Summary Report: 2003 Stream Sediment Sampling Program on the Richman 1 and 3 Claims, NTS Map Sheet 92 O/7

Latitude 51° 18′ N; Longitude 122° 38′ W

Clinton Mining Division

Tenure Holder: Alexander J. Boronowski

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GEOLOGICAL SURVEY BRANCH
ASSESSMENT REPORT

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SUMMARY

A stream sediment sampling program was conducted on the Richman 1 and 3 Claims lying to the southwest of Blackdome Mountain in the Clinton Mining Division. The stream sediment sampling programme was designed with the following objectives in mind:

1) to help confirm the presence and location of epithermal gold mineralization on the claims;
2) to develop a stream sediment sampling methodology that can be used as an exploration tool for future prospecting efforts further a-field in the region around Blackdome Mountain.

The stream sediment samples were collected by the author and Alexander J. Boronowski using a shovel and rock pick and digging in two places to about 30 to 50 cm down into the stream channel. The material was wet sieved and the fine (-20 mesh/850 um) material obtained was collected in a pan and some time was given for the fines to settle out. The collected material was then put into 6-mil polyethylene plastic bags. Pan concentrates were also collected at the same site. One heaped pan-full of material dug from the stream bed was concentrated by panning and collected in Ziploc®-type bags.

Further sample preparation and analysis was performed by Acme Analytical Laboratories Ltd., Vancouver, B.C. Sample preparation at Acme included sieving the dried material to -80 mesh (180 um). Further sieving separated the - 230 mesh (63 um) fraction. Two fractions of the stream sediment were thus obtained: -80 to 230 and -230 mesh. Both the -80 to 230 and -230 fractions were digested in aqua regia and then analyzed by ICP-MS. A leach analysis was also performed using a weak NaOH and NaCN solution on a 1 g sample from the -80 to 230 fraction and analyzed by ICP-MS. The pan concentrate samples were digested in aqua regia and then analyzed by ICP-MS.

The important results of the stream sediment sampling programme on the Richman Claims are summarized as follows.

1) The pan concentrates taken in the two drainages did not yield any significant results. The highest Au value obtained was 2.7 ppb.

2) A moderately anomalous Au result of 48.2 ppb was found in the -230 mesh fraction of one sample. Slightly anomalous Au concentrations >4 ppb are present in the -230 mesh fraction of three other samples.

3) The finer size fraction (-230 mesh) of the stream sediments appears to give better contrast between anomalous versus background concentrations of elements such as Au, Ag, As, Sb, Hg, Ba, Cu, and Pb.

4) After reviewing the data it appears that the best pathfinder elements to potential epithermal Au mineralization on the Richman Claims and in the Blackdome area are Au, As, and Pb. Hg is probably also useful but might require a different analytical method such as cold vapour AA to gain more reliable results. Other elements that have a more restricted use, or might be potentially useful given more sample coverage in the future , are Cu, Zn and perhaps Ba.

In keeping with the objectives outlined for this programme the following work is recommended.

1) Three sample sites - SO7, SO3 and SO6 - returned moderately anomalous results for Au, As, and Pb. These sites and their corresponding drainages should be further investigated.

2) It would be desirable to resample the 10 sites for heavy mineral concentrates. The pan concentrate samples collected in this programme may not have contained enough of the heavy mineral fraction in the stream sediment to yield meaningful Au values. Only one pan full of sediment was treated at each site. Therefore a second set of samples of ~30 g final weight should be collected by panning several (~5 or more) panfulls to provide a higher proportion of heavy minerals for analysis. Also material for sample preparation should be taken from deeper in the stream bed. Future sampling at other sites in the area should then be sampled in a similar manner.

3) Additional silt and pan concentrate samples should be taken from the drainage on the Richman 1 Claim in an effort to close-up the sampling pattern. This would increase sampling resolution and increase confidence in the results. Two additional sites between SO1 and SO3 on the main channel of the creek would provide better coverage of this important drainage. One more could be added down stream from SO3 at the western

boundary of the Richman 1 Claim. Additional samples should also be tried on the northern edge of the Richman 1 Claim in two northerly flowing drainages.

4) Duplicate samples should be analyzed in order to provide greater confidence in the reproducibility of the results. Splits from 3 of the heavier samples collected have been saved and are available for this purpose. Alternatively a second field sample could be done on sample sites where <30 g of -80 to 230 or -230 material was obtained. This would serve to gain a more representative sample and provide a field replicate.

5) Two or three additional stream sediment samples should be collected from the area around Blackdome Mountain. One might be obtained from Churn Creek. Churn Creek is a large drainage extending northwards from the Yalakom area and curving eastwards north of Blackdome. Churn Creek flows into the Fraser River just south of the Gang Ranch Bridge. Sediment from Churn Creek might provide an homogenized background reference sample useful for comparison to more localized stream sediment sample results. Another reference sample could be collected from a stream draining ground known to be barren such as a drainage located within the younger Miocene Basalt. These stream sediment samples should then be processed and analyzed in a similar manner as those collected from the Richman Claims. The results would provide information as to the general background concentrations of pathfinder elements in streams draining the wider surrounding area and provide greater confidence in deciding what constitutes a truly anomalous concentration versus a background concentration.

INTRODUCTION AND OUTLINE OF PROGRAMME

A stream sediment sampling program was conducted to assess the epithermal-gold-silver potential of the Richman 1 and 3 Claims (Figure 1) lying to the southwest of Blackdome Mountain in the Clinton Mining Division. Two drainages incising the 2 claim blocks were tested using ten sample sites.

Location and Access

Access to the Richman claims is provided by an all-weather gravel road, which leaves Highway 97 about 17 km north of Clinton, B.C. The road leads westward and crosses the Fraser River via the Gang Ranch Bridge. The road then heads southward towards Empire Valley. Just south of Brown Lake the Blackdome Mine road turns off. This road is about 32 km long and is drivable by normal 2 wheel drive vehicles under dry conditions to Blackdome Mountain. From there access through the Blackdome Mine property is restricted via a gate across the mine road. For this programme the author and second sampler traversed the last 6 km to the claims on foot and on bicycles as motorized-vehicle access across the Blackdome property had not been previously approved by the owners.

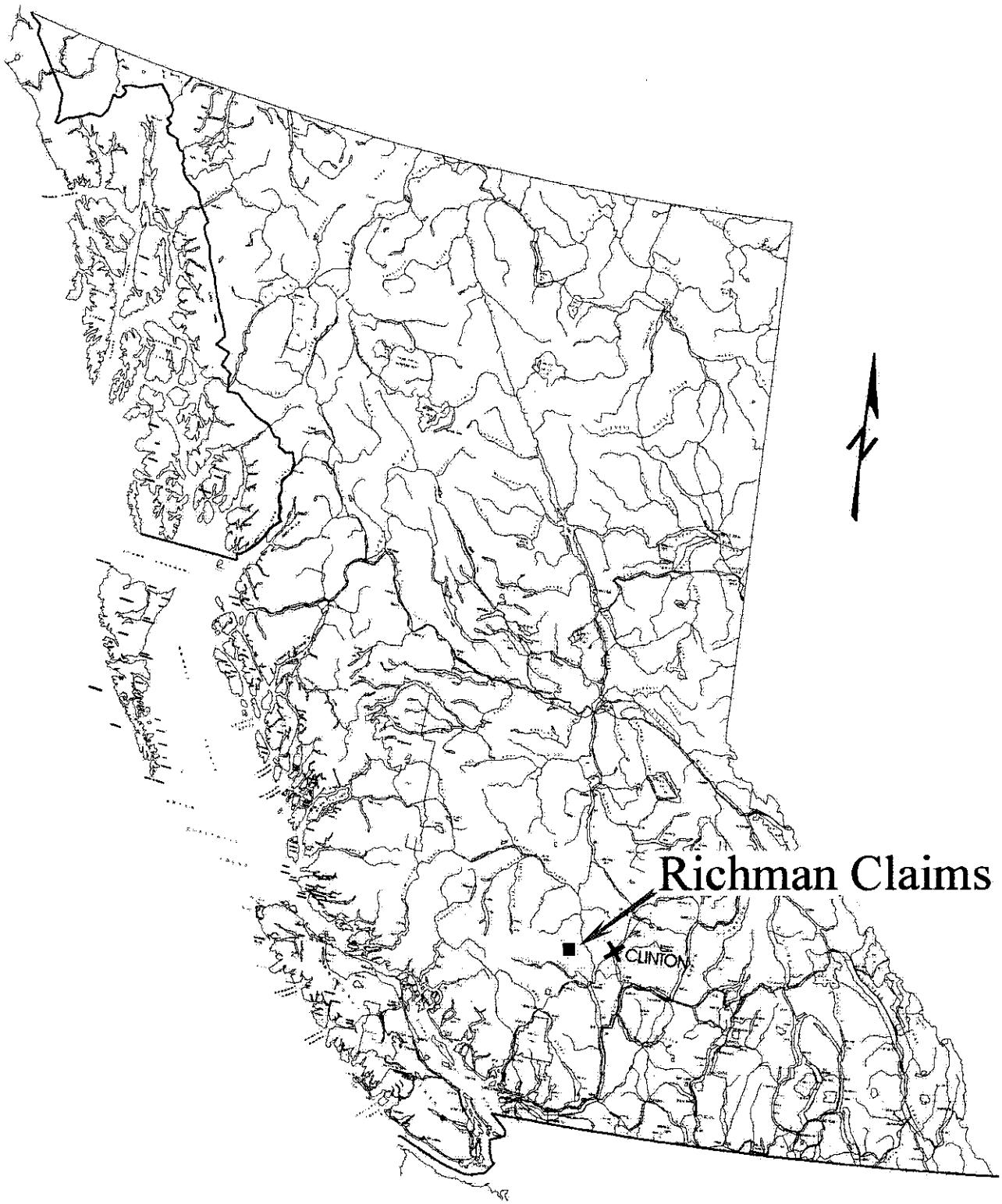
Claim Tenure Information

Table 1 outlines the claim tenure information for the Richman 1 and 3 Claims. Figure 2 shows their location relative to Blackdome Mountain and other mineral titles.

Table 1: **Tenure Information: Richman Claims, Clinton Mining Division, B.C.**

Claim	Units	Tenure No.	Owner	Client No.	Date of Staking
Richman 1	20 units	378915	A. J. Boronowski	102794	2000/07/12
Richman 3	4 units	378917	A. J. Boronowski	102794	2000/07/12

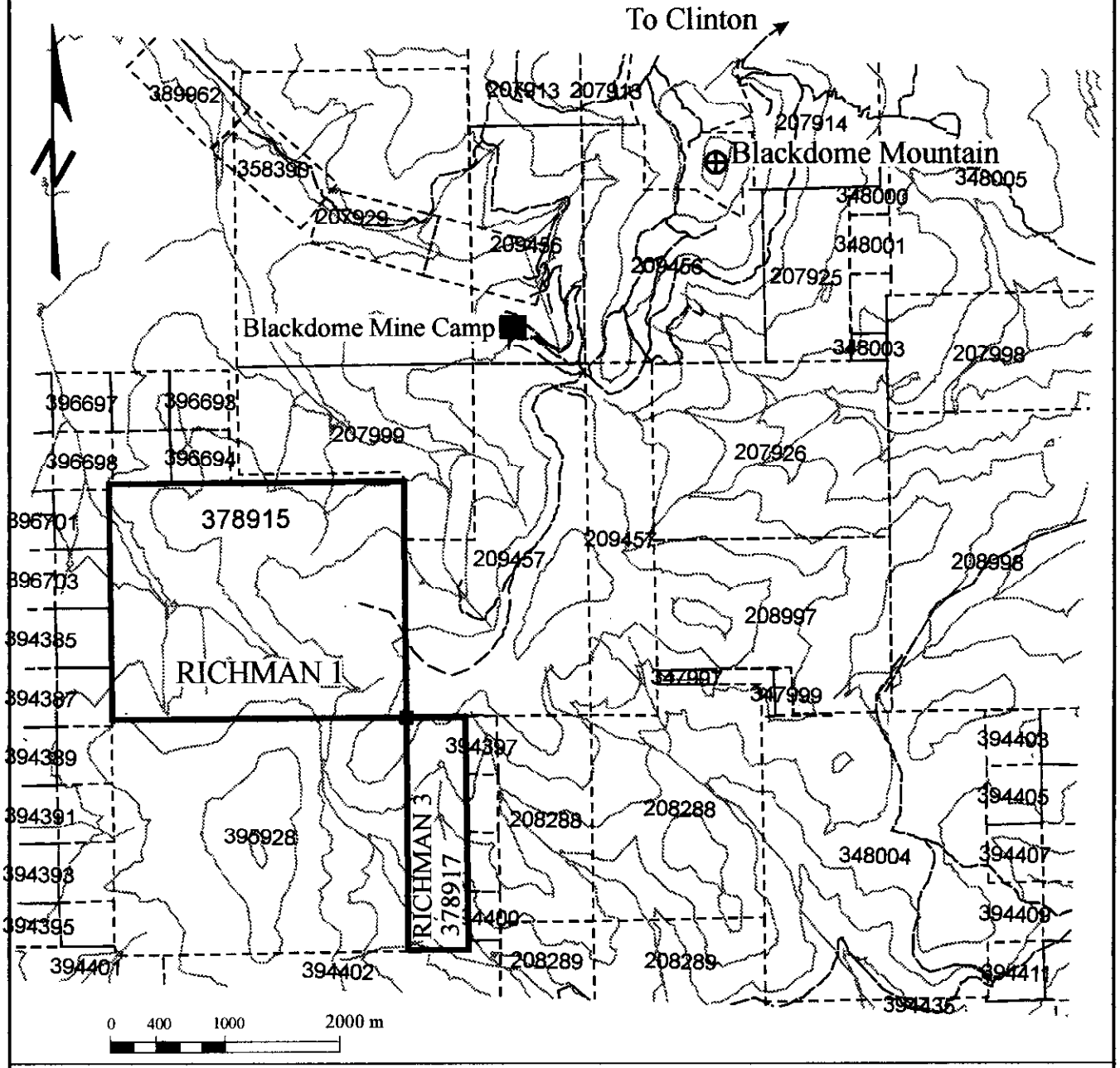
The Richman 1 and 3 Claims were part of ground staked in 2000 as a result of a prospecting programme conducted on open crown land to the south and southwest of the Blackdome mine. The prospecting programme was partially funded by the B.C. Government's Prospector Assistance Program (Grant No.: 00/01 – P129).



Property Location Map

RICHMAN 1 and 3 CLAIMS

Figure 1



TENURE MAP
RICHMAN 1 & 3 CLAIMS

Figure 2	Sept. 5, 2003

Based on this years filing of assessment work: the Richman 1 Claim is in good standing until 12/07/2004; the Richman 3 Claim until 12/07/2008.

Summary of Geology

Blackdome Mountain lies just 5 km to the northeast of the Richman Claims. It is an Eocene-aged calc-alkaline volcanic centre (Vivian, 1988) and is composed of shallow-dipping layer-cake stratigraphy made-up of alternating beds of andesitic, dacitic and rhyolitic flows, breccias, tuffs and volcanic-derived sediments. The Eocene volcanic rocks are part of a regional formation. They are underlain by older Lower Cretaceous-aged conglomerate of the Jackass Mountain Group in the southern part of the area explored. Dark Miocene-aged basalt flows and breccias of the Chilcotin Group cap the Eocene volcanics and are often prominently exposed on topographic high points. Glacial drift, which includes till and fluvial deposits, forms an extensive blanket that covers the country rocks at lower elevations.

Gold-silver mineralization occurs at the Blackdome Mine and is contained in epithermal-type veins lying in prominent north to northeast trending fault zones. The faults and veins generally dip steeply to the west and tend to be strongly argillically altered and stained by iron and manganese oxides. Propylitic alteration also occurs peripherally to the veins and may form an outer envelope to the argillic alteration. Green porphyritic andesite dykes intrude the vein-bearing faults locally.

The epithermal Au-Ag mineralization at the Blackdome Mine occurs in low-sulphidation-type quartz-rich veins, which display characteristic open-space filling textures. The veins are composed of several phases of, amorphous and fine-grained to coarse-grained sub-to euhedral crustiform and cockscomb quartz. The quartz is accompanied by significant adularia, calcite and clay minerals including Ca-K montmorillonite, illite, mixed illite/smectite and minor kaolinite (Vivian, 1988). Sulphides are sparse in the Blackdome veins and are generally fine-grained; these include pyrite, Ag-sulphosalts, acanthite-aguilarite (Ag_2S – Ag_2Se), chalcopyrite, galena, sphalerite and marcasite. Gold occurs in native form and more commonly as electrum (Vivian, 1988). Particle size of the gold and electrum vary from microscopic (1 micron) to several millimetres. The gold is found associated with fine-grained pyrite but primarily within acanthite-aguilarite grains. Electrum is found between quartz-adularia grains,

in tiny veinlets cutting pyrite and chalcopyrite and commonly within acanthita-aguilarite grains. Vivian (1988) states that it is common to see electrum replacing silver sulphosalts. Therefore he suggests that electrum and gold deposition probably closely followed the start of deposition of Ag sulphides and sulphosalts, chalcopyrite, galena and sphalerite.

Sampling and analysis of ore mineralization at the Blackdome mine determined that there was a close correlation between Au, Ag, As, Sb, Cu, Pb and Mo (Rennie, 1988). However, exploration conducted by Blackdome Mining Corp. revealed that most of these elements were not useful pathfinders for the epithermal mineralization in soils (Rennie, 1988).

Previous workers in the area have also noted that economic Au mineralization at Blackdome is confined largely between the 1870 and 1960 m elevation and the veins at this level are generally better formed and the wall rocks are harder and less clay altered. At higher levels the veins become more discontinuous and occur as multiple stringers, and the wallrock tends to more clay altered. The Au content of the veins at upper levels is generally lower and with sporadic higher Au grades. These characteristics of the Blackdome veins may be related to a primary topographic control in the hydrothermal system. Also interesting is that all known economic mineralization at Blackdome Mountain appears to occur within several kilometres of the peak and this suggests that the Au mineralization in the area was deposited close to volcanic centers.

Summary of Previous Exploration Work

Several parties have previously explored the area covered by the Richman Claims.

In 1981 Mr. R. Dunn obtained anomalous Au values from heavy mineral samples from creeks draining the area, which had been staked as the Pony Claims at that time. Unfortunately, the location of these samples is unknown. Other samples from altered and silicified float reportedly contained up to 2010 ppb Au; these samples were found on line with the southwestern projection of the Blackdome vein system (Heine, 1988 a & b).

In 1982, 23 soil samples were collected along a contour-parallel traverse (Fipke and Capell, 1983); of these three were very anomalous in Au (ranging from 1180 to 2555 ppb). The traverse was conducted near the top of a prominent west-northwest trending ridge and the

sample locations were about 200 m to the west-northwest of the old Lexington Camp (Figure 3).

In 1986 the Pony claims were re-staked as the Bobcat claims and then subsequently sold to Lexington Resources Ltd. More exploration was done by Ashworth Explorations Ltd. for Lexington Resources Ltd. in the late 1980's. A program of geological mapping, soil sampling and trenching was followed by diamond drilling (Heine, 1988 a & b). This program identified several argillically altered fault zones of similar attitude as those found at Blackdome Mountain. Some of these structures contained quartz stringers and quartz sealed breccias with open-space filling textures; some contained significant sulphides. However, assay values of samples taken in trenches and core did not return any significant Au values. A "high" Au value of 120 ppb was obtained from a blocky-brecciated clay-rich zone with quartz veinlets in one drill hole. The same interval contained mercury values up to 6100 ppb. Lower Au values (generally below 70 ppb) were returned from other similar clay-rich silicified zones. Instead, a few of these altered zones contain sporadic high Hg values exceeding 5000ppb. However, Lexington Resources Ltd. decided not to pursue further exploration of the ground and the claims were allowed to lapse.

Past exploration on the Richman Claims indicates that the bedrock geology is very similar to that found at Blackdome Mountain. The core from the dozen holes drilled by Lexington Resources Ltd. was re-organized and re-piled in 2000 by Alexander J. Boronowski and the author. The rocks in the core consisted primarily of medium to green-grey (+/-) pyroxene-feldspar-porphyritic dacite to andesite flows. Occasional beds of autoclastic volcanic breccia, ash layers, heterogeneous volcanic blockstone, and fine to coarse-grained volcanic sandstone occurs in the stratigraphy. The volcanic blockstones contained a mixture of porphyritic dacite and andesite blocks up to 10's of centimetres across and pale rhyolite fragments were noted in places. Generally these blockstones are unbedded and probably were locally derived. Some sandstone layers are well bedded. Grain size of the sandstones varies from fine to coarse and flattened pumice fragments were noted sporadically. Minor laminated mudstone and fine-grained ash beds are contained in the sandstone layers. Like the volcanic blockstones the sandstones were largely derived from andesitic and dacitic volcanics but are more reworked, likely in an aqueous setting.

Pale, bleached to rusty rhyolite tuffs and flows sub crop on the eastern boundary and in the north-westward flowing creek draining the central portion of the Richman 1 Claim.

To date the Richman Claims have only been partially mapped. The exploration program conducted for Lexington Resources Ltd. was mainly focused on delineating and mapping alteration and structures on the upper elevations of the Richman 1 Claim. The detailed stratigraphic and structural relations between lithologies remain to be determined. Also, the soil geochemical programs conducted on these claims so far have been localized efforts.

However, the previous exploration efforts on the ground covered by the Richman 1 Claim suggest that there is good potential for epithermal Au-bearing veins. Of particular interest is that several of the drill holes intersected quartz-sealed breccia zones, which were contained in argillically altered faults. Present data suggests that they trend north to northeast, a similar orientation as those at the Blackdome Mine. Also they are mineralogically and texturally somewhat similar to those found at Blackdome.

Heine (1988b) postulated that the clay-rich nature of the faulted zones, the lack of well-formed vein structures and low Au content may be due to the samples being taken at too high an elevation in the hydrothermal system. He suggested that Au grades may increase at depth. To date the areas sampled by drilling and trenching lie at elevations from above 1950 down to about 1800 m. While this covers the productive elevation range for Au at the Blackdome Mine this exploration has occurred on only a restricted portion of the property. Also, the mineralization in the Richman area may conceivably be related to a different hydrothermal cell and therefore there is potential of finding higher Au grades at lower elevations than at the Blackdome Mine.

Another clay-sericite altered fault zone is exposed on the north end of the Richman 3 Claim. This zone was uncovered and examined originally by Ballatar Explorations Ltd. (Hardy and van Wermeskerken, 1989) in 1988 and named the Geo Zone. It is made-up of several limonite and clay rich sheared intervals containing quartz veinlets and pyrite. Sampling revealed only very low Au contents (up to 19 ppb) but elevated As (up to 250 ppm) and Hg (up to 11000 ppb).

Objectives and Methodology of the Stream Sediment Sampling Programme

The stream sediment sampling programme was designed with the following objectives in mind:

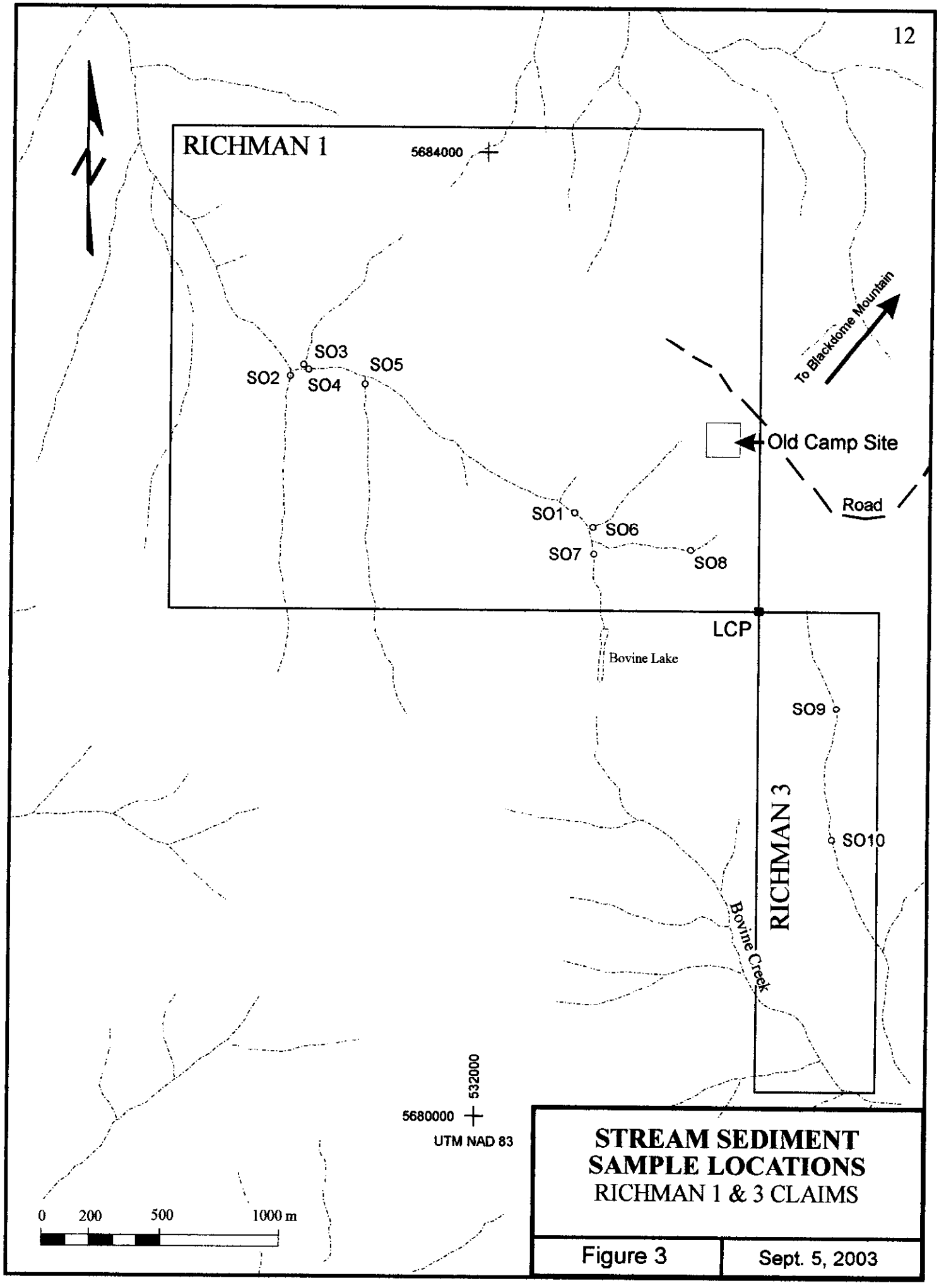
1) to help confirm the presence and define the location of potential epithermal gold mineralization on the claims;
2) to develop a stream sediment sampling methodology that can be used as an exploration tool for future prospecting efforts further a-field in the region around Blackdome Mountain.

"Anomalous" Au results have been obtained from earlier stream sediment reconnaissance surveys in the Blackdome area. However, some of these reports covering this early work are internal company documents and have to this point been unavailable to the author. Therefore the experience of previous workers could not be employed in the design of this survey.

The presence of extensive and locally thick layers of glacial drift and other overburden in the area around Blackdome Mountain is a major consideration in planning soil or stream sediment sampling programmes. The overburden tends to mask bedrock and any geochemical responses to mineralization. At higher elevations this is generally not a problem, but in drainages and at lower elevations it is problematic and geochemical methods have to be developed to cope with the potential masking-effect of deep cover and dilution by barren drift.

In light of these ambiguities and potential problems, it was decided to apply both heavy mineral sampling and silt sampling techniques in this programme. Also, analyses were made on two fractions of the silt samples (the -80 to 230 and -230 mesh) in order to determine if there was any preferential concentration of elements in the fine sand-size versus the finer silt+clay material in the stream beds. A weak leach analysis was also performed on the -80 to 230 mesh fraction to test for potential preferential adsorption of metals to Mn-Fe-oxide coatings or organic material.

The samples were collected on two separate days June 19 and June 30, 2003; near the finish of the spring melt. Ten sampling sites were used in this programme, which were marked by metal tags and flagging. The sample locations were recorded using 1:20,000 TRIM maps and a hand held GPS receiver and are plotted on Figure 3. Eight sample sites covered the main drainage



STREAM SEDIMENT SAMPLE LOCATIONS
RICHMAN 1 & 3 CLAIMS

Figure 3	Sept. 5, 2003

and tributaries transecting the Richman 1 Claim. The main drainage flows from southeast to northwest and has an average grade of about 13%. Two additional samples were taken on a north to south running tributary of Bovine Creek, which drains the Richman 3 Claim. This stream has a steeper grade of about 21%.

All the sample sites chosen were in stream channels with running water. No pH measurements were taken in this survey. The BC RGS regional stream sampling programme conducted on the 92O map sheet in 1979 reported neutral to slightly alkaline pH values (pH ~6.5 to 8.5) for the creeks sampled in the Blackdome area (Jackaman et al., 1979).

Silt samples were collected using a shovel and rock pick and digging in two places to about 30 to 50 cm down into the stream channel. The material was wet sieved and the fine (-20 mesh - 850 um) material obtained was collected in a pan and some time was given for the fines to settle out. The collected material was then put into 6-mil polyethylene plastic bags. The field description of the silt sediment samples is given in Appendix 1.

Pan concentrates were then collected at the same site. One heaped pan-full of material dug from the stream bed was concentrated by panning and collected in Ziploc®-type bags. Unfortunately, time constraints, partially imposed by the restricted access across the adjoining Blackdome property prevented the panning of more sediment and the concentration of more of the heavy mineral fraction for the pan concentrate samples.

The silt samples collected were then dried by setting the opened bags outside. The partially dried samples were then weighed. The damp pan concentrate samples were further panned-down so that each sample weighed about 30 g. The final dry weight was between 20 and 30 g.

Further sample preparation and analysis was performed by Acme Analytical Laboratories Ltd., Vancouver, B.C. (see Appendix 2). Silt sample preparation at Acme included sieving the dried material to -80 mesh. Further sieving separated the - 230 mesh fraction. The weights of -80 to 230 and -230 mesh material obtained for analysis is given in Appendix 2 and 3. Both the -80 to 230 and -230 fractions were digested in aqua regia and then analyzed by ICP-MS. A leach using a weak NaOH and NaCN solution was performed on a 1 g sample from the -80 to 230 fraction was and analyzed by ICP-MS. The pan concentrate samples were digested in aqua regia and then analyzed by ICP-MS.

RESULTS

The analytical results for selected elements on the -80 to 230 (180 um to 63 um) and -230 (- 63 um) mesh fractions and for the pan concentrate samples is presented in Table 2. Elements selected for tabulation include those that displayed measurable concentrations and the classic pathfinder elements that are generally associated with epithermal-type Au deposits (e.g. Boyle, 1974 and Rose et al., 1979) including Au, Ag, Hg, As, Sb, Pb, Cu and Zn.

As the sample set was only 10 in number only very simple statistical techniques were applied to the data. Table 2 contains the calculated median, average, and one, two and three standard deviation thresholds of the data.

Au in Pan Concentrate Samples (Figure 4a)

The Au content in all of these samples is low and close to the detection limit (0.2 ppb). Only two samples contain >2 ppb Au: SO1 and SO7, which contain 2.7 and 2.3 ppb Au respectively. The median value for the group was 1.5 ppb Au.

Au in Silt Samples (Figure 4b)

The Au content of the -80 to 230 mesh portions is low. Two samples from SO6 and SO3 contain 3.5 and 3.8 ppb Au respectively. The Au content of the -230 mesh fractions is generally higher. Four samples contain >4 ppb Au including: SO3 with 4.3; SO9 with 5.1; SO6 with 6.0; and SO7 with 48.2 ppb Au. The median value for the silt samples is 1.1 ppb and 2.6 ppb Au for the -80 to 230 and -230 mesh fractions respectively.

Au in Leach of -80-230 Mesh Fraction (Figure 4c)

Up to 2.5 ppb Au is contained in the leach from sample SO3. Otherwise the results are <2 ppb with a median concentration of 0.7 ppb Au.

Ag in Silt Samples (Figure 5a)

Silver concentrations are generally low. These are given in ppb in Table 2. The median concentration for Ag is 103 ppb (0.1 ppm) and 187 ppb (~0.2 ppm) in the -80 to 230 and -230 mesh fractions respectively. Sample SO3 contains the highest value of Ag of the group with > 200 ppb Ag in both the -80 to 230 and -230 mesh fractions.

Table 2. **Stream Sediment Sample Summary: Richman 1 & 3 Claims**

No.	Type	Location (NAD 83) E	Location (NAD 83) N	Claim	Pan Concentrate Au	Silt Samples: -80 to 230 mesh fraction Au	Ag	As	Sb	Hg	Ba	Cu	Zn	Pb	U	Sr	Mn	Fe
					ppb	ppb	ppb	ppm	ppm	ppb	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%
SO1	Silt	532401	5682519	Richman 1		1.5	87	29.8	0.68	164	101.5	23.00	47.3	7.51	0.8	57.5	735	2.55
SO1 PC	Pan Conc.				2.7													
SO2	Silt	531198	5683046	Richman 1		1.5	188	10.4	0.24	77	129.7	22.78	50.8	6.73	2.5	94.2	1163	2.95
SO2 PC	Pan Conc.				<0.2													
SO3	Silt	531252	5683057	Richman 1		3.8	206	10.9	0.39	53	133.4	31.72	94.9	16.7	2.2	68.0	1036	3.21
SO3 PC	Pan Conc.				1.9													
SO4	Silt	very close to SO3		Richman 1		0.5	33	14.3	0.27	49	87.4	15.14	53.2	6.48	0.8	60.3	571	2.39
SO4 PC	Pan Conc.				1.1													
SO5	Silt	531486	5683043	Richman 1		1.2	24	8.8	0.18	54	76.6	11.03	47.6	7.12	0.7	53.0	391	1.91
SO5 PC	Pan Conc.				0.5													
SO6	Silt	532433	5682485	Richman 1		3.5	139	49.6	1.14	138	82.0	31.72	54.0	10.8	0.5	41.1	794	2.90
SO6 PC	Pan Conc.				0.4													
SO7	Silt	532460	5682375	Richman 1		0.3	157	14.7	0.30	107	146.2	28.43	50.0	10.1	1.2	77.5	1571	3.39
SO7 PC	Pan Conc.				2.3													
SO8	Silt	532912	5682386	Richman 1		0.4	85	38.5	0.72	114	100.3	17.02	43.3	8.43	1.1	37.8	1169	2.50
SO8 PC	Pan Conc.				1.9													
SO9	Silt	533475	5681696	Richman 3		0.4	118	5.4	0.41	108	191.9	24.42	53.1	7.49	0.8	72.2	687	2.49
SO9 PC	Pan Conc.				0.9													
SO10	Silt	533498	5681169	Richman 3		0.9	75	6.2	0.34	112	198.4	20.86	44.7	6.85	0.7	50.3	643	2.22
SO10 PC	Pan Conc.				<0.2													
				Median	1.5	1.1	103	12.6	0.37	108	115.6	22.89	50.4	7.50	0.8	58.9	765	2.53
				Average	1.5	1.4	111	18.9	0.47	98	124.7	22.61	53.9	8.82	1.1	61.2	876	2.65
				σ	0.9	1.3	62	15.2	0.30	39	43.7	6.89	14.9	3.12	0.7	17.2	353	0.46
				2σ	1.7	2.5	123	30.3	0.59	77	87.4	13.78	29.7	6.23	1.4	34.5	706	0.91
				3σ	2.6	3.8	185	45.5	0.89	116	131.0	20.68	44.6	9.35	2.0	51.7	1059	1.37

Table 2. cont'd **Stream Sediment Sample Summary: Richman 1 & 3 Claims**

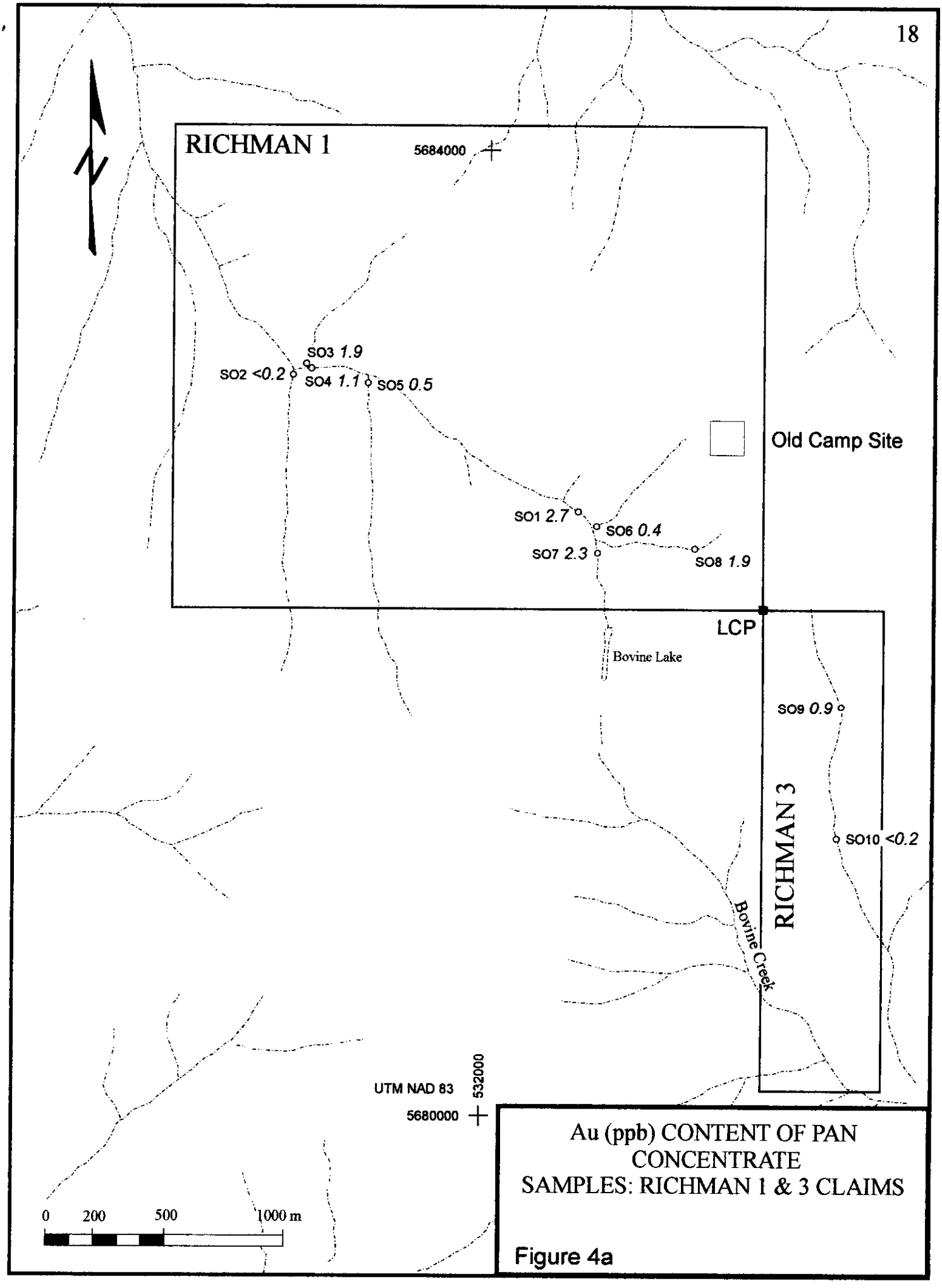
Silt Samples: -230 mesh fraction

No.	Type	Location (NAD 83) E	N	Claim	Au	Ag	As	Sb	Hg	Ba	Cu	Zn	Pb	U	Sr	Mn	Fe
					ppb	ppb	ppm	ppm	ppb	ppm	ppm	ppm	ppm	ppb	ppm	ppm	%
SO1	Silt	532401	5682519	Richman 1	3.7	161	44.1	0.88	168	150.9	34.35	64.2	11.44	1.5	84.7	1102	3.38
SO2	Silt	531198	5683046	Richman 1	1.4	263	13.6	0.30	126	181.3	31.55	69.3	8.95	4.2	115.3	1594	3.62
SO3	Silt	531252	5683057	Richman 1	4.3	265	11.6	0.42	98	159.4	39.78	111.0	18.28	3.6	84.2	1111	3.38
SO4	Silt	very close to SO3		Richman 1	1.5	69	27.4	0.41	120	169.9	25.65	87.3	12.29	1.8	88.6	1007	3.45
SO5	Silt	531486	5683043	Richman 1	1.4	72	19.0	0.29	55	129.1	18.61	82.9	14.34	2.1	84.7	834	2.97
SO6	Silt	532433	5682485	Richman 1	6.0	242	59.0	1.47	232	125.7	42.01	66.0	15.02	0.9	58.6	902	3.20
SO7	Silt	532460	5682375	Richman 1	48.2	209	17.0	0.31	110	180.0	33.60	58.8	12.18	1.6	102.8	1712	3.71
SO8	Silt	532912	5682386	Richman 1	0.9	183	72.4	1.22	216	180.3	28.66	66.8	15.35	2.4	65.6	1928	3.84
SO9	Silt	533475	5681696	Richman 3	5.1	191	7.0	0.57	179	291.8	38.12	62.2	10.06	1.1	114.2	786	2.76
SO10	Silt	533498	5681169	Richman 3	0.7	127	7.8	0.42	170	292.3	28.09	50.4	9.33	1.2	81.4	874	2.59
				Median	2.6	187	18.0	0.42	147	175.0	32.58	66.4	12.24	1.7	84.7	1055	3.38
				Average	7.3	178	27.9	0.63	147	186.1	32.04	71.9	12.72	2.0	88.0	1185	3.29
				σ	14.5	72	22.9	0.42	55	59.3	7.09	17.5	2.99	1.1	18.6	408	0.41
				2σ	29.0	143	45.8	0.84	110	118.6	14.18	34.9	5.99	2.2	37.1	817	0.82
				3σ	43.5	215	68.7	1.26	165	177.9	21.27	52.4	8.98	3.3	55.7	1225	1.23

Table 2. cont'd **Stream Sediment Sample Summary: Richman 1 & 3 Claims**

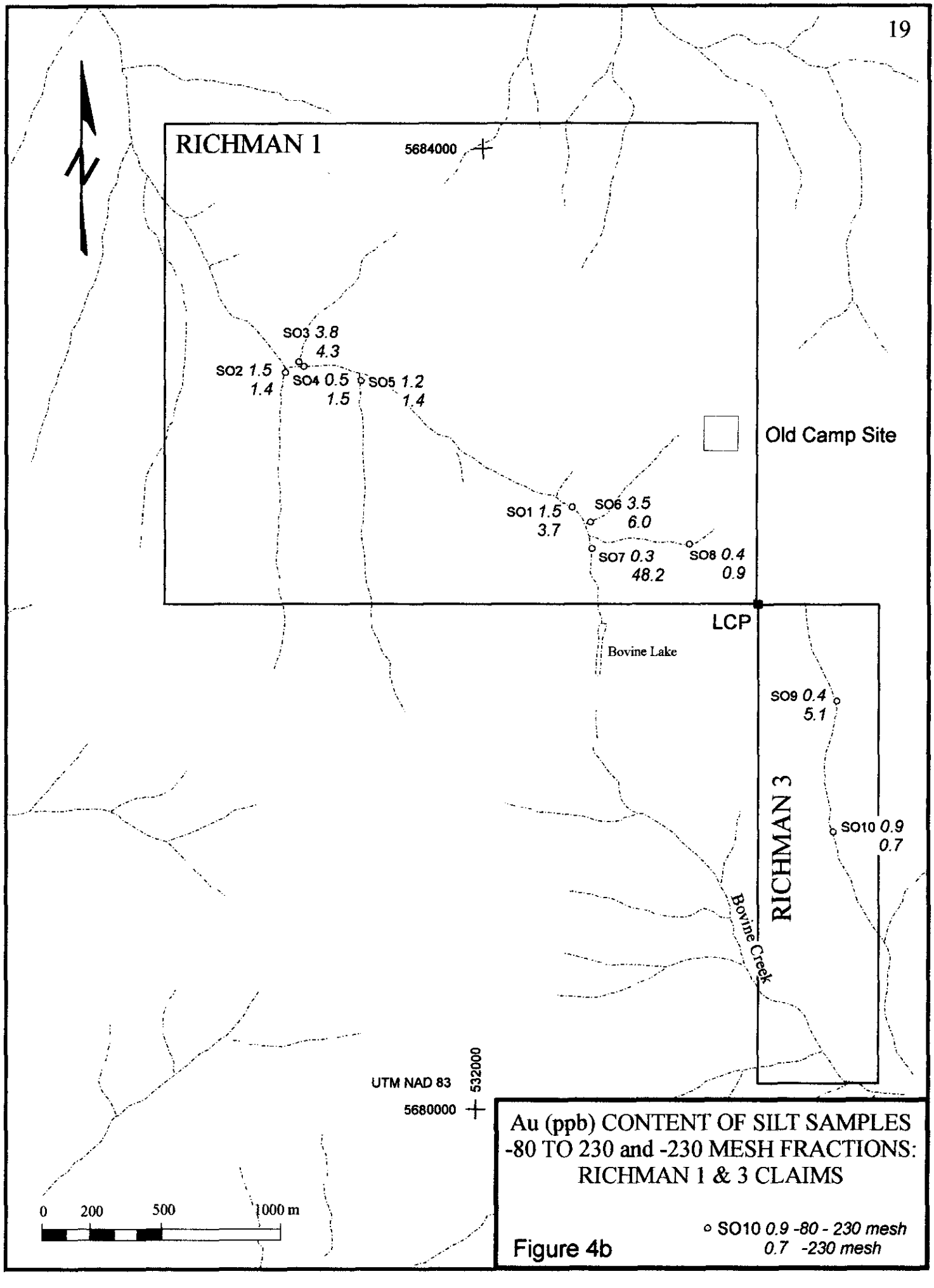
Silt Samples: NaOH+NaCN Leach on -80 to 230 mesh split

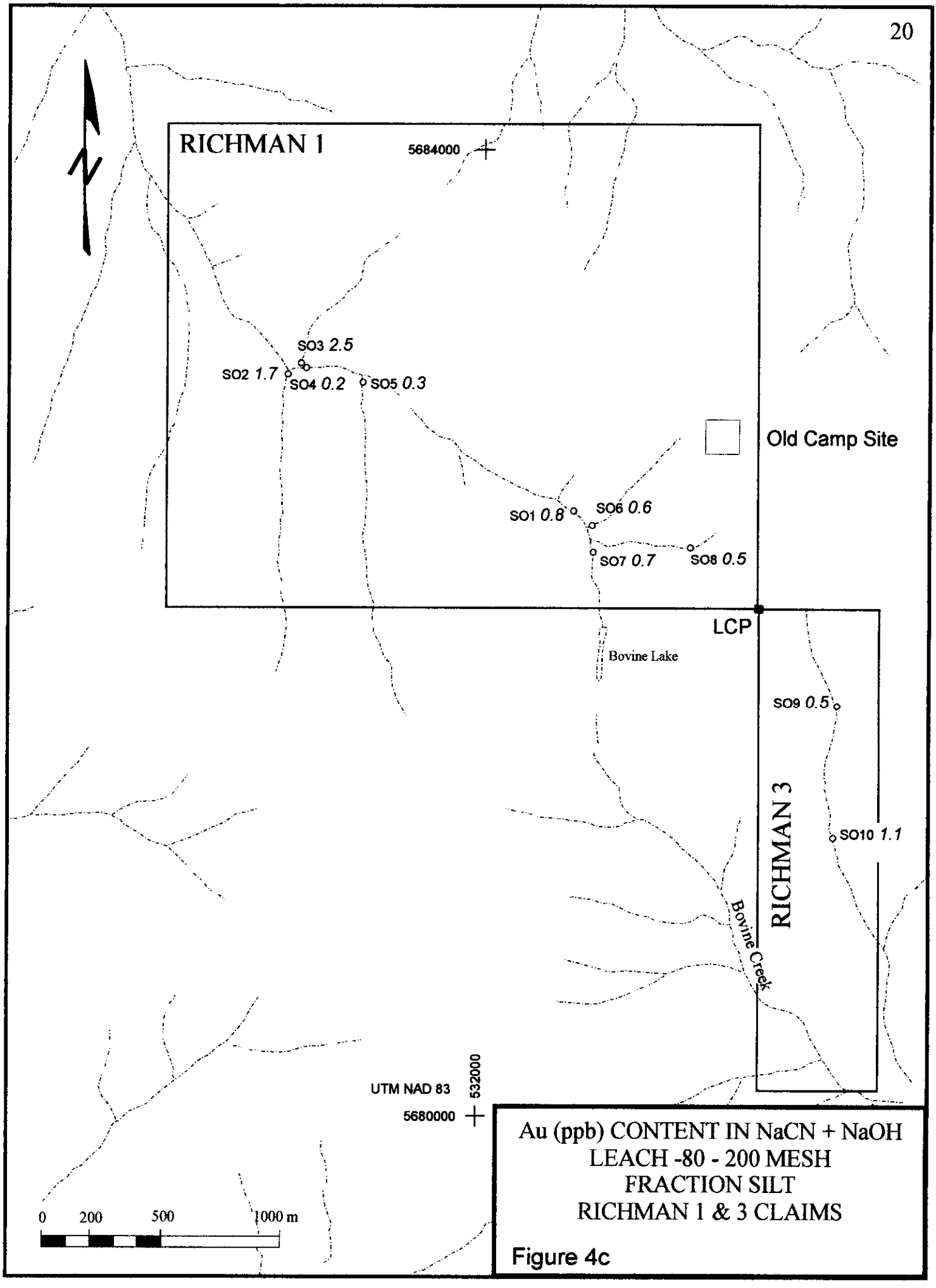
No.	Type	Location (NAD 83) E	N	Claim	Au ppb	Ag ppb	As ppb	Sb ppb	Hg ppb	Ba ppm	Cu ppm	Zn ppm	Pb ppb	U ppb	Sr ppm	Mn ppm	Fe ppm
SO1	Silt	532401	5682519	Richman 1	0.8	89	1384	19	15	1.82	3.90	1.37	124	36	1.83	2.2	116
SO2	Silt	531198	5683046	Richman 1	1.7	206	525	20	15	1.20	9.71	2.15	164	265	2.34	5.3	155
SO3	Silt	531252	5683057	Richman 1	2.5	190	322	15	10	1.44	9.69	4.12	76	156	1.82	6.9	145
SO4	Silt	very close to SO3		Richman 1	0.2	44	788	11	3	0.56	1.50	1.33	156	27	1.48	1.3	72
SO5	Silt	531486	5683043	Richman 1	0.3	25	704	5	3	0.39	1.42	1.48	60	34	0.82	1.7	93
SO6	Silt	532433	5682485	Richman 1	0.6	148	1898	36	19	2.20	6.16	1.18	68	31	1.17	2.2	117
SO7	Silt	532460	5682375	Richman 1	0.7	160	500	11	10	0.69	6.36	1.11	154	131	1.75	4.4	117
SO8	Silt	532912	5682386	Richman 1	0.5	121	147	20	12	1.61	5.09	2.62	73	22	3.27	1.5	67
SO9	Silt	533475	5681696	Richman 3	0.5	121	147	20	12	1.61	5.09	2.62	73	22	3.27	1.5	67
SO10	Silt	533498	5681169	Richman 3	1.1	77	223	13	16	1.26	4.02	1.15	201	17	1.62	1.3	79
				Median	0.7	121	513	17	12	1.35	5.09	1.43	100	33	1.79	2.0	105
				Average	0.9	118	664	17	12	1.28	5.29	1.91	115	74	1.94	2.8	103
				σ	0.7	60	573	8	5	0.58	2.86	0.97	51	83	0.81	2.0	32
				2σ	1.4	120	1145	17	11	1.16	5.73	1.95	102	166	1.62	4.0	64
				3σ	2.1	180	1718	25	16	1.75	8.59	2.92	153	249	2.43	6.0	96



Au (ppb) CONTENT OF PAN CONCENTRATE SAMPLES: RICHMAN 1 & 3 CLAIMS

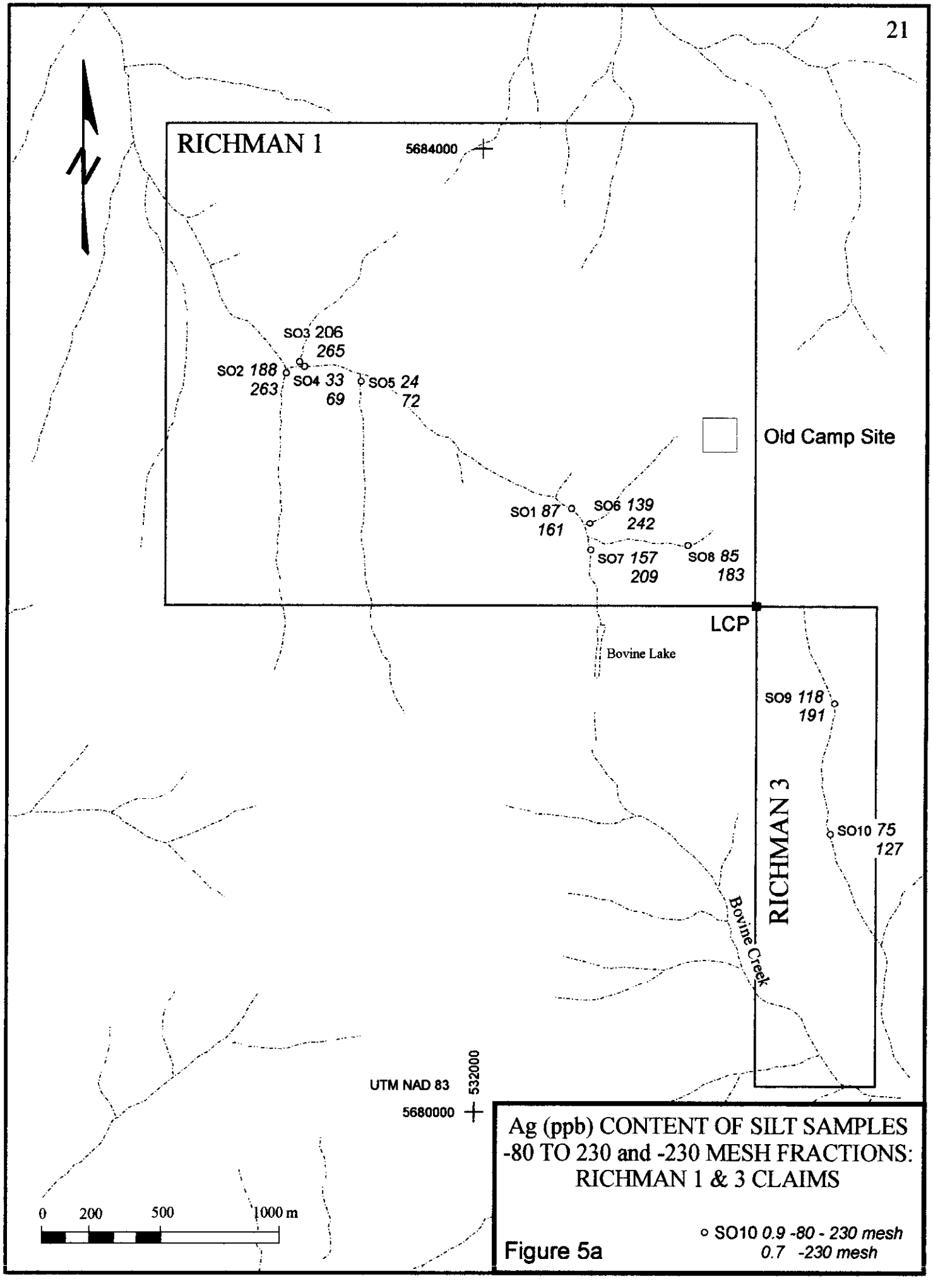
Figure 4a


RICHMAN 1
5684000
SO3 3.8
4.3
SO2 1.5
1.4
SO4 0.5
1.5
SO5 1.2
1.4
Old Camp Site
SO1 1.5
3.7
SO6 3.5
6.0
SO7 0.3
48.2
SO8 0.4
0.9
LCP
Bovine Lake
SO9 0.4
5.1
RICHMAN 3
SO10 0.9
0.7
Bovine Creek
UTM NAD 83
532000
5680000
0 200 500 1000 m
Au (ppb) CONTENT OF SILT SAMPLES
-80 TO 230 and -230 MESH FRACTIONS:
RICHMAN 1 & 3 CLAIMS
SO10 0.9 -80 - 230 mesh
0.7 -230 mesh
Figure 4b



Au (ppb) CONTENT IN NaCN + NaOH
LEACH -80 - 200 MESH
FRACTION SILT
RICHMAN 1 & 3 CLAIMS

Figure 4c



Ag (ppb) CONTENT OF SILT SAMPLES
-80 TO 230 and -230 MESH FRACTIONS:
RICHMAN 1 & 3 CLAIMS

Figure 5a

○ SO10 *0.9 -80 - 230 mesh*
0.7 -230 mesh

Ag in Leach of -80 to 230 Mesh Fraction (Figure 5b)

Silver values were similar in magnitude in the leach of the -80 to 230 mesh fraction as those from the aqua regia digestions of the two silt fractions. The median concentration is 121 ppb Ag.

As in Silt Samples (Figure 6a)

Several sample sites contain 30 ppm or more As. Samples from SO1, SO6 and SO8 were found to contain 30, 50 and 39 ppm As respectively in the -80 to 230 mesh fraction. The -230 mesh portion returned slightly higher values of 44, 59 and 72 ppm As respectively for these same three samples. Interesting is that the As content of the samples taken in the tributary of Bovine Creek on the Richman 3 Claim are much lower. Here the highest value obtained was 7.8 ppm in the -230 mesh fraction of sample SO10.

As in Leach of -80 to 230 Mesh Fraction (Figure 6b)

As results for the leach are given in ppb. The greatest concentration is in the leach of sample SO8 at 2184 ppb As followed by 1898 ppb As in SO6. The two samples taken on the Richman 3 Claim (SO9 and SO10) reported As concentrations which were a magnitude lower (the highest here was 223 ppb) than those taken on the Richman 1 Claim.

Sb in Silt Samples (Figure 7a)

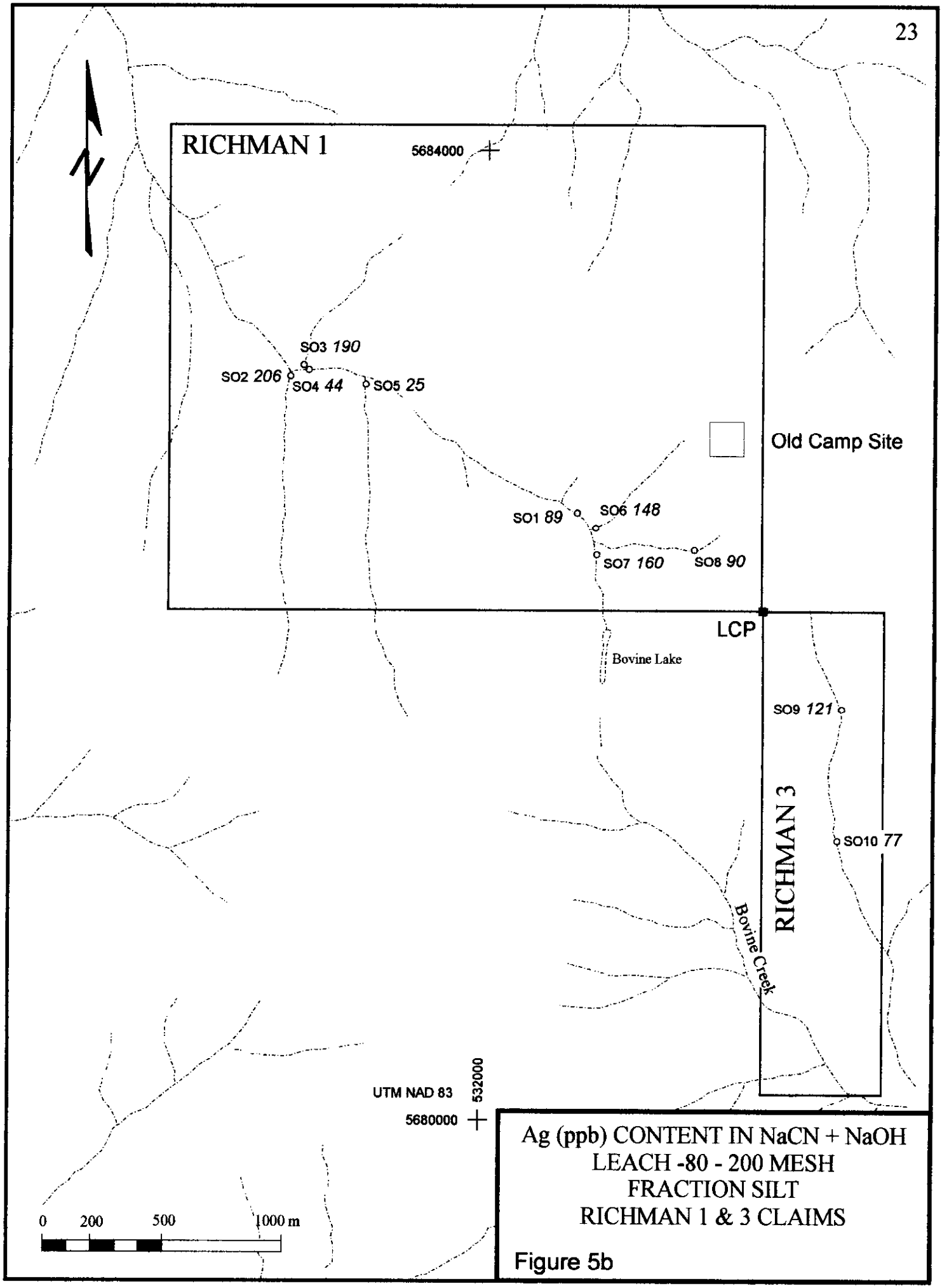
Antimony concentrations are at very low levels in all the samples. Median concentration for the digested silt samples is 0.42 ppm Sb in the -230 mesh fraction. The highest values obtained are in samples SO6 and SO8, which contain 1.47 and 1.22 ppm Sb respectively in the -230 mesh fraction.

Sb in Leach of -80 to 230 Mesh Fraction (Figure 7b)

Leach results for Sb are given in ppb. All analyses for Sb are below 40 ppb.

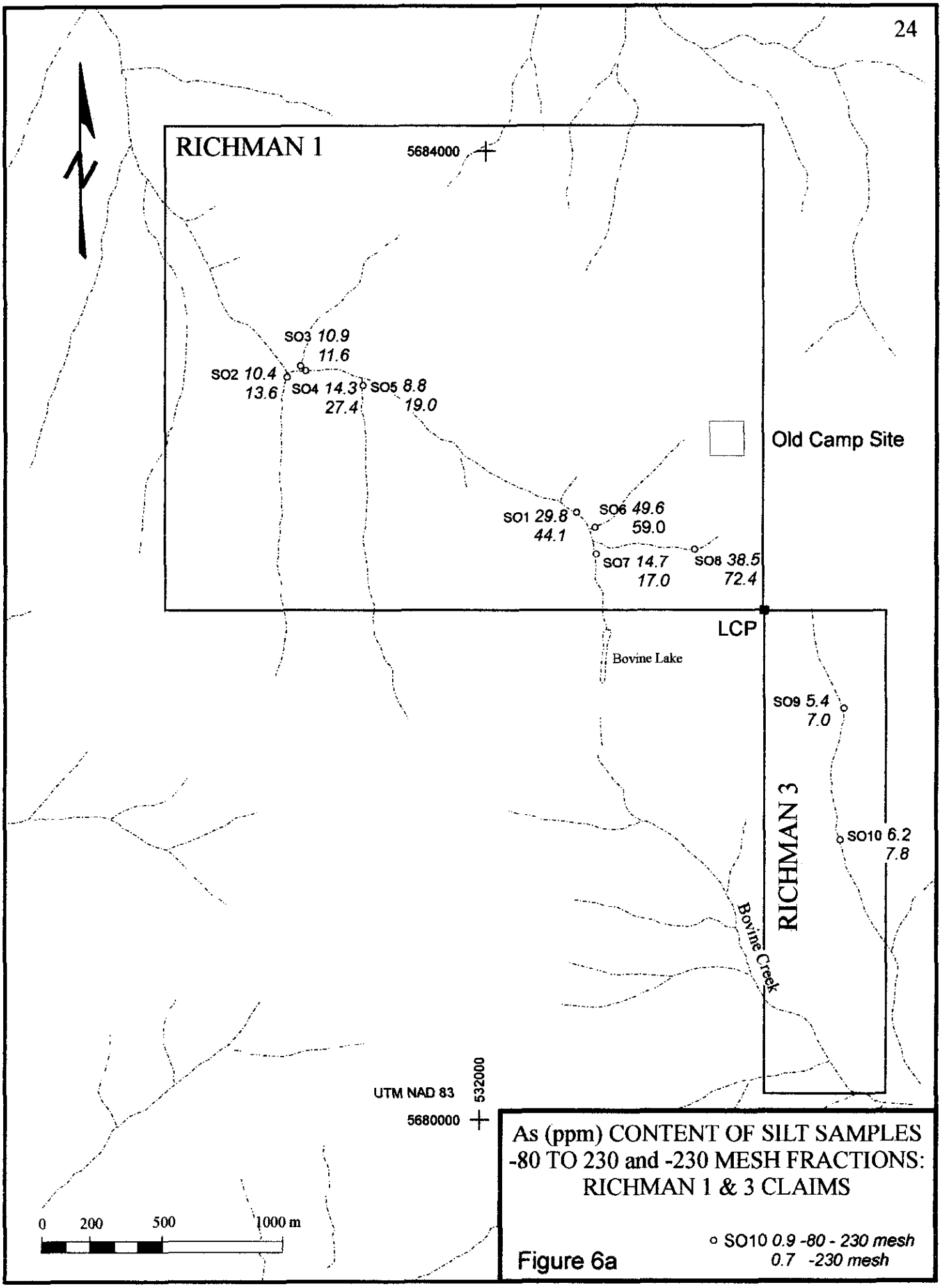
Hg in Silt Samples (Figure 8a)

Mercury concentrations are slightly elevated with median concentrations of 108 and 147 ppb in the -80 to 230 and -230 mesh fractions respectively. The greatest concentrations (>200 ppb) of Hg are contained in the -230 mesh fraction of samples SO6 and SO8. Concentrations of Hg



Ag (ppb) CONTENT IN NaCN + NaOH
LEACH -80 - 200 MESH
FRACTION SILT
RICHMAN 1 & 3 CLAIMS

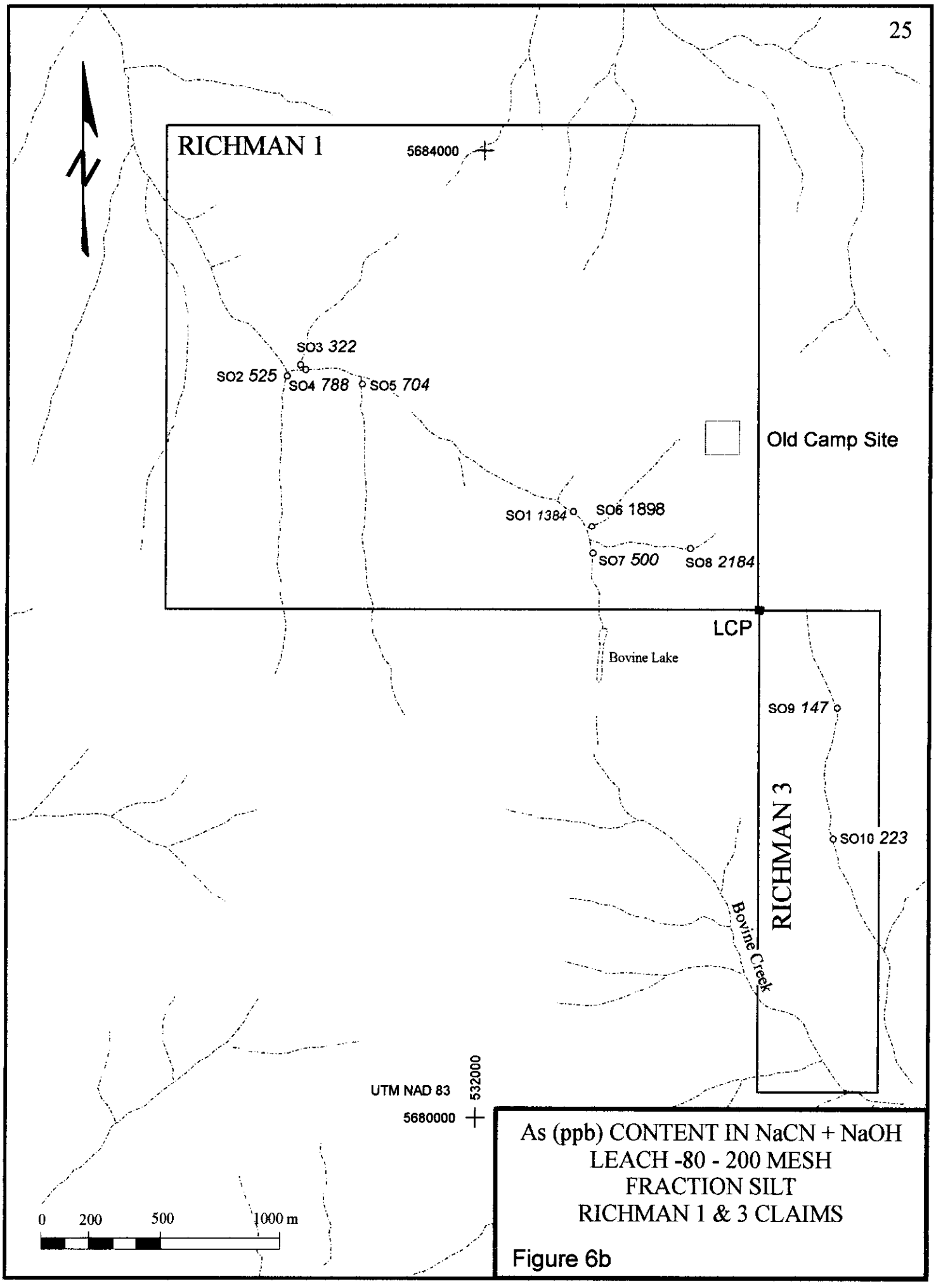
Figure 5b



As (ppm) CONTENT OF SILT SAMPLES
-80 TO 230 and -230 MESH FRACTIONS:
RICHMAN 1 & 3 CLAIMS

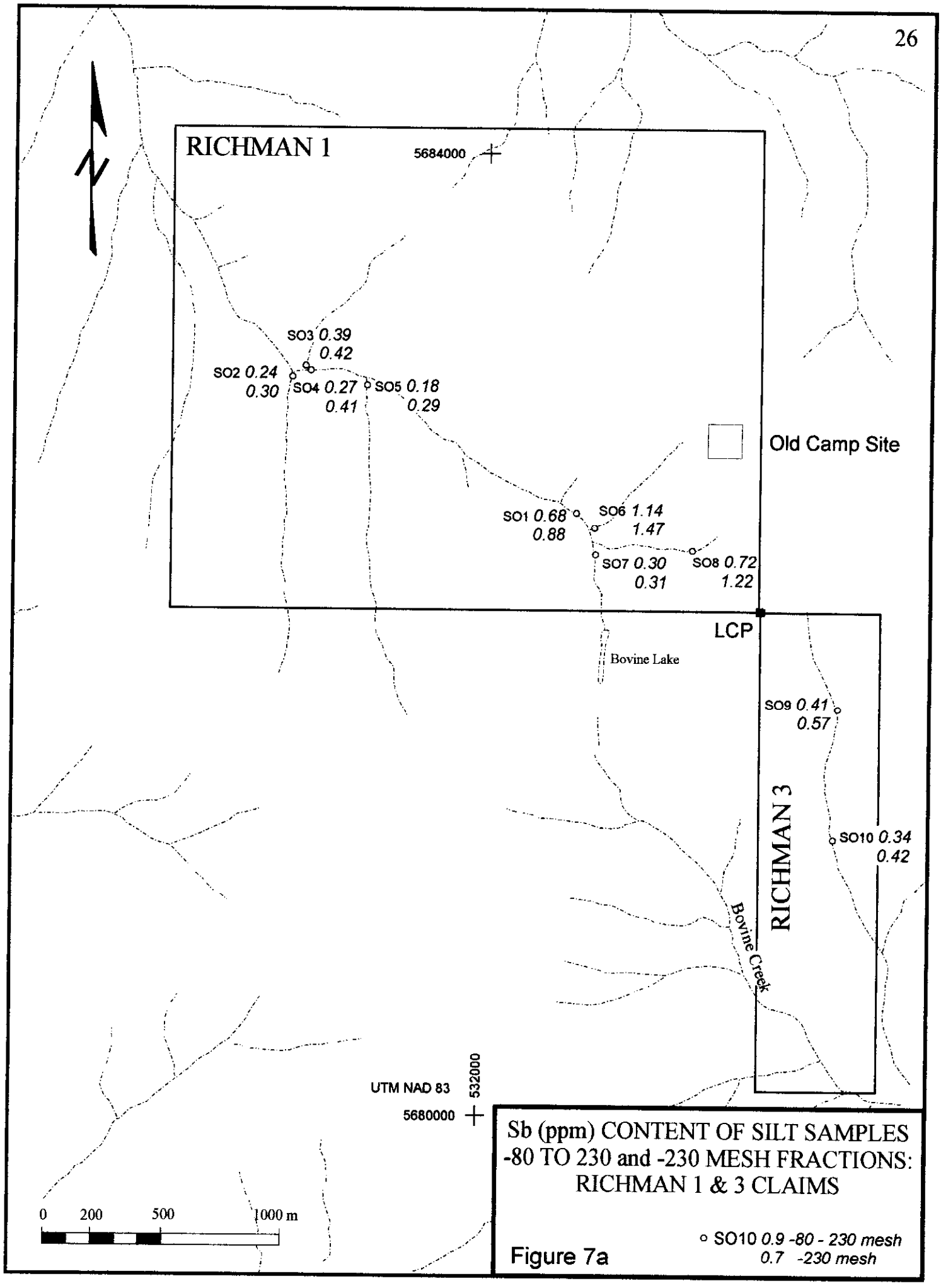
Figure 6a

○ SO10 *0.9 -80 - 230 mesh*
0.7 -230 mesh



As (ppb) CONTENT IN NaCN + NaOH
LEACH -80 - 200 MESH
FRACTION SILT
RICHMAN 1 & 3 CLAIMS

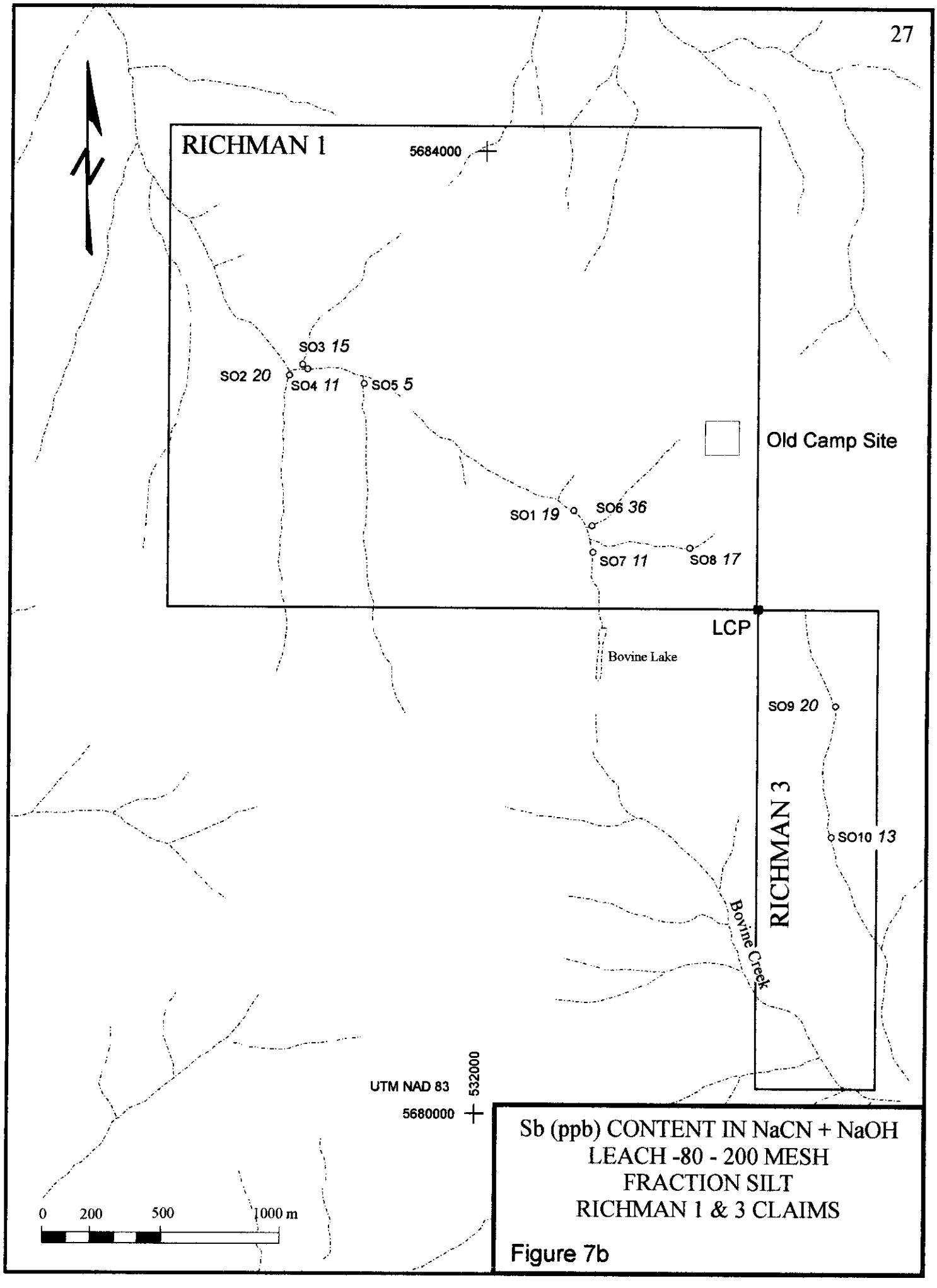
Figure 6b



Sb (ppm) CONTENT OF SILT SAMPLES -80 TO 230 and -230 MESH FRACTIONS: RICHMAN 1 & 3 CLAIMS

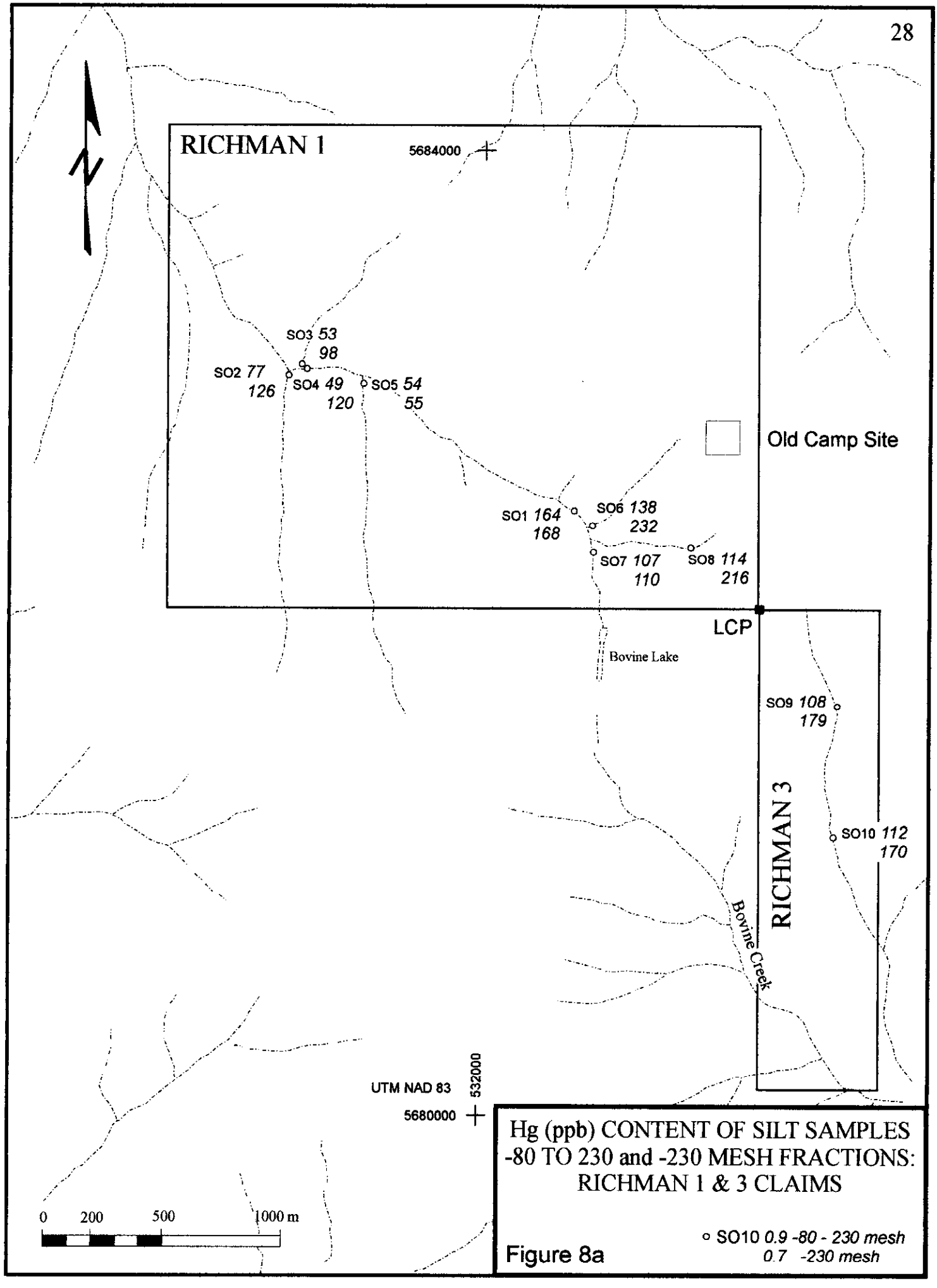
Figure 7a

○ SO10 *0.9 -80 - 230 mesh*
0.7 -230 mesh



Sb (ppb) CONTENT IN NaCN + NaOH
LEACH -80 - 200 MESH
FRACTION SILT
RICHMAN 1 & 3 CLAIMS

Figure 7b



Hg (ppb) CONTENT OF SILT SAMPLES
-80 TO 230 and -230 MESH FRACTIONS:
RICHMAN 1 & 3 CLAIMS

Figure 8a

○ SO10 *0.9 -80 - 230 mesh*
0.7 -230 mesh

were also elevated in excess of 150 ppb in the -230 mesh fractions of samples SO1, SO9 and SO10.

Hg in Leach of -80 to 230 Mesh Fraction (Figure 8b)

Levels of Hg in the leach are very low. Samples SO6 and SO8 yielded results of 19 and 27 ppb respectively.

Ba in Silt Samples (Figure 9a)

The median Ba concentration in the -80 to 230 mesh fraction is 108 ppm and 175 ppm in the -230 mesh fraction. The two highest results were obtained in -230 mesh material from samples SO9 and SO10 on the Richman 3 Claim, which analyzed at about 292 ppm each. The Ba content of the coarser fraction in these samples is also higher than in the rest of the samples collected on the Richman 1 Claim. However, it is likely that the results for Ba in the silt samples is unrepresentative of its actual concentration. Digestion with aqua regia is less than total for barite or Ba in silicates. This latter point is discussed further in the Discussion section.

Ba in Leach of -80 to 230 Mesh Fraction (Figure 9b)

Barium is present in very small amounts in the leach of -80 to 230 mesh fraction of the silt. The median concentration is 1.35 ppm Ba.

Cu in Silt Samples (Figure 10a)

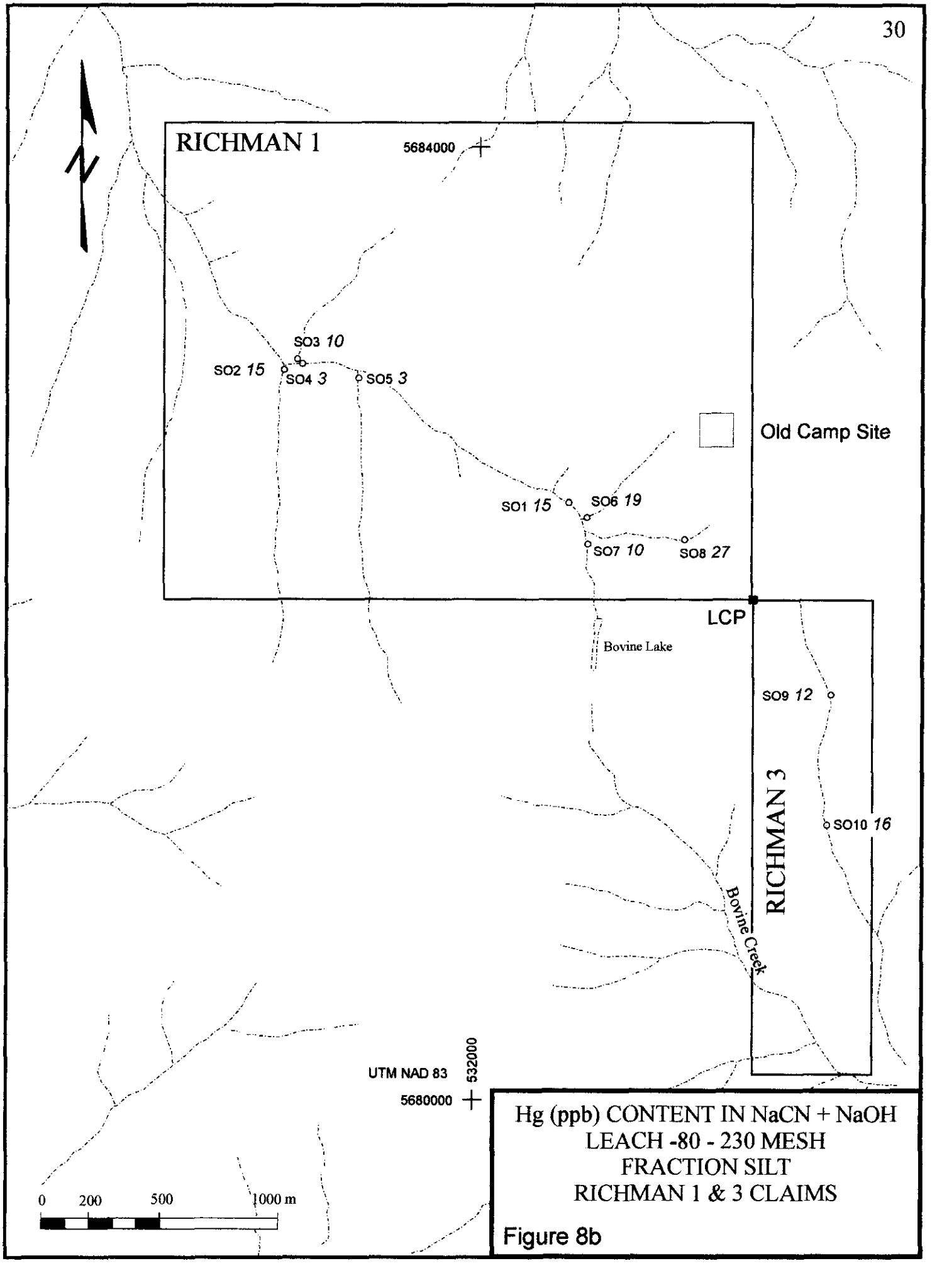
Median Cu contents for the sample set are 22.9 and 32.6 ppm for the -80 to 230 and -230 mesh fraction respectively. The highest Cu concentrations were found in samples SO3 and SO6, which contained 31.7 ppm in the -80 to 230 mesh fraction and 39.8 and 42.0 ppm respectively in the -230 mesh fraction.

Cu in Leach of -80 to 230 Mesh Fraction (Figure 10b)

Cu concentrations in the leach are low with a median of 5.1 ppm.

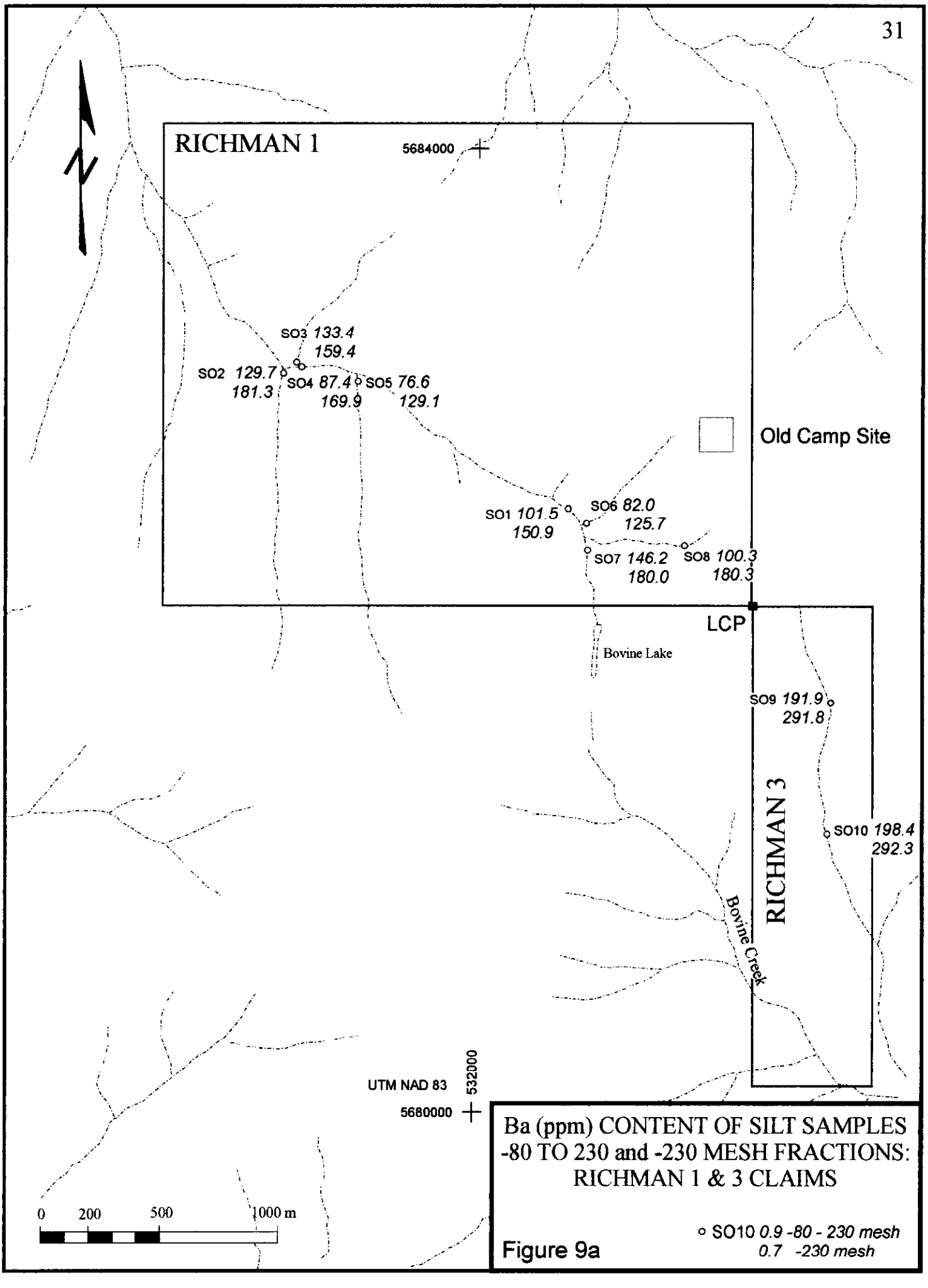
Zn in Silt Samples (Figure 11a)

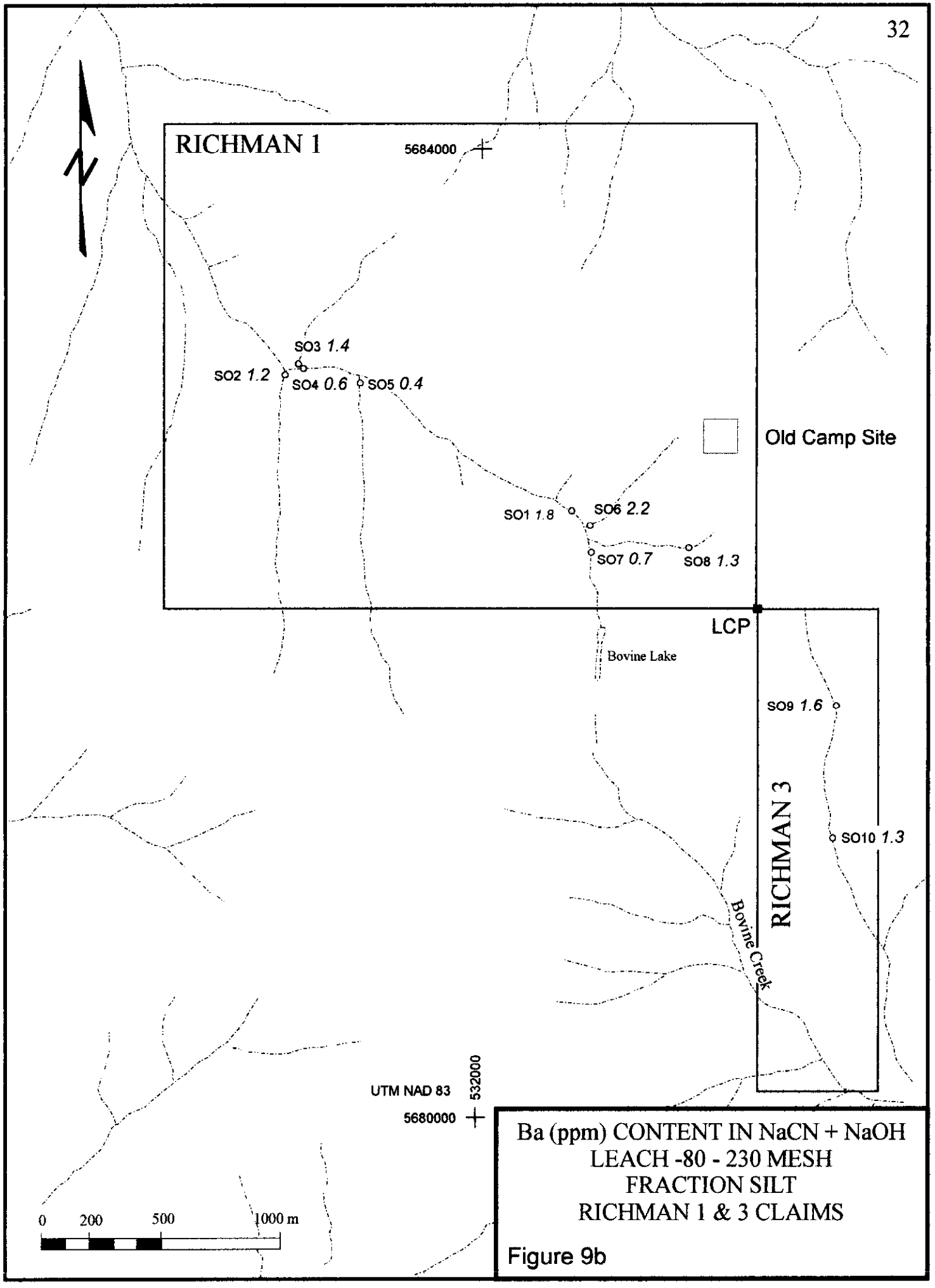
The median Zn concentration is 50.4 ppm and 66.4 ppm in the -80 to 230 and -230 mesh fractions respectively. Sample SO3 contained the highest Zn concentration of 94.9 and 111.0 ppm in the -80 to 230 mesh fraction respectively.



Hg (ppb) CONTENT IN NaCN + NaOH
LEACH -80 - 230 MESH
FRACTION SILT
RICHMAN 1 & 3 CLAIMS

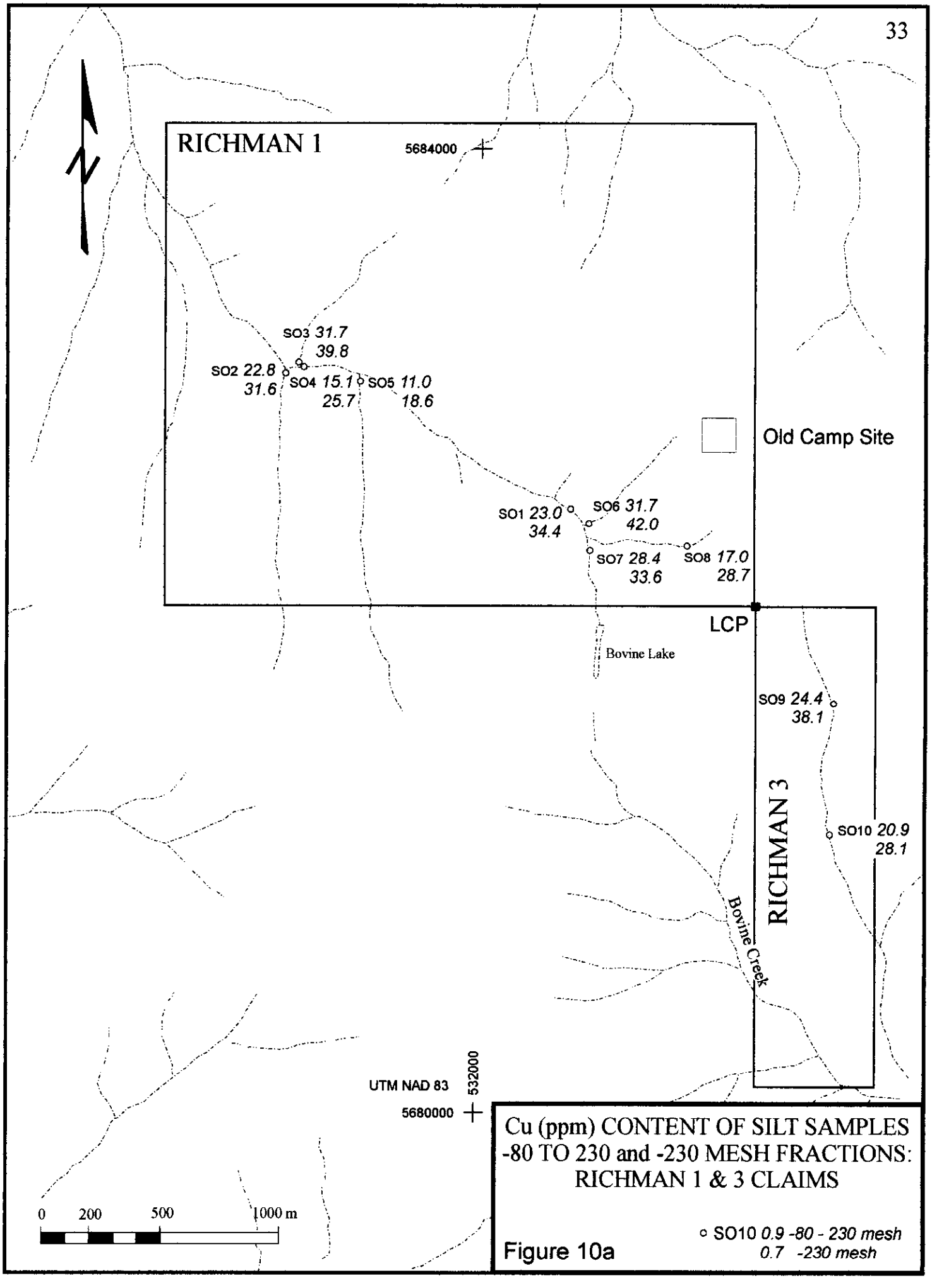
Figure 8b

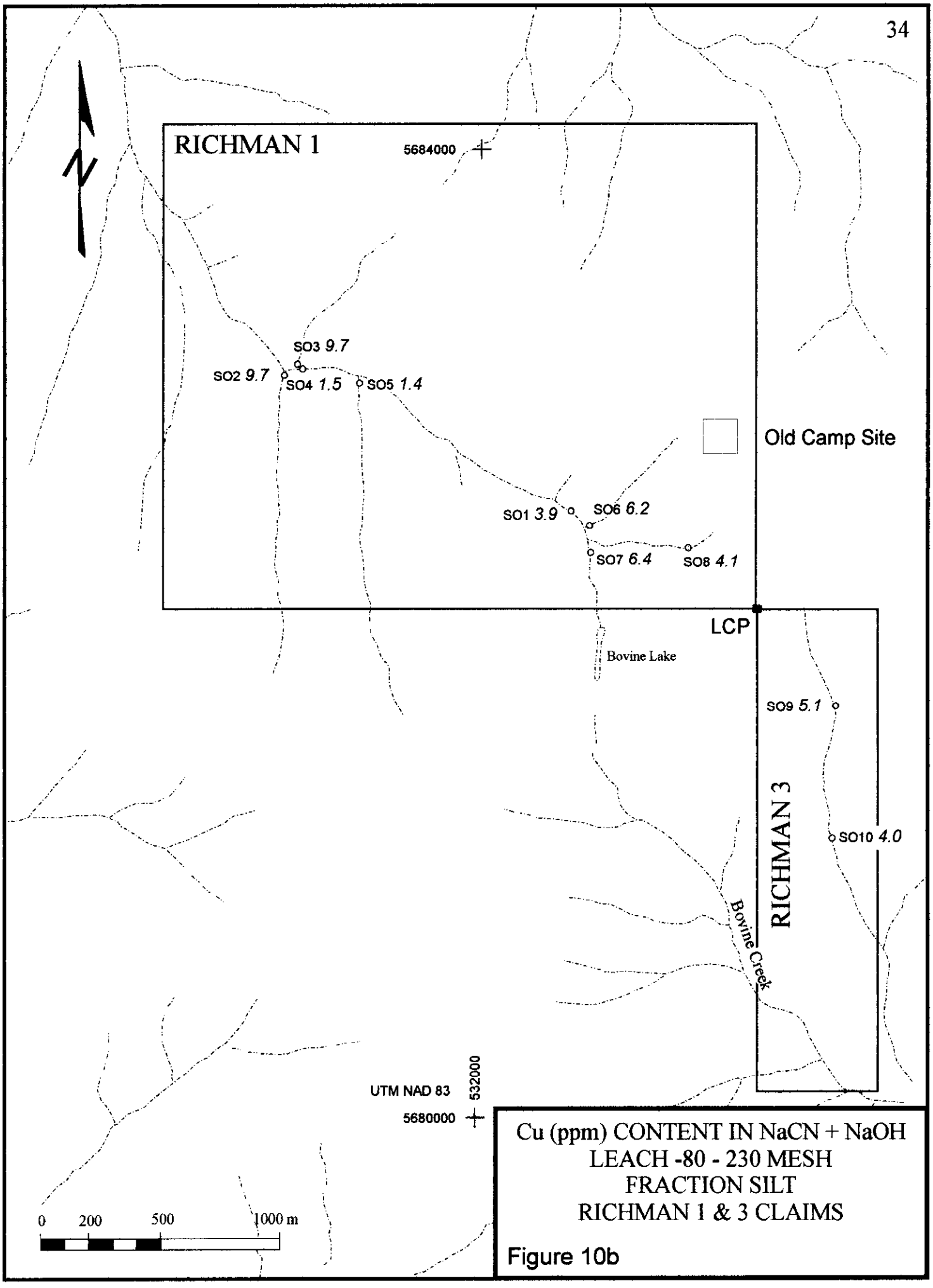

RICHMAN 1
5684000
SO3 133.4
159.4
SO2 129.7
181.3
SO4 87.4
169.9
SO5 76.6
129.1
Old Camp Site
SO1 101.5
150.9
SO6 82.0
125.7
SO7 146.2
180.0
SO8 100.3
180.3
LCP
Bovine Lake
SO9 191.9
291.8
RICHMAN 3
SO10 198.4
292.3
Bovine Creek
UTM NAD 83
532000
5680000
0 200 500 1000 m
Ba (ppm) CONTENT OF SILT SAMPLES
-80 TO 230 and -230 MESH FRACTIONS:
RICHMAN 1 & 3 CLAIMS
Figure 9a
SO10 0.9 -80 - 230 mesh
0.7 -230 mesh



Ba (ppm) CONTENT IN NaCN + NaOH
LEACH -80 - 230 MESH
FRACTION SILT
RICHMAN 1 & 3 CLAIMS

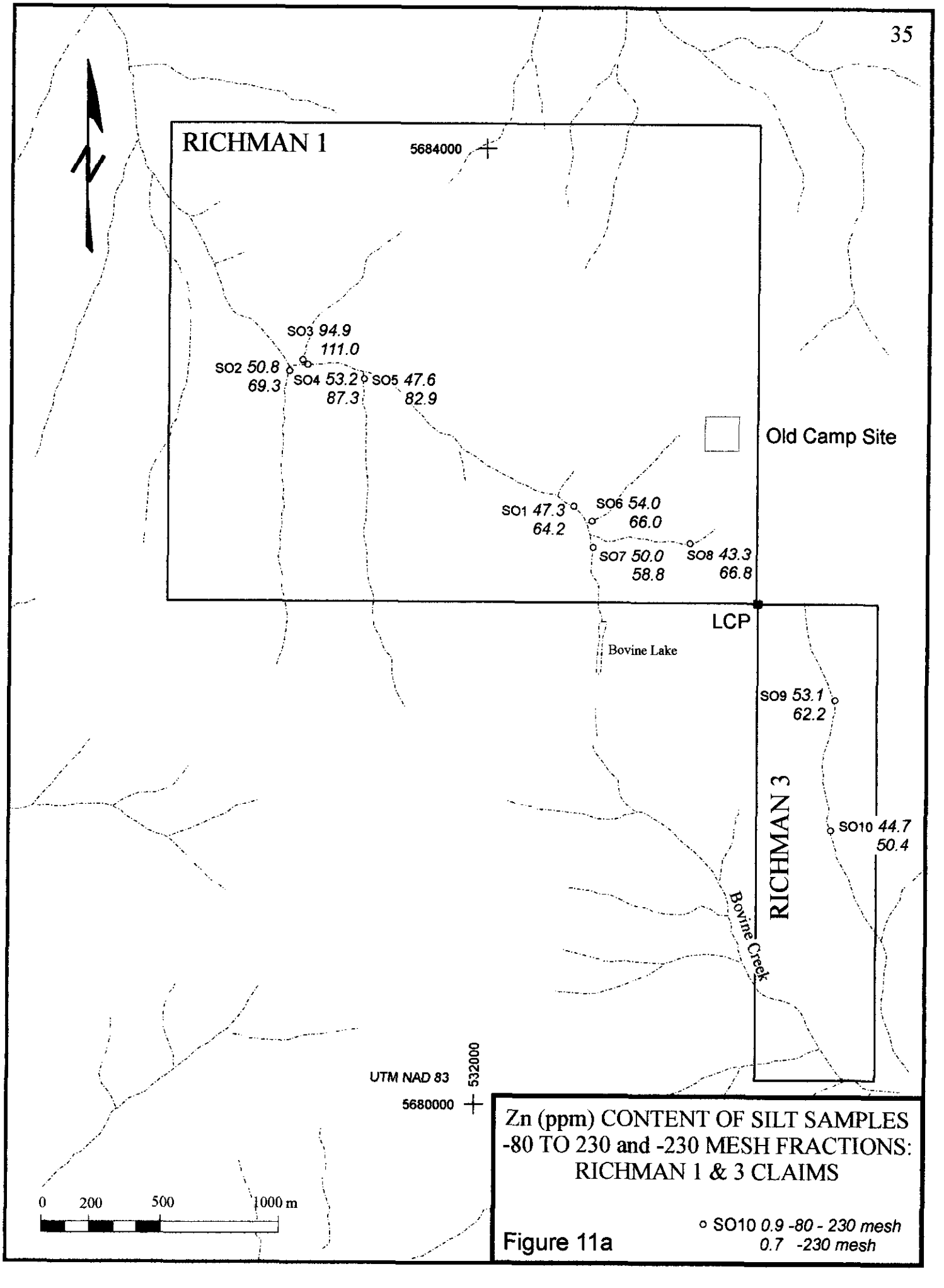
Figure 9b


RICHMAN 1
5684000
SO3 31.7
39.8
SO2 22.8
31.6
SO4 15.1
25.7
SO5 11.0
18.6
Old Camp Site
SO1 23.0
34.4
SO6 31.7
42.0
SO7 28.4
33.6
SO8 17.0
28.7
LCP
Bovine Lake
SO9 24.4
38.1
RICHMAN 3
SO10 20.9
28.1
Bovine Creek
UTM NAD 83
532000
5680000
0 200 500 1000 m
Cu (ppm) CONTENT OF SILT SAMPLES
-80 TO 230 and -230 MESH FRACTIONS:
RICHMAN 1 & 3 CLAIMS
Figure 10a
SO10 0.9 -80 - 230 mesh
0.7 -230 mesh



Cu (ppm) CONTENT IN NaCN + NaOH
LEACH -80 - 230 MESH
FRACTION SILT
RICHMAN 1 & 3 CLAIMS

Figure 10b


RICHMAN 1
5684000
SO3 94.9
111.0
SO2 50.8
69.3
SO4 53.2
87.3
SO5 47.6
82.9
Old Camp Site
SO1 47.3
64.2
SO6 54.0
66.0
SO7 50.0
58.8
SO8 43.3
66.8
LCP
Bovine Lake
SO9 53.1
62.2
RICHMAN 3
SO10 44.7
50.4
Bovine Creek
UTM NAD 83
532000
5680000
0 200 500 1000 m
Zn (ppm) CONTENT OF SILT SAMPLES
-80 TO 230 and -230 MESH FRACTIONS:
RICHMAN 1 & 3 CLAIMS
Figure 11a
SO10 0.9 -80 - 230 mesh
0.7 -230 mesh

Zn in Leach of -80 to 230 Mesh Fraction (Figure 11b)

Median concentration of Zn in the leach was 1.4 ppm. SO3 reported the highest value of 4.1 ppm Zn.

Pb in Silt Samples (Figure 12a)

Lead concentrations ranged between 6.5 and 16.5 ppm in the -80 to 230 mesh fraction and 9 to 18.3 ppm in the -230 mesh fraction. The median concentration was 7.5 ppm and 12.2 ppm for the -80 to 230 and -230 mesh fraction respectively. Sample SO3 contained the most Pb; 16.7 ppm in the -80 to 230 mesh fraction and 18.3 ppm in the -230 mesh fraction.

Pb in Leach of -80 to 230 Mesh Fraction (Figure 12b)

Lead concentrations in the leach are given in ppb and are low. The median concentration was 100 ppb.

Mn in Silt Samples (Figure 13a)

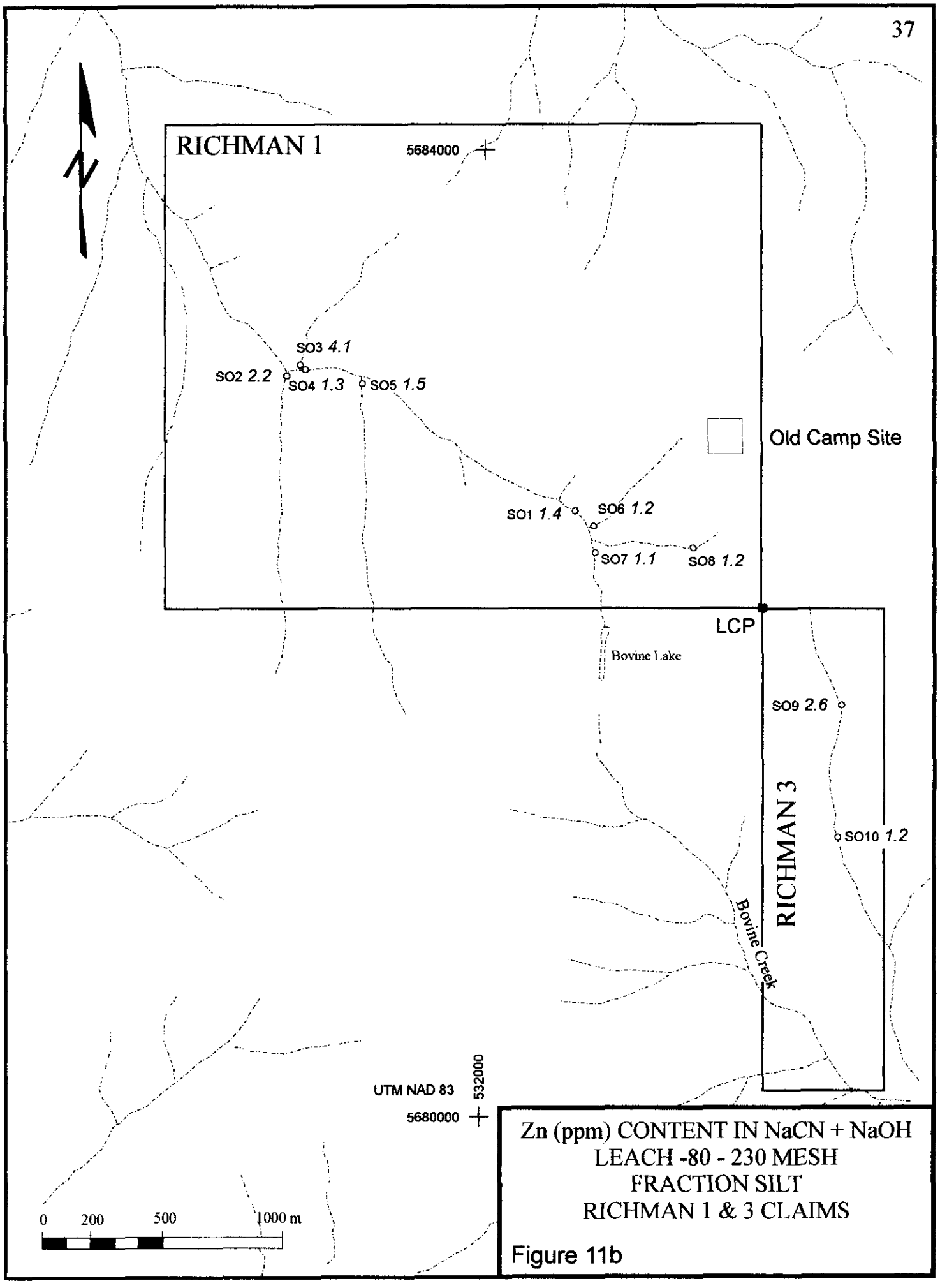
Manganese content is between 391 and 1928 ppm in the silt samples. The -230 mesh fraction contains proportionally higher Mn concentrations than its coarser counterpart.

Mn in Leach of -80 to 230 Mesh Fraction (Figure 13b)

The median concentration of Mn in the leach is 2.0 ppm. Leaches of samples SO2, SO3 and SO7 contained >4 ppm Mn.

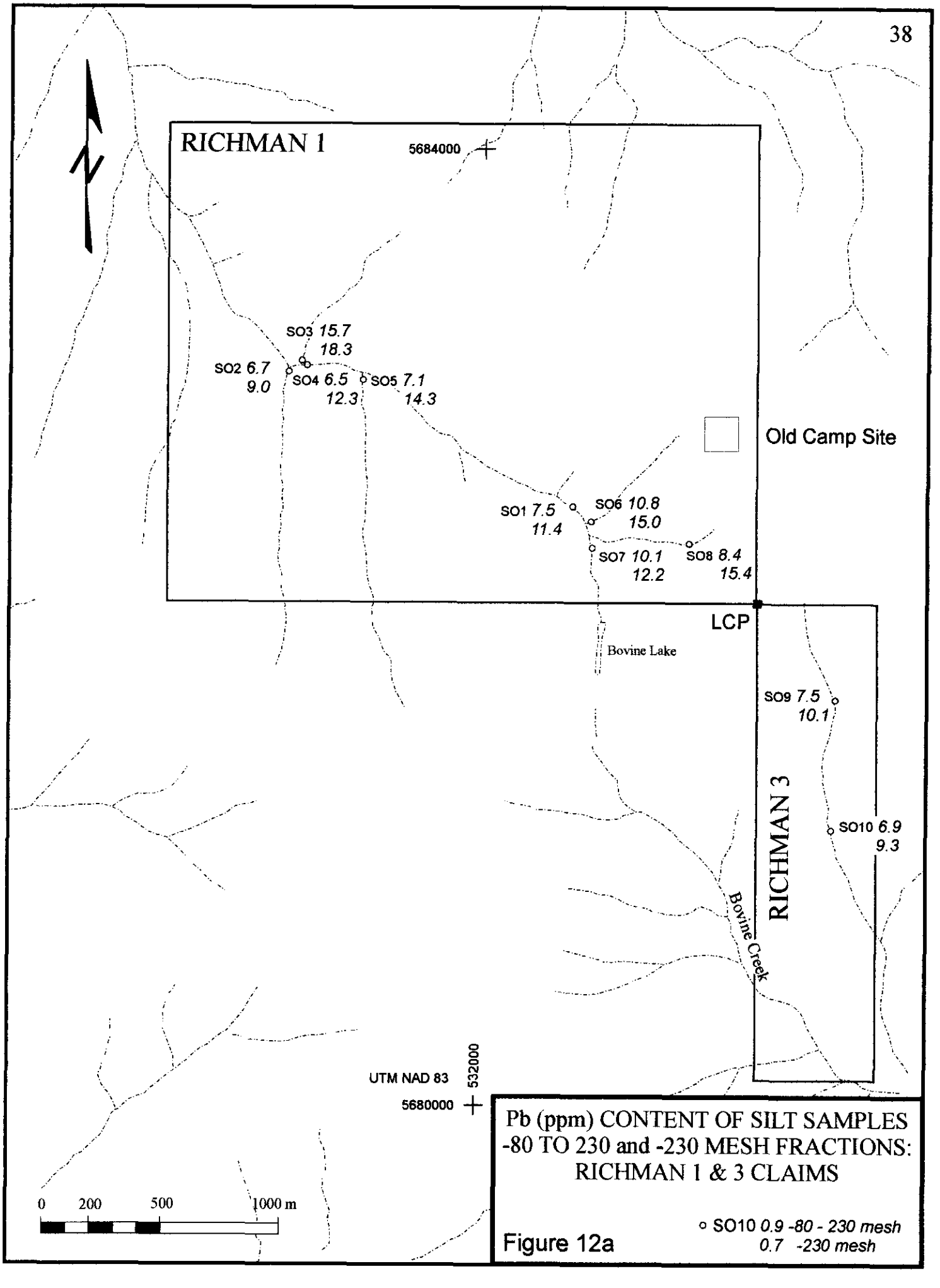
Fe in Leach of -80 to 230 Mesh Fraction (Figure 14)

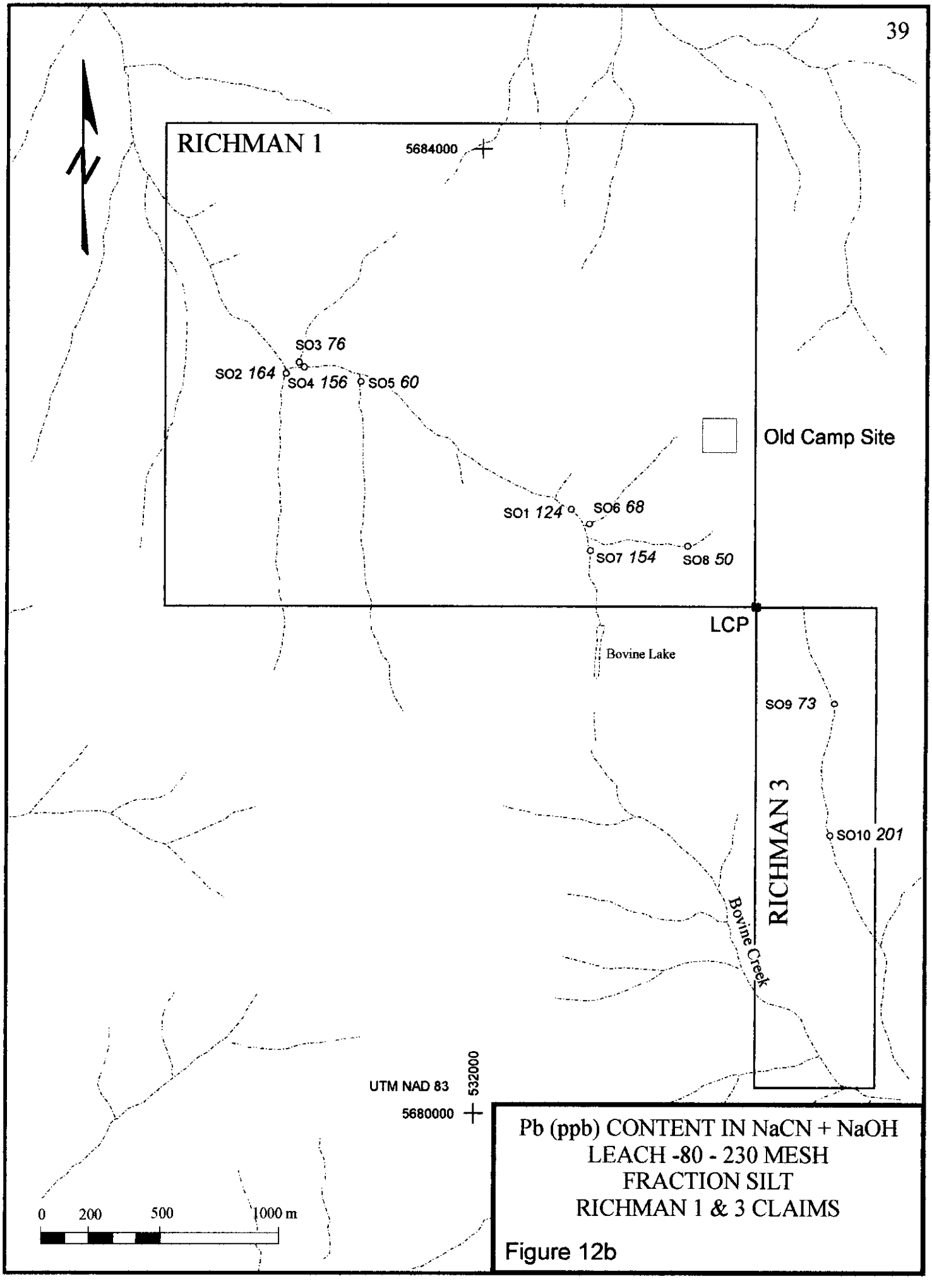
Iron concentration in the leach ranged between 67 and 155 ppm with a median value of 105 ppm. Relatively elevated Fe concentrations (>105 ppm) were generally in those samples also containing relatively elevated Mn.



Zn (ppm) CONTENT IN NaCN + NaOH
LEACH -80 - 230 MESH
FRACTION SILT
RICHMAN 1 & 3 CLAIMS

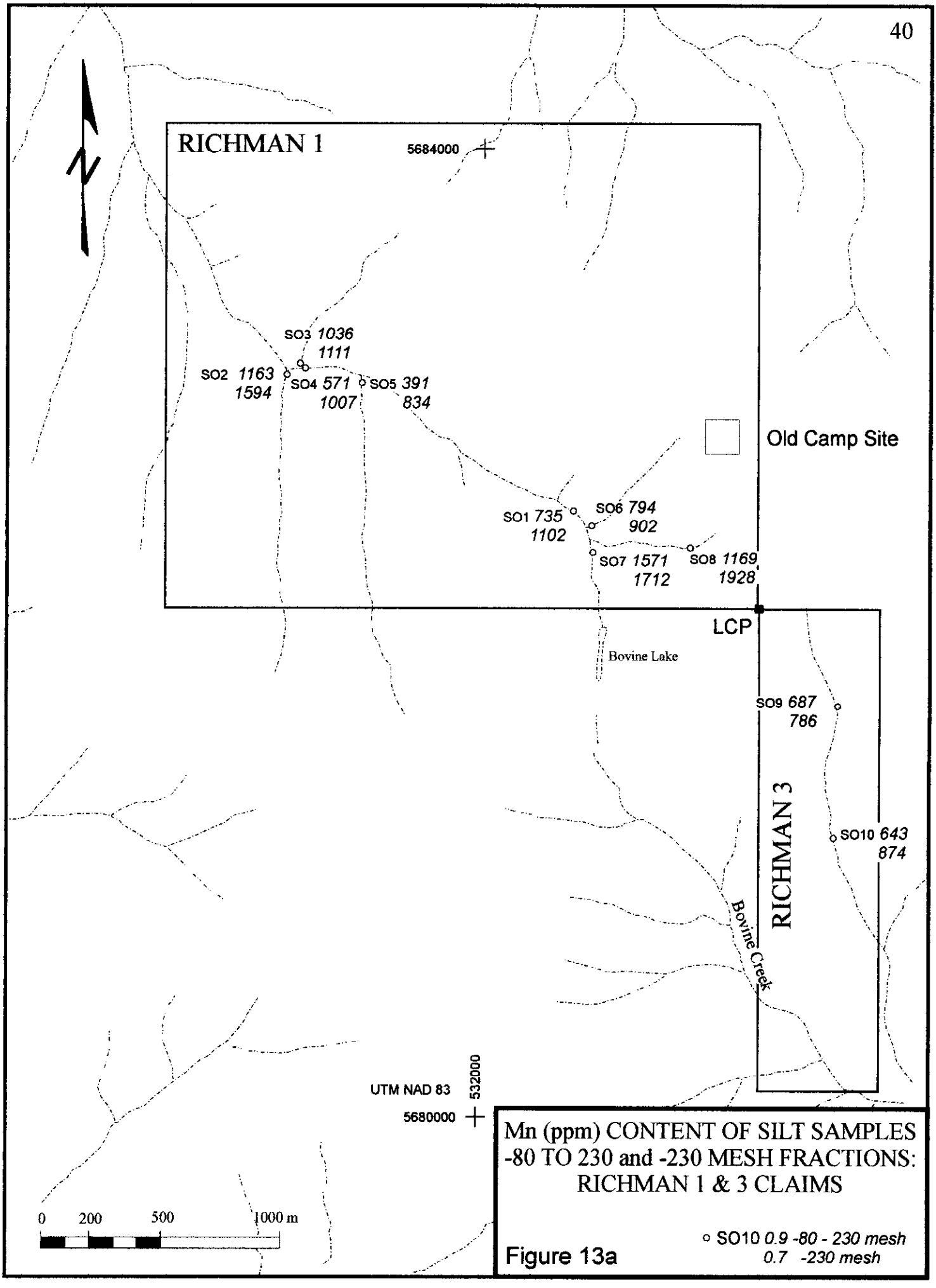
Figure 11b


RICHMAN 1
5684000
SO3 15.7
18.3
SO2 6.7
9.0
SO4 6.5
12.3
SO5 7.1
14.3
Old Camp Site
SO1 7.5
11.4
SO6 10.8
15.0
SO7 10.1
12.2
SO8 8.4
15.4
LCP
Bovine Lake
SO9 7.5
10.1
RICHMAN 3
SO10 6.9
9.3
Bovine Creek
UTM NAD 83
532000
5680000
0 200 500 1000 m
Pb (ppm) CONTENT OF SILT SAMPLES
-80 TO 230 and -230 MESH FRACTIONS:
RICHMAN 1 & 3 CLAIMS
SO10 0.9 -80 - 230 mesh
0.7 -230 mesh
Figure 12a



Pb (ppb) CONTENT IN NaCN + NaOH
LEACH -80 - 230 MESH
FRACTION SILT
RICHMAN 1 & 3 CLAIMS

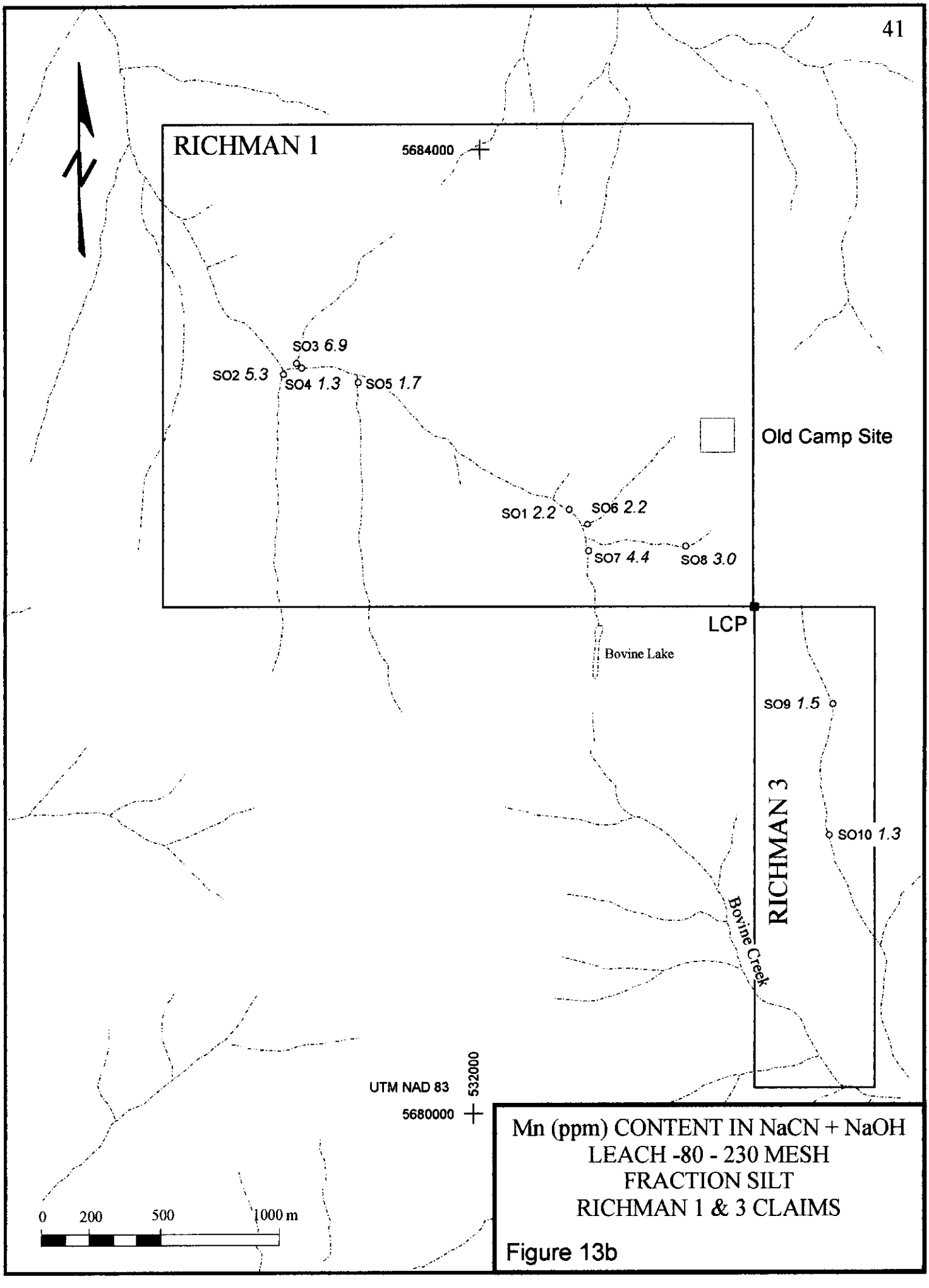
Figure 12b



Mn (ppm) CONTENT OF SILT SAMPLES -80 TO 230 and -230 MESH FRACTIONS: RICHMAN 1 & 3 CLAIMS

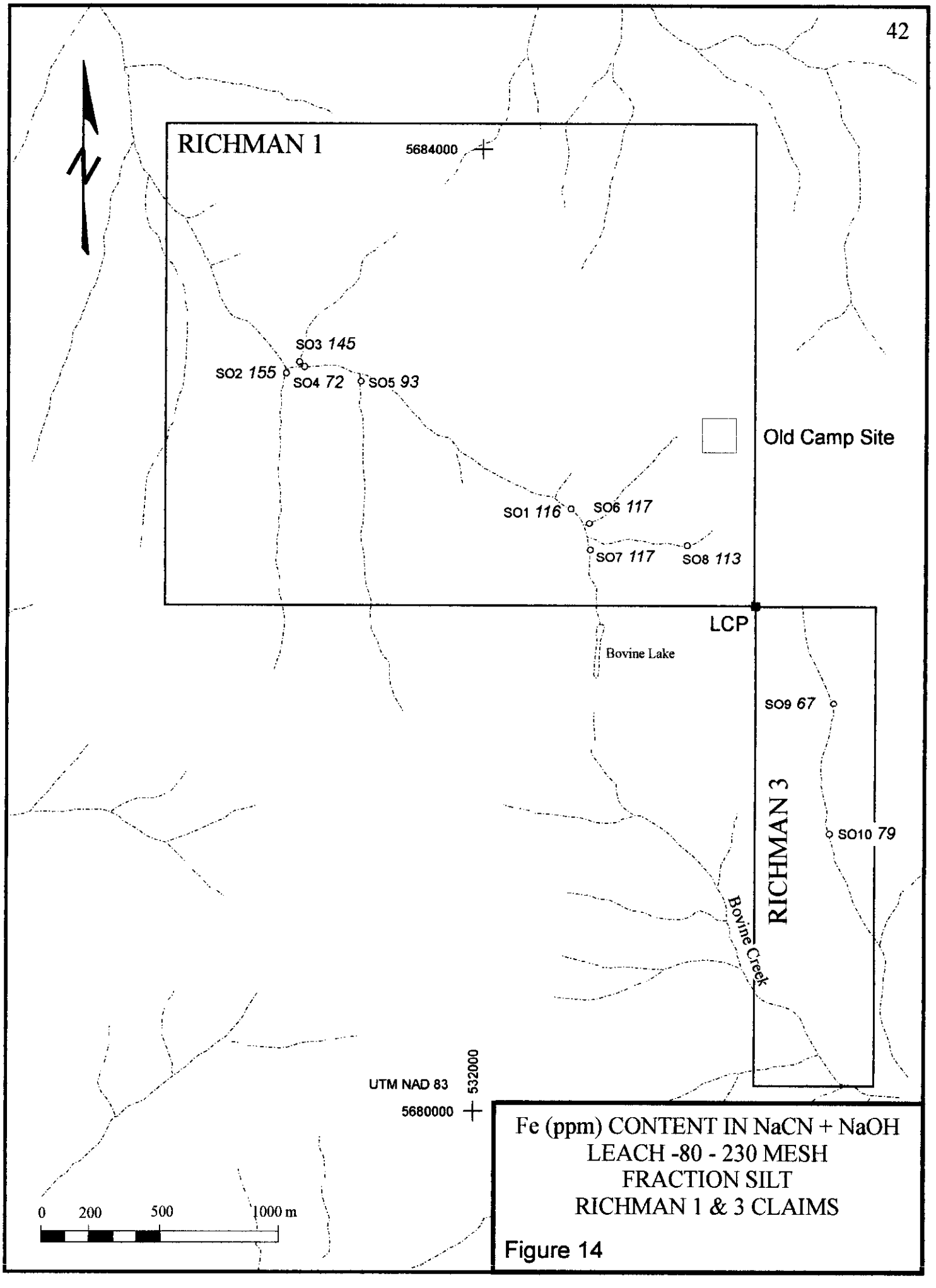
Figure 13a

○ SO10 *0.9 -80 - 230 mesh*
0.7 -230 mesh



Mn (ppm) CONTENT IN NaCN + NaOH
LEACH -80 - 230 MESH
FRACTION SILT
RICHMAN 1 & 3 CLAIMS

Figure 13b



Fe (ppm) CONTENT IN NaCN + NaOH
LEACH -80 - 230 MESH
FRACTION SILT
RICHMAN 1 & 3 CLAIMS

Figure 14

Notes on Other Elements

There were some sporadic occurrences of relatively higher concentrations of other elements, which are reported here for the sake of completeness. These were not considered to be useful pathfinders to mineralization by themselves but a few of these elements may augment other results or prove useful in the future as more data becomes available and better statistical constraints can be imposed.

Tellurium concentrations were generally very low in the silt samples and close to the detection limit (0.02 ppm). However, Te was elevated to about 4 times detection in the leach performed on sample SO3 (Appendix 3).

Selenium is a trace constituent of many epithermal Au-Ag-deposits and occurs in Ag minerals at Blackdome. Se concentrations in the stream sample set are low with many results approaching the detection limit of 0.1 ppm. However, the Se concentration in the -230 mesh fraction of SO3 was 1.3 ppm about 3 times the median value of 0.4 ppm. Sample SO3 also contained slightly higher Se concentrations in the -80 to 230 mesh fraction and leach (on that fraction) compared to the other samples (Appendix 3).

Molybdenum has been mentioned as elevated in some of the Blackdome veins (Rennie, 1988). Molybdenum concentrations were observed to be slightly elevated in sample SO8, which contained 3.3 ppm and 6.5 ppm in the -80 to 230 and -230 mesh fractions respectively.

Lanthanum results had a median concentration of 14.5 and 24.1 ppm La in the -80 to 230 and -230 mesh fractions respectively. Interesting is that in sample SO3 the concentration of La in both fractions was relatively elevated over that in the other 9 samples by a factor of 3, or >4 times the median value of the sample set. La was also present in relatively higher concentration in the leach analysis of SO3 (Appendix 3).

Uranium displayed a moderate contrast in concentration in the leach of the -80 to 230 mesh fraction (Table 2). Uranium contents in the leach varied from a low of 17 ppb to a high of 265 ppb. The higher concentrations of U are generally associated with higher Mn in the leach and also in the aqua regia digestion of the silt fractions. This is probably a hydromorphic phenomena and using U as an indicator of epithermal mineralization is probably doubtful.

Strontium displayed concentrations in all the samples that were well above detection. Sr concentrations are between 38 and 94 ppm in the -80 to 230 mesh fraction and between 59 and 115 ppm in the -230 mesh fraction. These levels are not necessarily significant considering that even felsic volcanic rocks can contain in excess of 100 ppm Sr. This situation is the same for calcium, which ranges between 0.4 and 1.2 % in the stream sediments. Carbonate alteration has been noted as occurring in the veins at Blackdome (Vivian, 1988) but its presence cannot be confirmed by the calcium concentrations found in the stream samples.

DISCUSSION OF RESULTS

Correlation Between Elements of Interest

Table 3 summarizes the correlation coefficients calculated for the Au, Ag, Sb, Hg, Ba, Cu, Zn, Pb and Mn data. Gold moderately correlates with Ag, Cu, Zn and Pb in the -80 to 230 mesh fraction but not in the -230 mesh fraction. In the leach, Au concentration moderately correlates with Ag, Cu, Zn and Mn. There seems to be little or no correlation between Au concentrations and As, Sb or Hg.

Silver correlates fairly well with Cu in the digested silts and in the leach. It correlates somewhat with Zn and Pb in the digestion of the -80 to 230 mesh fraction and displays moderate correlation with Mn in the leach. Silver also displays a weak sporadic correlation (coefficient = 0.52) with some higher Au concentrations in the -80 to 230 mesh fraction of the sediment samples.

There appears to be moderate correlation between As, Sb and Hg concentrations in the -80 to 230 and -230 fractions.

Comparison to BC RSGS 35 Dataset from the 92O NTS Sheet

Comparing the concentrations of elements of interest to results obtained in government regional stream sediment surveys can only be done tentatively. The analytical methods used in the government surveys are different for certain elements and the sample preparation procedures were different as well. For example with respect to Au and Ba the government surveys employed neutron activation analysis, which is almost certainly a better method for Ba given the insoluble character of barite in most digestions. Also the government survey

Table: 3. **Correlation Between Certain Elements in the Stream Sediment Samples: Richman 1 and 3 Claims**

-80 to 230 mesh fraction

	Ag	As	Sb	Hg	Ba	Cu	Zn	Pb	Mn
Au	0.5206	0.3267	0.4475	-0.0216	-0.2620	0.6140	0.7059	0.7411	-0.0382
Ag	1	0.0096	0.1170	0.0402	0.2937	0.8389	0.5882	0.6560	0.6943
As		1	0.9262	0.5929	-0.5759	0.2391	-0.1813	0.1390	0.1425
Sb			1	0.6978	-0.3205	0.4359	-0.0673	0.2264	0.0372
Hg				1	0.1131	0.3380	-0.4345	-0.1508	0.1327
Ba					1	0.2849	0.0449	-0.0199	0.1601
Cu						1	0.5432	0.7058	0.5056
Zn							1	0.8827	0.1343
Pb								1	0.3740
Mn									1

-230 mesh fraction

	Ag	As	Sb	Hg	Ba	Cu	Zn	Pb	Mn
Au	0.2162	-0.1547	-0.2099	-0.1937	-0.0520	0.1869	-0.2464	-0.0271	0.4003
Ag	1	0.0487	0.2451	0.2864	-0.0642	0.8023	0.0559	0.1775	0.3765
As		1	0.8870	0.6385	-0.4880	0.0930	-0.1288	0.3996	0.3605
Sb			1	0.8496	-0.2658	0.4271	-0.2289	0.3388	0.0906
Hg				1	0.2333	0.4965	-0.5337	-0.0833	0.0897
Ba					1	0.0567	-0.4808	-0.6026	-0.1827
Cu						1	0.0035	0.1745	-0.0315
Zn							1	0.6955	-0.1308
Pb								1	0.0723
Mn									1

Weak NaOH+NaCN Leach

	Ag	As	Sb	Hg	Ba	Cu	Zn	Pb	Mn
Au	0.6999	-0.2329	0.0505	0.2859	0.2014	0.8255	0.6597	0.1144	0.8613
Ag	1	-0.0827	0.4715	0.5272	0.4162	0.9778	0.4937	-0.0082	0.7941
As		1	0.5477	0.2999	0.3735	-0.1410	-0.4860	-0.1638	-0.1378
Sb			1	0.7816	0.8824	0.3942	0.0286	-0.2783	-0.0168
Hg				1	0.8354	0.5011	-0.0599	0.1300	0.0812
Ba					1	0.3893	0.2214	-0.3057	-0.0127
Cu						1	0.5821	-0.0013	0.8506
Zn							1	-0.4514	0.5631
Pb								1	0.0297
Mn									1

employed the dry sieving of collected sediment to -18 mesh before sending it to the laboratory. This survey made use of wet sieving to -20 mesh. The latter method may result in potential loss of fine gold in the sample. However, if done judiciously a comparison made between local data and regional data can give an approximate, "ballpark"-type idea as to the potential significance of the local results.

Table 4 provides a summary of the threshold concentrations of the 90th and 95th percentile for Au, Ag, As, Sb, Hg, Ba, Cu, Zn and Pb from the >860 samples taken in the B.C. RGS Survey (Jackaman et al., 1979). In doing this comparison it is important to remember that the -80 mesh fraction was analyzed in the BC RGS samples.

Table 5 summarizes the average of the concentration of the same set of elements calculated on the basis of the measured concentration in the -80 to 230 and -230 mesh fractions of the Richman stream sediments. The calculated average concentration of the two fractions is used for the purposes of comparison and is taken as an estimate of the actual concentration of these elements in the total -80 mesh fraction of the ten samples.

The calculated average gold concentration in SO7 (24.3 ppb Au) would fall into the 90th percentile class established in the BC RGS data set. Three of the Richman stream sediment samples contain As contents that are equivalent to the 95th percentile population in the government data set. These are SO1, SO6 and SO8, which contain a calculated averaged estimate of 37 ppm or more As. Sample SO3 contained a calculated average of 107 ppm Zn, which exceeds the 90th percentile threshold of the government stream survey data. Pb levels in all ten of the Richman samples exceed the 90th percentile threshold and are greater than the 95th percentile minimum of 9 ppm in samples SO3, SO5, SO6, SO7 and SO8. The calculated average concentrations of Ag, Sb, Hg, Ba, and Cu in the ten stream sediment samples from the Richman Claims is below the 90th percentile thresholds established in the BC RGS data.

Comparison of Results from the Two Size Fractions

Comparing the analytical results from the -80 to 230 and -230 mesh size fractions of the ten stream sediment samples it is apparent that the concentrations of potential pathfinder elements are greater in the finer fraction than in the coarser one. Table 6 estimates the potential anomaly contrast given by analyzing each of the two size fractions for Au, Ag, As, Sb, Hg, Ba, Cu, Zn

Table 4. **Summary of Threshholds for Select Elements from BC RGS Stream Sediment Survey Data**

	95th Perc.		90th Perc.		
	N	Conc.	N	Conc.	N_t
Au	46	27 ppb	83	13 ppb	868
Ag	3	0.61 ppm	5	0.41 ppm	883
As	44	37.1 ppm	83	26.1 ppm	868
Sb	43	3.61 ppm	86	2.51 ppm	868
Hg	46	331 ppb	90	211 ppb	881
Ba	43	811 ppm	86	711 ppm	868
Cu	41	66 ppm	84	49 ppm	883
Zn	45	107 ppm	88	88 ppm	883
Pb	43	9 ppm	72	7 ppm	883

Compiled from Jackaman, W., Matysek, P.F. and Cook, S.J. (1979)

Table 5. **Average Concentration of Select Elements in Stream Sediment Samples: Richman 1 and 3 Claims**

	Au ppb	Ag ppb	As ppb	Sb ppb	Hg ppb	Ba ppm	Cu ppm	Zn ppm	Pb ppb
SO1	2.6	124	37.0	0.78	166	126.2	28.68	55.8	9.48
SO2	1.5	226	12.0	0.27	102	155.5	27.17	60.1	7.84
SO3	4.1	236	11.3	0.41	76	146.4	35.75	103.0	17.48
SO4	1.0	51	20.9	0.34	85	128.7	20.40	70.3	9.39
SO5	1.3	48	13.9	0.24	55	102.9	14.82	65.3	10.73
SO6	4.8	191	54.3	1.31	185	103.9	36.87	60.0	12.91
SO7	24.3	183	15.9	0.31	109	163.1	31.02	54.4	11.14
SO8	0.7	134	55.5	0.97	165	140.3	22.84	55.1	11.89
SO9	2.8	155	6.2	0.49	144	241.9	31.27	57.7	8.78
SO10	0.8	101	7.0	0.38	141	245.4	24.48	47.6	8.09

Table 6. **Comparison of Potential Anomaly Contrast -80 to 230 versus -230 mesh fractions**

	Range of Conc.*			
	-80 + 230 m	-230 m		% diff.
Au	3	26	ppb	*709*
Ag	169	194	ppb	15
As	38.3	58.3	ppm	52
Sb	0.7	1.1	ppm	46
Hg	100	148	ppb	48
Ba	116	165	ppm	42
Cu	18.6	18.8	ppm	1
Zn	30.5	44.6	ppm	46
Pb	7.1	7.7	ppm	8

* estimated as: average of two highest - average of two lowest results

and Pb. The potential range of concentrations was calculated by subtracting the average of the two lowest values from the average of the two highest (e.g. Melo and Fletcher, 1999).

Reviewing the results in Table 6, the potential anomaly contrast increased by 7 times for Au in the finer versus the coarser fraction. This large increase is partially due to the skewing-effect by the one elevated Au result (of 48.2 ppb) in the -230 mesh fraction of SO7. However, a general review of the Au data in Table 2 confirms a general increase of Au concentrations in the finer versus coarser fraction in the ten samples.

Other elements including As, Sb, Hg, Ba and Zn also displayed significant increases (of >40%) in potential anomaly contrast in the finer (-230 mesh) fraction. Silver and Pb displayed a moderate increase in contrast (of 8% or better).

NaOH+NaCN Leach on -80 to 230 Sediment Fraction

The leach analyses on the -80 to 230 mesh fraction of the silt samples were performed to assess the concentration of weakly adsorbed metals on clay, organic and Mn-Fe-oxide-coated rock particles. The concentration of loosely held metals may provide an indication of the metal content of the water and provide additional clues to finding mineralization in the drainage.

This might have particular application in using the more mobile metals such as As or Zn as pathfinders to mineralization. For example, it appears that As is elevated relative to the other 8 samples in SO1 (with 1384 ppb) and SO6 (with 1898 ppb). Sample SO6 was collected from a south-flowing tributary, which joins the main creek about 100 m upstream from the SO1 sample site (Figure 6b).

Summary of Significant Results, Potential Pathfinders and Anomalous Samples

The highest Au concentration in the pan concentrate samples was 2.7 ppb in sample SO1 (Table 2). Given the small database, poor statistical constraints and the natural variability of Au in the environment such low values of Au especially if taken by themselves are potentially insignificant. The low Au concentrations in the pan concentrates could be the result of inadequate concentration of heavy minerals in the stream sediment. Other factors, which also may play a role are:

1) a large portion of the gold in the drainage is very fine and was lost while panning;

2) gold concentrations in the drainage are diluted by barren overburden;

3) the gold is concentrated deeper in the stream bed;

4) the gold is partially still locked in quartz which was lost while panning;

5) there is little gold in the drainage and no Au-rich mineralization.

The use of heavy mineral pan concentrates is a well proven and successful method for locating Au mineralization (e.g. Barakso and Tegart, 1982). It is the hallmark of the method that by concentrating the heavy mineral fraction it can "see through" large amounts of lighter waste that dilute anomalous metal concentrations in areas with heavy overburden. The method will not only detect mechanically transported Au but also secondary gold. This would include Au that has been reduced from solution by Mn-Fe minerals and coatings, and by the formation of secondary sulphides from iron-copper-bearing sulphide that occur in the heavy mineral fraction of the sediment (Barakso and Tegart, 1982).

The presence of 48.2 ppb of Au in the fine -230 mesh fraction of sample SO7 suggests that greater concentrations than 2 ppb Au are present in the drainage tested. Therefore it is the conclusion of the author that the low concentrations of Au in the pan concentrates may be due to insufficient material being concentrated for analysis as only one pan full of sediment was treated for the survey. Also the depth that the samples were taken at may not have been adequate and an insufficient cross-section of the stream bed is represented. If the Au is fine or locked in quartz then the situation is more problematic.

Silver results were generally low and from the data gathered so far it appears that Ag concentration taken alone is not useful as a pathfinder to epithermal-Au mineralization.

Arsenic is contained in significant quantities (30 or more ppm) in three samples (SO1, SO6 and SO8) in the upper portion of the drainage incising the Richman 1 Claim north of Bovine Lake (Figure 6a). Arsenic is also elevated in the leach analysis of samples SO1 and SO6. Arsenic is a classic pathfinder for epithermal mineralization and has been noted as somewhat useful in defining potential mineralization at the Blackdome Mine (Rennie, 1988). Therefore, the elevated As concentrations in the upper portion of the drainage on the Richman 1 Claim may be indicating the presence of hydrothermal veins or alteration in the stream valley.

Antimony concentrations in the samples were generally low and cannot be considered to be significant in this survey.

Mercury has been used to locate sub economic epithermal mineralization and related hydrothermal alteration zones on the former Bobcat (now Richman 1) Claims (Heine, 1988a and Leriche, 1988) and the former EH claims, which are now partially covered by the present Richman 3 Claim. For example samples of the Geo Zone contained up to 11000 ppb Hg (Hardy and van Wermeskerken, 1989). Government BC RGS stream sediment surveys collected in the drainages around Blackdome Mountain contained up to 460 ppb Hg (Jackaman et al., 1979). Rather lower Hg results were obtained in this survey (Table 2). Sample SO9 located below the Geo Zone contained between 100 and 200 ppb Hg. The median result for Hg in the ten samples was 108 ppb and 147 ppb for the -80 to 230 and -230 mesh fractions respectively. However, these results may not be without significance given that the expected background values for Hg in granitic rocks are around 40 ppb (Rose et. al., 1979). Better results for Hg could possibly be obtained by changing the analytical method employed and this option should be investigated further.

Barium is not a classic pathfinder element in the exploration for epithermal-Au deposits. However, up to 770 ppm Ba has been reported in government BC RGS stream survey sites in creeks draining the slopes of Blackdome Mountain (Jackaman et al., 1979). The mineralization at Blackdome contains adularia and Ba could substitute in the lattice. Vivian (1988) lists geochemical trace element data from drill holes that contain >1000 ppm Ba. The background Ba levels in felsic volcanic rocks could approach levels of 800 ppm (Rose et al., 1979). Ba levels in both fractions of the ten stream sediment samples ranged between 76 and 292 ppm. These results will likely be lower than the actual content as many Ba-bearing minerals (e.g. barite and Ba-rich feldspar) are generally only partially soluble in acid digestions. In order to achieve an accurate analysis for total Ba a non-digestive analytical technique such as INA or XRF could be adopted. A less satisfactory solution would be a four acid digestion, which is near total. However, the extra cost imposed by an additional analytical procedure is probably not warranted given barium's marginal use as a pathfinder for epithermal-Au.

The use of base metal concentrations for exploration of epithermal-Au prospects is of variable use. The Blackdome veins are of the low-sulphidation-type and usually contain 1% or less

metallic minerals (Rennie, 1988). Therefore they are low in base metal content by nature. Copper concentrations in the stream samples collected on the Richman Claims ranged between 11 and 42 ppm and Cu appears to display moderate correlation with Au in the -80 to 230 mesh fraction (Table 3). Concentrations of Cu <30 ppm are not necessarily significant with regard to Au mineralization; trace whole rock analyses of samples taken from intermediate to felsic volcanic rocks at the Blackdome Mine contained between 5 and 33 ppm Cu (Vivian, 1988). However, two of the high Cu results from the -230 mesh fraction of samples SO3 (39.8 ppm Cu) and SO6 (42.0 ppm Cu) may be taken to be potentially anomalous given that they occur with slightly elevated Au (and also As in SO6).

Similar to Cu the use of zinc as a pathfinder is limited. Zinc is generally more mobile in the oxidizing environment than Cu (Rose et al., 1979) and would likely form more dispersed anomalies. However, trace whole rock analyses of samples from the volcanic rocks at the Blackdome Mine display Zn concentrations between 19 and 108 ppm (Vivian, 1988). The highest Zn concentration measured in the stream sediment samples on the Richman Claims is 111 ppm in sample SO3. SO3 contains slightly elevated Au and Cu concentrations and therefore the higher Zn result may possibly reflect the presence of Au mineralization.

Lead appears to be more useful as a potential pathfinder to epithermal mineralization than Cu or Zn. Unlike these two elements Pb occurs at concentration levels that exceed the 95th percentile threshold (of 9 ppm: Table 4) of the BC RGS stream sediment survey. Also, the higher Pb concentrations in the sediments from the Richman Claims are associated with elevated Au and/or higher As concentrations, although not always consistently with both (Table 2).

The following sample sites returned slightly to moderately anomalous results for certain elements and should be investigated further.

Sample SO7 contained elevated Au (48.2 ppb) in the -230 mesh fraction. This result is >16 times the median value and therefore is considered as anomalous. The leach analysis from the same sample was not relatively enriched in Au, instead it contained the median value of 0.7 ppb (Table 2). This may suggest that the anomalous Au is particulate in nature rather than hydromorphic, however, the Au may still be of secondary origin. The manganese concentration in SO7 was 1571 ppm in the -80 to 230 mesh fraction, which is elevated relative

to the other samples in the group (median concentration is 765 Mn in the -80 to 230 mesh fraction). Therefore, a portion of the Au may have precipitated from solution with Mn. Lead is also relatively higher (at >10 ppm) in SO7 compared to the other 9 samples and when compared to BC RGS stream survey data (Table 2, 4 and 5). Sample SO7 was taken on a northward flowing tributary originating from Bovine Lake. Both the tributary and lake reside in a prominent north-trending gulley, which may be a fault trace.

Sample SO3 returned slightly elevated Au results: 3.8 ppb in the -80 to 230 mesh and 4.3 ppb in the -230 mesh fraction. The Au concentration in the leach analysis was higher compared to the other samples. Also, Cu (at >30 ppm) , Zn (at > 94 ppm) , Pb (at > 16 ppm) were higher in SO3 than nearly all of the other samples (Table 2). The consistent relative elevation of several elements that are known to be present in epithermal-style deposits suggests that SO3 may be an anomalous sample worth following-up. The sample site for SO3 is in a small tributary flowing southwestward from the ridge of high ground where Lexington Resources identified several north and northeast trending argillically altered fault zones. Notably, examination of the 1:20,000 TRIM map reveals that the upper parts of this tributary drain a northeast-trending gulley in the ridge.

Sample SO6 is also worthy of follow-up. This sample contained relatively elevated concentrations of 3.5 ppb and 6.0 ppb Au in the -80 to 230 and -230 mesh fractions respectively. SO6 contained >49 ppm As in the two sediment fractions and 1898 ppb As in the leach analysis; the latter result was the highest of any of the ten samples. Also Hg, Cu and Pb concentrations are elevated well over the median concentration of the ten stream sediment samples. SO6 was collected from a southwest flowing tributary which headwaters on the edge of the west-northwest trending ridge on which Lexington Resources examined northwest-trending argillically-altered structures.

Sample SO9 also contained weakly elevated Au (5.1 ppb) in the -230 mesh fraction of the sediment. Mercury results are also elevated above median concentration in this sample. The SO9 sample site is located about 500 m downstream from the Geo Zone, which lies right at the headwaters of the creek. The Geo Zone has been briefly described above and given the fairly detailed work done on this zone already by Ballatar Explorations Ltd. (Hardy and van Wermeskerken, 1989) this area is of secondary priority.

CONCLUSIONS AND RECOMMENDATIONS

The pan concentrates taken in the two drainages did not yield any significant results. The highest Au value obtained was 2.7 ppb.

A moderately anomalous Au result of 48.2 ppb was found in the -230 mesh fraction of sample SO7. Slightly anomalous Au concentrations are present in the -230 mesh fraction of samples SO3, SO6 and SO9.

The finer size fraction (-230 mesh) of the stream sediments appears to give better contrast between anomalous versus background concentrations of elements such as Au, Ag, As, Sb, Hg, Ba, Cu, and Pb.

After reviewing the data it appears that the best pathfinder elements to potential epithermal Au mineralization on the Richman Claims are Au, As, and Pb. Hg is probably also useful but might require a different analytical method such as cold vapour AA to gain reliable results. Sample handling and preparation may also have to be modified to improve results for Hg.

Other elements that have a more restricted use or may be potentially useful with greater sample density are Cu, Zn, and perhaps Ba.

In keeping with the objectives outlined for this programme recommendations for future work are:

1) Three sample sites - SO7, SO3 and SO6 - returned moderately anomalous results for Au, As, and Pb. These sites and the corresponding drainages should be further investigated.
2) It would be desirable to resample all the 10 sites for heavy mineral concentrates. The pan concentrate samples collected in this programme may not have contained enough of the heavy mineral fraction in the stream sediment to yield meaningful Au values. Only one pan full of sediment was treated at each site. Therefore a second set of samples of 30 g final weight should be taken by panning several (~5 or more) panfulls to provide a higher proportion of heavy minerals for analysis. Also material for sample preparation should be taken from deeper in the stream bed. Future sampling at other sites in the area should then be sampled in a similar manner.

3) Additional silt and pan concentrate samples should be taken from the drainage on the Richman 1 Claim in an effort to close-up the sampling pattern. This would increase sampling resolution and increase confidence in the results. Two additional sites between SO1 and SO3 on the main channel of the creek would provide better coverage of this important drainage. One more could be added down stream from SO3 at the western boundary of the Richman 1 Claim. Additional samples should also be tried on the northern edge of the Richman 1 Claim in two northerly flowing drainages (see Figure 3, 4 etc.). These are likely without water in the summer but samples there might help to confirm Au mineralization in the northern section of the claim block.
4) Duplicate samples should be analyzed in order to provide greater confidence in the reproducibility of the results. Splits from 3 of the heavier samples collected (SO7, SO8 and SO9) have been saved and are available for this purpose. Alternatively a second field sample could be done on sample sites where <30 g of -80 to 230 or -230 material was obtained such as SO1 or SO8 (Appendix 2). This would serve to make these more representative and also provide a field replicate.
5) Two or three additional stream sediment samples should be collected from the area around Blackdome Mountain. One might be obtained from Churn Creek. Churn Creek is a large drainage extending northwards from the Yalakom area and curving eastwards north of Blackdome. Churn Creek flows into the Fraser River just south of the Gang Ranch Bridge. Sediment from Churn Creek might provide an homogenized background reference sample useful for comparison to more localized stream sediment sample results. Another reference sample could be collected from a stream draining ground known to be barren such as a drainage located within the younger Miocene Basalt. These stream sediment samples should then be processed and analyzed in a similar manner as those collected from the Richman Claims. The results would provide information as to the general background concentrations of pathfinder elements in streams draining the wider surrounding area and provide greater confidence in deciding what constitutes a truly anomalous concentration versus a background concentration.

COST OF THE STREAM SEDIMENT SAMPLING PROGRAM

Table 7. **Statement of Expenditures**

Chris Sebert		Days	Rate	Date			Amount
			$				$
Wage	GEOLOGIST	3	400	18-20/06			1200.00
includes travel and work days		3	400	29/06-02/07			1200.00
					km	rate/km	
Truck	mileage from Goldbridge to Blackdome Mountain and back				700.00	0.40	280.00
(2 trips)	mileage from Langley to Blackdome Mountain and back				962.00	0.40	384.80
Groceries				7/6/2003	42.99		
				18/06/03	22.05		
				28/06/2003	14.45		
				28/06/2003	103.94		183.43
Sundries and Exploration Supplies							78.83
					Total =		3327.06

Alex Boronowski		Days	Rate	Date			Amount
			$				$
Wage	GEOLOGIST	3	400	29/06-02/07			1200.00
includes travel and work days					km	rate/km	
Truck	North Vancouver to Blackdome Mountain and back				980.00	0.40	392.00
Telephone	long distance charges						5.00
					Total =		1597.00

Analytical Work

	No.	Cost/sample		Amount
		$		$
Silt Samples	10	62.30		623.00
	Batch charge for leach	100.00		100.00
Pan Conc.	10	8.50		85.00
			GST	56.56
			Total =	864.56

Report Writing

	Days	Rate	Amount
Chris Sebert	2	400	800.00
			$
		Programme Total =	**6588.62**

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Appendix 1: Stream Sample Descriptions: Richman 1 and 3 Claims

Appendix 1: **Stream Sample Descriptions: Richman 1 & 3 Claims**

		Silt g	Pan Conc. g
SO1	Plentiful mixed (till) overburden beside creek. Lithologies in creek include various types of volcanic and other varieties. Sample is medium brown in colour and poor in organic matter. Contains minor angular white quartz pebbles and grains.	335	35
SO2	Dark brown to black with abundant organic matter. Stream contains mixed lithologies including intermediate volcanics. Very little magnetite in panned concentrate. Difficult to gain -20 mesh silt fraction.	550	38
SO3	Dark brown and organic-rich. It appears as if cobbles and grains of mixed lithology are lying on top of organic and clay-rich substrate below stream bed. Very little magnetite in pan concentrate.	595	37
SO4	Taken within 8 m of SO3 a bit upstream from confluence of creeks. Creek contains cobbles and pebbles of mixed lithology. Sample is medium brown in colour and there is very little magnetite in pan concentrate.	635	36
SO5	Stream contains abundant bleached rhyolite cobbles and pebbles. Sample is medium to dark brown colour due to elevated organic content.	440	37
SO6	Stream contains cobbles and pebbles of mixed lithology but largely of volcanic origin. Minor quartz pebbles. Sample is medium brown in colour and is relatively poor in organic content.	1015	38
SO7	Stream contains mixed cobbles and pebbles but dominated by volcanic types. Sample is dark brown and contains organic material and abundant clay.	1790	38

Appendix 1: **Stream Sample Descriptions: Richman 1 & 3 Claims (cont'd)**

		Silt g	Pan Conc. g
SO8	Mixed lithologic content but largly volcanic in origin. Medium brown in colour with relatively low organic content.	1110	37
SO9	Stream contains abundant volcanic cobbles and pebbles largly of andesite to dacite composition. Minor quartz pebbles and cobbles with quartz veinlets. Sample has low organic content.	580	37
SO10	Similar to SO9 with lithology of clasts largely andesite to dacite. Minor white quartz pebbles and quartz-veined pebbles. Low magnetite content in pan concentrate. Low organic content. One tiny speck of Au observed in pan concentrate.	1160	35

* moist weight, which includes weight of bag: ~6 g for pan conc. and 38 g for silts.
Pan concentrates were panned down to ~30 g weight after collection

Appendix 2: Summary of Sample Treatment and Analytical Procedures:

Richman 1 and 3 Claims

Appendix 2:

Sample Treatment and Analytical Proceedures: Richman 1 and 3 Claims

Analyses by ACME Analytical Laboratories Ltd. at 852 E. Hastings St., Vancouver, B.C.

Silt Samples

Drying and Sieving

dry at 60 C ; sieving to -80 mesh

dry at 60 C ; sieving to -230 mesh

Analyses Performed

1) aqua regia digestion with ICP-MS finish on -80 to 230 mesh fraction*
2) aqua regia digestion with ICP-MS finish on -230 mesh fraction*
3) weak NaCN+NaOH leach on 1 g sample -80 to 230 mesh sample with ICP-MS finish

* Weights for individual samples given below

Pan Concentrates

Analysis

aqua regia digestion of the whole sample and ICP-MS finish*

* final weight of pan concentrate given in Appendix 3.

Detection Limits

(for selected elements)

ICP-MS

Au	0.2 ppb	Ca	0.01%	La	0.5 ppm	Sr	0.5 ppm
Ag	2 ppb	Cu	0.01 ppm	Mn	1 ppm	Te	0.02 ppm
As	0.1 ppm	Fe	0.01%	Pb	0.01 ppm	U	0.1ppm
Ba	0.5 ppm	Hg	5 ppb	Sb	0.02 ppm	Zn	0.1ppm

Weights of Splits Analyzed

	-80 to 230 mesh	-230 mesh
SO1	20	20
SO2	30	20
SO3	30	30
SO4	30	30
SO5	30	30
SO6	30	30
SO7	30	30
SO8	10	10
SO9	30	20
SO10	30	10

Appendix 3: Certificates of Analysis

ACME ANALYTICAL LABORATORIES LTD. 852 E. HASTINGS ST. VANCOUVER BC V6A 1R6 PHONE(604)253-3158 FAX(604)253-1716
(ISO 9002 Accredited Co.)

GEOCHEMICAL ANALYSIS CERTIFICATE

Sebert, Chris File # A302424

19616 - 80th Ave, Langley BC V2Y 1T8 Submitted by: Chris Sebert

SAMPLE#	Au* ppb	Sample gm
G-1	<.2	30.00
S01-PC	2.7	20.80
S02-PC	<.2	25.50
S03-PC	1.9	26.21
S04-PC	1.1	22.59
S05-PC	.5	23.23
S06-PC	.4	22.03
S07-PC	2.3	22.75
S08-PC	1.9	22.52
S09-PC	.9	22.31
S010-PC	<.2	23.91
STANDARD AU-R	480.0	30.00

AU* IGNITED, ACID LEACHED, ANALYZED BY ICP-MS. (TOTAL SAMPLES)
- SAMPLE TYPE: PAN CONC.

DATE RECEIVED: JUL 7 2003 **DATE REPORT MAILED:** Jul 18/2003 **SIGNED BY** .....D. TOYE, C.LEONG, J. WANG; CERTIFIED B.C. ASSAYERS

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Data L FA ___

ACME ANALYTICAL LABORATORIES LTD. 852 E. HASTINGS ST. VANCOUVER BC V6A 1R6 PHONE(604)253-3158 FAX(604)253-1716
(ISO 9002 Accredited Co.)

GEOCHEMICAL ANALYSIS CERTIFICATE

Sebert, Chris File # A302425 Page 1
19616 - 80th Ave, Langley BC V2Y 1T8 Submitted by: Chris Sebert

SAMPLE#	Mo ppm	Cu ppm	Pb ppm	Zn ppm	Ag ppb	Ni ppm	Co ppm	Mn ppm	Fe %	As ppm	U ppm	Au ppb	Th ppm	Sr ppm	Cd ppm	Sb ppm	Bi ppm	V ppm	Ca %	P %	La ppm	Cr ppm	Mg %	Ba ppm	Ti %	B ppm	Al %	Na %	K %	W ppm	Sc ppm	Tl ppm	S %	Hg ppb	Se ppm	Te ppm	Ga ppm	Sample gm
G-1	2.58	4.14	3.25	76.4	20	8.2	6.5	971	2.84	.6	1.8	<.2	4.7	132.5	.01	.03	.14	61	.74	.073	10.2	25.9	1.02	450.8	.231	2	2.01	.198	1.01	4.7	6.4	.59	.01	<5	.1	<.02	8.6	30
S01 -80+230	2.05	23.00	7.51	47.3	87	33.1	15.9	735	2.55	29.8	.8	1.5	1.4	57.5	.13	.68	.09	55	.49	.046	14.7	35.8	.64	101.5	.069	1	1.34	.025	.07	<.1	3.0	.07	.05	164	.3	.02	4.6	20
S02 -80+230	2.05	22.78	6.73	50.8	188	31.4	16.7	1163	2.95	10.4	2.5	1.5	1.2	94.2	.20	.24	.08	61	.94	.074	22.1	38.0	.57	129.7	.058	1	1.98	.021	.08	<.1	5.5	.08	.05	77	.5	<.02	5.9	30
S03 -80+230	.96	31.72	15.67	94.9	206	41.9	16.6	1036	3.21	10.9	2.2	3.8	1.7	68.0	.33	.39	.15	64	.85	.057	70.6	39.1	.71	133.4	.058	1	2.06	.016	.13	.1	6.1	.10	.01	53	.6	.02	6.5	30
S04 -80+230	1.26	15.14	6.48	53.2	33	30.1	12.3	571	2.39	14.3	.8	.5	1.9	60.3	.10	.27	.08	54	.49	.051	11.9	31.4	.64	87.4	.082	1	1.21	.024	.06	<.1	2.7	.05	<.01	49	.1	<.02	3.8	30
S05 -80+230	.60	11.03	7.12	47.6	24	18.4	9.1	391	1.91	8.8	.7	1.2	1.7	53.0	.10	.18	.07	47	.39	.047	9.8	21.2	.43	76.6	.075	1	.89	.019	.06	<.1	2.2	.05	<.01	54	<.1	<.02	3.2	30
S06 -80+230	2.91	31.72	10.79	54.0	139	36.4	16.8	794	2.90	49.6	.5	3.5	1.1	41.1	.15	1.14	.11	54	.46	.040	16.8	40.2	.72	82.0	.057	1	1.42	.014	.07	<.1	2.7	.07	<.01	138	.2	<.02	4.8	30
S07 -80+230	1.22	28.43	10.10	50.0	157	33.7	21.6	1571	3.39	14.7	1.2	.3	1.3	77.5	.21	.30	.14	88	.69	.075	20.1	45.0	.64	146.2	.064	1	2.20	.018	.08	<.1	5.7	.10	<.01	107	.2	.02	6.9	30
S08 -80+230	3.34	17.02	8.43	43.3	85	24.5	13.8	1169	2.50	38.5	1.1	.4	1.1	37.8	.11	.72	.08	48	.40	.038	12.3	27.9	.52	100.3	.064	1	1.26	.015	.06	<.1	2.8	.06	<.01	114	.1	.02	4.2	10
RE S08 -80+230	3.66	19.29	9.00	46.7	90	27.0	15.7	1158	2.54	39.8	1.1	1.0	1.2	38.2	.12	.77	.09	50	.41	.038	13.3	30.1	.53	106.2	.072	1	1.30	.015	.06	.1	2.6	.06	<.01	118	.2	<.02	4.5	10
S09 -80+230	1.23	24.42	7.49	53.1	118	32.2	11.3	687	2.49	5.4	.8	.4	1.0	72.2	.11	.41	.12	51	.63	.050	13.1	39.6	.68	191.9	.056	1	1.57	.021	.09	<.1	2.9	07	.03	108	.3	<.02	5.0	30
S010 -80+230	1.17	20.86	6.85	44.7	75	29.9	11.7	643	2.22	6.2	.7	.9	1.2	50.3	.08	.34	.10	42	.53	.030	14.3	32.4	.61	198.4	.030	<1	1.40	.015	.07	<.1	2.5	.06	<.01	112	.2	<.02	4.9	30
STANDARD DS5	12.35	137.65	23.88	139.2	265	24.2	12.4	771	2.90	17.4	6.2	41.4	2.7	47.3	5.64	3.52	5.88	58	.71	.092	11.4	179.6	.67	131.9	.099	19	2.00	.035	.13	5.1	3.6	.99	<.01	167	4.6	.82	6.5	30

GROUP 1F30 - 30.00 GM SAMPLE LEACHED WITH 180 ML 2-2-2 HCL-HNO3-H2O AT 95 DEG. C FOR ONE HOUR, DILUTED TO 600 ML, ANALYSED BY ICP/ES & MS.
UPPER LIMITS - AG, AU, HG, W, SE, TE, TL, GA, SN = 100 PPM; MO, CO, CD, SB, BI, TH, U, B = 2,000 PPM; CU, PB, ZN, NI, MN, AS, V, LA, CR = 10,000 PPM.
- SAMPLE TYPE: SILT Samples beginning 'RE' are Reruns and 'RRE' are Reject Reruns.

DATE RECEIVED: JUL 7 2003 DATE REPORT MAILED: July 29/03 SIGNED BY. C. Leong .D. TOYE, C.LEONG, J. WANG; CERTIFIED B.C. ASSAYERS

All results are considered the confidential property of the client. Acme assumes the liabilities for actual cost of the analysis only.

Data A FA

SAMPLE#	Mo ppm	Cu ppm	Pb ppm	Zn ppm	Ag ppb	Ni ppm	Co ppm	Mn ppm	Fe %	As ppm	U ppm	Au ppb	Th ppm	Sr ppm	Cd ppm	Sb ppm	Bi ppm	V ppm	Ca %	P %	La ppm	Cr ppm	Mg %	Ba ppm	Ti %	B ppm	Al %	Na %	K %	W ppm	Sc ppm	Tl ppm	S %	Hg ppb	Se ppm	Te ppm	Ga ppm	Sample gm
G-1	2.46	3.63	2.79	36.0	13	4.8	3.5	485	1.87	.5	2.1	.5	4.9	110.5	.01	.03	.14	36	.66	.087	10.5	22.8	.45	204.4	.117	1	1.26	.150	.46	4.8	4.3	.26	<.01	<5	<.1	<.02	4.2	30
S01 -230	3.38	34.35	11.44	64.2	161	43.7	21.4	1102	3.38	44.1	1.5	3.7	1.6	84.7	.20	.88	.13	68	.75	.066	23.5	50.1	.76	150.9	.076	1	1.97	.027	.10	.1	4.4	.08	<.01	168	.4	.02	5.8	20
S02 -230	2.74	31.55	8.95	69.3	263	44.5	22.5	1594	3.62	13.6	4.2	1.4	1.5	115.3	.34	.30	.12	72	1.22	.098	31.8	49.6	.70	181.3	.064	1	2.45	.027	.10	<.1	7.6	.08	.02	126	.7	.03	7.5	20
S03 -230	1.07	39.78	18.28	111.0	265	45.5	16.6	1111	3.38	11.6	3.6	4.3	1.7	84.2	.43	.42	.18	61	1.14	.073	106.0	43.8	.71	159.4	.053	2	2.49	.020	.15	<.1	7.3	.11	.03	98	1.3	.02	6.7	30
S04 -230	2.32	25.65	12.29	87.3	69	44.8	21.6	1007	3.45	27.4	1.8	1.5	2.5	88.6	.21	.41	.13	68	.77	.084	21.1	44.8	.79	169.9	.108	1	1.79	.042	.11	<.1	4.6	.08	<.01	120	.2	.02	5.9	30
S05 -230	1.28	18.61	14.34	82.9	72	28.6	15.0	834	2.97	19.0	2.1	1.4	2.4	84.7	.24	.29	.14	66	.73	.089	19.1	39.2	.60	129.1	.108	1	1.65	.029	.10	<.1	4.2	.08	<.01	55	.3	.02	5.2	30
S06 -230	3.86	42.01	15.02	66.0	242	44.3	18.6	902	3.20	59.0	.9	6.0	1.2	58.6	.21	1.47	.15	55	.66	.055	27.9	45.8	.74	125.7	.056	<1	1.84	.022	.09	.1	4.1	.09	.01	232	.4	.04	5.8	30
S07 -230	1.31	33.60	12.18	58.8	209	38.4	23.8	1712	3.71	17.0	1.6	48.2	1.4	102.8	.25	.31	.17	91	.88	.087	25.8	54.6	.73	180.0	.063	1	2.63	.022	.10	<.1	7.0	.11	.02	110	.4	.03	8.0	30
S08 -230	6.53	28.66	15.35	66.8	183	40.0	23.3	1928	3.84	72.4	2.4	.9	1.7	65.6	.19	1.22	.14	65	.67	.057	24.6	47.4	.74	180.3	.083	1	2.01	.025	.10	.2	4.2	.09	.02	216	.4	.02	6.0	10
RE S08 -230	6.31	30.30	14.58	62.8	177	39.1	23.6	1910	3.80	72.7	2.4	1.5	1.7	65.3	.20	1.21	.13	66	.67	.057	23.4	46.3	.73	175.1	.084	1	2.02	.024	.10	.2	4.3	.09	.03	238	.3	<.02	6.2	10
S09 -230	1.65	38.12	10.06	62.2	191	39.3	13.2	786	2.76	7.0	1.1	5.1	1.0	114.2	.21	.57	.16	50	.99	.072	18.8	46.1	.77	291.8	.048	1	2.11	.032	.12	<.1	4.0	.08	.05	179	.6	<.02	6.3	20
S010 -230	1.62	28.09	9.33	50.4	127	35.6	14.5	874	2.59	7.8	1.2	.7	1.3	81.4	.13	.42	.14	43	.86	.044	21.3	41.5	.67	292.3	.028	1	1.85	.025	.10	<.1	3.7	.08	.04	170	.5	<.02	5.8	10
STANDARD DS	12.35	137.65	23.88	139.2	265	24.2	12.4	771	2.90	17.4	6.2	41.4	2.7	47.3	5.64	3.52	5.88	58	.71	.092	11.4	179.6	.67	131.9	.099	19	2.00	.035	.13	5.1	3.6	.99	<.01	167	4.6	.82	6.5	30

Standard is STANDARD DS5. Samples beginning 'RE' are Reruns and 'RRE' are Reject Reruns.

All results are considered the confidential property of the client. Acme assumes the liabilities for actual cost of the analysis only.

Data A FA ___

ACME ANALYTICAL LABORATORIES LTD. 852 E. HASTINGS ST. VANCOUVER BC V6A 1R6 PHONE(604)253-3158 FAX(604)253-1716
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GEOCHEMICAL ANALYSIS CERTIFICATE

Sebert, Chris File # A302425 Page 1

19616 - 80th Ave, Langley BC V2Y 1T8 Submitted by: Chris Sebert

SAMPLE#	Au ppb	Ag ppb	As ppb	Al ppm	Ba ppm	Bi ppb	Br ppm	Ca ppm	Cl ppm	Co ppb	Cr ppm	Cu ppm	Fe ppm	Hg ppb	I ppm	K ppm	La ppb	Mg ppm	Mn ppm	Mo ppb	Ni ppm	P ppm	Pb ppb	Pd ppb	Sb ppb	Se ppm	Sr ppm	Te ppb	Th ppb	Ti ppm	U ppb	V ppm	W ppb	Zn ppm
G-1	<.1	8	29	78	.12	<5	<5	<5	<10	<2	.22	.26	11	<2	<1	63	<5	<5	.4	<5	<.02	<1	<10	10	<5	.43	1.72	<5	<5	1	<5	.09	20	.17
S01 -80+230	.8	89	1384	472	1.82	<5	<5	340	15	83	.42	3.90	116	15	1	27	56	28	2.2	163	1.37	12	124	15	19	.54	1.83	<5	17	5	36	1.10	<10	1.37
S02 -80+230	1.7	206	525	346	1.20	<5	<5	464	47	97	.42	9.71	155	15	3	20	79	34	5.3	263	4.26	21	164	32	20	.33	2.34	<5	14	6	265	1.69	19	2.15
S03 -80+230	2.5	190	322	456	1.44	<5	<5	421	34	116	.32	9.69	145	10	1	32	267	33	6.9	65	4.42	23	76	12	15	.91	1.82	24	18	5	156	1.23	14	4.12
S04 -80+230	.2	44	788	202	.56	<5	<5	320	<10	53	.14	1.50	72	3	<1	17	22	13	1.3	88	.71	7	156	13	11	.33	1.48	<5	6	3	27	.89	<10	1.33
S05 -80+230	.3	25	704	218	.39	<5	<5	195	32	65	.14	1.42	93	3	<1	15	27	16	1.7	34	.78	9	60	2	5	.25	.82	<5	8	4	34	1.03	14	1.48
S06 -80+230	.6	148	1898	488	2.20	<5	<5	295	<10	90	.30	6.16	117	19	1	33	82	25	2.2	110	1.83	14	68	11	36	.75	1.17	<5	18	4	31	.82	19	1.18
S07 -80+230	.7	160	500	287	.69	<5	<5	355	<10	64	.30	6.36	117	10	2	13	67	26	4.4	113	1.45	25	154	18	11	.65	1.75	<5	17	6	131	1.60	21	1.11
S08 -80+230	.5	90	2184	344	1.34	<5	<5	222	16	83	.15	4.06	113	27	1	20	42	21	3.0	431	1.27	9	50	20	17	.30	1.06	7	13	5	50	.99	<10	1.23
RE S08 -80+230	1.2	86	2150	327	1.37	<5	<5	251	<10	91	.15	4.27	120	21	1	20	48	18	2.7	454	1.15	8	90	19	15	.43	1.05	<5	15	5	48	1.03	13	1.32
S09 -80+230	.5	121	147	212	1.61	<5	<5	517	<10	37	.13	5.09	67	12	2	21	31	19	1.5	108	2.15	14	73	3	20	.73	3.27	<5	10	3	22	.43	10	2.62
S010 -80+230	1.1	77	223	227	1.26	<5	<5	83	<10	45	.09	4.02	79	16	1	19	28	18	1.3	78	1.22	6	201	24	13	.39	1.62	<5	9	4	17	.81	<10	1.15
STANDARD C60	223.1	308	1014	268	1.10	11	<5	108	105	30	.13	1.71	46	12	<1	79	16	15	1.9	631	.07	8	71	57	129	.31	1.73	<5	24	4	196	.28	797	1.10

1.00 GM SAMPLE CONTINUOUS ROLLING WITH .3% CYANIDE AND .1% NAOH FOR 1 HOUR, ANALYSED BY ICP-MS.
- SAMPLE TYPE: SILT Samples beginning 'RE' are Reruns and 'RRE' are Reject Reruns.

DATE RECEIVED: JUL 7 2003 DATE REPORT MAILED: July 29/03 SIGNED BY ..... D. TOYE, C.LEONG, J. WANG; CERTIFIED B.C. ASSAYERS

All results are considered the confidential property of the client. Acme assumes the liabilities for actual cost of the analysis only.

Data FA

Appendix 4: Statement of Qualification

STATEMENT OF QUALIFICATION

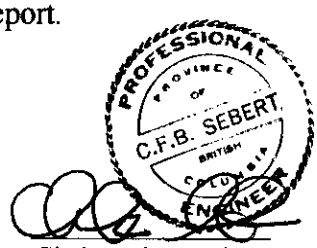
I, Christopher Sebert, residing at 19616-80th Ave, Langley, British Columbia declare:

1) I am a registered Geological Engineer in the province of British Columbia.

2) I hold a Bachelors and Masters degree in Geological Engineerng obtained at the University of British Columbia in 1987 and 1998 respectively.

3) I have worked in the mining industry as an exploration and mine geologist for 12 years.

4) I planned and supervised the work described in this report.



Christopher Sebert

Signed this day of September 5, 2003