Main area (see plate 1) has been inferred from 1) gold mineralization (3m @ 1.0 g/t Au) intersected at the bottom of hole IV92817 at the 4900' elevation level, 2) N and NE trending bedded silica outcrops and 3) anomalous surface and drill hole trace element geochemistry.

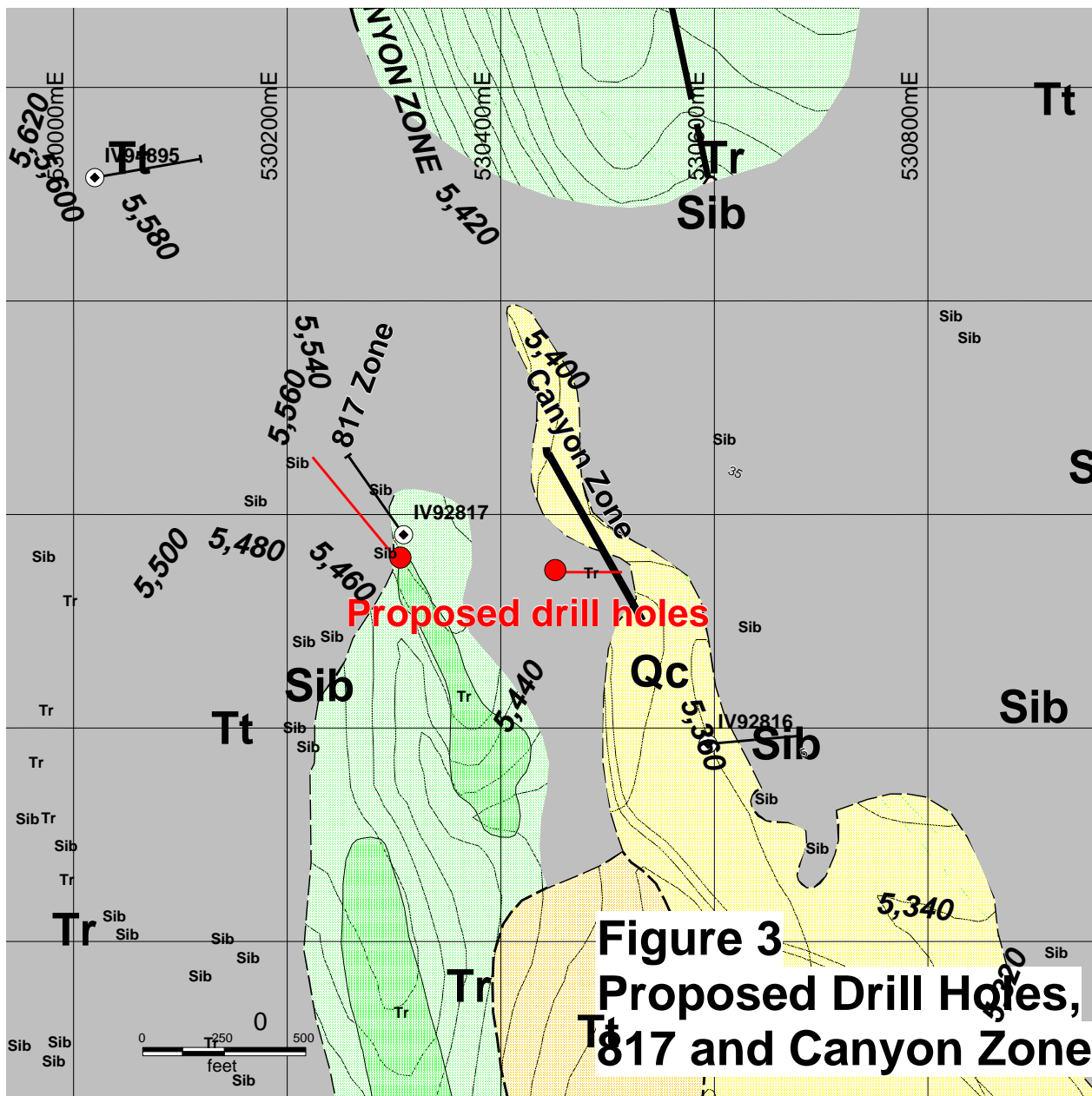


Figure 3
Proposed Drill Holes,
817 and Canyon Zone

Surface samples taken from bedded silica outcrops within a 200 meter radius of hole IV92817 returned the highest values from the property to date in bismuth (4.77 ppm), lead (329 ppm) and Zn (82 ppm), and the second highest in selenium (1.6 ppm) and copper (35 ppm). Trace element analyses (Hg, Sb, As only) of drill cutting by Newmont/Touchstone returned ≤ 300 ppm arsenic, which is higher than any arsenic values returned from SCT-6 and SCT-7. These anomalies may indicate that a gold favorable elevation is closer to the current topographic surface in this area than at the Silver Cloud mine.

Drill testing the 817 zone at depth is recommended. A -70°, 270° azimuth, 360 meter deep drill hole is proposed at gridpoint 0530309mE, 4544181mN (figure 3). This hole would penetrate below the 4500' (1350m) elevation level.

Canyon Zone A prospective NW trending structural zone located in the western Main area has been inferred from intense opal-chalcedony alteration exposed within a linear, 1.5+ km long, valley (see plate 1). Bedded silica, with strikes parallel or sub-parallel to the valley, have been mapped on each side of it.

A -80°, 90° azimuth, 360 meter deep drill hole is proposed at gridpoint 0530450mE, 4544150mN (figure 3). This hole would penetrate below the 4500' (1350m) elevation level.

NW Canyon Area At least three small structurally controlled silica bodies hosted in rhyolite are present approximately 600 meters northwest of hole IV92817, near gridpoint 0530000mE, 4544750 mN (see plate 1). One body has returned 1.7 g/t Au, the highest known surface gold value on the property. The same outcrop also returned the highest surface values in silver (207.9 ppm), copper (129 ppm), antimony (11 ppm), selenium (2.2 ppm) and molybdenum (2.05 ppm). Additional mapping at 1:2400 scale and geochemical sampling is highly recommended.

RECOMMENDATIONS

If drill results from the 2001 exploration program at the Silver Cloud mine are encouraging, drilling of the 817 zone and Canyon zone is highly recommended. Base metal, bismuth and selenium surface anomalies in the 817 zone and NW Canyon area may indicate that a gold favorable elevation is closer to the current topographic surface in these areas than at the Silver Cloud mine. These areas may warrant drilling regardless of results at the Silver Cloud mine.

If drill results from the 2001 exploration program at the Silver Cloud mine are encouraging, additional mapping and geochemical sampling is justified on the Quiver, North and NE prospects. An evaluation of the Section 12 prospect should be made regardless of results at the Silver Cloud mine.

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