**Assessment Report**

***on the***

**2004 Exploration Program**
**Grid, Geophysics, Trenching, Diamond Drilling**



# IXL PROPERTY

# FRANKLIN CAMP

NTS 82E/9

Lat: 49° 32' 30'' N Long: 118° 24' 45'' W
*(at approximate centre of property)*

Greenwood Mining Division
British Columbia, Canada

Prepared for:

| Cougar Minerals Corp. | and | New Cantech Ventures Inc. |
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**VOLUME 2 - APPENDICES 4 & 5 + MAPS**

# APPENDIX 4

## Petrographic Report

PETROGRAPHIC REPORT ON 9 THIN SECTIONS FROM IXL PROPERTY

Sept. 10, 2004.

SUMMARY:

The protoliths for this suite of relatively strongly altered suite of rocks are varied, possibly including tuffaceous volcanic rocks (mainly crystal tuff or crystal-lithic tuff?) of about andesitic composition, and porphyritic, high-level intrusive rocks of about hornblende quartz diorite or rarely latite. The former includes samples 94-5c 426' and possibly 94-7c 312', plus 03-1 7.2m and 14.85m; the latter includes samples 94-6c 277', plus 03-1 29.8m, 37.8m and 64.6m. The last sample, from 03-1 100m, could be a strongly altered, fine pebble conglomerate or tuff-breccia, or a hydrothermal pebble breccia.

Alteration in these samples is strong to intense, locally destroying or severely modifying the original texture of the rock. It is mainly propylitic or transitional to phyllic in character, typified by the mineral assemblage chlorite-epidote-albite-quartz-calcite-pyrite-sphene/rutile, but locally significant quartz-epidote-chlorite-magnetite-minor chalcopyrite veining, and traces of K-feldspar (possibly locally secondary) suggest that the observed assemblage could in part overprint a former potassic assemblage. In one sample (94-7c 312') the assemblage seems to indicate a skarny or calc-silicate altered rock (epidote-quartz-garnet-carbonate-chlorite-pyrite-hematite-sphene/rutile).

Capsule descriptions are as follows:

94-5c 426: this sample appears to be a strongly sericite-?albite-epidote-chlorite-pyrite calcite altered, probably originally tuffaceous volcanic rock (crystal tuff?), possibly of about andesitic composition.

94-6c 277: the composition of this chlorite-calcite-epidote-quartz-sphene-pyrite altered sample (roughly equivalent plagioclase and K-spar, very rare primary quartz, containing euhedral amphibole relics), suggests a high-level porphyry or volcanic of about (hornblende?) latite composition (could be trachyte if most of the plagioclase is albite, or could be trachyandesite if the Kspar is partly secondary, or is overestimated in the mode).

94-7c 312: this sample appears to be a skarny or calc-silicate (epidote-quartz-garnet-carbonate-chlorite-pyrite-hematite±sphene/rutile) altered, ?felsic tuffaceous rock, with zones of massive replacement, cut by veinlets of carbonate-chlorite or quartz-carbonate.

03-1 7.2m: appears to be a crystal-lithic tuff composed of 50-60% albite-sericite-epidote-chlorite altered feldspar, 5-10% quartz, possible epidote-altered mafic shards, and 20-30% intensely quartz-epidote-magnetite-chalcopyrite veined, brecciated lithic fragments, in a fine-grained intensely altered matrix, cut by narrow, discontinuous calcite-pyrite veinlets.

03-1 14.85m: appears to represent a crystal tuff, possibly of intermediate composition (mainly plagioclase feldspar and relict mafic crystal shards, no obvious primary quartz) that has undergone intense microfracture-, fracture-and vein-controlled alteration to quartz, epidote, magnetite, pyrite,

chalcopyrite (and pervasive albite, sericite, and chlorite), as well as later fracture-controlled calcite-minor pyrite.

03-1 29.8m: high-level intrusive porphyry, possibly of about ?hornblende quartz diorite composition, that has undergone moderate alteration to chlorite-epidote-albite-sericite-quartz-calcite, pyrite±chalcopyrite, sphene/rutile, K-feldspar.

03-1 37.8m: this also appears to be a high-level intrusive porphyry, possibly of hornblende or pyroxene(?) quartz diorite composition, that has undergone moderate alteration and veining to chlorite-epidote-quartz-albite-sericite-calcite-magnetite-sphene/rutile.

03-1 64.6m: strongly quartz-chlorite-sericite-albite-minor pyrite, sphene/rutile, apatite altered diorite or quartz diorite is veined by quartz-chlorite-pyrite-sphene; the boundary is marked by a late fracture filled with calcite, chlorite and minor pyrite.

03-1 100m: this sample might be characterized as a strongly quartz-albite-epidote-chlorite-carbonate-pyrite (trace chalcopyrite, possible galena?)-sphene altered, fine pebble conglomerate or tuff-breccia (could also be a hydrothermal breccia).

Detailed petrographic descriptions and photomicrographs are appended. If you have any questions regarding the petrography, please do not hesitate to contact me.

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94-5c 426: STRONGLY SERICITE-?ALBITE-EPIDOTE-CHLORITE-PYRITE-CALCITE-SPHENE ALTERED, POSSIBLY ORIGINALLY ANDESITIC CRYSTAL TUFF

Hand specimen is a pale greenish grey, fine-grained, strongly altered and pyritized rock of uncertain origin. Sulfides are finely disseminated and also locally controlled as elongated blebs along fractures. The rock is not magnetic, shows only minor reaction to cold dilute HCl, and no stain for K-feldspar in the etched offcut. Modal mineralogy in polished thin section is approximately:

| | |
|---|---|
| Plagioclase (relict, sericitized) | 40% |
| Sericite | 20% |
| Epidote | 15% |
| Chlorite | 10% |
| Pyrite, trace chalcopyrite | 10% |
| Carbonate (mainly calcite?) | 3-5% |
| Sphene, trace rutile | 1-2% |

This sample is composed mainly of small, very crowded, plagioclase phenocrysts or shards and lesser, smaller, chlorite, carbonate, pyrite or epidote altered mafic relics set in minor very fine-grained matrix in which individual minerals are difficult to identify.

Plagioclase forms mainly euhedral to subhedral, somewhat rounded, broken crystals or shards <0.5 mm in diameter. Only traces of vague relict twinning remain due to strong alteration to minute flakes of sericite (mostly <10 microns in diameter) that generally replace about20-40% of the crystals. The remaining relict plagioclase may be albitized, but this is difficult to determine due to the abundance of sericite and absence of quartz to compare refractive indices with.

Mafic relics have mainly irregular to rarely subhedral outlines <0.25 mm (but locally up to almost 0.5 mm) in diameter; it is not possible to guess what the original mafic may have been. Alteration is complete, to chlorite (subhedral flakes <50 microns in diameter), epidote (subhedral mostly <0.1 mm in diameter), pyrite (euhedral to subhedral crystals up to 0.25 mm in size) and variable carbonate (subhedra mostly <50 microns in size) plus minor sphene (subhedral crystals mostly <20 microns in diameter, locally with traces of rutile as minute inclusions). Chlorite has optical properties (very pale, non-pleochroic green colour, first-order greenish grey, length-fast birefringence) indicative of a relatively magnesian composition, with Fe:Fe+Mg, or F:M, ratio possibly around 0.4. Epidote lacks distinct colour or pleochroism and may be relatively Fe-poor. Carbonate is likely mostly calcite to judge by the reaction to HCl, but may include lesser ankerite which appears to have higher relief than the calcite. Most of the finely disseminated pyrite in this sample appears to be replacing former mafic sites.

The matrix, which appears to make up <20% of the sample, is difficult to identify, but appears on the basis of lack of relief difference with the plagioclase, and white appearance in the etched offcut, to be mostly fine-grained plagioclase microlites (mostly <20 microns in diameter) partly altered to and mixed with even finer-grained sericite, chlorite, epidote and sphene/leucoxene (all mainly <10 microns in diameter). However, these identifications are tentative at this extremely fine grain size. Leucoxene is a term applied to very fine-grained, brownish mixtures of sphene and possibly rutile, generally with epidote.

Blebby or fracture-controlled pyrite (subhedral crystals up to about 0.5 mm in diameter rarely containing trace chalcopyrite as 20 micron inclusions or associated with subhedral chalcopyrite to 0.1 mm in diameter) is associated with epidote (subhedral mostly <0.1 mm in diameter) and locally with calcite (subhedral crystals that are optically continuous for up to 3 mm) and traces of sphene (subhedra <20 microns in diameter), along veinlets mostly <1 mm thick. The calcite appears not to be so much associated with pyrite as to merely displace it, implying that it is later than pyrite

In summary, this sample appears to be a strongly sericite-?albite-epidote-chlorite-pyrite-calcite-sphene altered, probably originally tuffaceous volcanic rock (crystal tuff?), possibly of about andesitic composition.

94-6c 277: CHLORITE-CALCITE-EPIDOTE+QUARTZ-SPHENE-SERICITE-PYRITE ALTERED PORPHYRITIC ?HORNBLENDE LATITE

Hand specimen is fine-grained, pale grey-buff, strongly altered rock of uncertain derivation until the etched offcut is considered, which shows scattered relict mafic crystals with euhedral outlines up to 5 mm long in a matrix that stains yellow for K-feldspar, suggesting a porphyritic volcanic rock. The sample is magnetic and reacts to cold dilute HCl. Modal mineralogy in polished thin section is approximately:

| | |
|---|---|
| Plagioclase (matrix, albitic?) | 35% |
| K-feldspar (matrix, primary?) | 30% |
| Chlorite | 15% |
| Carbonate (mainly calcite?) | 10% |
| Epidote | 5% |
| Quartz (partly secondary) | 1% |
| Magnetite, minor hematite | 1% |
| Sphene, minor rutile | 1% |
| Sericite | 1% |
| Pyrite, trace chalcopyrite | <1% |
| Apatite | <1% |

This sample consists of about 15-20% altered mafic relict phenocrysts in a matrix of small feldspar laths with interstitial chlorite, calcite, and minor quartz, sericite and magnetite/hematite.

The mafic relics have euhedral to subhedral outlines up to 3.5 mm in size (and aggregates to 8 mm long), with shapes distinctly suggestive of former amphibole (hornblende?). They are completely replaced (pseudomorphed) by mixtures of chlorite, carbonate, epidote, sphene, magnetite and locally pyrite and possibly minor quartz(?). Chlorite forms subhedral flakes up to about 0.15 mm in diameter with distinct green pleochroism and near-zero birefringence suggesting F:M probably near 0.5; carbonate, likely mostly calcite to judge by the reaction in hand sample, forms sub- to anhedral, ragged crystals mostly <0.1 mm in diameter that are locally mixed with minor epidote (strong yellow pleochroism, probably Fe-rich) to 50 microns and rare quartz (?) subhedra to 0.15 mm.

Sphene locally forms aggregates (relict phenocrysts?) up to 3 mm long, (subhedral crystals up to 1.2 mm long, commonly containing minute crystals of rutile <20 microns in diameter and magnetite <35 microns in diameter, both controlled along fractures. Magnetite also forms euhedral to subhedral crystals or aggregates up to about 1 mm in diameter, generally partly altered at margins and along partings to fine-grained hematite (subhedra mostly <50 microns in diameter), or is present as minute subhedra mostly <20 microns in diameter in the matrix. Pyrite occurs as irregularly shaped, sieve-textured aggregates up to 0.5 mm across, or locally as elongated blebs along narrow fracture veinlets, where it appears to have replaced magnetite and is rarely associated with trace chalcopyrite <25 microns in diameter.

The matrix consists of feathery feldspar laths or microlites mostly <0.1 mm long that are locally show polysynthetic twins, and so are likely plagioclase (possibly albitic?), mixed with lesser untwinned feldspar with negative relief (K-feldspar, mostly <50 microns in diameter) and relatively rare, interstitial quartz (anhedra <50 microns in diameter). Other interstitial minerals include chlorite (subhedral flakes mostly <35 microns in diameter), carbonate (subhedra mostly <50 microns across), rare sericite (subhedral flakes up to 30 microns in diameter) and magnetite/hematite (see above). Scattered apatite crystals form euhedra up to 0.15 mm in diameter.

Veinlets generally <0.2 mm thick are composed mainly of secondary quartz as subhedra mostly <0.35 mm long, with traces of epidote and calcite, and are cut by minor hairline (<25 micron thick) microfractures filled with sericite and carbonate. In summary, the composition of this chlorite-calcite-epidote-quartz-sphene-pyrite altered sample (roughly equivalent plagioclase and K-spar, very rare primary quartz, containing euhedral amphibole relics), suggests a high-level porphyry or volcanic of about (hornblende?) latite composition (could be trachyte if most of the plagioclase is albite, or could be trachyandesite if the Kspar is partly secondary, or is overestimated in the mode).

94-7c 312: INTENSELY SKARN/CALC-SILICATE (EPIDOTE-QUARTZ-GARNET-CALCITE-CHLORITE-PYRITE-HEMATITE) ALTERED, FINE-GRAINED ?FELSIC TUFFACEOUS ROCK

Hand specimen is a skarny-looking, intensely altered rock apparently composed of reddish garnet?, yellow-green epidote and chlorite and abundant carbonate, cut by various epidote-pyrite or dark green chlorite veins. The rock is not magnetic, shows strong reaction to cold dilute HCl, and no stain for K-feldspar in the etched offcut. Modal mineralogy in polished thin section is approximately:

| | |
|---|---|
| Epidote | 35% |
| Quartz (mainly secondary) | 25% |
| Garnet | 10% |
| Relict feldspar (plagioclase?) | 10% |
| Carbonate (mainly calcite?) | 10% |
| Chlorite | 5-7% |
| Pyrite | 3% |
| Hematite | <1% |
| Sphene/rutile | trace |

This sample consists mainly of very fine-grained (probably mostly secondary) quartz, epidote, and locally relict feldspar and minor carbonate, overprinted by intense stringer to blebby or massive epidote (locally with lesser carbonate, garnet, chlorite and pyrite) replacement, and cut by carbonate-chlorite or quartz-carbonate veins. The fine-grained background rock is faintly foliated, and contains small shard-like quartz crystals that suggest it may have been a tuff.

In the background rock, quartz ?shards have ragged, subhedral outlines mostly <0.1 mm in diameter, set in a matrix in which quartz, epidote, carbonate, possible relict plagioclase and minor chlorite and opaques (hematite, rutile) are mostly <20 microns in diameter, making identifications tentative. The faint foliation is caused by vague layering into slightly more quartz-rich or locally more epidote-rich, discontinuous laminae or elongate blebs (the latter could represent the sites of former mafic mineral shards).

The stringer to massive replacement consists mainly of interlocking epidote subhedra up to about 0.6 mm long (the crystals have highly irregular, diffuse boundaries and are strongly fractured, with intense yellow pleochroism indicating high Fe content). Carbonate, locally at the center of epidote masses, forms masses of interlocking subhedral crystals mainly <0.1 mm in diameter, and appears to be replacing garnet. The garnet, which forms small rounded sub- to euhedral crystals up to about 0.25 mm in diameter with distinct yellow-brown colour, is commonly difficult to see in the intensely altered rock. Chlorite, which forms subhedral flakes mostly <0.1 mm in diameter with optical properties (bright green to pale yellow-green pleochroism, near zero birefringence) indicating moderately high Fe content (F:M perhaps 0.5-0.6), may also form a replacement of garnet. Pyrite occurs as subhedral to cubic crystals mainly <1 mm in diameter, locally aggregating in elongate blebs up to 5 mm long.

Veins are generally less than about 2 mm thick, and are composed mainly of carbonate (coarse sub- to anhedral crystals up to 1.5 mm in diameter, likely mostly calcite) with patches (< 1 mm across) of chlorite (fine matted flakes mostly <35 microns in diameter, showing anomalous purple, length-slow birefringence indicative of F:M perhaps as high as 0.7). These are the dark veins seen in hand specimen. Paler-coloured veins are composed of quartz (subhedra up to 0.5 mm) and carbonate (subhedra to 0.25 mm); minor epidote, chlorite and pyrite may be accidentally trapped in the veins from the altered wallrock.

In summary, this sample appears to be a skarny or calc-silicate (epidote-quartz-garnet-carbonate-chlorite-pyrite-hematite±sphene/rutile) altered, ?felsic tuffaceous rock, with zones of massive replacement, cut by veinlets of carbonate-chlorite or quartz-carbonate.

03-1 7.2m: INTENSE ALBITE-QUARTZ-EPIDOTE-CHLORITE-CALCITE-SERICITE-PYRITE-MAGNETITE-CHALCOPYRITE ALTERED, VEINED, BRECCIATED CRYSTAL-LITHIC TUFF

Hand specimen is fine-grained, intensely altered and veined/fractured, pale to dark green, with abundant sulfides and magnetite. There is minor reaction to cold dilute HCl, but only trace yellow stain for K-feldspar in the etched offcut. Texture of the host rock is revealed best in the etched offcut, which shows what appear to be abundant, crowded plagioclase (rare K-feldspar, or rare Kspar cores to plagioclase) and lesser quartz shards or broken crystals, plus fragments of (previously veined) rock, as well as large (1-2 cm thick) quartz-sulfide-magnetite veins that appear to have been fragmented. Late pyritic veinlets cut the rock. Modal mineralogy in polished thin section is approximately:

| | |
|---|---|
| Relict plagioclase (secondary, albitic?) | 45% |
| Quartz (mainly secondary; minor primary) | 25% |
| Epidote | 10% |
| Chlorite | 5% |
| Carbonate (mainly calcite?) | 5% |
| Magnetite | 3% |
| Pyrite | 2% |
| Chalcopyrite | 1-2% |
| Sericite | 1-2% |
| K-feldspar (relict primary?) | 1-2% |
| Rutile | <1% |

The bulk of this sample consists of highly crowded crystals or shards of relict, altered feldspar (mainly plagioclase) and scattered relict quartz ?eyes in a minor amount of fine-grained matrix that is so fractured, microveined and altered as to be almost unrecognizable. Cognate fragments of intensely veined and/or altered, sulfide- and magnetite-mineralized rock are up to several cm in diameter, with mainly subangular to angular outlines. It is not clear which veins are cut off at margins of fragments, and which are cross-cutting, but it appears that narrow, irregular, carbonate-pyrite veins are the latest.

Overall, the host rock looks to be a crystal-lithic tuff, composed of about 50-60% feldspar, 5-10% quartz, and possibly an indeterminate amount of relict mafic shards in a fine-grained, altered matrix that also contains about 20-30% veined, altered lithic fragments. The feldspar shards have mainly subhedral outlines up to about 0.5 mm in diameter, and are strongly altered to probable albitic secondary alkali feldspar (a guess, based on lack of yellow stain in hand specimen, possibly negative relief compared to quartz in thin section, lack of twinning, and associated alteration to minute flakes of sericite, epidote/zoisite, and chlorite. Quartz shards (single or multiple crystal aggregates) have irregular outlines up to 0.5 mm in diameter, however most quartz shards are fine-grained aggregates of interlocking subhedra mostly <0.1 mm in diameter, and appear most likely to be fragments of quartz veins. Lithic fragments range from extremely fine-grained quartz and minor epidote and sericite or chlorite (trace rutile as minute subhedra <15 microns), to recognizable porphyritic or tuffaceous lithologies (containing albitized plagioclase phenocrysts or shards).

Intensely altered and veined lithic fragments are commonly composed of about 50-90% secondary (vein) quartz, forming interlocking subhedra mostly <0.2 mm in diameter, but locally with massive epidote (interlocking sub- to euhedral crystals up to 0.5 mm long; strong yellow pleochroism indicated moderate to high Fe content), chlorite (subhedral flakes mostly <0.15 mm in diameter with distinct green pleochroism and length-fast, anomalous green birefringence suggesting F:M perhaps about 0.5), sulfides and magnetite. Some of the fragments contain abundant magnetite (aggregates up to 0.5 mm across of subhedral crystals mostly <0.1 mm in diameter intergrown with epidote), in places closely associated with chalcopyrite as very fine sub- to anhedral crystals mostly <50 microns in diameter (but locally up to 0.5 mm), and sparse pyrite as cubic euhedra to 0.1 mm in size. Pyrite, forming sub- to euhedral cubic crystals up to 1 mm in diameter, appears to be more commonly later (controlled along cross-cutting, but discontinuous, fractures or veinlets, in places with carbonate, likely mostly calcite, as subhedra that are optically continuous for up to 5 mm.

03-1 14.85m: INTENSELY ALBITE-QUARTZ-EPIDOTE-CHLORITE-CALCITE-SERICITE-PYRITE-MAGNETITE-CHALCOPYRITE ALTERED, VEINED, FRACTURED CRYSTAL TUFF

Dark greyish-green, intensely fractured, altered, and veined rock of uncertain derivation, cut by narrow sulfide stringers and locally strongly magnetic; there are only traces of yellow stain for K-feldspar, possibly secondary (along microfractures), and late fractures show minor reaction to cold dilute HCl. Modal mineralogy in polished thin section is approximately:

| | |
|---|---|
| Relict alkali feldspar (albitic?) | 40% |
| Quartz (mainly secondary) | 25% |
| Epidote | 10% |
| Chlorite | 10% |
| Carbonate (mainly calcite?) | 5% |
| Sericite (after feldspar) | 5% |
| Pyrite | 2-3% |
| Magnetite | 1-2% |
| Chalcopyrite | 1% |
| K-feldspar (secondary?) | <1% |
| Sphene, rutile | <1% |

Alteration in this sample is similar to 03-1 7.2m but the brecciated character, with veined fragments, is not so obvious, silicification is more abundant, and sericitization of alkali feldspar is stronger; K-feldspar, although minor, may be secondary. The protolith appears to be crowded crystal tuff, composed mainly of perhaps 60% small alkali feldspar shards, lesser relict mafic crystals, and minor (10% or less) interstitial matrix. This is cut by cut by a series of major (up to 1 cm thick) quartz-minor magnetite-sulfide-epidote veins which in turn are cut by carbonate fractures.

In the body of the rock, alkali feldspar (likely mainly albitic) forms small relict crystal shards with subhedral to broken outlines mostly <0.25 mm in diameter. They are moderately overprinted by fine-grained sericite (flakes mostly <25 microns in diameter), which together with the lack of twinning suggests they have likely been albitized. Only rarely does trace yellow stain in the etched slab suggest the presence of minor (probably secondary) K-feldspar. Relict mafics have irregular outlines up to about 0.3 mm across, and are completely pseudomorphed by fine-grained chlorite (subhedral flakes to 30 microns with weak green pleochroism and anomalous green, length-fast birefringence suggesting moderate F:M perhaps around 0.5), epidote (subhedra mostly <0.1 mm in diameter with pale yellow pleochroism indicating moderate Fe content), and opaques (magnetite and sulfides, trace sphene/rutile). Sphene forms small subhedra mostly <25 microns in size, containing traces of rutile (<10 microns), commonly included in the epidote. In places, fracture or microfracture-controlled alteration of silicification or epidote is so intense as to become almost pervasive.

Veins consist of quartz (subhedral to anhedral, interlocking crystals mostly <0.2 mm in diameter) with patchy magnetite (subhedral crystals mostly <0.1 mm in diameter, locally in aggregates up to almost 2 mm across, intimately mixed with chlorite and minor epidote). Sulfides are mainly pyrite, forming sub- to euhedral crystals up to 0.5 mm in diameter that occur intergrown with the quartz, or along narrow stringers, commonly cutting the quartz vein in a perpendicular orientation. Some (but not all) of the pyrite stringers are associated with carbonate veinlets or fractures, mostly <1 mm thick, in which the carbonate (likely mostly calcite to judge by the reaction in hand sample) forms subhedral crystals up to about 1 mm in diameter. The carbonate locally brecciates the rock. Chalcopyrite forms small subhedral crystals mostly <0.15 mm in diameter that appear to be as, or slightly more abundant, in the intensely epidote-chlorite altered wallrock to the veins than in the veins themselves. Chalcopyrite occurs both associated with and not associated with the magnetite.

In summary, this sample appears to represent a crystal tuff, possibly of intermediate composition (mainly plagioclase feldspar and relict mafic crystal shards, no obvious primary quartz) that has undergone intense microfracture, fracture-and vein-controlled alteration to quartz, epidote, magnetite, pyrite, chalcopyrite (and pervasive albite, sericite, and chlorite), as well as later fracture-controlled calcite-minor pyrite.

03-1 29.8m: HIGH-LEVEL INTRUSIVE (HORNBLENDE QUARTZ DIORITE PORPHYRY?) ALTERED TO CHLORITE-EPIDOTE-ALBITE-SERICITE-QUARTZ-CALCITE-PYRITE-SPHEN

Hand specimen is a pale grey-green, distinctly porphyritic, possibly high-level intrusive of intermediate composition (plagioclase and relict mafic phenocrysts visible) cut by abundant fractures and microfractures filled with pale buff-greenish epidote and white calcite (reacts to cold dilute HCl); traces of yellow stain in the etched offcut indicate possibly secondary Kspar. Sulfides are relatively minor, mostly pyrite; magnetite is absent. Modal mineralogy in polished thin section is approximately:

| | |
|---|---|
| Plagioclase (mainly albitized, sericitized) | 45% |
| Quartz (partly secondary) | 25% |
| Chlorite | 10% |
| Epidote | 7% |
| Sericite (after feldspar) | 5% |
| Carbonate (mainly calcite?) | 3% |
| Pyrite | 2% |
| Sphene, rutile | 1% |
| K-feldspar (possibly secondary?) | 1% |
| Chalcopyrite | <1% |

This sample has a distinctly different texture from the previous two samples. It is composed of about 30-40% relict, altered plagioclase phenocrysts and perhaps 10% less well-defined, relict (chlorite-epidote altered) mafic crystals in a phaneritic, siliceous groundmass. Veinlets consist of epidote, quartz and minor carbonate.

Plagioclase phenocrysts have generally euhedral outlines up to about 2 mm in diameter, locally with relict primary compositional zoning preserved, or mimicked by sericite alteration. Many crystals show significant (10-20%) replacement by fine (mostly <20 micron diameter) flakes of sericite, accompanied by diffuse, poorly defined twinning that likely indicates albitization. The replacement by secondary alkali feldspar is most pronounced along narrow fractures or microfractures mostly <0.5 mm thick; rarely, along these, minor (secondary?) K-feldspar and quartz, both <0.1 mm in diameter, are found.

Mafic relics have irregular to rarely subhedral outlines up to about 3 mm long (possibly suggestive of former amphibole, likely hornblende). They are pseudomorphed by fine-grained chlorite (subhedral flakes to 0.25 with optical character, and F:M, similar to the previous sample), epidote (subhedra to 0.25 mm with moderate Fe content indicated by yellow pleochroism), pyrite (cubic crystals up to 0.5 mm in diameter) and minor sphene/rutile (minute aggregates mostly <35 microns in diameter). In places, carbonate (likely mostly calcite) also replaces the sites.

The groundmass consists of smaller, seriate-textured, altered plagioclase crystals mostly <0.5 mm in diameter, and interstitial, abundant quartz as subhedra mostly <0.25 mm in diameter. The quartz may be locally partly secondary, attacking the margins of sericitized plagioclase crystals. Minor chlorite-minor epidote-sphene/rutile altered mafic relics are also present in the groundmass.

Veins, rarely over 2 mm thick, consist mostly of quartz (subhedral, slightly strained crystals up to about 0.5 mm in diameter) or epidote (subhedra up to 0.4 mm long but more commonly <50 microns in diameter), locally with sulfides, and cut by later carbonate-filled fractures (<1 mm thick, composed mainly of calcite as subhedra up to 0.5 mm in diameter). Pyrite forms eu- to subhedral crystals up to about 0.5 mm in diameter, commonly controlled along cross-cutting epidote-rich stringers/veinlets up to about 0.5 mm thick. Chalcopyrite, forming minute blebs or subhedral crystals mostly <0.1 mm in diameter (locally <15 microns), is closely associated with quartz-epidote (and to a lesser degree, chlorite) alteration controlled along more diffuse, less well-defined fractures and microfractures. Locally, chalcopyrite occurs in fractures cutting pyrite, possibly due to remobilization.

In summary, this appears to be a high-level intrusive porphyry, possibly of about ?hornblende quartz diorite composition, that has undergone moderate alteration to chlorite-epidote-albite-sericite-quartz-calcite-pyrite$\pm$chalcopyrite, sphene/rutile, K-feldspar.

03-1 37.8m: HIGH-LEVEL INTRUSIVE (QUARTZ DIORITE PORPHYRY?) ALTERED TO CHLORITE-EPIDOTE-QUARTZ-ALBITE-SERICITE-CALCITE-?MAGNETITE-SPHENE

Similar to the previous sample from 29.8m, crowded high-level intermediate intrusive porphyry characterized by small, altered plagioclase and relict mafic crystals in a phaneritic matrix; cut by quartz-epidote veins, microveins and fractures, late calcite fractures (react to cold dilute HCl). Rock is strongly magnetic, but shows only traces of yellow stain for Kspar in the etched offcut. Modal mineralogy in thin section is approximately:

| | |
|---|---|
| Plagioclase (partly albitized, sericitized) | 50% |
| Quartz (partly secondary) | 30% |
| Chlorite | 5% |
| Epidote | 5% |
| Sericite | 5% |
| Carbonate (mainly calcite?) | 2% |
| Opaque (mostly magnetite?) | 2% |
| Sphene, rutile | 1% |
| K-feldspar (primary?) | trace |

This sample consists of about 40-50%, rather crowded, albite-sericite altered plagioclase phenocrysts and chlorite-epidote altered, mafic relics set in a phaneritic, siliceous groundmass, cut by discontinuous quartz-magnetite-epidote-minor calcite veins and silicification patches (offset by epidote-chlorite microfracturing).

Plagioclase phenocrysts have generally euhedral outlines up to about 2 mm in diameter, locally with traces of relict primary compositional zoning, or twinning, preserved. Most crystals show significant (15-25%) replacement by fine (mostly <30 micron diameter) flakes of sericite and minor carbonate of similar size, accompanied by diffuse, poorly defined twinning that likely indicates albitization. The replacement by secondary alkali feldspar is most pronounced along microfractures mostly <50 microns thick.

Mafic relics have irregular to rarely subhedral outlines up to about 3 mm across (suggestive of former amphibole or possibly pyroxene). They are pseudomorphed by fine-grained chlorite (subhedral flakes to 0.25 mm with pale green pleochroism and anomalous blue, length-slow birefringence indicating F:M probably about 0.5-0.6), epidote (subhedra to 0.25 mm with moderate Fe content indicated by yellow pleochroism), opaque (subhedral crystals up to 0.5 mm in diameter, likely mostly magnetite) and minor sphene/rutile (minute aggregates mostly <45 microns in diameter). In places, carbonate (likely mostly calcite) also replaces the sites.

The groundmass consists of smaller, seriate-textured, altered plagioclase crystals mostly <0.5 mm in diameter, and interstitial, abundant quartz as subhedra mostly <0.15 mm in diameter. The quartz may be locally partly secondary, attacking the margins of sericitized plagioclase crystals, and in places semi-pervasive silicification appears to occur, accompanied by more abundant, fine-grained sericite and epidote. Small chlorite-minor epidote-sphene/rutile altered mafic relics are also present in the groundmass.

Veins, mostly <3 mm thick, consist mostly of quartz (subhedral, slightly strained crystals up to about 0.5 mm in diameter) and minor epidote (subhedra up to 0.2 mm long or more commonly <30 microns in diameter), locally with opaques, and cut by later carbonate-filled fractures (<0.5 mm thick, composed mainly of calcite as subhedra up to 0.35 mm in diameter). Opaques forms subhedral to anhedral crystals or aggregates up to about 1 mm across, that may be largely magnetite. Sulfides are not readily apparent and cannot be positively identified, lacking a polished surface.

In summary, this also appears to be a high-level intrusive porphyry, possibly of hornblende or pyroxene(?) quartz diorite composition, that has undergone moderate alteration and veining to chlorite-epidote-quartz-albite-sericite-calcite-magnetite-sphene/rutile.

03-1 64.6: STRONGLY QUARTZ-CHLORITE-SERICITE-ALBITE-PYRITE-RUTILE ALTERED DIORITE/QUARTZ DIORITE VEINED BY QUARTZ-CHLORITE-PYRITE-RUTILE, CALCITE

Hand specimen shows a medium green, relatively fine-grained (intensely altered) rock in which the texture has been destroyed, locally with abundant fine-grained, mostly pyritic, sulfide and grey, patchy to lensy or vein-like, secondary quartz plus late calcite-filled fractures (react to cold dilute HCl). The rock is not magnetic and there is no stain for K-feldspar in the etched offcut; modal mineralogy in polished thin section is approximately:

| | |
|---|---|
| Quartz (largely secondary) | 50% |
| Relict plagioclase (albitized, sericitized) | 20% |
| Chlorite | 15% |
| Sericite | 10% |
| Pyrite, trace chalcopyrite, pyrrhotite | 3-5% |
| Sphene, rutile | 1% |
| Carbonate (mostly calcite?) | <1% |
| Apatite | <1% |

One half of the section looks almost like a vein, composed mostly of relatively coarse-grained, secondary quartz with interstitial, chloritized relict mafic material, pyrite and minor, sericitized feldspar; the other half, highly altered wallrock, comprises mostly relict (sericitized) feldspar, quartz (probably partly secondary) and minor chlorite.

In the vein half, quartz forms mainly anhedral to subhedral, interlocking crystals up to about 0.6 mm in diameter that are generally only slightly strained (undulose extinction). Chloritized relics have highly irregular shapes mostly less than 1 mm across, interstitial to the quartz grains, suggesting the alteration of former mafic mineral crystals or aggregates. Chlorite, forming subhedral flakes mostly <50 microns in diameter with optical characteristics (very weak colour/pleochroism, grey-white, length-fast birefringence) indicating a magnesian composition, F:M perhaps 0.3-0.4, is mixed with sericite flakes of similar size, quartz to 0.1 mm, sphene as subhedra <30 microns in diameter, and locally apatite as euhedral prisms up to 0.1 mm long. Chlorite commonly contains minute crystals of rutile mostly <35 microns in diameter. Most of the sulfide in the vein portion is pyrite, forming subhedral crystals <0.5 mm in diameter although aggregates to 1 mm are present. Rare inclusions of chalcopyrite in pyrite have irregular, rounded bleb-like outlines <25 microns in size.

In the strongly altered wallrock, the ghosted outlines of possible former plagioclase (?) phenocrysts, similar in size and distribution to those in the high-level porphyries from 29.8 and 37.8 m in this hole, are vaguely defined as subrounded to subhedral patches up to 3 mm in diameter that are almost completely replaced by fine-grained (<35 micron diameter) secondary quartz, alkali feldspar and lesser chlorite (with included minute rutile or locally aggregates of sphene/rutile), and sericite. Elsewhere, the rock consists of intergrown patches of quartz (subhedral crystals <0.2 mm in diameter, likely mostly secondary) and interstitial, mainly strongly sericitized, alkali feldspar (likely albite; no yellow stain in etched offcut) plus chlorite, pyrite and sericite. Although some of the quartz may be derived from an originally fine-grained groundmass, as seen in the other samples from 29.8 and 37.8 m, it is not possible to be sure. Pyrite forms subhedral to ragged, almost anhedral crystals up to 0.25 mm in diameter that are generally most closely associated with chlorite, and appear to mark the sites of replaced former mafic crystals. Minute inclusions of chalcopyrite, pyrrhotite and possibly electrum (?, with strong polishing hardness difference), all <10 microns in size, are locally present in the pyrite.

Narrow fractures, especially along the boundary between the two rock types (vein and wallrock) are filled with carbonate (likely mostly calcite, as elongated subhedra up to 1 mm long) and minor chlorite and pyrite.

In summary, a strongly quartz-chlorite-sericite-albite-minor pyrite, sphene/rutile, apatite altered diorite or quartz diorite is veined by quartz-chlorite-pyrite-sphene; the boundary is marked by a late fracture filled with calcite, chlorite and minor pyrite.

03-1 100m:

Hand sample is white to grey-buff (mainly quartz, likely mostly secondary), with patches or possible fragments (?) of buff-coloured feldspar, yellow-green epidote and minor sulfides, plus carbonate that reacts vigorously to cold dilute HCl. A few large, pinkish, sieve-textured possible garnets (?), up to 8 mm across, are present (but not seen in the thin section). The rock is not magnetic and shows no significant stain for K-feldspar. Modal mineralogy in polished thin section is approximately:

| | |
|---|---|
| Quartz (largely secondary) | 55% |
| Secondary alkali feldspar (albite?) | 25% |
| Epidote | 5% |
| Chlorite | 5% |
| Carbonate (mostly calcite?) | 5% |
| Pyrite | 3-5% |
| Sphene | <1% |
| Chalcopyrite, possible galena? | <1%, trace |

This sample consists essentially of irregular-shaped patches up to almost 1 cm across (possible fragments?) composed of variably textured alkali feldspar, quartz, epidote, carbonate and locally sulfides, in a matrix that appears to be mostly secondary quartz. The overall impression is of a fine pebble conglomerate or lithic tuff-breccia that has been intensely altered, but it is hard to be sure.

Possible clasts have subrounded to irregular outlines. They are composed of 1) fine-grained quartz (interlocking subhedral to anhedral crystals mostly <0.15 mm in diameter and relatively unstrained, although locally up to almost 1 mm long and strongly strained, marked by strong undulose extinction, sub-grain development and minor suturing of grain boundaries), 2) fine-grained quartz and alkali feldspar mostly <0.1 mm in diameter, locally with relict ?plagioclase phenocrysts or lithic shards retained as ghost-like remnant sub- to euhedral outlines up to 0.6 mm long, and relict ?mafic sites composed of pale yellow epidote or colourless, i.e. Fe-poor, zoisite/clinozoisite (subhedra up to 0.25 mm in diameter) and chlorite (subhedral flakes up to 0.15 mm in diameter) plus pyrite, and 3) patches of chlorite (subhedral flakes to 0.1 mm with anomalous blue, length-slow birefringence indicating F:M around 0.5-0.6), epidote (subhedral crystals to 0.5 mm diameter with intense yellow pleochroism indicating high Fe content), and carbonate (probably mostly calcite, although some higher-relief material could be ankerite or dolomite, both forming ragged to skeletal, subhedral crystals up to 0.75 mm across). Alkali feldspar in these clasts appears to have negative relief compared to quartz, suggesting it is likely albite; it locally forms subhedra up to 0.2 mm across.

Pyrite, which forms ragged to locally skeletal subhedral crystals up to 1.5 mm in maximum dimension that are commonly fractured and contain abundant inclusions of silicates or carbonate up to 0.1 mm across, rarely contains small rounded bleb-like to subhedral inclusions of chalcopyrite mostly <0.1 mm in diameter. Traces of chalcopyrite are also found along fractures in and between the pyrite crystals, and as separate blebs in epidote/clinozoisite, adjacent to the pyrite, or along late fractures with carbonate. Rare inclusions in pyrite <50 microns long may be galena(?).

The matrix appears to be composed of minor amounts of very fine-grained, secondary quartz, with local additions of coarser-grained, clearly hydrothermal, epidote, chlorite, pyrite and carbonate. These minerals are also found along irregular, anastamosing fractures.

In summary, this sample might be characterized as a strongly quartz-albite-epidote-chlorite-carbonate-pyrite (trace chalcopyrite, possible galena?)-sphene altered, fine pebble conglomerate or tuff-breccia (could also be a hydrothermal breccia).

**December 2004**

**Project: IXL Property**

| | | |
|---|---|---|
| **Samples:** | **ddh 04-1:** | **44.0 m** |
| | **ddh 04-2:** | **15.7 m, 37.2 m** |
| | **ddh 04-5:** | **36.6 m** |
| | **ddh 04-6:** | **35.3 m** |
| | **ddh 04-9:** | **10.2 m, 30.5 m** |
| | **ddh 04-10:** | **11.6 m, 16.76 m, 24.0 m, 96.1 m, 141.5 m, 209.3 m** |
| | **ddh 04-11:** | **89.5 m, 191.8 m** |
| | **ddh 04-12** | **180.5 m, 186.5 m** |

**Summary:**

**Sample ddh 04-1 44.0 m** is a brecciated felsic tuff that contains minor coarser grains of plagioclase and a few aggregates of plagioclase and lesser quartz in a groundmass dominated by anhedral, slightly interlocking plagioclase with much less abundant quartz and sericite. Pyrite and minor chalcopyrite form disseminated grains. Scattered replacement patches are of quartz and minor epidote. The rock was brecciated moderately, and brecciated zones are loci for discontinuous, fracture-filling veinlets of calcite and irregular veinlets and patches of sericite and pyrite. Calcite veinlets are dominant in one half of the section and pyrite and sericite veinlets are dominant in the other.

**Sample ddh 04-2 15.7 m** is a felsic tuff containing moderately abundant, anhedral plagioclase grains in a groundmass of much finer grained plagioclase with minor wispy seams and disseminated patches of leucoxene and minor disseminated pyrite and epidote. Scattered replacement patches are of epidote and chalcopyrite. Moderately abundant, irregular, in part braided veinlets and skeletal replacement patches are of calcite with minor quartz. A few late veinlets are of chlorite with minor to moderately abundant epidote and pyrite and locally abundant K-feldspar and quartz.

**Sample ddh 04-2 37.2 m** is a hypabyssal, porphyritic diorite/andesite containing anhedral plagioclase phenocrysts, clusters of smaller plagioclase grains and a few subhedral hornblende phenocrysts (altered to calcite-chlorite-plagioclase) in a groundmass dominated by much finer grained plagioclase with patches of calcite-chlorite after hornblende. Replacement patches are of epidote and pyrite with much less abundant chalcopyrite and quartz. Several veinlets are of calcite. One veinlet is of epidote-pyrite-chlorite.

**Sample ddh 04-5 36.6 m** is a banded calcite-garnet-plagioclase/quartz-pyrite skarn that contains three main zones. Zone A is characterized by an intergrowth of calcite with lesser, disseminated garnet. Zone B is dominated by garnet with minor interstitial plagioclase/quartz and calcite. Zone C contains garnet with interstitial plagioclase/quartz and much less abundant calcite. Pyrite forms disseminated porphyroblasts with inclusions of garnet. Sphalerite forms disseminated patches. Chalcopyrite forms disseminated grains. A few veins and several veinlets are of calcite with minor quartz and a few are of quartz with minor calcite.

**Sample ddh 04-6 35.3 m** contains angular fragments up to 2 cm in size of felsic tuff (A) that are enclosed in and partly replaced by a patchy matrix dominated by quartz with lesser plagioclase, chlorite, epidote, and pyrite (B). Veins and veinlets are of calcite-epidote-chlorite-(pyrite-chalcopyrite). Minor veinlets and replacement patches are dominated by quartz.

**Sample ddh 04-9 10.2 m** is a volcanic wacke that contains abundant detrital grains that are dominated by equant fragments of plagioclase grains, very fine grained aggregates of plagioclase, and extremely fine grained aggregates of quartz. These are set in a groundmass dominated by plagioclase and chlorite with lesser leucoxene. Replacement patches are of calcite, epidote, and pyrite. Veins are of epidote-calcite-(quartz) and of calcite-quartz-epidote-pyrite.

**Sample ddh 04-9 30.5 m** is a hypabyssal diorite/andesite or very fine volcanic wacke that contains anhedral plagioclase phenocrysts and much less abundant hornblende phenocrysts in a groundmass of finer grained plagioclase. Disseminated replacement patches are of epidote and pyrite. Discontinuous, replacement veinlets are of epidote, of calcite, and of quartz.

**Sample ddh 04-10 11.6 m** is zoned strongly. Zone A is a porphyritic hypabyssal latite that contains phenocrysts of plagioclase and minor ones of quartz in a groundmass dominated by plagioclase. Zone B consists of a replacement zone dominated by sericite with lesser epidote and quartz. Zone C contains patches of hypabyssal latite in a groundmass of much finer grained plagioclase and abundant replacement patches of one or more of K-feldspar, quartz, pyrite, and epidote.

**Sample ddh 04-10 16.76 m** is a porphyritic dacite that contains phenocrysts of plagioclase (altered strongly to sericite and calcite), lesser phenocrysts of quartz, and minor ones of hornblende (altered completely to sericite and leucoxene) in an extremely fine grained groundmass dominated by plagioclase. A large replacement patch and numerous smaller ones are of quartz. An irregular replacement zone is of sericite-calcite. Abundant veins and veinlets are of calcite and a few are of quartz.

**Sample ddh 04-10 24.0 m** is a hypabyssal diorite/andesite or very fine volcanic wacke that was altered moderately producing diffuse textures that are most similar to those in Sample 04-9 30.6 m. Anhedral, coarser plagioclase grains are set in a groundmass of much finer grained plagioclase. Alteration is moderate to disseminated sericite and patches of calcite. Pyrite forms disseminated grains. Veinlets are of sericite-chlorite-pyrite, sericite-quartz, and calcite.

**Sample ddh 04-10 96.1 m** is a felsic tuff that contains minor phenocrysts of plagioclase in a groundmass of extremely fine grained plagioclase. In part of the sample the groundmass is slightly coarser grained and contains more quartz; this may be the result of early silicification. Irregular replacement patches are dominated by one or more of sericite, calcite, and pyrite. Irregular, discontinuous veins and veinlets are dominated by one or more of calcite, quartz, sericite, and pyrite. Several veinlets of quartz-sericite contain moderately abundant disseminated chalcopyrite and minor to moderately abundant calcite.

**Sample ddh 04-10 141.5 m** is a cataclastically deformed rock that contains fragments up to 1 cm in size of hypabyssal diorite (A) and one fragment of hypabyssal latite (B). These are set in a matrix of extremely fine grained plagioclase that contains minor to moderately abundant plagioclase crystal fragments whose texture is similar to that in the coarser fragments. Some textures suggest that the rock was deformed cataclastically. One patch of groundmass is free of plagioclase fragments (C). A large vein is of epidote-calcite-(chlorite). Several replacement patches up to a few mm across are of epidote. Calcite forms replacement patches and abundant irregular veinlets.

**Sample ddh 04-10 209.3 m** is a hypabyssal syenite that contains scattered phenocrysts of plagioclase, in part overgrown by K-feldspar, and minor ones of hornblende in a groundmass dominated by unoriented prismatic K-feldspar grains, with minor biotite and magnetite. Plagioclase was altered moderately to sericite-calcite overgrown moderately to strongly by K-feldspar, hornblende was replaced completely by various intergrowths of calcite/ ankerite, quartz, and rutile, and biotite was replaced slightly to moderately by quartz-rutile. Interstitial patches of calcite/ankerite and quartz probably are of replacement origin. Several veinlets are of quartz-(calcite) and a few are of calcite.

**Sample ddh 04-11 89.5 m** is a porphyritic hypabyssal latite/monzodiorite that contains phenocrysts of plagioclase, lesser ones of hornblende, and minor ones of quartz in a groundmass dominated by plagioclase, with lesser K-feldspar and chlorite, and minor calcite, quartz, pyrite, and leucoxene. Plagioclase phenocrysts were altered slightly to sericite and hornblende phenocrysts were altered completely to chlorite and calcite/ankerite. Replacement patches, veins and veinlets are of calcite.

**Sample ddh 04-11 191.8 m** is mainly a pyroxene amphibolite that is dominated by actinolite and much less abundant clinopyroxene, magnetite, biotite, and sphene. Clinopyroxene forms ragged cores of grains that were replaced moderately to strongly by actinolite. Some actinolite grains were replaced moderately to completely by pseudomorphic tremolite and patches of calcite-(hematite). A patch in one corner of the section is of metamorphosed syenite that is dominated by coarse grained microcline with less abundant, finer grained plagioclase. Irregular veinlets are of calcite and lesser chlorite; near these, amphibole commonly is replaced by pale green tremolite/actinolite.

**Sample ddh 04-12 180.5 m** is a metamorphosed diorite that is dominated by plagioclase with lesser actinolite and much less abundant epidote, biotite, and K-feldspar, and minor sphene, hematite, calcite, apatite, and chalcopyrite. The ragged texture indicates a metamorphic history. Plagioclase is altered slightly to moderately to sericite and minor epidote. Some actinolite grains are altered moderately to strongly to tremolite-(calcite) and minor epidote. A veinlet is of calcite with minor epidote.

**Sample ddh 04-12 186.5 m** is an amphibolite that is dominated by unoriented, slightly interlocking grains of actinolite with much less abundant interstitial grains of biotite, magnetite, K-feldspar, sphene, and apatite. Two veinlets up to 0.3 mm wide are dominated by chlorite with lesser calcite, K-feldspar, and epidote.

**Photographic Notes:**

The scanned sections show the gross textural features of the sections; these features are seen much better on the digital image than on the printed image. Sample numbers are shown in or near the top left of the photos and photo numbers at or near the lower left. The letter in the lower right-hand corner indicates the lighting conditions: P = plane light, X = plane light in crossed nicols, R = reflected light. Locations of digital photographs (by photo number) are shown on the scanned sections. Descriptions of individual photographs are given at the end of the report.

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**Sample ddh 04-1 44.0 m** **Brecciated Felsic Tuff**
**Replacement: Quartz-(Epidote)**
**Veinlets: Calcite, Pyrite, Sericite**

Minor coarser grains of plagioclase and a few aggregates of plagioclase and lesser quartz are set in a groundmass dominated by anhedral, slightly interlocking plagioclase with much less abundant quartz and sericite. Pyrite and minor chalcopyrite form disseminated grains. Scattered replacement patches are of quartz and minor epidote. The rock was brecciated moderately, and brecciated zones are loci for discontinuous, fracture-filling veinlets of calcite and irregular veinlets and patches of sericite and pyrite. Calcite veinlets are dominant in one half of the section and pyrite and sericite veinlets are dominant in the other.

| mineral | percentage | main grain size range (mm) | |
|---|---|---|---|
| **megacrysts** | | | |
| plagioclase | 2- 3% | 0.07-0.2 | |
| quartz | minor | 0.05-0.1 | |
| **groundmass** | | | |
| plagioclase | 80-85 | 0.005-0.01 | |
| sericite | 4- 5 | 0.005-0.01 | |
| quartz | 4- 5 | 0.02-0.05 | |
| pyrite | 2- 3 | 0.05-0.15 | |
| epidote | 0.3 | 0.02-0.1 | |
| leucoxene | 0.2 | dusty | |
| chalcopyrite | minor | 0.03-0.05 | (a few up to 0.1 mm) |
| **replacement patches** | | | |
| quartz | 1- 2 | 0.03-0.1 | |
| epidote | 0.2 | 0.05-0.15 | |
| **veinlets** | | | |
| calcite | 2- 3 | 0.05-0.3 | |
| pyrite | 0.3 | 0.05-0.1 | |
| sericite | 0.1 | 0.005-0.01 | |
| quartz | minor | 0.01-0.03 | |

Plagioclase forms anhedral grains and irregular patches of a few to several grains that are concentrated moderately near one end of the section. Some patches contain zones of quartz of uncertain origin (primary or replacement). Plagioclase is altered slightly to moderately to sericite.

In the groundmass, plagioclase forms equant, anhedral, slightly interlocking grains, some of which are altered slightly to sericite.

Quartz forms disseminated grains and patches up to 0.2 mm in size, some of which may have replaced plagioclase and/or mafic minerals.

Pyrite forms disseminated, euhedral to subhedral grains.

Epidote forms disseminated, anhedral grains and clusters of a few grains, in part associated with sulphides.

Leucoxene forms disseminated, dusty grains and wispy seams.

Chalcopyrite forms disseminated grains.

(continued)

A few replacement patches up to 2 mm across are of quartz and epidote.

The rock was brecciated moderately, and fragments healed by wispy, discontinuous veinlets.

Calcite forms abundant, discontinuous, fracture-filling veinlets 0.02-0.2 mm wide. Most of these are concentrated near one end of the section.

Pyrite forms several discontinuous veinlets and lenses up to 0.15 mm wide. Some of these are intergrown with sericite and some contain minor chalcopyrite. Sericite also forms a few, wispy, irregular, discontinuous veinlets up to 0.1 mm wide. These veinlets are concentrated in brecciated zones in the opposite end of the section from the main zone of calcite veinlets.

A very few veinlets up to 0.03 mm wide are of quartz and minor calcite.

**Sample ddh 04-2 15.7 m Felsic Tuff**
**Veinlets: 1) Calcite-(Quartz);**
**2) Chlorite-Pyrite-Epidote-(K-feldspar-Quartz)**

Moderately abundant, anhedral plagioclase grains are set in a groundmass of much finer grained plagioclase with minor wispy seams and disseminated patches of leucoxene and minor disseminated pyrite and epidote. Scattered replacement patches are of epidote and chalcopyrite. Moderately abundant, irregular, in part braided veinlets and skeletal replacement patches are of calcite with minor quartz. A few late veinlets are of chlorite with minor to moderately abundant epidote and pyrite and locally abundant K-feldspar and quartz.

| mineral | percentage | main grain size range (mm) |
|---|---|---|
| **coarser grains** | | |
| plagioclase | 7- 8% | 0.03-0.1 |
| **groundmass** | | |
| plagioclase | 75-80 | 0.005-0.01 |
| epidote | 0.3 | 0.03-0.07 |
| leucoxene | 0.3 | dusty-0.01 |
| **replacement** | | |
| epidote | 3- 4 | 0.01-0.03 |
| chalcopyrite | 0.3 | 0.005-0.1 |
| **veinlets** | | |
| 1) calcite | 3- 4 | 0.05-0.5 |
| 2) chlorite-pyrite-epidote- (K-feldspar-quartz-chalcopyrite) | 2- 3 | 0.01-0.03 (cl, qz, Kf), 0.02-0.05 (ep), 0.02-0.2 (py), 0.005-0.03 (cp) |

Plagioclase forms equant to slightly elongate grains and fragments of from 0.03-0.2 mm in size. These are concentrated moderately to strongly in patches and bands up to 2 mm wide. Some are altered slightly to moderately to sericite.

The groundmass is dominated by equant, interlocking plagioclase grains.

Epidote forms disseminated grains and clusters of a few grains. It also forms several replacement patches up to 0.5 mm in size and diffuse vein-like lenses up to 0.2 mm wide, many of which contain moderately abundant, disseminated grains of chalcopyrite (0.01-0.03 mm).

Leucoxene forms disseminated spots and lenses.

Replacement patches and lenses up to 1 mm in size are of epidote and moderately abundant, disseminated chalcopyrite.

Calcite forms discontinuous, fracture-filling veinlets up to 0.3 mm wide and a few zones up to a few mm across that contain abundant skeletal patches of calcite replacing the groundmass. Some veinlets contain minor quartz and a few contain minor pyrite and chalcopyrite.

A few veinlets up to 0.3 mm wide are of chlorite, pyrite, epidote, K-feldspar and quartz. Chalcopyrite forms minor grains in fractures in pyrite and interstitial to pyrite grains and disseminated grains in some epidote patches. A few seams up to 0.03 mm wide are mainly of chlorite. Some of these cut and offset calcite veinlets by up to 0.1 mm. A few veinlets are dominated by K-feldspar and epidote. Pyrite forms a few discontinuous veinlets up to 0.1 mm wide.

**Sample ddh 04-2 37.2 m** **Hypabyssal, Porphyritic Diorite/Andesite**
**Veins: Calcite-(Chlorite); Epidote-Chlorite-Pyrite**

Anhedral plagioclase phenocrysts, clusters of smaller plagioclase grains and a few subhedral hornblende phenocrysts (altered to calcite-chlorite-plagioclase) are set in a groundmass dominated by much finer grained plagioclase with patches of calcite-chlorite after hornblende. Replacement patches are of epidote and pyrite with much less abundant chalcopyrite and quartz. Several veinlets are of calcite. One veinlet is of epidote-pyrite-chlorite.

| **mineral** | **percentage** | **main grain size range (mm)** | |
|---|---|---|---|
| **phenocrysts** | | | |
| plagioclase | | | |
| large | 8-10% | 0.3-0.8 | (a few up to 1.5 mm) |
| medium | 17-20 | 0.05-0.3 | |
| hornblende | 2- 3 | 0.5-1.5 | |
| **groundmass** | | | |
| plagioclase | 35-40 | 0.01-0.03 | |
| calcite-chlorite | 12-15 | 0.02-0.05 | |
| Ti-oxide/leucoxene | 0.5 | 0.005-0.02 | |
| apatite | minor | 0.1-0.25 | |
| hematite/magnetite | minor | 0.15 | |
| **replacement** | | | |
| pyrite | 5- 7 | 0.05-0.5 | |
| epidote | 4- 5 | 0.03-0.1 | |
| chalcopyrite | 0.3 | 0.01-0.03 | |
| quartz | 0.1 | 0.03-0.05 | |
| **veinlets** | | | |
| calcite | 1- 2 | 0.05-0.2 | (0.3-0.7 mm in large vein) |
| epidote-pyrite-chlorite-(quartz-calcite) | 0.2 | 0.02-0.1 | |

Plagioclase forms anhedral to locally subhedral, equant to prismatic phenocrysts. These grade downwards in size to interlocking aggregates of plagioclase grains (0.1-0.5 mm). All are altered slightly to sericite.

Hornblende forms subhedral, prismatic phenocrysts that were replaced completely by various aggregates of calcite and chlorite.

In the groundmass, plagioclase forms moderately interlocking grains that are intergrown with coarser grained patches of plagioclase and with patches of chlorite and calcite (after hornblende). Ti-oxide/leucoxene forms disseminated, irregular patches up to 0.5 mm in size. Many of these were nuclei for formation of clusters of pyrite grains. Apatite forms a few equant, anhedral grains. Hematite/magnetite forms one anhedral grain 0.15 mm across.

Epidote forms ragged replacement patches up to 1 mm in size. Many of these are associated with patches of pyrite and some contain a few grains of chalcopyrite.

Pyrite forms disseminated, anhedral to subhedral grains and clusters of several grains, in part intergrown with epidote. Some large patches of pyrite were partly granulated along their margins

Chalcopyrite forms disseminated, anhedral grains associated with chlorite-calcite after hornblende.

Quartz forms a few replacement patches up to 0.7 mm in size.

Calcite forms a few irregular veinlets from 0.02-0.1 mm wide and one vein 0.7 mm wide.

A veinlet 0.03-0.05 mm wide is of epidote, pyrite, and chlorite with minor quartz and calcite.

**Sample ddh 04-5 36.6 m Banded Calcite-Garnet-Quartz/Plagioclase-Pyrite Skarn**

The sample contains three main zones. Zone A is characterized by an intergrowth of calcite with lesser, disseminated garnet. Zone B is dominated by garnet with minor interstitial plagioclase/quartz and calcite. Zone C contains garnet with interstitial plagioclase/quartz and much less abundant calcite. Pyrite forms disseminated porphyroblasts with inclusions of garnet. Sphalerite forms disseminated patches. Chalcopyrite forms disseminated grains. A few veins and several veinlets are of calcite with minor quartz and a few are of quartz with minor calcite.

| **mineral** | **percentage** | **main grain size range (mm)** | |
|---|---|---|---|
| calcite | 40-45 | 0.02-0.07 | (a few up to 0.2) |
| garnet | 30-35 | 0.05-0.1 | |
| plagioclase/quartz | 15-17 | 0.005-0.02 | |
| pyrite | 2- 3 | 0.05-0.5 | |
| sphalerite | 0.1 | 0.02-0.05 | |
| chalcopyrite | minor | 0.005-0.03 | |
| chlorite | minor | 0.02-0.03 | |
| **veins, veinlets** | | | |
| calcite-(quartz) | 5- 7 | 0.1-1 (ct); 0.02-0.05 (qz) | |
| quartz-(calcite) | 0.3 | 0.02-0.05 | |

In Zone A, garnet forms disseminated, equant, anhedral grains enclosed in abundant calcite. This grades into Zone B, which is dominated by garnet with only minor interstitial quartz/plagioclase and calcite and minor patches of pale green chlorite. This in turn grades into Zone C which is dominated by garnet with more abundant interstitial plagioclase/quartz and minor to locally moderately abundant calcite. Plagioclase/quartz also is concentrated in a few bands up to 0.5 mm wide in both Zones A and C. Plagioclase/quartz forms strongly interlocking aggregates of grains that are interstitial to garnet.

Pyrite forms disseminated grains and clusters of a few grains. It forms a few porphyroblasts up to 1.5 mm across that contain abundant embayments and inclusions of garnet; textures suggest that pyrite formed by replacement of interstitial calcite and plagioclase/quartz. Pyrite also forms disseminated grains mainly from 0.01-0.05 mm in size.

Sphalerite forms a few irregular patches up to 0.5 mm across in Zone B. It contains minor inclusions of chalcopyrite, probably of exsolution origin.

Chalcopyrite forms disseminated grains in sphalerite, in and bordering pyrite, and in garnet.

Veins up to 2 mm wider are dominated by calcite with minor patches of quartz.

One vein 0.2-0.3 mm wide is dominated by slightly interlocking quartz and much less abundant calcite.

**Sample ddh 04-6 35.3 m** **Felsic Tuff Fragments in Quartz-(Chlorite-Pyrite-Epidote) Matrix**
**Veins: Calcite-Epidote-Chlorite-(Pyrite-Chalcopyrite); Quartz**

Angular fragments up to 2 cm in size of felsic tuff (A) are enclosed in and partly replaced by a patchy matrix dominated by quartz with lesser plagioclase, chlorite, epidote, and pyrite (B). Veins and veinlets are of calcite-epidote-chlorite-(pyrite-chalcopyrite). Minor veinlets and replacement patches are dominated by quartz.

| mineral | percentage | main grain size range (mm) |
|---|---|---|
| **coarser grains** | | |
| plagioclase | 1- 2% | 0.05-0.15 |
| **groundmass** | | |
| plagioclase | 40-45 | 0.005-0.01 |
| leucoxene | 1 | dusty-0.005 |
| pyrite | 0.3 | 0.03-0.05 |
| **replacement** | | |
| quartz | 35-40 | 0.01-0.03 |
| plagioclase | 5- 7 | 0.005-0.015 |
| chlorite | 4- 5 | 0.03-0.07 |
| pyrite | 2- 3 | 0.05-0.2 |
| epidote | 1- 2 | 0.03-0.05 |
| chalcopyrite | 0.3 | 0.02-0.1 |
| Ti-oxide/leucoxene | 0.1 | 0.005-0.02 |
| Muscovite | trace | 0.05-0.07 |
| pyrrhotite | trace | 0.005-0.01 |
| **veins, veinlets** | | |
| calcite-epidote-chlorite-quartz-(pyrite-chalcopyrite) | 2- 3 | 0.02-0.1 |
| quartz-(epidote-pyrite-chlorite) | 0.3 | 0.02-0.05 |

The felsic tuff fragments (A) contain scattered anhedral grains of plagioclase from 0.05-0.15 mm in size that are altered slightly to sericite. These grade downwards in size to that of the groundmass.

The groundmass of the fragments consists of interlocking grains of plagioclase with abundant, disseminated patches of leucoxene. Pyrite forms disseminated, anhedral grains.

The fragments are surrounded by a matrix that contains 2-5% anhedral plagioclase grains (0.05-0.15 mm) in a matrix dominated by quartz with minor to moderately abundant patches of extremely fine grained plagioclase and of chlorite. A few patches up to 1 mm across consist of a cluster of anhedral plagioclase grains from 0.1-0.2 mm in size. Plagioclase was altered slightly to sericite.

Chlorite forms clusters of up to a few grains. A few replacement patches up to 1.7 mm in size are dominated by chlorite with much less abundant quartz and pyrite.

Pyrite forms disseminated, subhedral to anhedral grains, many of which are associated with patches of chlorite. A few pyrite grains contain minor inclusions of pyrrhotite.

Epidote forms disseminated patches mainly less than 0.1 mm in size.

Chalcopyrite forms disseminated patches intergrown mainly with sulphides.

Ti-oxide/leucoxene forms ragged patches up to 0.2 mm in size.

Muscovite forms scattered flakes.

Veinlets up to 0.5 mm wide are of two or more of calcite, epidote, and chlorite, with scattered grains of pyrite and of chalcopyrite.

A few discontinuous veinlets up to 0.2 mm wide and replacement patches up to 0.5 mm across are of quartz; some of these also contain minor patches of epidote, pyrite, and chlorite.

**Sample ddh 04-9 10.2 m** **Volcanic Wacke**
**Veins: Epidote-Calcite-Quartz; Calcite-Quartz-Epidote-Pyrite**

Detrital grains are dominated by equant fragments of plagioclase grains, very fine grained aggregates of plagioclase, and extremely fine grained aggregates of quartz. These are set in a groundmass dominated by plagioclase and chlorite with lesser leucoxene. Replacement patches are of calcite, epidote, and pyrite. Veins are of epidote-calcite-(quartz) and of calcite-quartz-epidote-pyrite.

| mineral | percentage | main grain size range (mm) |
|---|---|---|
| **detrital grains** | | |
| plagioclase | 40-45% | 0.5-0.8 |
| quartz aggregate | 4- 5 | 0.01-0.03 |
| ilmenite | minor | 0.5 |
| **groundmass** | | |
| plagioclase | 15-20 | 0.005-0.02 |
| chlorite | 3- 4 | 0.005-0.015 |
| epidote | 0.3 | 0.05-0.1 |
| **replacement** | | |
| pyrite | 3- 4 | 0.05-0.5 |
| calcite | 1 | 0.03-0.1 |
| epidote | 0.5 | 0.03-0.07 |
| chalcopyrite | minor | 0.02-0.1 |
| **veins** | | |
| epidote-calcite-quartz | 5- 7 | 0.1-0.2 |
| calcite-quartz-epidote-pyrite | 2- 3 | 0.03-0.2 |

Plagioclase forms anhedral grains and clusters up to 1.5 mm in size of a few to several grains. Alteration is slight to sericite. Scattered fragments are of very fine grained aggregates of plagioclase.

A few fragments are of angular quartz grains and aggregates of a few grains from 0.2-0.7 mm in size. These probably are of plutonic origin.

Equant fragments up to 1 mm in size are of aggregates of equant, slightly interlocking quartz grains.

A few patches up to 0.5 mm in size are of ilmenite that was altered completely to Ti-oxide/ leucoxene.

The groundmass is of slightly interlocking plagioclase and chlorite with moderately abundant leucoxene.

Replacement patches are dominated by pyrite, calcite, and epidote.

Chalcopyrite forms inclusions in pyrite grains and elongate patches along grain boundaries in pyrite aggregates.

A vein up to 5 mm wide and a few much smaller veinlets are dominated by epidote with lesser calcite and a few patches of quartz. Epidote has a pink colour in hand sample.

A vein up to 2 mm wide is dominated by calcite with lesser quartz, epidote, and pyrite. A few, discontinuous veinlets up to 0.3 mm wide are of calcite.

**Sample ddh 04-9 30.5 m Hypabyssal Diorite/Andesite or Very Fine Volcanic Wacke**

Anhedral plagioclase phenocrysts and much less abundant hornblende phenocrysts are set in a groundmass of finer grained plagioclase. Disseminated replacement patches are of epidote and pyrite. Discontinuous, replacement veinlets are of epidote, of calcite, and of quartz.

| mineral | percentage | main grain size range (mm) |
|---|---|---|
| **phenocrysts** | | |
| plagioclase | 35-40% | 0.15-0.5 |
| hornblende | 4- 5 | 0.15-0.5 |
| **groundmass** | | |
| plagioclase | 40-45 | 0.005-0.01 |
| apatite | 0.1 | 0.05-0.15 |
| **replacement** | | |
| epidote | 4- 5 | 0.05-0.1 |
| pyrite | 3- 4 | 0.1-0.3 |
| chalcopyrite | minor | 0.01-0.05 |
| **veinlets** | | |
| 1) epidote | 1- 2 | 0.05-0.1 |
| 2) calcite | 0.3 | 0.02-0.05 |
| 3) quartz-(calcite) | 0.2 | 0.02-0.05 |

Plagioclase forms anhedral, equant to prismatic phenocrysts and clusters of a few grains. Alteration is slight to sericite and moderate to dusty hematite inclusions that give the grains a medium grey colour.

Hornblende forms anhedral, prismatic phenocrysts that were replaced completely by chlorite and locally by calcite-chlorite; both types contain minor patches of leucoxene.

The groundmass is dominated by moderately interlocking, equant plagioclase grains that are relatively free of dusty hematite inclusions.

Apatite forms disseminated, equant, anhedral grains.

Pyrite forms disseminated, anhedral to subhedral grains, some of which are porphyroblastic. One pyrite-rich lens is 4 mm long and up to 1.5 mm wide. A few pyrite grains contain minor inclusions of chalcopyrite. Chalcopyrite also is concentrated moderately as disseminated grains in a few patches of epidote and of calcite.

Epidote forms disseminated, irregular replacement patches up to 0.5 mm in size.

A vein up to 0.5 mm wide and a few veinlets are dominated by epidote with much less abundant calcite and pyrite.

A few wispy veinlets up to 0.03 mm wide are dominated by calcite and quartz.

One veinlet 0.02 mm wide is dominated by quartz.

**Sample ddh 04-10 11.6 m** **Zoned: Porphyritic Hypabyssal Latite**
**Hypabyssal Latite with Quartz-Sericite-Pyrite Alteration**
**Sericite/Muscovite-Quartz-Epidote Alteration**

The sample is zoned strongly. Zone A is a porphyritic hypabyssal latite that contains phenocrysts of plagioclase and minor ones of quartz in a groundmass dominated by plagioclase. Zone B consists of a replacement zone dominated by sericite with lesser epidote and quartz. Zone C contains patches of hypabyssal latite in a groundmass of much finer grained plagioclase and abundant replacement patches of one or more of K-feldspar, quartz, pyrite, and epidote.

**Zone A** (25-30% of section)

| **mineral** | **percentage** | **main grain size range (mm)** |
|---|---|---|
| **phenocrysts** | | |
| plagioclase | 12-15% | 0.3-1.5 |
| quartz | 1- 2 | 0.3-0.5 |
| **groundmass** | | |
| plagioclase | 30-35 | 0.01-0.02 |
| quartz | 4- 5 | 0.02-0.03 |
| pyrite | 2- 3 | 0.05-0.2 |
| apatite | minor | 0.05-0.07 |
| zircon | trace | 0.05 |
| **replacement** | | |
| sericite | 4- 5 | 0.01-0.03 |
| epidote | 1- 2 | 0.03-0.07 |
| calcite | 1- 2 | 0.03-0.05 |

Plagioclase forms subhedral phenocrysts that were altered slightly to sericite and patches of calcite. A few patches up to a few mm across consist of aggregates of anhedral plagioclase grains.

Quartz forms scattered, subrounded phenocrysts.

The groundmass is dominated by equant, slightly interlocking plagioclase grains with disseminated patches of chlorite (probably after hornblende).

Pyrite forms disseminated, subhedral to euhedral grains, many of which have a slight, partial rim of calcite.

Leucoxene forms irregular patches up to 0.3 mm in size, in part associated with pyrite.

Apatite forms disseminated, subhedral, equant grains.

Zircon forms one stubby, euhedral grain.

The zone was brecciated slightly, and sericite and pyrite were formed along fractures in the host rock.

**Zone B** (5-7% of section)

| **mineral** | **percentage** | **main grain size range (mm)** |
|---|---|---|
| sericite/muscovite | 80-85% | 0.02-0.1 |
| epidote | 10-12 | 0.05-0.1 |
| quartz | 3- 4 | 0.03-0.07 |
| pyrite | 0.3 | 0.05-0.2 |

(continued)

**Sample ddh 04-10 11.6 m** (page 2)

Zone B is a replacement zone dominated by sericite/muscovite. Epidote forms subradiating to massive patches intergrown with sericite. Quartz forms patches up to 0.5 mm in size of anhedral grains. Pyrite forms scattered, subhedral to euhedral grains.

**Zone C** (60-65% of section)

| **mineral** | **percentage** | **main grain size range (mm)** |
|---|---|---|
| plagioclase | 60-65% | 0.2-0.5; 0.005-0.01 |
| K-feldspar | 15-17 | 0.1-0.5 |
| quartz | 12-15 | 0.01-0.03 |
| chlorite | 2- 3 | 0.03-0.05 |
| pyrite | 3- 4 | 0.05-0.1 |
| calcite | 0.3 | 0.02-0.05 |
| Ti-oxide | 0.1 | 0.02-0.05 |
| chalcopyrite | minor | 0.03-0.07 |

This zone is variable in composition. It contains patches up to 2 mm across of aggregates of anhedral, moderately interlocking plagioclase grains (0.15-0.5 mm). These grade into zones of much finer grained plagioclase and K-feldspar. Plagioclase was altered slightly to sericite.

K-feldspar forms irregular replacement patches after plagioclase, relic plagioclase was altered strongly to sericite. Some finer grained replacement patches of K-feldspar also contain quartz.

Quartz forms abundant, irregular, replacement patches of equant, slightly interlocking grains. Grain size varies moderately from patch to patch. Scattered ovoid replacement patches up to 1 mm in size are dominated by slightly interlocking aggregates of quartz.

Interstitial to some patches of plagioclase is moderately abundant chlorite in patches up to 0.15 mm in size.

Pyrite forms disseminated, subhedral to euhedral grains and clusters and trains of grains.

Calcite forms scattered replacement patches up to 0.2 mm across and veinlets up to 0.03 mm wide.

Ti-oxide forms disseminated, irregular patches up to 0.2 mm in size. Some of these were loci for precipitation of pyrite.

Chalcopyrite forms scattered grains.

**veinlets** (1-2% of section)

| **mineral** | **percentage** | **main grain size range (mm)** |
|---|---|---|
| calcite-(quartz) | 0.5-1% | 0.02-0.1 |
| sericite-pyrite | 0.3 | 0.02-0.05 |

A veinlet 0.2 mm wide is dominated by calcite grains, many of which are oriented subperpendicular to the walls of the veinlet. A few smaller veinlets are of calcite and/or quartz.

In Zone C, an irregular veinlet 0.05 mm wide is of sericite with moderately abundant pyrite.

**Sample ddh 04-10 16.76 m** **Porphyritic Dacite**
**Replacement Patches: Quartz**
**Veins, Veinlets: Calcite, Quartz**

Phenocrysts of plagioclase (altered strongly to sericite and calcite), lesser phenocrysts of quartz, and minor ones of hornblende (altered completely to sericite and leucoxene) are set in an extremely fine grained groundmass dominated by plagioclase. A large replacement patch and numerous smaller ones are of quartz. An irregular replacement zone is of sericite-calcite. Abundant veins and veinlets are of calcite and a few are of quartz.

| **mineral** | **percentage** | **main grain size range (mm)** |
|---|---|---|
| **phenocrysts** | | |
| plagioclase | 5- 7% | 0.5-1.5 |
| quartz | 1- 2 | 0.5-0.7 |
| hornblende(?) | 0.3 | 0.5-1 |
| apatite | minor | 0.1-0.2 |
| **groundmass** | | |
| plagioclase | 40-45 | 0.005-0.01 |
| sericite | 8-10 | 0.005-0.01 |
| calcite | 3- 4 | 0.01-0.03 |
| pyrite | 3- 4 | 0.05-0.2 |
| **replacement** | | |
| quartz | 20-25 | 0.05-0.1 |
| **veins** | | |
| calcite | 7- 8 | 0.05-0.5 |
| quartz | 1- 2 | 0.02-0.07 |

Plagioclase forms subhedral to euhedral phenocrysts that were replaced strongly to completely by sericite and irregular patches of calcite.

Quartz forms scattered, subrounded phenocrysts. One quartz phenocryst was cut and offset 0.6 mm along a wispy veinlet of calcite-sericite 0.03 m wide.

Hornblende(?) forms subhedral phenocrysts that were replaced completely by sericite and leucoxene.

In one corner of the section, a patch 2 mm across with nearly orthogonal outlines consists of an intergrowth of quartz and sericite (possibly after plagioclase). The rectilinear shape of this patch suggests that it is an altered phenocryst, but the original mineral is uncertain. A few patches of quartz up to 0.5 mm in size have rectangular outlines and may be secondary after plagioclase or mafic phenocrysts.

Apatite forms a few subhedral to euhedral phenocrysts.

The groundmass is dominated by equant, moderately to strongly interlocking plagioclase grains.

Sericite forms very irregular replacement patches up to a few mm in size. Some patches contain minor to moderately abundant calcite. Some of this sericite may be secondary after plagioclase phenocrysts, but the original texture was destroyed and sericite replaced both phenocrysts and surrounding groundmass.

(continued)

Pyrite forms disseminated, euhedral to subhedral grains. A few grains are bordered by one or two flakes of muscovite.

A few replacement patches up to a few mm across are of slightly coarser grained plagioclase and quartz with lesser patches of sericite and minor ones of calcite.

At one end of the section is a large replacement patch dominated by quartz with minor calcite and pyrite. It contains a few fragments up to 1 mm in size of the host rock.

Several veins up to 0.7 mm wide and numerous discontinuous veinlets from 0.03-0.1 mm wide are of calcite. A few contain patches of subhedral to euhedral quartz grains. Veins are particularly abundant in the patch of replacement quartz.

A few discontinuous veinlets up to 0.5 mm wide are of quartz.

**Sample ddh 04-10 24.0 m** **Hypabyssal Diorite/Andesite or Very Fine Volcanic Wacke**
**Sericite-Calcite Alteration**
**Calcite-Quartz Veins**

The sample is altered moderately and textures are somewhat diffuse. Textures are most similar to those in Sample 04-9 30.6 m. Anhedral, coarser plagioclase grains are set in a groundmass of much finer grained plagioclase. Alteration is moderate to disseminated sericite and patches of calcite. Pyrite forms disseminated grains. Veinlets are of sericite-chlorite-pyrite, sericite-quartz, and calcite.

| mineral | percentage | main grain size range (mm) |
|---|---|---|
| **phenocrysts** | | |
| plagioclase | 20-25% | 0.05-0.25 |
| **groundmass** | | |
| plagioclase | 50-55 | 0.005-0.03 |
| leucoxene | 0.3 | dusty-0.01 |
| apatite | trace | 0.1-0.15 |
| **replacement** | | |
| sericite | 3- 5 | 0.005-0.02 |
| pyrite | 3- 5 | 0.03-0.3 |
| calcite | 2- 3 | 0.03-0.05 |
| quartz | 1- 2 | 0.03-0.3 |
| epidote | 0.2 | 0.02-0.05 |
| chlorite | 0.2 | 0.05-0.1 |
| chalcopyrite | minor | 0.02-0.07 |
| **veins** | | |
| sericite-chlorite-pyrite | 2- 3 | 0.01-0.03 (se, cl), 0.05-0.2 (py) |
| sericite-quartz-(chlorite-chalcopyrite) | 0.5 | 0.01-0.02 (se), 0.03-0.07 (qz, cl, cp) |
| calcite-(quartz) | 1- 2 | 0.05-0.5 |

Plagioclase forms anhedral, equant to slightly prismatic grains that were altered moderately to sericite and ragged patches of calcite.

Leucoxene forms disseminated, ragged patches and lenses.

Apatite forms disseminated, anhedral to subhedral grains.

Sericite forms anhedral replacement patches whose origin is uncertain; they may be after phenocrysts or may be replacement of the rock as a whole. Some replacement patches consist of intimate intergrowths of sericite and calcite.

Pyrite forms disseminated, subhedral to euhedral grains and clusters of a few to several grains. A few of these have overgrowths on one side of chlorite up to 0.15 mm thick. Most pyrite grains contain dusty to extremely fine silicate inclusions and a few contain an inclusion of chalcopyrite up to 0.01 mm in size.

Calcite forms irregular replacement patches up to 0.3 mm in size.

Quartz forms a few replacement patches up to 1 mm in size; some of these contain disseminated grains of chalcopyrite.

A few lenses up to 1.5 mm long are of a dense aggregate of anhedral epidote and calcite.

Pale green chlorite forms scattered equant grains and patches up to 0.1 mm in size.

Chalcopyrite forms minor disseminated patches in silicates and a few patches interstitial to pyrite.

**Sample ddh 04-10 24.0 m** (page 2)

Two subparallel veinlets up to 0.7 mm wide are of sericite, chlorite, and pyrite. Pyrite forms euhedral to subhedral grains

A few veinlets up to 0.1 mm wide are of sericite and quartz. Some of these also contain patches of chlorite and of chalcopyrite. Sericite also forms wispy lenses and patches that cut the rock.

Calcite forms irregular, in part diffuse veinlets up to 0.5 mm wide as well as discontinuous lenses, mainly from 0.03-0.1 mm wide. In some veins, grains are subparallel and oriented at 60-70° to the walls of the veinlet. A few veins contain subordinate patches of quartz.

**Sample ddh 04-10 96.1 m** **Felsic Tuff**
**Replacement: Quartz; Calcite, Sericite, Pyrite**
**Veinlets: Calcite, Quartz**

Minor phenocrysts of plagioclase are set in a groundmass of extremely fine grained plagioclase. In part of the sample the groundmass is slightly coarser grained and contains more quartz; this may be the result of early silicification. Irregular replacement patches are dominated by one or more of sericite, calcite, and pyrite. Irregular, discontinuous veins and veinlets are dominated by one or more of calcite, quartz, sericite, and pyrite. Several veinlets of quartz-sericite contain moderately abundant disseminated chalcopyrite and minor to moderately abundant calcite.

| mineral | percentage | main grain size range (mm) |
|---|---|---|
| **phenocrysts** | | |
| plagioclase | 1- 2% | 0.1-0.2 |
| quartz | trace | 0.2 |
| **groundmass** | | |
| plagioclase | 55-60 | 0.003-0.005 |
| quartz | 10-12 | 0.005-0.01 |
| leucoxene | 0.5 | dusty-0.005 |
| apatite | trace | 0.05-0.1 |
| **replacement** | | |
| calcite | 4- 5 | 0.02-1 |
| sericite | 5- 7 | 0.005-0.01 |
| pyrite | 3- 4 | 0.05-0.2 |
| quartz | 0.5 | 0.02-0.05 |
| chlorite | 0.3 | 0.03-0.07 |
| chalcopyrite | 0.1 | 0.02-0.07 |
| **veins** | | |
| calcite-(quartz) | 5- 7 | 0.02-0.1 (ct); 0.02-0.05 (qz) |
| quartz-sericite-calcite-chalcopyrite | 2- 3 | 0.03-0.1 (qz, ct); 0.01-0.03 (se), 0.03-0.3 (cp) |

Plagioclase forms subhedral prismatic to equant phenocrysts that are concentrated moderately to strongly in a few patches in the section.

Quartz forms one angular, detrital grain.

In part of the rock, the groundmass is dominated by equant, interlocking plagioclase grains. Disseminated patches of calcite and sericite may, in part, be replacements of original plagioclase grains from 0.05-0.1 mm in size. In the other part of the rock, the groundmass is slightly coarser grained and contains moderately abundant quartz; this zone may represent an early, silicification of the host rock.

Leucoxene forms disseminated spots.

Apatite forms scattered, anhedral, equant grains.

(continued)

A few irregular replacement patches up to a few mm across are dominated by sericite; some contain patches of pyrite and interstitial chlorite.

Pyrite forms disseminated, subhedral to euhedral grains and clusters up to a few mm across of a few to many grains. A few diffuse, discontinuous veinlets up to 0.2 mm wide consist of trains of these grains.

A few replacement patches are dominated by quartz with much less abundant chlorite and chalcopyrite.

Calcite forms lensy, discontinuous veinlets up to 1 mm wide. Some of these contain minor to moderately abundant quartz. In some large veins, calcite grains are elongated and oriented at a high angle to the length of the vein, and in others, grains are equant and show no preferred orientation. One slightly banded calcite vein up to 1 mm wide cuts a quartz veinlet 0.2 mm wide.

Quartz forms a few discontinuous veinlets up to 0.3 mm wide; some of these contain minor calcite. One veinlet up to 0.3 mm wide is dominated by quartz with much less abundant, interstitial calcite along its centreline.

A few veinlets up to 1 mm wide are dominated by quartz and/or sericite and contain disseminated patches of chalcopyrite and of chlorite. The largest vein contains several chalcopyrite patches from 0.1-0.3 mm in size.

**Sample ddh 04-10 141.5 m** **Cataclastically Deformed Hypabyssal Diorite**
**Veins and Replacement: Epidote, Calcite, (Chlorite, Quartz)**

Three fragments up to 1 cm in size are of hypabyssal diorite dominated by plagioclase (A). One exotic fragment is of hypabyssal latite (B). These are set in a matrix of extremely fine grained plagioclase that contains minor to moderately abundant plagioclase crystal fragments whose texture is similar to that in the coarser fragments. Some textures suggest that the rock was deformed cataclastically. One patch of groundmass is free of plagioclase fragments (C). A large vein is of epidote-calcite-(chlorite). Several replacement patches up to a few mm across are of epidote. Calcite forms replacement patches and abundant irregular veinlets.

| mineral | percentage | main grain size range (mm) | |
|---|---|---|---|
| **fragments** | | | |
| **diorite** | | | |
| plagioclase | 20-25% | 0.3-1 | |
| K-feldspar | 3- 4 | 0.02-0.05 | (only in fragment A’) |
| chlorite | 0.5 | 0.02-0.05 | |
| leucoxene | 0.3 | dusty-0.03 | |
| **latite** | | | |
| plagioclase | 3- 4 | 0.05-0.1 | |
| **groundmass** | | | |
| **megacrysts** | | | |
| plagioclase | 17-20 | 0.1-0.5 | |
| **groundmass** | | | |
| plagioclase | 35-40 | 0.005-0.01 | |
| chlorite | 1- 2 | 0.03-0.05 | |
| leucoxene | 1 | dusty-0.05 | |
| pyrite | 0.5 | 0.02-0.05 | |
| chalcopyrite | minor | 0.02-0.15 | |
| **veins and replacement** | | | |
| epidote-calcite-(chlorite) | 5- 7 | 0.03-0.15 | |
| calcite | 2- 3 | 0.05-0.8 | |

Fragment A consists of interlocking, subhedral plagioclase grains (0.1-0.8 mm) with less than 5% interstitial patches of extremely fine grained plagioclase with patches of leucoxene/Ti-oxide and minor disseminated pyrite and 2-3% ragged, replacement patches of calcite.

Fragment A’ consists of an intergrowth of slightly more elongated plagioclase grains with 20-25% much finer grained interstitial patches of plagioclase and K-feldspar with disseminated leucoxene and 2-5% irregular replacement patches of calcite and minor pyrite. Many larger plagioclase grains were replaced slightly by irregular patches of K-feldspar.

Fragment A” is somewhat similar to Fragment A, but contains 30% interstitial patches of slightly interlocking, equant plagioclase (0.01-0.02 mm).

Fragment B (latite) consists of an unoriented intergrowth of prismatic and lesser equant plagioclase grains (0.05-0.15 mm) with minor disseminated leucoxene, patches of calcite, and pyrite.

(continued)

The groundmass contains abundant, anhedral grains of plagioclase in a groundmass of much finer grained plagioclase with much less abundant patches of chlorite and disseminated, ragged patches of leucoxene. Zone C is free of coarser plagioclase fragments.

Epidote forms replacement patches up to a few mm across, whose margins range from sharp to ragged. Some epidote patches contain aggregates of chalcopyrite and pyrite up to 0.5 mm across.

Calcite forms irregular replacement patches up to 0.5 mm in size in both groundmass and fragments.

Pyrite forms disseminated, subhedral to euhedral grains that are concentrated moderately to strongly in certain parts of the section.

Chalcopyrite forms minor disseminated patches.

A large, slightly discontinuous vein up to 0.5 mm wide and a much narrower branch are dominated by epidote with lesser calcite and minor chlorite. In an alteration envelope up to 2 mm wide about the vein, the wall rock contains minor disseminated patches of epidote.

Calcite forms several, irregular veins from 0.1-0.5 mm wide and numerous, discontinuous veinlets up to 0.1 mm wide.

**Sample ddh 04-10 209.3 m** **Hypabyssal Syenite**
**Replacement, Veinlets: Quartz-Calcite/Ankerite**

Scattered phenocrysts of plagioclase, in part overgrown by K-feldspar, and minor ones of hornblende are set in a groundmass dominated by unoriented prismatic K-feldspar grains, with minor biotite and magnetite. Plagioclase was altered moderately to sericite-calcite overgrown moderately to strongly by K-feldspar, hornblende was replaced completely by various intergrowths of calcite/ ankerite, quartz, and rutile, and biotite was replaced slightly to moderately by quartz-rutile. Interstitial patches of calcite/ankerite and quartz probably are of replacement origin. Several veinlets are of quartz-(calcite) and a few are of calcite.

| mineral | percentage | main grain size range (mm) | |
|---|---|---|---|
| **phenocrysts** | | | |
| plagioclase | 7- 8% | 1- 2 | |
| hornblende | 2- 3 | 1-1.7 | |
| biotite | 1- 2 | 0.5-1 | |
| **groundmass** | | | |
| K-feldspar | 82-85 | 0.5-1 | |
| magnetite | 1 | 0.05-0.2 | |
| quartz | 0.1 | 0.07-0.2 | |
| apatite | 0.1 | 0.1-0.2 | |
| pyrite | minor | 0.05-0.1 | |
| **replacement, veins** | | | |
| calcite/ankerite | 4- 5 | 0.1-0.3 | |
| quartz | 2- 3 | 0.01-0.03 | (a few grains up to 0.4 mm) |

Plagioclase forms subhedral, prismatic to equant phenocrysts, many of which were overgrown by K-feldspar. Plagioclase was altered moderately to strongly to extremely fine intergrowths of sericite and calcite. Some K-feldspar probably was formed by replacement of plagioclase.

Hornblende forms a few subhedral to euhedral, prismatic phenocrysts. Some were replaced completely by calcite/ankerite with minor sericite/muscovite and disseminated grains of rutile. A few were replaced by aggregates of quartz and minor disseminated grains of Ti-oxide and minor to moderately abundant patches of calcite/ankerite; quartz-rutile textures are similar to those bordering biotite grains. Some quartz-rich patches also contain local clusters of sericite/muscovite intergrown with patches of Ti-oxide.

Biotite forms a few flakes with pleochroism from light straw to deep brownish red or red. Most are surrounded by very fine grained quartz containing disseminated grains of rutile; these aggregates probably are secondary after biotite. One biotite flake was replaced moderately by patches of calcite/ankerite.

The groundmass is dominated by unoriented, prismatic grains of K-feldspar that contains abundant, dusty hematite inclusions.

Magnetite forms disseminated, equant grains that were replaced strongly to completely by slightly translucent, deep reddish brown hematite.

Quartz forms minor interstitial patches.

Apatite forms subhedral to euhedral, prismatic grains.

Pyrite forms disseminated, subhedral grains.

(continued)

Calcite/ankerite forms interstitial patches, probably of replacement origin. These patches are dominated by calcite with zones, mainly along their margins of much higher relief that are interpreted to be ankerite.

Quartz is concentrated in discontinuous veinlets up to 0.2 mm wide and a few irregular patches. One of the veinlets has a lens of coarser grained calcite in its core.

A few veinlets up to 0.15 mm wide are dominated by calcite with minor quartz.

**Sample ddh 04-11 89.5 m Porphyritic Hypabyssal Latite/Monzodiorite**
**Veins, Veinlets: Calcite**

Phenocrysts of plagioclase, lesser ones of hornblende, and minor ones of quartz are set in a groundmass dominated by plagioclase, with lesser K-feldspar and chlorite, and minor calcite, quartz, pyrite, and leucoxene. Plagioclase phenocrysts were altered slightly to sericite and hornblende phenocrysts were altered completely to chlorite and calcite/ankerite. Replacement patches, veins and veinlets are of calcite.

| mineral | percentage | main grain size range (mm) | |
|---|---|---|---|
| **phenocrysts** | | | |
| plagioclase | 15-17% | 0.5-1.7 | (one grain 2.3 mm long) |
| hornblende | 4- 5 | 0.5-1.5 | |
| quartz | 0.5 | 0.1-0.3 | (one grain 0.9 mm across) |
| **groundmass** | | | |
| plagioclase | 55-60 | 0.01-0.1 | |
| K-feldspar | 10-12 | 0.01-0.03 | |
| chlorite | 4- 5 | 0.02-0.05 | |
| calcite | 1- 2 | 0.05-0.1 | |
| quartz | 1 | 0.05-0.3 | |
| leucoxene | 0.5 | 0.005-0.02 | |
| pyrite | 0.5 | 0.05-0.5 | |
| apatite | minor | 0.05-0.1 | |
| pyrrhotite | trace | 0.005-0.01 | |
| **veins** | | | |
| calcite | 3- 4 | 0.1-3 | |

Plagioclase forms euhedral to subhedral, prismatic phenocrysts that were altered slightly to moderately to sericite.

Hornblende forms subhedral to euhedral, equant to prismatic phenocrysts that were replaced completely by chlorite and calcite with ragged patches of leucoxene.

Quartz forms one subrounded phenocryst 0.9 mm across and a few, small, rounded phenocrysts.

The groundmass contains equant to slightly prismatic plagioclase grains with interstitial patches of finer grained plagioclase and K-feldspar, with lesser interstitial patches of chlorite, disseminated interstitial grains of quartz, and ragged replacement patches of calcite.

Leucoxene forms ragged patches, commonly associated with chlorite.

Pyrite forms disseminated, anhedral to locally subhedral grains, a few of which contain minor inclusions of pyrrhotite.

Apatite forms disseminated, anhedral to subhedral, equant to prismatic grains.

Calcite forms irregular replacement patches up to 2 mm across, a few veins up to 1.5 mm wide, and several veinlets from 0.01-0.05 mm wide. Many grains in the largest veins are over 2 mm in size. One small veinlet 0.15 mm wide contains a patch 0.02 mm across of chalcopyrite and bornite.

**Sample ddh 04-11 191.8 m** **Pyroxene Amphibolite; Patch of Metamorphosed Syenite**
**Veinlets: Calcite-(Chlorite)**

The sample is dominated actinolite and much less abundant magnetite, biotite, and sphene. Clinopyroxene forms ragged cores of grains that were replaced moderately to strongly by actinolite. Some actinolite grains were replaced moderately to completely by pseudomorphic tremolite and patches of calcite-(hematite). A patch in one corner of the section is of metamorphosed syenite that is dominated by coarse grained microcline with less abundant, finer grained plagioclase. Irregular veinlets are of calcite and lesser chlorite; near these, amphibole commonly is replaced by pale green tremolite/actinolite.

| **mineral** | **percentage** | **main grain size range (mm)** | |
|---|---|---|---|
| actinolite | 83-85% | 0.5-2 | |
| magnetite | 4- 5 | 0.05-0.5 | |
| biotite | 2- 3 | 0.5-1 | |
| sphene | 1 | 0.03-0.07 | (a few grains up to 0.2 mm) |
| epidote | 0.2 | 0.03-0.07 | (a few grains up to 0.5 mm) |
| pyrite | trace | 0.01-0.03 | |
| **syenite** | | | |
| K-feldspar | 4- 5 | 0.3-2 | |
| plagioclase | 1- 2 | 0.05-0.5 | |
| calcite | 0.2 | 0.03-0.1 | |
| **veins, veinlets** | | | |
| calcite | 2- 3 | 0.02-0.2 | |
| chlorite | 0.3 | 0.02-0.05 | |
| pyrite | trace | 0.03-0.05 | |

Actinolite forms anhedral, slightly interlocking, prismatic grains with pleochroism from light to medium green. Some grains were altered moderately to completely in patches to pseudomorphic, colourless to pale green tremolite with minor to abundant irregular patches of calcite. Some patches of calcite contain abundant ragged patches of dusty to extremely fine grained hematite.

Biotite forms subhedral flakes and clusters of several flakes with pleochroism from pale to medium brownish green.

Clinopyroxene forms a few patches of moderately corroded grains that were replaced moderately by actinolite. Some of the actinolite was replaced by tremolite/actinolite and calcite.

Magnetite forms disseminated, anhedral grains. Many have a thin rim or partial rim of sphene. Hematite occurs in scattered patches bordering magnetite grains and locally forms a weak replacement within margins of magnetite grains. A few biotite grains adjacent to a magnetite grain contain flame-like aggregates or a lens of hematite growing along cleavage planes outwards from the contact with the magnetite grain. A few other biotite grains contain up to a few thin lamellae of hematite along cleavage planes.

Sphene forms disseminated, anhedral to subhedral grains included in actinolite grains and rims on magnetite grains. A few grains are altered slightly to moderately to Ti-oxide/leucoxene.

Epidote forms disseminated, anhedral grains and patches.

Calcite forms interstitial patches up to 1.5 mm in size that grade into calcite-altered amphibole.

Pyrite forms disseminated, anhedral grains.

(continued)

In one corner of the section is a patch a few m across of metamorphic syenite (of feldspar segregation) dominated by coarse grained K-feldspar with much less abundant, much finer grained plagioclase. Plagioclase was replaced slightly to moderately by irregular patches of calcite. Calcite also forms scattered, interstitial patches up to 0.3 m in size.

Veinlets up to 0.2 mm wide are dominated by calcite with locally moderately abundant patches of chlorite. Pyrite forms a few lensy patches up to 0.2 mm long. Adjacent to many veinlets, actinolite was altered moderately to strongly to pseudomorphic tremolite.

**Sample ddh 04-12 180.5 m** **Metamorphosed Diorite**
**Veinlet: Calcite-(Epidote)**

The rock is dominated by plagioclase with lesser actinolite and much less abundant epidote, biotite, and K-feldspar, and minor sphene, hematite, calcite, apatite, and chalcopyrite. The ragged texture indicates a metamorphic history. Plagioclase is altered slightly to moderately to sericite and minor epidote. Some actinolite grains are altered moderately to strongly to tremolite-(calcite) and minor epidote. A veinlet is of calcite with minor epidote.

| mineral | percentage | main grain size range (mm) | |
|---|---|---|---|
| plagioclase | 65-70% | 0.3-0.7 | (a few from 1.2 -2 mm) |
| actinolite | 12-15 | 0.2-1 | (a few from 2-3.5 mm) |
| epidote | 5- 7 | 0.2-0.5 | |
| biotite | 4- 5 | 0.3-1 | |
| K-feldspar | 3- 4 | 0.2-0.7 | |
| sphene | 0.7 | 0.05-0.15 | |
| hematite | 0.2 | 0.02-0.08 | |
| apatite | 0.1 | 0.05-0.1 | |
| calcite | 0.1 | 0.05-0.2 | |
| chalcopyrite | 0.1 | 0.01-0.05 | (a few up to 0.15 mm) |
| magnetite | 0.1 | 0.03-0.07 | (a few up to 0.3 mm) |
| pyrite | trace | 0.05-0.1 | |
| bornite | trace | 0.01-0.02 | |
| **veinlet** | | | |
| calcite-(epidote) | 0.2 | 0.03-0.07 | |

Plagioclase forms anhedral, slightly interlocking grains, a few of which were altered moderately to sericite.

Actinolite forms ragged prismatic grains with pleochroism from light to medium green. Some grains, including most of the coarser ones, were replaced moderately to strongly in patches by pale green tremolite.

Epidote forms ragged grains and patches, in part replacing actinolite and in part replacing plagioclase.

Biotite forms ragged flakes with pleochroism from light to medium, brownish green.

K-feldspar forms anhedral interstitial grains and also forms replacement patches along and near borders of some plagioclase grains.

Sphene forms anhedral, disseminated grains.

Calcite forms anhedral, interstitial grains.

Apatite forms disseminated, subhedral to anhedral, equant to prismatic grains.

Pyrite forms anhedral grains

Magnetite forms anhedral, equant grains, some of which were altered slightly to hematite.

Chalcopyrite forms anhedral grains, commonly associated with epidote. A few patches of chalcopyrite contain one to a few grains of bornite.

One patch 0.3 mm across contains an intergrowth of chalcopyrite, pyrite, and platy hematite.

Hematite forms patches up to 0.2 mm in size of anhedral to platy grains.

A veinlet 0.1 mm wide is dominated by calcite with much less abundant epidote.

**Sample ddh 04-12 186.5 m** **Amphibolite**
**Veinlets: Chlorite-Calcite-K-feldspar-Epidote**

The sample is dominated by unoriented, slightly interlocking grains of actinolite with much less abundant interstitial grains of biotite, magnetite, K-feldspar, sphene, and apatite. Two veinlets up to 0.3 mm wide are dominated by chlorite with lesser calcite, K-feldspar, and epidote.

| **mineral** | **percentage** | **main grain size range (mm)** | |
|---|---|---|---|
| actinolite | 85-87% | 0.5-1.5 | (a few up to 2.5 mm long) |
| biotite | 5- 7 | 0.2-0.5 | |
| magnetite | 4- 5 | 0.1-0.5 | |
| K-feldspar | 1- 2 | 0.1-0.15 | |
| sphene | 1- 2 | 0.05-0.15 | |
| apatite | 0.7 | 0.05-0.1 | (a few grains from 0.2-0.4 mm long) |
| epidote | minor | 0.05-0.15 | |
| chalcopyrite | trace | 0.02-0.03 | |
| **veinlets** | | | |
| chlorite-calcite-K-feldspar-epidote | 1- 2 | 0.03-0.15 | |

Actinolite forms anhedral, slightly interlocking, prismatic to equant grains with pleochroism from pale to light/medium, slightly brownish green. Many grains contain abundant, commonly platy opaque inclusions that are oriented along major crystallographic directions in actinolite. A few patches up to 0.4 mm in size are of subradiating aggregates of tremolite.

Biotite forms disseminated flakes with pleochroism from straw to light, brownish green. A few grains were replaced moderately to completely in plates parallel to cleavage by pale green, pseudomorphic chlorite. A few grains were replaced slightly to moderately by patches of K-feldspar. One elongate grain 0.8 mm long was replaced by a very fine grained aggregate of K-feldspar with wispy relic seams of sericite/muscovite oriented parallel to the length of the grain.

Magnetite forms disseminated, anhedral grains, many of which were replaced slightly to moderately by hematite in irregular patches near margins of the grains. Some magnetite grains are rimmed partly by sphene.

K-feldspar forms disseminated, interstitial grains.

Sphene forms disseminated, anhedral grains.

Apatite forms disseminated, anhedral grains.

Epidote forms a few patches up to 0.2 mm in size.

Calcite forms scattered anhedral, in part ragged grains.

Chalcopyrite forms one elongate grain

An irregular veinlet up to 0.4 mm wide is of chlorite and calcite with lesser K-feldspar and epidote. An irregular veinlet up to 0.2 mm wide is of chlorite with patches of epidote. Veinlets contain angular fragments of the host rock, including several sphene grains.

APPENDIX 5a

Logistical Report - Induced Polarization, Magnetometer and VLF Surveys

by
SJ GEOPHYSICS LTD.

# ***LOGISTICAL REPORT***

# ***COUGAR MINERAL LTD.***

3D Induced Polarization Survey

*Exploration Project*

**SEPTEMBER 2004**

GRAND FORKS, BC,
CANADA

*LOCATION OF CONTROL POINT AT THE CENTER OF THE GRID (APPROXIMATELY)*
*397840E 5488735N (WGS 84 ZONE 11U)*

PREPARED FOR
COUGAR MINERALS LTD.

Survey by

***S J  G e o p h y s i c s  L t d .***

Report by


Jesse Corrigan
Cameron Wallace
S.J.V. Consultants Ltd.
Date: October/November 2004

# Table of Contents

# 1. Introduction

Cougar Minerals Ltd. contracted the services of SJ Geophysics Ltd. to conduct an Induced Polarization survey over areas of the IXL Mine property near Grand Forks, BC. The gathered data was then to be used in determining the location of future drill holes and trench targets.

# 2. Location and Line Information

Located roughly a 1.5 hour drive North of Grand Forks, the grid was prepared with 11 slope-corrected lines, tied together with a baseline at 10100N. The slope of terrain varied from between 0 % to as much as 100% in areas. Lines 5800E through 5200E were 1.1 km in length, lines 5100E through 4800E were 1 km in length. The survey was conducted at 50 meter spacing. The grid was reached via forestry access roads. The helpers used a hand-held radio to communicate with traffic and lead the drive each morning. Following the departure of the helpers, a short-range hand-held field radio was programmed for crew use.

## 3. Field Work and Instrumentation

The survey was conducted during the period from September 9th, 2004 to September 25th, 2004. This includes 2 days for mobilization, and demobilization. The geophysical data was collected from September 11th to September 24th of 2004. During 10 days of production 13 Km of IP data were collected. Following the IP survey 11.8 Km of Mag/VLF data were collected. Five days were lost due to equipment problems, setup, and weather.

The geophysical crew consisted of 5 members, Tony Cade, Jesse Corrigan Dominic Kot. Helpers Mike Hibberson and Chris Shuster were supplied by the client. Jesse was the receiver operator, and Dominic was the transmitter operator for the majority of the survey. The IP survey required current lines on either side of the receiver with one additional line along the receiver line to provide additional shallow detail. Mike and Chris worked current lines for the duration of the survey. Tony and Dominic alternated on the transmitter and current during the survey. Tony and Dominic conducted the Mag/VLF following the IP survey, after the rest of the crew had departed.

The instrumentation used in the field consisted of an Elrec 10 Receiver and a GDD TxII transmitter for the IP survey. The Mag/VLF was conducted using EDA units with VLF capability.

The detailed specifications are located in Appendix 6 of this report.

# 4. Geophysical Techniques

## *4.1. IP Method*

The time domain IP technique energizes the ground surface with an alternating square wave pulse via a pair of current electrodes. On most surveys, such as this one, the IP/Resistivity measurements are made on a regular grid of stations along survey lines.

After the transmitter (Tx) pulse has been transmitted into the ground via the current electrodes, the IP effect is measured as a time diminishing voltage at the receiver electrodes. The IP effect is a measure of the amount of IP polarizable materials in the subsurface rock. Under ideal circumstances, IP chargeability responses are a measure of the amount of disseminated metallic sulfides in the subsurface rocks.

Unfortunately, there are other rock materials that give rise to IP effects, including some graphitic rocks, clays and some metamorphic rocks (serpentinite for example). So from a geological point of view, IP responses are almost never uniquely interpretable. Because of the non-uniqueness of geophysical measurements it is always prudent to incorporate other data sets to assist in interpretation.

Also, from the IP measurements the apparent (bulk) resistivity of the ground is calculated from the input current and the measured primary voltage.

IP/resistivity measurements are generally considered to be repeatable to within about five percent. However, they will exceed that if field conditions change due to variable water content or variable electrode contact.

IP/resistivity measurements are influenced, to a large degree, by the rock materials nearest the surface (or, more precisely, nearest the measuring electrodes), and the interpretation of the traditional pseudosection presentation of IP data in the past have often been uncertain. This is because stronger responses that are located near surface could mask a weaker one that is located at depth.

### *4.2. Discussion of Directional Effect on the IXL Grid*

When processing the data for a 3D IP survey a pseudo-section is produced for quality control. These sections split the data up into 6 different parts based on the relation of the transmitting line to the receiver line, and based on the relation of the transmitting station to the receiving dipole. In this particular data set we noticed something very interesting. The difference in the amplitude of the calculated resistivity was quite dramatic based on the relation of the current electrode to the receiving dipole. The amplitude of the resistivity is calculated from the recorded current, recorded voltage and the location of the transmitting and receiving poles. Because of this we often find that any calculated resistivity values that fluctuate systematically, and with any relation to survey design, are an indication of a problem in location, such as mislabeled stations. When the receiving dipole was on the south side of the electrode the amplitude of the calculated resistivity was roughly half the amplitude of the same calculated resistivity from the other side, so of course we examined the location database and the labeling. We were unable to find any errors, and, as the difference between the calculated resistivity when the current electrode was north of the receiving dipole compared to when it was to the south of the receiving dipole appeared almost systematic, but no longer related to the survey design, we began to realise that this was a pronounced instance of the directional effect.

There has been an increasing awareness in geophysics of what is called the directional effect in relation to IP. This roughly means that the position of the receiving dipole in relation to the position of the transmitting current electrode can affect the resulting shape, presence, size and amplitude of the calculated resistivity. This increased awareness has been present due to a slow move away from one direction 2D IP surveying. Fortunately, the survey done was 3D IP, so we were able to discover this affect and provide an inverted result. As we are very interested in discovering more details of this effect we are interested in re-surveying the area to make sure it is repeatable, depending on if and when it might be possible for us to spare a crew and if Cougar Minerals Ltd. would be able to allow us access to the property. We may also conduct a standard 2D survey over the same area to further compare the results. The inversion program seemed to be able to resolve the anomalies quite well, though we would be curious to see how accurately this corresponds with drill results and geological results.

There is also the question of the extent of the anomalies, as they are not fully covered by the grid, further surveying done to the SouthWest and NorthWest of the grid, as well as to the East should allow a more complete map of the anomalies in the area, this may also allow us to further resolve any directional effects. Further discussion of the possible anomalous extents based on geophysics and surrounding geology is recommended, as the exact size and shape of possible grid extensions relies on a number of factors.

Respectfully Submitted

Cameron Wallace Bsc.

Geophysical Technician

SJ Geophysics Ltd./ S.J.V. Consultants Ltd.

Delta, B.C.

# 5. Appendix 1 – Statement of Qualifications

## *5.1. Cameron Wallace*

I, Cameron Wallace, of the city of Vancouver, Province of British Columbia, hereby certify that:

1. I graduated from the University of Victoria 2003 with a Bachelor of Science degree majoring in geography.
2. I have been working in mineral and oil exploration since February 2004.
3. I have no interest in Cougar Minerals Ltd., or in any property within the scope of this report, nor do I expect to receive any.

Signed by: ___________________________

Cameron Wallace
Geophysical Technician

Date: ___________________________

# 6. Appendix 3 – Instrument Specifications

## *6.1. Iris Elrec 10 IP Receiver*

Technical:

| | |
|---|---|
| Input impedance: | 10 Mohm |
| Input overvoltage protection up to 1000V | |
| Automatic SP bucking with linear drift correction | |
| Internal calibration generator for a true calibration on request of the operator | |
| Internal memory: | 3200 dipoles reading |
| Automatic synchronization and re-synchronization process on primary voltages signals whenever needed | |
| Proprietary intelligent stacking process rejecting strong non-linear SP drifts | |
| Common mode rejection: | More than 100 dB (for Rs =0) |
| Self potential (Sp) | : range:-15V - + 15V |
| | : resolution: 0.1 mV |
| Ground resistance measurement range: | 0.1-100 kohms |
| Primary voltage | : range: 10µV - 15V |
| | : resolution: 1µV |
| | : accuracy: typ. 1.3% |
| Chargeability | : resolution: 10µV/V |
| | : accuracy: typ. 0.6% |

**General:**

| | |
|---|---|
| Dimensions: | 31x21x25 cm |
| Weight (with the internal battery): | 9 kg |
| Operating temperature range: | -30ºC -70ºC |
| Case in fiber-glass for resisting to field shocks and vibrations | |

## *6.2. GDD Tx II IP Transmitter*

| | |
|---|---|
| Input voltage: | 120V / 60 Hz or 240V / 50Hz (optional) |
| Output power: | 1.4 kW maximum. |
| Output voltage: | 150 to 2000 Volts |
| Output current: | 5 ma to 10Amperes |
| Time domain: | Transmission cycle is 2 seconds ON, 2 seconds OFF |
| Operating temp. range | $-40^0$ to $+65^0$ C |
| Display | Digital LCD read to 0.001A |
| Dimensions (h w d): | 34 x 21 x 39 cm |
| Weight: | 20kg. |

## *6.3. EDA OMNI-Plus Specifications*

| | |
|---|---|
| Operating modes | Total field, base, tie-line |
| Operating temperature | -45 to +50 deg. C. |
| Sensor | Proton precession |
| Dynamic range | 18,000 – 110,000 gammas |
| Tuning | Automatic over entire range |
| | +/- 15% relative to ambient field of last stored total field |
| Polarizing cycle | Microprocessor controlled |
| Processing sensitivity | +/- 0.02 gammas |
| Resolution | 0.1 gammas |
| Absolute accuracy | +/- 1 gamma at 50,000 gammas at 23 deg. C |
| | +/- 2 gammas over total temperature range |
| Statistical error reject threshold | 0.2 gammas |
| Statistical error resolution | 0.01 gammas |
| **Memory** | |
| Field | 1300 readings |
| Tie-line points | 100 readings |
| Base station | 5500 readings |

# APPENDIX 5b

Magnetometer data

| Line | Station | FieldStrength |
|---|---|---|
| 4800 | 10300 | 55975.9 |
| 4800 | 10287.5 | 56070.3 |
| 4800 | 10275 | 56139.6 |
| 4800 | 10262.5 | 55998.8 |
| 4800 | 10250 | 55997.4 |
| 4800 | 10237.5 | 56131.3 |
| 4800 | 10225 | 55992.6 |
| 4800 | 10212.5 | 56045.6 |
| 4800 | 10200 | 56000.3 |
| 4800 | 10187.5 | 56087.8 |
| 4800 | 10175 | 56061.2 |
| 4800 | 10162.5 | 56040.7 |
| 4800 | 10150 | 56065.7 |
| 4800 | 10137.5 | 56191.9 |
| 4800 | 10125 | 56186.1 |
| 4800 | 10112.5 | 56308.6 |
| 4800 | 10100 | 56258.6 |
| 4800 | 10087.5 | 56423.6 |
| 4800 | 10075 | 56544.6 |
| 4800 | 10062.5 | 56534 |
| 4800 | 10050 | 56485.5 |
| 4800 | 10037.5 | 56475.7 |
| 4800 | 10025 | 56427.4 |
| 4800 | 10012.5 | 56452.9 |
| 4800 | 10000 | 56457.3 |
| 4800 | 9987.5 | 56649 |
| 4800 | 9975 | 56607.2 |
| 4800 | 9962.5 | 56687.7 |
| 4800 | 9950 | 56586.6 |
| 4800 | 9937.5 | 56606.7 |
| 4800 | 9925 | 56680.5 |
| 4800 | 9912.5 | 56666.1 |
| 4800 | 9900 | 56588.4 |
| 4800 | 9887.5 | 56569.4 |
| 4800 | 9875 | 56535.3 |
| 4800 | 9862.5 | 56501.7 |
| 4800 | 9850 | 56489.9 |
| 4800 | 9837.5 | 56460.3 |
| 4800 | 9825 | 56451.1 |
| 4800 | 9812.5 | 56430.1 |
| 4800 | 9800 | 56418.8 |
| 4800 | 9787.5 | 56404.3 |
| 4800 | 9775 | 56392 |
| 4800 | 9762.5 | 56375.8 |
| 4800 | 9750 | 56362 |
| 4800 | 9737.5 | 56360 |
| 4800 | 9725 | 56335.9 |
| 4800 | 9712.5 | 56333.1 |
| 4800 | 9700 | 56306.4 |
| 4800 | 9687.5 | 56345 |
| 4800 | 9675 | 56326.2 |
| 4800 | 9662.5 | 56304.5 |
| 4800 | 9650 | 56317.3 |

| Line | Station | FieldStrength |
|---|---|---|
| 4800 | 9637.5 | 56322.4 |
| 4800 | 9625 | 56322.9 |
| 4800 | 9612.5 | 56325.6 |
| 4800 | 9600 | 56328.8 |
| 4800 | 9587.5 | 56343.9 |
| 4800 | 9575 | 56350.5 |
| 4800 | 9562.5 | 56371.4 |
| 4800 | 9550 | 56357 |
| 4800 | 9537.5 | 56666.4 |
| 4800 | 9525 | 56690.5 |
| 4800 | 9512.5 | 56442.9 |
| 4800 | 9500 | 56436.1 |
| 4800 | 9487.5 | 56431.6 |
| 4800 | 9475 | 56443.8 |
| 4800 | 9462.5 | 56449.1 |
| 4800 | 9450 | 56460.9 |
| 4800 | 9437.5 | 56506.5 |
| 4800 | 9425 | 56515.6 |
| 4800 | 9412.5 | 56522.3 |
| 4800 | 9400 | 56554.6 |
| 4800 | 9387.5 | 56633.7 |
| 4800 | 9375 | 56666.3 |
| 4800 | 9362.5 | 56678.7 |
| 4800 | 9350 | 56869.7 |
| 4800 | 9337.5 | 56645.7 |
| 4800 | 9325 | 56578.6 |
| 4800 | 9312.5 | 56720.6 |
| 4800 | 9300 | 56739 |
| 4900 | 9300 | 57178.4 |
| 4900 | 9312.5 | 57219.9 |
| 4900 | 9325 | 57141.5 |
| 4900 | 9337.5 | 57043.4 |
| 4900 | 9350 | 57004.1 |
| 4900 | 9362.5 | 56958.4 |
| 4900 | 9375 | 56774.4 |
| 4900 | 9387.5 | 56713.3 |
| 4900 | 9400 | 56664.9 |
| 4900 | 9412.5 | 56677.2 |
| 4900 | 9425 | 56890.6 |
| 4900 | 9437.5 | 56586.1 |
| 4900 | 9450 | 56571.3 |
| 4900 | 9462.5 | 56588.3 |
| 4900 | 9475 | 56585.7 |
| 4900 | 9487.5 | 56562.6 |
| 4900 | 9500 | 56572.5 |
| 4900 | 9512.5 | 56567.8 |
| 4900 | 9525 | 56587.9 |
| 4900 | 9537.5 | 56649.7 |
| 4900 | 9550 | 56676.2 |
| 4900 | 9562.5 | 56752.6 |
| 4900 | 9575 | 56572.4 |
| 4900 | 9587.5 | 56639.3 |
| 4900 | 9600 | 56682.5 |

| Line | Station | FieldStrength |
|---|---|---|
| 4900 | 9612.5 | 56540.8 |
| 4900 | 9625 | 56522.6 |
| 4900 | 9637.5 | 56648.3 |
| 4900 | 9650 | 56649.7 |
| 4900 | 9662.5 | 56465.5 |
| 4900 | 9675 | 56467.8 |
| 4900 | 9687.5 | 56504.4 |
| 4900 | 9700 | 56508.9 |
| 4900 | 9712.5 | 56492.2 |
| 4900 | 9725 | 56501.9 |
| 4900 | 9737.5 | 56495.9 |
| 4900 | 9750 | 56515.1 |
| 4900 | 9762.5 | 56526.4 |
| 4900 | 9775 | 56531.2 |
| 4900 | 9787.5 | 56554.6 |
| 4900 | 9800 | 56598.2 |
| 4900 | 9812.5 | 56682.5 |
| 4900 | 9825 | 56817.9 |
| 4900 | 9837.5 | 56697.4 |
| 4900 | 9850 | 56707 |
| 4900 | 9862.5 | 56733.1 |
| 4900 | 9875 | 56795.6 |
| 4900 | 9887.5 | 56818.7 |
| 4900 | 9900 | 56722.1 |
| 4900 | 9912.5 | 56749.2 |
| 4900 | 9925 | 56782 |
| 4900 | 9937.5 | 56740.6 |
| 4900 | 9950 | 56796.3 |
| 4900 | 9962.5 | 56815.6 |
| 4900 | 9975 | 56855.4 |
| 4900 | 9987.5 | 56760.1 |
| 4900 | 10100 | 56683.4 |
| 4900 | 10112.5 | 56663.3 |
| 4900 | 10125 | 56671 |
| 4900 | 10137.5 | 56651.8 |
| 4900 | 10150 | 56647.8 |
| 4900 | 10162.5 | 56716.8 |
| 4900 | 10175 | 56629.8 |
| 4900 | 10187.5 | 56523.2 |
| 4900 | 10200 | 56599.1 |
| 4900 | 10212.5 | 56650 |
| 4900 | 10225 | 56585.1 |
| 4900 | 10237.5 | 56326.8 |
| 4900 | 10250 | 56275.8 |
| 4900 | 10262.5 | 56393.9 |
| 4900 | 10275 | 56387.5 |
| 4900 | 10287.5 | 56189.4 |
| 4900 | 10300 | 56369.9 |
| 5800 | 9400 | 56646.8 |
| 5800 | 9412.5 | 56640.1 |
| 5800 | 9425 | 56668.1 |
| 5800 | 9437.5 | 56689.5 |
| 5800 | 9450 | 56705.6 |

| Line | Station | FieldStrength |
|---|---|---|
| 5800 | 9462.5 | 56813.4 |
| 5800 | 9475 | 56759.1 |
| 5800 | 9487.5 | 56772.4 |
| 5800 | 9500 | 56791.4 |
| 5800 | 9512.5 | 56817.1 |
| 5800 | 9525 | 56805.1 |
| 5800 | 9537.5 | 56804.7 |
| 5800 | 9550 | 56769.8 |
| 5800 | 9562.5 | 57136.1 |
| 5800 | 9575 | 56966.9 |
| 5800 | 9587.5 | 56909.6 |
| 5800 | 9600 | 57047.3 |
| 5800 | 9612.5 | 57097.5 |
| 5800 | 9625 | 57058.5 |
| 5800 | 9637.5 | 57047.1 |
| 5800 | 9650 | 57088.9 |
| 5800 | 9662.5 | 57179.8 |
| 5800 | 9675 | 57178.6 |
| 5800 | 9687.5 | 57216.9 |
| 5800 | 9700 | 57297.2 |
| 5800 | 9712.5 | 57359.5 |
| 5800 | 9725 | 57424.4 |
| 5800 | 9737.5 | 57426.1 |
| 5800 | 9750 | 57442.6 |
| 5800 | 9762.5 | 57485.8 |
| 5800 | 9775 | 57514.6 |
| 5800 | 9787.5 | 57550.2 |
| 5800 | 9800 | 57601.9 |
| 5800 | 9812.5 | 57661.2 |
| 5800 | 9825 | 57726.2 |
| 5800 | 9837.5 | 57754.2 |
| 5800 | 9850 | 57809.4 |
| 5800 | 9862.5 | 57852.3 |
| 5800 | 9875 | 57902.3 |
| 5800 | 9887.5 | 57935.8 |
| 5800 | 9900 | 58001.8 |
| 5800 | 9912.5 | 58047.7 |
| 5800 | 9925 | 58084.9 |
| 5800 | 9937.5 | 58091 |
| 5800 | 9950 | 58142.8 |
| 5800 | 9962.5 | 58215.6 |
| 5800 | 9975 | 58203.8 |
| 5800 | 9987.5 | 58234.1 |
| 5800 | 10012.5 | 58031.5 |
| 5800 | 10025 | 57937.7 |
| 5800 | 10037.5 | 57826.2 |
| 5800 | 10050 | 57927 |
| 5800 | 10062.5 | 57995.6 |
| 5800 | 10075 | 57906.6 |
| 5800 | 10087.5 | 57610.5 |
| 5800 | 10100 | 57672 |
| 5800 | 10112.5 | 57661 |
| 5800 | 10125 | 57700.7 |

| Line | Station | FieldStrength |
|---|---|---|
| 5800 | 10137.5 | 57587.4 |
| 5800 | 10150 | 57591.1 |
| 5800 | 10162.5 | 57708.4 |
| 5800 | 10175 | 57637.2 |
| 5800 | 10187.5 | 57401.4 |
| 5800 | 10200 | 57428 |
| 5800 | 10212.5 | 57718.7 |
| 5800 | 10225 | 57562.6 |
| 5800 | 10237.5 | 57387.7 |
| 5800 | 10250 | 57356.3 |
| 5800 | 10262.5 | 57370.4 |
| 5800 | 10275 | 56807.4 |
| 5800 | 10287.5 | 56670.2 |
| 5800 | 10300 | 56670.5 |
| 5800 | 10312.5 | 56561.8 |
| 5800 | 10325 | 56458.1 |
| 5800 | 10337.5 | 56428.5 |
| 5800 | 10350 | 56204.1 |
| 5800 | 10362.5 | 56101.1 |
| 5800 | 10375 | 56203.2 |
| 5800 | 10387.5 | 56062.5 |
| 5800 | 10400 | 55906.5 |
| 5800 | 10412.5 | 55815.8 |
| 5800 | 10425 | 55615.8 |
| 5800 | 10437.5 | 55469.6 |
| 5800 | 10450 | 55368.8 |
| 5800 | 10462.5 | 55405.9 |
| 5800 | 10475 | 55526.1 |
| 5800 | 10487.5 | 55735.7 |
| 5800 | 10500 | 55877.9 |
| 5700 | 10487.5 | 55253.2 |
| 5700 | 10475 | 55306.2 |
| 5700 | 10500 | 55253.1 |
| 5700 | 10487.5 | 55295.7 |
| 5700 | 10475 | 55373.6 |
| 5700 | 10462.5 | 55421.6 |
| 5700 | 10450 | 55498.4 |
| 5700 | 10437.5 | 55664.9 |
| 5700 | 10425 | 56106.2 |
| 5700 | 10412.5 | 56037.8 |
| 5700 | 10400 | 56004.6 |
| 5700 | 10387.5 | 56091.4 |
| 5700 | 10375 | 56290.1 |
| 5700 | 10362.5 | 56380.5 |
| 5700 | 10350 | 56569.2 |
| 5700 | 10337.5 | 56537.5 |
| 5700 | 10325 | 56571 |
| 5700 | 10312.5 | 56514.4 |
| 5700 | 10300 | 56612.6 |
| 5700 | 10287.5 | 56659.9 |
| 5700 | 10275 | 56722.18253 |
| 5700 | 10262.5 | 56779.76564 |
| 5700 | 10250 | 56799.94903 |

| Line | Station | FieldStrength |
|---|---|---|
| 5700 | 10237.5 | 56796.03247 |
| 5700 | 10225 | 56832.6162 |
| 5700 | 10212.5 | 56853.90013 |
| 5700 | 10200 | 56986.08414 |
| 5700 | 10187.5 | 57018.46819 |
| 5700 | 10175 | 57046.15252 |
| 5700 | 10162.5 | 57096.03703 |
| 5700 | 10150 | 57184.72176 |
| 5700 | 10137.5 | 57252.00655 |
| 5700 | 10125 | 57334.59145 |
| 5700 | 10112.5 | 57387.97692 |
| 5700 | 10100 | 57386.36278 |
| 5700 | 10087.5 | 57441.2492 |
| 5700 | 10075 | 57462.73638 |
| 5700 | 10062.5 | 57524.61278 |
| 5700 | 10050 | 57167.09017 |
| 5700 | 10037.5 | 57753.76814 |
| 5700 | 10025 | 58001.34669 |
| 5700 | 10012.5 | 58017.82535 |
| 5700 | 10000 | 58025.60429 |
| 5700 | 9987.5 | 58013.88596 |
| 5700 | 9987.5 | 58014.56777 |
| 5700 | 9975 | 58023.24991 |
| 5700 | 9962.5 | 58043.33266 |
| 5700 | 9950 | 58202.11552 |
| 5700 | 9937.5 | 58180.49854 |
| 5700 | 9925 | 58172.98012 |
| 5700 | 9912.5 | 58090.46212 |
| 5700 | 9900 | 58050.84488 |
| 5700 | 9887.5 | 58024.42855 |
| 5700 | 9875 | 57983.51309 |
| 5700 | 9862.5 | 57955.89853 |
| 5700 | 9850 | 57856.78468 |
| 5700 | 9837.5 | 57802.37199 |
| 5700 | 9825 | 57771.75976 |
| 5700 | 9812.5 | 57706.54793 |
| 5700 | 9800 | 57648.03637 |
| 5700 | 9787.5 | 57606.52624 |
| 5700 | 9775 | 57564.21644 |
| 5700 | 9762.5 | 57559.00694 |
| 5700 | 9750 | 57478.79753 |
| 5700 | 9737.5 | 57491.68802 |
| 5700 | 9725 | 57402.97865 |
| 5700 | 9712.5 | 57375.86947 |
| 5700 | 9700 | 57323.06038 |
| 5700 | 9687.5 | 57332.1513 |
| 5700 | 9675 | 57252.64226 |
| 5700 | 9662.5 | 57220.43316 |
| 5700 | 9650 | 57177.12398 |
| 5700 | 9637.5 | 57172.51493 |
| 5700 | 9625 | 57126.10641 |
| 5700 | 9612.5 | 57100.19831 |
| 5700 | 9600 | 57067.2903 |

| Line | Station | FieldStrength |
|---|---|---|
| 5700 | 9587.5 | 57035.28251 |
| 5700 | 9575 | 57017.87159 |
| 5700 | 9562.5 | 56966.26065 |
| 5700 | 9550 | 56849.14963 |
| 5700 | 9537.5 | 57240.43823 |
| 5700 | 9525 | 57121.72677 |
| 5700 | 9512.5 | 56949.81495 |
| 5700 | 9500 | 56835.40286 |
| 5700 | 9487.5 | 56812.39071 |
| 5700 | 9475 | 56803.07858 |
| 5700 | 9462.5 | 56787.06662 |
| 5700 | 9450 | 56768.85462 |
| 5700 | 9437.5 | 56739.13986 |
| 5700 | 9425 | 56713.62508 |
| 5700 | 9412.5 | 56714.80991 |
| 5700 | 9400 | 56700.89439 |
| 5600 | 9400 | 57351.48744 |
| 5600 | 9412.5 | 57104.58052 |
| 5600 | 9425 | 56950.37222 |
| 5600 | 9437.5 | 56876.36434 |
| 5600 | 9450 | 56906.75578 |
| 5600 | 9462.5 | 56919.94791 |
| 5600 | 9475 | 56927.63931 |
| 5600 | 9487.5 | 56887.02988 |
| 5600 | 9500 | 56971.21973 |
| 5600 | 9512.5 | 57033.2 |
| 5600 | 9525 | 57486.76796 |
| 5600 | 9537.5 | 57094.17338 |
| 5600 | 9550 | 57103.00496 |
| 5600 | 9562.5 | 57086.93453 |
| 5600 | 9575 | 57093.17617 |
| 5600 | 9587.5 | 57103.09166 |
| 5600 | 9600 | 57103.21519 |
| 5600 | 9612.5 | 57111.95017 |
| 5600 | 9625 | 57139.04151 |
| 5600 | 9637.5 | 57178.57309 |
| 5600 | 9650 | 57197.77124 |
| 5600 | 9662.5 | 57212.7666 |
| 5600 | 9675 | 57246.65592 |
| 5600 | 9687.5 | 57272.80902 |
| 5600 | 9700 | 57325.43998 |
| 5600 | 9712.5 | 57357.43131 |
| 5600 | 9725 | 57398.69045 |
| 5600 | 9737.5 | 57438.17776 |
| 5600 | 9750 | 57481.46507 |
| 5600 | 9762.5 | 57515.93426 |
| 5600 | 9775 | 57555.9787 |
| 5600 | 9787.5 | 57573.08412 |
| 5600 | 9800 | 57609.64929 |
| 5600 | 9812.5 | 57684.84666 |
| 5600 | 9825 | 57715.09976 |
| 5600 | 9837.5 | 57769.48506 |
| 5600 | 9850 | 57775.72206 |

| Line | Station | FieldStrength |
|---|---|---|
| 5600 | 9862.5 | 57646.5154 |
| 5600 | 9875 | 57641.77856 |
| 5600 | 9887.5 | 57677.20008 |
| 5600 | 9900 | 57712.91154 |
| 5600 | 9912.5 | 57798.30488 |
| 5600 | 9925 | 57781.91634 |
| 5600 | 9937.5 | 57781.92578 |
| 5600 | 9950 | 57822.25133 |
| 5600 | 9962.5 | 57905.36279 |
| 5600 | 9975 | 58066.19638 |
| 5600 | 9987.5 | 57904.17966 |
| 5600 | 10000 | 57345.86775 |
| 5600 | 10012.5 | 57423.45305 |
| 5600 | 10025 | 57509.42224 |
| 5600 | 10037.5 | 57427.76528 |
| 5600 | 10050 | 57344.41033 |
| 5600 | 10062.5 | 57394.69361 |
| 5600 | 10075 | 57317.10105 |
| 5600 | 10087.5 | 57466.2286 |
| 5600 | 10100 | 57113.76421 |
| 5600 | 10112.5 | 57112.16359 |
| 5600 | 10125 | 56968.86901 |
| 5600 | 10137.5 | 56999.39858 |
| 5600 | 10150 | 56923.9201 |
| 5600 | 10162.5 | 56818.61545 |
| 5600 | 10175 | 56681.22892 |
| 5600 | 10187.5 | 56563.71623 |
| 5600 | 10200 | 56619.72568 |
| 5600 | 10212.5 | 56639.16732 |
| 5600 | 10225 | 56580.38884 |
| 5600 | 10237.5 | 56560.2345 |
| 5600 | 10250 | 56512.67615 |
| 5600 | 10262.5 | 56501.81175 |
| 5600 | 10275 | 56384 |
| 5600 | 10287.5 | 56365.27654 |
| 5600 | 10300 | 56327.85805 |
| 5600 | 10312.5 | 56217.53743 |
| 5600 | 10325 | 56135.41823 |
| 5600 | 10337.5 | 56131.49619 |
| 5600 | 10350 | 56096.37486 |
| 5600 | 10362.5 | 56003.04997 |
| 5600 | 10375 | 55836.32295 |
| 5600 | 10387.5 | 55820.39167 |
| 5600 | 10400 | 55740.66038 |
| 5600 | 10412.5 | 55534.23336 |
| 5600 | 10425 | 55484.31274 |
| 5600 | 10437.5 | 55411.78928 |
| 5600 | 10450 | 55399.76155 |
| 5600 | 10462.5 | 55385.84022 |
| 5600 | 10475 | 55357.21817 |
| 5600 | 10487.5 | 55406.88618 |
| 5600 | 10500 | 55381.86342 |
| 5500 | 10500 | 55284.31044 |

| Line | Station | FieldStrength |
|---|---|---|
| 5500 | 10487.5 | 55298.8884 |
| 5500 | 10475 | 55288.45498 |
| 5500 | 10462.5 | 55323.5308 |
| 5500 | 10450 | 55552.70023 |
| 5500 | 10437.5 | 55497.58103 |
| 5500 | 10425 | 55484.15828 |
| 5500 | 10412.5 | 55557.53268 |
| 5500 | 10400 | 55619.31206 |
| 5500 | 10387.5 | 55602.99002 |
| 5500 | 10375 | 55788.46513 |
| 5500 | 10362.5 | 55754.33029 |
| 5500 | 10350 | 55841.576 |
| 5500 | 10337.5 | 55888.24898 |
| 5500 | 10325 | 55972.62693 |
| 5500 | 10312.5 | 56042.80987 |
| 5500 | 10300 | 56008.98498 |
| 5500 | 10287.5 | 56058.6601 |
| 5500 | 10275 | 56155.83023 |
| 5500 | 10262.5 | 56178.5089 |
| 5500 | 10250 | 56231.97975 |
| 5500 | 10237.5 | 56274.55557 |
| 5500 | 10225 | 56315.22927 |
| 5500 | 10212.5 | 56342.18376 |
| 5500 | 10200 | 56370.75674 |
| 5500 | 10187.5 | 56401.43043 |
| 5500 | 10175 | 56349.8027 |
| 5500 | 10162.5 | 56684.46715 |
| 5500 | 10150 | 56613.04226 |
| 5500 | 10137.5 | 56625.71596 |
| 5500 | 10125 | 56699.29036 |
| 5500 | 10112.5 | 56789.26121 |
| 5500 | 10100 | 56859.63205 |
| 5500 | 10087.5 | 56941.4965 |
| 5500 | 10075 | 57001.65668 |
| 5500 | 10062.5 | 57140.73393 |
| 5500 | 10050 | 57151.90478 |
| 5500 | 10037.5 | 57177.16212 |
| 5500 | 10025 | 57394.29954 |
| 5500 | 10012.5 | 57353.7 |
| 5500 | 10000 | 57442.71932 |
| 5500 | 9987.5 | 57404.85388 |
| 5500 | 9975 | 57366.68773 |
| 5500 | 9962.5 | 57446.04979 |
| 5500 | 9950 | 57482.79069 |
| 5500 | 9937.5 | 57499.23865 |
| 5500 | 9925 | 57519.3859 |
| 5500 | 9912.5 | 57575.41763 |
| 5500 | 9900 | 57650.84795 |
| 5500 | 9887.5 | 57525.57687 |
| 5500 | 9875 | 57471.80931 |
| 5500 | 9862.5 | 57521.21241 |
| 5500 | 9850 | 57467.54344 |
| 5500 | 9837.5 | 57450.89492 |
| 5500 | 9825 | 57472.35275 |
| 5500 | 9812.5 | 57499.20917 |
| 5500 | 9800 | 57436.45642 |
| 5500 | 9787.5 | 57383.77278 |
| 5500 | 9775 | 57398.11157 |
| 5500 | 9762.5 | 57372.19196 |
| 5500 | 9750 | 57293.34626 |
| 5500 | 9737.5 | 57307.11608 |
| 5500 | 9725 | 57274.08731 |
| 5500 | 9712.5 | 57246.06559 |
| 5500 | 9700 | 57243.34386 |
| 5500 | 9687.5 | 57230.29196 |
| 5500 | 9675 | 57209.62934 |
| 5500 | 9662.5 | 57208.01185 |
| 5500 | 9650 | 57181.44711 |
| 5500 | 9637.5 | 57187.88025 |
| 5500 | 9625 | 57129.2275 |
| 5500 | 9612.5 | 57120.38181 |
| 5500 | 9600 | 57124.31142 |
| 5500 | 9587.5 | 57090.86008 |
| 5500 | 9575 | 57086.58279 |
| 5500 | 9562.5 | 57039.51312 |
| 5500 | 9550 | 56986.64062 |
| 5500 | 9537.5 | 57018.66319 |
| 5500 | 9525 | 57393.99351 |
| 5500 | 9512.5 | 57052.63371 |
| 5500 | 9500 | 57019.26403 |
| 5500 | 9487.5 | 57003.4 |
| 5500 | 9475 | 56979.02704 |
| 5500 | 9462.5 | 56998.75693 |
| 5500 | 9450 | 56974.99251 |
| 5500 | 9437.5 | 56964.61529 |
| 5500 | 9425 | 56923.94375 |
| 5500 | 9412.5 | 56893.68218 |
| 5500 | 9400 | 56879.8199 |
| 5400 | 9400 | 56899.86504 |
| 5400 | 9412.5 | 56932.78212 |
| 5400 | 9425 | 57441.30276 |
| 5400 | 9437.5 | 57351.21913 |
| 5400 | 9450 | 57115.43763 |
| 5400 | 9462.5 | 57054.55613 |
| 5400 | 9475 | 57014.48531 |
| 5400 | 9487.5 | 56985.8088 |
| 5400 | 9500 | 56996.73228 |
| 5400 | 9512.5 | 57028.45861 |
| 5400 | 9525 | 57041.58281 |
| 5400 | 9537.5 | 57049.10985 |
| 5400 | 9550 | 57028.04187 |
| 5400 | 9562.5 | 57002.38386 |
| 5400 | 9575 | 57027.90948 |
| 5400 | 9587.5 | 57064.33652 |
| 5400 | 9600 | 57114.25929 |
| 5400 | 9612.5 | 57126.48278 |

| Line | Station | FieldStrength |
|---|---|---|
| 5400 | 9625 | 57102.11551 |
| 5400 | 9637.5 | 57132.24042 |
| 5400 | 9650 | 57127.48312 |
| 5400 | 9662.5 | 57135.06709 |
| 5400 | 9675 | 57157.80481 |
| 5400 | 9687.5 | 57158.33043 |
| 5400 | 9700 | 57146.76815 |
| 5400 | 9712.5 | 57145.39875 |
| 5400 | 9725 | 57154.83291 |
| 5400 | 9737.5 | 57154.05995 |
| 5400 | 9750 | 57154.00122 |
| 5400 | 9762.5 | 57185.7973 |
| 5400 | 9775 | 57222.34071 |
| 5400 | 9787.5 | 57241.69408 |
| 5400 | 9800 | 57245.47165 |
| 5400 | 9812.5 | 57134.7218 |
| 5400 | 9825 | 57193.98477 |
| 5400 | 9837.5 | 57240.15024 |
| 5400 | 9850 | 57262.94347 |
| 5400 | 9862.5 | 57236.28474 |
| 5400 | 9875 | 57277.51321 |
| 5400 | 9887.5 | 57342.1737 |
| 5400 | 9900 | 57343.21711 |
| 5400 | 9912.5 | 57333.43917 |
| 5400 | 9925 | 57713.07333 |
| 5400 | 9937.5 | 57366.39468 |
| 5400 | 9950 | 57445.92101 |
| 5400 | 9962.5 | 57454.04307 |
| 5400 | 9975 | 57406.16513 |
| 5400 | 9987.5 | 57332.4 |
| 5000 | 10300 | 56240.463 |
| 5000 | 10287.5 | 56195.97512 |
| 5000 | 10275 | 56142.00861 |
| 5000 | 10262.5 | 56172.49633 |
| 5000 | 10250 | 56149.67608 |
| 5000 | 10237.5 | 56198.41754 |
| 5000 | 10225 | 56212.36061 |
| 5000 | 10212.5 | 56256.90686 |
| 5000 | 10200 | 56357.14833 |
| 5000 | 10187.5 | 56405.4201 |
| 5000 | 10175 | 56368.45518 |
| 5000 | 10162.5 | 56750.8764 |
| 5000 | 10150 | 56740.53222 |
| 5000 | 10137.5 | 56765.38325 |
| 5000 | 10125 | 56730.82632 |
| 5000 | 10112.5 | 56728.07895 |
| 5000 | 10100 | 56779.6555 |
| 5000 | 10087.5 | 56854.61451 |
| 5000 | 10075 | 56810.37193 |
| 5000 | 10062.5 | 56860.2756 |
| 5000 | 10050 | 56934.61388 |
| 5000 | 10037.5 | 57107.9697 |
| 5000 | 10025 | 57134.11276 |

| Line | Station | FieldStrength |
|---|---|---|
| 5000 | 10012.5 | 57065.72329 |
| 5000 | 10000 | 57039.87751 |
| 5000 | 9987.5 | 57012.96364 |
| 5000 | 9975 | 57001.43748 |
| 5000 | 9962.5 | 56986.33796 |
| 5000 | 9950 | 56993.28421 |
| 5000 | 9937.5 | 56942.55439 |
| 5000 | 9925 | 56941.98788 |
| 5000 | 9912.5 | 56908.84848 |
| 5000 | 9900 | 56892.70112 |
| 5000 | 9887.5 | 56855.58086 |
| 5000 | 9875 | 56825.16061 |
| 5000 | 9862.5 | 56752.34514 |
| 5000 | 9850 | 56724.39777 |
| 5000 | 9837.5 | 56782.47799 |
| 5000 | 9825 | 56742.60989 |
| 5000 | 9812.5 | 57073.48644 |
| 5000 | 9800 | 56974.65981 |
| 5000 | 9787.5 | 56782.67943 |
| 5000 | 9775 | 56723.54163 |
| 5000 | 9762.5 | 56674.48676 |
| 5000 | 9750 | 56640.86332 |
| 5000 | 9737.5 | 56584.4622 |
| 5000 | 9725 | 56619.93876 |
| 5000 | 9712.5 | 56691.72329 |
| 5000 | 9700 | 56757.59984 |
| 5000 | 9687.5 | 56677.49298 |
| 5000 | 9675 | 56677.24242 |
| 5000 | 9662.5 | 56664.01419 |
| 5000 | 9650 | 56664.06045 |
| 5000 | 9637.5 | 56639.33222 |
| 5000 | 9625 | 56651.57687 |
| 5000 | 9612.5 | 56645.85662 |
| 5000 | 9600 | 56651.12998 |
| 5000 | 9587.5 | 56657.41611 |
| 5000 | 9575 | 56674.78469 |
| 5000 | 9562.5 | 56684.36443 |
| 5000 | 9550 | 56687.60271 |
| 5000 | 9537.5 | 56683.89841 |
| 5000 | 9525 | 56681.6319 |
| 5000 | 9512.5 | 56697.9941 |
| 5000 | 9500 | 56735.45949 |
| 5000 | 9487.5 | 56841.1201 |
| 5000 | 9475 | 56813.8488 |
| 5000 | 9462.5 | 56913.51738 |
| 5000 | 9450 | 56837.36364 |
| 5000 | 9437.5 | 56690.1067 |
| 5000 | 9425 | 57266.14019 |
| 5000 | 9412.5 | 57203.08963 |
| 5000 | 9400 | 56916.12791 |
| 5000 | 9387.5 | 56909.76778 |
| 5000 | 9375 | 56919.60766 |
| 5000 | 9362.5 | 56960.14593 |

| Line | Station | FieldStrength |
|---|---|---|
| 5000 | 9350 | 57059.78421 |
| 5000 | 9337.5 | 56838.97831 |
| 5000 | 9325 | 56947.43892 |
| 5000 | 9312.5 | 56885.61866 |
| 5000 | 9300 | 56970.2 |
| 5100 | 9300 | 56744.91811 |
| 5100 | 9412.5 | 56741.81893 |
| 5100 | 9425 | 57020.19713 |
| 5100 | 9437.5 | 56858.14493 |
| 5100 | 9450 | 56832.8831 |
| 5100 | 9462.5 | 56781.23264 |
| 5100 | 9475 | 56918.68566 |
| 5100 | 9487.5 | 56881.34216 |
| 5100 | 9500 | 56899.29866 |
| 5100 | 9512.5 | 56930.2221 |
| 5100 | 9525 | 56899.57686 |
| 5100 | 9537.5 | 56916.46898 |
| 5100 | 9550 | 56914.52895 |
| 5100 | 9562.5 | 56896.98893 |
| 5100 | 9575 | 56797.03673 |
| 5100 | 9587.5 | 56739.05321 |
| 5100 | 9600 | 56667.68013 |
| 5100 | 9612.5 | 56798.97747 |
| 5100 | 9625 | 56873.13397 |
| 5100 | 9637.5 | 56988.4748 |
| 5100 | 9650 | 56849.6226 |
| 5100 | 9662.5 | 56731.85126 |
| 5100 | 9675 | 56725.76231 |
| 5100 | 9687.5 | 56667.74921 |
| 5100 | 9700 | 56517.87787 |
| 5100 | 9712.5 | 56541.15084 |
| 5100 | 9725 | 56626.0882 |
| 5100 | 9737.5 | 57030.70294 |
| 5100 | 9750 | 57031.45422 |
| 5100 | 9762.5 | 56922.4055 |
| 5100 | 9775 | 56827.36722 |
| 5100 | 9787.5 | 56799.6663 |
| 5100 | 9800 | 56802.92279 |
| 5100 | 9812.5 | 56808.36537 |
| 5100 | 9825 | 56827.02709 |
| 5100 | 9837.5 | 56868.46793 |
| 5100 | 9850 | 56905.01573 |
| 5100 | 9862.5 | 56942.14776 |
| 5100 | 9875 | 56981.7973 |
| 5100 | 9887.5 | 57001.51204 |
| 5100 | 9900 | 57088.87028 |
| 5100 | 9912.5 | 57266.61634 |
| 5100 | 9925 | 57377.2711 |
| 5100 | 9937.5 | 56974.4015 |
| 5100 | 9950 | 57228.35626 |
| 5100 | 9962.5 | 57310.65011 |
| 5100 | 9975 | 57324.41009 |
| 5100 | 9987.5 | 57411.16833 |

| Line | Station | FieldStrength |
|---|---|---|
| 5100 | 10000 | 57408.02657 |
| 5100 | 10012.5 | 57462.84735 |
| 5100 | 10025 | 57468.36208 |
| 5100 | 10037.5 | 57524.62032 |
| 5100 | 10050 | 57428.27856 |
| 5100 | 10062.5 | 57327.3281 |
| 5100 | 10075 | 57262.27938 |
| 5100 | 10087.5 | 57413.8324 |
| 5100 | 10100 | 57294.78542 |
| 5100 | 10112.5 | 57371.74192 |
| 5100 | 10125 | 57295.79668 |
| 5100 | 10137.5 | 57041.341 |
| 5100 | 10150 | 56942.39749 |
| 5100 | 10162.5 | 56825.44007 |
| 5100 | 10175 | 56650.40353 |
| 5100 | 10187.5 | 56578.95829 |
| 5100 | 10200 | 56481.21827 |
| 5100 | 10212.5 | 56532.97129 |
| 5100 | 10225 | 56373.13997 |
| 5100 | 10237.5 | 56289.18603 |
| 5100 | 10250 | 56347.02687 |
| 5100 | 10262.5 | 56048.03812 |
| 5100 | 10275 | 56156.29636 |
| 5100 | 10287.5 | 56250.34416 |
| 5100 | 10300 | 56176.49718 |
| 5200 | 10400 | 55841.59111 |
| 5200 | 10387.5 | 55911.75365 |
| 5200 | 10375 | 55872.0823 |
| 5200 | 10362.5 | 55934.60922 |
| 5200 | 10350 | 56006.56572 |
| 5200 | 10337.5 | 56080.40134 |
| 5200 | 10325 | 56165.95436 |
| 5200 | 10312.5 | 56183.90564 |
| 5200 | 10300 | 56193.26562 |
| 5200 | 10287.5 | 56190.21168 |
| 5200 | 10275 | 56237.86295 |
| 5200 | 10262.5 | 56242.50727 |
| 5200 | 10250 | 56267.26029 |
| 5200 | 10237.5 | 56370.96807 |
| 5200 | 10225 | 56414.50717 |
| 5200 | 10212.5 | 56374.74279 |
| 5200 | 10200 | 56475.74883 |
| 5200 | 10187.5 | 56740.27574 |
| 5200 | 10175 | 57090.39396 |
| 5200 | 10162.5 | 57265.35742 |
| 5200 | 10150 | 57521.1 |
| 5200 | 10137.5 | 57511.33433 |
| 5200 | 10125 | 57576.09005 |
| 5200 | 10112.5 | 57415.74729 |
| 5200 | 10100 | 57442.00605 |
| 5200 | 10087.5 | 57454.96482 |
| 5200 | 10075 | 57431.80221 |
| 5200 | 10062.5 | 57567.45792 |

| Line | Station | FieldStrength |
|---|---|---|
| 5200 | 10050 | 57600.61363 |
| 5200 | 10037.5 | 57585.07087 |
| 5200 | 10025 | 57517.36533 |
| 5200 | 10012.5 | 57406.82331 |
| 5200 | 10000 | 57390.98208 |
| 5200 | 9987.5 | 57309.82325 |
| 5200 | 9975 | 57384.96522 |
| 5200 | 9962.5 | 57365.78734 |
| 5200 | 9950 | 57315.12778 |
| 5200 | 9937.5 | 57314.05448 |
| 5200 | 9925 | 57212.58117 |
| 5200 | 9912.5 | 57147.11093 |
| 5200 | 9900 | 57083.79102 |
| 5200 | 9887.5 | 57100.02077 |
| 5200 | 9875 | 57131.42682 |
| 5200 | 9862.5 | 57074.54894 |
| 5200 | 9850 | 57066.97564 |
| 5200 | 9837.5 | 56951.27484 |
| 5200 | 9825 | 56903.63514 |
| 5200 | 9812.5 | 56756.34119 |
| 5200 | 9800 | 56896.03961 |
| 5200 | 9787.5 | 57005.0434 |
| 5200 | 9775 | 56878.98231 |
| 5200 | 9762.5 | 56776.86167 |
| 5200 | 9750 | 56886.82954 |
| 5200 | 9737.5 | 56971.5921 |
| 5200 | 9725 | 56946.74476 |
| 5200 | 9712.5 | 56780.91801 |
| 5200 | 9700 | 56751.67672 |
| 5200 | 9687.5 | 56762.95913 |
| 5200 | 9675 | 57032.87055 |
| 5200 | 9662.5 | 56965.39878 |
| 5200 | 9650 | 56935.13464 |
| 5200 | 9637.5 | 57011.48119 |
| 5200 | 9625 | 56993.64759 |
| 5200 | 9612.5 | 56901.58803 |
| 5200 | 9600 | 56903.95291 |
| 5200 | 9587.5 | 56892.52616 |
| 5200 | 9575 | 56894.57576 |
| 5200 | 9562.5 | 56885.53911 |
| 5200 | 9550 | 56905.39329 |
| 5200 | 9537.5 | 56909.54901 |
| 5200 | 9525 | 56907.21388 |
| 5200 | 9512.5 | 56920.06501 |
| 5200 | 9500 | 56936.82684 |
| 5200 | 9487.5 | 56973.67491 |
| 5200 | 9475 | 56986.84284 |
| 5200 | 9462.5 | 56995.70619 |
| 5200 | 9450 | 56992.07107 |
| 5200 | 9437.5 | 57010.32831 |
| 5200 | 9425 | 56982.87944 |
| 5200 | 9412.5 | 57023.02446 |
| 5200 | 9400 | 57064.58017 |

| Line | Station | FieldStrength |
|---|---|---|
| 5200 | 9387.5 | 57028.52367 |
| 5200 | 9375 | 56991.48549 |
| 5200 | 9362.5 | 56947.74121 |
| 5200 | 9350 | 56942.30303 |
| 5200 | 9337.5 | 56984.96332 |
| 5200 | 9325 | 57055.62667 |
| 5200 | 9312.5 | 56992.77627 |
| 5200 | 9300 | 57112.12893 |
| 5300 | 9300 | 56874.98578 |
| 5300 | 9312.5 | 56851.88041 |
| 5300 | 9325 | 56828.55292 |
| 5300 | 9337.5 | 57242.31627 |
| 5300 | 9350 | 56945.78267 |
| 5300 | 9362.5 | 57217.83228 |
| 5300 | 9375 | 57003.70021 |
| 5300 | 9387.5 | 56993.12843 |
| 5300 | 9400 | 56978.09636 |
| 5300 | 9412.5 | 56952.15055 |
| 5300 | 9425 | 56962.31542 |
| 5300 | 9437.5 | 56957.27419 |
| 5300 | 9450 | 56944.52227 |
| 5300 | 9462.5 | 56955.87951 |
| 5300 | 9475 | 56962.13675 |
| 5300 | 9487.5 | 57301.59246 |
| 5300 | 9500 | 57262.25886 |
| 5300 | 9512.5 | 57130.01916 |
| 5300 | 9525 | 57079.07793 |
| 5300 | 9537.5 | 57043.03822 |
| 5300 | 9550 | 57028.6031 |
| 5300 | 9562.5 | 56994.26339 |
| 5300 | 9575 | 56980.68551 |
| 5300 | 9587.5 | 56977.98698 |
| 5300 | 9600 | 56983.85338 |
| 5300 | 9612.5 | 56993.87397 |
| 5300 | 9625 | 56992.6419 |
| 5300 | 9637.5 | 56995.90067 |
| 5300 | 9650 | 57007.26096 |
| 5300 | 9662.5 | 57031.51209 |
| 5300 | 9675 | 57016.06475 |
| 5300 | 9687.5 | 57015.70825 |
| 5300 | 9700 | 57013.70898 |
| 5300 | 9712.5 | 56990.24705 |
| 5300 | 9725 | 57003.15237 |
| 5300 | 9737.5 | 57033.87296 |
| 5300 | 9750 | 57017.92714 |
| 5300 | 9762.5 | 56988.35537 |
| 5300 | 9775 | 56983.8561 |
| 5300 | 9787.5 | 57026.35989 |
| 5300 | 9800 | 57035.29881 |
| 5300 | 9812.5 | 57008.73467 |
| 5300 | 9825 | 56979.68122 |
| 5300 | 9837.5 | 57050.6186 |
| 5300 | 9850 | 57031.11018 |

| Line | Station | FieldStrength |
|---|---|---|
| 5300 | 9862.5 | 57126.73382 |
| 5300 | 9875 | 57187.40554 |
| 5300 | 9887.5 | 57229.74751 |
| 5300 | 9900 | 57238.11849 |
| 5300 | 9912.5 | 57287.76352 |
| 5300 | 9925 | 57318.3009 |
| 5300 | 9937.5 | 57343.60622 |
| 5300 | 9950 | 57354.54666 |
| 5300 | 9962.5 | 57377.90543 |
| 5300 | 9975 | 57370.16878 |
| 5300 | 9987.5 | 57417.42602 |
| 5300 | 10000 | 57456.18631 |
| 5300 | 10012.5 | 57478.31148 |
| 5300 | 10025 | 57466.94887 |
| 5300 | 10037.5 | 57385.5 |
| 5300 | 10050 | 57443.01936 |
| 5300 | 10062.5 | 57443.85808 |
| 5300 | 10075 | 57326.78954 |
| 5300 | 10087.5 | 57341.01374 |
| 5300 | 10100 | 57329.37181 |
| 5300 | 10112.5 | 57343.42425 |
| 5300 | 10125 | 57408.7557 |
| 5300 | 10137.5 | 57373.29523 |
| 5300 | 10150 | 56969.22185 |
| 5300 | 10162.5 | 56826.85089 |
| 5300 | 10175 | 56181.37186 |
| 5300 | 10187.5 | 56309.90171 |
| 5300 | 10200 | 56252.02268 |
| 5300 | 10212.5 | 56496.66059 |
| 5300 | 10225 | 56353.79608 |
| 5300 | 10237.5 | 56431.63077 |
| 5300 | 10250 | 56197.55174 |
| 5300 | 10262.5 | 56173.17917 |
| 5300 | 10275 | 56108.60256 |
| 5300 | 10287.5 | 56079.42514 |
| 5300 | 10300 | 56031.5437 |
| 5300 | 10312.5 | 55961.76548 |
| 5300 | 10325 | 55932.18564 |
| 5300 | 10337.5 | 55803.60581 |
| 5300 | 10350 | 55816.82597 |
| 5300 | 10362.5 | 55717.65259 |
| 5300 | 10375 | 55699.17195 |
| 5300 | 10387.5 | 55702.29454 |
| 5300 | 10400 | 55611.1147 |
| 5400 | 10500 | 55298.82789 |
| 5400 | 10487.5 | 55281.18193 |
| 5400 | 10475 | 55413.20129 |
| 5400 | 10462.5 | 55434.92468 |
| 5400 | 10450 | 55419.56905 |
| 5400 | 10437.5 | 55393.29889 |
| 5400 | 10425 | 55414.22148 |
| 5400 | 10412.5 | 55511.47794 |
| 5400 | 10400 | 55559.00456 |

| Line | Station | FieldStrength |
|---|---|---|
| 5400 | 10387.5 | 55619.43038 |
| 5400 | 10375 | 55642.16103 |
| 5400 | 10362.5 | 55841.30055 |
| 5400 | 10350 | 55866.81991 |
| 5400 | 10337.5 | 55956.74411 |
| 5400 | 10325 | 55952.27638 |
| 5400 | 10312.5 | 55958.51026 |
| 5400 | 10300 | 55962.52478 |
| 5400 | 10287.5 | 56010.64494 |
| 5400 | 10275 | 56008.86511 |
| 5400 | 10262.5 | 56052.49495 |
| 5400 | 10250 | 56244.21754 |
| 5400 | 10237.5 | 56385.95626 |
| 5400 | 10225 | 56261.27804 |
| 5400 | 10212.5 | 56271.80224 |
| 5400 | 10200 | 56307.4224 |
| 5400 | 10187.5 | 56277.76112 |
| 5400 | 10175 | 56243.57725 |
| 5400 | 10162.5 | 56445.2071 |
| 5400 | 10150 | 56704.22646 |
| 5400 | 10137.5 | 56843.44911 |
| 5400 | 10125 | 56892.76928 |
| 5400 | 10112.5 | 57000.40638 |
| 5400 | 10100 | 56967.22978 |
| 5400 | 10087.5 | 56802.06366 |
| 5400 | 10075 | 57392.22093 |
| 5400 | 10062.5 | 57062.14432 |
| 5400 | 10050 | 57167.37174 |
| 5400 | 10037.5 | 57164.30159 |
| 5400 | 10025 | 57157.33708 |
| 5400 | 10012.5 | 57234.36451 |
| 5400 | 10000 | 57373.1 |

| | | |
|---|---|---|
| 4800 | 10300 | 55975.9 |
| 4800 | 10287.5 | 56070.3 |
| 4800 | 10275 | 56139.6 |
| 4800 | 10262.5 | 55998.8 |
| 4800 | 10250 | 55997.4 |
| 4800 | 10237.5 | 56131.3 |
| 4800 | 10225 | 55992.6 |
| 4800 | 10212.5 | 56045.6 |
| 4800 | 10200 | 56000.3 |
| 4800 | 10187.5 | 56087.8 |
| 4800 | 10175 | 56061.2 |
| 4800 | 10162.5 | 56040.7 |
| 4800 | 10150 | 56065.7 |
| 4800 | 10137.5 | 56191.9 |
| 4800 | 10125 | 56186.1 |
| 4800 | 10112.5 | 56308.6 |
| 4800 | 10100 | 56258.6 |
| 4800 | 10087.5 | 56423.6 |
| 4800 | 10075 | 56544.6 |
| 4800 | 10062.5 | 56534 |
| 4800 | 10050 | 56485.5 |
| 4800 | 10037.5 | 56475.7 |
| 4800 | 10025 | 56427.4 |
| 4800 | 10012.5 | 56452.9 |
| 4800 | 10000 | 56457.3 |
| 4800 | 9987.5 | 56649 |
| 4800 | 9975 | 56607.2 |
| 4800 | 9962.5 | 56687.7 |
| 4800 | 9950 | 56586.6 |
| 4800 | 9937.5 | 56606.7 |
| 4800 | 9925 | 56680.5 |
| 4800 | 9912.5 | 56666.1 |
| 4800 | 9900 | 56588.4 |
| 4800 | 9887.5 | 56569.4 |
| 4800 | 9875 | 56535.3 |
| 4800 | 9862.5 | 56501.7 |
| 4800 | 9850 | 56489.9 |
| 4800 | 9837.5 | 56460.3 |
| 4800 | 9825 | 56451.1 |
| 4800 | 9812.5 | 56430.1 |
| 4800 | 9800 | 56418.8 |
| 4800 | 9787.5 | 56404.3 |
| 4800 | 9775 | 56392 |
| 4800 | 9762.5 | 56375.8 |
| 4800 | 9750 | 56362 |
| 4800 | 9737.5 | 56360 |
| 4800 | 9725 | 56335.9 |
| 4800 | 9712.5 | 56333.1 |
| 4800 | 9700 | 56306.4 |
| 4800 | 9687.5 | 56345 |
| 4800 | 9675 | 56326.2 |
| 4800 | 9662.5 | 56304.5 |
| 4800 | 9650 | 56317.3 |
| 4800 | 9637.5 | 56322.4 |

| | | |
|---|---|---|
| 4800 | 9625 | 56322.9 |
| 4800 | 9612.5 | 56325.6 |
| 4800 | 9600 | 56328.8 |
| 4800 | 9587.5 | 56343.9 |
| 4800 | 9575 | 56350.5 |
| 4800 | 9562.5 | 56371.4 |
| 4800 | 9550 | 56357 |
| 4800 | 9537.5 | 56666.4 |
| 4800 | 9525 | 56690.5 |
| 4800 | 9512.5 | 56442.9 |
| 4800 | 9500 | 56436.1 |
| 4800 | 9487.5 | 56431.6 |
| 4800 | 9475 | 56443.8 |
| 4800 | 9462.5 | 56449.1 |
| 4800 | 9450 | 56460.9 |
| 4800 | 9437.5 | 56506.5 |
| 4800 | 9425 | 56515.6 |
| 4800 | 9412.5 | 56522.3 |
| 4800 | 9400 | 56554.6 |
| 4800 | 9387.5 | 56633.7 |
| 4800 | 9375 | 56666.3 |
| 4800 | 9362.5 | 56678.7 |
| 4800 | 9350 | 56869.7 |
| 4800 | 9337.5 | 56645.7 |
| 4800 | 9325 | 56578.6 |
| 4800 | 9312.5 | 56720.6 |
| 4800 | 9300 | 56739 |

| | | |
|---|---|---|
| 4900 | 9300 | 57178.4 |
| 4900 | 9312.5 | 57219.9 |
| 4900 | 9325 | 57141.5 |
| 4900 | 9337.5 | 57043.4 |
| 4900 | 9350 | 57004.1 |
| 4900 | 9362.5 | 56958.4 |
| 4900 | 9375 | 56774.4 |
| 4900 | 9387.5 | 56713.3 |
| 4900 | 9400 | 56664.9 |
| 4900 | 9412.5 | 56677.2 |
| 4900 | 9425 | 56890.6 |
| 4900 | 9437.5 | 56586.1 |
| 4900 | 9450 | 56571.3 |
| 4900 | 9462.5 | 56588.3 |
| 4900 | 9475 | 56585.7 |
| 4900 | 9487.5 | 56562.6 |
| 4900 | 9500 | 56572.5 |
| 4900 | 9512.5 | 56567.8 |
| 4900 | 9525 | 56587.9 |
| 4900 | 9537.5 | 56649.7 |
| 4900 | 9550 | 56676.2 |
| 4900 | 9562.5 | 56752.6 |
| 4900 | 9575 | 56572.4 |
| 4900 | 9587.5 | 56639.3 |
| 4900 | 9600 | 56682.5 |
| 4900 | 9612.5 | 56540.8 |
| 4900 | 9625 | 56522.6 |
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| 5500 | 9962.5 | 57446.04979 |
| 5500 | 9950 | 57482.79069 |
| 5500 | 9937.5 | 57499.23865 |
| 5500 | 9925 | 57519.3859 |
| 5500 | 9912.5 | 57575.41763 |
| 5500 | 9900 | 57650.84795 |
| 5500 | 9887.5 | 57525.57687 |
| 5500 | 9875 | 57471.80931 |
| 5500 | 9862.5 | 57521.21241 |
| 5500 | 9850 | 57467.54344 |
| 5500 | 9837.5 | 57450.89492 |

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|---|---|---|
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| 5500 | 9812.5 | 57499.20917 |
| 5500 | 9800 | 57436.45642 |
| 5500 | 9787.5 | 57383.77278 |
| 5500 | 9775 | 57398.11157 |
| 5500 | 9762.5 | 57372.19196 |
| 5500 | 9750 | 57293.34626 |
| 5500 | 9737.5 | 57307.11608 |
| 5500 | 9725 | 57274.08731 |
| 5500 | 9712.5 | 57246.06559 |
| 5500 | 9700 | 57243.34386 |
| 5500 | 9687.5 | 57230.29196 |
| 5500 | 9675 | 57209.62934 |
| 5500 | 9662.5 | 57208.01185 |
| 5500 | 9650 | 57181.44711 |
| 5500 | 9637.5 | 57187.88025 |
| 5500 | 9625 | 57129.2275 |
| 5500 | 9612.5 | 57120.38181 |
| 5500 | 9600 | 57124.31142 |
| 5500 | 9587.5 | 57090.86008 |
| 5500 | 9575 | 57086.58279 |
| 5500 | 9562.5 | 57039.51312 |
| 5500 | 9550 | 56986.64062 |
| 5500 | 9537.5 | 57018.66319 |
| 5500 | 9525 | 57393.99351 |
| 5500 | 9512.5 | 57052.63371 |
| 5500 | 9500 | 57019.26403 |
| 5500 | 9487.5 | 57003.4 |
| 5500 | 9475 | 56979.02704 |
| 5500 | 9462.5 | 56998.75693 |
| 5500 | 9450 | 56974.99251 |
| 5500 | 9437.5 | 56964.61529 |
| 5500 | 9425 | 56923.94375 |
| 5500 | 9412.5 | 56893.68218 |
| 5500 | 9400 | 56879.8199 |

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| 5600 | 9475 | 56927.63931 |
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| 5600 | 9525 | 57486.76796 |
| 5600 | 9537.5 | 57094.17338 |
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| 5600 | 9562.5 | 57086.93453 |
| 5600 | 9575 | 57093.17617 |
| 5600 | 9587.5 | 57103.09166 |
| 5600 | 9600 | 57103.21519 |
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| 5600 | 9675 | 57246.65592 |
| 5600 | 9687.5 | 57272.80902 |
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| 5600 | 9750 | 57481.46507 |
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| 5600 | 9825 | 57715.09976 |
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| 5700 | 9987.5 | 58014.56777 |
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| 5700 | 9950 | 58202.11552 |
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| 5700 | 9487.5 | 56812.39071 |
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| 5700 | 9437.5 | 56739.13986 |
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| 5700 | 9412.5 | 56714.80991 |
| 5700 | 9400 | 56700.89439 |

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| 5800 | 9587.5 | 56909.6 |
| 5800 | 9600 | 57047.3 |
| 5800 | 9612.5 | 57097.5 |
| 5800 | 9625 | 57058.5 |
| 5800 | 9637.5 | 57047.1 |
| 5800 | 9650 | 57088.9 |
| 5800 | 9662.5 | 57179.8 |
| 5800 | 9675 | 57178.6 |
| 5800 | 9687.5 | 57216.9 |
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| 5800 | 9712.5 | 57359.5 |
| 5800 | 9725 | 57424.4 |
| 5800 | 9737.5 | 57426.1 |
| 5800 | 9750 | 57442.6 |
| 5800 | 9762.5 | 57485.8 |
| 5800 | 9775 | 57514.6 |
| 5800 | 9787.5 | 57550.2 |
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| 5800 | 9862.5 | 57852.3 |
| 5800 | 9875 | 57902.3 |
| 5800 | 9887.5 | 57935.8 |
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| 5800 | 9912.5 | 58047.7 |
| 5800 | 9925 | 58084.9 |
| 5800 | 9937.5 | 58091 |
| 5800 | 9950 | 58142.8 |
| 5800 | 9962.5 | 58215.6 |
| 5800 | 9975 | 58203.8 |
| 5800 | 9987.5 | 58234.1 |
| 5800 | 10012.5 | 58031.5 |
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| 5800 | 10037.5 | 57826.2 |
| 5800 | 10050 | 57927 |
| 5800 | 10062.5 | 57995.6 |
| 5800 | 10075 | 57906.6 |

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| 5800 | 10112.5 | 57661 |
| 5800 | 10125 | 57700.7 |
| 5800 | 10137.5 | 57587.4 |
| 5800 | 10150 | 57591.1 |
| 5800 | 10162.5 | 57708.4 |
| 5800 | 10175 | 57637.2 |
| 5800 | 10187.5 | 57401.4 |
| 5800 | 10200 | 57428 |
| 5800 | 10212.5 | 57718.7 |
| 5800 | 10225 | 57562.6 |
| 5800 | 10237.5 | 57387.7 |
| 5800 | 10250 | 57356.3 |
| 5800 | 10262.5 | 57370.4 |
| 5800 | 10275 | 56807.4 |
| 5800 | 10287.5 | 56670.2 |
| 5800 | 10300 | 56670.5 |
| 5800 | 10312.5 | 56561.8 |
| 5800 | 10325 | 56458.1 |
| 5800 | 10337.5 | 56428.5 |
| 5800 | 10350 | 56204.1 |
| 5800 | 10362.5 | 56101.1 |
| 5800 | 10375 | 56203.2 |
| 5800 | 10387.5 | 56062.5 |
| 5800 | 10400 | 55906.5 |
| 5800 | 10412.5 | 55815.8 |
| 5800 | 10425 | 55615.8 |
| 5800 | 10437.5 | 55469.6 |
| 5800 | 10450 | 55368.8 |
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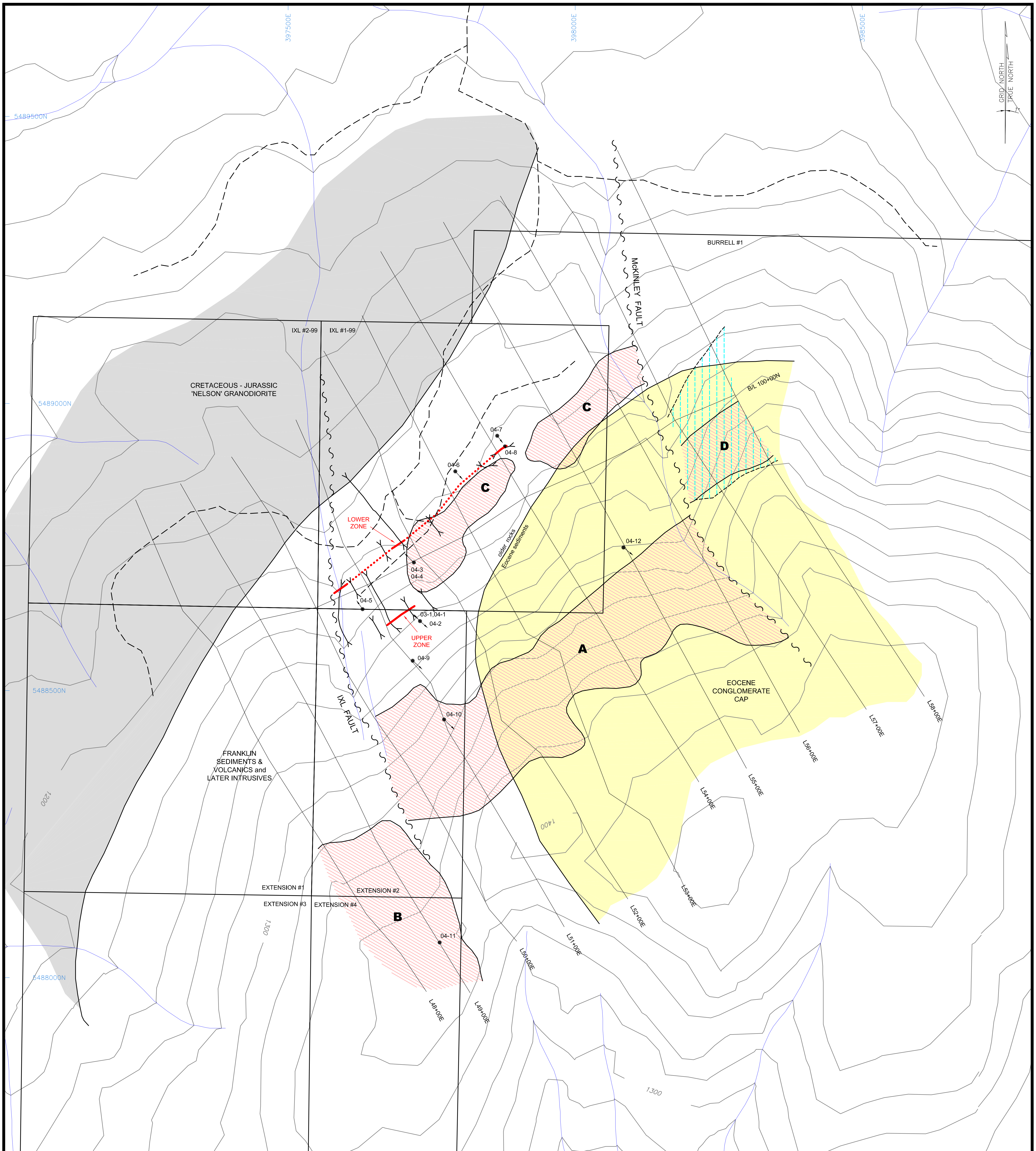



**LEGEND**

| | |
|---|---|
| 04-7 | Diamond Drill Hole |
| | 2004 Trench |
| A | IP Chargeability Anomaly |
| | Magnetic High Anomaly |
| | Eocene Conglomerate Cap |
| | Nelson Grandiorite (unmineralized) |
| | Copper - Gold (& locally Pb - Zn) Mineralization |

**ANOMALY A** Strong linear, steeply dipping chargeability anomaly with good continuity approx parallel to Franklin stratigraphy. Anomaly is 650m long and truncated by faults at both ends. Best developed at 150 meters below surface.

**ANOMALY B** Strong chargeability anomaly, best developed at 250m below surface.

**ANOMALY C** Strong steeply dipping chargeability anomaly, but with less continuity than Anomaly A. Anomaly C is best developed at 75-100m below surface.

**ANOMALY D** Probable off-faulted continuation of Anomaly C or A. Best developed at 150m below surface. Strong coincident mag high.

COUGAR MINERALS CORP.
&
NEW CANTECH VENTURES INC.

IXL PROPERTY

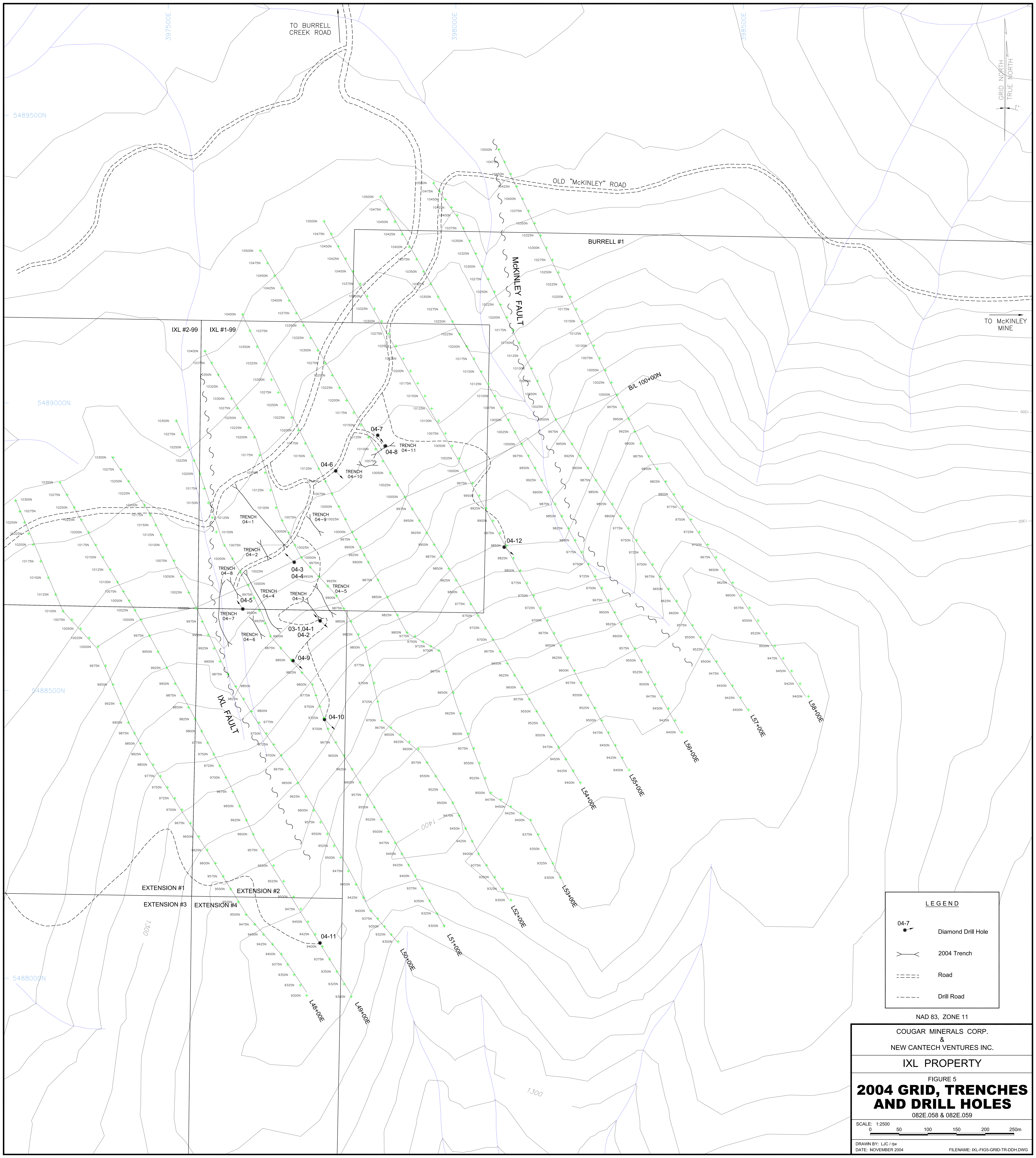
FIGURE 4

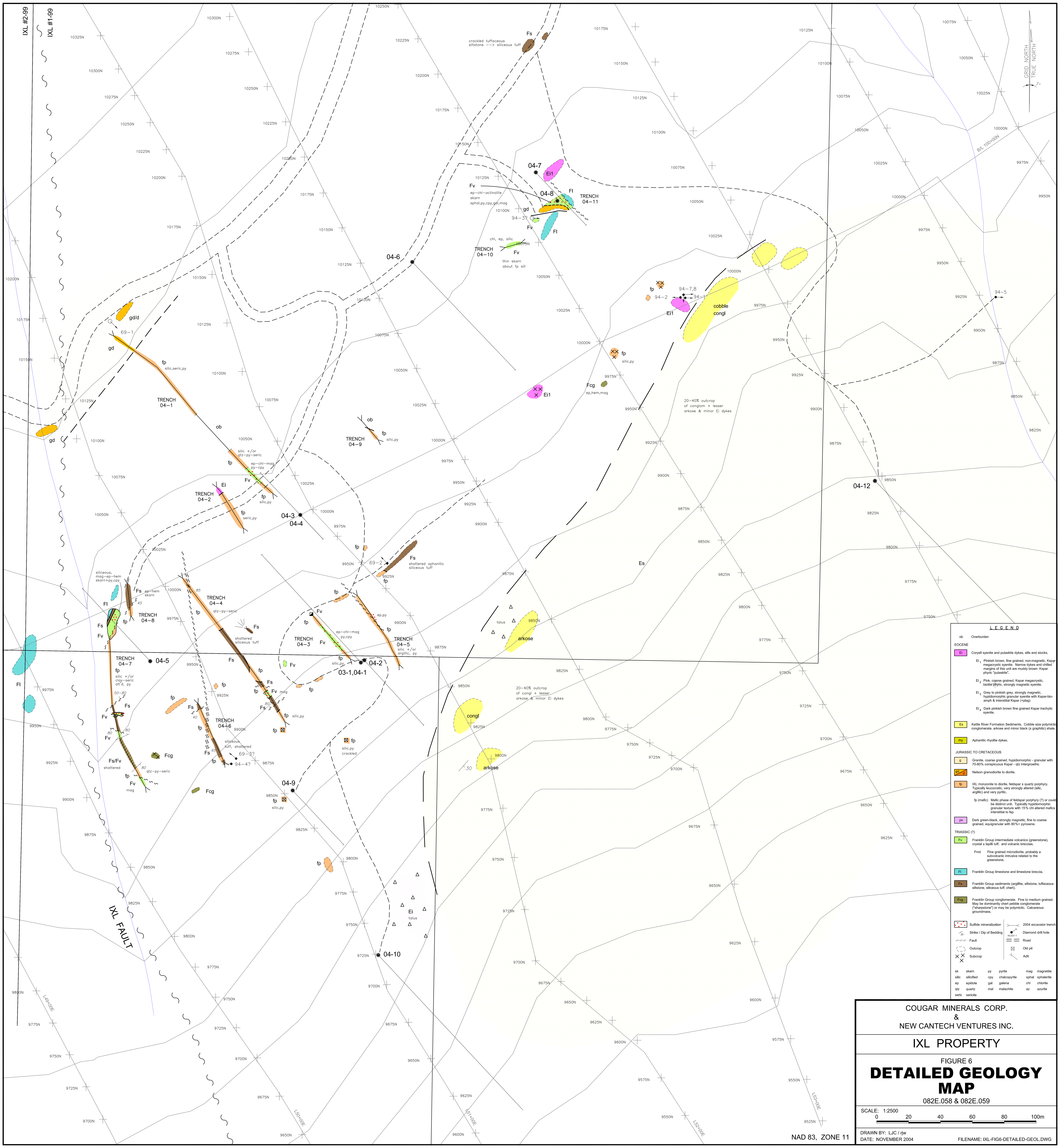
# COMPILATION MAP

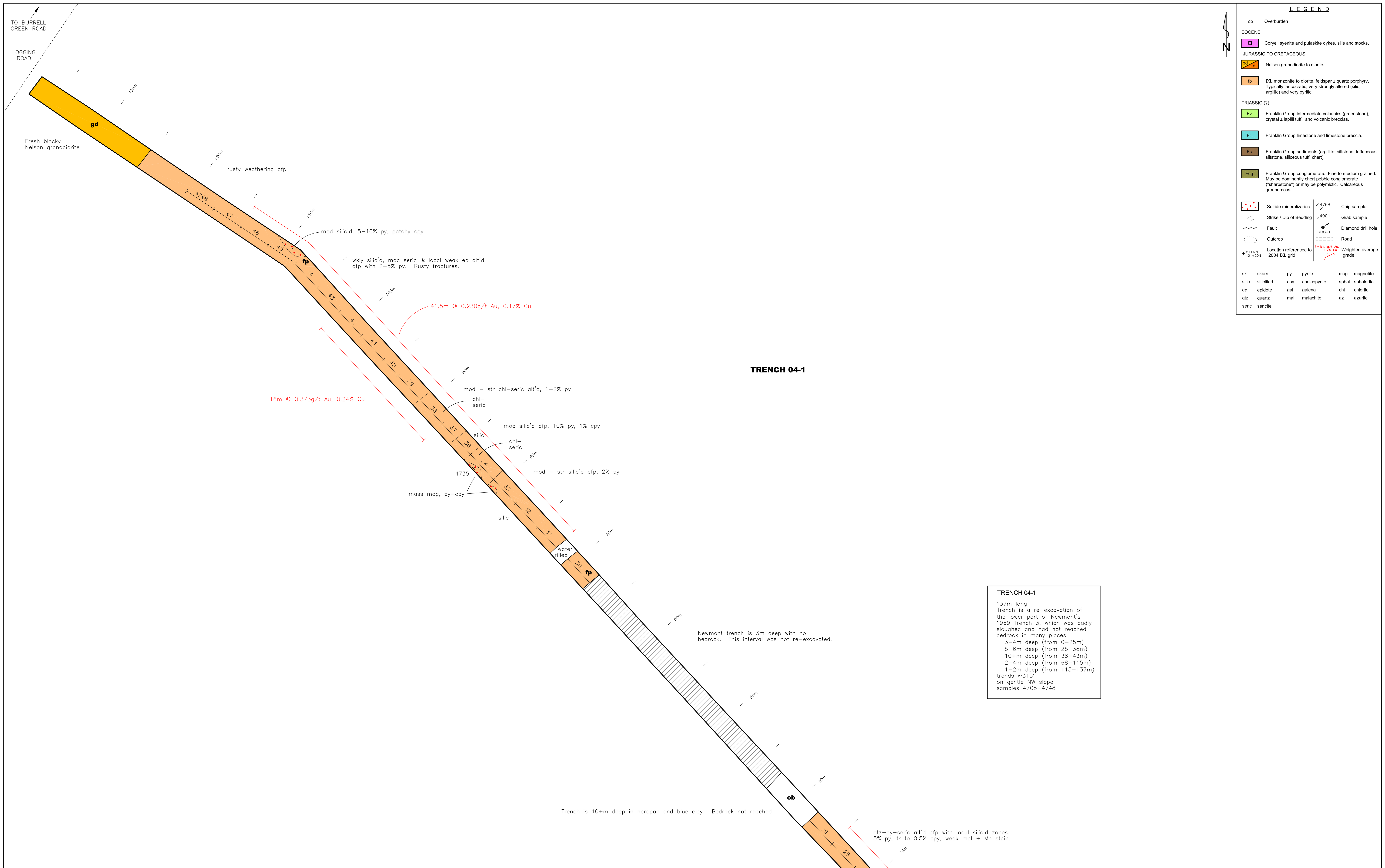
082E.058

SCALE: 1:5000
0 50 100 150 200 250m

DRAWN BY: LJC / rjw
DATE: NOVEMBER 2004
FILENAME: IXL-FIG4-COMPILATION.DWG


TO BURRELL CREEK ROAD
OLD "McKINLEY" ROAD
BURRELL #1
McKINLEY FAULT
TO McKINLEY MINE
GRID NORTH
TRUE NORTH
397500E
398000E
398500E
5489500N
5489000N
5488500N
5488000N
IXL #2-99
IXL #1-99
B/L 100+00N
IXL FAULT
EXTENSION #1
EXTENSION #2
EXTENSION #3
EXTENSION #4
TRENCH 04-1
TRENCH 04-2
TRENCH 04-3
TRENCH 04-4
TRENCH 04-5
TRENCH 04-6
TRENCH 04-7
TRENCH 04-8
TRENCH 04-9
TRENCH 04-10
TRENCH 04-11
04-3
04-4
04-5
04-6
04-7
04-8
04-9
04-10
04-11
04-12
03-1,04-1
04-2
L48+00E
L49+00E
L50+00E
L51+00E
L52+00E
L53+00E
L54+00E
L55+00E
L56+00E
L57+00E
L58+00E
1300
1400
LEGEND
04-7
Diamond Drill Hole
2004 Trench
Road
Drill Road
NAD 83, ZONE 11
COUGAR MINERALS CORP.
&
NEW CANTECH VENTURES INC.
IXL PROPERTY
FIGURE 5
2004 GRID, TRENCHES AND DRILL HOLES
082E.058 & 082E.059
SCALE: 1:2500
0 50 100 150 200 250m
DRAWN BY: LJC / tjw
DATE: NOVEMBER 2004
FILENAME: IXL-FIG5-GRID-TR-DDH.DWG


IXL #2-99
IXL #1-99
IXL FAULT
GRID NORTH
TRUE NORTH
TRENCH 04-1
TRENCH 04-2
TRENCH 04-3
TRENCH 04-4
TRENCH 04-5
TRENCH 04-6
TRENCH 04-7
TRENCH 04-8
TRENCH 04-9
TRENCH 04-10
TRENCH 04-11
04-2
04-3
04-4
04-5
04-6
04-7
04-8
04-9
04-10
04-12
03-1,04-1
cobble congl
congl
arkose
Es
20-40% outcrop of conglom + lesser arkose & minor Ei dykes
NAD 83, ZONE 11
LEGEND
ob Overburden
EOCENE
Ei Coryell syenite and pulaskite dykes, sills and stocks.
Ei 1 Pinkish brown, fine grained, non-magnetic, Kspar megacrystic syenite. Narrow dykes and chilled margins of this unit are muddy brown Kspar phyric "pulaskite".
Ei 2 Pink, coarse grained, Kspar megacrystic, biotite phyric, strongly magnetic syenite.
Ei 3 Grey to pinkish grey, strongly magnetic, hypidiomorphic granular syenite with Kspar-bio-amph & interstitial Kspar (+plag)
Ei 4 Dark pinkish brown fine grained Kspar trachytic syenite.
Es Kettle River Formation Sediments. Cobble size polymictic conglomerate, arkose and minor black (± graphitic) shale.
rhy Aphanitic rhyolite dykes.
JURASSIC TO CRETACEOUS
g Granite, coarse grained, hypidiomorphic - granular with 70-80% conspicuous Kspar - qtz intergrowths.
gd d Nelson granodiorite to diorite.
fp IXL monzonite to diorite, feldspar ± quartz porphyry. Typically leucocratic, very strongly altered (silic, argillic) and very pyritic.
fp (mafic) Mafic phase of feldspar porphyry (?) or could be distinct unit. Typically hypidiomorphic granular texture with 15% chl altered mafics interstitial to fsp.
px Dark green-black, strongly magnetic, fine to coarse grained, equigranular with 80%+ pyroxene.
TRIASSIC (?)
Fv Franklin Group intermediate volcanics (greenstone), crystal ± lapilli tuff, and volcanic breccias.
Fmd Fine grained microdiorite, probably a subvolcanic intrusive related to the greenstone.
Fl Franklin Group limestone and limestone breccia.
Fs Franklin Group sediments (argillite, siltstone, tuffaceous siltstone, siliceous tuff, chert).
Fcg Franklin Group conglomerate. Fine to medium grained. May be dominantly chert pebble conglomerate ("sharpstone") or may be polymictic. Calcareous groundmass.
Sulfide mineralization
2004 excavator trench
Strike / Dip of Bedding
Diamond drill hole
IXL03-1
Fault
Road
Outcrop
Old pit
Subcrop
Adit
sk skarn
silic silicified
ep epidote
qtz quartz
seric sericite
py pyrite
cpy chalcopyrite
gal galena
mal malachite
mag magnetite
sphal sphalerite
chl chlorite
az azurite
COUGAR MINERALS CORP.
&
NEW CANTECH VENTURES INC.
IXL PROPERTY
FIGURE 6
DETAILED GEOLOGY MAP
082E.058 & 082E.059
SCALE: 1:2500
0 20 40 60 80 100m
DRAWN BY: LJC / rjw
DATE: NOVEMBER 2004
FILENAME: IXL-FIG6-DETAILED-GEOL.DWG




**TRENCH 04-1 ANALYTICAL RESULTS**

| Sample # | Interval (m) | Sample Width (m) | Au ppb | Au g/t | Ag g/t | Cu ppm | Cu % | Pb ppm | Zn ppm |
|---|---|---|---|---|---|---|---|---|---|
| 4708 | 5 - 7 | 2 | 240 | | 2.2 | 3537 | | 48 | 42 |
| 4709 | 7 - 9.2 | 2.2 | 640 | | 2.0 | 9436 | | 6 | 48 |
| 4710 | 9.2 - 10 | 0.8 | 875 | | 2.7 | >10000 | 1.05 | <2 | 42 |
| 4711 | 10 - 11 | 1 | >1000 | 1.39 | 1.9 | >10000 | 1.00 | <2 | 40 |
| 4712 | 11 - 12 | 1 | 770 | | 2.3 | >10000 | 1.30 | <2 | 28 |
| 4713 | 12 - 13 | 1 | 915 | | 2.2 | 6960 | | <2 | 27 |
| 4714 | 13 - 14 | 1 | >1000 | 4.55 | 3.6 | >10000 | 1.11 | <2 | 45 |
| 4715 | 14 - 15 | 1 | >1000 | 2.15 | 6.8 | >10000 | 1.11 | <2 | 44 |
| 4716 | 15 - 16 | 1 | >1000 | 1.55 | 11.5 | >10000 | 1.46 | <2 | 44 |
| 4717 | 16 - 17 | 1 | 925 | | 5.5 | >10000 | 1.03 | <2 | 37 |
| 4718 | 17 - 18 | 1 | 680 | | 1.7 | 6743 | | 6 | 34 |
| 4719 | 18 - 19 | 1 | 485 | | 1.4 | 5726 | | 6 | 39 |
| 4720 | 19 - 20 | 1 | 565 | | 1.4 | 4617 | | 6 | 30 |
| 4721 | 20 - 21 | 1 | 580 | | 3.0 | 7657 | | 8 | 39 |
| 4722 | 21 - 22.5 | 1.5 | 530 | | 3.0 | 5773 | | 8 | 51 |
| 4723 | 22.5 - 24 | 1.5 | 255 | | 3.5 | 4616 | | 10 | 38 |
| 4724 | 24 - 26 | 2 | >1000 | 1.65 | 2.2 | 7343 | | 6 | 30 |
| 4725 | 26 - 28 | 2 | >1000 | 1.60 | 2.0 | 7047 | | 4 | 31 |
| 4726 | 28 - 30 | 2 | 135 | | 1.5 | 2627 | | 8 | 30 |
| 4727 | 30 - 32 | 2 | 180 | | 0.9 | 1570 | | 12 | 32 |
| 4728 | 32 - 35 | 3 | 155 | | 0.7 | 1496 | | 14 | 36 |
| 4729 | 35 - 38 | 3 | 100 | | 0.4 | 571 | | 12 | 42 |
| 4730 | 68 - 71 | 3 | 100 | | 0.5 | 1351 | | 12 | 20 |
| 4731 | 72.5 - 75 | 2.5 | 110 | | 0.3 | 580 | | 10 | 24 |
| 4732 | 75 - 78 | 3 | 135 | | 1.1 | 1483 | | 12 | 38 |
| 4733 | 78 - 81 | 3 | 230 | | 0.4 | 1176 | | 20 | 39 |
| 4734 | 81 - 84 | 3 | 175 | | 0.7 | 861 | | 10 | 42 |
| 4735 | 82 | grab | 175 | | 2.2 | 1114 | | <2 | 54 |
| 4736 | 84 - 86 | 2 | 80 | | 0.6 | 479 | | 12 | 24 |
| 4737 | 86 - 88 | 2 | 210 | | 3.6 | 3579 | | 10 | 31 |
| 4738 | 88 - 91 | 3 | 735 | | 1.9 | 4243 | | 12 | 27 |
| 4739 | 91 - 94 | 3 | 115 | | 1.0 | 1036 | | 14 | 32 |
| 4740 | 94 - 96 | 2 | 195 | | 0.9 | 1411 | | 12 | 37 |
| 4741 | 96 - 99 | 3 | 565 | | 1.9 | 2830 | | 104 | 71 |
| 4742 | 99 - 102 | 3 | 305 | | 1.6 | 1549 | | 102 | 147 |
| 4743 | 102 - 105 | 3 | 110 | | 1.2 | 851 | | 140 | 43 |
| 4744 | 105 - 108 | 3 | 55 | | 0.8 | 429 | | 114 | 36 |
| 4745 | 108 - 111 | 3 | 40 | | 3.8 | 713 | | 1964 | 1185 |
| 4746 | 111 - 114 | 3 | 295 | | 18.4 | 4086 | | 234 | 114 |
| 4747 | 114 - 117 | 3 | 35 | | 0.7 | 225 | | 100 | 67 |
| 4748 | 117 - 120 | 3 | 30 | | 0.5 | 365 | | 48 | 57 |

COUGAR MINERALS CORP.
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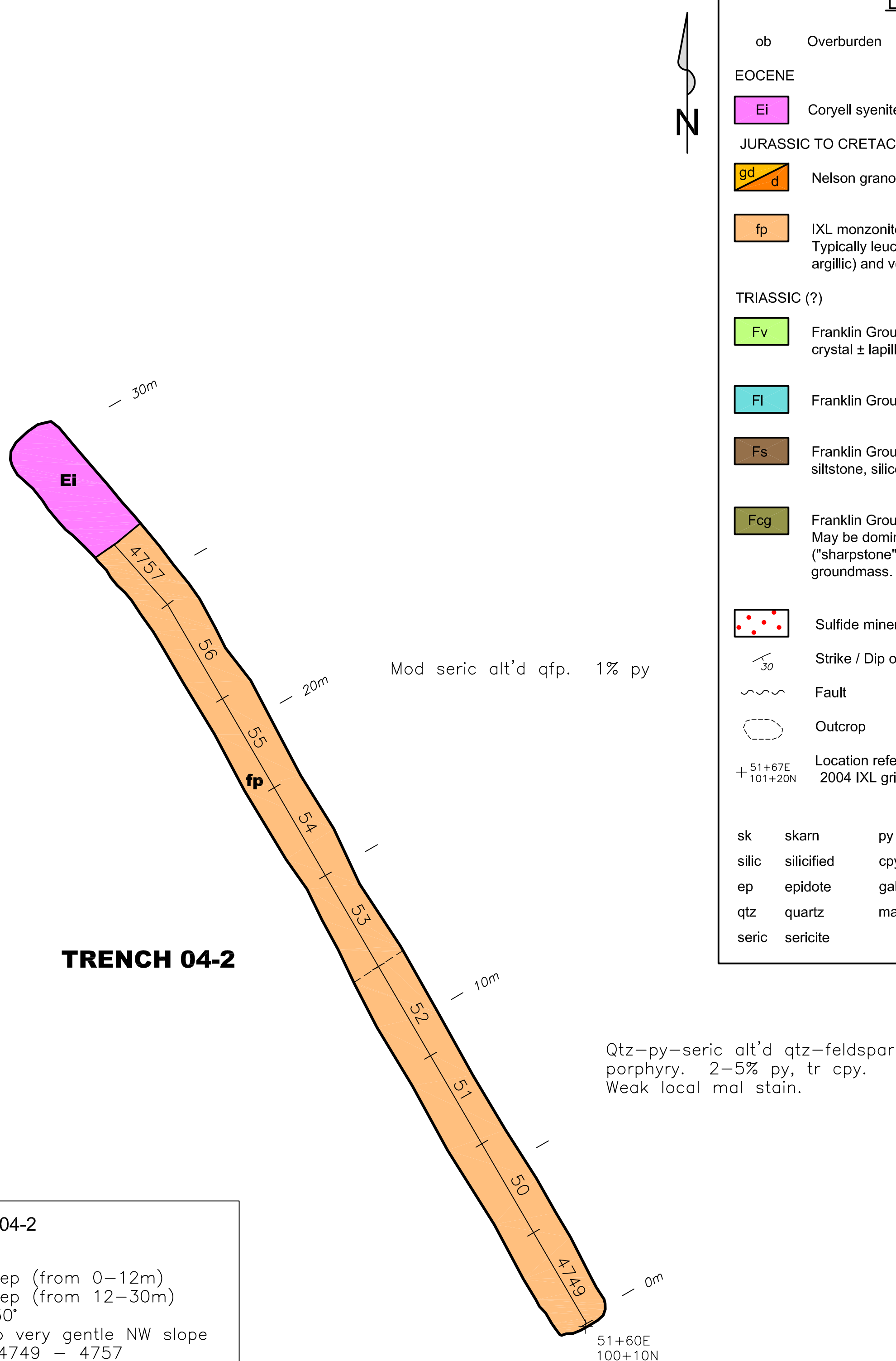
IXL PROPERTY

FIGURE 7

**TRENCH 04-1**
**GEOLOGY, SAMPLE LOCATIONS & RESULTS**

SCALE: 1:200 (0 – 10m)

DRAWN BY: LJC / rjw
DATE: NOVEMBER 2004
FILENAME: IXL-FIG7-TR04-1.DWG




TRENCH 04-2

30m long
6–7m deep (from 0–12m)
2–3m deep (from 12–30m)
trends 330°
on flat to very gentle NW slope
samples 4749 – 4757

## LEGEND

ob Overburden

EOCENE

Ei — Coryell syenite and pulaskite dykes, sills and stocks.

JURASSIC TO CRETACEOUS

gd / d — Nelson granodiorite to diorite.

fp — IXL monzonite to diorite, feldspar ± quartz porphyry. Typically leucocratic, very strongly altered (silic, argillic) and very pyritic.

TRIASSIC (?)

Fv — Franklin Group intermediate volcanics (greenstone), crystal ± lapilli tuff, and volcanic breccias.

Fl — Franklin Group limestone and limestone breccia.

Fs — Franklin Group sediments (argillite, siltstone, tuffaceous siltstone, siliceous tuff, chert).

Fcg — Franklin Group conglomerate. Fine to medium grained. May be dominantly chert pebble conglomerate ("sharpstone") or may be polymictic. Calcareous groundmass.

Sulfide mineralization

30 Strike / Dip of Bedding

Fault

Outcrop

51+67E 101+20N Location referenced to 2004 IXL grid

4768 Chip sample

4901 Grab sample

IXL03–1 Diamond drill hole

Road

3m@1.1g/t Au, 1.2% Cu Weighted average grade

| | | | | | |
|---|---|---|---|---|---|
| sk | skarn | py | pyrite | mag | magnetite |
| silic | silicified | cpy | chalcopyrite | sphal | sphalerite |
| ep | epidote | gal | galena | chl | chlorite |
| qtz | quartz | mal | malachite | az | azurite |
| seric | sericite | | | | |

**TRENCH 04-2 ANALYTICAL RESULTS**

| Sample # | Interval (m) | Sample Width (m) | Au ppb | Ag g/t | Cu ppm | Pb ppm | Zn ppm |
|---|---|---|---|---|---|---|---|
| 4749 | 0 - 3 | 3 | 170 | 0.2 | 777 | 18 | 27 |
| 4750 | 3 - 6 | 3 | 445 | 0.3 | 1328 | 20 | 26 |
| 4751 | 6 - 9 | 3 | 285 | 0.3 | 1021 | 18 | 32 |
| 4752 | 9 - 12 | 3 | 90 | 0.4 | 531 | 16 | 28 |
| 4753 | 12 - 15 | 3 | 85 | <0.2 | 345 | 12 | 23 |
| 4754 | 15 - 18 | 3 | 95 | 0.3 | 454 | 14 | 26 |
| 4755 | 18 - 21 | 3 | 190 | 0.3 | 391 | 16 | 28 |
| 4756 | 21 - 24 | 3 | 130 | 0.3 | 583 | 12 | 31 |
| 4757 | 24 - 26.5 | 2.5 | 255 | 1.5 | 859 | 12 | 30 |

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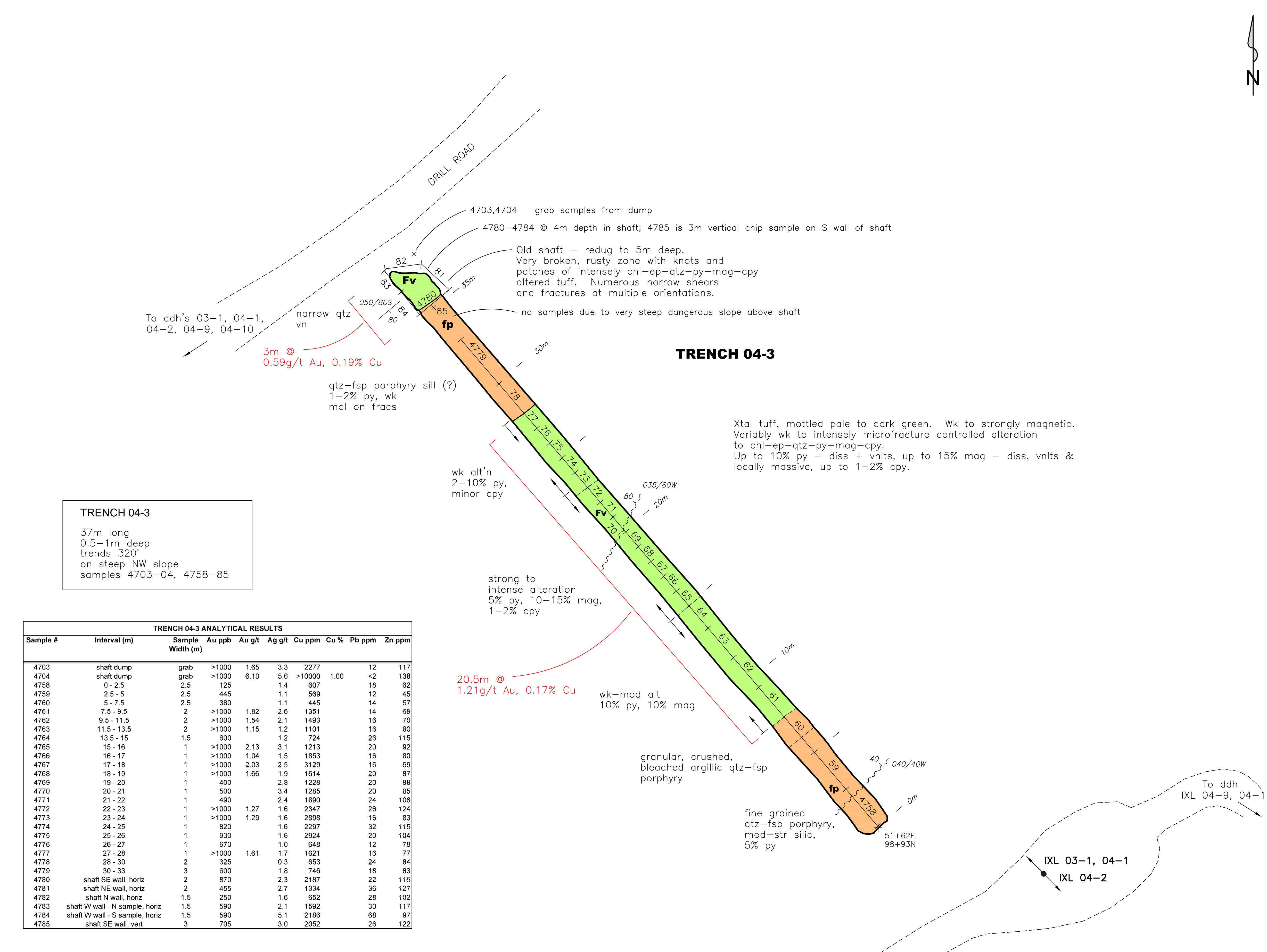
FIGURE 8

# TRENCH 04-2 GEOLOGY, SAMPLE LOCATIONS & RESULTS

SCALE: 1:200
0 10m

DRAWN BY: LJC / rjw
DATE: NOVEMBER 2004
FILENAME: IXL-FIG8ab-TR04-2.DWG




**TRENCH 04-3 ANALYTICAL RESULTS**

| Sample # | Interval (m) | Sample Width (m) | Au ppb | Au g/t | Ag g/t | Cu ppm | Cu % | Pb ppm | Zn ppm |
|---|---|---|---|---|---|---|---|---|---|
| 4703 | shaft dump | grab | >1000 | 1.65 | 3.3 | 2277 | | 12 | 117 |
| 4704 | shaft dump | grab | >1000 | 6.10 | 5.6 | >10000 | 1.00 | <2 | 138 |
| 4758 | 0 - 2.5 | 2.5 | 125 | | 1.4 | 607 | | 18 | 62 |
| 4759 | 2.5 - 5 | 2.5 | 445 | | 1.1 | 569 | | 12 | 45 |
| 4760 | 5 - 7.5 | 2.5 | 380 | | 1.1 | 445 | | 14 | 57 |
| 4761 | 7.5 - 9.5 | 2 | >1000 | 1.82 | 2.6 | 1351 | | 14 | 69 |
| 4762 | 9.5 - 11.5 | 2 | >1000 | 1.54 | 2.1 | 1493 | | 16 | 70 |
| 4763 | 11.5 - 13.5 | 2 | >1000 | 1.15 | 1.2 | 1101 | | 16 | 80 |
| 4764 | 13.5 - 15 | 1.5 | 600 | | 1.2 | 724 | | 26 | 115 |
| 4765 | 15 - 16 | 1 | >1000 | 2.13 | 3.1 | 1213 | | 20 | 92 |
| 4766 | 16 - 17 | 1 | >1000 | 1.04 | 1.5 | 1853 | | 16 | 80 |
| 4767 | 17 - 18 | 1 | >1000 | 2.03 | 2.5 | 3129 | | 16 | 69 |
| 4768 | 18 - 19 | 1 | >1000 | 1.66 | 1.9 | 1614 | | 20 | 87 |
| 4769 | 19 - 20 | 1 | 400 | | 2.8 | 1228 | | 20 | 88 |
| 4770 | 20 - 21 | 1 | 500 | | 3.4 | 1285 | | 20 | 85 |
| 4771 | 21 - 22 | 1 | 490 | | 2.4 | 1890 | | 24 | 106 |
| 4772 | 22 - 23 | 1 | >1000 | 1.27 | 1.6 | 2347 | | 26 | 124 |
| 4773 | 23 - 24 | 1 | >1000 | 1.29 | 1.6 | 2898 | | 16 | 83 |
| 4774 | 24 - 25 | 1 | 820 | | 1.6 | 2297 | | 32 | 115 |
| 4775 | 25 - 26 | 1 | 930 | | 1.6 | 2924 | | 20 | 104 |
| 4776 | 26 - 27 | 1 | 670 | | 1.0 | 648 | | 12 | 78 |
| 4777 | 27 - 28 | 1 | >1000 | 1.61 | 1.7 | 1621 | | 16 | 77 |
| 4778 | 28 - 30 | 2 | 325 | | 0.3 | 653 | | 24 | 84 |
| 4779 | 30 - 33 | 3 | 600 | | 1.8 | 746 | | 18 | 83 |
| 4780 | shaft SE wall, horiz | 2 | 870 | | 2.3 | 2187 | | 22 | 116 |
| 4781 | shaft NE wall, horiz | 2 | 455 | | 2.7 | 1334 | | 36 | 127 |
| 4782 | shaft N wall, horiz | 1.5 | 250 | | 1.6 | 652 | | 28 | 102 |
| 4783 | shaft W wall - N sample, horiz | 1.5 | 590 | | 2.1 | 1592 | | 30 | 117 |
| 4784 | shaft W wall - S sample, horiz | 1.5 | 590 | | 5.1 | 2186 | | 68 | 97 |
| 4785 | shaft SE wall, vert | 3 | 705 | | 3.0 | 2052 | | 26 | 122 |

## LEGEND

ob — Overburden

EOCENE

El — Coryell syenite and pulaskite dykes, sills and stocks.

JURASSIC TO CRETACEOUS

gd / d — Nelson granodiorite to diorite.

fp — IXL monzonite to diorite, feldspar ± quartz porphyry. Typically leucocratic, very strongly altered (silic, argillic) and very pyritic.

TRIASSIC (?)

Fv — Franklin Group intermediate volcanics (greenstone), crystal ± lapilli tuff, and volcanic breccias.

Fl — Franklin Group limestone and limestone breccia.

Fs — Franklin Group sediments (argillite, siltstone, tuffaceous siltstone, siliceous tuff, chert).

Fcg — Franklin Group conglomerate. Fine to medium grained. May be dominantly chert pebble conglomerate ("sharpstone") or may be polymictic. Calcareous groundmass.

Sulfide mineralization; Strike / Dip of Bedding; Fault; Outcrop; 51+67E 101+20N Location referenced to 2004 IXL grid

4768 Chip sample; 4901 Grab sample; IXL03–1 Diamond drill hole; Road; 3m@1.1g/t Au, 1.2% Cu Weighted average grade

| | | | | | |
|---|---|---|---|---|---|
| sk | skarn | py | pyrite | mag | magnetite |
| silic | silicified | cpy | chalcopyrite | sphal | sphalerite |
| ep | epidote | gal | galena | chl | chlorite |
| qtz | quartz | mal | malachite | az | azurite |
| seric | sericite | | | | |

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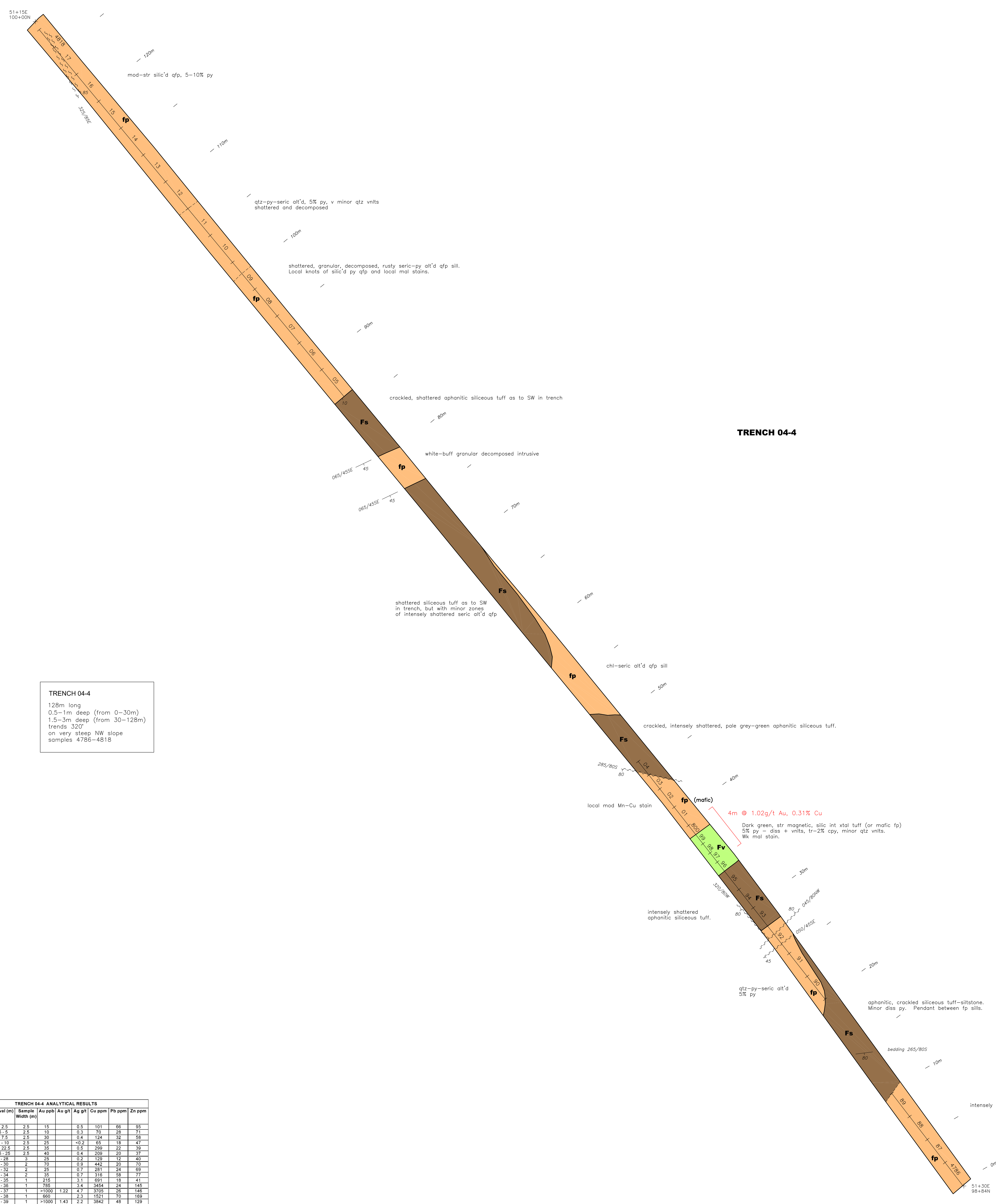
FIGURE 9

**TRENCH 04-3 GEOLOGY, SAMPLE LOCATIONS & RESULTS**

SCALE: 1:200 0 10m

DRAWN BY: LJC / rjw
DATE: NOVEMBER 2004
FILENAME: IXL-FIG9-TR04-3.DWG




| TRENCH 04-4 ANALYTICAL RESULTS | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Sample # | Interval (m) | Sample Width (m) | Au ppb | Au g/t | Ag g/t | Cu ppm | Pb ppm | Zn ppm |
| 4786 | 0 - 2.5 | 2.5 | 15 | | 0.5 | 101 | 66 | 95 |
| 4787 | 2.5 - 5 | 2.5 | 10 | | 0.3 | 70 | 28 | 71 |
| 4788 | 5 - 7.5 | 2.5 | 30 | | 0.4 | 124 | 32 | 58 |
| 4789 | 7.5 - 10 | 2.5 | 25 | | <0.2 | 65 | 18 | 47 |
| 4790 | 20 - 22.5 | 2.5 | 35 | | 0.5 | 299 | 22 | 39 |
| 4791 | 22.5 - 25 | 2.5 | 40 | | 0.4 | 209 | 20 | 37 |
| 4792 | 25 - 28 | 3 | 25 | | 0.2 | 129 | 12 | 40 |
| 4793 | 28 - 30 | 2 | 70 | | 0.9 | 442 | 20 | 70 |
| 4794 | 30 - 32 | 2 | 25 | | 0.7 | 281 | 24 | 69 |
| 4795 | 32 - 34 | 2 | 35 | | 0.7 | 316 | 58 | 77 |
| 4796 | 34 - 35 | 1 | 215 | | 3.1 | 691 | 18 | 41 |
| 4797 | 35 - 36 | 1 | 785 | | 3.4 | 3454 | 24 | 145 |
| 4798 | 36 - 37 | 1 | >1000 | 1.22 | 4.7 | 3705 | 26 | 146 |
| 4799 | 37 - 38 | 1 | 660 | | 2.3 | 1521 | 70 | 169 |
| 4800 | 38 - 39 | 1 | >1000 | 1.43 | 2.2 | 3842 | 48 | 129 |
| 4801 | 39 - 41 | 2 | 280 | | 0.5 | 736 | 30 | 108 |
| 4802 | 41 - 43 | 2 | 115 | | 0.7 | 489 | 34 | 110 |
| 4803 | 43 - 44.5 | 1.5 | 80 | | 0.5 | 498 | 24 | 96 |
| 4804 | 44.5 - 46 | 1.5 | 250 | | 0.8 | 305 | 20 | 84 |
| 4805 | 86 - 88 | 2 | 65 | | 0.4 | 338 | 18 | 18 |
| 4806 | 88 - 91 | 3 | 95 | | 1.1 | 585 | 18 | 39 |
| 4807 | 91 - 94 | 3 | 55 | | 0.8 | 646 | 22 | 36 |
| 4808 | 94 - 97 | 3 | 85 | | 1.3 | 714 | 12 | 28 |
| 4809 | 97 - 100 | 3 | 75 | | 1.0 | 814 | 22 | 29 |
| 4810 | 100 - 103 | 3 | 65 | | 1.3 | 816 | 62 | 39 |
| 4811 | 103 - 106 | 3 | 60 | | 0.6 | 572 | 20 | 29 |
| 4812 | 106 - 109 | 3 | 50 | | 0.4 | 601 | 16 | 30 |
| 4813 | 109 - 112 | 3 | 80 | | 0.8 | 1066 | 20 | 35 |
| 4814 | 112 - 115 | 3 | 60 | | 0.6 | 645 | 22 | 30 |
| 4815 | 115 - 118 | 3 | 60 | | 0.5 | 806 | 16 | 26 |
| 4816 | 118 - 121 | 3 | 285 | | 1.3 | 2096 | 12 | 32 |
| 4817 | 121 - 124 | 3 | 105 | | 0.6 | 583 | 10 | 26 |
| 4818 | 124 - 126 | 2 | 205 | | 0.3 | 820 | 14 | 48 |

## LEGEND

ob — Overburden

EOCENE

Ei — Coryell syenite and pulaskite dykes, sills and stocks.

JURASSIC TO CRETACEOUS

gd / d — Nelson granodiorite to diorite.

fp — IXL monzonite to diorite, feldspar ± quartz porphyry. Typically leucocratic, very strongly altered (silic, argillic) and very pyritic.

TRIASSIC (?)

Fv — Franklin Group intermediate volcanics (greenstone), crystal ± lapilli tuff, and volcanic breccias.

Fl — Franklin Group limestone and limestone breccia.

Fs — Franklin Group sediments (argillite, siltstone, tuffaceous siltstone, siliceous tuff, chert).

Fcg — Franklin Group conglomerate. Fine to medium grained. May be dominantly chert pebble conglomerate ("sharpstone") or may be polymictic. Calcareous groundmass.

Sulfide mineralization
Strike / Dip of Bedding (30)
Fault
Outcrop
Location referenced to 2004 IXL grid (51+67E 101+20N)
Chip sample (4768)
Grab sample (4901)
Diamond drill hole (IXL03–1)
Road
Weighted average grade (3m@1.1g/t Au, 1.2% Cu)

| | | | | | |
|---|---|---|---|---|---|
| sk | skarn | py | pyrite | mag | magnetite |
| silic | silicified | cpy | chalcopyrite | sphal | sphalerite |
| ep | epidote | gal | galena | chl | chlorite |
| qtz | quartz | mal | malachite | az | azurite |
| seric | sericite | | | | |

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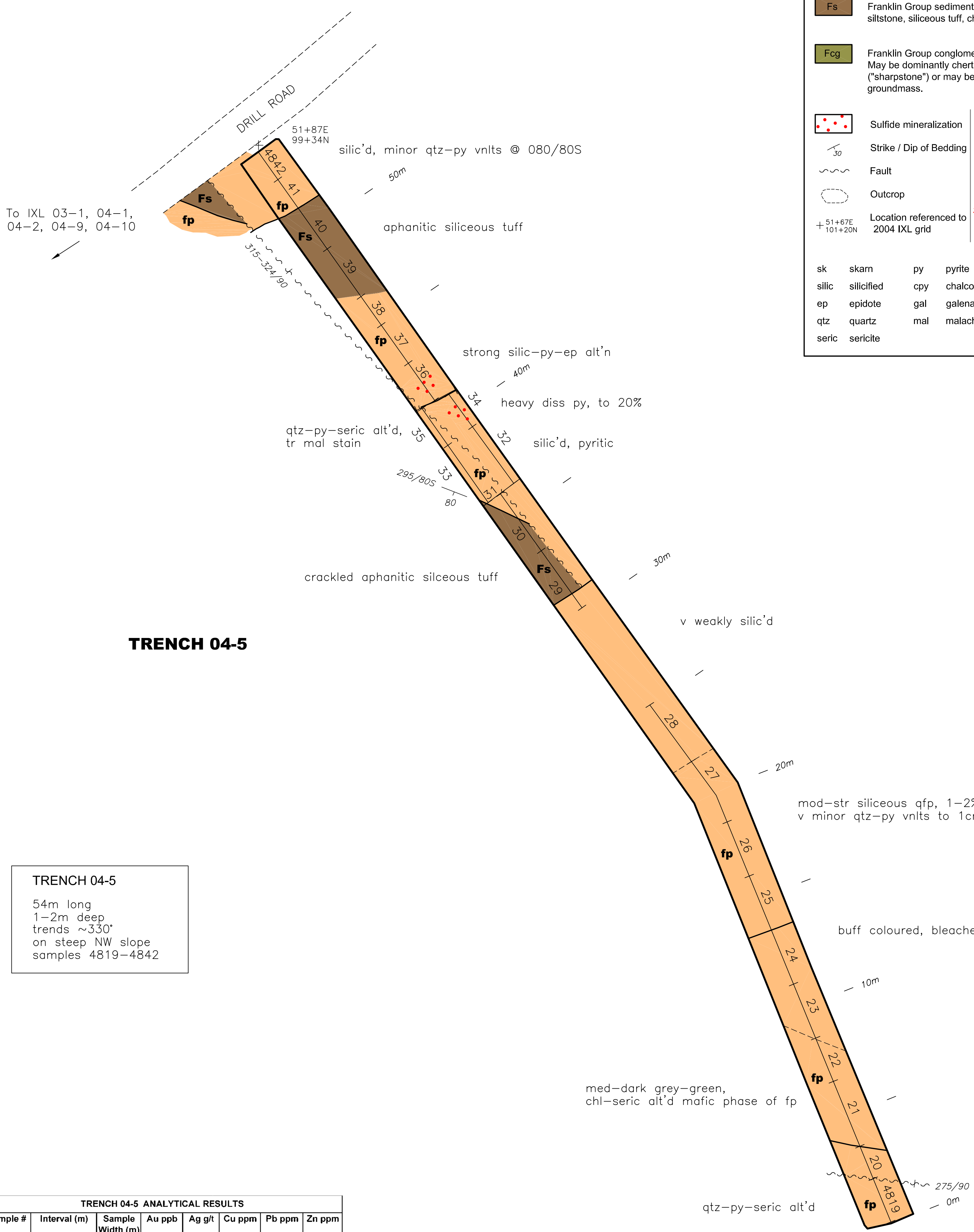
FIGURE 10

# TRENCH 04-4 GEOLOGY, SAMPLE LOCATIONS & RESULTS

SCALE: 1:200
0 — 10m

DRAWN BY: LJC / rjw
DATE: NOVEMBER 2004
FILENAME: IXL-FIG10-TR04-4.DWG




## LEGEND

ob Overburden

EOCENE

Ei — Coryell syenite and pulaskite dykes, sills and stocks.

JURASSIC TO CRETACEOUS

gd / d — Nelson granodiorite to diorite.

fp — IXL monzonite to diorite, feldspar ± quartz porphyry. Typically leucocratic, very strongly altered (silic, argillic) and very pyritic.

TRIASSIC (?)

Fv — Franklin Group intermediate volcanics (greenstone), crystal ± lapilli tuff, and volcanic breccias.

Fl — Franklin Group limestone and limestone breccia.

Fs — Franklin Group sediments (argillite, siltstone, tuffaceous siltstone, siliceous tuff, chert).

Fcg — Franklin Group conglomerate. Fine to medium grained. May be dominantly chert pebble conglomerate ("sharpstone") or may be polymictic. Calcareous groundmass.

Sulfide mineralization
Strike / Dip of Bedding (30)
Fault
Outcrop
Location referenced to 2004 IXL grid (51+67E 101+20N)
Chip sample (4768)
Grab sample (4901)
Diamond drill hole (IXL03–1)
Road
Weighted average grade (3m@1.1g/t Au, 1.2% Cu)

| | | | | | |
|---|---|---|---|---|---|
| sk | skarn | py | pyrite | mag | magnetite |
| silic | silicified | cpy | chalcopyrite | sphal | sphalerite |
| ep | epidote | gal | galena | chl | chlorite |
| qtz | quartz | mal | malachite | az | azurite |
| seric | sericite | | | | |

### TRENCH 04-5 ANALYTICAL RESULTS

| Sample # | Interval (m) | Sample Width (m) | Au ppb | Ag g/t | Cu ppm | Pb ppm | Zn ppm |
|---|---|---|---|---|---|---|---|
| 4819 | 0 - 2 | 2 | 35 | 0.6 | 297 | 14 | 60 |
| 4820 | 2 - 3.5 | 1.5 | 60 | 1.2 | 341 | 16 | 67 |
| 4821 | 3.5 - 6.5 | 3 | 95 | 1.0 | 686 | 16 | 86 |
| 4822 | 6.5 - 8.5 | 2 | 225 | 1.3 | 886 | 14 | 82 |
| 4823 | 8.5 - 11 | 2.5 | 165 | 3.4 | 717 | 38 | 89 |
| 4824 | 11 - 13.5 | 2.5 | 135 | 2.7 | 511 | 36 | 82 |
| 4825 | 13.5 - 16 | 2.5 | 40 | 0.6 | 209 | 20 | 75 |
| 4826 | 16 - 18.5 | 2.5 | 65 | 3.1 | 249 | 24 | 85 |
| 4827 | 18.5 - 21.5 | 3 | 35 | 0.8 | 278 | 26 | 86 |
| 4828 | 21.5 - 24.5 | 3 | 30 | 0.7 | 280 | 14 | 59 |
| 4829 | 30 - 33 | 3 | 40 | 0.4 | 265 | 16 | 68 |
| 4830 | 33 - 36 | 3 | 90 | 0.7 | 424 | 18 | 65 |
| 4831 | @ 36 | 2 | 145 | 1.6 | 1197 | 12 | 70 |
| 4832 | 36 - 39 N side | 3 | 75 | 1.0 | 486 | 12 | 54 |
| 4833 | 36 - 39 S side | 3 | 140 | 1.2 | 571 | 14 | 88 |
| 4834 | 39 - 41 N side | 2 | 25 | 0.3 | 548 | 14 | 53 |
| 4835 | 39 - 41 S side | 2 | 45 | 0.2 | 1342 | 12 | 69 |
| 4836 | 41 - 43 | 2 | 320 | 1.3 | 1138 | 10 | 42 |
| 4837 | 43 - 45 | 2 | 90 | 0.6 | 639 | 16 | 70 |
| 4838 | 45 - 46.5 | 1.5 | 75 | 0.6 | 219 | 14 | 53 |
| 4839 | 46.5 - 49 | 2.5 | 45 | 0.5 | 425 | 16 | 47 |
| 4840 | 49 - 51 | 2 | 20 | <0.2 | 2315 | 18 | 97 |
| 4841 | 51 - 52.5 | 1.5 | 35 | 0.3 | 823 | 16 | 59 |
| 4842 | 52.5 - 54 | 1.5 | 15 | 0.6 | 378 | 28 | 41 |

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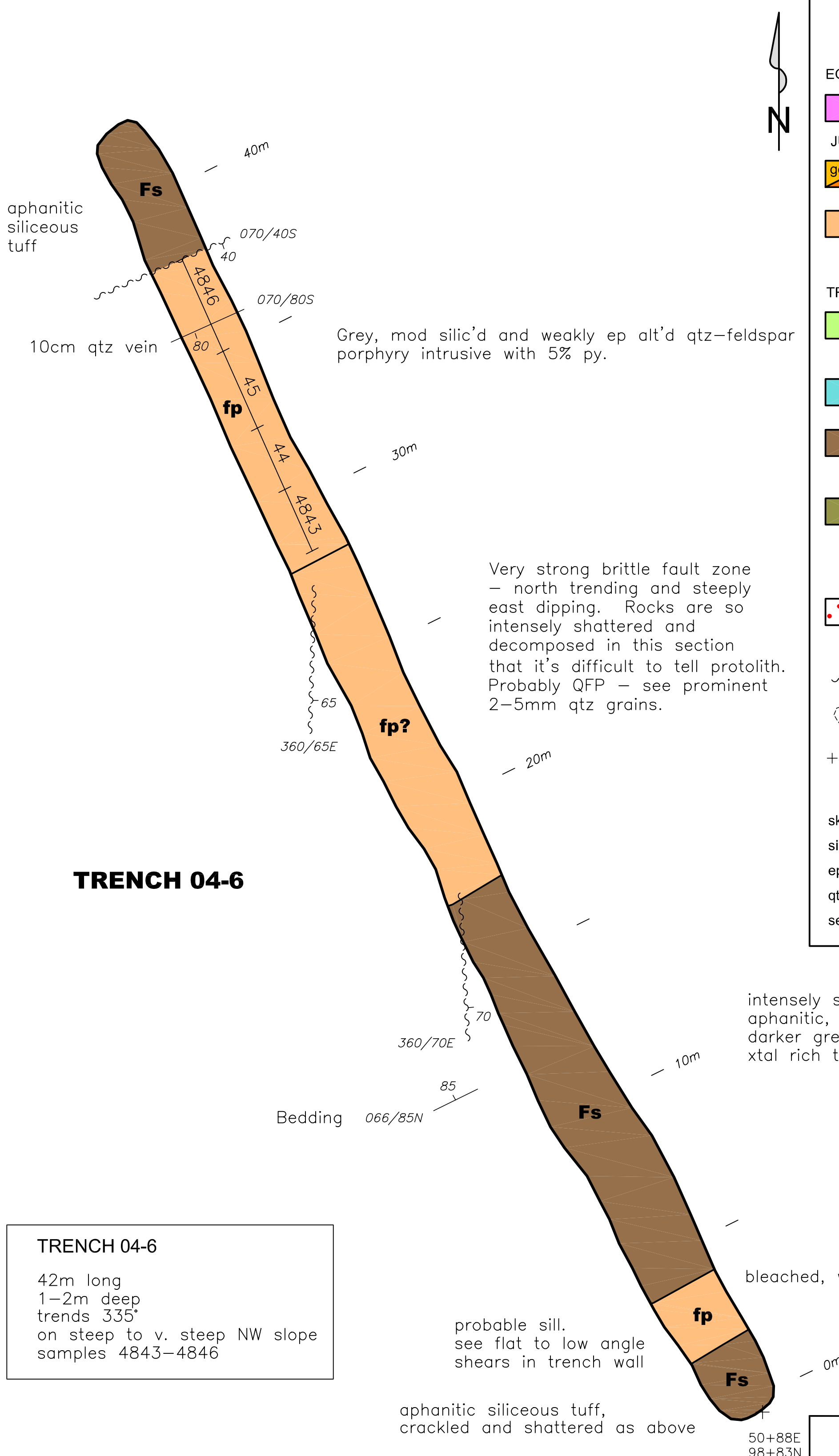
FIGURE 11

# TRENCH 04-5 GEOLOGY, SAMPLE LOCATIONS & RESULTS

SCALE: 1:200 (0 — 10m)

DRAWN BY: LJC / rjw
DATE: NOVEMBER 2004
FILENAME: IXL-FIG11-TR04-5.DWG




## L E G E N D

ob — Overburden

EOCENE

Ei — Coryell syenite and pulaskite dykes, sills and stocks.

JURASSIC TO CRETACEOUS

gd / d — Nelson granodiorite to diorite.

fp — IXL monzonite to diorite, feldspar ± quartz porphyry. Typically leucocratic, very strongly altered (silic, argillic) and very pyritic.

TRIASSIC (?)

Fv — Franklin Group intermediate volcanics (greenstone), crystal ± lapilli tuff, and volcanic breccias.

Fl — Franklin Group limestone and limestone breccia.

Fs — Franklin Group sediments (argillite, siltstone, tuffaceous siltstone, siliceous tuff, chert).

Fcg — Franklin Group conglomerate. Fine to medium grained. May be dominantly chert pebble conglomerate ("sharpstone") or may be polymictic. Calcareous groundmass.

Sulfide mineralization

30 — Strike / Dip of Bedding

Fault

Outcrop

51+67E 101+20N — Location referenced to 2004 IXL grid

4768 — Chip sample

4901 — Grab sample

IXL03–1 — Diamond drill hole

Road

3m@1.1g/t Au, 1.2% Cu — Weighted average grade

| | | | | | |
|---|---|---|---|---|---|
| sk | skarn | py | pyrite | mag | magnetite |
| silic | silicified | cpy | chalcopyrite | sphal | sphalerite |
| ep | epidote | gal | galena | chl | chlorite |
| qtz | quartz | mal | malachite | az | azurite |
| seric | sericite | | | | |

**TRENCH 04-6 ANALYTICAL RESULTS**

| Sample # | Interval (m) | Sample Width (m) | Au ppb | Ag g/t | Cu ppm | Pb ppm | Zn ppm |
|---|---|---|---|---|---|---|---|
| 4843 | 28.5 - 30.5 | 2 | 25 | 0.4 | 93 | 44 | 92 |
| 4844 | 30.5 - 32.5 | 2 | 20 | 0.3 | 313 | 10 | 31 |
| 4845 | 32.5 - 35 | 2.5 | 80 | 1.2 | 856 | 32 | 92 |
| 4846 | 35 - 38 | 3 | 50 | 0.3 | 342 | 24 | 54 |

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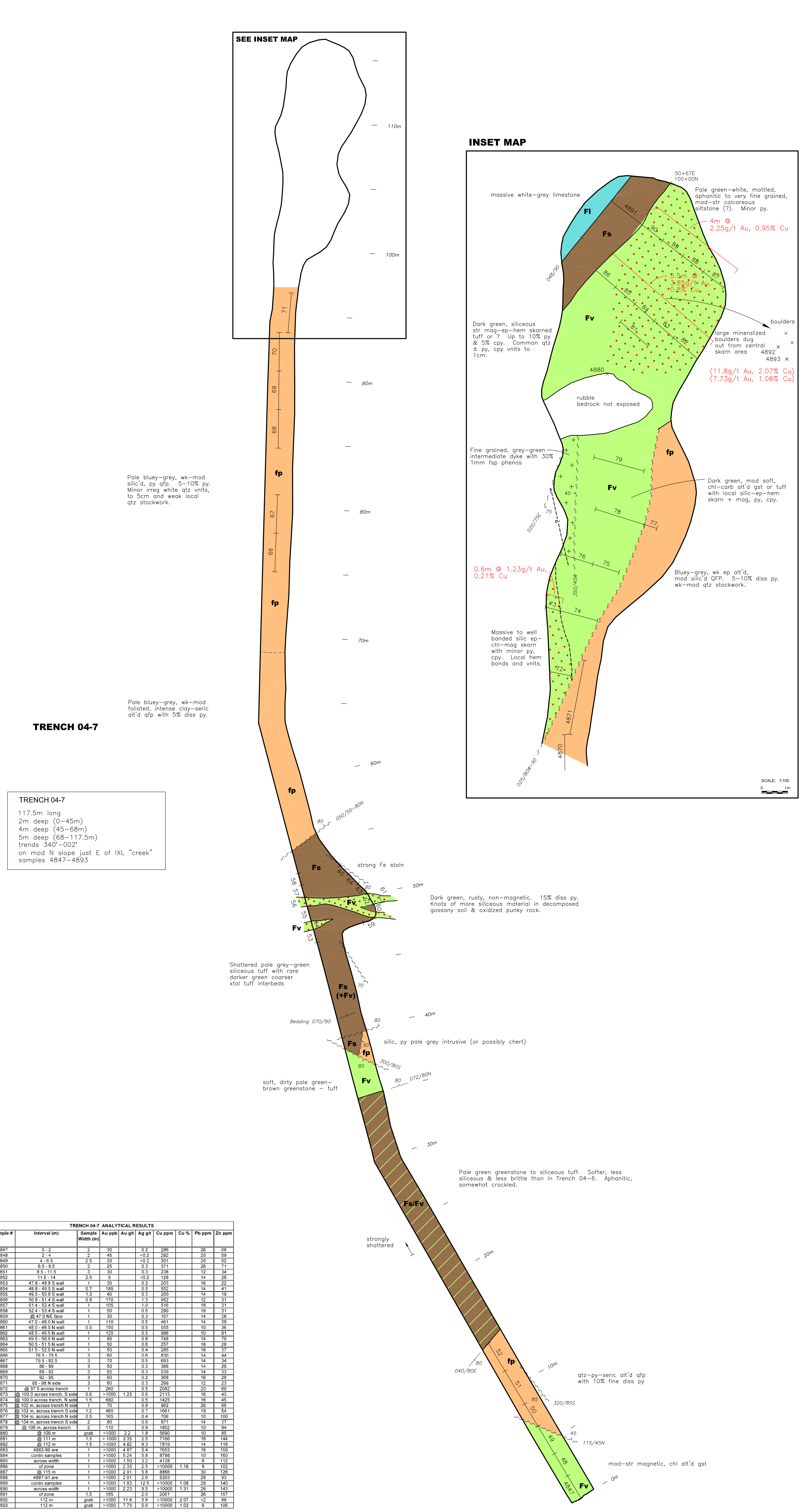
FIGURE 12

# TRENCH 04-6 GEOLOGY, SAMPLE LOCATIONS & RESULTS

SCALE: 1:200
0 10m

DRAWN BY: LJC / rjw
DATE: NOVEMBER 2004
FILENAME: IXL-FIG12-TR04-6.DWG




| TRENCH 04-7 ANALYTICAL RESULTS | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Sample # | Interval (m) | Sample Width (m) | Au ppb | Au g/t | Ag g/t | Cu ppm | Cu % | Pb ppm | Zn ppm |
| 4847 | 0 - 2 | 2 | 30 | | 0.2 | 286 | | 26 | 68 |
| 4848 | 2 - 4 | 2 | 45 | | <0.2 | 292 | | 20 | 59 |
| 4849 | 4 - 6.5 | 2.5 | 20 | | <0.2 | 201 | | 20 | 62 |
| 4850 | 6.5 - 8.5 | 2 | 25 | | 0.3 | 371 | | 26 | 71 |
| 4851 | 8.5 - 11.5 | 3 | 30 | | 0.3 | 238 | | 12 | 34 |
| 4852 | 11.5 - 14 | 2.5 | 5 | | <0.2 | 128 | | 14 | 26 |
| 4853 | 47.8 - 48.8 S wall | 1 | 30 | | 0.2 | 203 | | 16 | 22 |
| 4854 | 48.8 - 49.5 S wall | 0.7 | 185 | | 0.5 | 552 | | 14 | 41 |
| 4855 | 49.5 - 50.8 S wall | 1.3 | 40 | | 0.3 | 260 | | 14 | 19 |
| 4856 | 50.8 - 51.4 S wall | 0.8 | 170 | | 1.3 | 952 | | 12 | 31 |
| 4857 | 51.4 - 52.4 S wall | 1 | 105 | | 1.0 | 516 | | 18 | 31 |
| 4858 | 52.4 - 53.4 S wall | 1 | 50 | | 0.5 | 290 | | 18 | 31 |
| 4859 | @ 47.0 NE face | 1 | 30 | | 0.3 | 167 | | 14 | 28 |
| 4860 | 47.0 - 48.0 N wall | 1 | 110 | | 0.5 | 461 | | 14 | 38 |
| 4861 | 48.0 - 48.5 N wall | 0.5 | 150 | | 0.5 | 555 | | 10 | 36 |
| 4862 | 48.5 - 49.5 N wall | 1 | 120 | | 0.5 | 986 | | 10 | 81 |
| 4863 | 49.5 - 50.5 N wall | 1 | 85 | | 0.8 | 748 | | 14 | 70 |
| 4864 | 50.5 - 51.5 N wall | 1 | 50 | | 0.6 | 257 | | 16 | 28 |
| 4865 | 51.5 - 52.5 N wall | 1 | 50 | | 0.4 | 285 | | 18 | 37 |
| 4866 | 76.5 - 79.5 | 3 | 60 | | 0.6 | 830 | | 14 | 44 |
| 4867 | 79.5 - 82.5 | 3 | 70 | | 0.5 | 693 | | 14 | 34 |
| 4868 | 86 - 89 | 3 | 50 | | 0.3 | 386 | | 14 | 26 |
| 4869 | 89 - 92 | 3 | 65 | | 0.3 | 539 | | 14 | 33 |
| 4870 | 92 - 95 | 3 | 60 | | 0.2 | 368 | | 16 | 28 |
| 4871 | 95 - 98 N side | 3 | 60 | | 0.3 | 299 | | 12 | 23 |
| 4872 | @ 97.5 across trench | 1 | 260 | | 0.5 | 2082 | | 20 | 60 |
| 4873 | @ 100.0 across trench, S side | 0.6 | >1000 | 1.23 | 0.6 | 2113 | | 16 | 43 |
| 4874 | @ 100.0 across trench, N side | 1.5 | 680 | | 0.5 | 1425 | | 16 | 45 |
| 4875 | @ 102 m, across trench N side | 1 | 70 | | 0.8 | 962 | | 26 | 66 |
| 4876 | @ 102 m, across trench S side | 1.2 | 460 | | 0.7 | 1661 | | 18 | 54 |
| 4877 | @ 104 m, across trench N side | 0.5 | 165 | | 0.4 | 706 | | 10 | 100 |
| 4878 | @ 104 m, across trench S side | 2 | 80 | | 0.6 | 871 | | 14 | 37 |
| 4879 | @ 106 m, across trench | 2 | 110 | | 0.9 | 1802 | | 10 | 94 |
| 4880 | @ 109 m | grab | >1000 | 2.2 | 1.8 | 5690 | | 10 | 85 |
| 4881 | @ 111 m | 1.5 | > 1000 | 3.35 | 2.5 | 7166 | | 18 | 144 |
| 4882 | @ 112 m | 1.5 | >1000 | 4.82 | 6.3 | 7819 | | 14 | 116 |
| 4883 | 4882-86 are | 1 | >1000 | 4.87 | 5.4 | 7653 | | 18 | 159 |
| 4884 | contin samples | 1 | >1000 | 5.24 | 5.8 | 8798 | | 10 | 160 |
| 4885 | across width | 1 | >1000 | 1.50 | 3.2 | 4128 | | 6 | 112 |
| 4886 | of zone | 1 | >1000 | 2.33 | 2.5 | >10000 | 1.18 | 8 | 102 |
| 4887 | @ 115 m | 1 | >1000 | 2.91 | 5.8 | 8866 | | 30 | 126 |
| 4888 | 4887-91 are | 1 | >1000 | 2.01 | 2.6 | 5303 | | 28 | 93 |
| 4889 | contin samples | 1 | >1000 | 1.83 | 12.5 | >10000 | 1.08 | 28 | 140 |
| 4890 | across width | 1 | >1000 | 2.23 | 9.5 | >10000 | 1.31 | 26 | 143 |
| 4891 | of zone | 1.5 | 185 | | 2.0 | 2061 | | 26 | 157 |
| 4892 | 112 m | grab | >1000 | 11.8 | 5.8 | >10000 | 2.07 | <2 | 88 |
| 4893 | 112 m | grab | >1000 | 7.73 | 5.6 | >10000 | 1.03 | 6 | 106 |

## LEGEND

ob — Overburden

EOCENE

Ei — Coryell syenite and pulaskite dykes, sills and stocks.

JURASSIC TO CRETACEOUS

gd / d — Nelson granodiorite to diorite.

fp — IXL monzonite to diorite, feldspar ± quartz porphyry. Typically leucocratic, very strongly altered (silic, argillic) and very pyritic.

TRIASSIC (?)

Fv — Franklin Group intermediate volcanics (greenstone), crystal ± lapilli tuff, and volcanic breccias.

Fl — Franklin Group limestone and limestone breccia.

Fs — Franklin Group sediments (argillite, siltstone, tuffaceous siltstone, siliceous tuff, chert).

Fcg — Franklin Group conglomerate. Fine to medium grained. May be dominantly chert pebble conglomerate ("sharpstone") or may be polymictic. Calcareous groundmass.

Sulfide mineralization
Strike / Dip of Bedding (30)
Fault
Outcrop
Location referenced to 2004 IXL grid (51+67E 101+20N)
Chip sample (4768)
Grab sample (4901)
Diamond drill hole (IXL03-1)
Road
Weighted average grade (3m@1.1g/t Au, 1.2% Cu)

| | | | | | |
|---|---|---|---|---|---|
| sk | skarn | py | pyrite | mag | magnetite |
| silic | silicified | cpy | chalcopyrite | sphal | sphalerite |
| ep | epidote | gal | galena | chl | chlorite |
| qtz | quartz | mal | malachite | az | azurite |
| seric | sericite | | | | |

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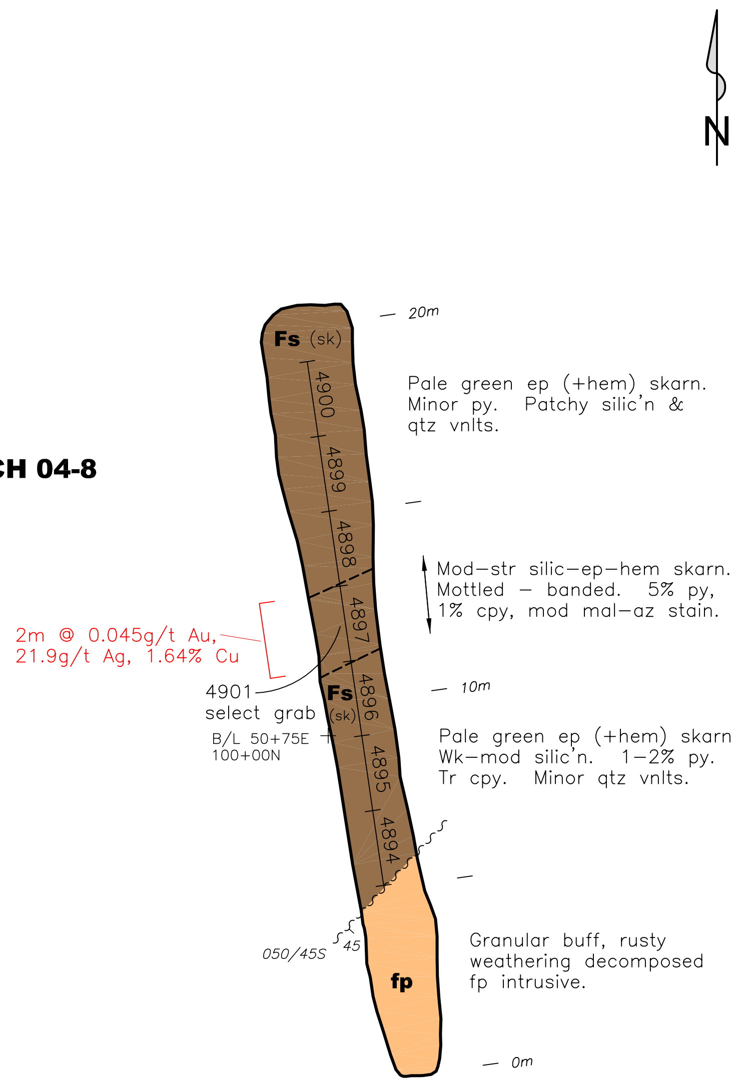
FIGURE 13

# TRENCH 04-7 GEOLOGY, SAMPLE LOCATIONS & RESULTS

SCALE: 1:200
0 — 10m

DRAWN BY: LJC / rjw
DATE: NOVEMBER 2004
FILENAME: IXL-FIG13-TR04-7.DWG

# TRENCH 04-8




## LEGEND

ob Overburden

EOCENE

Ei — Coryell syenite and pulaskite dykes, sills and stocks.

JURASSIC TO CRETACEOUS

gd / d — Nelson granodiorite to diorite.

fp — IXL monzonite to diorite, feldspar ± quartz porphyry. Typically leucocratic, very strongly altered (silic, argillic) and very pyritic.

TRIASSIC (?)

Fv — Franklin Group intermediate volcanics (greenstone), crystal ± lapilli tuff, and volcanic breccias.

Fl — Franklin Group limestone and limestone breccia.

Fs — Franklin Group sediments (argillite, siltstone, tuffaceous siltstone, siliceous tuff, chert).

Fcg — Franklin Group conglomerate. Fine to medium grained. May be dominantly chert pebble conglomerate ("sharpstone") or may be polymictic. Calcareous groundmass.

| | | | |
|---|---|---|---|
| | Sulfide mineralization | 4768 | Chip sample |
| 30 | Strike / Dip of Bedding | × 4901 | Grab sample |
| | Fault | IXL03–1 | Diamond drill hole |
| | Outcrop | | Road |
| + 51+67E 101+20N | Location referenced to 2004 IXL grid | 3m@1.1g/t Au, 1.2% Cu | Weighted average grade |

| | | | | | |
|---|---|---|---|---|---|
| sk | skarn | py | pyrite | mag | magnetite |
| silic | silicified | cpy | chalcopyrite | sphal | sphalerite |
| ep | epidote | gal | galena | chl | chlorite |
| qtz | quartz | mal | malachite | az | azurite |
| seric | sericite | | | | |

TRENCH 04-8

20.5m long
1.5–3m deep
trends 353°
on flat to v. gentle NNW slope
samples 4894–4901

**TRENCH 04-8 ANALYTICAL RESULTS**

| Sample # | Interval (m) | Sample Width (m) | Au ppb | Ag g/t | Cu ppm | Cu % | Pb ppm | Zn ppm |
|---|---|---|---|---|---|---|---|---|
| 4894 | 5 - 7 | 2 | 25 | 0.2 | 832 | | 50 | 115 |
| 4895 | 7 - 9 | 2 | 35 | 0.7 | 906 | | 44 | 148 |
| 4896 | 9 - 11 | 2 | 35 | 1.1 | 1911 | | 50 | 140 |
| 4897 | 11 - 13 | 2 | 45 | 21.9 | >10000 | 1.64 | 108 | 287 |
| 4898 | 13 - 15 | 2 | 35 | 0.3 | 122 | | 76 | 100 |
| 4899 | 15 - 17 | 2 | 30 | 0.9 | 232 | | 180 | 161 |
| 4900 | 17 - 19 | 2 | 30 | 0.9 | 426 | | 100 | 110 |
| 4901 | @ 12 m | grab | 45 | 30.6 | >10000 | 2.17 | 568 | 502 |

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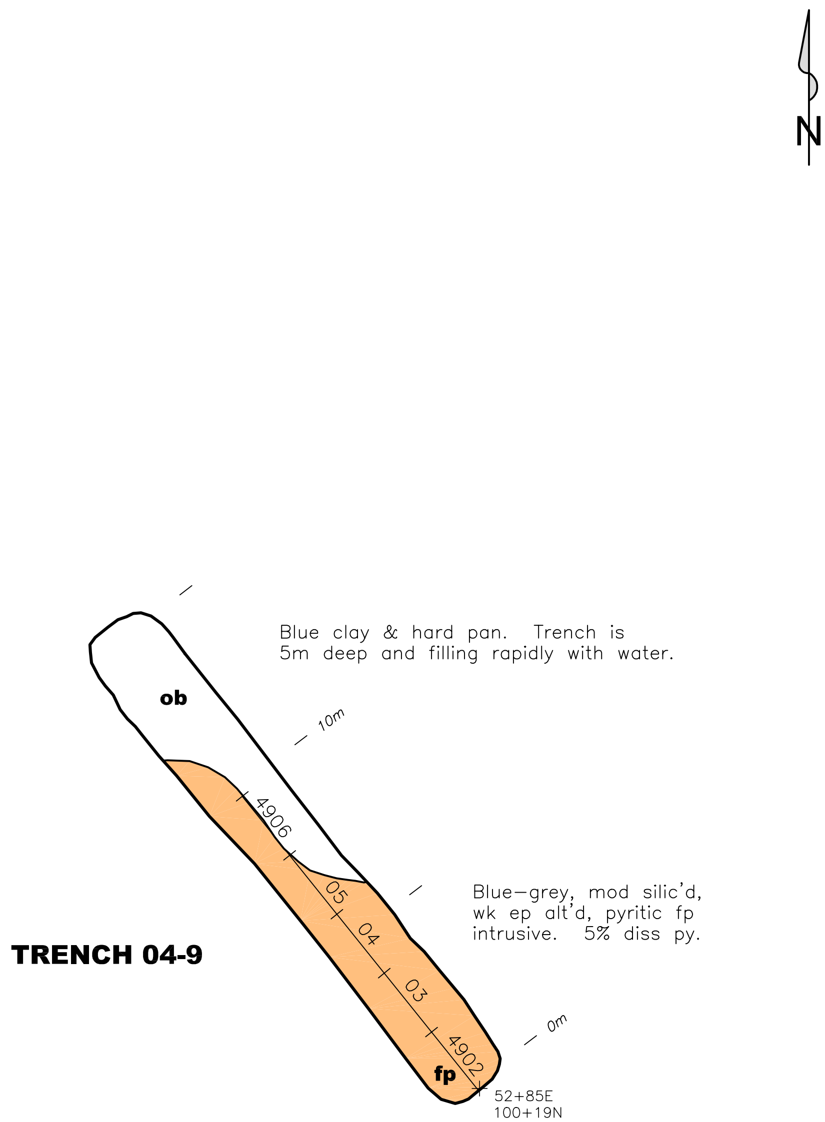
FIGURE 14

**TRENCH 04-8 GEOLOGY, SAMPLE LOCATIONS & RESULTS**

SCALE: 1:200 (0 – 10m)

DRAWN BY: LJC / rjw
DATE: NOVEMBER 2004
FILENAME: IXL-FIG14-TR04-8.DWG




TRENCH 04-9

15m long
5m deep
trends 320°
on gentle NW slope
samples 4902–4906

## L E G E N D

ob — Overburden

EOCENE

Ei — Coryell syenite and pulaskite dykes, sills and stocks.

JURASSIC TO CRETACEOUS

gd / d — Nelson granodiorite to diorite.

fp — IXL monzonite to diorite, feldspar ± quartz porphyry. Typically leucocratic, very strongly altered (silic, argillic) and very pyritic.

TRIASSIC (?)

Fv — Franklin Group intermediate volcanics (greenstone), crystal ± lapilli tuff, and volcanic breccias.

Fl — Franklin Group limestone and limestone breccia.

Fs — Franklin Group sediments (argillite, siltstone, tuffaceous siltstone, siliceous tuff, chert).

Fcg — Franklin Group conglomerate. Fine to medium grained. May be dominantly chert pebble conglomerate ("sharpstone") or may be polymictic. Calcareous groundmass.

| | | | |
|---|---|---|---|
| | Sulfide mineralization | 4768 | Chip sample |
| 30 | Strike / Dip of Bedding | 4901 | Grab sample |
| | Fault | IXL03–1 | Diamond drill hole |
| | Outcrop | | Road |
| 51+67E 101+20N | Location referenced to 2004 IXL grid | 3m@1.1g/t Au, 1.2% Cu | Weighted average grade |

| | | | | | |
|---|---|---|---|---|---|
| sk | skarn | py | pyrite | mag | magnetite |
| silic | silicified | cpy | chalcopyrite | sphal | sphalerite |
| ep | epidote | gal | galena | chl | chlorite |
| qtz | quartz | mal | malachite | az | azurite |
| seric | sericite | | | | |

TRENCH 04-9 ANALYTICAL RESULTS

| Sample # | Interval (m) | Sample Width (m) | Au ppb | Ag g/t | Cu ppm | Pb ppm | Zn ppm |
|---|---|---|---|---|---|---|---|
| 4902 | 0 - 2 | 2 | 100 | 0.4 | 604 | 38 | 48 |
| 4903 | 2 - 4 | 2 | 100 | 0.7 | 1188 | 44 | 47 |
| 4904 | 4 - 6 | 2 | 75 | 0.3 | 477 | 36 | 27 |
| 4905 | 6 - 8 | 2 | 55 | <0.2 | 205 | 30 | 24 |
| 4906 | 8 - 10 | 2 | 50 | <0.2 | 278 | 34 | 26 |

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FIGURE 15

# TRENCH 04-9 GEOLOGY, SAMPLE LOCATIONS & RESULTS

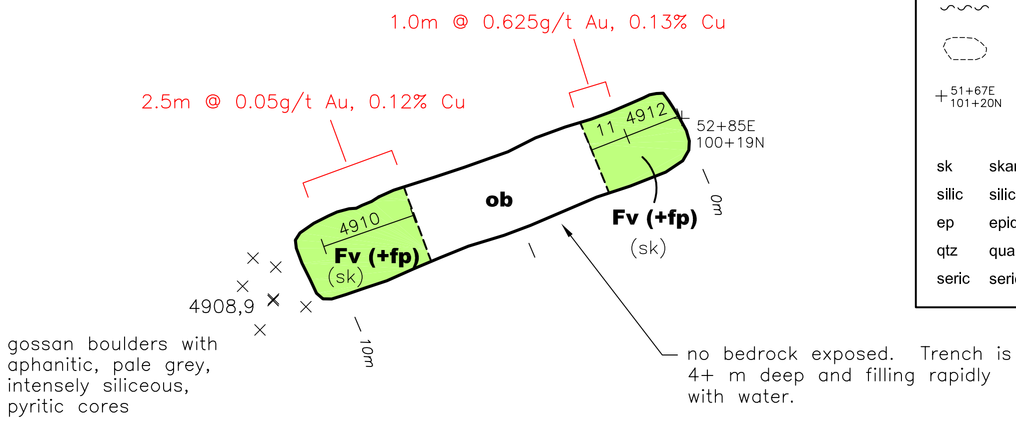
SCALE: 1:200
0 10m

DRAWN BY: LJC / rjw
DATE: NOVEMBER 2004
FILENAME: IXL-FIG15-TR04-9.DWG

N

## TRENCH 04-10

Trench exposes a thin unit of intensely 'skarn' altered (chl, ep, silic, py, cpy) weakly calcareous greenstone (or possibly tuff or intrusive) with tr cpy and up to 10% py. This unit sits above a sill of strongly altered (silic, py) feldspar porphyry, with up to 10% py. Occasionally the trench floor breaks through into the underlying sill.




TRENCH 04-10

10m long
4m deep
trends 250°
on very gentle NNW slope
samples 4908–4912

**TRENCH 04-10 ANALYTICAL RESULTS**

| Sample # | Interval (m) | Sample Width (m) | Au ppb | Ag g/t | Cu ppm | Pb ppm | Zn ppm |
|---|---|---|---|---|---|---|---|
| 4908 | @ 10 m | grab | 330 | 6.2 | 1753 | 356 | 307 |
| 4909 | @ 10 m | grab | 30 | 10.2 | 8139 | 34 | 35 |
| 4910 | 7.5 - 10 | 2.5 | 50 | 1.2 | 1210 | 42 | 71 |
| 4911 | 1.5 - 2.5 | 1 | 625 | 5.9 | 1318 | 336 | 103 |
| 4912 | 0 - 1.5 | 1.5 | 35 | 0.8 | 489 | 28 | 127 |

### LEGEND

ob Overburden

EOCENE

Ei Coryell syenite and pulaskite dykes, sills and stocks.

JURASSIC TO CRETACEOUS

gd / d Nelson granodiorite to diorite.

fp IXL monzonite to diorite, feldspar ± quartz porphyry. Typically leucocratic, very strongly altered (silic, argillic) and very pyritic.

TRIASSIC (?)

Fv Franklin Group intermediate volcanics (greenstone), crystal ± lapilli tuff, and volcanic breccias.

Fl Franklin Group limestone and limestone breccia.

Fs Franklin Group sediments (argillite, siltstone, tuffaceous siltstone, siliceous tuff, chert).

Fcg Franklin Group conglomerate. Fine to medium grained. May be dominantly chert pebble conglomerate ("sharpstone") or may be polymictic. Calcareous groundmass.

Sulfide mineralization
30 Strike / Dip of Bedding
Fault
Outcrop
+ 51+67E 101+20N Location referenced to 2004 IXL grid

4768 Chip sample
× 4901 Grab sample
IXL03-1 Diamond drill hole
Road
3m@1.1g/t Au, 1.2% Cu Weighted average grade

| | | | | | |
|---|---|---|---|---|---|
| sk | skarn | py | pyrite | mag | magnetite |
| silic | silicified | cpy | chalcopyrite | sphal | sphalerite |
| ep | epidote | gal | galena | chl | chlorite |
| qtz | quartz | mal | malachite | az | azurite |
| seric | sericite | | | | |

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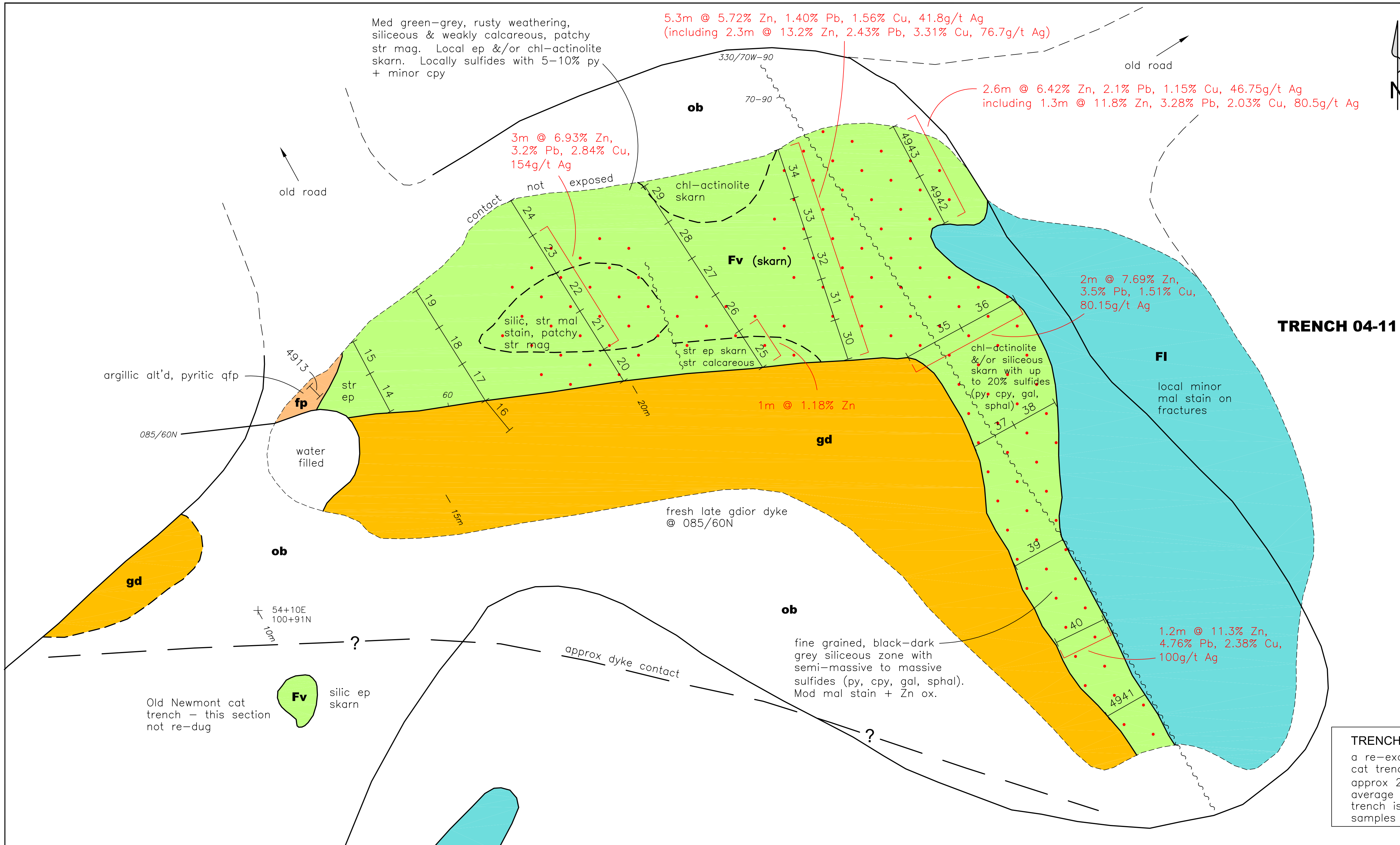
FIGURE 16

## TRENCH 04-10 GEOLOGY, SAMPLE LOCATIONS & RESULTS

SCALE: 1:200
0 10m

DRAWN BY: LJC / rjw
DATE: NOVEMBER 2004
FILENAME: IXL-FIG15-TR04-9.DWG




LEGEND

ob Overburden

EOCENE

EI Coryell syenite and pulaskite dykes, sills and stocks.

JURASSIC TO CRETACEOUS

gd / d Nelson granodiorite to diorite.

fp IXL monzonite to diorite, feldspar ± quartz porphyry. Typically leucocratic, very strongly altered (silic, argillic) and very pyritic.

TRIASSIC (?)

Fv Franklin Group intermediate volcanics (greenstone), crystal ± lapilli tuff, and volcanic breccias.

Fl Franklin Group limestone and limestone breccia.

Fs Franklin Group sediments (argillite, siltstone, tuffaceous siltstone, siliceous tuff, chert).

Fcg Franklin Group conglomerate. Fine to medium grained. May be dominantly chert pebble conglomerate ("sharpstone") or may be polymictic. Calcareous groundmass.

Sulfide mineralization — Chip sample (4768)
Strike / Dip of Bedding (30) — Grab sample (4901)
Fault — Diamond drill hole (IXL03–1)
Outcrop — Road
Location referenced to 2004 IXL grid (51+67E 101+20N) — Weighted average grade (3m@1.1g/t Au, 1.2% Cu)

| | | | | | |
|---|---|---|---|---|---|
| sk | skarn | py | pyrite | mag | magnetite |
| silic | silicified | cpy | chalcopyrite | sphal | sphalerite |
| ep | epidote | gal | galena | chl | chlorite |
| qtz | quartz | mal | malachite | az | azurite |
| seric | sericite | | | | |

TRENCH 04-11
a re–excavation of an old, sloughed 1969 Newmont cat trench (Newmont trench #6)
approx 25x10m irregular stripped area
average 0.5–1m deep
trench is level to v. low N sloping
samples 4913–4943

**TRENCH 04-11 ANALYTICAL RESULTS**

| Sample # | Interval (m) | Sample Width (m) | Au ppb | Ag g/t | Cu ppm | Cu % | Pb ppm | Pb % | Zn ppm | Zn % |
|---|---|---|---|---|---|---|---|---|---|---|
| 4913 | @ 14 m | 0.5 | 30 | 5.0 | 777 | | 1298 | | 1391 | |
| 4914 | 4914-15 are contin | 1.3 | 40 | 0.9 | 190 | | 100 | | 42 | |
| 4915 | samples @ 15 m | 1.2 | 40 | 1.4 | 508 | | 552 | | 269 | |
| 4916 | dyke @ 17 m | 1 | 20 | <0.2 | 33 | | 30 | | 83 | |
| 4917 | 4917 - 4919 are | 1 | 45 | 2.9 | 2058 | | 34 | | 810 | |
| 4918 | contin samples | 1 | 20 | 1.1 | 618 | | 44 | | 605 | |
| 4919 | across zone @ 17 m | 1 | 75 | 5.5 | 3786 | | 134 | | 797 | |
| 4920 | 4920-4924 are | 1 | 130 | 2.3 | 396 | | 66 | | 322 | |
| 4921 | contin samples | 1 | 655 | 110.0 | >10000 | 3.44 | >10000 | 1.37 | >10000 | 3.13 |
| 4922 | across zone @ 20 m | 1 | 465 | 182.0 | >10000 | 1.20 | >10000 | 2.85 | >10000 | 11.50 |
| 4923 | | 1 | 445 | 170.0 | >10000 | 3.87 | >10000 | 5.39 | >10000 | 6.17 |
| 4924 | | 1 | 90 | 2.1 | 380 | | 352 | | 895 | |
| 4925 | 4925 - 4929 are | 1 | 45 | 4.8 | 1634 | | 1352 | | >10000 | 1.18 |
| 4926 | contin samples | 1 | 25 | 1.2 | 352 | | 424 | | 1927 | |
| 4927 | across zone @ 23 m | 1 | 25 | 3.1 | 852 | | 398 | | 2218 | |
| 4928 | | 1 | 20 | 2.4 | 1250 | | 16 | | 1238 | |

**TRENCH 04-11 ANALYTICAL RESULTS**

| Sample # | Interval (m) | Sample Width (m) | Au ppb | Ag g/t | Cu ppm | Cu % | Pb ppm | Pb % | Zn ppm | Zn % |
|---|---|---|---|---|---|---|---|---|---|---|
| 4929 | | 1 | 40 | 0.5 | 379 | | 14 | | 1267 | |
| 4930 | 4930 - 4934 are | 1 | 125 | 54.7 | >10000 | 1.20 | >10000 | 1.90 | >10000 | 2.57 |
| 4931 | contin samples | 1 | 45 | 10.2 | 3459 | | 6164 | | 9367 | |
| 4932 | across zone @ 26 m | 1 | 170 | 3.3 | 780 | | 228 | | 5333 | |
| 4933 | | 1 | 290 | 78.9 | >10000 | 2.96 | >10000 | 1.97 | >10000 | 13.10 |
| 4934 | | 1.3 | 240 | 74.5 | >10000 | 3.66 | >10000 | 2.89 | >10000 | 13.20 |
| 4935 | 4935-36 contin samples | 1.4 | 260 | 100.0 | >10000 | 1.50 | >10000 | 6.10 | >10000 | 10.70 |
| 4936 | across N-S zone | 1.4 | 550 | 60.3 | >10000 | 1.53 | 9500 | 0.95 | >10000 | 4.67 |
| 4937 | 4937-38 contin samples | 1 | 70 | 2.2 | 585 | | 442 | | 1154 | |
| 4938 | across N-S zone | 1 | 175 | 5.1 | 1150 | | 226 | | 2865 | |
| 4939 | NS 'vein' | 1.4 | 120 | 1.8 | 611 | | 78 | | 399 | |
| 4940 | NS 'vein' | 1.2 | 225 | 100.0 | >10000 | 2.38 | >10000 | 4.76 | >10000 | 11.32 |
| 4941 | NS 'vein' | 1.1 | 135 | 1.8 | 864 | | 406 | | 9433 | |
| 4942 | 4942-43 contin samples | 1.3 | 340 | 80.5 | >10000 | 2.03 | >10000 | 3.28 | >10000 | 11.80 |
| 4943 | @ 29 m | 1.3 | 60 | 13.0 | 2700 | | 9130 | | >10000 | 1.04 |

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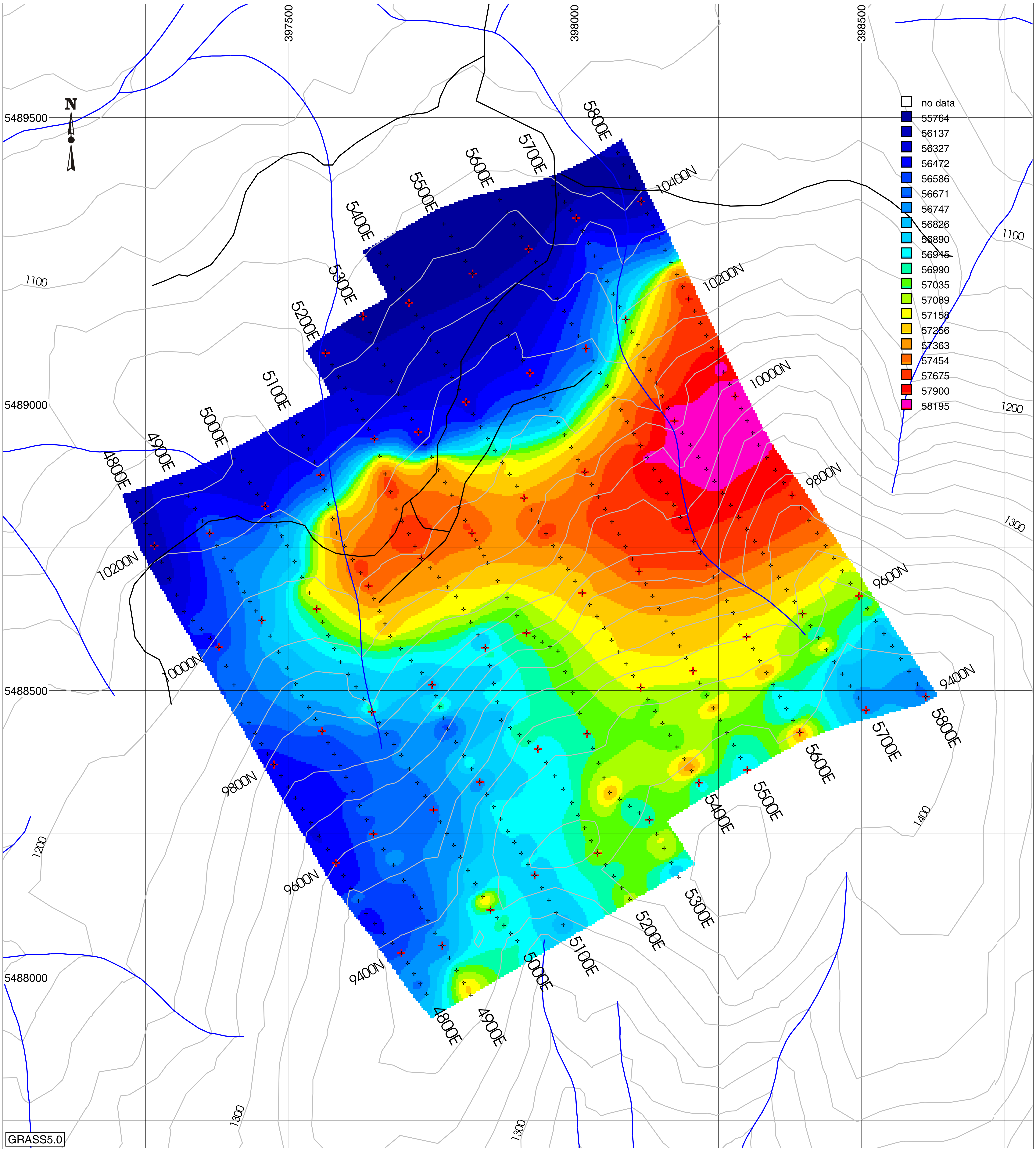
FIGURE 17

**TRENCH 04-11 GEOLOGY, SAMPLE LOCATIONS & RESULTS**

SCALE: 1:100 (0 — 5m)

DRAWN BY: LJC / rjw
DATE: NOVEMBER 2004
FILENAME: IXL-FIG17-TR04-11.DWG




0 100 200 300 400 500

Metres

Survey by: SJ Geophysics Ltd.
IP Inversion by: S.J.V. Consultants Ltd.
Processing Date: Oct, 2004
Projection: UTM
Datum: NAD83
Zone: 11
Mapping Date: Oct, 2004

Legend

- Contour Lines
- Rivers
- Roads

# COUGAR RESOURCES

IXL Grid

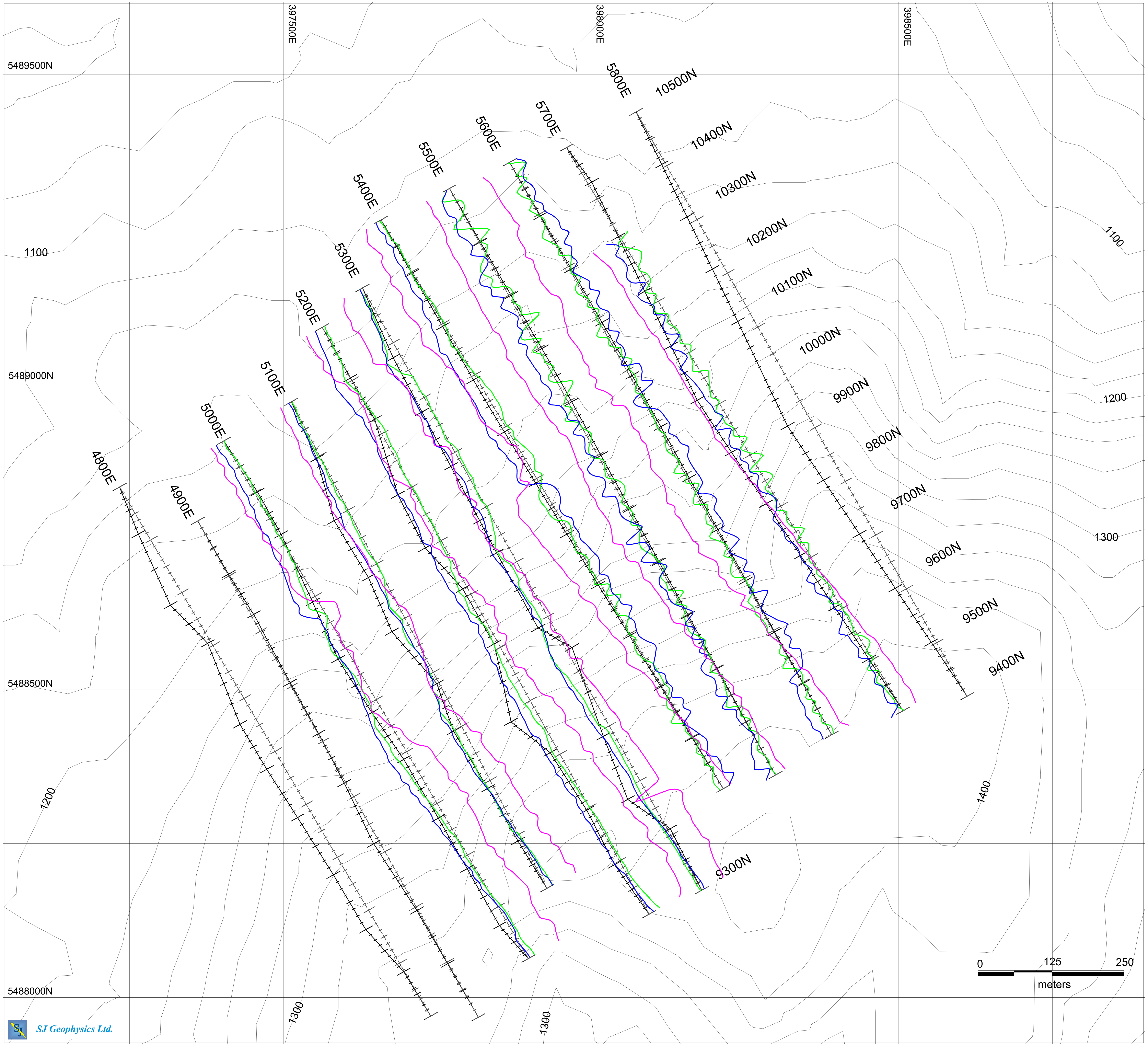
Grand Forks, BC - Canada

## Magnetic Survey Contour Plan Map

Total Field Magnetic Intensity (nT)

SJ Geophysics Ltd.

Plate: G-3a




Cartography Legend

Contour Level

VLF Legend

In Phase

Quadrature

Field Strength

Real Grid

Ideal Grid

In Phase (InP):

Base Line Value = 0

Vertical Scale = 5% / mm at 1:5000

Quadrature (Qdt):

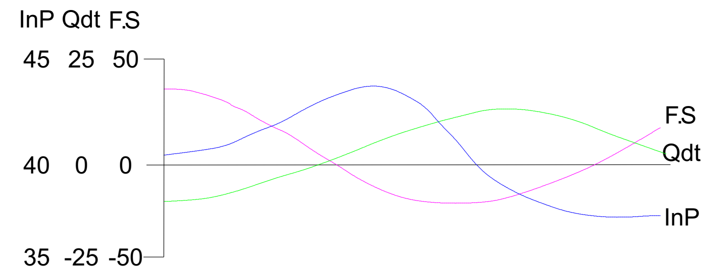
Base Line Value = 0

Vertical Scale = 2.5 % / mm at 1:5000

Field Strength (F.S):

Base Line Value = 40

Vertical Scale = 1 % / mm at 1:5000




Base Line = Ideal Grid

**VLF Information**

Station: NML4

Frequency: 25.2 kHz

Location: LaMoure, ND

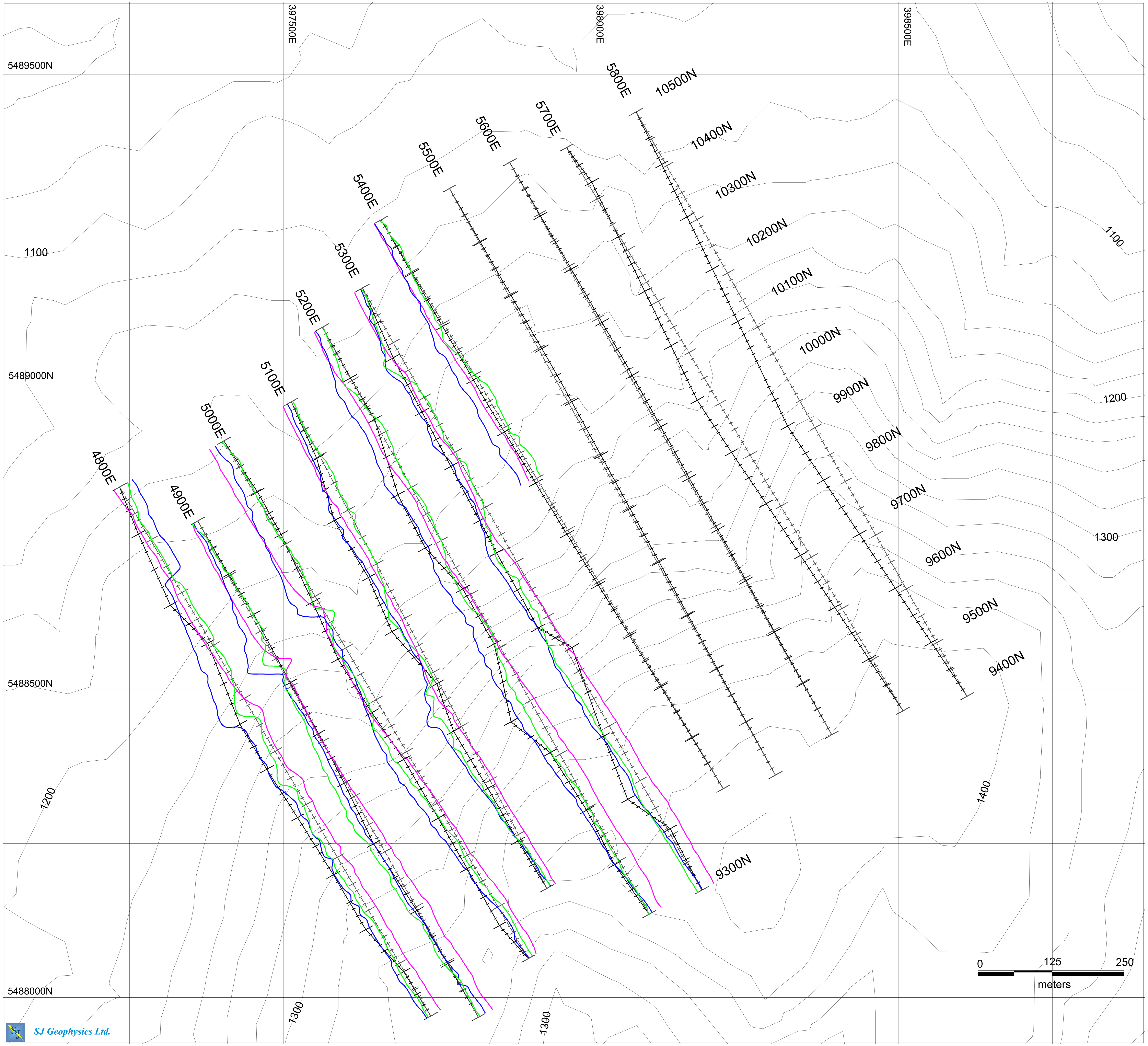
# COUGAR RESOURCES

IXL Grid

Grand Forks, BC - Canada

VLF Profiles

Survey by: SJ Geophysics Ltd.
Projection: UTM - Datum: NAD83, Zone 11
Mapping Date: Oct, 2004




Cartography Legend

Contour Level

VLF Legend

In Phase

Quadrature

Field Strength

Real Grid

Ideal Grid

In Phase (InP):

Base Line Value = 0

Vertical Scale = 5% / mm at 1:5000

Quadrature (Qdt):

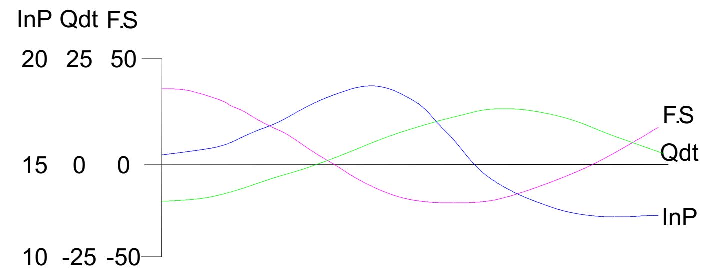
Base Line Value = 0

Vertical Scale = 2.5 % / mm at 1:5000

Field Strength (F.S):

Base Line Value = 15

Vertical Scale = 1 % / mm at 1:5000




Base Line = Ideal Grid

**VLF Information**

Station: NPM

Frequency: 21.4 kHz

Location: Lualualei, Hawai

21°25'30"N 158°09'20"W

# COUGAR RESOURCES

## IXL Grid

## Grand Forks, BC - Canada

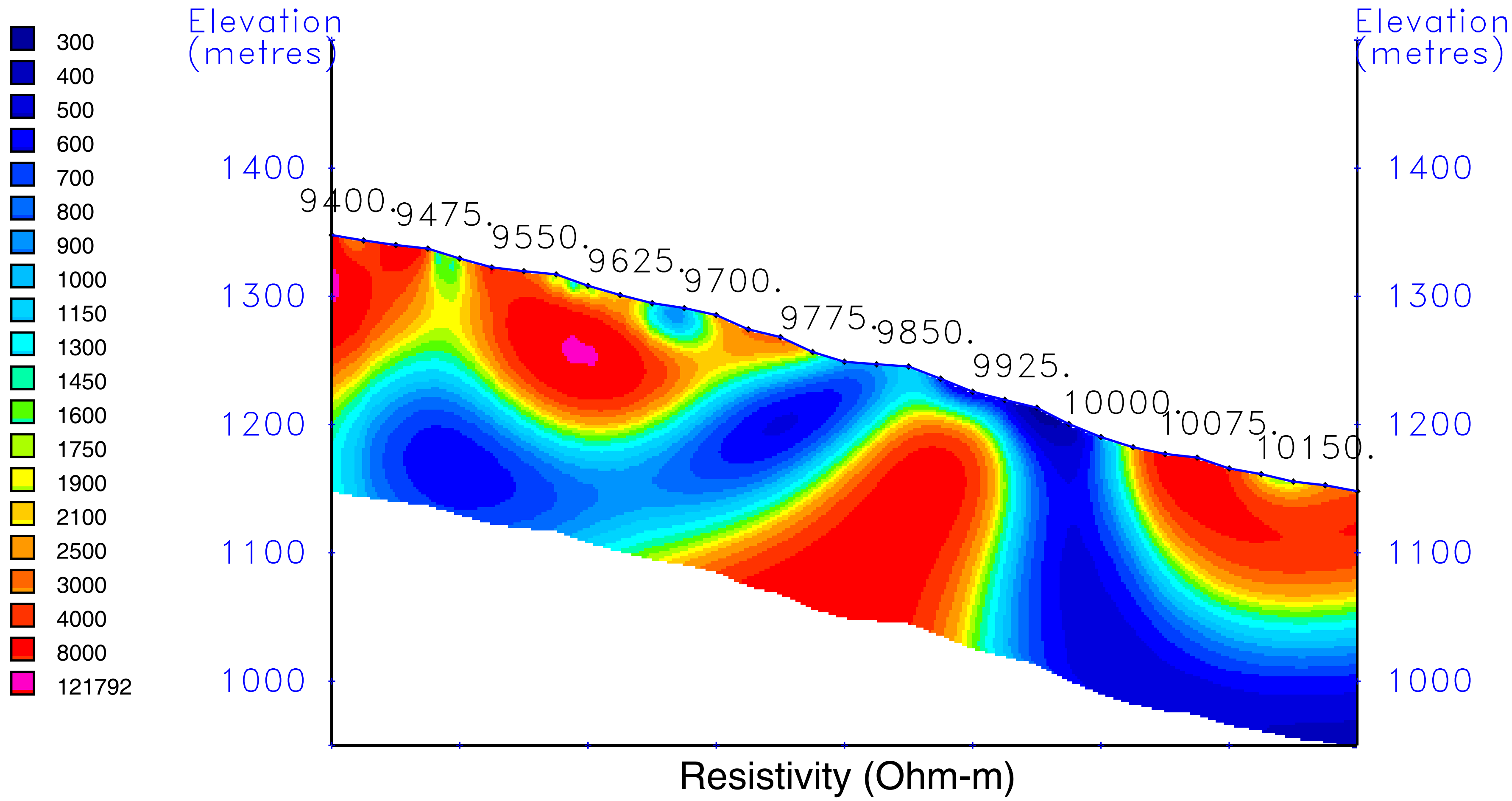
## VLF Profiles

Survey by: SJ Geophysics Ltd.
Projection: UTM - Datum: NAD83, Zone 11
Mapping Date: Oct, 2004

ARRAY
2D Pole-Dipole
6 Dipoles at 50 m
2 Dipoles at 100 m
2 Dipoles at 150 m

INSTRUMENTATION
RECEIVER: Elrec 10 / Androtex TDR6
TRANSMITTER: GDD TXII

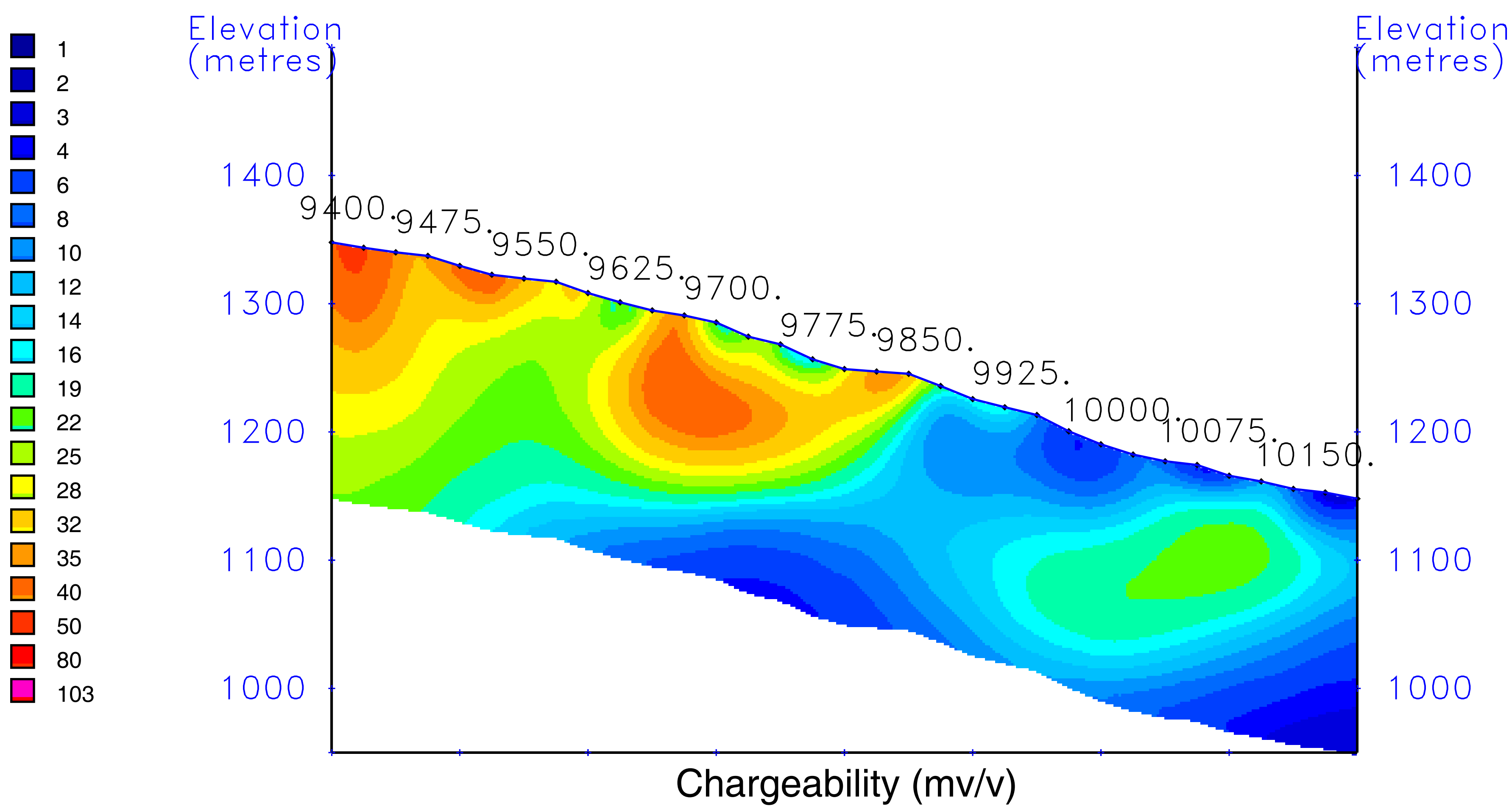
0 40 80 120 160 200
Metres




# COUGAR RESOURCES

## IXL Grid

Grand Forks, BC - Canada




## 2D IP Survey

2D Inversion Depth Section

Line 4900E

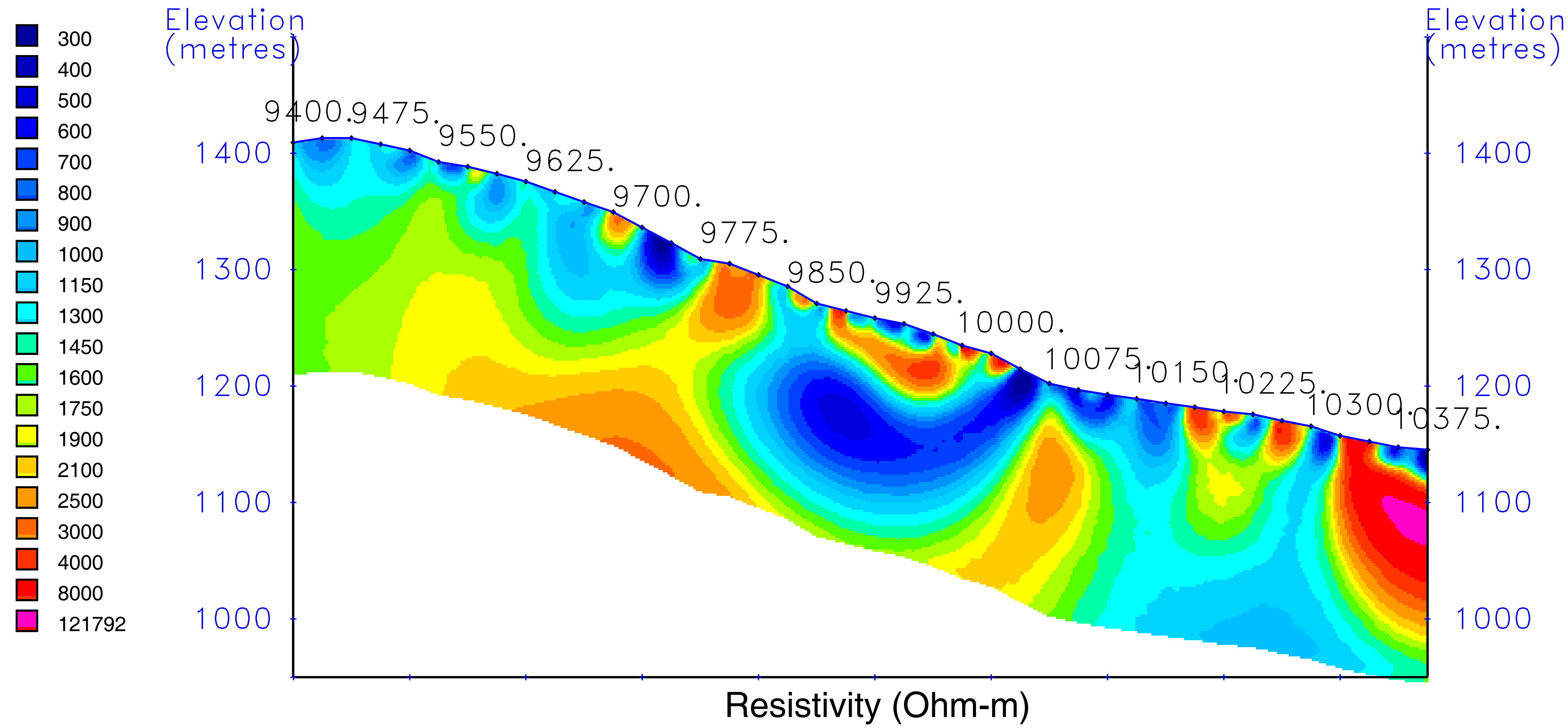
Survey by: SJ Geophysics Ltd. - Sep, 2004
IP Inversion by: S.J.V. Consultants Ltd.
Processing Date: Sep, 2004
Mapping Date: Oct, 2004

GRASS5.0 S.J.V. Consultants Ltd.

ARRAY
2D Pole-Dipole
6 Dipoles at 50 m
2 Dipoles at 100 m
2 Dipoles at 150 m

INSTRUMENTATION
RECEIVER: Elrec 10 / Androtex TDR6
TRANSMITTER: GDD TXII

0 40 80 120 160 200
Metres




# COUGAR RESOURCES

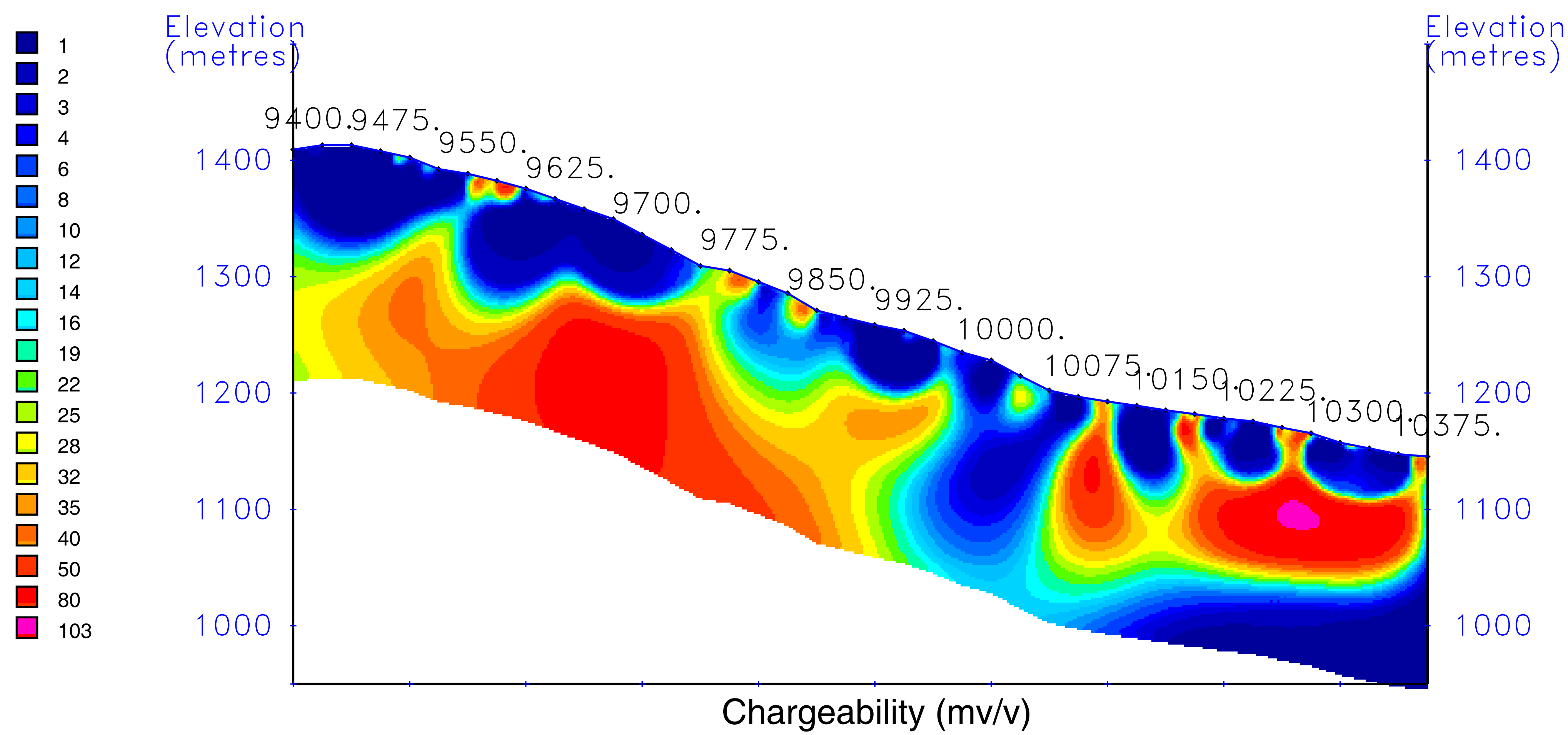
## IXL Grid

Grand Forks, BC - Canada

## 2D IP Survey

2D Inversion Depth Section

Line 5100E



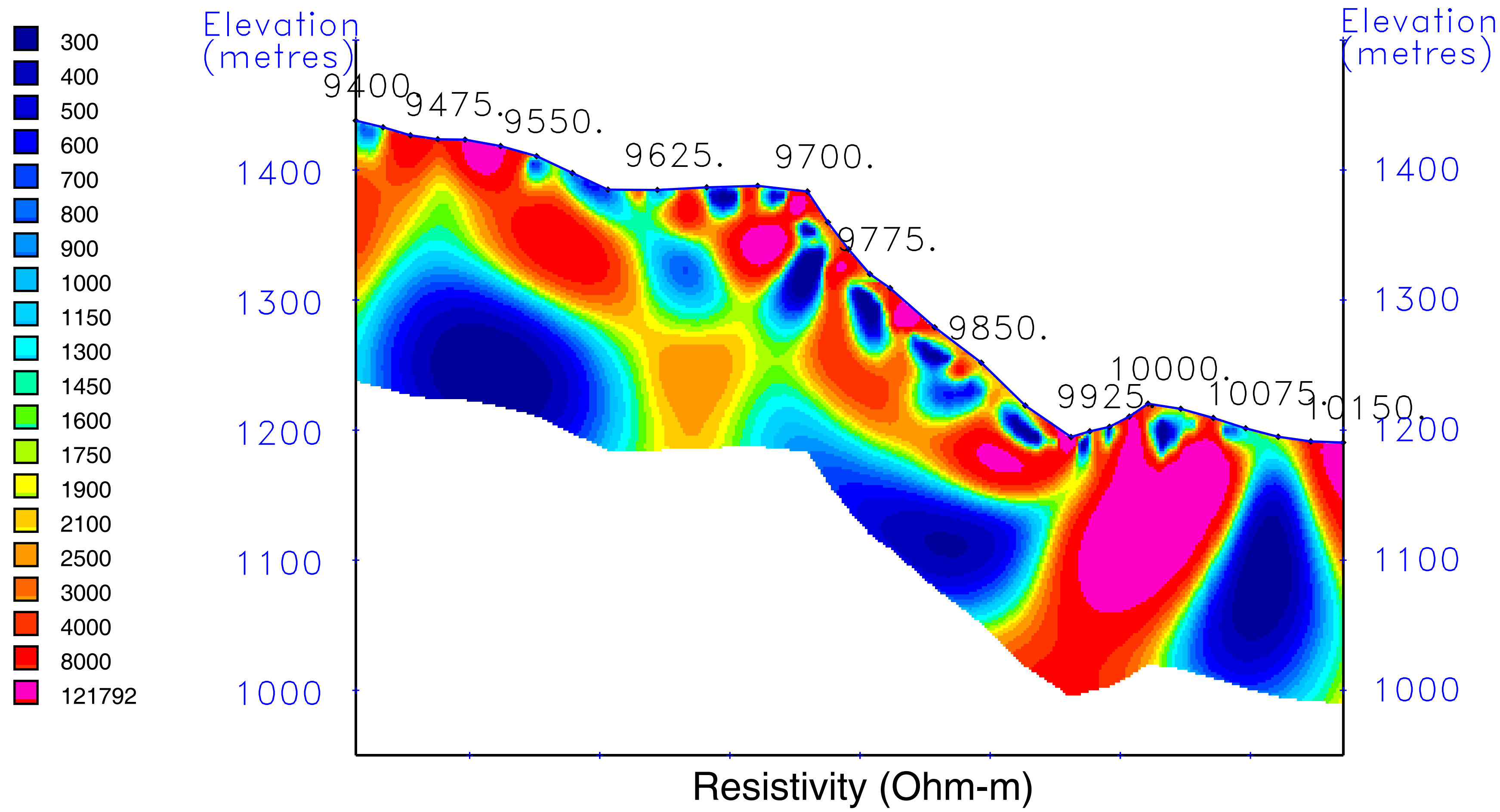

Survey by: SJ Geophysics Ltd. - Sep, 2004
IP Inversion by: S.J.V. Consultants Ltd.
Processing Date: Sep, 2004
Mapping Date: Oct, 2004

GRASS5.0 S.J.V. Consultants Ltd.

ARRAY
2D Pole-Dipole
6 Dipoles at 50 m
2 Dipoles at 100 m
2 Dipoles at 150 m

INSTRUCTIONS
RECEIVER: Elrec 10 / Androtex TDR6
TRANSMITTER: GDD TXII

0 40 80 120 160 200
Metres




# COUGAR RESOURCES

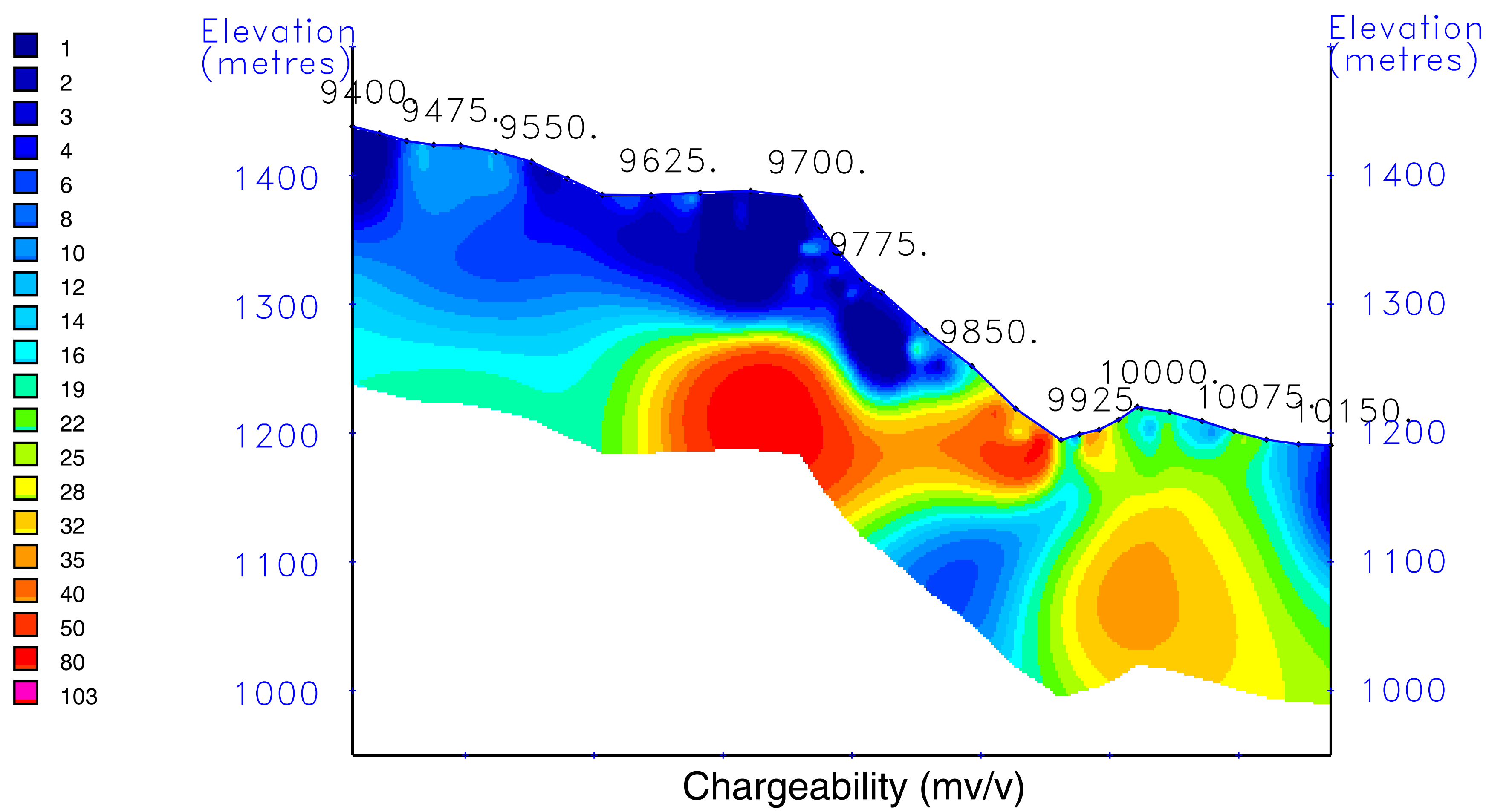
## IXL Grid

Grand Forks, BC - Canada

## 2D IP Survey

2D Inversion Depth Section

Line 5300E



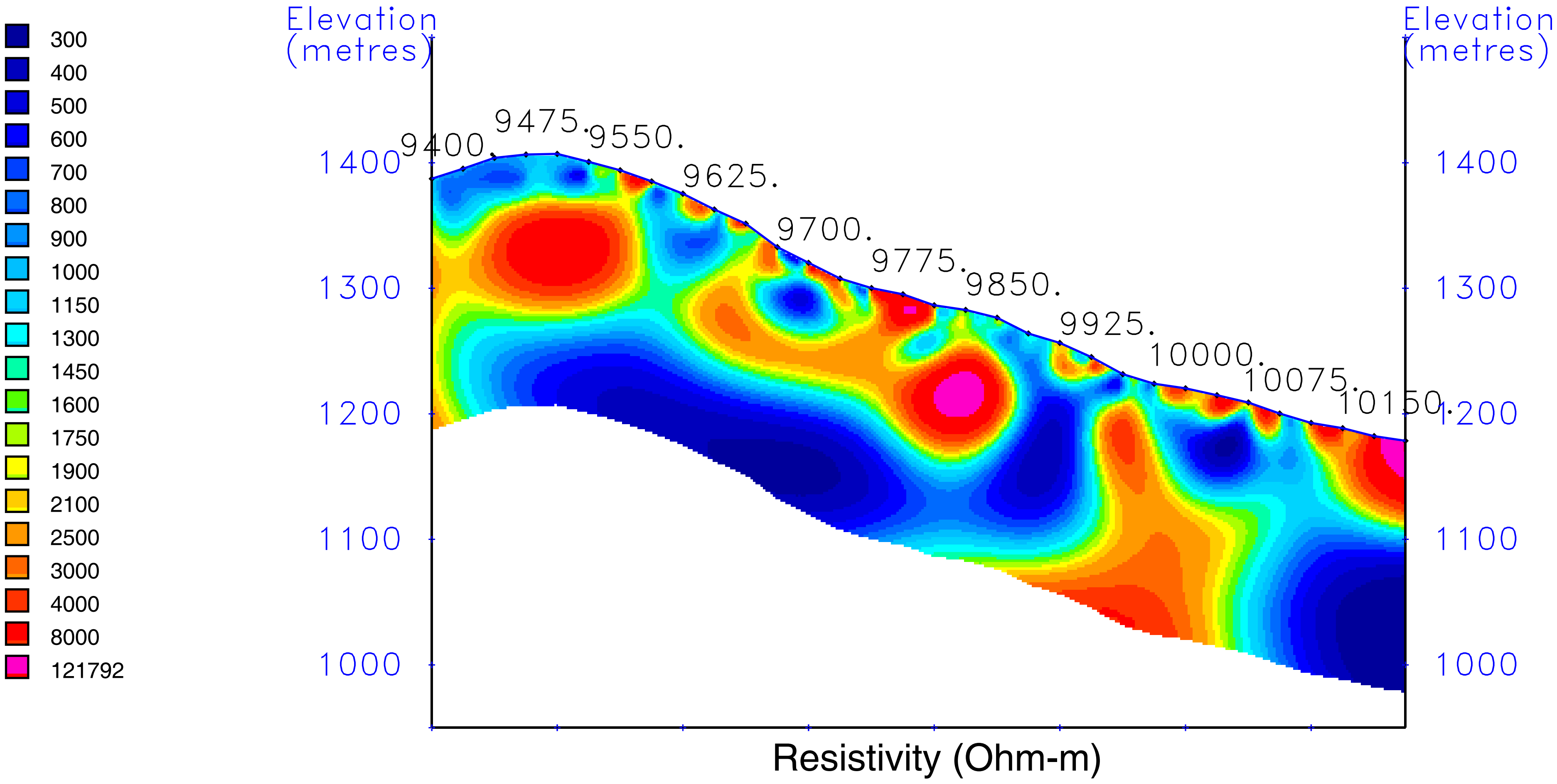

Survey by: SJ Geophysics Ltd. - Sep, 2004
IP Inversion by: S.J.V. Consultants Ltd.
Processing Date: Sep, 2004
Mapping Date: Oct, 2004

GRASS5.0 S.J.V. Consultants Ltd.

ARRAY
2D Pole-Dipole
6 Dipoles at 50 m
2 Dipoles at 100 m
2 Dipoles at 150 m

INSTRUMENTATION
RECEIVER: Elrec 10 / Androtex TDR6
TRANSMITTER: GDD TXII

0 40 80 120 160 200
Metres




# COUGAR RESOURCES

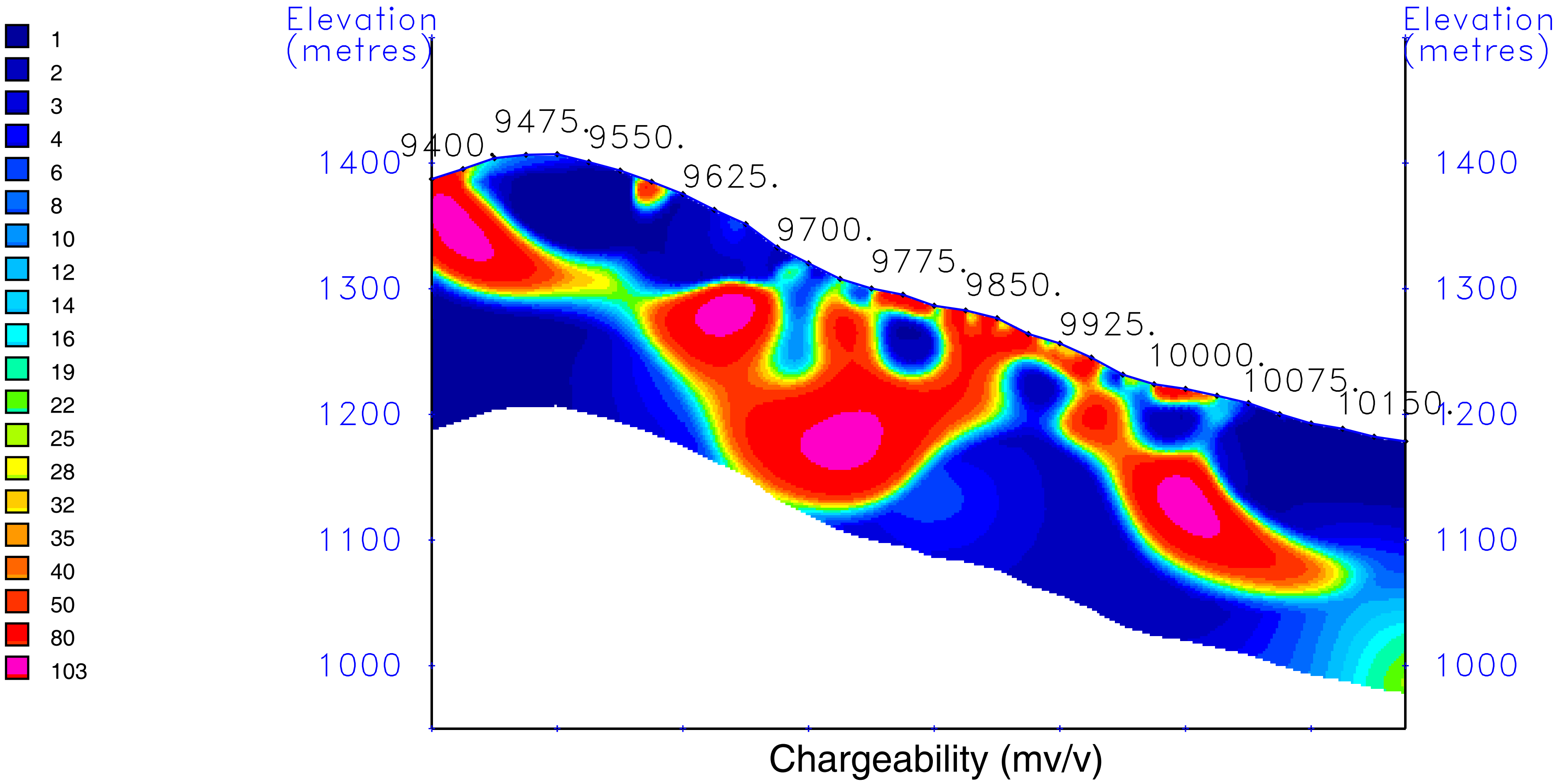
## IXL Grid

Grand Forks, BC - Canada

## 2D IP Survey

2D Inversion Depth Section

Line 5500E

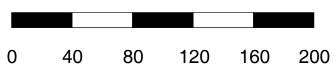



Survey by: SJ Geophysics Ltd. - Sep, 2004
IP Inversion by: S.J.V. Consultants Ltd.
Processing Date: Sep, 2004
Mapping Date: Oct, 2004

GRASS5.0 S.J.V. Consultants Ltd.

ARRAY
2D Pole-Dipole
6 Dipoles at 50 m
2 Dipoles at 100 m
2 Dipoles at 150 m

INSTRUMENTATION
RECEIVER: Elrec 10 / Androtex TDR6
TRANSMITTER: GDD TXII




# COUGAR RESOURCES

## IXL Grid

Grand Forks, BC - Canada

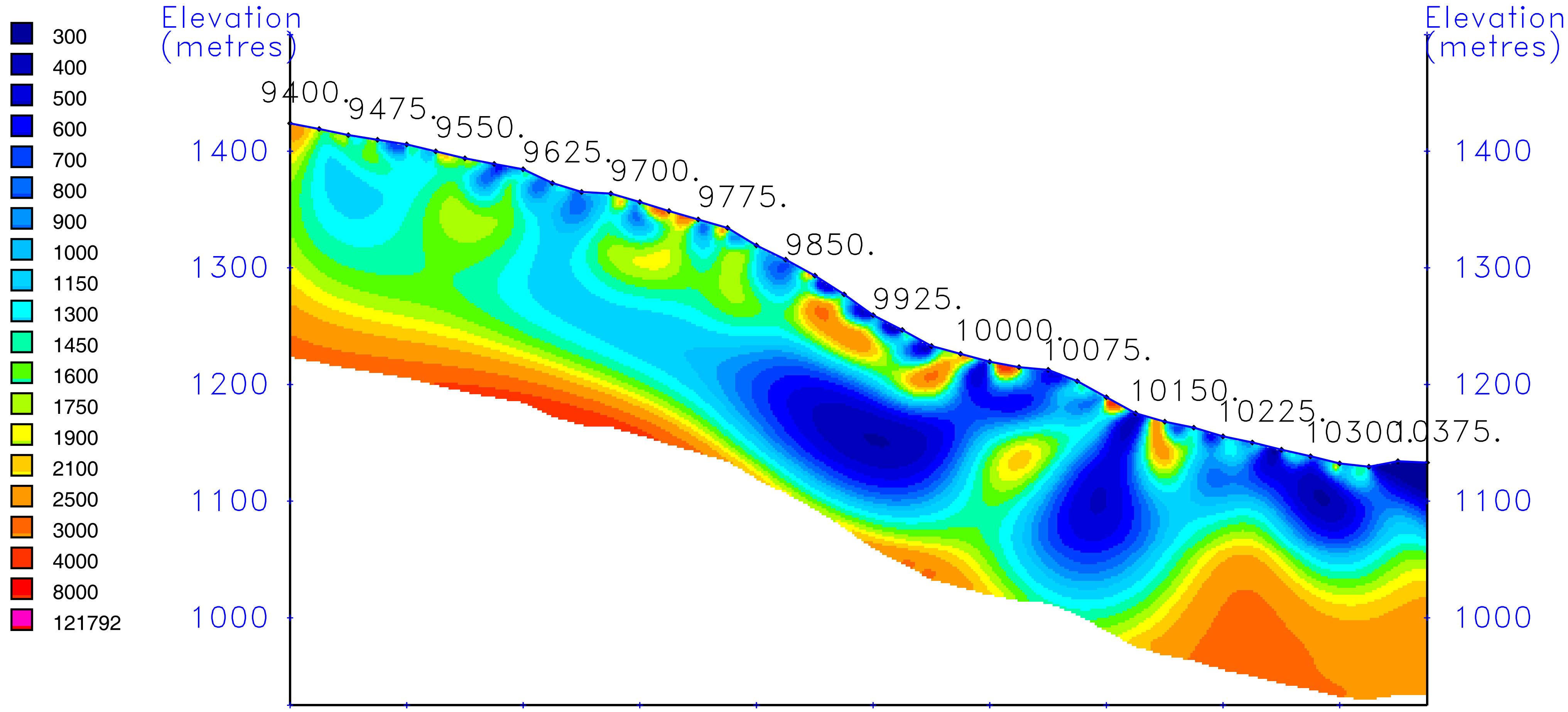
## 2D IP Survey

2D Inversion Depth Section

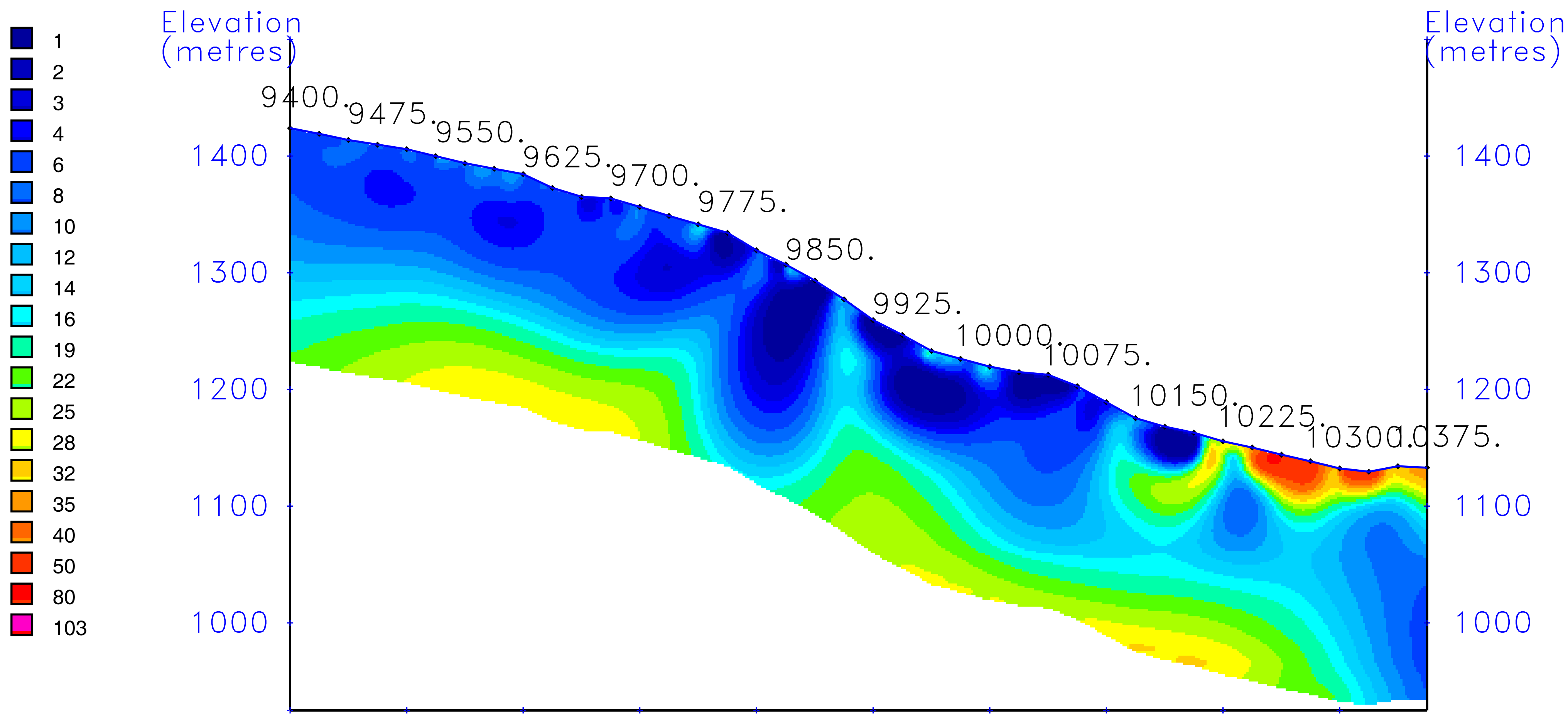
Line 5700E

Survey by: SJ Geophysics Ltd. - Sep, 2004
IP Inversion by: S.J.V. Consultants Ltd.
Processing Date: Sep, 2004
Mapping Date: Oct, 2004

GRASS5.0 S.J.V. Consultants Ltd.




Resistivity (Ohm-m)




Chargeability (mv/v)