Southern Rio Resources Ltd.

3Ts PROJECT

TAM PROPERTY

SUMMARY REPORT ON **TED VEIN** DIAMOND DRILLING PROGRAM **NOVEMBER 2004**

OMINECA MINING DIVISION, CENTRAL BRITISH COLUMBIA

JOH

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N.T.S. 93 F/3E, 2W

LATITUDE 53° 02' N, LONGITUDE 125° 01' W

Prepared for:

Gold Commissioner's Office Gold VANCOUVER. E.C. Southern Rio Resources Ltd. 1410 – 650 West Georgia Street VANCOUVER, British Columbia V6B 4N8

By:

David J. Pawliuk, P. Geo. Nanoose Geoservices

April 30, 2005

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SUMMARY

Diamond drilling was performed on the TAM 2 mineral claim, part of the 3Ts project, in central British Columbia. The drilling was carried out between November 16 and 26, 2004 on behalf of Southern Rio Resources Ltd. (Southern Rio) of Vancouver, British Columbia.

In addition, clearing of possible drill access roads for future drilling was carried out between February 23 and March 4, 2005.

The Tam property is located in central British Columbia, approximately 125 km southwest of the town of Vanderhoof. The property is comprised of 14 units in two mineral claims wholly owned by Southern Rio.

The 3Ts project area has been explored since 1994, when the discovery of gold-bearing quartz veins by the British Columbia Geological Survey was announced. Prospecting and geochemical sampling were followed by diamond drilling. A total of more than 16,000 metres of diamond drilling in 81 holes was completed on the Tsacha property, which adjoins the Tam claims. Most of this drilling tested the Tommy Vein, which contains an inferred resource of 470,000 tonnes at 7.40 g/t gold and 65.2 g/t silver, using a cut-off grade of 4 g/t gold.

Southern Rio staked the Tam property in October 2001. The company then optioned both the Tsacha property from TeckCominco Limited and the Taken property from Phelps Dodge in early 2002. Southern Rio carried out line-cutting, prospecting, resistivity surveying and an 11 hole (1,312.5 m) program of diamond drilling during 2002, and drilled an additional 1,541.8 m in 14 holes on the Tam property during early 2003. The structural setting, character and mineralogy of the mineralized veins were studied later in 2003. Southern Rio prospected the property during the fall of 2003. Southern Rio drilled 1,859.87 m in nine holes on the Tam property during November and December 2003.

The 3Ts project is located along the southern margin of the Nechako Uplift, a structurally raised block. This uplift provides a window through younger cover rocks to the underlying volcanic and sedimentary rocks of the Jurassic Hazelton and the Bowser Lake Groups. Cretaceous Capoose Batholith granitic rocks intrude these stratified rocks. Eocene volcanic rocks of the Ootsa Lake and Endako Groups locally overlie the older rocks. Younger basalt of the Chilcotin Group forms rare hill cappings within the Nechako Uplift.

The mineralized quartz-calcite veins within the property area strike north-northwesterly and have subvertical dips. These veins formed by open space filling along faults. Vein breccia fragments, crustiform banding and comb crystal structures indicate that the mineralized veins have an epithermal character and formed at a shallow depth.

The results of the recent diamond drilling program show that the mineralized Ted Vein structure is open at depth below a crosscutting microdiorite sill. The mineralized Tommy Vein also extends below this same sill approximately one km to the west, on the Tsacha property.

The Ted Vein structure should be further tested by diamond drilling below the microdiorite sill. Drilling should begin between hole TT-04-37 and the floor of the sill. Additional holes should be drilled both to the north and to the south of the first hole; these three holes will each be approximately 450 m in length in the first phase. Additional drill holes will be

needed to test the Ted Vein structure both along strike and down-dip of the phase one drill holes.

The cost of the recommended exploration is estimated to be \$ 213,000.00.

INTRODUCTION AND TERMS OF REFERENCE

This report describes diamond drilling performed on the TAM 2 mineral claim in central British Columbia. This work was carried out on behalf of Southern Rio Resources Ltd. (Southern Rio) of Vancouver, British Columbia.

Mr. Lindsay Bottomer, President of Southern Rio, contracted the writer to supervise the diamond drilling. The writer personally supervised and performed geological core logging, sampling and drill access road building on the property between November 16, 2004 and March 4, 2005.

The writer has read National Instrument 43 - 101 and Form 43 - 101F1, and this report has been prepared in compliance with that instrument and form. The writer fulfils the requirements to be a "qualified person" for the purposes of NI 43 - 101.

DISCLAIMER

No legal searches of mineral tenure ownership were made during the preparation of this report. The information regarding the mineral claims presented in Table 1 was provided by Southern Rio.

PROPERTY DESCRIPTION AND LOCATION

The TAM 2 mineral claim is located approximately 125 km southwest of the town of Vanderhoof in central British Columbia (Figure 1). The project area is centred at approximately 53° 02' N latitude and 125° 01' W longitude.

The Tam property is comprised of two contiguous grid-system mineral claims totalling 14 units. The mineral claims have not been legally surveyed. The property covers an area of approximately 350 hectares (Figure 2). The mineral claims comprising the property are listed in Table 1 below. The diamond drilling that is the subject of this technical report was performed within the TAM 2 mineral claim.

Table 1. Tam Property mineral claims

Claim Name	Tenure number	Units	Owner
TAM 1	390162	2	Southern Rio Resources Ltd.
TAM 2	390163	12	Southern Rio Resources Ltd.

The TAM 1 and TAM 2 mineral claims are 100 % owned by Southern Rio.

ACCESSIBILITY, CLIMATE, LOCAL RESOURCES, INFRASTRUCTURE AND PHYSIOGRAPHY

The Tam property is located in central British Columbia, approximately 125 km southwest of the town of Vanderhoof (Figure 1).

A network of logging roads provides access to the property. The Kenney Dam Road extends southwesterly from Vanderhoof for 25 km to the Kluskus Forest Service Road. The turnoff to the property, onto the Green 9000 Road, is southwest of the 161 km marker



Figure 1. Location Map



Figure 2. Claim Map

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along the Kluskus Road. Green 9000 Road extends 13 km southeastwards from the Kluskus Road into the north-central part of the property. At present (April 2005) access to the Tam property area is via an access road established by TeckCominco Limited during 1995; this road begins at about the 6.5 km point along the Green 9000 Road. Drill roads and bulldozer tracks lead from the end of this access road into the property area.

Alternative road access to the Tam property is from the end of the Green 9000 Road, but a bridge located at the 8 km point along the Green 9000 Road was removed during March, 2005 and has not yet (as of April 25, 2005) been replaced. Drill roads and bulldozer tracks lead from the end of the Green 9000 Road into the Ted Vein area.

Driving time from Vanderhoof to the property is 3.5 hours. Most of the trip is along the Kluskus Road, which is busy with heavy industrial traffic (logging trucks). Vehicles travelling the Kluskus Road should be radio-equipped, and should carry spare fuel.

The project area is within the Nechako Plateau of central British Columbia. Elevations in the property area range from about 1,050 metres to about 1,280 metres a.s.l. The terrain consists of rounded hills separated by swamps and small lakes. Pine, spruce, aspen and alder trees grow in the property area. Most of the pine trees are dead or dying because of the mountain pine beetle infestation. Thick glacial till covers the bedrock is most places, and outcrop exposure is sparse. Soils are poorly developed. Summer weather is cloudy with frequent showers, and winters are dry and cold.

HISTORY

Tipper (1963) geologically mapped the region at 1:253,440 scale for the Geological Survey of Canada. More recent, detailed mapping in the property area was carried out by Diakow, Webster, Levson and Giles (1994) of the British Columbia Geological Survey.

The property area has been explored since 1994, following the discovery of gold-bearing quartz veins by the British Columbia Geological Survey; these veins contained up to 3.7 g/t gold and up to 41.8 g/t silver (Diakow and Webster, 1994). Teck Corporation (now TeckCominco Limited) staked the occurrence during 1994 as the Tsacha property while Cogema Limited (Cogema) and Phelps Dodge Corporation of Canada (Phelps Dodge) staked adjoining ground to the east. Southern Rio restaked the Cogema property in 2001 as the Tam property, which is the subject of this technical report.

Prospecting and geochemical sampling within the Tam and Taken property areas by Phelps Dodge and Cogema during 1994 resulted in the discovery of the Mint Showing, containing 5,060 parts per billion (ppb) gold, and the Ted Showing with 1,490 ppb gold (Fox, 1996). Both of these showings are located on the Tam property.

Phelps Dodge optioned the Tam property from Cogema in 1995 and carried out prospecting, linecutting, geological mapping, trenching and soil sampling. Phelps Dodge drilled a total of 1,263.1 metres in 9 holes during 1996. Two of these holes tested the Mint Vein, and seven holes tested the Ted Vein. Hole 252-09 on the Ted Vein returned an intersection grading 8.88 g/t gold and 393.6 g/t silver across a true width of 6.46 m (Fox, 1996).

Phelps Dodge performed geochemical soil sampling, induced polarization surveying, rock trenching and excavated six test pits during 1998. The rock trenching was done in the

northern part of the Tam property, north of the Mint and Ted veins. Trench chip sampling results returned an average of 4.7 g/t silver, 680 parts per million (ppm) copper, 1,810 ppm lead and 637 ppm zinc across 29.5 metres. The mineralization exposed in the trench was thought to be characteristic of the upper levels of an epithermal vein system (Fox, 1999).

Southern Rio staked the Tam property in October 2001. The adjacent Tsacha property was optioned from TeckCominco Limited in early 2002. The adjacent Taken property was also optioned from Phelps Dodge in early 2002.

Southern Rio performed linecutting, resistivity surveying and diamond drilling of 360.9 metres in four holes on the Tam property during late 2002 (McIvor, 2002).

Southern Rio drilled a total of 1,541.8 m in fourteen holes on the Tam property during March and April 2003 (McIvor, 2003). This drilling was done on both the Ted Vein and the Mint Vein.

Rhys (2003) studied the structural setting and character of the mineralized veins within the Tsacha and Tam mineral claims, and Ross (2003) carried out petrographic studies of rock samples from the properties.

Southern Rio prospected the southeastern corner of the TAM 2 mineral claim, between the Ted Vein and Adrian Lake, during August and September 2003 (Pawliuk, 2003).

Southern Rio drilled a total of 1,859.87 m in nine holes on the Tam property during November and December 2003 (Pawliuk, 2004). This drilling was done to test the Ted Vein, mainly down-dip and to the south of earlier drill holes.

Wallis and Fier (2004) have calculated an inferred mineral resource of 273,800 tonnes grading 2.0 g/t gold and 133 g/t silver for the Ted Vein.

GEOLOGICAL SETTING

Regional Geology

The Tam property is located within the southern Nechako Plateau. Igneous and sedimentary rocks of Jurassic to Tertiary age underlie the region. These rocks form part of the Stikine Terrane. The geology of the project region is shown on Figure 3.

The property is within the Fawnie Creek map-area. This area is located along the southern margin of the Nechako Uplift, which is a northeast-trending, structurally raised block. The structural uplift provides a window through younger cover rocks to the underlying, regionally extensive, volcanic and sedimentary rocks of the Lower to Middle Jurassic Hazelton Group, and to the Late Jurassic Bowser Lake Group. These stratified rocks are intruded by granodiorite to granite of the Late Cretaceous Capoose Batholith. Eocene volcanic rocks of the Ootsa Lake and Endako Groups locally overlie the older rocks. Younger, Miocene olivine basalt of the Chilcotin Group forms rare cappings on hills within the Nechako Uplift.

Property Geology

Quartz- and feldspar-phyric rhyolite tuffs and flows of the Entiako Formation are locally the most abundant rock unit (Figure 4). The Entiako Formation is the lowermost rock unit

within the Hazelton Group. Naglico Formation andesite flows locally conformably overlie the Entiako Formation rocks. An augite porphyry plug occurs in the southern part of the Tam property. Late Cretaceous microdiorite sills and dykes intrude the above rocks.

MINERALIZATION

The Ted Vein is a north-northwesterly striking, subvertical quartz-calcite vein located within the central portion of the TAM 2 mineral claim (Figure 4). The vein formed by open space filling along a fault with small right-lateral displacement (Rhys, 2003). Local bends in the fault can create dilational jogs where the vein may widen to fill the resulting openings. Vein breccia fragments indicate that faulting occurred during vein formation. The vein breccia fragments, local crustiform banding and comb crystal structures indicate that the Ted Vein has an epithermal character, and formed at a shallow depth.



Figure 3. Regional Geology Map

The Ted Vein is mottled; its colour varies from pale grey to light greyish brown to creamy white to medium grey to greyish blue. The Ted Vein has been brecciated and rehealed; the vein material observed in drill cores appears to have undergone at least three or four such episodes of veining and brecciation.

Ted Vein quartz is locally finely banded on a millimetre scale. The vein usually contains from 10 to 40 % variably silicified and assimilated rhyolite porphyry fragments. The vein generally contains 5 to 10 % pale brown to brownish white to pale pink-orange calcite, often as late vein material cementing brecciated vein quartz fragments. Open cavities up to 20 x 8 mm across are lined by pale grey, subhedral quartz or calcite crystals; these cavities form up to 2 % of the rock volume. Some cavities lined by euhedral quartz crystals are infilled by later calcite. Pinkish orange rhodochrosite(?) forms about 1 % of the Ted Vein within drill hole TT-03-30 (Pawliuk, 2004).

The wallrock rhyolite quartz-feldspar porphyry (RQFP) is generally pervasively silicified, brecciated and healed by quartz-calcite veins and veinlets along both the upper and lower contacts with the Ted Vein, across widths of up to about 10 metres.

The Ted Vein usually contains about 0.5 % combined sulphide minerals. The most abundant sulphide is pyrite, which occurs mostly as finely disseminated, subhedral grains. Grey, sooty pyrite(?) forms hairline, irregular, stylolitic veinlets crosscutting vein quartz in drill hole TT-03-30 (Pawliuk, 2004). Variable amounts of chalcopyrite, blonde or grey sphalerite, dark bluish, metallic sulphosalt(?) and galena also occur within the Ted Vein. The chalcopyrite occurs as occasional, irregular, wispy masses that are generally rimmed by sulphosalt(?). Subhedral sphalerite blebs, usually 2 to 5 mm across, are also rimmed by sulphosalt(?). Sulphosalt(?) within the Ted Vein mostly occurs as rims around sulphide mineral grains, or as irregular, branching masses up to 3 or 4 mm across. Galena occurs as rare disseminated grains. Early vein quartz fragments within the Ted Vein breccia generally contain more abundant sulphosalt(?) and sulphide minerals than do later generations of vein quartz or calcite within the vein structure.

Bright red, dusty disseminated hematite locally occurs within the Ted Vein (Appendix B).

The Ted Vein structure within the southernmost two drill holes, TT-03-34 and TT-03-35, is a breccia with 70 to 85 % RQFP wallrock fragments cemented by 15 to 30 % vein quartz. Local, irregular, off-white to pale pinkish calcite veinlets up to 6 mm wide form up to 0.5 % of the rock volume. The Ted Vein breccia here has gradational contacts with the adjacent RQFP wallrock (Pawliuk, 2004).

The Ted Vein is offset by brittle, post-mineral faults that are marked on surface by prominent topographic lineaments and gullies. These post-mineral faults strike east-northeasterly (Figure 5).

DRILLING

One hole was drilled to a depth of 419.71 metres at the Ted Vein area between November 18 and 26, 2004. Falcon Drilling Ltd. of Prince George, British Columbia performed the drilling, using a custom-built diamond drill rig.

The drill cores are stored in labelled wooden boxes, stacked in a storage area on the property. The core boxes are covered with plywood sheeting, to protect them from rain and

snow.

The diamond drilling was supervised by the writer, assisted by Robert Weicker, P.Geo. and Daniel Meldrum, M.Sc. Drill hole orientation, depth and location are listed in the following table.

Table 2: Summary of November 2004 Diamond Drill Hole, TAM 2 mineral claim

<u>Hole No.</u>	Collar Location (U.T.M.)	<u>Azimuth/</u>	<u>Depth</u>
	Northing / Easting / elevation (m)	Inclination	(m)
TT-04-37	5876612 / 365021 / 1107	240º / 62º	419.71

Note: The hole location was surveyed by G.P.S., and by hip chain-and-compass from the collar of drill hole TT-03-17. Downhole surveys were carried out using both a Sperry Sun instrument and acid tests at the bottom of the hole

Drill hole TT-04-37

This hole was drilled to test the central Ted Vein below the crosscutting microdiorite sill, down-dip of an earlier intersection in drill hole TT-03-29, which assayed 3.84 g/t gold and 364.6 g/t silver across an estimated true width of 13.06 m (Pawliuk 2004 and Figures 5 and 7).

Drill hole TT-04-37 intersected rhyolite quartz feldspar porphyry (RQFP) from 8.72 to 108.20 m depth (Figure 6). A large fault was cut from 101.42 m to 105.38 m depth. Microdiorite sill was intersected from 108.20 m to 215.73 m depth. RQFP was intersected from 215.73 m to 384.23 m depth; this rock unit is crosscut by a few narrow, late igneous dykes.

Local, narrow quartz-calcite veins mineralized with 1 to 5 % sulphosalt and traces of pyrite crosscut the RQFP below about 344 m depth; most of these veins are 1 cm wide (Appendix B). The hole cut brecciated RQFP healed by vein quartz and calcite from 380.34 to 380.80 m depth; here the quartz veins are generally planar features and later(?) vein calcite mainly occurs as irregular masses that fill spaces within the rock.

The Ted Vein was intersected between 384.23 m and 401.23 m depth in hole TT-04-37. The upper vein contact is gradational across 5 to 10 cm. The vein overall contains about 10 to 15 % moderately to intensely silicified RQFP fragments. Quartz within the vein is often finely banded on a millimetre scale.

From 394.65 to 395.10 m depth the Ted Vein is mineralized with 30 % galena and minor sphalerite(?); the galena grains are up to 1 mm across. This interval also contains about 10 % dusty disseminated sulphosalt(?).

Dark grey to black sulphosalt(?) rims vein quartz breccia fragments at 392.28 m depth. Sulphosalt(?) also forms a late, crosscutting veinlet at 387.97 m depth, which indicates that there have been at least two episodes of sulphosalt(?) mineralization within the Ted Vein (Appendix B). Hematite locally forms up to about 5 % of the Ted Vein, as from 399.80 m to 399.90 m depth; there are usually trace amounts of hematite within the Ted Vein in hole TT-04-37. No pyrite was seen within the vein (Appendix B).

The Ted Vein intercept from 388.3 m to 399.3 m depth assayed 3.74 g/t gold and 59.3 g/t silver across an estimated true width of 6.5 m (Appendices A, B).

RQFP was intersected from 401.23 m to the bottom of the hole at 419.71 m depth; this rock contains local, narrow, crosscutting quartz-calcite veins up to 4 cm wide. These veins are mineralized with traces to 1 % sulphosalt and traces of pyrite. Chalcopyrite and galena blebs were seen along the margins of a quartz-calcite vein 1.5 cm wide at 411.13 m to 411.56 m depth; this vein is oriented at 15^o to the core axis (Appendix B). The interval from 411.13 m to 411.56 m depth assayed 0.61 g/t gold, 171 g/t silver and 2.27 % lead across 0.43 m (Appendix A).

SAMPLING METHOD AND APPROACH

The sampling method and approach consisted of logging the core, during which intervals for sampling and assaying would be marked out on the core in the core boxes. The selected intervals generally included all intervals containing significant (> 5%) quartz and/or carbonate veining, visible sulphides, and altered wallrocks for several metres on either side of the main vein intervals. Vein material was generally sampled in one metre intervals, with variations to allow for the occurrence of major structures, or lithologic contacts. Wallrock samples outside of the vein zones were sometimes sampled over lengths of up to two metres.

SAMPLE PREPARATION, ANALYSES AND SECURITY

The drill core samples were geologically logged by Daniel Meldrum, M.Sc. or by the writer. Selected intervals of core were then split lengthwise using a Longyear wheel-type core splitter, or, for the Ted Vein interval, were sawn lengthwise with a rock saw. The core samples were bagged, and then shipped via bus to Eco Tech Laboratory Ltd. in Kamloops, British Columbia.

The samples were assayed for gold and silver by geochemical fire assay. Subsamples of 30 gm were analyzed.

Assay certificates form Appendix A. A geological log of the diamond drill core is presented in Appendix B.

DATA VERIFICATION

One blank sample was inserted into the sample stream from hole TT-04-37. The assay for this blank is reported with the regular assays in Appendices A and B.

Laboratory results show that the blank sample contains 0.05 gold and 1.00 g/t silver (Appendices A, B), therefore slight contamination within the laboratory is indicated by the blank sample results. The blank sample was inserted into the sample stream between samples assaying 7.76 g/t and 5.80 g/t gold, and 131.0 g/t and 73.0 g/t silver (Appendices A, B).

MINERAL RESERVE AND MINERAL RESOURCE ESTIMATES

Wallis and Fier (2004) have calculated an inferred mineral resource of 273,800 tonnes grading 2.0 g/t gold and 133 g/t silver for the Ted Vein, using a cutoff grade of 4.0 g/t gold equivalent for mineralisation above the microdiorite sill. Gold equivalent values were determined using a silver:gold ratio of 60:1, assuming 100 % recovery.

No revisions have been made to their resource estimate.

INTERPRETATION AND CONCLUSIONS

The results of the recent diamond drilling program show that the mineralized Ted Vein structure is open at depth below a crosscutting microdiorite sill. The mineralized Tommy Vein also extends below this same sill approximately one km to the west, on the Tsacha property.

RECOMMENDATIONS

The Ted Vein structure should be tested by diamond drilling below the microdiorite sill. Drilling should begin between hole TT-04-37 and the floor of the sill. Additional holes should be drilled both to the north and to the south of the first hole; these three holes will each be approximately 450 m in length in the first phase. Additional drill holes will be needed to test the Ted Vein structure both along strike and down-dip of the phase one drill holes.

The cost of the recommended exploration is \$ 213,00.00. A cost estimate for the recommended program is outlined below.

Cost Estimate Diamond drilling: 1,350 m @ \$ 125.00 Assays Engineering, supervision, reporting)/m	\$ 168,750.00 \$ 5,000.00 <u>\$ 20,000.00</u>
	Subtotal	\$ 193,750.00
	Contingency (10 %)	<u>\$ 19,250.00</u>
	Total	\$ 213,000.00

Respectfully submitted,

David J. Pawliuk, P. Geo.



I, David J. Pawliuk, P.Geo. do hereby certify that:

1. I am currently employed as a consulting geologist by:

Nanoose Geoservices 2960 Anchor Way Nanoose Bay, British Columbia, Canada V9P 9G2

- 2. I graduated with a degree of Bachelor of Science with Specialization in Geology from the University of Alberta in 1975.
- I am a member of the Association of Professional Engineers and Geoscientists of British Columbia, and of the Association of Professional Engineers, Geologists and Geophysicists of Alberta.
- 4. I have worked as a geologist for more than 20 years since my graduation from university.
- 5. I have read the definition of "qualified person" set out in National Instrument 43-101 ("NI 43-101") and certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfil the requirements to be a "qualified person" for the purposes of NI 43-101.
- 6. I am responsible for the preparation of this Technical Report. I was on-site at the Tam property from November 16 to 19, 2004 and from February 23 to March 5, 2005, and performed and supervised the geological core logging, sampling and drill access road building.
- 7. I have had prior involvement with the property that is the subject of the Technical Report. I performed and supervised prospecting, geological mapping and geochemical rock sampling on the Tam property between August 18 and September 15, 2003. I performed and supervised geological core logging and sampling on the Tam property from November 11 to December 16, 2003.
- 8. I am not aware of any material fact or material change with respect to the subject matter of the Technical Report that is not reflected in the Technical Report, the omission to disclose which makes the Technical Report misleading.
- I am not independent of the issuer applying all of the tests in section 1.5 of National Instrument 43-101. I expect to receive options in the securities of Southern Rio Resources Ltd.
- 10. I have read National Instrument 43-101 and Form 43-101F1, and the Technical Report has been prepared in compliance with that instrument and form.
- 11. I consent to the filing of the technical report with any stock exchange and other regulatory authority and any publication by them, including electronic publication in the company public files on their websites accessible by the public, of the Technical Report.

Dated this $\frac{30}{20}$ Day of April, 2005.

Signature of Qualified Person

PAWLIUK 4 V I D

Print name of Qualified Person

PAWLIUK 15.

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STATEMENT OF EXPENDITURES

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	\$ 68,094.64
Management Fees	\$ 4,454.79
Travel	\$ 643.43
Professional Fees	\$ 2,680.30
Camp (food, cook, fuel, rent)	\$ 3,373.04
Field Supplies	\$ 902.04
Analytical	\$ 606.48
Diamond Drilling	\$ 55,434.56

ACME ANALYTICAL LABORATORIES LTD. 852 E. HASTINGS ST. VANCOUVER BC V6A 1R6 PHONE(604)253-3158 FAX(604)253-1716 Southern Rio Resources Ltd. PROJECT 3T'S

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Acme file # A4	407500	Received	: DEC 6	2004 *	 * 23 samples in this disk file.
ELEMENT Ag	J**	Au**	Sampl	е	
SAMPLES gr	n/mt	gm/mt	kg		
Si <2) •	<.01	-		
11751	4	0.2	2 (0.66	
11752	45	1.72	2 2	2.24	
11753	7	0.26	6 3	2.05	
11754	3	0.14	4 :	2.64	
11755	23	0.4	4	1.9	
11756	50	3.41	1 · ·	1.77	
11757	22	2.27	7 2	2.13	
11758	49	4.17	7 2	2.32	
11759	9	0.33	3 2	2.08	
11760	18	1.6	5 2	2.37	
11761	19	1.14	4 ·	1.98	
11762	84	1.0	5 2	2.35	
RE 11762	80	1.04	4 -		
RRE 11762	82				
11763	56			2.19	
11764	143			2.42	
11765	131			2.07	
11766 <2		0.05		1.66	
11767	73			2.39	
11768	14			2.14	
11769	5			0.99	
11770	10			0.88	
STANDAR	155	3.34	4 -		

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Acme file # /			ed: DEC 6		samples ir	this disk	file.				
ELEMENT		Au**	Sample				, mo.				
SAMPLES	gm/mt	gm/mt	kg								
SI	<2	<.01	-	From	То	Interval	Est TW	Au g/t	Aa a/t	Ag=Au/60	Au Eav.
11751	- 4				384.30	0.25	0.15	0.20	4.00	0.07	0.27
	•	• • • •	0.00	001.00	001100	0.20	00	••		0.07	0.21
11752	45	1.72	2.24	384.30	385.30	1.00		1.72	45.00	0.75	2.47
11753	7	0.26	2.05	385.30	386.30	1.00		0.26	7.00	0.12	0.38
11754	3	0.14	2.64	386.30	387.30	1.00		0.14	3.00	0.05	0.19
11755	23	0.4	1.9	387.30	388.30	1.00		0.40	23.00	0.38	0.78
				384.30	388.30	4.00	2.35	0.63	19.50	0.33	0.96
11756	50	3.41	1.77	388.30	389.30	1.00		3.41	50.00	0.83	4.24
11757	22	2.27	2.13	389.30	390.30	1.00		2.27	22.00	0.37	2.64
11758	49	4.17	2.32	390.30	<u>39</u> 1.30	1.00	_	4.17	49.00	0.82	4.99
				388.30	391.30	3.00	1.76	3.28	40.33	0.67	3.96
11759	9	0.33	2.08	391.30	392.30	1.00		0.33	9.00	0.15	0.48
11760	18	1.65	2.37	392.30	393.30	1.00		1.65	18.00	0.30	1.95
11761	19	1.14	1.98	393.30	394.30	1.00		1.14	19.00	0.32	1.46
11762	84	1.05	2.35	394.30	395.30	1.00		1.01	82.00	1.37	2.38
RE 11762	80	1.04	-								
RRE 11762	82	0.94	-								
				391.30	395.30	4.00	2.35	1.03	32.00	0.53	1.57
11763	56	4.33	2.19	395.30	396.30	1.00		4.33	56.00	0.93	5.26
11764	143	9.32	2.42	396.30	397.30	1.00		9.32	143.00	2.38	11.70
11765	131	7.76	2.07	397.30	398.30	1.00		7.76	131.00	2.18	9.94
11766	<2	0.05	1.66	Blank				0.05	<2		
11767	. 73	5.8	2.39	398.30	399.30	1.00		5.80	73.00	1.22	7.02
				395.30	399.30	4.00	2.35	6.80	100.75	1.68	8.48
				388.30	399.30	11.00	6.47	3.74	59.27	0.99	4.73
11768	14	1.23	2.14	399.30	400.30	1.00		1.23	14.00	0.23	1.46
				<u>384.30</u>	400.30	16.00	9.41	2.75	41.38	0.69	3.44
11769	5			400.30	401.10	0.80		0.13	5.00	0.08	0.21
11770	10	0.06	0.88	401.10	401.70	0.60		0.06	10.00	0.17	0.23
STANDARD	155	3.34	-			0.00		3.34	155.00	2.58	5.92
						0.00		0.00	0.00	0.00	0.00
						0.00		0.00	0.00	0.00	0.00
						0.00		0.00	0.00	0.00	0.00

	T .			Description
Hole	Type	From 0.00	To (m) 8.72	DescriptionCASING
TT04-37			0.12	
TT04-37		0.00		-62
TT04-37				
TT04-37		0.00		5876612
TT04-37		0.00		365021
TT04-37	Major	8.72	108.20	Rhyolite quartz feldspar porphyry; maroon brown laminated lapilli tuff with say 5-10% with lenticular lapilli sized clasts in medium grained ash tuff matrix. Well-developed banding/stratification throughout @ 55° to core axis. Pale creamy brown bleach patches with faint margins up to 8 cm across say 5% rock unit weakly bleached light brown, often as bleached envelopes along discontinuous hairline veinlets, subparallel to laminated. < 0.5% grayish white calcite within irregular randomly oriented veins up to 15 mm wide; feldspar grains soft, moderately altered to greenish sericite or chlorite; 1-2% subhedral quartz crystals to 4 mm across; rare trace very finely disseminated pyrite. Generally hard competent rock unit. Limonitic iron oxide along fracture surfaces.
TT04-37	Minor	43.00	43.20	5% rock is black calcite blebs and thin (1 mm) veins cutting core @ many angles 2-5% finely disseminated pyrite << 1 mm within calcite.
TT04-37	Minor	46.05	46.30	2 discontinuous 1 cm wide dark bands of black calcite cut core and a high angle (~75° to core axis) between the Black rock and wall rock is a thin (1-2 mm wide) band of white calcite; veins are broken by small faults which disrupt or offset the veins.
TT04-37	Minor	48.55	55.35	brecciated rock, broken core; core is very broken with red-Rusty to white clay gouge a few mms too few cms thick; section is also auto-brecciated with small 2-5 mm blocks of wall rock healed by black, white and creamy calcite; locally 5-10% rock as leached (calcite?) Leaving open voids 3-4 mms across.
TT04-37	Minor	55.35	60.00	brecciated rock; autobrecciated healed by carbonate; 10-20% rock is calcite; Rhyolite quartz feldspar porphyry is brick red to brownish; calcite is cream to pale greenish; locally strong zonation occurs; hematite (br. red) in the center; white calcite and greenish chlorite at boundary of wall rock other places the hematite occurs at the wall rock with chlorite mixed with calcite in core; a few small 1-2 cm blebs of black calcite occur one has a 3 mm cube of pyrite within it; in general pyrite is sparse trace - < 1%.
TT04-37	Minor	60.00	63.45	as above (55.35-60 .00m) except no significant brecciation.
TT04-37		63.45	71.00	brownish Rhyolite quartz feldspar porphyry; no brecciation many small veins (one every 5 cm) 2-3 mms across mostly carbonate tend to cut core nearly perpendicular to core axis (80°) trace amount of hematite and chlorite; rare veins of black calcite; veins become more chlorite and hematite rich towards bottom of interval.
TT04-37	Minor	66.48	66.60	hard bleached section; rock is pale nearly white, very hard, slightly Rusty, no fizz with acid
TT04-37		71.00	77.27	interval composed of 5% calcite veins often cut core axis at low angle (0-20°) most veins and < 1 cm wide with ~one veins/meter (love hematite/chlorite bearing calcite) many veins are zoned white-clearer calcite middle; chlorite and bright red hematite next to creamy calcite @ boundary with wall rock. Locally clear calcite not present; locally chlorite missing. Very little to no pyrite occurs in veins or country rock; one vein @ 75.80 m has black calcite in center white calcite; rimmed by chlorite with creamy calcite next to wall rock with only a few specs of hematite.
TT04-37	Minor	77.27	83.60	relatively fresh brown-red brown Rhyolite quartz feldspar porphyry with little veining.

Hole	Туре	From	To (m)	Description
TT04-37	Minor	83.60	84.43	Rhyolite quartz feldspar porphyry with ~10% vein material mostly creamy white calcite with minor amounts of black calcite, red hematite chlorite, quartz (creamy white) and hematite occurs as blebs up to 6 mm in size but mostly as thin rinds near calcite veins; the quartz vein material occurs on the outer margins of one veins (white calcite center hematite rind and quartz then country rock) vein material isn't indiscreet veins that cut core rather irregularly shaped
				blebs that are laterally discontinuous; very little to no pyrite.
TT04-37	Minor	84.43	101.42	relatively fresh Rhyolite quartz feldspar porphyry; rarer < 1-2 cm vein / m; mostly calcite with minor amount of smoky gray-clearer quartz plus hematite very minor chlorite and trace to no pyrite; below 100 m are to creamy white calcite veins ~45° to core axis; 1-2 cms wide with thin 1 mm chlorite rims.
TT04-37	acid	100		60°.
TT04-37	Minor	101.42	105.38	gouge; very soft rock (deforms with fingers) to paste like rock; 15+% calcite; chlorite coding some surfaces; protolith on discernible most of core is whitish to pale green color; near bottom of interval rock is reddish (hematite?) 2 calcite rich veins (< 1 cm) cut core @ ~45° to core axis.
TT04-37	Minor	105.30	108.20	altered Rhyolite quartz feldspar porphyry pinkish orange to pale pinkish grey color; 15-25% calcite mostly creamy white heels on a brecciated rock; locally 3-5% of rock is fine grain black material (most likely find grained black carbonate (occurs more in lower half of interval); rock is very broken but core is competent (i.e. not mushy like 101.42-105.38 m) lower section is darker in color and lacks pinkish tones in upper one half; lower contact in broken core but it appears as though the contact is quite sharp and cut core axis ~75-80°.
TT04-37	Major	108.20	215.73	SILL; Microdiorite Dyke; medium-dark green to grayish; fine grain <1 mm; salt and pepper colors under 16X hand lense; can discern black-and-white minerals most likely plag and hornblend? But too small to be confident; very monotonous rock unit; small (mostly <1 cm many 2-3 mms) veins of white to creamy white quartz and carbonate veins cut core @ many angles; these vary from 10 / m to 1 / m; some have minor amount of chlorite; some calcite veins have a yellowish residue after reaction with HCl. 2-3% of rock is < 1-3 mm white specs these tend to be roundish to equant a few are rectangular (possibly anhedral plag?) Rare pyrite is seen in core < 1 mm in size (0-trace amount).
TT04-37	Minor	157.15	157.30	broken core (~45° to core axis) and minor fault gouge.
TT04-37	Minor	172.54	174.15	broken core more intense @ top (0.5cm) gradually increase in size of blocks towards bottom of interval (2-3 cms size blocks).
TT04-37	Minor	176	176.35	broken core (2-3 cm blocks)
TT04-37	Minor	177.40	179.67	variably broken core; several intervals of moderately broken core 6-7cm chunks interrupted by zone of more intensely broken core (1-2 cm blocks).
TT04-37	Minor	182.20	182.60	very broken core < 1 cm chunks.
TT04-37		210.49	210.58	pinkish-white quartz carbonate vein; quarttz is smoky gray 40% with pinkish-white carbonate at contact with wall rock ~45° to core axis. Open spaces ~20-25% up to 1.5 cm across with terminating quartz crystals; contact with wall rock is irregular.
TT04-37		215.73	384.23	Rhyolite quartz feldspar porphyry; very similar to Rhyolite quartz feldspar porphyry described @ top of hole; upper contact gredational over 10 cm it appears as though this???? Wall rock has been digested by sill. contact is ~?° to core axis. White specs seemed more???
TT04-37	Minor	221	221.10	black calcite tension gashes with hematite 3-4mm wide parallel to core axis.
TT04-37	acid	230.73		58.5°

Hole	Туре	From	To (m)	Description
TT04-37	Minor	234.70	235.59	fine grain dark green-black dyke; very calcareous (fizz with HCI); upper contact sharp ~50° to core axis; lower contact broken core but ~50° to core axis.
TT04-37	Minor	235.59	237.1	very fractured/brecciated Rhyolite quartz feldspar porphyry mainly healed by calcite cement; many brx fragments <1 cm across; many 2-5mm carbonate veinlets run ~parallel to core axis (15% rock volume); color ranges from brick red- gray; lower contact ~65° to core axis and is sharp ~planar.
TT04-37	Minor	237.10	237.87	medium green fine grained mafic dyke; upper contact ~laminated (chilled margins?) looking, parallel to contact; 1 mm-1 cm wide bands of lighter/darker green rock; this continues from top of interval to 237.59; at 237.59 m dyke becomes slightly darker and more massive possibly a 2nd pulse of dyke material? Lower contact ~45° small (2 cm) blebs of dyke are located between brecciated pieces of Rhyolite quartz feldspar porphyry.
TT04-37	Minor	237.87	242.93	brick red Rhyolite quartz feldspar porphyry; 2-5%?
TT04-37		242.93	246.22	mafic dyke; dark green to mostly black significant (five% +?) calcite in matrix; upper 1/2 of interval has numerous wispy anastomosing calcite +/- quartz veins (up to 1 cm of mostly 1-2 mms) these veins are cut by small discrete faults (unable to determine sense or displacement) tend to cut core @ 70-90°
TT04-37	Minor	243.76	243.88	quartz plus carbonate veins cut core @ 70° to core axis; banded appearance with shadows of xenoliths 3-4cms across, several open spaces within vein up to 2 cm across; calcite is creamy white (90%) vein quartz (10%) white to glassy clear; below this vein there is relatively little vein (1% rock) mostly 1 mm wide veinlets cutting core @ many angles; minor-trace amounts of hematite in these veins (dusty pink color) upper contact ~75° to core axis, digestive irregular; lower contact sharp planar 85° to core axis.
TT04-37	Minor	246.22	261.58	Rhyolite quartz feldspar porphyry; brick red, competent very much like top of hole; here there are several of 2-3 cm wide bands of finer grained lighter colored rock possibly a large clast? Most bands are ~parallel to layering; a few bands are less flat more oval in shape; each band looks similar to Rhyolite quartz feldspar porphyry and one can see ghosts and/or fragments of Rhyolite quartz feldspar porphyry within band. Several small (< 1 cm) white quartz veins/blebs occur in it in the interval; layering 75-80° to core axis; veins cut core at many angles. no sulfides noted.
TT04-37	Minor	261.58	272.34	typical Rhyolite quartz feldspar porphyry; feldspar grain slightly larger 15-20% rock is made up of feldspars ~5mm in size; this interval is relatively broken core; several intervals of 1-2 m of 2-6 cm chunks of core; quartz veins rare, say 1/m and thin 2-3 mm; 3 small (< 1 cm) carbonate veins in lowermost 2m of interval; no sulfides noted in veins.
TT04-37		272.34	279.74	interval has significant (10-15%) veins many run ~parallel to core axis; most range from 1-3 cms in true widths, some pure calcite others pure quartz others quartz core with calcite next to wall rock; <<1 mm-1 mm pyrite is observed within veins and in wall rock ; some veins have trace gray blue mineral (sulfosalt?) fine grained; quartz is glassy smoky gray, carbonate is creamy white to locally pinkish (very light, perhaps some hematite?) At least two faults can be observed in the lower one half of interval these cut core axis at a high angle 75-80°; they offset quartz +/- carbonate veins.
TT04-37	Minor	279.74	306.93	Rhyolite quartz feldspar porphyry; brick red to brownish at bottom of interval; plagioclase crystals mostly whitish to pale green becoming pinkish toward bottom of interval (kspar alteration?) Several quartz and/or carbonate veins in this section, fewer towards bottom of interval, banding @ ~85° to core axis. Most veins are white to pinkish, creamy carbonate plus smoky gray quartz.

Hole	Туре	From	To (m)	Description
TT04-37	Point	280.68		carbonate vein plus chlorite; 1 cm; 25° to core axis.
TT04-37	Point	282.95		2 - 1 cm quartz plus carbonate veins ; 30° to core axis; trace pyrite.
TT04-37	acid	285.6		58°.
TT04-37	Point	289.13		fault offsets quartz vein 85° to core axis.
TT04-37	Point	289.90		guartz +carbonate + chorite + trace pyrite + sphalerite + sulfosalt? 1 cm wide; 20° to core axis
TT04-37	Point	290.86		1-3 cm wide quartz + carbonate vein + trace pyrite + sulfosalt? 20° to core axis, thin 1 mm wide dark gray selveges to vein possibly sulfosalt.
TT04-37	Minor	306.93	316.08	Rhyolite quartz feldspar porphyry; dark brown with pinkish feldspars very few veins; several large 3-6 cm class (xenoliths? within Rhyolite quartz feldspar porphyry
TT04-37	Point	308.70	1	pinkish vein (no reaction to HCI / soft, scratched by nail) zeolite? Trace sulfosalt? + pyrite; 1 cm wide 20° to core axis.
TT04-37	Point	310.53	1	1 cm vein wall rock-quartz-calcite-quartz-wall rock; trace pyrite plus sulfosalt? 50° to core axis.
TT04-37		312.90		5 cm thick dyke? Dark gray-black fine grain rock fairly hard (but scratches with nail) cuts @ a 70° to core axis.
TT04-37	Minor	316.08	360.23	Rhyolite quartz feldspar porphyry; feldspars tend to be pinkish; rock is mainly brick red in color lighter and darker locally; several veins within this interval has significant dark gray-black fine grain sulfides (sulfosalt?) along with trace pyrite and sphalerite details to follow.
TT04-37	Minor	319.52	320.00	1 cm quartz vein ~parallel to core axis; Rhyolite quartz feldspar porphyry auto brecciated healed by quartz veins (smoky glasslike) then re-brecciated and healed by milky white quartz; proximal to vein is 3 mm wide zone of kspar? alteration.
TT04-37	Point	321.28		1 cm quartz vein exhibits banding 1-2 mms scale; smoky-white quartz; trace-1% dots of (< 1-1 mm) sulfosalt? + pyrite (cubes < 1-1 mm); sulfide seems to parallel banding (i.e. several dots in a row along 1 band) 50° to core axis.
TT04-37	Point	321.92	+	45° to core axis 1 cm wide quartz vein thin 1 mm selveges with black fine grain sulfosalt?.
TT04-37		324.37		two X 1 cm quartz veins 20° to core axis; quartz is smoky gray up to 10% very fine grain sulfosalt mostly as 3-4 mm rim between quartz and wall rock; quartz is banded on mm scale; a small fault offsets vein a few mms; open spaces along fault filled with pinkish vein material that heals auto brecciated Rhyolite quartz feldspar porphyry, few cms down hole of quartz vein; pink material no fizz with HCl and can be scratched (zeolite?) And vein ~parallel to quartz vein; no mineralization in pink vein.
TT04-37	Point	326.23		~1 cm or quartz vein 40° to core axis; smoky gray 3-5% very fine grain sulfosalt as 1 mm rind within quartz vein and at contact between vein and wall rock thin (1-2 mm) vein of pink zeolite? Is center of 1 part of vein; a few specs of < 1 mm pyrite near vein wall rock contact.
TT04-37	Minor	326.70	327.20	1 cm? vein of quartz + minor pink zeolite? cuts parallel to core axis a few specs of pyrite (nail-trace) 5-10% zeolite? heals brecciated quartz vein; 1% sulfosalt? along vein/wall rock boundary 1 mm rind; several large 4-6cm clasts within Rhyolite quartz feldspar porphyry of more brownish volcanic within brick red Rhyolite quartz feldspar porphyry in this portion of core.
TT04-37	Minor	329.40	331.20	quartz +/- zeolite? vein @ 3-7 mm parallel to core axis; 1-2% sulfosalt? as thin rinds; trace pyrite (< 1 mm cubes); quartz is smoky gray; zeolite? is pinkish.

Hole	Туре	From	To (m)	Description
TT04-37	Minor	331.20	332.67	thin 2-8mm quartz veins run parallel to core axis; 1-2% sulfosalt as thin rinds along wall rock-vein contact, trace disseminated pyrite.
TT04-37	Point	334.27		smoky gray guartz vein; trace 1 mm specs of honey yellow sphalerite? in wall rock; trace pyrite <<1mm specs;
		004.27		possible sulfosalt disseminated in quartz vein material, core is somewhat broken difficult to determine orientation and
				width of vein likely more ameoid shaped than a planar vein.
TT04-37	Point	334.62		1 cm wide quartz vein ~80° to core axis; banded; ~1 mm specs of sulfosalt in core of vein and along wall rock-vein
		001101		contact; vein is offset a few mms by a fault ~parallel to core axis.
TT04-37	Point	336		10 cm zone of auto breccia healed by white calcite.
TT04-37		336.40	336.85	zone of vein and auto breccia (lower 1/2) healed by quartz carbonate vein; wall rock-quartz-calcite (middle); trace
			1	pyrite and sulfosalt as <1-1mm cubes and specs.
TT04-37	Point	337.85		1 cm quartz vein; 25° to core axis; smoky gray quartz, 3-5% sulfosalt as 1 mm specs throughout, trace-1% pyrite as
				< 1-1 mm specs/cubes.
TT04-37	Point	338.55		2 cm quartz vein 35° to core axis, smoky gray-white quartz; 30% sulfosalt as 1 mm specs and as dark-black streaks -
				bands within veins up to 4 mm thick; trace-1% pyrite as <1mm cubes/specs. Downhole 15 cm is similar vein but 0.5
ļ	1		}	cm wide offset ~1cm by a fault parallel to core axis and fracture is filled by pale pink zeolite? A few grains of dark
				sulfide may be galena?
TT04-37	Point	341.61		1.2 cm thick quartz/zeolite vein 30° to core axis. 50% smoky gray quartz 50% pale pink zeolite?; tr1% sulfosalt as 1
				mm specs; a few specs of pyrite (trace) and a few specs of galena? <1mm; all sulfides are within a quartz.
TT04-37	Point	344.25		1 cm quartz vein 60° to core axis; banded with smoky gray quartz 25-30% of vein is sulfosalt; as black blothches
				specs and streaks; a few grains of galena? and a few <<1mm specs of pyrite.
TT04-37	Point	346.30		1cm wide quartz vein; 30° to core axis; smoky gray, tr-1% sulfosalt; brecciated and healed by white calcite
				stockwork.
TT04-37	acid	346.56		58°.
TT04-37	Minor	349.41	349.61	zone of auto breccia; smoky gray quartz vein ~3 cm wide brecciated (along with wall rock) and healed by creamy
				white carbonate; this interval 30% quartz; 30% carbonate 40% wall rock; trace sulfosalt as tiny specs <<1mm.
TT04-37	Point	349.81		1-1 .5 cm wide quartz veins; smoky gray; trace specs of sulfosalt; small amount of calcite quartz vein cut by small
ļ				fault ~75° to core axis offset quartz filled with white calcite; large 0.5 X 1.5 cm open space in core.
TT04-37	Point	352.37		1.5 cm wide quartz vein 85° to core axis; banded quartz; White-smoky gray; 5% sulfosalt occurs as a small 1-2mm
				blebs along 1 band; a few specs of pyrite.
TT04-37	Point	352.4		quartz vein nearly at right angles to vein mentioned above (352.37 m) vein is thinner (0.5cm) and has less sulfosalt
	1			(1-2%) as small blebs.
TT04-37	Point	354.24		4 cm wide quartz vein brecciated and healed by calcite; quartz smoky gray; calcite white; 3-5% sulfosalt locally
				calcite has dusty pink hue (hematite?) Sulfosalt occurs as 1-2mm veinlets and as fracture fill in the small patches;
			1	brecciation makes orientation of vein difficult to ascertain likely 20° to core axis, trace pyrite as < 1 mm specs.
TT04-37	Point	354.90		1cm smoky gray quartz vein, 30° to core axis cut by thin <1cm pinkish calcite vein ~parallel to quartz vein; traces
				sulfosalt and pyrite.

Hole	Туре	From	To (m)	Description
TT04-37	Point	356.85		2 quartz veins smoky gray each 1 cm wide ~75° to core axis; tr-1% of pyrite and sulfosalt; pyrite as 1mm clots of tiny specs of pyrite and sulfosalt as 1-2mm wide rinds of dark gray to black portion of vein.
TT04-37	Point	358.30		1 cm wide quartz carbonate vein 20° to core axis; 80% banded smoky quartz; 20% pinkish calcite (fizz with HCI)
		000.00		trace sulfosalt and pyrite; vein cut by fault ~parallel to core axis.
TT04-37	Point	358.80		1cm smoky quartz vein 45° to core axis; brecciated and healed by calcite; 1-2% sulfosalt; usually as 1-4mm clots between breccia fragments; trace pyrite.
TT04-37	Point	359.36		1 cm wide quartz vein 40° to core axis; 25-30% sulfosalt black dusty vein seems to healed brecciated quartz vein; trace calcite
TT04-37	Point	364.15		1 cm wide smoky gray quartz vein; 15° to core axis; trace-1% sulfosalt as < 1-1mm specs within vein; vein and wall rock are brecciated and healed by calcite (white) veins are offset by faults 20° to core axis and nearly perpendicular to vein.
TT04-37	Minor	366.25	366.55	three quartz carbonate veins 50,40,30° to core axis each is 1-1.5 cm wide the middle vein has 40% sulfosalt top 1 has 20%, lowermost trace-1%. Each has veinlets up to 4 mm wide locally cross cutting quartz vein @ right angles; trace pyrite.
TT04-37	Minor	367.36	367.56	zone of multiple 0.5 cm quartz carbonate veins sinuous but roughly running 20° to core axis; smoky quartz on outside with thin 1-2 mm wedges of calcite locally in middle of vein; trace-5% (depending on vein) sulfosalt as small 1 2mm blebs in guartz veins.
TT04-37	Minor	369.95	370.50	several quartz carbonate veins trace-1% sulfosalt as black 1mm specs and locally blebs 1X5 mm.
TT04-37	Minor	370.94	372.64	auto breccia 85% wall rock; 10% quartz; 5% calcite; trace pyrite; 1-2% sulfosalt; concentration of sulfosalt is highest at bottom of interval where locally may be 10-15% sulfosalt as dusty disseminated grains within quartz material; trace pyrite as <1 mm cubes.
TT04-37	Point	372.75		2 cm wide 30° to core axis; quartz vein milky white; trace-1% sulfosalt as 1 mm specs and thin discontinuous (1cm) smears.
TT04-37	Point	373.99		2cm wide pale smoky white quartz vein with minor sulfosalt (< 1%); 22° to core axis; a 1 cm thick carbonate filled fracture cuts core ~parallel to core axis in the center of the vein is a 1 mm thick vein of sulfosalt which is very contorted ~stylitic in nature.
TT04-37	Point	375.54		4cm wide quartz carbonate amethyst vein; 20° to core axis; banded vein (2-4mm scale) central bands have purple cast to them (amethyst?); 85% quartz, 5% amethyst, 10% calcite (pale pink) trace of dust sized sulfosalt in quartz, 1-2 specs of pyrite observed.
TT04-37	Minor	375.80	376.75	3 quartz carbonate amethyst veins ~45-50° to core axis; +/- parallel; top-bottom of 1,3,1cm wide. Top vein has 1-2% sulfosalt as 1 mm specs in vein closest to wall rock; middle vein is 95% smoky quartz, 5% creamy white carbonate, trace sulfosalt as dusty specs; bottom vein is 20% amethyst, 75% quartz, 5% carbonate,amethyst is proximal to wall rock - quartz in middle - small amount of calcite heals brecciated vein material; volcanic fragment 4cms in size within this interval.
TT04-37	Minor	377.24	377.76	brecciated wall rock mostly (70%?) quartz + 30% calcite heals brecciated rock (core is very competent) most fracture filling material is 1-4mms wide, rarely 6-7 mm wide; many orientations.
TT04-37	Minor	377.83	378.42	three quartz carbonate veins 60, 30, 40° to core axis (top-bottom) trace sulfosalt as <1mm specs each vein <1cm wide.

Hole	Туре	From	To (m)	Description
TT04-37		379.00		quartz carbonate vein 30° to core axis ; 2cm wide 2-3% sulfosalt as 1-2mm specs and as dark cloudy blothches 1-2 cms across; 80% quartz 20% calcite, calcite seems to fill small tension gashes/small 1 mm fractures many perpendicular to guartz vein.
TT04-37	Minor	380.34	380.80	numerous veins / brecciation healing vein material; cut core at many angles. In general quartz vein seemto be planar-gently curved; calcite seems to be more infilling breccia and as such very irregularly shaped; mostly trace amounts of sulfosalt as 1 mm specs or clusters of <<1mm and a few specs of <<1mm pyrite. The very lowest vein in this interval has 5-10% sulfosalt; vein is 0.5 cm wide; sulfosalt as fine dust and as 1mm specs in quartz material. This vein cuts core @ 10-15° to core axis, trace-1% pyrite in this vein.
TT04-37	Point	382.18		1cm wide quartz (70%) carbonate (30%) vein 35° to core axis; no sulfides observed, smoky quartz, creamy calcite heals brecciated quartz vein.
TT04-37	Point	382.50		3 cm wide quartz vein 35° to core axis well banded on a few mm scale; locally a dusty red color in quartz (hematite?) Trace sulfosalt as <<1mm specs; vein is cut by several small faults that offset vein a few mms?- cm?; fractures are filled with white calcite.
TT04-37	Point	382.77		1 cm wide smoky gray quartz vein (heals brecciated wall rock) 30° to core axis; trace sulfosalt as 1 mm specs, trace hematite as 2-3 mm clots of dusty red material; vein is offset by several small (<<1mm) fractures filled with quartz/calcite.
TT04-37	Point	383.30		1.5 cm wide quartz vein 30° to core axis; trace-1% sulfosalt as 1 mm specs; small 1 mm calcite veins cut quartz vein ~right angles; quartz vein is offset several cms by a fracture; vein is well banded on mm several mm scale.
TT04-37	Minor	384.00	384.23	rock is fractured by quartz (smoky gray) interval is 70% quartz 25% wall rock 5% calcite; trace sulfosalt (1 mm specs); trace-Nil pyrite (<<1 mm specs), rock is brecciated.
TT04-37	Major	384.23	401.23	VEIN - several sheets sent to vancouver
TT04-37		401.23	419.71	Rhyolite quartz feldspar porphyry much like described 8.72-108.20m here rock is brownish to brownish green; ~20% slightly altered plagioclase; 1-2% rock is large (2+ cm) angular clasts of volcanic rock some are flattened but many are subequant in shape.
TT04-37	Minor	402.23	403.23	50% quartz vein 15% calcite; trace-1% sulfosalt as 1-2mms specks/blebs; trace pyrite as 1 mm clusters of specs often proximal to sulfosalt; 35% wall rock; quartz runs parallel to core axis.
TT04-37	Point	404.21		3 cm wide quartz carbonate vein 35° to core axis; 85% quartz (smoky gray) 15% creamy white calcite that cuts quartz vein; trace sulfosalt and pyrite both as <1mm specs.
TT04-37	Point	404.93		2 cm wide quartz vein (smoky gray) 35° to core axis; trace sulfosalt and trace pyrite mostly proximal to wall rock.
TT04-37	Point	408.82		3 cm wide quartz vein/breccia zone; 75% quartz, 20% wall rock, 5% calcite, trace sulfosalt and pyrite. (1mm specs), a few slivers (1 mm wide) of green vitreous mineral (chlorite?)
TT04-37	Minor	411.13	411.56	15° to core axis ~1.5 cm wide quartz vein with dusty black halo of sulfosalt 0.5-1 cm wide and significant chalcopyrite and galena. Over all interval portions are 65-70% wall rock; 25% quartz, 2-3% sulfosalt, 1-2% chalcopyrite, 1% galena; chalcopyrite and galena are found proximal to wall rock/quartz contact galena is fairly uniform, chalcopyrite is more blebby with clusters of 2-3 mm blebs then 1 cm of no chalcopyrite then another cluster of blebs.

Hole	Туре	From	To (m)	Description
TT04-37	Point	411.92	1	4 cm wide quartz vein 65° to core axis; 98% guartz, 2% calcite, trace-1% sulfosalt as thin smear 1 mm thick vein at
	· .	_		quartz wall rock contact, trace pyrite proximal to sulfosalt.
TT04-37	acid	419.71		59°.
TT04-37	Point	419.71		end of hole.

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TED VEIN; upper contact somewhat arbitrary over 5-10cm rapid increase in vein quantity and frequency from 384.13 - 384.23m. At 384.23m nearly 95% vein material; veins (discrete quartz) 20-30° to core axis; white to smoky grey quartz veins makes up 70-80% of interval; silicified wallrock (RQFP) makes up 2-3% of interval; carbonate (creamy white to locally pinkish due to trace-1% dusty hematite?) heals brecciated quartz makes up 5-10% of rock; diffuse irregular clouds to locally well-defined vein like zones of dark grey to black sulfosalt? may make up 2-3% of a unit. Locally (387.97m) one such vein of sulfosalt? cuts core ~20° to core axis. This vein crosscuts quartz and carbonate suggesting this is the latest phase of mineralization observed in this hole. Note that sulfosalt also occurs as rims surrounding quartz breccia fragments (392.28 m) as such, there have been two mineralizing events involving sulfosalt; lower contact is somewhat graditional with decreasing intensity of brecciation a few% chlorite located in diffuse pale-medium green blotches at contact. Locally

65% quartz (locally well banded) white smoky gray; 20% pinkish-white carbonate; 15% silicified RQFP; trace-1% hematite (discoloring carbonate); 2-3% sulfosalt as discontinuous blebs up to 2 mm wide and up to 2 cm long; carbonate heals brecciated quartz vein. much like 384.23-385.23m but less pinkish carbonate more ccreamy white; one 3cm chunk has an odd yellowish cast to rock; I believe the carbonate is yellow but difficult to say; some excellent quartz banding is observed.

much like 385.23-386.23m 1 discrete sulfosalt vein located at bottom 5 cm of interval \sim 5 mm wide cuts core @ 20° to axis, somewhat anastomosing and discontinuous. Quartz fragments locally quite small 2-3mm many \sim 1 cm in size; little to no hematite.

well-developed banding (contorted) in quartz, locally sulfosalt dust rims chalcedonic banding, within a few centimeters a discrete vein of sulfosalt occurs 2cm wide; 65% quartz; 30% carbonate (creamy white) 5% sulfosalt; trace-1% hematite.

this interval contains ~5-7% pink carbonate veins and vein fragments (brecciated) one vein is @ 70° to core axis; 2-3% dusty sulfosalt mostly in 1cm wide bands band; 20%? carbonate (total pink + creamy white); 70% guartz (smoky gray) locally well banded.

70% quartz (rarely well banded) breccia healed by 20% carbonate (pink-white to locally yellow brown); 2-3% sulfosalt more as 1-2mm specs than discrete veins or bands; 1-2% silicified RQFP?.

85% white to smoky gray quartz variably brecciated healed by 10-15% pale pink carbonate; 2-3% sulfosalt as 1-2mm specs or clusters of specs; only rare banding observed in quartz clasts. Trace-1% hematite discolors carbonate).

75% white to smoky gray quartz, locally banded; 5% pinkish carbonate; 1-2% pale-medium green (chlorite?) as ameboid blebs up to 1cm across; 1-2% hematite slightly discoloring carbonate but also as discrete blebs of medium red dusty material @ vein margins; 5% peach colored carbonate very distinct color different than the hematite discolored carbonate, this section of peach carbonate is finely brecciated (less than 1-2mm scale) mostly this occurs in a 5-7cm zone ~ vein gradational @ top but a sharp slightly irregular lower contact ~90° to core axis. This "vein" is in turn intersected by a more standard looking pink carbonate vein ~1cm wide ~parallel to core axis.

65-70% quartz (locally well banded); 25% pinkish carbonate; trace-1% greenish smears of chlorite?; 2-3% sulfosalt as blackish rims/halos and as dusty areas within quartz fragments and as faint poorly developed veinlets 1mm wide cutting core @ many angles.

50% quartz (white-smoky gray to locally pale greenish? discolored by chlorite?); 20% very silicified RQFP fragments only one 2cm fragment is relatively unaltered, the rest of this 20% is variably silicified rock mostly recognizable from a faint dappled appearance; 15% pinkish to white carbonate; 1-2% sulfosalt mostly as specs and ameboid shaped clusters of specs up to a few cm's across; 1% hematite discoloring carbonate, a few areas (1-2cm across) of medium reddish concentrations of hematite dust in lower 1/2 of interval.

30-35% galena/sphalerite difficult to spot sphalerite (finer grained) but most likely present; galena dominant and can be as observed in 1mm euhedral crystals; fragments of nearly 100% galena/sphalerite are brecciated and healed by white carbonate; 30% quartz (white smoky gray to locally pale green chlorite? altered) locally well banded often associated with a rim of 1-2mm dots of sulfosalt; (which makes up 2% of interval) there may be sulfosalt with galena/sphalerite as well impossible to estimate quantity. 30% white to pale pink carbonate healing quartz and sulfide fragments a few places it is medium red with significant hematite but this only occurs in a few 1-2cm patches.

75% quartz, white to pale smoky gray; 5-10% silicified RQFP angular to rounded; gray to tan RQFP mostly in upper half of interval; 10-15% white to pale pink carbonate healing quartz fragments; 1-2% sulfosalt as specs (1-3mm) and as dusty gray rinds surrounding quartz fragments.

75% quartz, white to pale smoky gray; 10-15% pale pink carbonate; 2-3% sulfosalt as disseminated dust sized particles within carbonate and as rinds around quartz fragments. 1% chlorite? (pale green) proximal to sulfosalt rinds at bottom of interval.

75+% quartz locally very slightly purplish (amethyst?); 15+% pinkish carbonate; 2-3% sulfosalt specs / rinds; 1% RQFP altered nearly beyond recognition (silicified).

60-65% quartz, white to very pale smoky gray, very little banding; 15% silicified RQFP (nearly beyond recognition); healed by 10% white (milky) carbonate; breccia can be quite fine 1-2mm grains to course 5-10cm fragments; 1-2% sulfosalt as specs, clusters of specs and locally irregular smears (~vein like) of specs.

35% silicified RQFP, pale gray, mottled, subtle difference between this and quartz vein; 35-40% quartz vein, white to pale smoky gray to medium red (hematite) locally well banded. 2-3% hematite as dusty red diffuse ameboid shapes several cms by 1cm, locally shapes are somewhat vein like; 1-2% sulfosalt as dusty gray areas to clusters of specs to thin veins 1mm wide; 20% creamy white carbonate heals brecciated quartz / RQFP.

75% quartz, locally banded, white to rarely pinkish (hematite discolored); 15% carbonate, white, creamy to pale yellow, locally "wormy" looking; trace-1% hematite as thin-2mm rinds in and around quartz bands and thin 1-2mm discontinuous smears ~vein like; 10% silicified RQFP (at bottom of interval).

TT 04-37

Major 384.23 401.23 TED VEIN: upper contact somewhat arbitrary over 5-10cm rapid increase in vein quantity and frequency from 384.13 - 384.23m. At 384.23m nearly 95% vein material; veins (discrete quartz) 20-30° to core axis; white to smoky grey quartz veins makes up 70-80% of interval; silicified wallrock (RQFP) makes up 2-3% of interval; carbonate (creamy white to locally pinkish due to trace-1% dusty hematite?) healing brecciated guartz makes up 5-10% of rock; diffuse the regular clouds to locally well-defined vein link to those of dark great blacks of us all? May make up 2-3% of a unit. At one place (387.97 m) 1 such vein notes of the salt? Cuts core ~20° to core axis. This vein crosscuts guartz and carbonate suggesting this is the latest phase of mineralization observed in this hole. The salt also occurs as rooms surrounding quartz fracture fragments (392.28 m) and such there have been to mineralizing events involving solve the salt; lower contact is somewhat traditional with a decreasing intensity of brecciation a few% chlorite located in diffuse pale-medium green blotches at contact. Locally glean a/sphalerite comprises 30% of rock unit IE 394.65-395.10 m) this federal has 1 mm sized crystals of glean and sphalerite difficult to spot finer grained 10%? Find grains of the salt locally hematite makes up ~five% of rock (i.e. 399.80 - 399.90 m) traced pyrite as rare specs of mostly less than 1 mm grains scattered around core. Locally quartz is banded on millimeter scale (grey-white).

Minor 384.23 385.23 65% quartz (locally will banded) white smoky gray; 20% pinkish-white carbonate; 15% silicified RQFP; trace-one% hematite (discovering carbonate); 2-3% solve the salt discontinuous blebs up to 2 mm wide and up to 2 cm long carbonate heels brecciated quartz vein.

Minor 385.23 386.23 much like 384.23-385.23 but less pinkish carbonate more can you white 1 cm chunk has an odd yellowish cast to rock I believe the carbonate is yellow but difficult to say some excellent quartz banding.

Minor 386.23 387.23 much like 385.23-3 86.23 m 1 discrete soft solve vein located at bottom 5 cm of interval ~5 mm wide cut @ 20° to core axis somewhat anastomosing and discontinuous quartz fragments locally quite small 2-3 millimeters many ~1 cm in size; little to no hematite.

Minor 387.23 388.23 well-developed banding (contorted) in quartz locally so for salt DOS residents calcit on the banding, within a few centimeters a discrete vein of solve the salt occurs 2 cm wide 65% quartz; 30% carbonate (creamy white) five% salt scratch that solve the salt; trace-one% hematite.

Minor 388.23 389.23 this interval contains ~5-7% paint carbonate veins and vein fragments (brecciated one vein is @ 70° to core axis 2-3% salt for salt dusty mostly at 1 cm wide bands and; 20%? Carbonate (total pink + creamy white) 70% quartz (smoky gray) to locally will banded.

Minor 389.23 390.23 70% quartz (rarely will banded) breccia brecciated healed by 20% carbonate (pink-white to locally yellow brown); 2-3% salt for salt more as 1-2 millimeter specs then discrete veins or bands; 1-2% silicified RQFP's setback?.

Minor 390.23 391.23 five% white to smoky gray quartz very ugly brecciated healed by a 10-15% pale paint carbonate; 2-3% so for salt as 1-2 millimeter specs were clusters of specs only rare banding observed in quartz class. Trace-one% hematite scholars carbonate).

Minor 391.23 three and 92.2375% white to smoky gray quartz locally banded; five% pinkish carbonate; 1-2% pale-medium green (chlorite? Cuts) as nebulous blebs up to one centers across; 1-2% so for salt slightly discoloring carbonate but also has discrete blebs of medium red dusty material @ vein margins. 5% peach a colored carbonate very distinct color different than the hematite discolored carbonate, this section of peach carbonate is finally brecciated (less than 1-2 millimeter scale) mostly this so occurs in a 5-7 centimeters of ~and vein gradational @ top by a sharp slightly irregular lower contact ~90°to core axis. This "vein" is intern's intersected by a more standard looking pink carbonate main ~1 cm wide ~parallel to core axis.

Minor 392.23 393.23 65-70% quartz (locally will banded); 25% pinkish carbonate; trace-one% greenish smears of chlorite?; 2-3% so for salt as blackish rains/halos and as dusty areas within quartz fragments and as faint poorly developed in vein lets 1 mm wide @ many angles.

Minor 393.23 394.23 50% quartz (white-smoky gray to locally pale greenish? Discolored by chlorite?; 20% very silicified RQFP fragments only one small to centimeter fragment is relatively unaltered, the rest of this 20% in variable a silicified rock mostly recognizable from the faint dabbled appearance; 15% pinkish to white carbonate; 1-2% so for salt mostly as specs and in the white shapes scratch that and the point shaped clusters of specs up to a few centimeters across; one% hematite discoloring carbonate, a few areas (1-2 centers across the medium reddish concentrations of hematite dust in lower one half of interval.

Minor 394.3 395.3 30-35% glean a/sphalerite difficult to spot sphalerite (finer grained?) But most likely present; glean a dominant and can be as you're in 1 mm subhedral-the mutual crystals; fragments of nearly 100% glean a/sphalerite are brecciated and healed by white carbonate; 30% quartz white smoky gray to locally pale green (chlorite? Locally will banded often associated with a rim of 1-2 millimeter dogs of solve the salt?; which makes up to% of intervals; there may be so for salt with galena/sphalerite as well in possible to estimate quantity. 30% white to pale paint carbonate human quartz and sulfide fragments a few places it is medium red with significant hematite but this only occurs in a few 1-2 centimeter patches.

Minor 395.3 396.3 semifinal% quartz, white to pale smoky gray; 5-10% silicified RQFP angular to rounded; gray to 10 RQFP mostly in upper half of interval; 10-15% white to pale paint carbonate human quartz fragments; one-to% so for salt as specs (1-3 millimeters) and as dusty gray Ryan's surrounding quartz fragments.

Minor 396.3 397.3 semifinal% quartz, white to pale smoky gray; 10-15% pale paint carbonate; 2-3% so for salt as disseminated dust sized particles within carbonate and as Ryan's around quartz fragments. One% chlorite? (Pale green) proximal to so for salt Ryan's at bottom of interval.

Minor 397.3 398.3 75+% quartz locally very slightly purplish (amethyst?); 15 plus% pinkish carbonate; 2-3% sulfosalt specs / rinds; 1% RQFP altered nearly beyond recognition (silicified) and

Minor 390.30 399.30 60-65% quartz, white to very pale smoky gray, very little banding; 15% silicified RQFP (nearly beyond recognition); healed by 10% white (milky) carbonate red check can be quite find 1-2 non-meter grains to course 5-10cm fragments; 1-2% so for sold as specs, clusters of specs and locally irregular smears (~vein like) of specs.

Minor 399.30 400.30 35% silicified RQFP pale gray mottled subtle difference in this and full loan quartz vein; 35-40% quartz vein white to pale smoky gray to medium red (hematite, dusty (scratch that) locally well banded. 2-3% hematite as dusty red diffuse in the point shapes several centimeters by 1cm, locally shapes are somewhat vein like; 1-2% so for sold as dusty gray areas to clusters of specs to thin vein was 1mm wide scrutiny: 20% white creamy carbonate heels brecciated RQFP/RQFP 20% creamy white carbonate healed brecciated quartz/RQFP.

Minor 400.3 401.23 75% quartz locally banded, white to rarely pinkish (hematite discolored); 15% carbonate, white creamy to pale yellow, locally "wormy" looking; trace-1% hematite thin-2 mm Ryan's in and around quartz bands and thin 1-2mm discontinuous smears ~vein like; 10% silicified RQFP (at bottom of interval).









