094235

MARG PROPERTY

YEAR 2000 ASSESSMENT REPORT

Geological & Geochemical Surveys

Volume 1 – Text & Appendices

Mayo Mining District

Marg 87 – 144 (YB02471 – YB02528)
Marg 159 – 178 (YB02594 – YB02613)
Mayo Mining District

NTS 105M/15 & 16, 106D/1 & 2
63°59'N 134°37'W
YUKON TERRITORY

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Field work completed June 20 to August 4, 2000

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September 6, 2000

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This report has been examined by the Geological Evaluation Unit under Section 53 (4) Yukon Quartz Mining Act and is allowed as representation work in the amount of $ 27,300.

M. Baker

for Regional Manager, Exploration and Geological Services for Commissioner of Yukon Territory.

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EXECUTIVE SUMMARY

The Marg project is a joint venture between operator Atna Resources Ltd. (66 2/3%) and Cameco Corporation (33 1/3%) exploring the Marg deposit in central Yukon. The Marg (Cu-Zn-Pb-Au-Ag) volcanogenic massive sulphide deposit is hosted within metasedimentary and metavolcanic rocks of the Devonian–Mississippian Earn Group and Mississippian Keno Hill Quartzite. These rocks form part of the Selwyn Basin; an off-shelf sequence that developed at the continental margin prior to Cordilleran deformation and accretion.

The area has been explored by a number of companies in several phases since 1965. The year 2000 program included geological mapping, detailed structural analysis and re-logging of drill core in order to assess the deposit and property-scale economic potential. A short program of prospecting, mapping and sampling was completed on the Jane Zone. An orthophoto base map was prepared and used as control for the work.

The Marg deposit is deformed by at least three generations of structures which developed during Late Jurassic to Early Cretaceous and are geometrically correlative with regional-scale structures such as the Robert Service thrust and the Tombstone strain zone. The Marg deposit occurs within a southeasterly plunging, complex fold structure; a significant part of which has been removed by erosion.

Discovery of additional stratigraphy comparable to the Marg sequence, and new sulphide occurrences within the claims underscores both property and regional exploration potential. The presence of probable rift-related volcanism and mineralization within the Selwyn Basin, and the similarities of this mineralization to that within 'suspect' terranes, has implications for both regional tectonics and exploration.

1. INTRODUCTION

The Marg volcanogenic massive sulphide deposit is hosted within a thick sequence of predominately metasedimentary rocks of the North American continental margin and as such represents an unusual setting for this deposit type. The deposit currently has a resource of 5.5 million tonnes grading 1.76% Cu, 4.5% Zn, 2.5% Pb, 86 g/t Ag and 0.9 g/t Au (Franzen, 1997) and the recent geological work described herein suggests that the original deposit was substantially larger prior to erosion, demonstrating that the deposit type is an attractive exploration target. Exploration work during 2000 consisted of geological mapping (1:5,000), geochemical sampling, prospecting, and re-logging plus geochemical analysis of previously drilled core. The purpose of this work was to better understand the geological setting, stratigraphy and structure of the deposit and its host rocks as well as the geochemical changes associated with mineralization and alteration, in order to guide future exploration.

1.1 LOCATION AND ACCESS

The Marg claims are located in central Yukon on NTS map sheets, 105M/15 & 16, 106D/1 & 2, centered at approximately 64°00'N and 134°30'W (figure 1.1). Access to the claim group is by helicopter, based in Mayo, located approximately 80 km to the southwest or by small aircraft to a 380 m airstrip located near the Marg deposit area. A winter road from Keno to the property boundary was completed in 1997 (figure 1.2).

1.2 CLAIMS

The Marg property consists of 402 contiguous mineral claims covering approximately 8403 hectares (figure 1.3). The property is owned by a joint venture between Atna Resources Ltd. (66 2/3%) and Cameco Corporation (33 1/3%). The claims are recorded in the Mayo Mining District as follows:

Table 1: Claim Data

Name	Grant number	Expiry date
Tudl 1-32	YA76768-YA76799	September 14, 2006
Marg 1-86	YB02385-YB02470	September 14, 2005
Marg 87-116	YB02471-YB02500	September 14, 2005*
Marg 117-144	YB02501-YB02528	September 14, 2004*
Marg 144-158	YB02529-YB02593	September 14, 2005
Marg 159-178	YB02594-YB02613	September 14, 2004*
Marg 179-190	YB02944-YB02955	September 14, 2002
Marg 191-290	YB03107-YB03206	January 14, 2007
Marg 291-370	YB03606-YB03685	January 14, 2005

*with acceptance of this assessment report.

Marg property claims are situated within sub-alpine to alpine terrain within the Patterson Range with elevations varying from 600 to 1,900 metres. The majority of the claim block is covered with a thin veneer of talus or colluvium. Overall, outcrop exposure averages less than 10% although some slopes within cirque headwalls approach 70% exposure.

1.3 HISTORY

The Marg property has an extensive history with numerous owners and work programs attesting to both the difficulty of discovery, and the benefits of perseverance. Although there have been many owners, until the most recent program, all of the work carried out on the property, including its discovery, was undertaken by Archer Cathro & Associates (1981) Ltd. Much of the property history is taken from property reports by Archer Cathro & Associates (1981) Ltd. (Archer Cathro, 1997).

The Marg area was first staked in 1965 by a joint venture between United Keno Hill Mines Ltd. and Canadian Superior Exploration Ltd. The joint venture program, following the release of the Geological Survey of Canada reconnaissance stream sediment survey results, entailed geochemistry and prospecting with the objective of finding Keno Hill style silver veins. No significant silver mineralization was found and the claims were allowed to lapse.

In 1982, the area was re-staked by the ZX Joint Venture between SMD Mining Co. Ltd. (now Cameco), Chevron Minerals Ltd., and Enterprise Exploration Ltd. (an Australian exploration subsidiary of Rio Tinto). An exploration program included hand trenching in geochemically anomalous areas in search of sedex style lead-zinc mineralization. Enterprise abandoned their interest in the property and the project was optioned to All-North Resources Ltd. (All-North) who earned a 50% interest through a program that included geochemical and geophysical surveys (VLF and Max-Min EM, Magnetometer, and IP) plus trenching.

In 1987, NDU Resources Ltd. (NDU) purchased All-North's interest and Chevron converted its 25% working interest to a 5% net profit interest. This resulted in NDU controlling 66 2/3% of the JV and Cameco controlling 33 1/3%. The NDU/Cameco JV explored the property in two phases. NDU's portion of the second phase was financed through a short-lived option with Noranda Inc. and Brenda Mines Ltd.

The 1988 work program included claim staking, geological, geochemical, and geophysical surveys (VLF and Pulse EM) plus 6,038 m of diamond drilling in 33 holes, which defined extensive volcanogenic mineralization. Work also included construction of a 380m airstrip, an airphoto survey, preliminary exploration of the Jane zone, and initiation of a baseline environmental program.

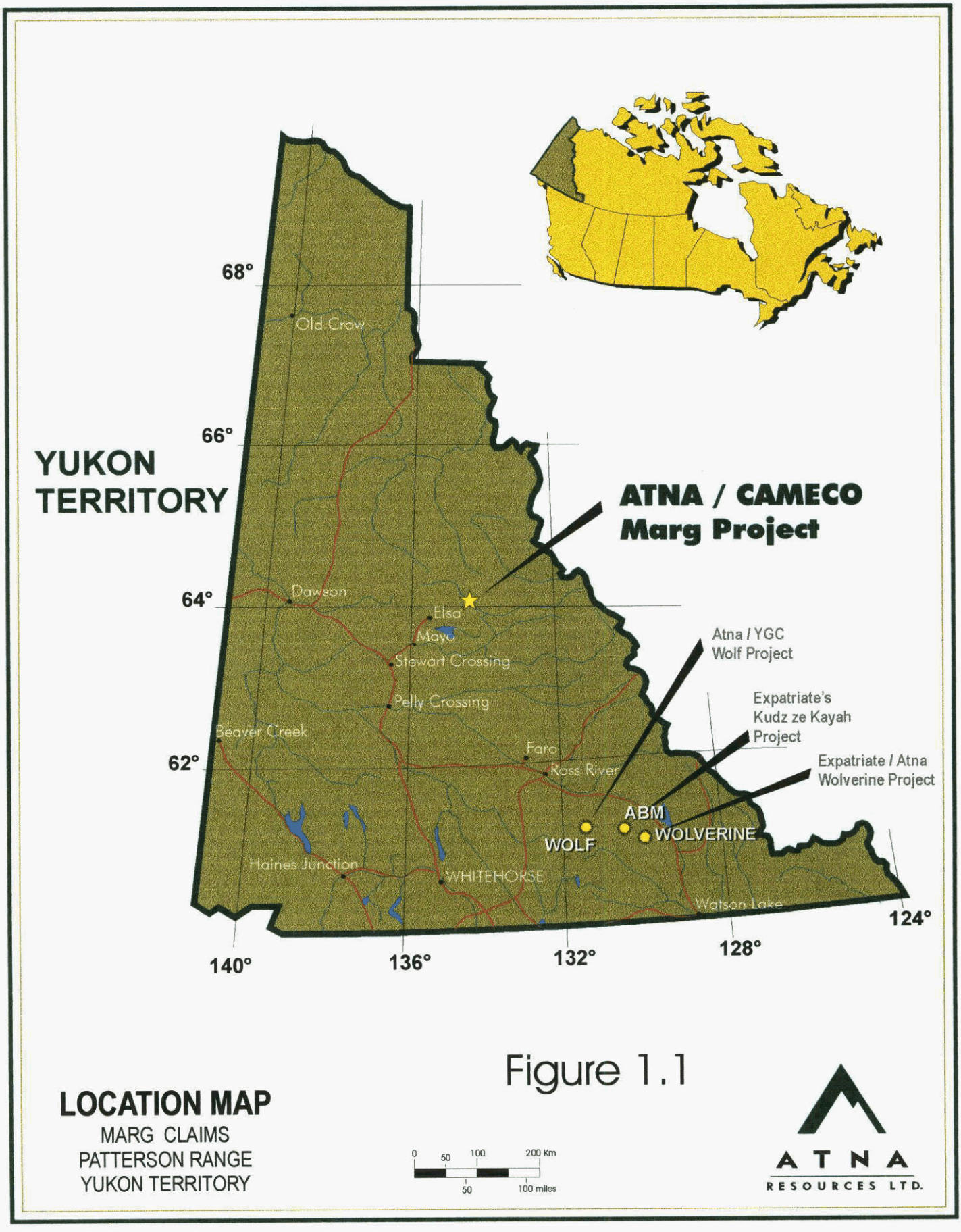
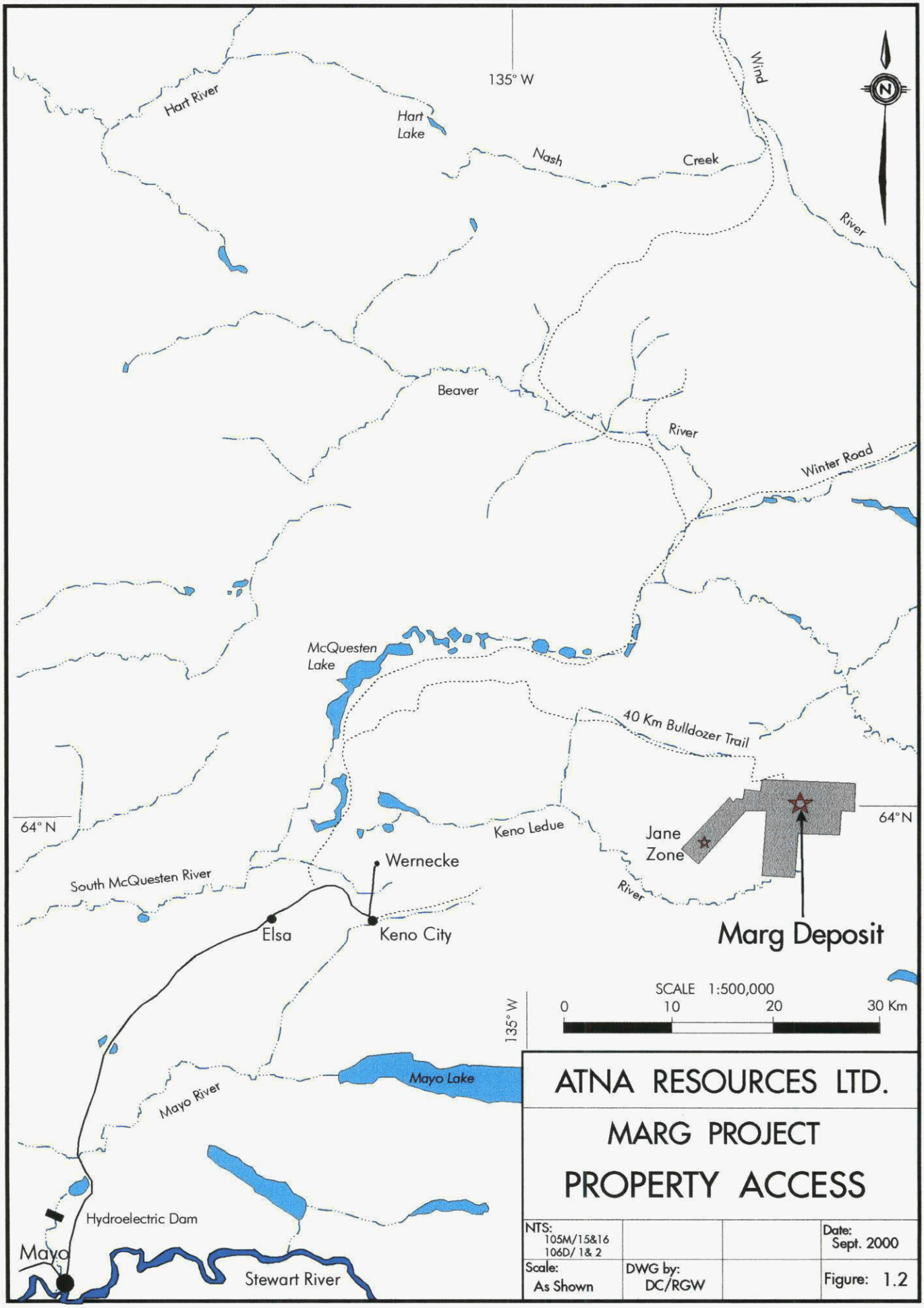


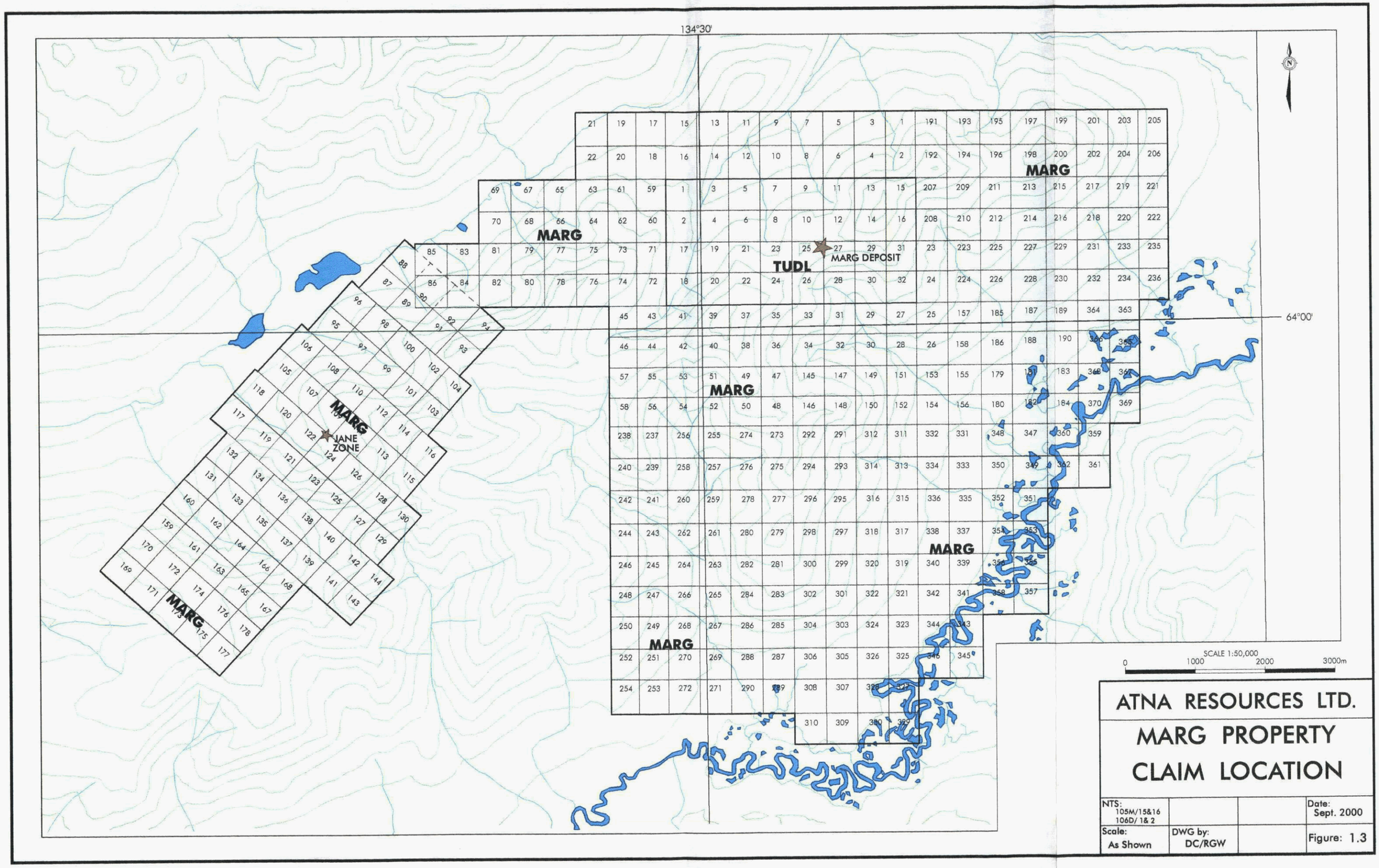
Figure 1.1

LOCATION MAP

MARG CLAIMS
PATTERSON RANGE
YUKON TERRITORY

ATNA RESOURCES LTD.


135° W
Hart River
Hart Lake
Nash Creek
Wind River
Beaver River
Winter Road
McQuesten Lake
40 Km Bulldozer Trail
64° N
64°N
Keno Ledue River
Jane Zone
Marg Deposit
South McQuesten River
Wernecke
Elsa
Keno City
SCALE 1:500,000
0 10 20 30 Km
135° W
Mayo Lake
Mayo River
Hydroelectric Dam
Mayo
Stewart River
ATNA RESOURCES LTD.
MARG PROJECT
PROPERTY ACCESS
NTS: 105M/15&16 106D/ 1& 2
Date: Sept. 2000
Scale: As Shown
DWG by: DC/RGW
Figure: 1.2



ATNA RESOURCES LTD.

MARG PROPERTY

CLAIM LOCATION

NTS: 105M/15&16 106D/ 1& 2			Date: Sept. 2000
Scale: As Shown	DWG by: DC/RGW		Figure: 1.3

In 1989, the NDU/Cameco JV continued to explore the property, and purchased Chevron's 5% NPI in proportion to existing ownership. Diamond drilling on the Marg zone consisted of 1,819 m in five holes. Work on the Jane zone included grid geological, geochemical and geophysical (VLF-EM, Pulse EM and Magnetometer) surveys. Reconnaissance geochemical sampling was also completed over much of the property and further water samples were collected for environmental monitoring.

Work continued in 1990, with an additional nine holes, totaling 4,120 m, completed on the Marg zone. Hand (blast) trenching and sampling was carried out on the Jane zone. Baseline environmental monitoring surveys initiated in 1988 were continued and the resource estimate was updated.

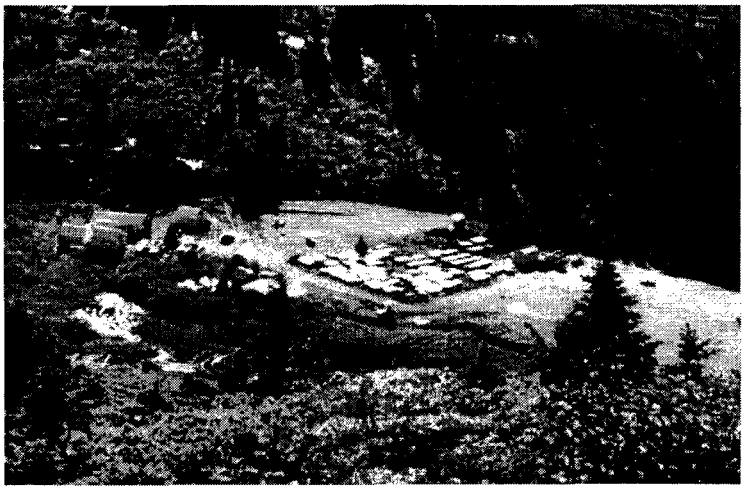
The project was re-activated in 1996, with 8,518 m of diamond drilling in 29 holes completed, and additional work carried out on the Jane zone. Environmental monitoring water sample sites were re-established and sampled.

United Keno acquired NDU in 1997 thereby obtaining the majority interest in the Marg property. United Keno envisioned placing the property in production using the Keno mine site for processing the Marg ore. To this end, United Keno completed additional diamond drilling (7 holes for 2,540 m) and completed a winter road from the town of Keno to the property boundary.

In 1998, United Keno issued convertible debentures to Norvista Development Ltd. (Norvista) and withdrew cash through a promissory note using the Marg property as collateral. United Keno subsequently went into default on the promissory note. Norvista obtained a judgement against United Keno resulting in the court ordered sale of United Keno's interest in the Marg claims. Atna Resources Ltd. (Atna) successfully bid on the property in late 1999. Atna and Cameco completed a Novation agreement and formed a JV to further explore the property.

1.4 WORK COMPLETED

Work completed in 2000 included base map construction, camp rehabilitation, geological mapping, rock and soil geochemistry, and core re-logging. The camp, pictured here, was last occupied in September 1997 and survived remarkably well with only one tent collapse. That tent was rebuilt and the canvas re-used. Although all tents have had some degree of canvas tearing, and most are nearing the end of their useful lifespan, new tarps added in 2000 should preserve the



structures for at least the next year and perhaps longer.

The Marg property was geologically remapped at a 1:5000 scale between the Marg zone and the Jane zone. In all, 52.5 square kilometres was mapped with a structural focus. In conjunction with mapping, 62 rock samples were collected and sent to Acme Analytical Laboratories Ltd in Vancouver, B.C. The samples were geochemically analyzed by ICP techniques for 32 elements (Appendix I), while selected samples were analyzed for whole rock geochemistry.

On the Marg zone, three soil geochemical grids (Leyla, Max and Penny) were installed over favourable stratigraphy; each grid being approximately 700 x 400m in size. Soil samples were collected along 100 metre spaced lines and 50 metre sample stations, with 330 soil samples being collected in total. On the Jane zone, three reconnaissance soil lines were completed and 87 samples collected at 50 metre spacings.

Diamond drill core from selected holes was re-logged and drill sections reinterpreted using information gleaned from the structural mapping project. Twenty-one drill holes totalling 5788.6 metres were re-logged (Appendix I). Representative drill core samples from above and below mineralized intersections were collected for lithogeochemical analysis. ICP results (Appendix II) from 245 samples were used to identify trace element zonation related to mineralization and associated hydrothermal alteration.

The D-3C caterpillar tractor was started and confirmed to be in good working order. Minor track adjustment along with other routine maintenance will be required before heavy machine use is contemplated. The Gator 6 x 4 utility vehicle was also started and used extensively during this program. Adjustment to the braking system will be necessary prior to further use on steep property roads.

2 GEOLOGY

2.1 REGIONAL GEOLOGY

The Marg property lies south of a shelf / off-shelf regional boundary and within the Selwyn Basin (figure 2.1), a predominantly off-shelf metasedimentary and metavolcanic sequence that forms part of the Foreland Belt of the northern Canadian Cordillera. Regional geology, as described by Green (1971; 1972) and Abbott (1990a, b), consists of three major tectonostratigraphic elements. These elements are, from north to south: Middle-Proterozoic shelf sequence carbonate rocks of the Wernecke Supergroup (that are unconformably overlain by Lower to Middle Paleozoic carbonate shelf sedimentary rocks); Neoproterozoic to Lower Cambrian off-shelf rocks of the Hyland Group; and, Devonian to Mississippian age rocks of the Earn Group and the Keno Hill Quartzite (figure 2.2). Deformation, metamorphism and imbrication of the varying stratigraphic units occurred during the Jurassic to Lower Cretaceous (190 to 120 million years ago).

Three major fault structures control the geometry of the major stratigraphic units (figure 2.2). The northern-most fault, the Dawson Thrust, separates off-shelf rocks of the

Selwyn Basin (Keno Hill Quartzite, Earn Group, and Hyland Group) from shelf rocks of the Wernecke Supergroup. The central Tombstone Thrust, imbricates rocks of the Keno Hill Quartzite and the Earn Group, host of the Marg deposit. The southern-most fault, the Robert Service Thrust, carries rocks of the Hyland Group onto Earn Group and Keno Hill Quartzite. The Wernecke Supergroup and other associated shelf rocks are not present near the Marg property and will not be discussed further.

All of the rock units have been deformed by at least two, and locally three, phases of deformation (Abbott 1990a, b; Gordey, 1990; Turner and Abbott, 1990; Murphy, 1997). The structures are generally composed of varying degrees of ductile and brittle deformation, compatible with the lower- to middle-greenschist-facies metamorphic grade of the region, and vary depending upon proximity to the thrust faults (Gordey, 1990).

The first phase of deformation is characterized by north to northeast vergent, overturned, isoclinal folds whose axial surface parallels the south dipping, regional-scale thrust faults (Turner and Abbott, 1990). These folds, and related thrust faults, define the major south-dipping aspect of the thrust panel, with the majority of fold axes and associated linear features plunging to the southeast. Second phase refolding of first phase structures locally produces a penetrative rodding and mineral lineation plunging to the southeast (Abbott, 1990) and a second axial plane cleavage (Gordey, 1990). A third phase of deformation consists of upright, open to tight, southwest-vergent folds. These later phase folds have axial planes with steep northeasterly dips and fold axes that plunge to the south-southeast.

The two (or more) early episodes of deformation are related to shortening, imbrication, and thickening caused by overthrusting of the off-shelf and shelf sequences during Jurassic orogeny. Elongation lineations associated with, or developed in, earlier fold structures are compatible with northwesterly motion along the thrust faults (Abbott, 1990; Gordey, 1990), however, the northeasterly vergence of folds may also indicate earlier, northeasterly directed motion. The later generation of deformation overprints earlier structures, and may be related to re-activation along older faults.

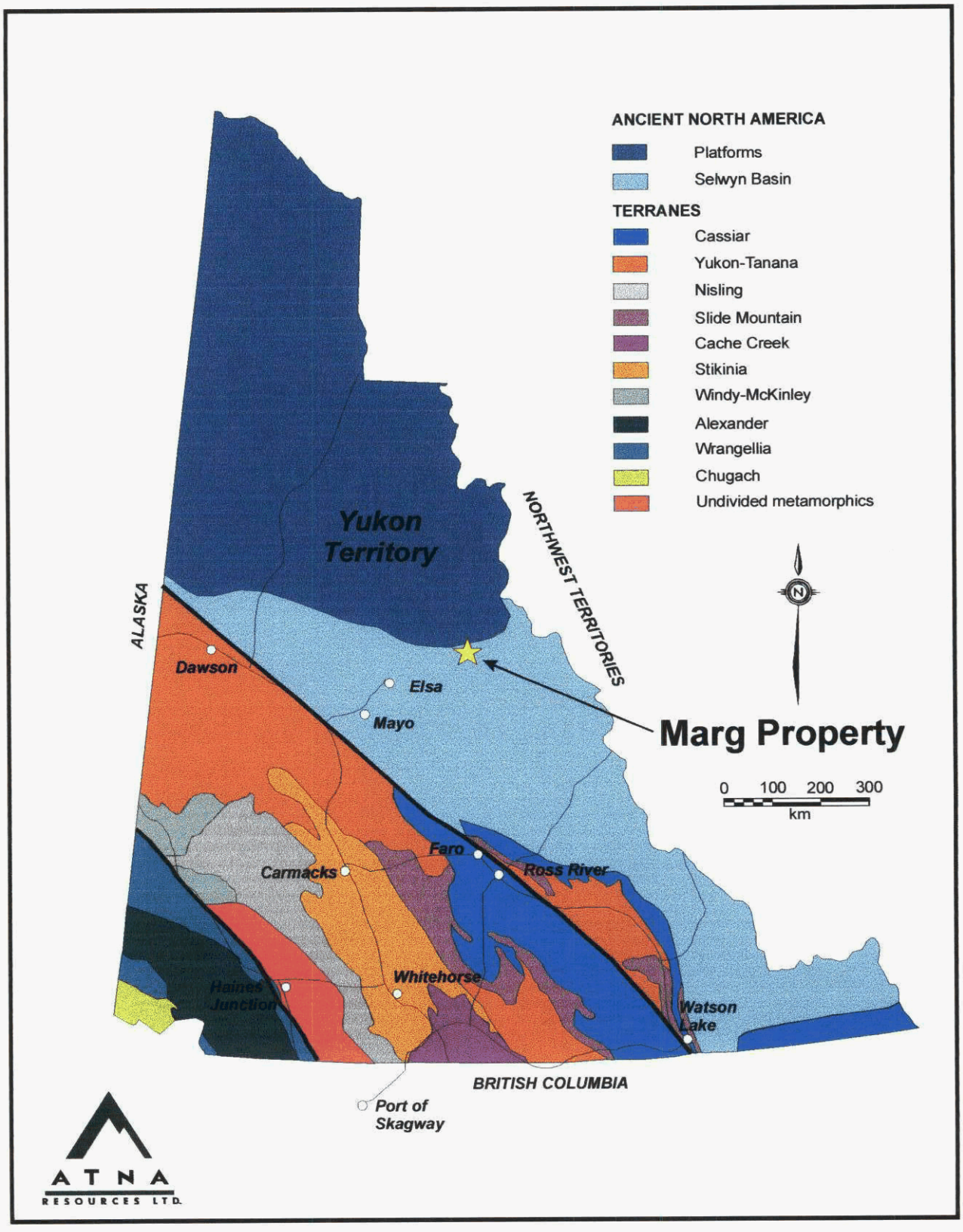
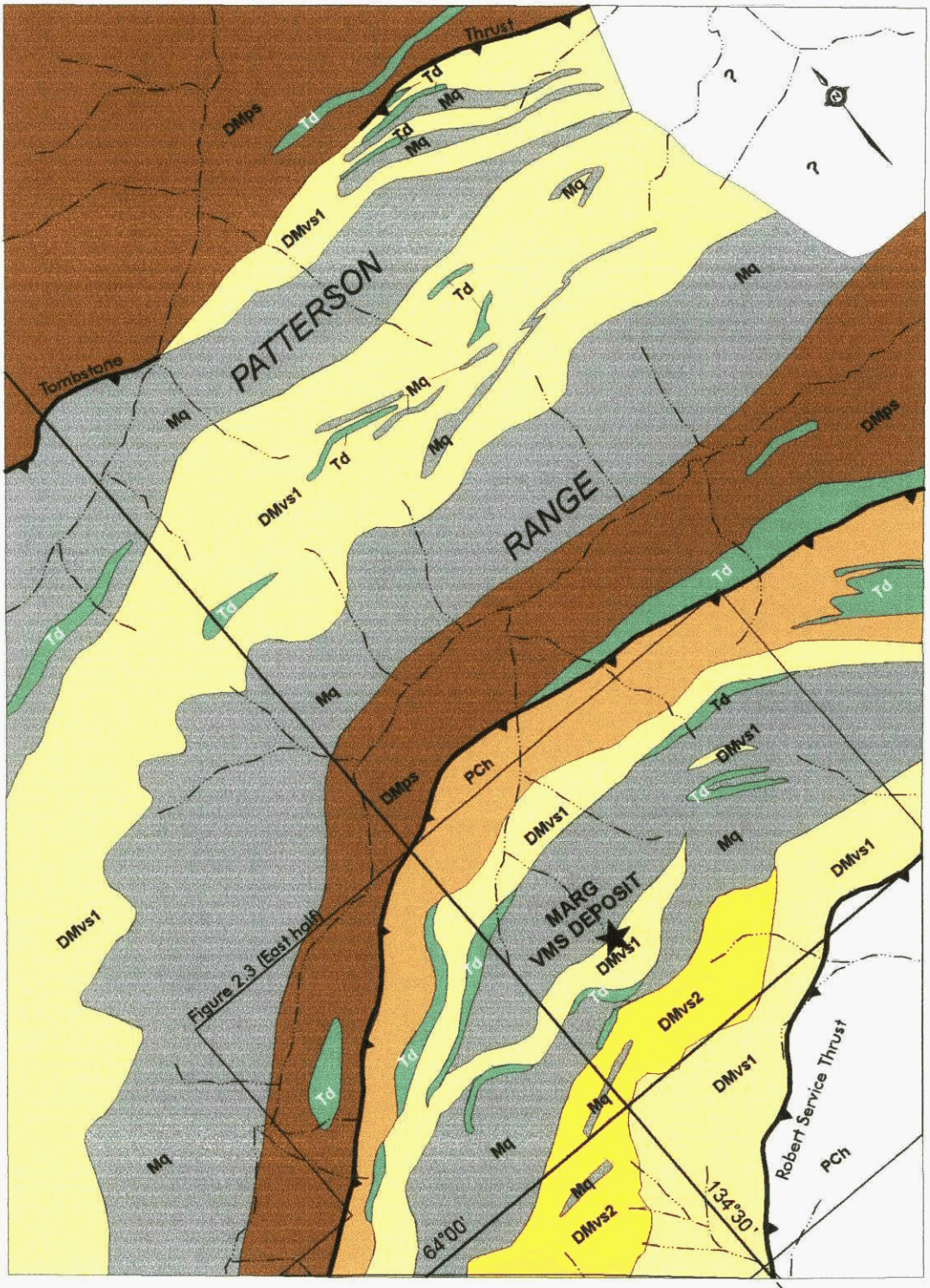


Figure 2.1: TERRANE LOCATIONS: Location of the Marg Property and tectonic assemblages of the northern Canadian Cordillera.



TRIASSIC (?)

Td — Diorite to gabbro dykes and/or sills

DEVONIAN (?), MISSISSIPPIAN, OR YOUNGER (?)

Mq — Keno Hill quartzite

DMps — Earn Group argillaceous metasedimentary rocks

DMvs1 — Earn Group metavolcanic rocks

DMvs2 — Metasedimentary and metavolcanic rocks, possibly equivalent to Earn Group

LATE PRECAMBRIAN AND LOWER CAMBRIAN

PCh — Hyland Group metasedimentary rocks

Geological Contact

Thrust Fault

Stream, river

0 1 2 3 Km

Scale in Kilometres

After Turner & Abbott, 1990

Figure 2.2: Regional Geology

2.2 PROPERTY GEOLOGY

2.2.1 INTRODUCTION

Work by the territorial and federal governments in recent years has provided a new geological framework for the Marg area. In order to place the property and deposit geology within this new framework, a program of geological mapping at 1:5,000 scale, detailed core re-logging (Appendix I) and evaluation of historical work was undertaken. Previous workers classified and described stratigraphy using metamorphic mineral assemblages. Although the rocks are highly strained, the abundance of drill core permits the classification of rock units using both primary textures and composition, as indicated by metamorphic mineral assemblages. An attempt has been made to keep map unit notations consistent with existing maps.

2.2.2 STRATIGRAPHY

The Marg property is primarily underlain by a thrust panel between the Robert Service and Tombstone thrust faults (Abbott, 1990a,b), figure 2.2. This thrust panel consists of four major stratigraphic/lithologic groups within the property map area (figure 2.3 and 2.4a&b). A precise stratigraphic progression within this thrust panel is difficult to determine due to extensive folding and faulting. However, chronological data, discussed below, provides a reasonable context with which to order the various map units. The units consist of:

- Late Precambrian to Lower Cambrian Hyland Group (PCh, PCmv, PCmb).
- probable Earn Group rocks, which include:
  - black shale and graphitic argillite (DMps),
  - felsic fragmental metavolcanic rocks (DMv), and
  - a mixed metasedimentary, metavolcanic and carbonate package (DMvs);
- Mississippian Keno Hill quartzite (Mq); and
- Triassic diorite to gabbro dykes and sills (Td).

Hyland Group

Unit PCh

The oldest rocks within and surrounding the Marg property are believed to be Neoproterozoic to Lower Cambrian Hyland Group siliciclastic metasedimentary rocks (PCh on figures 2.3 and 2.4a, b, c). Rock types included in this unit regionally, are quartz sandstone, quartzite, quartz-feldspar grit, buff weathering grey phyllite, buff to grey weathering limestone, and silty to sandy limestone that locally grades to calcareous grit (Gordey. 1990). Within the Marg area, lithologies consist of dirty sandstone or greywacke, quartzo-felspathic grit, phyllite and minor carbonate and mafic volcanic rocks. The minor units, a thin, relatively pure marble (PCmb) and a thin sequence of mafic volcanic rocks (PCmv), have been broken out (Figure 2.4a) as these units are distinctive and may be useful as marker horizons.

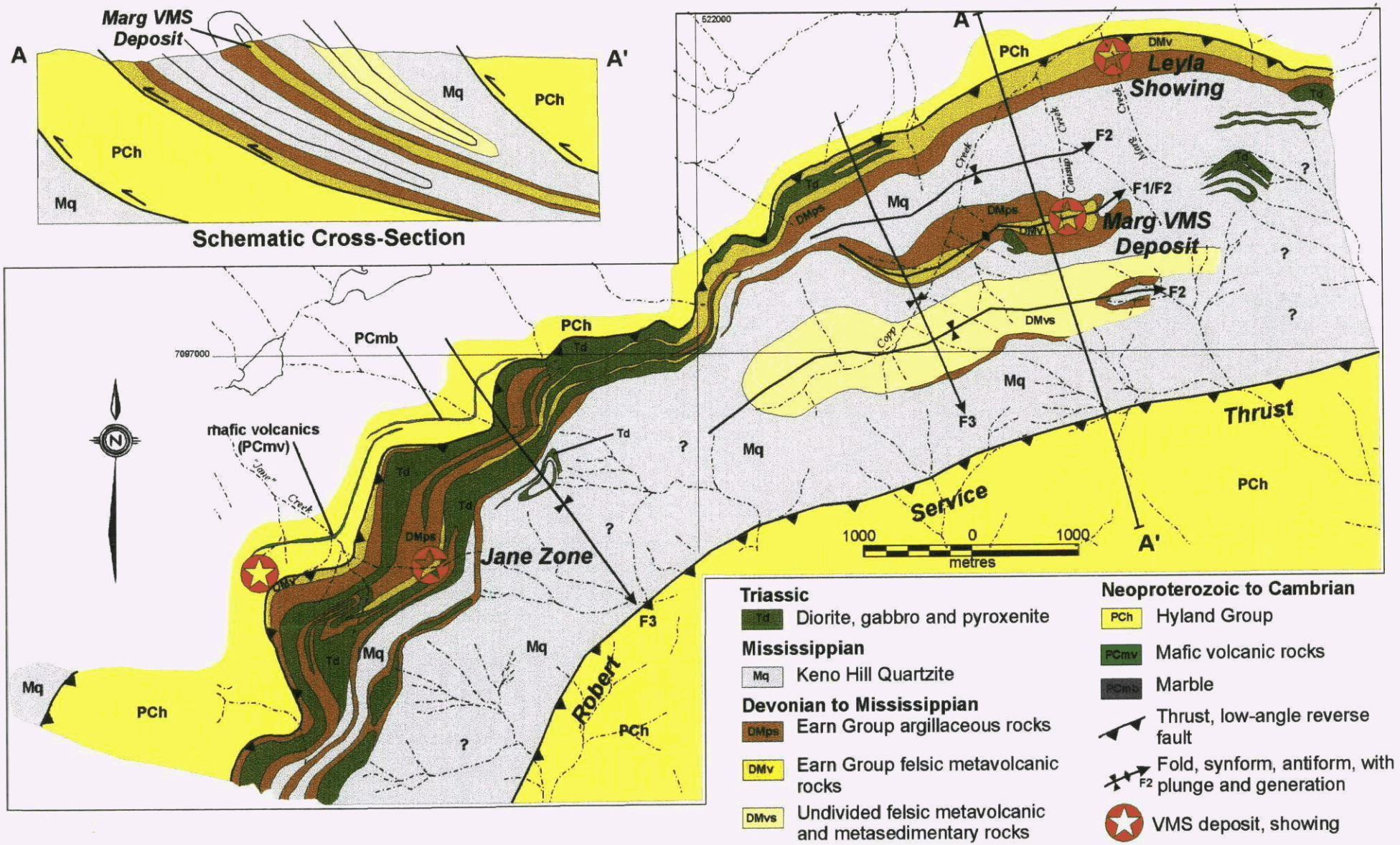


Figure 2.3: Property Geology

The Hyland Group is the lowest mapped unit in the property area and is distinctive due to an abundance of blue, relatively coarse grained, quartz grains. These rocks, situated just north of the Marg deposit (1.5 km), were initially mapped as Hyland Group by Abbott (1990a), but were later considered (Abbott, 1990b) to belong to a younger (Mississippian?) suite of volcanic and volcaniclastic metasediments. Lithologies present on the Marg claims which are typified by the presence of blue quartz grains (not observed in any of the overlying rocks) closely match the description of the Hyland Group provided by Gordey (1990) for the map area immediately south of the Marg property.

On the Marg property, the Hyland Group rocks are separated from the overlying Earn Group stratigraphy by a thrust fault, which, although not exposed, is inferred from a subtle upwards truncation of stratigraphy from east to west. Intrusive rocks are not observed crossing this contact. The lower contact of the Hyland Group is the Tombstone thrust fault (Abbott, 1990). The upper thrust, which places younger on older rocks, may represent later movement on a synclinal infold of the Hyland Group within the Earn Group. Hyland Group rocks above the Robert Service thrust fault were not investigated.

During mapping, the Hyland Group rocks were defined by an abundance of blue quartz grains, both within greywacke or grit and within quartz and sericite-rich phyllite that are thought to be distal or reworked tuffaceous rocks. Metatuffaceous rocks are fine-grained, strongly foliated, and lack primary macroscopic volcanic features, except rare, lapilli sized, lithic fragments, and occur as 1 to 15 metre thick bands intercalated with argillaceous and siliceous (greywacke) metasedimentary rocks. The overall sequence of the Hyland Group is generally thick-bedded and may have a total thickness in excess of one kilometre. Recently discovered sulphide mineralization in the Jane zone vicinity is associated with altered metatuffaceous rocks of the Hyland Group. This mineralization is in close proximity to mafic volcaniclastic and mafic volcanic rocks (see below) but lacks the anomalous base and trace element chemistry associated with the mineralization in the Earn Group.

Unit PCmv

Mafic volcanic rocks were discovered in the western part of the property, enclosed within metasedimentary rocks of unit PCh. These mafic volcanic rocks occur as thin bands, from 1 to 10 metres thick, along what is interpreted to be a single stratigraphic horizon. Mafic rocks are characterized by a fine-grained matrix of chlorite and amphibole. Volcanic textures include quartz and calcite amygdules, which may indicate basalt flows deposited in a sub-aerial to sub-aqueous environment. In one location, the rocks seemingly display pillow shapes with fine-grained chloritic rinds and siliceous knots within rind (pillow?) interstices. These basalts are the only mafic flow rocks discovered to date on the Marg property. Mafic, probably volcaniclastic, rocks are intimately associated with the interpreted flow rocks, forming thin (<10m) but laterally continuous bands. Mafic volcaniclastic lithologies have a large biotite component that together with grey, fine-grained, feldspar and quartz bands, defines alternating millimetre-scale microlithons. Mafic clastic rocks can contain minor (up to 10%) blue quartz grains that are coarser-grained than the surrounding matrix. Mafic flow and volcaniclastic rocks have similar chemistry, which indicates that these rocks are alkali basalts with anomalous levels of barium (4,000 ppm) and zirconium (300–500 ppm).

Unit PCmb
Weakly-foliated, homogeneous marble, hosted within metasedimentary rocks of the Hyland Group, occurs as thin, 5-25m thick bands that are laterally continuous for distances of 1 km. The white to pale brown marble is a minor component of the overall stratigraphy, and suggests a minor period of deposition within a shelf sequence in a shallow marine environment.

Earn Group

Metasedimentary and metavolcanic rocks form three distinct sequences on the Marg property, one of which is a 300 metre thick, but folded, succession that surrounds and hosts the Marg deposit. Although these rocks are correlated with the Earn Group, a lack of clear diagnostic features such as fossils or the chert pebble conglomerate unit (Abbott, 1990) makes this correlation tentative. Zircons from quartz-phyric sericite schist (crystal tuff) (Turner and Abbott, 1990) have poor U-Pb systematics but yield a minimum age of 344 Ma (Mortensen, pers. comm.). Zircons from other units within this sequence have similarly poor U-Pb systematics but yield dates ranging from 368 to 375 Ma indicating a probable early Late Devonian age (Mortensen, pers. comm.).

The Earn Group rocks have been informally subdivided into three map units, which are structurally, and probably stratigraphically, interlayered with the Keno Hill Quartzite. The units are described in structural sequence. The "upper" package (DMvs) of metasedimentary rocks consists of graphitic, argillaceous material with abundant intercalations of fine-grained volcaniclastic rocks and, locally, thin carbonate lenses. The "middle" unit (DMps) is composed of black argillaceous rocks (graphitic schist). The "lower" unit (DMv) is a volcanic sequence composed of quartz and feldspar-phyric tuffs and possible flows, fine-grained ash tuffs and related volcanic sediments, and massive sulphide mineralization.

Unit DMvs
This unit occurs as a synclinal keel located approximately 1 km south of the Marg deposit and consists of intercalated argillaceous metasediments with subordinate, thin, pale green, fine-grained tuffs and limestone lenses. Outcrop exposures consist of brown to dark grey phyllite, minor pale green phyllite and white to cream coloured limestone. The significant differences between this unit and the other units correlated with the Earn Group is the lower graphite and quartz contents of the sediments, fine grain size of the tuffaceous rocks, and most importantly, the presence of limestone lenses. Contacts with Keno Hill Quartzite are only exposed in a few locations and are sheared in all but one, where the contact appears to be gradational.

Unit DMps
This unit is primarily composed of graphitic, argillaceous metasedimentary rocks with minor metatuffaceous rocks. The sedimentary rocks are characterized by a phyllitic metamorphic and structural character, with fine alternating quartz and graphitic microlithons. This unit is defined as being approximately 90% black shale or mudstone with only minor intervals of volcanic ash and no quartzite. Minor intercalations of quartzite invariably signal the start of the Keno Hill Quartzite unit. There is significant variation in the silica content of the black shale as indicated by the presence of up to 40%

quartz "sweats" within the argillite, notably, those proximal to mineralization. Graphitic argillites of the Earn Group indicate a deep-water, off-shelf depositional setting (Roots, 1997a).

Unit DMv
Felsic, metavolcanic rocks are the primary host to the Marg massive sulphide deposit. Lithologies range from lithic and crystal-lithic ash tuffs through rare lapilli tuffs to coarse-grained quartz-feldspar crystal tuffs or flows. Typically, these lithologies are yellow green to medium dark green depending upon relative amounts of muscovite and chlorite. Lithic fragments, grain-size and even phenocrysts are difficult to discern in outcrop, except on weathered, lichen-free surfaces, but are readily visible in drill core. Volcanic lithologies are generally thin (<25 m) and commonly interbedded with minor argillaceous material. Contacts between volcaniclastic units are commonly gradational whereas contacts between volcaniclastic and sedimentary lithologies can be either sharp or gradational.

Coarse-grained quartz porphyry occurs between massive sulphide layers, near the central part of the deposit, and both unit thickness and quartz (+/- feldspar) grain size diminish along strike in both directions as well as down-dip suggesting a possible flow-dome complex or the center of a pyroclastic flow channel.

Earn Group felsic metavolcanic rocks are thought to be mainly pyroclastic flows based on observed textures in drill core as well as their lateral extent (kilometres) relative to thickness, limited compositional variation, and lack of broken phenocrysts. These features suggest volcanic derivation from a regional felsic dome or intrusive complex (Roots, 1997a).

Keno Hill Quartzite

Unit Mq
The Keno Hill Quartzite (Green, 1971) consists of black to dark-grey weathering (but light grey on fracture surfaces) homogeneous, fine- to medium-grained, "clean" quartz-rich (>90%) rock, commonly containing 2 to 30 metre thick intercalations of graphitic argillite and rare interbeds of metatuffaceous rocks. The quartzite is anomalously thick and laterally extensive within the Marg area (Abbott, 1990) commonly forming extensive lenses in excess of 100 metres thick. The Keno Hill Quartzite is intruded by deformed Triassic (?) metadiorite to metapyroxenite sills and/or dykes. A Mississippian age of the Keno Hill Quartzite is indicated from fossil evidence at a number of localities in the Dawson area (Mortensen and Thompson, 1990; and Orchard, 1991).

Quartzite and intercalated argillite likely had sandstone and shale protoliths that were deposited in a near shore environment. This is based on the occurrence of non-marine plant fossils and gastropods (Roots, 1997; Tempelman-Kluit, 1970). Contacts between the quartzite and probable Earn Group rocks are commonly fractured due to the rheological differences, however, unfractured, both gradational and sharp contacts with argillite and tuffaceous rocks are observed within drill core, suggesting conformable relations with adjacent rocks on the Marg property.

Intrusive Rocks

Unit Td

Metasedimentary and metavolcanic rocks of the Keno Hill Quartzite and Earn Group in the Marg map area are intruded by deformed metadiorite to metapyroxenite dykes and/or sills and undeformed Cretaceous (?) granite to granodiorite plutonic rocks (Abbott, 1990a). The Cretaceous intrusions have pervaded the stratigraphy within the Mt. Westman map area (106D/1) and Abbott (1990a) interprets this to indicate that much of the region may be underlain by Cretaceous granitic stocks.

The mafic intrusive rocks are part of a belt, which extends for at least 200 km to the northwest (Green, 1972; Abbott, 1990). These rocks have an indicated Triassic age, based on a zircon and baddeleyite U/Pb age of 232+1.5/-1.2 Ma, obtained on a sample from the Tombstone Range, (Mortensen and Thompson, 1990) in the northwestern end of the belt. Within the Marg area, the mafic intrusive rocks are typified by medium-grained, equigranular, euhedral hornblende-plagioclase diorite to gabbro that locally contains porphyritic K-feldspar. In isolated locations, the gabbros have differentiated K-feldspar-plagioclase-rich margins that may indicate tops. Larger bodies of these intrusive rocks have been observed to contain pyroxenite cores. Intrusive bodies vary in thickness between 10 and 150 metres and have strike extents up to 3.5 kilometres. Hornblende and pyroxene within these dykes or sills is frequently replaced or pseudomorphed by actinolite, chlorite or fuchsite.

Contacts of the intrusive rocks with surrounding older metasedimentary and metavolcanic rocks are typified by moderate to intense ferroan carbonate alteration and/or hornfelsed metasedimentary rocks. These contact zones are generally 5–15 metres thick and commonly extend for considerable lengths along the intrusive body. The sills locally contain sheet-like xenoliths of foliated Earn Group argillite, Earn Group tuff or Keno Hill Quartzite (up to 10 m in length). Chilled margins within diorite are defined by a conspicuous reduction in grain size, although the margins and contact aureoles are less developed where intrusions are thin (10–20 m).

The medium-grained crystalline nature of the majority of the intrusive rocks suggests emplacement into the surrounding metasedimentary and metavolcanic rocks at depth, where residency times were long enough to accommodate significant crystallization.

There is the possibility of an older suite of mafic intrusions, which occur in vicinity of the sulphide deposit. Thin, mafic intrusions proximal to the sulphide deposit display unusual textures, some that resemble peperites, possibly indicating intrusion into wet sediments. Termed "greenstone" in drill logs, these units are commonly fine-grained, foliated and occur in various stages of iron-carbonate replacement, which varies from pale yellow to bright orange. The thicker units (+5 m) generally have green core zones with pervasive iron carbonate alteration along the margins. Iron carbonate alteration may also be replacing part of the host rocks adjacent to the intrusive contact, and may partly account for some of the unusual textures. As all of the intrusions were emplaced prior to deformation, it is not possible to distinguish syngenetic from epigenetic intrusions based on deformation state. Chemical analyses from the mafic intrusions are pending and may help determine if there is any difference between the mafic intrusive units.

2.2.3 STRUCTURAL GEOLOGY

Rocks within the Marg deposit area record a complex history of strain and deformation during Jurassic to Cretaceous orogeny. Deformation has substantially modified the geometry of massive sulphide mineralization and its host rocks. Three distinct structural events are preserved which likely represent a continual deformation sequence that accommodated crustal shortening in both northwesterly and northeasterly directions. Structural data is presented in figure 2.5, whereas a photograph of actual structures is shown in figure 2.6. A schematic illustration of structural features, fold geometries and the effect on mineralization is presented in figure 2.7, which is similar to that presented by Gordey (1990) for the Tiny Island Lake map area.

Generation 1 Structures

The earliest (phase 1) generation of deformation (D_1) observed within the area is marked by northeast- vergent, isoclinal folds (F_{1a}) that deform primary features. Fold closures were rarely observed, but where visible, plunge moderately (35-45°) to the southeast (100 to 130°). These folds contain axial surfaces that dip 35° to 45° to the south-southeast (120°–160°), parallel to the regional south-southeast dip of bedrock within the region. In areas of higher strain, defined by intense foliation (S_1) that completely transposes all earlier features, phase 1 is represented by sheath folds (F_{1b}).

Sheath folds are contained within the plane of maximum strain (S_1), exhibit parallel fold hinges with opposing asymmetry, plunge to the southeast, and are recognizable as minor folds in outcrop by characteristic elliptical features referred to as "lipstick pattern" (Figure 2.6). Larger scale sheath folds are manifested as the double fold closures or elliptical outcrop patterns of unit DMv in the Marg deposit area (figure 2.3). The presence of sheath folds (F_{1b}) is supportive of a ductile shear zone style of deformation and may be related to northwest-vergent deformation (Murphy, 1997) associated with the Tombstone Strain zone.

Generation 2 Structures

The second (phase 2) generation of deformation (D_2) is characterized by tight to isoclinal asymmetric folds (F_2) that deform phase 1 isoclinal and sheath folds. Phase 2 folds are recognizable as map scale (200–500 m) structures that fold contacts between the Earn Group, Keno Hill Quartzite and mafic intrusions. These fold structures verge to the northeast and have fold hinges that are coaxial with older F_1 folds. Foliation (S_2) related to this phase results in a crenulation cleavage and S_1/S_2 intersection lineation (L_2).

Generation 3 Structures

Phase 3 deformation, (D_3) is non-coaxial with earlier folds, and is represented by open to tight folds (F_3) that deform map- and outcrop-scale D_1 and D_2 folds and foliations (figure 2.6, 2.7). F_3 folds verge to the southwest and have steep to upright (45°–85°) axial surfaces that strike west-northwest (290° and 330°).

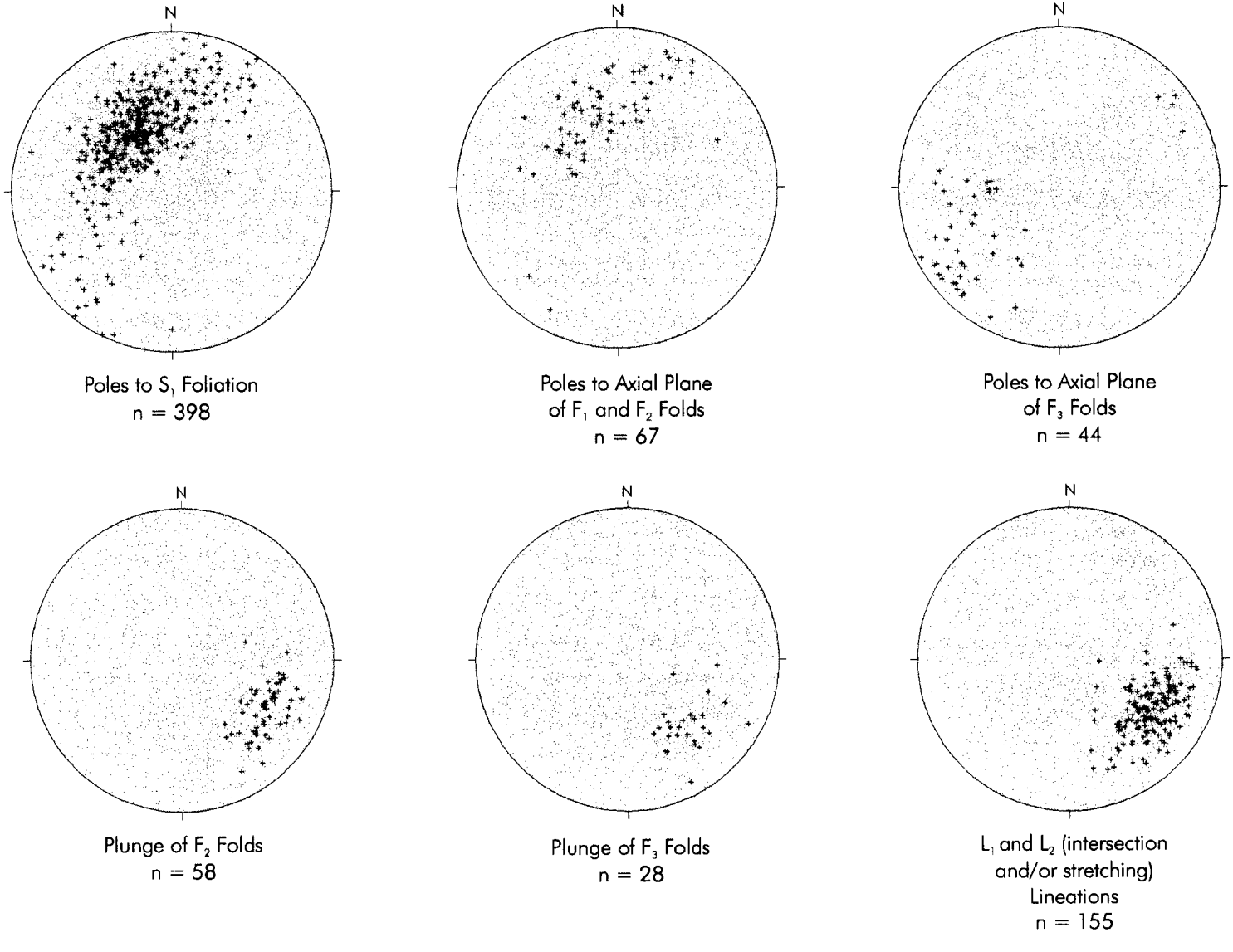


Figure 2.5: Stereographic presentation of structural data

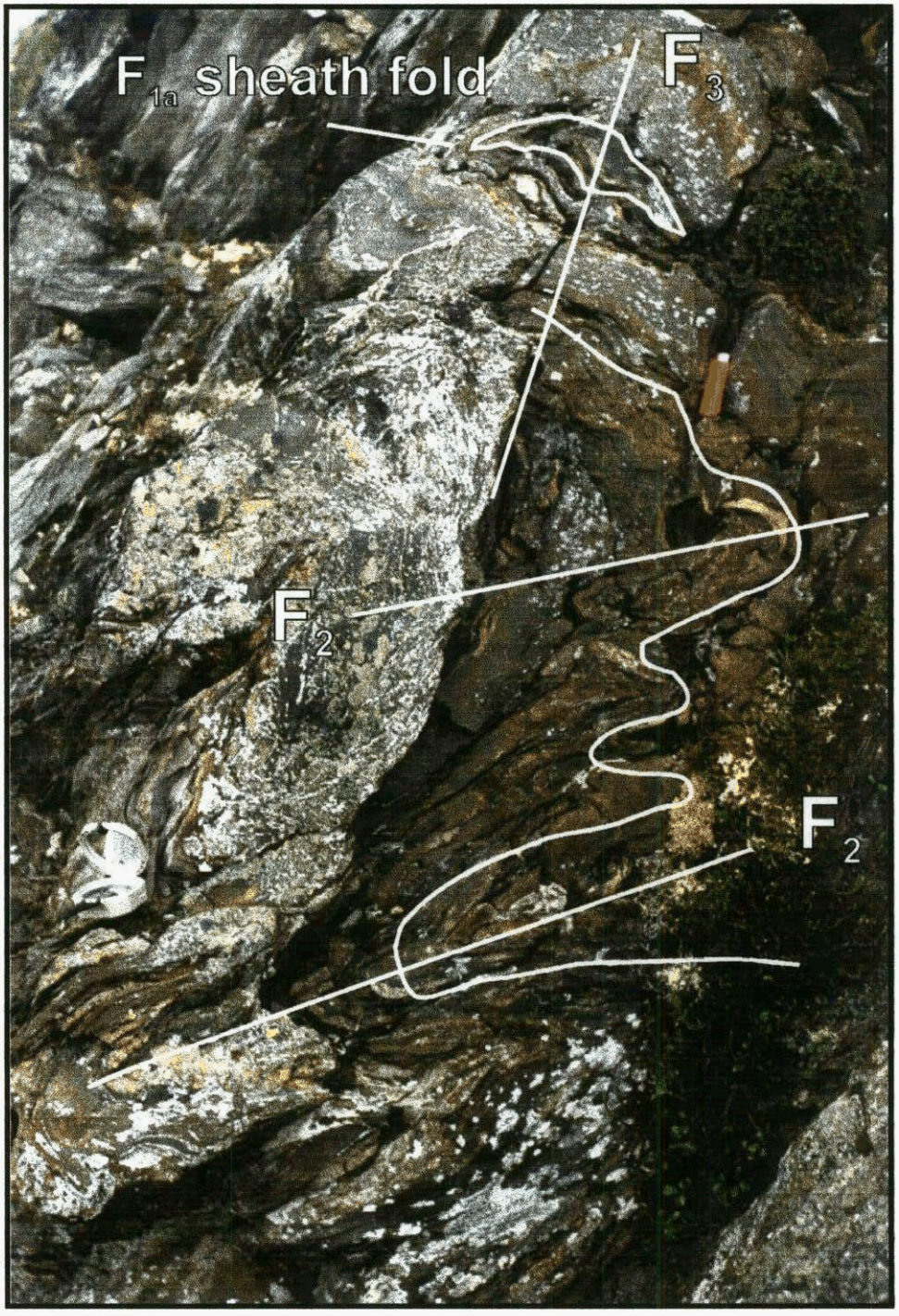


Figure. 2.6: Photograph illustrating the relation ship between F1b (sheath fold, note opposing closure, identical plunge), F2 northeast-vergent isoclinal S-folds, and late open F3 non-coaxial folds. Lithology is unit DMvs (metasedimentary rock) Note compass for scale. Compass needle oriented north. Photo taken 1 kilometre south of Marg camp.

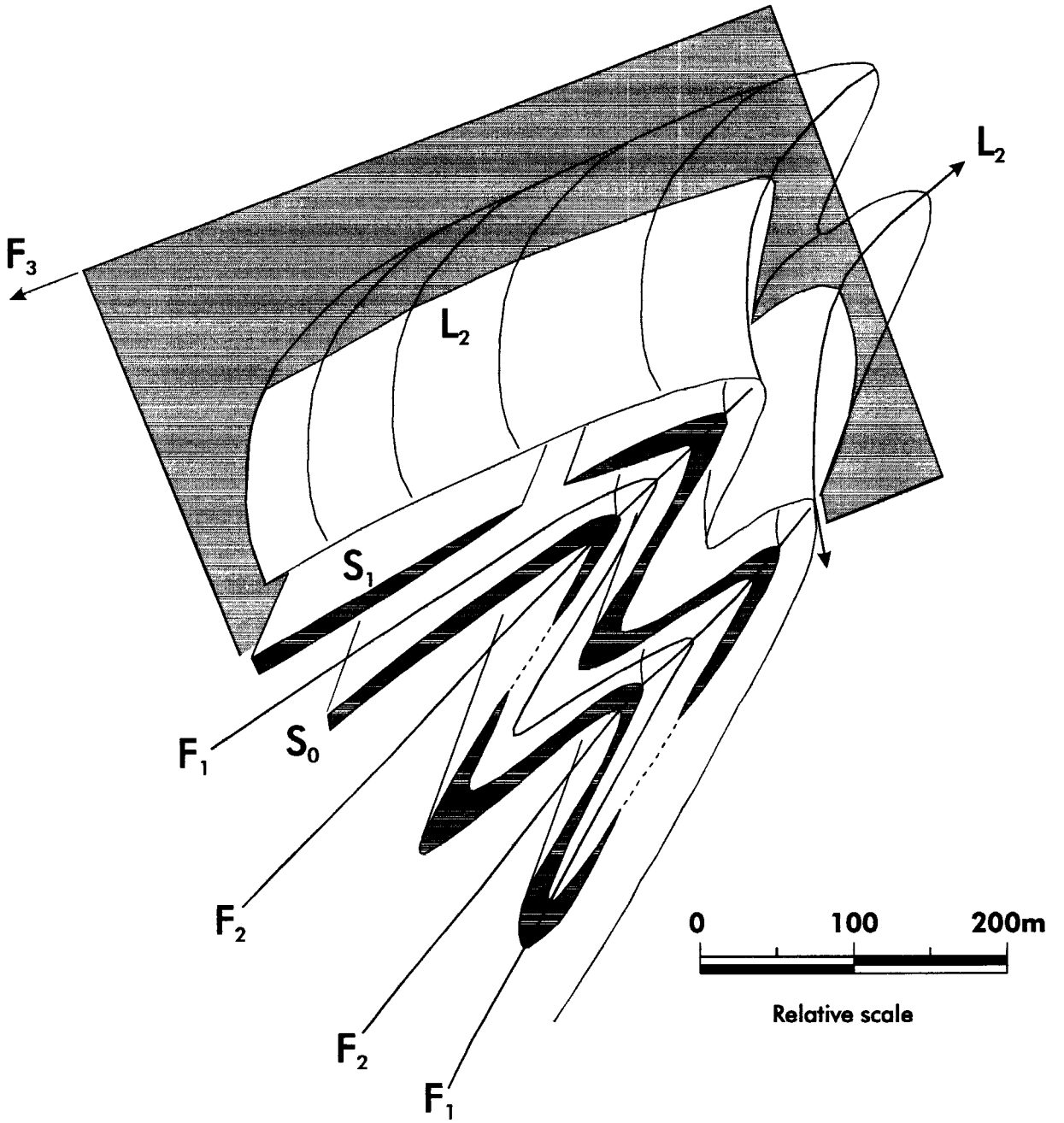


Figure 2.7: Schematic illustration of fold styles on the Marg property. Folded bedding (S_0), or massive sulphide mineralization, may be attenuated along limbs. Penetrative cleavage (foliation, S_1) is folded by F_2 folds which are co-axial to F_1. Intersection of F2 axial plane cleavage (S2) with S1 produces L2 lineations. F_1 hinge lines may be irregular due to formation of sheath folds (F_{1b}, not shown). F_2 and F_1 axial traces plunge moderately to the south-east. F_3 folds are generally open with upright axial planes and gentle to moderate plunges to the south-east. Actual folds are tighter than shown.

Significance to Exploration
The Marg polymetallic massive sulphide deposit has been deformed by all three phases of deformation described above and is interpreted to be hosted within an early F_1 fold (or F_{1b} sheath fold) that has been subsequently deformed during coaxial D_2 deformation and non-coaxial D_3 deformation (figure 2.7). In cross section, the F2 fold is an M-shaped fold, and the deposit shifts from being concentrated in the southern limb to the northern limb going from west to east (figure 2.9).

Exploration drilling at the eastern end of the deposit (section 23+00E, figure 2.8) intersected massive sulphide mineralization that terminates along strike to the east within isoclinal fold hinges. Mineralization plunges 45° to the southeast within coaxial F_1/F_2 fold closures. At the western end of the deposit, mineralization was observed to terminate along section 10+00E, which could be due to the closure of stratigraphy within an isoclinal (sheath) fold hinge (mapped on surface). The termination of the stratigraphy on both ends of the deposit in folds that are geometrically correlative, have the same plunge and opposite sense of closure, supports the hypothesis that the Marg deposit is contained within the core of an F_{1b} sheath fold. Mineralization is known to continue down plunge along the eastern fold nose and is interpreted to continue at depth along the southeast plunge of the western closure. In a similar fashion, the Marg host stratigraphy is repeated to the west of the deposit area in another elliptical shaped sheath fold (figure 2.3); an area that hereto has received minimal exploration.

Non-coaxial F_3 folds deform the stratigraphy of the Marg sequence, but are not visible on the north-south drill sections as the fold axial trace strikes (300°) at a low angle to the N–S sections. F_3 folds are more obvious in longitudinal sections and plan, where they broadly fold the mineralized horizons. These folds will vary the drill depth to massive sulphide intersections along the length of the deposit.

Although not directly connected with Marg deposit host rocks, both the Jane zone and the newly discovered Leyla zone occur in structural continuations of the prospective DMv stratigraphy.

2.2.4 MINERALIZATION AND ALTERATION

The Marg deposit consists of a series of continuous to discontinuous sheets of massive and semi-massive sulphide mineralization. Up to eight sulphide sheets can occur on a single section although most of the mineralization occurs within four sheets. A resource estimate was calculated by Franzen (1997), using the polygonal method and a minimum 3 metre true thickness of 135 drill intercepts in 76 holes; this estimate is 5,527,000 tonnes grading 1.76% Cu, 2.46% Pb, 4.60% Zn, 62.7g/t Ag and 0.98g/t Au. The resource is contained in parallel sheets within an area 700 metres along strike and 450 metres down-dip. The average thickness of the +3 metre intersections is 6.0 metres (figure 2.8). The upper two sulphide horizons account for 82% of the resource.

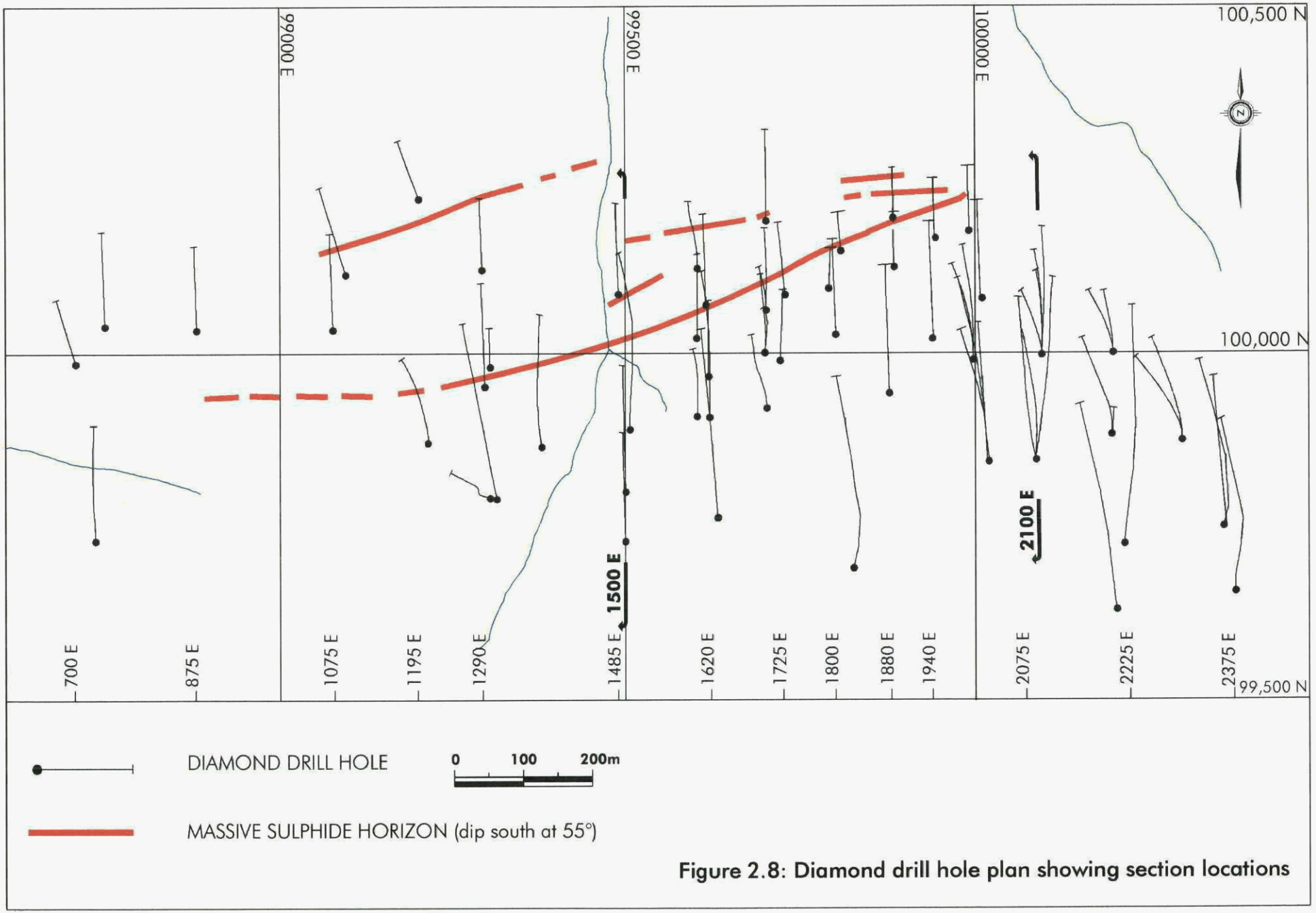
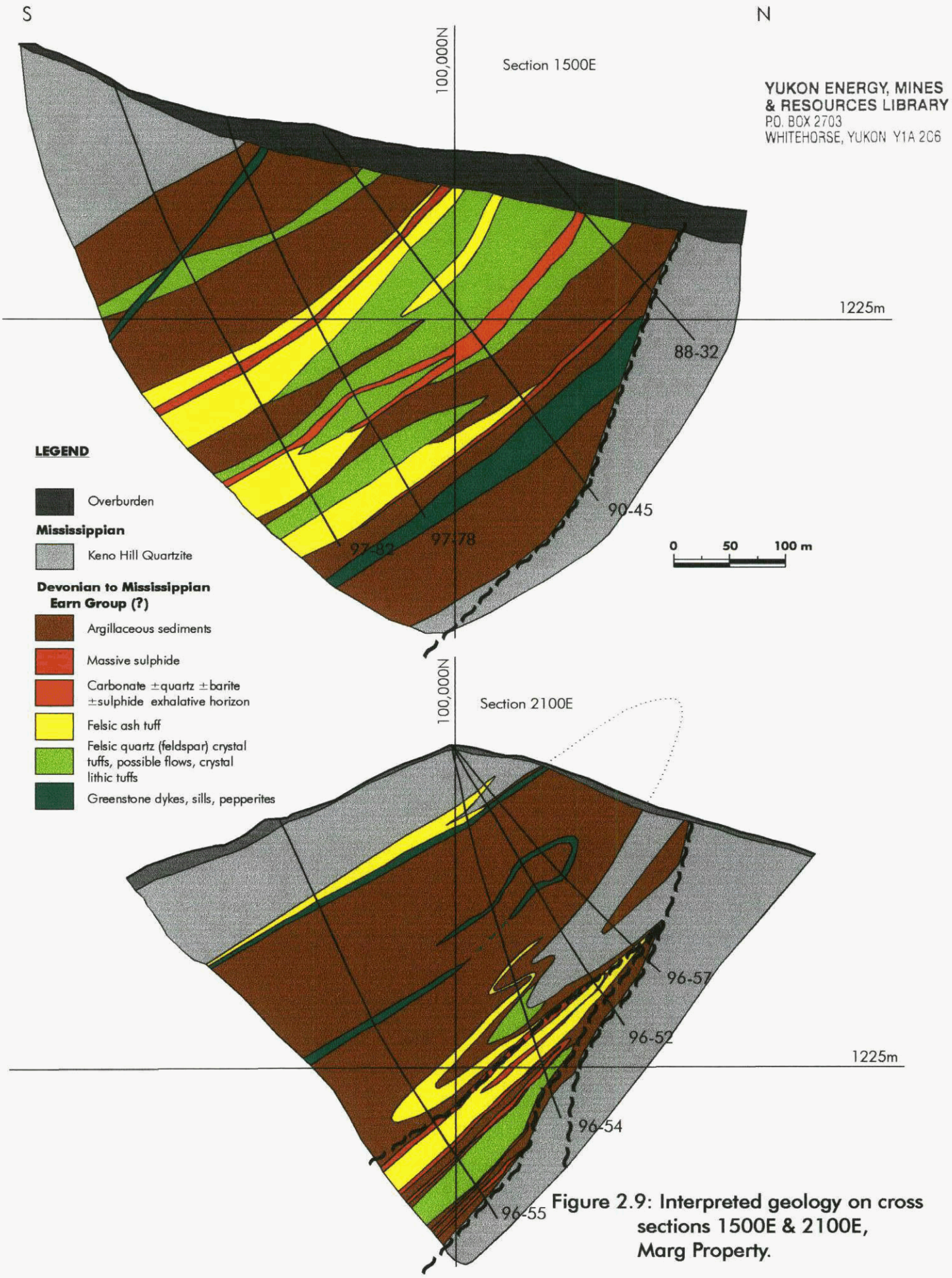


Figure 2.8: Diamond drill hole plan showing section locations



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WHITEHORSE, YUKON Y1A 2C6

Figure 2.9: Interpreted geology on cross sections 1500E & 2100E, Marg Property.

Sulphide mineralization occurs at, or near, the contact between footwall volcaniclastic rocks and hanging wall argillaceous sediments. It is believed that the mineralization bearing stratigraphy occurs within a refolded sheath fold that appears as an approximate 'M' shape in cross section (figure 2.9). Minor folds, irregular stratigraphy, attenuation along isoclinal fold limbs, and foliation parallel faults with minor displacement further complicate the geometry. It is probable that the main sulphide sheets represent a single refolded sulphide lens, an interpretation that is not particularly critical to exploration, but is supported by Turner and Abbott (1990), who documented the zonation of sulphide assemblage facies and metal ratios. Metal ratios, although variable within a single sheet, do not display any statistical differences between the various mineralized sheets, which might be expected if the sheets were separate stratiform deposits.

Mineralization is concentrated within the southern and central limbs of the 'M' fold in the western part of the deposit, but becomes progressively concentrated in the northern, or lower fold nose to the east (and down plunge), as illustrated in the two cross sections of Figure 2.9. This transition from upper to lower fold limbs indicates that the original strike of the deposit was at a shallow angle to the F_2 fold structure. The cross sections are not completely orthogonal to the strike direction and therefore dips appear to be shallower than they are in reality.

The lower contacts of the sulphide host rocks are locally truncated by the quartzite unit, the contact marked by fracturing or narrow intervals of gouge, which has been previously interpreted as a thrust fault. Kinematic indicators are lacking and sense of movement and actual displacement are not known, however, these faults are brittle fractures, which cut all deformation fabrics, including F_3 folds, and are therefore, unrelated to the regional thrust faulting (D_1/D_2).

Sulphide minerals consist of pyrite, sphalerite, chalcopyrite, galena, tetrahedrite and arsenopyrite in a gangue of quartz, ferroan carbonate, muscovite and rare barite. Magnetite is notably absent. It is probable that sulphide textures have been modified by strain but compositional layering on the millimetre to centimetre scale may be primary. Sulphide sheets are massive to semi-massive, with sharp, or less commonly, gradational, interlayered contacts. Alteration haloes of pervasive muscovite and carbonate are moderately developed and most conspicuous within the volcanic rocks. Black chlorite occurs locally, most notably near the up-dip footwall of the upper sheet. Because of the close proximity of the sulphide sheets, it is difficult to discern where the footwall alteration of one sheet ends relative to the hanging wall alteration of the adjacent sheet, or *vice versa*. Alteration is accompanied by enrichment in base metals as well as Hg, Mo, As, Ag, Ni, Ba and Mn. Lithogeochemical studies are ongoing and although zonation of 'indicator' elements does not appear to be as consistent and reliable as in some deposits, lithogeochemistry will still be useful to exploration, particularly within the argillaceous rocks where mineral alteration is not visually distinctive.

Sulphide mineralization is commonly over- or underlain by silica, ferroan carbonate and more rarely, barite layers of possible exhalative (+/- replacement) origin. Exhalative horizons range from 3 to 300 cm thick and are most prominent in the central to eastern part of the deposit, commonly marking the structurally inferred location of the sulphide

horizon where sulphide mineralization is minimal or absent. Interpreted exhalites are highly anomalous in base and precious metals as well as the indicator elements.

Lithogeochemical haloes (elements listed above) surrounding the massive sulphide horizons generally display both a decrease in thickness and intensity in the down-dip direction for all sulphide horizons, but most notably in the two upper (southernmost) horizons. This down-dip decrease is also more pronounced in an overall westerly direction. These trends in lithogeochemistry reflect the overall antiformal structure of the "M" fold and the southeasterly plunge direction. A corresponding decrease in the thickness and grain size of the quartz- feldspar-phyric pyroclastic/flow rock and zonation of chloritic alteration suggests that the original, central core zone of the deposit was situated up-dip from surface and has been eroded. Thus, the original deposit may have been substantially larger prior to erosion.

3. GEOCHEMISTRY

3.1 SOIL GEOCHEMISTRY

Soil sampling grids were constructed over sulphide showings and along strike of favourable stratigraphic units containing sulphide mineralization. Three grids, each approximately 700m by 400m in size, were sampled at 25 or 50m intervals along 100m spaced lines. As well, three reconnaissance soil lines SW of the Jane Zone were sampled at 50m intervals along lines between 1500 and 1700m in length. The locations of the grids and reconnaissance lines have been plotted on figure 3.1.

Within each grid, samples of "B" horizon soil were collected from holes that were dug using mattocks and shovels. The average sampling depth was 30 cm, however, local soil development dictated the ultimate sampling level. Boulder talus restricted sample collection at some sample sites. Collected samples were air dried prior to shipment to Acme Analytical Laboratories Ltd. in Vancouver for 30 element ICP analysis. Geochemical analytical certificates are included Appendix I, and plots of the results are included as figures 3.2 to 3.13. Only results of copper, lead and zinc have been plotted as these elements were selected as the main indicator elements. Due to the limited sample population within each grid, rigorous statistical treatment has not been carried out. Instead, the range breaks were determined using a simple statistical treatment supplied with the GIS MapInfo application. The analysis, which MapInfo refers to as "natural break," employs an algorithm that sets the range breaks to minimize the difference between the data values, and the average of the data values is minimized on a per range basis.

3.1.1 LEYLA GRID

The Leyla grid, NE of the Marg deposit, is centered over a bedded pyrite occurrence known as the Leyla showing. The grid, which is underlain by Earn group quartz crystal (ash) tuffs, was constructed to test for economic sulphides surrounding the showing. Soil samples were collected at 25m intervals along eight lines spaced 100m apart. Samples

were collected from 122 sample sites. Geochemical anomalies were not noted in the immediate vicinity of the showing, although subtly elevated values for Cu, Pb and especially Zn are observed in the NW quarter of the grid (figures 3.2, 3.3 and 3.4). Cu values to 77 ppm are present over a background of 40 ppm, Pb values to 73 ppm occur with a 27 ppm background, and Zn results to 392 doubles the 162 ppm background. These elevated values occur over a 150m by 250m area, and although the zone is open to the north, the grid was terminated along the northern boundary at the thrust-faulted contact with the Hyland Group(?) rocks. Additional sampling to confirm the extent of this zone should be incorporated into future programs.

A second zone containing elevated Zn values is located along the southern boundary of the grid over a 25m by 200m area; these results are attributed to the argillaceous rocks that outcrop in that area.

3.1.2 PENNY GRID

The Penny grid, situated at the SW end of the Marg airstrip, was constructed to test Marg deposit stratigraphy in a southwesterly direction from the area of main mineralization. Eight lines spaced at 100m intervals were soil sampled every 25m. In all, 123 samples were collected over a 200m by 700m area.

The results for Cu, Pb and Zn do not define any significant anomaly clustering (figures 3.5, 3.6 and 3.7) and background for all three elements is comparable with the Leyla grid. A weakly defined zone of elevated Pb and Zn values is noted between lines 14+00E and 15+00E adjacent to baseline 10+00N. The zone should be examined to determine the local source. West of Copp Creek, where soil development is disrupted by boulder-sized talus, the results for Pb are at background while Cu and Zn values are sporadically anomalous. In particular, several samples with anomalous Cu and Zn are present at the NW edge of the grid. This area should be prospected and, if warranted, the grid extended further to the NW.

3.1.3 MAX GRID

The Max grid, established 300m SW along strike of the Leyla grid, was a second test of interpreted thrust repeated Earn group stratigraphy adjacent to Hyland group rocks. No significantly anomalous areas can be defined from the 87 sample results (figures 3.8, 3.9 and 3.10) and background levels are comparable to the Leyla and Max grids. A narrow, two-line zone in the SE portion of the grid shows elevated Cu, Pb, and Zn over an area underlain by argillite. Like the Leyla grid, multiple, isolated samples within Earn group rocks are anomalous in Cu and Zn, indicating that the unit is mineralized.

Additional sampling between and along strike of the Leyla-Max grids should be completed to test for buried sulphide occurrences.

525500 mE

526000 mE

7100000 mN

7099500 mN

22+00 E

23+00 E

24+00 E

25+00 E

26+00 E

21+00 E

20+00 E

1050

1100

1150

1200

22+00 N

21+00 N

20+00 N

19+00 N

18+00 N

Leyla Grid
Soil Geochemistry - Cu (ppm)

55 to 107
40 to 55
29 to 40
15 to 29

Atna Resources Ltd.

Marg Property
Leyla Grid
Soil Geochemistry
Cu (ppm)

Date: 11/4/2001
Author: RGW
Office: Van., B.C.
Drawing: 3.2
Scale: 1:2500
Projection: UTM Zone 8 (NAD 27 for Canada)

0 25 50 100
metres

525500 mE

526000 mE

7100000 mN

7099500 mN

20+00 E

21+00 E

22+00 E

23+00 E

24+00 E

25+00 E

26+00 E

22+00 N

21+00 N

20+00 N

19+00 N

18+00 N

1050

1100

1150

1200

Leyla Grid
Soil Geochemisty - Pb (ppm)

47 to 73
27 to 47
18 to 27
10 to 18

Atna Resources Ltd.

Marg Property
Leyla Grid
Soil Geochemistry
Pb (ppm)

Date: 11/4/2001
Author: RGW
Office: Van., B.C.
Drawing: 3.3
Scale: 1:2500
Projection: UTM Zone 8 (NAD 27 for Canada)

0 25 50 100
metres

525500 mE

526000 mE

7100000 mN

7099500 mN

20+00 E

21+00 E

22+00 E

23+00 E

24+00 E

25+00 E

26+00 E

1050

1100

1150

1200

22+00 N

21+00 N

20+00 N

19+00 N

18+00 N

106 106 90 87 72 65 98 109 111 95 135 91 114 124 135 184

156 90 101 126 110 103 100 101 126 94 125 137 142 152 122 145 150 350 297

90 110 125 143 108 77 68 137 155 77 138 105 119 150 134 143 162 303

128 153 184 157 100 183 137 155 180 256 183 191 180 152 167 180 279

236 392 236 239 871 240 208 218 251 231 265 203 258 217 183 194 222 380 96 102

183 132 162 164 147 129 139 124 134 158 162 119 170

185 200 254 187 180 196 259 198 134 129 98 126 117 103

128 111 95 135 166 166 127 146 166 134

Leyla Grid
Soil Geochemistry - Zn (ppm)

231 to 392
162 to 231
117 to 162
65 to 117

Atna Resources Ltd.

Marg Property
Leyla Grid
Soil Geochemistry
Zn (ppm)

Date: 11/4/2001	
Author: RGW	
Office: Van., B.C.	
Drawing: 3.4	
Scale: 1:2500	Projection: UTM Zone 8 (NAD 27 for Canada)

0 25 50 100
metres

524000 mE

524500 mE

7098000 mN

7097500 mN

1450

1400

1350

1300

10+00E

11+00E

12+00E

13+00E

14+00E

15+00E

16+00E

9+00N

10+00N

11+00N

Penny Grid
Soil Geochemistry - Cu (ppm)

- 64 to 108
- 46 to 64
- 33 to 46
- 9 to 33

Contour Interval 50 metres

Atna Resources Ltd.

Marg Property
Penny Grid
Soil Geochemistry
Cu (ppm)

Date: 12/4/2001
Author: RGW
Office: Van., B.C.
Drawing: 3.5
Scale: 1:2500
Projection: UTM Zone 8 (NAD 27 for Canada)

0 25 50 100
metres

524000 mE

524500 mE

7098000 mN

7097500 mN

1450

1400

1350

1300

16+00E

15+00E

14+00E

13+00E

12+00E

11+00E

10+00E

11+00N

10+00N

9+00N

50 39 41 39 33 82 60 59 31 23 33 26 28 28 30 28 35 58 69 80 73 84 35 31 34 35 32 36 28 31 33 21 26 32 25 21 23 26 22 71 77 43 109 116 32 81 59 19 31 164 102 93 76 9 7 17 30 13 21 32 47 74 104 157 82 12 11 12 12 30 55 36 37 47 16 16 18 29 33 17 34 28 27 47 85 73 11 8 12 17 16 23 12 11 14 15 14 15 17 13 8 14 14 15 15 16 14 14 16 16 15 12 16 11 17 14 14 17 16 15 10 12 11 14 15 16 23 15 17 16 10 12 13 8 14 14 15 14 14 16 16 15 12 16 11 17 14 14

Penny Grid
Soil Geochemistrry - Pb

- 102 to 164
- 55 to 102
- 23 to 55
- 7 to 23

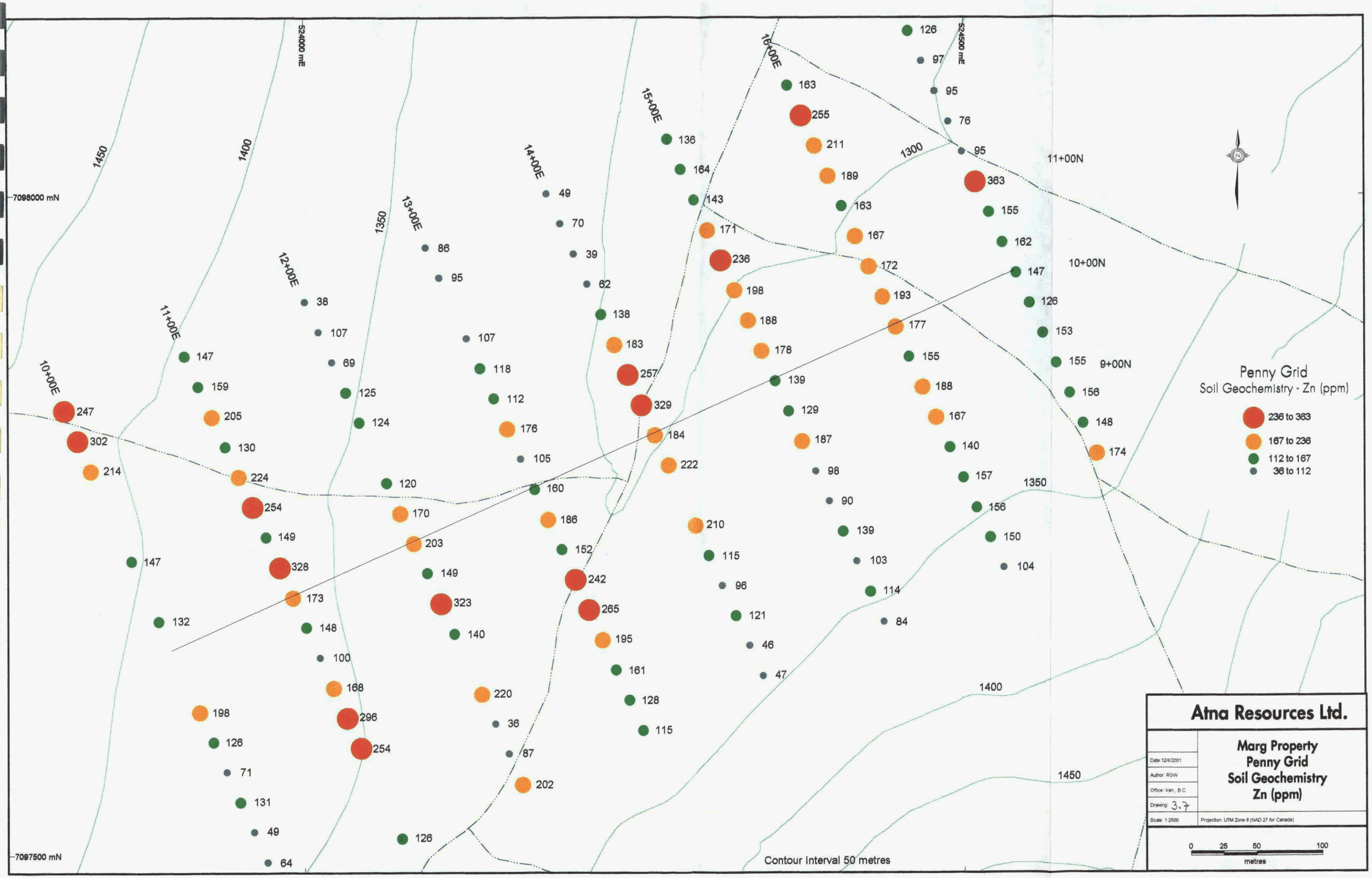
Contour Interval 50 metres

Atna Resources Ltd.

Marg Property
Penny Grid
Soil Geochemistry
Pb (ppm)

Date: 12/4/2001
Author: RGW
Office: Van., B.C.
Drawing: 3.6
Scale: 1:2500
Projection: UTM Zone 8 (NAD 27 for Canada)

0 25 50 100
metres


524000 mE
524500 mE
7098000 mN
7097500 mN
1450
1400
1350
1300
10+00E
11+00E
12+00E
13+00E
14+00E
15+00E
16+00E
11+00N
10+00N
9+00N
247
302
214
147
159
205
130
224
254
149
328
173
132
147
69
125
124
120
170
203
149
323
140
107
118
112
176
105
160
186
152
242
265
195
161
128
115
220
36
87
202
126
38
107
69
125
124
168
296
254
198
126
71
131
49
64
86
95
49
70
39
62
138
183
257
329
184
222
210
115
96
121
46
47
163
255
211
189
163
167
172
193
177
155
188
167
140
157
156
150
104
114
84
126
97
95
76
95
363
155
162
147
126
153
155
156
148
174
139
129
187
98
90
139
103
Penny Grid
Soil Geochemistry - Zn (ppm)
236 to 363
167 to 236
112 to 167
36 to 112
Contour Interval 50 metres
Atna Resources Ltd.
Marg Property
Penny Grid
Soil Geochemistry
Zn (ppm)
Date: 12/4/2001
Author: RGW
Office: Van., B.C.
Drawing: 3.7
Scale: 1:2500
Projection: UTM Zone 8 (NAD 27 for Canada)
0
25
50
100
metres

524000 mE

524500 mE

57+00 E

58+00 E

59+00 E

60+00 E

61+00 E

62+00 E

63+00 E

61+00 N

60+00 N

59+00 N

7099000 mN

1250

1200

1300

1350

19 10 23 16 63 28 48 46 20 18 16 19 15

57 31 35 28 20 13 28 15

13 16 27 12 23

30

16 89 30 44 10 9

130 99 37 22 28 25 21 33 82 17 49 45 70 40 22 16 14 10 68

25 33 16 14 20 14 41 50

29 76 44 17 16 25 32 60 30 58 25 23

45 15 13 33 30 72 51 25

15 20 23 29 7 23 12

Max Grid
Soil Geochemistry - Cu (ppm)

68 to 130
40 to 68
22 to 40
7 to 22

Contour interval 50 metres

Atna Resources Ltd.

Marg Property
Max Grid
Soil Geochemistry
Cu (ppm)

Date: 11/4/2001
Author: RGW
Office: Van., B.C.
Drawing: 3.8
Scale: 1:2500
Projection: UTM Zone 8 (NAD 27 for Canada)

0 25 50 100
metres

524000 mE

524500 mE

7099000 mN

57+00 E

58+00 E

59+00 E

60+00 E

61+00 E

62+00 E

63+00 E

59+00 N

60+00 N

61+00 N

1350

1300

1200

Max Grid
Soil Geochemsitry - Pb (ppm)

72 to 141
24 to 72
15 to 24
1 to 15

Contour Interval 50 metres

Atna Resources Ltd.

Marg Property
Max Grid
Soil Geochemistry
Pb (ppm)

Date: 11/4/2001
Author: RGW
Office: Van., B.C.
Drawing: 3.9
Scale: 1:2500
Projection: UTM Zone 8 (NAD 27 for Canada)

0 25 50 100
metres

524000 mE

524500 mE

7099000 mN

57+00 E

58+00 E

59+00 E

60+00 E

61+00 E

62+00 E

63+00 E

59+00 N

60+00 N

61+00 N

1250

1200

1300

1350

48 37 74 73 139 150 212 222 94 85 60 54

183 100 129 107 79 48 48 68

60 67 104 65 89

100

36 115 53 56 34 35

297 446 67 87 75 73 92 49 134 36

221 80 76 204 115 192

187 81 67 56 28 85 60

63 43 55 98 77 52

103 104 84 116 75 81 68

89 118 74 44 57 71 65 59 63 61 21 70 43

38 54 190 138 391 113

Max Grid
Soil Geochemistry - Zn (ppm)

- 183 to 446
- 94 to 183
- 63 to 94
- 21 to 63

Contour Interval 50 metres

Atna Resources Ltd.

Date: 11/4/2001	**Marg Property** **Max Grid** **Soil Geochemistry** **Zn (ppm)**
Author: RGW	
Office: Van., B.C.	
Drawing: 3.10	
Scale: 1:2500	Projection: UTM Zone 8 (NAD 27 for Canada)

0 25 50 100
metres

3.1.4 JANE ZONE

The area southwest of the Jane zone was explored with three reconnaissance soil lines run perpendicular to the strike of the geology. The lines start in complexly folded and "greenstone" intruded Earn group argillite and felsic volcanic rock, and pass over a thrust fault into metatuffaceous rocks of the Hyland group. One line was placed on the ridge that forms the SW boundary of the Jane zone valley. Two more lines on the next ridge further to the SW are spaced 200m apart. Line locations, along with sample numbers for the 86 samples, are shown on figure 3.1. The lines were established to determine if the Jane zone mineralized horizon extends to the SW, and also to test a zone of altered, sulphide-bearing rocks within the Hyland group.

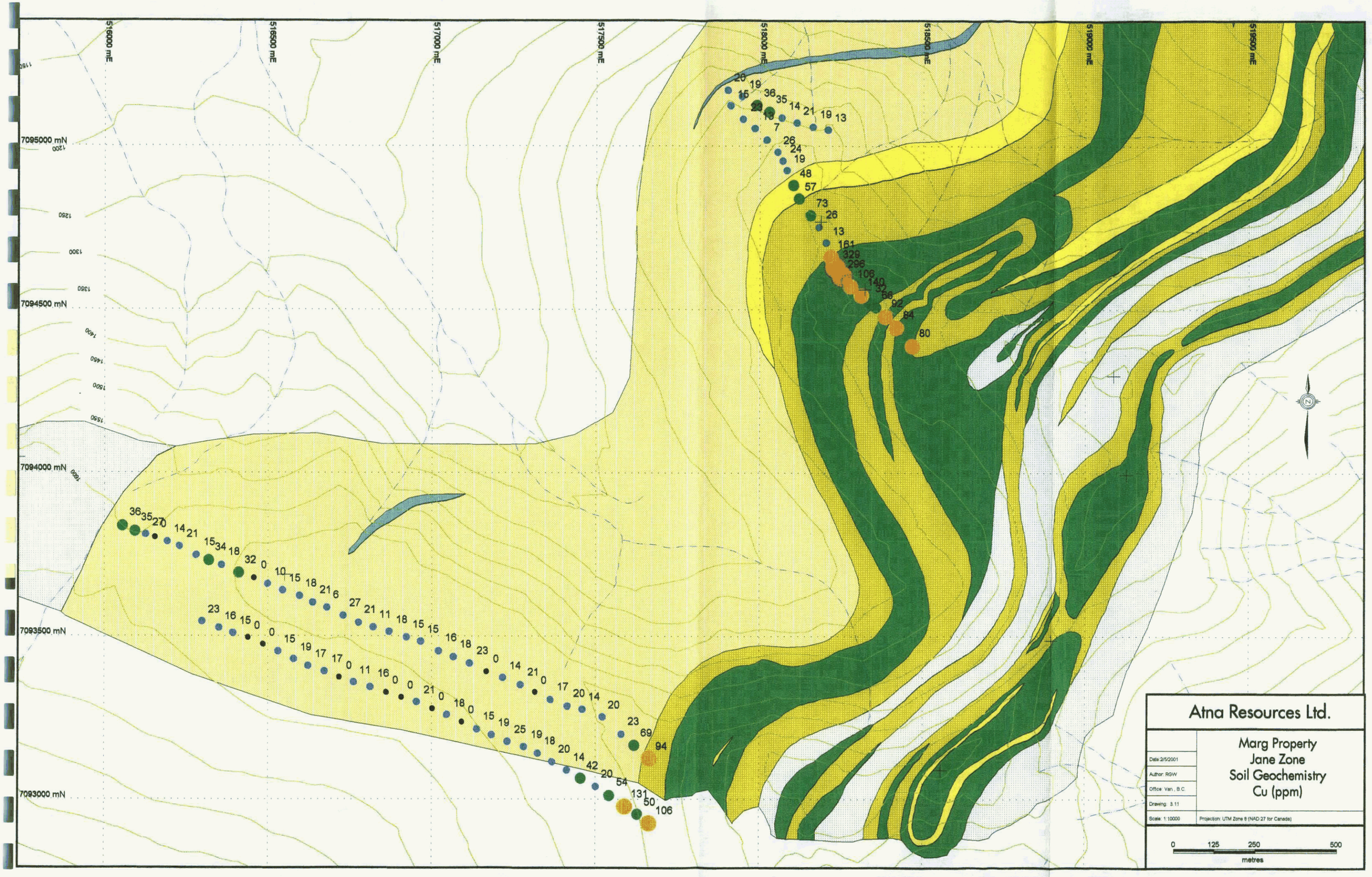
Two anomalous zones are evident in the sample results (figures 3.11, 3.12 and 3.13). The first zone, which is anomalous in Cu and Zn, occurs on the Jane zone SW ridge within mapped greenstone and argillite. Copper values between 140 and 329 ppm Cu and zinc values from 218 to 595 ppm Zn are present over a line length of 150m. The zone contains only background values for lead. The area is complexly folded and has not been mapped in sufficient detail to determine the source rocks for the anomalies.

The second zone, at the contact between Earn Group and Hyland Group rocks, is on the next ridge to the SW. Single sample anomalies on each line contain 561 and 794 ppm Pb plus 412 and 605 ppm Zn, with elevated copper (94 and 131 ppm Cu). The lead and zinc anomalies are flanked by samples containing elevated values for those elements. While further work is required to fully evaluate the anomalies, it is interpreted they are mapping the Jane zone stratigraphic horizon. It is recommended that the Jane zone soil grid be extended SW along the horizon's projected trace through these anomalies.

Sampling within altered Hyland group rocks produced only modestly elevated values for Cu, Pb and Zn. The alteration extends beyond the sampling and additional soil sampling is needed to rule out the possibility that the sampling was on the edge of a mineralized body.

3.2 ROCK GEOCHEMISTRY

Representative rock chips were collected at several outcrop stations and submitted for rock geochemical ICP analysis. Sample locations may be found on figure 3.1 and results are contained in Appendix I. Results from rock samples did not define significant new sulphide targets and although values were elevated for some elements at various locations, results were generally inconclusive from a lithogeochemical standpoint.


516000 mE
516500 mE
517000 mE
517500 mE
518000 mE
518500 mE
519000 mE
519500 mE
7095000 mN
7094500 mN
7094000 mN
7093500 mN
7093000 mN
20 19 15 36 35 14 21 19 13 7 26 24 19 48 57 73 26 13 161 329 296 106 140 37 56 92 84 80
36 35 20 14 21 15 34 18 32 0 10 15 18 21 6 27 21 11 18 15 15 16 18 23 0 14 21 0 17 20 14 20 23 69 94 50 131 54 42 20 14 18 20 25 19 15 0 21 0 18 0 0 16 11 0 17 19 17 17 0 15 19 0 0 15 16 0
Atna Resources Ltd.
Marg Property
Jane Zone
Soil Geochemistry
Cu (ppm)
Date: 2/5/2001
Author: RGW
Office: Van., B.C.
Drawing: 3.11
Scale: 1:10000
Projection: UTM Zone 8 (NAD 27 for Canada)
0 125 250 500
metres

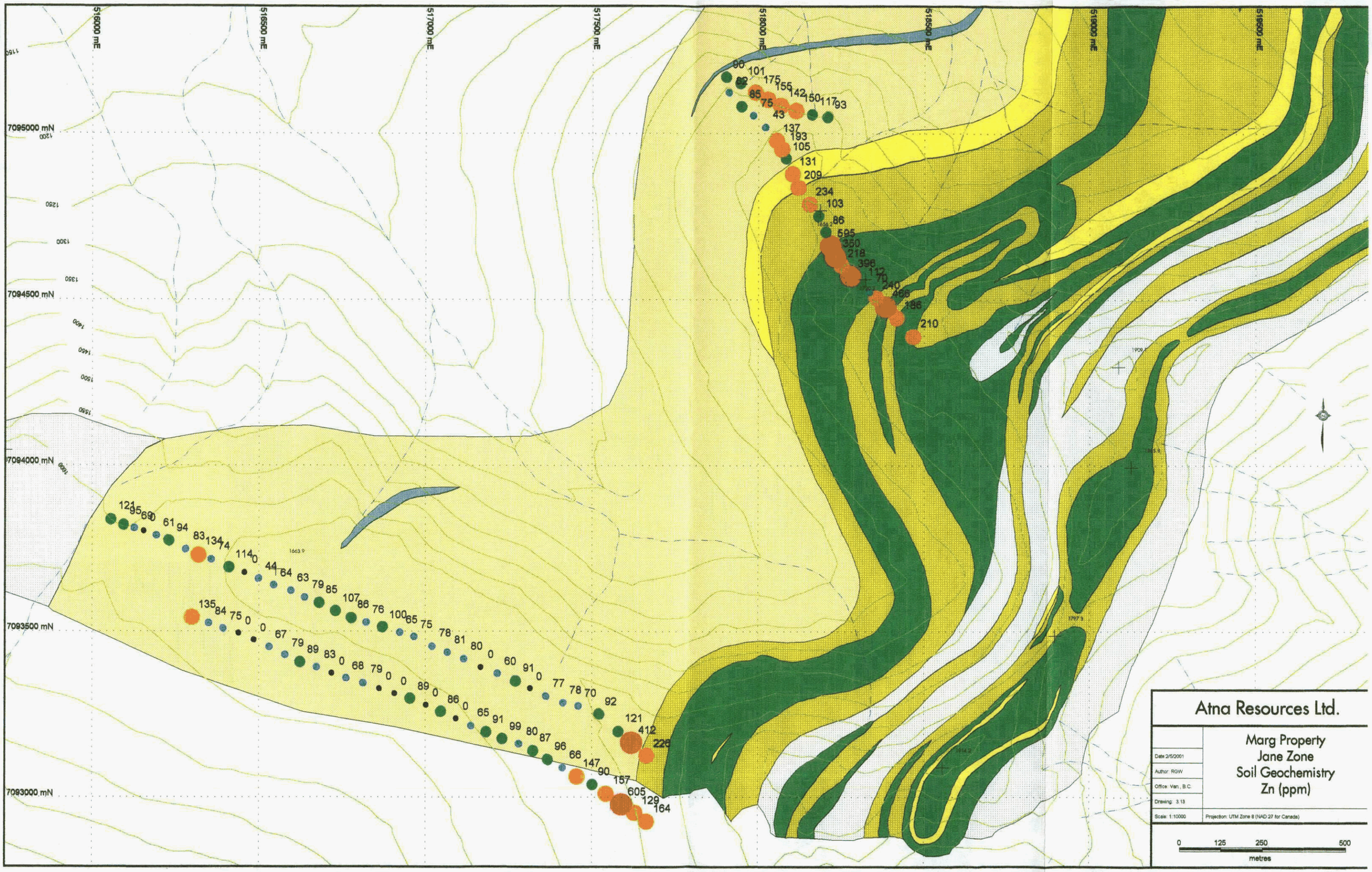
516000 mE
516500 mE
517000 mE
517500 mE
518000 mE
518500 mE
519000 mE
519500 mE
7095000 mN
7094500 mN
7094000 mN
7093500 mN
7093000 mN
1200
1250
1300
1350
1400
1450
1500
1550
1600
1663.9
1909.1
1797.3
14 25 26 35 47 20 28 33 25
17
14
30 26 18
34 32
11 16
15
20
16
12
20
10
13
24
21
31
20
12 19 64 0 13 12 16 28 41 16 0 11 9 15 12 11 81 10 14 23 12 17 14 15 12 0 19 14 0 16 23 24 75 54 561 3
22 12 14 0 0 15 14 23 14 0 14 19 0 0 26 0 15 0 21 36 22 22 39 37 16 48 23 15 794 15 23

Atna Resources Ltd.

Marg Property
Jane Zone
Soil Geochemistry
Pb (ppm)

Date: 2/5/2001	
Author: RGW	
Office: Van., B.C.	
Drawing: 3.12	
Scale: 1:10000	Projection: UTM Zone 8 (NAD 27 for Canada)

0 125 250 500
metres


516000 mE
516500 mE
517000 mE
517500 mE
518000 mE
518500 mE
519000 mE
519500 mE
7095000 mN
7094500 mN
7094000 mN
7093500 mN
7093000 mN
90 101 175 155 142 150 117 93
85 75 43
137 193 105 131 209 234 103 86 595 350 218 396 112 70 240 466 186 210
121 35 69 0 61 94 83 134 74 114 0 44 64 63 79 85 107 86 76 100 65 75 78 81 80 0 60 91 0 77 78 70 92 121 412 226
135 84 75 0 0 67 79 89 83 0 68 79 0 0 89 0 86 0 65 91 99 80 87 96 66 147 90 157 605 129 164
1663.9
1797.3
1914.2
1909.9
1841
Atna Resources Ltd.
Marg Property
Jane Zone
Soil Geochemistry
Zn (ppm)
Date 2/5/2001
Author: RGW
Office: Van., B.C.
Drawing: 3.13
Scale: 1:10000
Projection: UTM Zone 8 (NAD 27 for Canada)
0 125 250 500
metres

4. DISCUSSION

Although deformation at the Marg property is probably too extreme to fully reconstruct the stratigraphy and setting of the Marg deposit, detailed studies of the lithologies, alteration, structure and lithogeochemistry are shedding light on the nature of the deposit and, more importantly, on the exploration potential of the property.

Exploration potential within the Marg property is high. Recognition of the structural style of the sheath folds allows the prediction of the location of prospective stratigraphy in the sub-surface. Mapping and prospecting have discovered structural repetitions of the VMS host stratigraphy that contain sulphide occurrences, such as the Leyla zone, which highlight the potential for discovery of new zones of massive sulphide mineralization. The previously discovered Jane zone, is hosted by the strike extension of the Marg deposit host rocks, however, the thickness of the volcanic package and the intensity of alteration appears to be significantly greater than that present in the Marg area.

An "undeformed" Marg deposit displays many features that are similar to the VMS deposits of Yukon Tanana Terrane (Kudz ze Kayah and Wolverine (Hunt, 1997; Tucker *et al.*, 1997), and deposits of the Bonnifield district, Alaska. Marg metal ratios are most similar to KZK, whereas the alteration and setting, most notably, the tabular massive sulphide mineralization overlying a thin sequence of felsic crystal tuffs, flows and related volcaniclastic rocks within a thick pile of sediments, is more similar to the Wolverine deposit. Further studies will compare the chemistry of the volcanic rocks hosting the Marg deposit with those at Wolverine and elsewhere. Do the Marg volcanic rocks represent a slice of Yukon Tanana equivalent rocks imbricated into, and deformed along, the Tombstone Strain Zone? Stratigraphic evidence indicates probable conformity between the volcanic rocks and the Keno Hill Quartzite supporting VMS formation within the Selwyn Basin.

Geochemical, geological and structural data suggest that the central core zone of the deposit has been eroded supporting speculation that the original deposit may have been two or three times larger than what is indicated by the estimated resource. The amount of volcanic rock, in relation to the massive sulphide mineralization, is relatively minimal, (a possible sub-volcanic intrusion, or reasonable facsimile, is inferred to have been present lower in the stratigraphy, prior to thrust faulting) making regional exploration based on mapping difficult. Given the overall size of the Selwyn Basin and the limited stratigraphic thickness of volcanic rocks required to host Marg style VMS deposits, the potential for undiscovered VMS deposits is significant (Roots, 1997b).

Massive sulphide mineralization is spatially, and probably genetically, related to quartz-phyric volcanic rocks that likely originated within rift basins related to faults along the shelf edge of the continental miogeocline. The Keno Hill Quartzite, although the most resistant and therefore, most prominent rock within the host stratigraphy, is likely not significant to mineralization. Anomalous thickness of the quartzite unit may, however, indicate the presence of a rift-related basin.

ACKNOWLEDGEMENTS

This paper is based on exploration carried out in the summer of 2000 but could not have been done without the extensive data collected and documented previously by Rob Carne and Frank Gish of Archer Cathro and Associates. Field mapping and structural analysis was carried out, mostly in inclement weather, by Dave Copeland with assistance from Nick Mitchell. Drill core logging was conducted by Leyla Weston and Peter Holbek. Prospecting and geochemical sampling was performed by Duncan MacRea. Camp management, computer systems control, drafting and geological supervision was performed by Rob Wilson. The paper benefited from review by Julie Hunt and discussions with Don Murphy. Fieldwork on the Marg property would not have been carried out without the Yukon Mineral Exploration Tax Credit.

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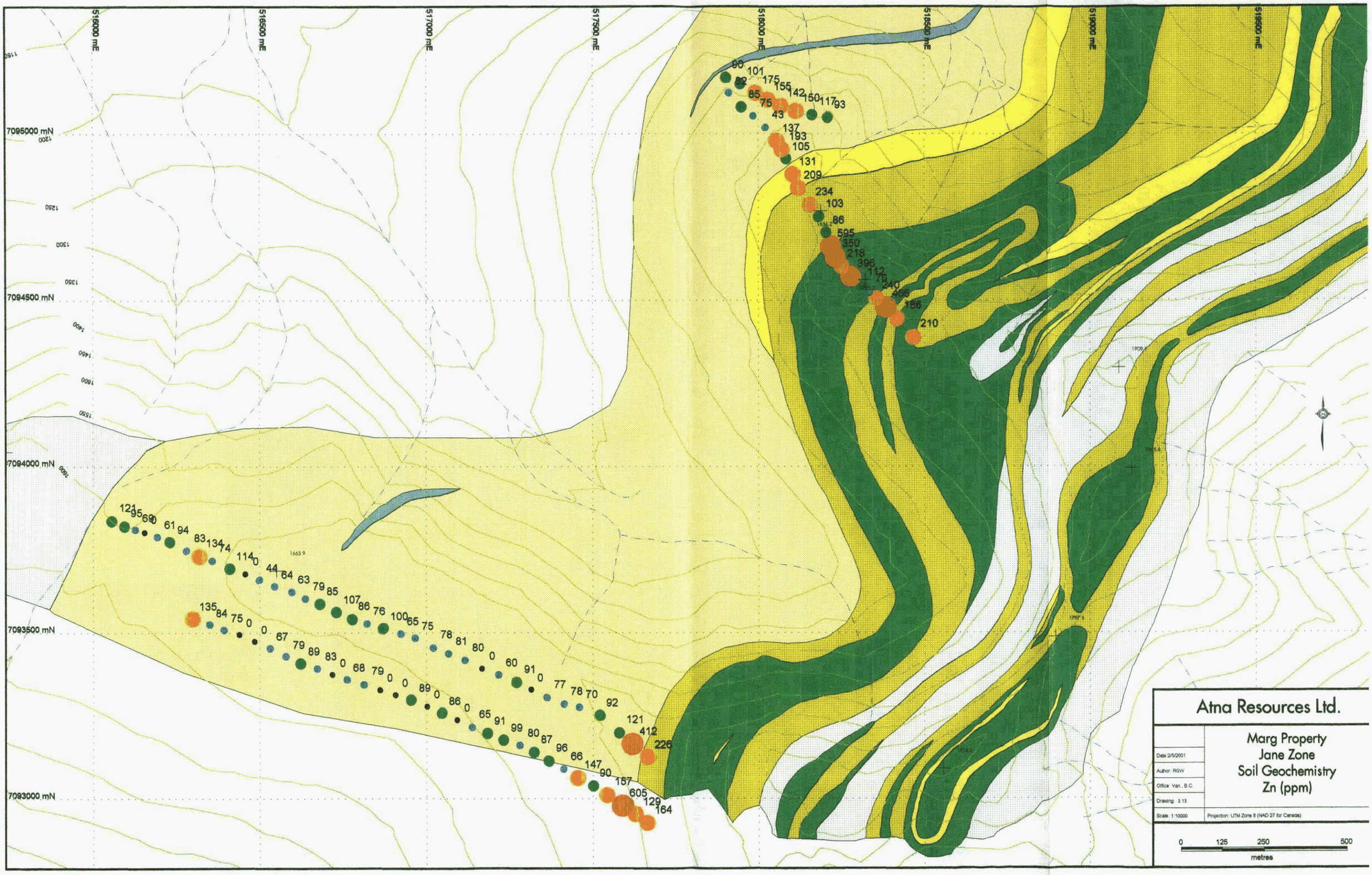
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516000 mE
516500 mE
517000 mE
517500 mE
518000 mE
518500 mE
519000 mE
519500 mE
7095000 mN
7094500 mN
7094000 mN
7093500 mN
7093000 mN
90 101 175 155 142 150 117 93
85 75 43
137 193 105 131 209 234 103 86 595 350 218 396 112 240 186 210
121 95 69 61 94 83 134 74 114 0 44 64 63 79 85 107 86 76 100 65 75 78 81 80 0 60 91 0 77 78 70 92 121 412 226
135 84 75 0 0 67 79 89 83 0 68 79 0 0 89 0 86 0 65 91 99 80 87 96 66 147 90 157 605 129 164
Atna Resources Ltd.
Marg Property
Jane Zone
Soil Geochemistry
Zn (ppm)
Date: 2/5/2001
Author: RGW
Office: Van., B.C.
Drawing: 3.13
Scale: 1:10000
Projection: UTM Zone 8 (NAD 27 for Canada)
0 125 250 500
metres

APPENDIX I

DRILL LOGS

Marg Project

Drill Log Code Key

I (INDEX)	
P	Primary
L	Lower
R	Remark
A	Analysis Type
S	Survey
E	Exended

FLAG (FLG)	
"	Clear Field
BRX	Breccia zone
CNT	Contact
DYK	Dyke, dike
F/W	Footwall
FLT	Identified faults
FTZ	Fault Zone
H/W	Hanging wall
MIN	Mineralization
OVB	Overburden
SUM	Summary
THN	Thin section

LITHOLOGY (Fm=Formation)	
ARD	Augen Rhyodacite
GMD	Green-Maroon Rhyd
MMR	Mottled Meta-Rhyl
SPY	Silver Phyllite
SPR	Speckled Rhyolite
SEX	Silica Exhalite

LITHOLOGY (Lith=ROCK TYPE)	
AGLM	Agglomerate
ANDS	Andesite
ARGL	Argillite
ASHT	Ash tuff
BAEX	Barite Exhalite
BASL	Basalt
BRXX	Breccia
CASE	Casing
CHRT	Chert
CONG	Conglomerate
DACT	Dacite
DBRF	Debris Flow
DIOR	Diorite
DOLM	Dolomite
DYKE	Dyke
EXHL	Exhalite
FLTZ	Fault zone
GOUG	Gouge
GRWK	Greywacke
LATF	Lithic ash tuff

LITHOLOGY (ROCK TYPE) cont.	
LLTF	Lapilli Tuff
LLXT	Lapilli crystal tuff
LOST	Lost core
LXTF	Lithic crystal tuff
MSSX	Massive sulphide
MUDS	Mudstone
OVER	Overburden
PATF	Pyritic Ash Tuff
PLTF	Pyritic-lapilli tuff
PMDS	Pyritic mudstone
QFXT	Quartz feldspar crystal tuff
QXAT	Quartz crystal ash tuff
QXLT	Qtz Xtal Lithic Tuff
QZVN	Quartz vein, alternative form
RHYL	Rhyolite
SEXL	Silica Exhalite
SIBX	Silica Breccia
SILT	Siltstone
SMPY	Semi-massive pyrite
SMSX	Semi-massive sulphide
STRZ	Stringer Zone
SYEN	Syenite
TFBR	Tuff-breccia
UNKN	Unknown rock
VEIN	Vein
VSLT	Volcanic Siltstone
XATF	Crystal-ash tuff
XLAT	Crystal-lithic tuff

LITHOLOGY (RM=Rx MODIFIER)	
AK	arkosic
AN	andesitic
AP	aplitic
AR	argillaceous
BN	bentonitic
CG	conglomeratic
CH	cherty
CO	coaly
CY	clayey
DB	diabasic
DC	dacitic
DO	dolomitic
DR	dioritic
FL	felsitic
GB	gabbroic
GN	gneissic
GR	granitic
HR	hornfelsic

LITHOLOGY (RM) cont.	
LS	limy
LT	latitic
MF	mafic
MZ	monzonitic
PG	pegmatitic
PH	phyllitic
PP	porphyritic
PY	pyritic
RY	rhyolitic
SH	shaly
SI	silty
SL	salty
ST	schistose
SY	syenitic
TF	tuffaceous
UM	ultramafic
VL	volcanic

COLOUR (S=SHADE)	
1	Very Dark
3	Dark
5	Medium
7	Pale
9	Very Light

COLOUR (CL=COLOUR)	
A	Grey
B	Blue
G	Green
O	Orange
R	Red
T	Tan
U	Brown
Y	Yellow
AG	Grey-green
AT	Gray Tan
AU	Gray Brown
AW	Grey White
GA	Greenish-grey
GM	Green & Maroon
GN	Green & Black
NG	Blackish Green
NN	Black
OA	Orange and Gray
TG	Tan-green
WG	Whitish green
WW	White
YA	Yellowish Gray
YG	Yellowish Green

COMPONENTS (C=MINL)	
AB	Albite
AM	Amygdules
AL	Alunite
AP	Apatite
AS	Arsenopyrite
AU	Augite
AX	Amphiboles, general
BA	Barite
BI	Biotite
BF	Breccia Fragments
BO	Bornite
CA	Calcite
CB	Carbonate
CK	Chrysocolla
CL	Chlorite
CN	Cinnabar
CP	Chalcopyrite
CY	Clay
DO	Dolomite
EP	Epidote
FL	Fluorite
FS	Feldspar (general)
FX	Feldspar phenocyrsts
GG	Fault Gouge
GL	Galena
GT	Garnet
GO	Goethite
GP	Graphite
GY	Gypsum
HB	Hornblende
HE	Hematite, earthy
HM	Hematite, magnetite
HS	Hematite, specularite
JA	Jarosite
KF	K-spar, orthoclase
LF	Lithic Fragments
LI	Limonite
MC	Malachite
MF	Mafics, general
MG	Magnetite
MI	Micas (general)
MS	Muscovite-sericite
MU	Muscovite
OX	Oxides (general)
PF	Plagioclase feldspar
PO	Pyhrrotite
PX	Pyroxene, general

Components (MINL) cont	
PY	Pyrite
QA	Quartz, agate
QV	Quartz vein, massive
QX	Quartz, crystals
QZ	Quartz, general
SE	Serpentine
SL	Sphalerite
SP	Sphalerite
SE	Serpentine
SD	Siderite
SX	Sulphides (general)
TA	Talc
TM	Tourmaline
TT	Tetrahedrite
XF	Crystal Fragments

TEXTURE (Tx=Texture)	
$T	Sheeted
<<	Microveined
>>	Macroveined
A*	Amygdaloidal
AE	Augen Eyes
AF	Angular Fragments
AG	Augen structured
AM	Amygdaloidal
AP	Aplitic
BD	Bedded
BK	Blocky
BN	Banded
BR	Brecciated
BT	Botryoidal
BX	Brecciated
CA	Cataclastic
CB	Crackle Breccia
CC	Concretionary
CG	Clay-galled
CM	Chilled margin
CN	Contorted
CO	Colloform Banded
CP	Crowded Porphyry
CR	Crenulated
CS	Closed-structured
CT	Clastic
CX	Crowed Crystal
DF	Drag-folded
EL	Elongate Fragments

TEXTURE (Tx) cont	
EQ	Equigranular
F$	Fissile
FB	Flow banded
FD	Folded
FE	Flattened & Elolgaed
FG	Fine-Grained
FO	Foliated
FR	Fragmental
FT	Flattened
FY	Flaggy
G;	Graded-bedded
GB	Granoblastic
GC	Gradational Contact
GG	Fault Gouge
GN	Gneissic
GP	Glomero-porphyritic
GT	Granitic
GY	Greasy, sectile
HF	Hornfels
HL	Heterolithic
HO	Homogeneous
HT	Heterogeneous
IB	Interbedded
IM	Imbricated
IN	Interstitial
IQ	Inequigranular
IR	Irregular
KR	Crackled
LB	Lensoid-banded
LE	Lineated
LM	Laminated
LN	Lenticular
LT	Lithic
MG	Medium Grained
ML	Monolithic
MM	Monomictic
MP	Microporphyry
MT	Mottled
MV	Microviened
MX	Massive
MY	Mylonitic
ND	Nodular
PA	Patchy
PB	Porphyroblastic
PF	Psuedofragmental
PG	Pegmatitic
PH	Phyllitic

TEXTURE (Tx) cont	
PI	Pisolitic, pea-like
PK	Poikilitic
PL	Pelleted
PM	Polymictic
PP	Porphyritic
PS	Poorly Sorted
RW	Reworked
SB	Slabby
SC	Schistose
SE	Seriate
SG	Sugary
SH	Sheared
SP	Spotted
SW	Stockworked
TB	Thin Bedded
TF	Tuffaceous
TG	Trachytic, trachytoid
TR	Trachytic
VG	Vuggy
VN	Veined
VS	Vesicular
VV	Veined
WD	Welded
WL	Welded
WS	Wispy
XB	Cross-bedded
XC	Cross-cutting

Marg Project

Drill Log Code Key

FRAGMENTS (TY=TYPE)	
Use Components - Mineral	

FRAGMENTS (Sh=SHAPE)	
1	Extremely angular
2	Very Angular
3	Angular
4	Moderately Angular
5	Intermediate
6	Moderately rounded
7	Rounded
8	Very rounded
9	Extremely rounded
A	Angular
B	Bladed
C	Compact, cubic
E	Elongated
F	Flattened
L	Lengthened
M	Mixed
P	Platy
R	Rounded
S	Sub-Angular

FRAGMENTS (Sz=SIZE)	
A	< .004 mm
B	.004 to .008 mm
C	.008 to .016 mm
D	.016 to .03 mm
E	.032 to .06 mm
F	.06 to .12 mm
G	.128 to .25 mm
H	.25 to .5 mm
I	.5 to 1 mm
J	1 to 2 mm
K	2 to 4 mm
L	4 to 8 mm
M	8 to 16 mm
N	16 to 32 mm
O	32 to 64 mm
P	64 to 128 mm
Q	128 to 256 mm
R	256 to .5 m
S	.5 to 1 m
T	1 to 2 m
U	2 to 4 m
X	1 to 4 m

FRAGS (MxP=MAX SIZE)
Use Sz scale

FRAGMENTS (Sort=SORTING)	
1	Extremely poor
2	Very poor
3	Poor
4	Moderately Poor
5	Moderate
6	Moderately good
7	Good
8	Very good
9	Extremely good

STRUCTURE (SD=STR. DEF.)	
<<	Microvein
>>	Macrovein
BD	Bedding
BN	Banding
CT	Contact
DY	Dyke
FB	Flow banding
FO	Foliation
FS	Fracture set
FT	Fault
FZ	Fault zone
JS	Joint set
LM	Laminations
LN	Lineations
QV	Quartz Vein
S#	Schistosity
S/	Shear zone
SF	Single fracture
SH	Shear
SL	Sill
TL	Tuffaceous Layering
VC	Carbonate vein
VE	Epidote vein
VN	Vein
VP	Pyrite vein
VQ	Quartz vein

VEINS (Vm=VEIN MATERIAL)
Use Components - Mineral

VEINS (AT=AVERAGE THICKNESS)
Use Fragments Sz Scale

VEINS (Or=ORIENTATION)
Relative to core axis

VEINS (V/M=VEINS/METRE)

ALTERATION (H=HOW (HABIT))	
"	Clear Field
#	Breccia fillings
$	Sheeting
)	CL/MG replaces MF
*	Clasts
+	Within quartz vein
0	Fresh,primary rock
1	A, minor > and/or scat. Crysta
2	Macroveins and Veins
3	Veins, Spots or Patches
4	Veins, and/or occas. Envelopes
5	Veins, and/or abundant Envelop
6	P or D Less Than <, S, and E
7	P or D Equal To <, S, and E
8	P or D Greater Than <, S and E
9	P or D, V, <, S and E
<	Microveins, fracture fillings
=	MS/CY replaces FX
>	Macroveins
A	A, cavity fillings
B	Blebs
C	Coatings & encrustations
D	Disseminations, scat. crystals
E	Envelopes
F	Framework crystals
G	Gouge
H	Replaced phenocrysts
I	Eyes,augen
J	Interstitial
K	Stockwork
L	Laminations/bedded
M	Massive
N	Nodules
O	Spots
P	Pervasive
Q	Patches, as in quilts
R	Rosettes & crystals clusters
S	Selvages
T	Stainings, as in tarnish
U	Eu-hedral crystals
V	Veins
W	Boxwork
X	K and/or $, M and/or L
Y	Dalmationite
Z	Massive,Laminated/Bedded
!	Wispy Laminations

ALTERATION (Amt=Amount)	
0.1	15
0.5	20
1	25
3	30
5	35
7	40
10	etc

MINERALIZATION (H=HOW)
Use Alteration H (How) scale

MINERALIZATION (Amt=% Amount)	
0.1	15
0.5	20
1	25
3	30
5	35
7	40
10	etc

SUM (AF=Alt'n Facies)	
FR	Fresh, primary rock
PP	Propylitic
MN	Montmorillonitic
IA	Intermediate argillic
KF	KF-stable
PH	Phyllic/greisenous
AA	Advanced argillic
PT	Pottassic
CP	Chlori-potassic
SC	Silicic

SUM (AF) (Amt=Amount)	
1	Trace
2	Very Weak
3	Weak
4	Moderate-Weak
5	Moderate
6	Moderate-Strong
7	Strong
8	Intense
9	Very Intense
x	Complete

ATNA RESOURCES LTD

DIAMOND DRILL LOG

Project: MARG (RE-LOG)

Drill Hole Id.: M88-32

Hole Azimuth: 358° **Dip:** -50° **Total Depth:** 204.8 m

Date Started: _____ **Date Completed:** _____ **Core Size:** _____

	Northing	Easting	Elevation
UTM Location:	7098192.97	525477.41	1362.2
Grid Location:			
Collar Survey:			

Down Hole Survey

Survey Method: _____

Depth	Azimuth	Dip*

*corrected

Sample Information

# of Samples: 188181 → 188192

Date Shipped: _____

Analytical Lab: ACME

Split By: _____

Type: _____

Assay Certificate #: A002841

Drill Information

Drill Contractor: _____

Drill Size: _____

Driller: _____
Driller: _____
Helper: _____
Helper: _____

Shift	Distance	Shift	Distance

Geological Summary

Purpose / Target: SECTION 1500E

Comments: HOLE DID NOT INTERSECT A SX HORIZON BUT THE ALTERATION AT START OF HOLE SUGGESTS FW ALT^N AND A NARROW SILICA EXHALITE OCCURS IN ARGL. KHQ UNIT IS IN FAULT CONTACT W/ MINESEQUENCE

Key Intersections

From	To	Results

Logged By: PMH

Project: MARC

Logged By: PMH

Atna Resources Ltd.

FV = FOLD VERGENCE
0 = UP
90 = DOWN

Diamond Drill Log

Hole Id.: M88-32

Page: 2 of 3

I	Flag F	L	G	Interval FROM / TO	G-tec % Rec / % RQD	Fm	Lithology LITH 1 / LITH 2	%Mix	RM1 / RM2	Color S	CL	Components C1	%	C3 / C4	Texture Tx1 / Tx2 / Tx3 / Tx4	Fragments Ty / Sh	Sz / %	MxP / Sort	M	Structure SD1 / SD2	AC	Veins Vm / Or	AT / VM	Alteration Qz Cl H	Amt	Cb Ep H	Amt	Ms Cy H	Amt	Ba H	Amt	Mineralization Py Cp H	Amt	Sp Gn H	Amt	Po H	Amt	Sum AF	In MF	In
V				0 / 53.4			OVER																															
P				53.4 / 65.5			XLTF			3	A	FX	10	MS	FG / PP	LF	5	20		FO	65			3	02	O	05	P	20			D	05	D	01			MS	5
L												LF	10	SX	FR / FO	EL	10	2																				
R					3MM GREY XTAL LITHIC TUFF DISSEMINATED SXS THROUGHOUT.							W/ 10% FX (MAINLY IN UPPER PART OF INTERVAL) AND WHITE TO BLACK LITHIC FRAGS FINELY				MODERATE MISC ALTERATION.																								
P	F	LT		65.5 / 66.2			FLTZ					GG	20																									
												QZ	50																									
P				66.2 / 93.5			XLTF			3	A	MS	15	FX	FG / LB					FV	90			3	07	O	10	P	15			D	05	L	01			MG	5
L												LF	10	CB	FD / IB					FO	60											D	TR					
R					AS ABOVE W/ 2 (<2cm) MSSX BANDS		BUT MINOR INTERBEDDED ARGL (10cm) IN LOWER HALF OF INTERVAL					IN UPPER PART OF INTERVAL 5X INCREASE IN LOWER 2M OF INTERVAL 50cm OF INTERVAL CARB MTX INCREASES TOWARDS FAULT @ 73.2-73.6																												
P				93.5 / 103.1			ARGL		51		NN	GR	05	CB	LM / LB					FO	70			3	03	$	05					D	03						
L												QZ	30	PY						FV	90																	
R					SILICEOUS ARGL FINELY LAMINATED BLACK AND WHITE W/ MINOR QZ SWEATS.																				0.5m CARB (CREASTONE) DYKE														
P	F	LT		103.1 / 104.0			FLTZ					GG	90																									
												GR	05																									
P				104.0 / 131.0			ARGL		51		NN	GR	10	QZ	LM / LB					FO	65			3	05	$	01					D	05						
L							SMSX 5					PY	10	CB																									
R					TYPICAL SILICEOUS ARGL, CORE IS SPLIT FROM 111.6 TO 123.6 DUE TO MORE ABUNDANT PORPHYROBLASTIC PY AND A NARROW ZONE OF SEMI MASSIVE SX + SYNOPTHIC CHERT (<0.5m) AT 117.1m.																																			
P	S	E	X	131.0 / 132.2			SEXL				A	QZ	90	CB	LM / AP					LM	75					$	04					$	05						
L												SX	05																									
R					POSS BLE SILICA EXHALITE (CHERT) BUT COULD ALSO BE QZIT. FAVOUR FORMER DUE TO POSITION (TOO HIGH UP FOR KHQ). WATCH FOR GEOCHEM ANALYSIS.																																			
P				132.0 / 142.5			ARGL		51		NN	GR	15		LM / LB					FO	65			3	03	O	02					D	02						
L												QZ	30																									
R					MUCH AS PREVIOUS INTERVALS EXCEPT GRAPHITE CONTENT NOTABLY HIGHER FOR MIDDLE HALF OF INTERVAL																																			
P	F	LT		142.5 / 143.9			FLTZ				NN	GG	70																									
P				143.9 / 165.1			ARGL		51	7	A	GR	05	PY	LM / B					FO	70					D	05					D	07						
L							QZIT 10					QZ	40	CB	IB					FO	40																	
R					LOOKS LIKE THE PREVIOUS UNITS OF ARGL HOWEVER THIS INTERVAL CONTAINS ABOUT 10% NARROW QZ-T BANDS/BEDS AND MINOR SECTIONS THAT I WOULD REFER TO AS CARBONACEOUS QZCRITS. ∴ THIS MIGHT BE KENO HILL FM.																																			

Project: MARG

Logged By: PMH

Atna Resources Ltd.

Diamond Drill Log

Hole Id.: AM 88-32

Page: 3 of 3

I	Flag F	L	G	Interval FROM XXX.X	TO XXX.X	G-tec % Rec / % RQD	Lithology Fm	LITH 1 / LITH 2	%Mix	RM1 / RM2	Color S	CL	Components C1 / C2	%	C3 / C4	Texture Tx1 / Tx3	Tx2 / Tx4	Fragments Ty / Sh	Sz / %	MxP / Sort	M / H	Structure SD1 / SD2	AC	Veins Vm / Or	AT / VM	Alteration Qz Cl H	Amt	Cb Ep H	Amt	Ms Cy H	Amt	Ba H	Amt	Mineralization Py Cp H	Amt	Sp Gn H	Amt	Po H	Amt	Sum AF	In / MF	In
P				165.1	209.8		KHQ	QZ1T			1	A	QZ	75	PY	IB	MX					FO	20					O	04					D	01					
L				·	·			ARGL	40				CR	03	CB	SG	FD					FO	0																	
R				·	·	Very	Typical	Kemo	Hill	QZ1T	MX	thick to thin beds of clean massive sugary QZ1T with																														
				·	·	The	siliceous	variety.					Note	foliation	goes to 0	and	back	to	60	°	suggesting	fold	nose	within	this																
				·	·	interval.																																				
	EOH			·	·																																				
A	DDZ			53.3	57.5			188181																																	
				57.5	65.5			182																																	
				65.5	73.2			183																																	
				73.6	80.6			184																																	
				80.6	91.5			185																																	
				91.5	93.5			186																																	
				93.5	103.1			187																																	
				103.1	111.8			188																																	
				123.6	131.2			189																																	
				131.2	132.4			190																																	
				132.4	142.5			191																																	
				193.9	155.0			188192																																	
	EOH			·	·																																				
				·	·																																				
R	Slu	m		0.	204.8		Hole cored thru deep overburden off 53m bedrock intersecting moderately mus. altered XLTF. This XLTF																																				
				·	·		is 40m thick and ends with 2-10cm bands of massive sulphide at the lower contact with ARGL. ARGL is																																				
				·	·		finely laminated graphitic and siliceous layers with up to 5% disseminated euhedral pyrite. The ARGL																																				
				·	·		is almost 50m thick and has a narrow pyritic interval and (no values) and a metres of either																																				
				·	·		sext or QZ1T. If the latter then the contact with Kemo Hill is very poorly defined.																																				
				·	·		Fault zone at 142.5 may mark this contact with Kemo Hill ARGL, followed by "clean" QZ1T																																				
				·	·		at 165.1m.																																				
				·	·																																				
				·	·		Geochem samples to check alt'n intensity of 10l's and see if chemical distinctions																																				
				·	·		between "ore sequence" ARGL and Kemo ARGL.																																				
				·	·																																				
				·	·																																				
				·	·																																				
				·	·																																				
				·	·																																				
				·	·																																				
				·	·																																				

ATNA RESOURCES LTD

DIAMOND DRILL LOG

Project: MARG. (RE-LOG)

Drill Hole Id.: 90-45

Hole Azimuth: 360° **Dip:** -55° **Total Depth:** 411.2m

Date Started: _____ **Date Completed:** _____ **Core Size:** _____

	Northing	Easting	Elevation
UTM Location:	7098002	525493	1392
Grid Location:			
Collar Survey:			

Down Hole Survey

Survey Method: _____

Depth	Azimuth	Dip*

*corrected

Sample Information

Split By: _____

# of Samples: 188033 → 188064 Type: _____

Date Shipped: _____ Assay Certificate # : A002251

Analytical Lab: ACME

Drill Information

Drill Contractor: _____ Drill Size: _____

Driller: _____
Driller: _____
Helper: _____
Helper: _____

Shift	Distance	Shift	Distance

Geological Summary

Purpose / Target: SECTION 1500E

Comments: _____

Key Intersections

From	To	Results

Logged By: PMH & LHW

Project: _____

Logged By: PmH LHW

Atna Resources Ltd.

Diamond Drill Log

Hole Id.: 90-45

Page: 2 of 6

I	Flag F	L	G	Interval FROM XXX.X	TO XXX.X	G-tec % Rec / % RQD	Fm	Lithology LITH 1 / LITH 2	%Mix	RM1 / RM2	Color S	CL	Components C1	%	C3 / C2	%	C4	Texture Tx1	Tx2 / Tx3	Tx4	Fragments Ty / Sh	Sz / %	MxP / Sort	M / H	Structure SD1	AC / SD2	AC	Veins Vm / Or	AT / VM	Alteration Qz Cl H	Amt	Cb Ep H	Amt	Ms Cy H	Amt	Ba H	Amt	Mineralization Py Cp H	Amt	Sp Gn H	Amt	Po H	Amt	Sum AF / MF	In / in
P				0.	41.0			OVER																																				
				.	.																																						
P				41.	48.6			ARGL				NN	GR	05	Py	QS	ZB							FO	50		V	20			P	10			L	05						
				.	.								QS	20																														
P	FLT			48.6	53.6			FLTZ																																				
R				.	.	RUBBLE AND POOR RECOVERY.																																								
P				53.6	69.2			QXAT			7	AG	QX	02	MS	PP	CL							FO	45		V	05	O	10	P	15			6	03						
L				.	.			ARGL 30					CB	10	Py	LB	IB																										
R				.	.	TYPICAL CRENULATED ASH TO LAPILLI TUFF WITH RARE BUT UBIQUITOUS QFP EYES TO 3mm. APPROX 30% INTERMIXED AND INTERBEDDED ARGL.																																								
				.	.																																						
P				69.2	109.6			ARGL					GR	02	QS	LM	ZB	LF	5	20			FO	65		3	10	#	05	P	10			D	02						
L				.	.			ASHT 10					LF	10		FR	IB	EL	10																								
R				.	.	BORDERLINE BETWEEN ARGL AND ARGL. QUIET SILICEOUS W/ MINOR INTERBEDDED ASH AND CARB TINTED GRST (??) (>1m CORE OF INTERVAL)																																								
				.	.	SOMEWHAT GRADATIONAL CONTACTS.																																								
P				109.6	111.1			ASHS			3	AG	MS	15	CL	FG	LM							FO	45		P	10	3	15	$	15			L	05						
L				.	.								CB	15	QZ															Q	5												
R				.	.	NOT A SIGNIFICANT THICKNESS BUT POSSIBLE CHLORITE ALTERATIONS(?) AT BOTTOM.																																								
				.	.																																						
P	M	I	N	111.1	116.3			MSSX					SX	60	QZ	BN							LM	50		J	15	J	15					M	40	L	6				
L				.	.								CB	15																					D	6	D	2				
R				.	.	INTERVAL BEGINS WITH 3m QZ-CARB RICH ZONE (B)/ BANDS OF MASSIVE SX AND/OR CRUSH AGGREGATES, THEN BECOMES MASSIVE BANDED																																								
				.	.	WITH BN RICH LAYERS DEFINING BANDING. CB IS DISTRIBUTED THROUGHOUT INTERVAL. MINOR ARGL INTERBEDS.																																								
P	M	I	N	116.3	126.			ARGL			1	AG	MS	20	QZ	TR	LM							FO	50		3	05	O	05	P	20			L	15	L	04				
L				.	.			SMSX 25					CR	02	CB	FO																				L	02						
R				.	.	A MIXED INTERVAL OF ARGL + ASHT + SULPHIDES MOST OF SULPHIDES IN UPPER 1m. ONLY CONSIDERED BX CALLED ASHT																																								
				.	.																																						
P				126.0	169.2			QXLT			7	AG	QX	05	MS	PP	FR	LF	05	25			FO	70		V	07	O	03	P	25			J	01	L	.5				
L				.	.								LF	10	CB	LM	CR	EL	10	M																						
R				.	.	RELATIVELY HOMOGENEOUS QZ EYE RHYOLITE TUFF. VARIES FROM XTAL-RICH TO LITHIC-RICH TO ASHY. MODERATE MUSC ALT'N																																								
				.	.	WITH LOCAL LAMINAE OF SX. QZ EYES TO ½mm BUT TYPICALLY 3mm.																																								
P				169.2	184.5			ASHT			5	BG	MS	25	QZ	FG	LM							FO	60		V	15	O	05	P	25			L	02						
				.	.								CL	07	CB	FO	CR													L	07												
				.	.	BLUE-GRN, FINE GRAINED ASH WITH RARE FINE QZ EYES AND CHLORITE BANDS OF LAMINAE LC IS GRADATIONAL. AS ABOVE																																								
				.	.	QZ SWEATS.																																								
P				184.5	211.8			QXAT			9	VG	QX	03	QZ	FG	CR							FO	50		V	01	O	10	P	30			D	01						
L				.	.			ARGL 10					MS	30	CB	LM	LB																										
R				.	.	FINE GRAINED, MODERATE TO STRONG MUSC. ALT IN A QZ XTAL ASH TUFF (± LAPILLI FRAGS). SOME (10%) INTERBEDDED + INTERMIXED																																								
				.	.	ARGL.																																						

Project: _____

Logged By: _____

Atna Resources Ltd.

Diamond Drill Log

Hole Id.: 90-45

Page: 3 of 6

Flag				Interval		G-tec	Lithology					Color		Components					Texture		Fragments				Structure		Veins		Alteration								Mineralization						Sum	
																												Qz		Cb		Ms		Ba		Py		Sp		Po			
																												Cl		Ep		Cy				Cp		Gn					
I	F	L	G	FROM	TO	% Rec	Fm	LITH 1	%Mix	RM1	S	CL	C1	%	C3	Tx1	Tx2	Ty	Sz	MxP	M	SD1	AC	Vm	AT	H	Amt	H	Amt	H	Amt	H	Amt	H	Amt	H	Amt	H	Amt	AF	in
				XXX.X	XXX.X	% RQD		LITH 2		RM2			C2	%	C4	Tx3	Tx4	Sh	%	Sort	H	SD2	AC	Or	VM	H	Amt	H	Amt	H	Amt	H	Amt	H	Amt	H	Amt	H	Amt	MF	in
N				203·2	206·2			ARGL				NN				FG	LM																								
				·	·																																				
P				211·8	215·9			ARGL				NN	GR	01	MS	IB	FR	LF	03	15		FO	75			V	03	O	05	P	10			D	04						
L				·	·			ASHT	20				QZ	03	CB			FL	10																						
R				·	·	BLACK SILICEOUS ARGL WITH LOCAL ARGYS							COLOUR			LIKE			10-70%		SILICEOUS FRAGS.			MINOR QZ VEINLETS & INTERBEDDED ASHT																	
				·	·																																				
P				215·9	226·2			ASHT				TA	MS	20		IB	MT																								
L				·	·			ARGL	20							CR																										
R				·	·	A MIXED INTERVAL OF ASHT AND SED. MEMBERS													MOD TO STRONG MS ALT'N PARTIALLY BANDED ARGL.																								
				·	·																																				
P				226·2	227·7			CBEX				UW	CA	95																												
L				·	·								SX	05																												
R				·	·	WHITE CALCITE BAND W APPROX 5% SX. COULD BE SYNGENETIC BUT PRESENCE OF SX SUGGESTS EXHALATIVE ORIGIN.																																						
				·	·																																				
P	N		N	227·7	235·4			PMDS				NN	GR	05		LM	FO											L	03					L	03	7	10					
L				·	·																																					
R				·	·	PYRITIC MUDSTONE. VERY THIN, DELICATE PL LAMINATIONS IN SOT BLACK ARGL W FINE SILICEOUS FRAGS. GRADES DOWN INTO THINLY																																						
				·	·	LAMINATED BARITE (?) AND THEN SILICA EXHALITE (BOTH ABOUT 10 cm THICK.																																						
P				235·4	246·7			CBEX				9A	CA	50	GR	MT	IB											J	10	MX	50			L	05	7	05	L	01			
L				·	·			ARGL	30				SX	07	QZ																					D	TR					
R				·	·	UNUSUAL INTERVAL OF SULPHIDE BEARING CALCITE (± RHODONITE ± RHODOCROSITE ± BARITE) SOME INTERCALATED ARGL AND ASH.																																						
				·	·																																				
P	E	L	T	246·7	246·9			FLTZ					GG	90																												
				·	·																																				
P				246·9	259·7			LLTF				5 AT	LF	30	CB	FL	LB	LF	6	25						V	05	W	20	P	35			D	03						
L				·	·								MS	35		CR		FL	30	G																					
R				·	·	INTENSELY MS ALTERED LAPILLI (?) TUFF. LENSOID BANDED THEREFORE COULD BE BLOOD FRAGMENTAL. RARE QZ EYES.																																						
				·	·																																				
P				259·7	299·8			ARGL				NN	GR	08	CA	LB	FR							FO	75			V	10	D	07					D	03					
L				·	·								QZ	10	PY	LM	VN																								
R				·	·	LOWER PART OF INTERVAL WOULD QUALIFY FOR ARQ DESIGNATION. ROCK IS LOCALLY VERY GRAPHITIC. FISSILITIES CONSISTS OF BLACK NAPPY																																						
				·	·	WITH 30% QZ + CA FRAGMENTS.								GRST		DYKE		(Fe-CARB ALTERED) FROM 263.5 - 264.8. FAINT GOUGE 269.3 - 273.4; 280.5 - 280.7																								
N	F	L	T	269·3	273·4			FLTZ					GG	60				(approx. 2 m of core missing - all within ARGL)																								
				·	·	> 2, 30 cm intervals of Fe-CARB ALT'N NEAR BOTTOM OF INTERVAL.																																						
P				299·8	301·5			ASHT				FAC	MS	30	CB	LB	VN							FO	50			V	10	D	10	P	30			D	01					
L				·	·								QZ	10	PY																										
R				·	·	INTENSLY MS ALTERED LENSOID BANDED VOLC ROCK - LIKELY SOME FORM OF TUFF.																																						
				·	·																																				

Project: _____

Atna Resources Ltd.

Hole Id.: 90-45

Logged By: _____

Diamond Drill Log

Page: 4 of 6

I	Flag F	L	G	Interval FROM XXX.X	TO XXX.X	G-tec % Rec / % RQD	Fm	Lithology LITH 1 / LITH 2	%Mix	RM1 / RM2	Color S	CL	Components C1	%	C3 / C4	Texture Tx1	Tx2 / Tx3	Tx4	Fragments Ty / Sh	Sz / %	MxP / Sort	M / H	Structure SD1	AC / SD2	AC	Veins Vm / Or	AT / VM	Alteration Qz / Cl H	Amt	Cb / Ep H	Amt	Ms / Cy H	Amt	Ba H	Amt	Mineralization Py / Cp H	Amt	Sp / Gn H	Amt	Po H	Amt	Sum AF	In MF	In
P	M	I	N	301.5	304.7			SMSX					SX	40	Q7	LM	BN											3	05			P	20			L	30	L	05					
L				·	·								MS	20																					D	05	D	02					
R				·	·	INTERVAL BEGINS WITH NARROW BANDS (5-20cm) OF SMSX TO MSSX INTERSPERSED WITH MUSC SCHIST																																									
				·	·	INTERVAL MASSIVE LAMINATED SX.																																								
P	M	I	N	304.7	307.2			ASHT					MS	30	Q2	FG	LB											V	05	W	15	P	30			L	05	L	01					
L				·	·			SMSX	15				CB	15	SX																					D	01							
R				·	·	SILVER PHYLLITE WITH A FEW 5-10cm BANDS OF MSSX TO SMSX.																																								
				·	·																																							
P				307.2	308.7			CRST		CB	5	T	CB	20		FG	FO							FO	80			V	03	P	20					U	03							
L				·	·																																							
R				·	·	FINE GRAINED WELL INDURATED, TAN TO ORANGE WEATHERING, ROCK PRESUMED TO BE CHERTIFIED CRST CONSISTS																																								
				·	·	SHARP AND COMMONLY MARKED BY QZ VN.																																								
P	M	I	N	308.7	309.6			SMSX					SX	30																							L	25	L	04					
L				·	·																																	D	02	D	T2					
R				·	·	INTERVAL CONSISTS OF MASSIVE TO SEMI-MASSIVE BANDS SEPARATED BY GRAPHITIC ASH.																																								
				·	·																																							
P				309.6	313.8			ASHT			5	AU	MS	20	CB	LB	LM							LM	90			3	03	W	05	P	20			L	10							
L				·	·								PY	10	LF	CR																												
R				·	·	INDISTINCT UNIT, LIKELY REPRESENTS A MUDDY OR DIRTY FELSIC TUFF.																																								
				·	·																																							
P				313.8	315.6			CRST		CB	5	O	CB	40	PY	MX											3	10	P	40	P	10			U	05							
L				·	·								MS	10	Q7												Q	03															
R				·	·	DARK ORANGE, MASSIVE WELL INDURATED HARD QZ-FD DISPLASTIC ROCK WHICH WEATHERS ORANGE AND CONTAINS EUHEDRAL PY. NUMEROUS																																								
				·	·	WALL ROCK INCLUSIONS AT UPPER CONTACT																																								
P				315.6	320.			ARGL			3	A	CB	02	Q2	LB	FR							FO	50			3	02	P	10					L	05							
L				·	·								CA	10	PY																												
R				·	·	CALCITE RICH ARGL W/ MINOR ARGILLACEOUS FELSIC CHIPS																																								
				·	·																																							
P				320	351.			CRST			5	OT	CB	30	MS	MX	PP							FO	60			3	05	P	30	P	10			U	02							
				·	·			ASHT	10				QZ	05	PY	LB	FG																											
				·	·	A MORE CONVINCING VERSION OF PREVIOUS. CORE OF INTERVAL IS CRST WITH FAINT PORPHYRITIC TEXTURE. RUSTY CARBONATE																																								
				·	·	ALTERED ON MARGINS. NESTED INTERVAL OF MUSC ALTERED ASH AND VERY FINE INCLUSIONS OF ARGL LAMINAE. 1mm-5cm.																																								
P				351.	354.7			LATF			7	A	MS	35		LB	FR		LF	5	20			FO				V	02	+	01	P	35			D	03							
				·	·								LF	15		FG			FL	15													(35.4)										
				·	·	FAIRLY TYPICAL LENSOID BANDED INTENSELY MS ALTERED TUFF, CONTAINS A 50cm COARSE ROCK. ENDS IN COARSE DEFINED																																								
				·	·	FROM LATF.																																								
P	FLT			354.7	355.2			FLTZ					GG	90	(40 cm of gouge in contact w ARGL)																															
				·	·																																							

Project: MARC

Logged By: [illegible]

Atna Resources Ltd.

Diamond Drill Log

Hole Id.: 90-45

Page: 5 of 6

I	Flag F	L	G	Interval FROM XXX.X	TO XXX.X	G-tec % Rec / % RQD	Fm	Lithology LITH 1 / LITH 2	%Mix	RM1 / RM2	Color S	CL	Components C1	%	C3 / C4	Texture Tx1	Tx2 / Tx3	Tx4	Fragments Ty / Sh	Sz / %	MxP / Sort	M / H	Structure SD1	AC / SD2	AC	Veins Vm / Or	AT / V/M	Alteration Qz / Cl H	Amt	Cb / Ep H	Amt	Ms / Cy H	Amt	Ba H	Amt	Mineralization Py / Cp H	Amt	Sp / Gn H	Amt	Po H	Amt	Sum AF / MF	In / in
P				355.2	360.2			ARGL				NN	QZ	08	CB	FO								FO	85			V	10	O	03	P	04			D	05						
L				.	.								QZ	10	PY																											
R				.	.																																					
P				360.2	363.5			CRST					CB	25																												
L				.	.								MS	10																												
R				.	.	STRONGLY		PARTLY CARB. ALTERED, WEAK MINERALIZED CRST.																																				
P				363.5	367.5			LATF				7 AG	MS	20		CR	FR		1F	5	15		FO	75					05	W	03	P	20			D	02						
L				.	.								LF	05		LB			FL	5																						
R				.	.	FOSSIL		PYROCLASTIC WITH LOCAL CONCENTRATIONS OF LAPILLI FRAGMENTS, REMAINDER ASH TUFF (?)																																						
P				367.5	394.2			ARGL				NN	QZ	05	MS	QS	FO						FO	75					3	20	O	05					D	05						
L				.	.								QZ	20	PY																												
R				.	.	TYPICAL QR-QZ VEINED/SHEARED								ARGL		W/ INCREASING QZ-SST								INTERCALATIONS TOWARDS BOTTOM OF INTERVAL.																					
N				384.8	390.6			GYWK					QZ	80	MS																												
L				.	.								CB	05	CK																												
R				.	.	QZ		RICH GREYWACK (DIRTY QZ SANDSTONE) CONTACTS W/ ARGL ARE GRADATIONAL																																						
D	FLT			394.2	395.0			FLTZ					QG	90																												
L				.	.																																					
R				.	.	- BELIEVE THIS IS WHAT HAS BEEN PERCEIVED AS THRUST FAULT																																						
P				395.0	411.2			ARGL				NN	QR	10		FO	QS												V	10	L	05					L	03						
				.	.								QZ	10		IB																											
				.	.	FAIRLY TYPICAL CRYPTIC ARGILLITE WITH INTERBEDDED PURE QZ ITE (KENO HILL?)																																						
N				403.	406.2			QZIT				7 A	QZ	90		CR	MX												V	05														
E	OH			.	.																																						
R	SUM			O.	411.2			Hole summarized as follows: Uppermost 75m predominantly argillite with lesser amounts of tuffaceous material. Two main mineralized horizons occur and can be correlated with relative certainty with the uppermost and lowermost mineralized horizons of hole 97-78 (along section 1500E). The first mineralized horizon occurs @ 111.1 m and is approx. 9.2 m thick. The second interval occurs @ 301.5m and is approx. 9.1m thick. This second mineralized horizon consists of bands of SMSX + MSSX within a fine-grained tuffaceous unit. A greenstone dyke? sill? also cuts this mineralized horizon between 307.2 - 308.7 m. Between the 2 main mineralized horizons at approx. 224.2m are two units of CBEX.																																								

P.6 CONT ON →

Project: MARG

Logged By: PMH + LHW

Atna Resources Ltd.

Diamond Drill Log

Hole Id.: 97-45

Page: 6 of 6.

Flag				Interval		G-tec	Lithology					Color		Components				Texture		Fragments				Structure		Veins		Alteration								Mineralization						Sum	
																												Qz Cl		Cb Ep		Ms Cy		Ba		Py Cp		Sp Gn		Po			
I	F	L	G	FROM XXX.X	TO XXX.X	% Rec % RQD	Fm	LITH 1 LITH 2	%Mix	RM1 RM2		S	CL	C1 C2	% %	C3 C4		Tx1 Tx3	Tx2 Tx4	Ty Sh	Sz %	MxP Sort	M H	SD1 SD2	AC AC	Vm Or	AT V/M	H	Amt	H	Amt	H	Amt	H	Amt	H	Amt	H	Amt	H	Amt	AF MF	In in
A	00		2	98.4	104.2		188083											A 002		227.7 - 235.4				188050		PMDS															
				104.2	103.7		188084													235.4 - 246.7				188051		CBEX + BA?															
				120.0	123.3		188085													246.7 - 252.7				188052																	
				123.3	126.0		188086													252.7 - 259.7				188053																	
				126.0	134.4		188087													259.7 - 269.4				188054																	
				134.4	141.9		188088													269.4 - 276.9				188055																	
				141.9	151.0		188089													276.9 - 288.1				188056																	
				151.0	159.0		188040													288.1 - 299.4				188057																	
				159.0	169.2		188041													310.7 - 313.2				188058																	
				169.2	183.5		188042													313.8 - 315.6				188059																	
				183.5	192.8		188043													315.6 - 320.0				188060																	
				192.8	203.2		188044													320.0 - 325.0				188061																	
				203.2	206.3		188045													325.0 - 328.0				188062																	
				206.3	211.8		188046													328.0 - 335.0				188063																	
				211.8	215.9		188047.													335.0 - 347.5				188064																	
				215.9	226.2		188048																																		
				226.2	227.7		188049	CBEX																																		
				.	.																																			
RSum				0.	411.2		(1.5 m thick and 11.3 m thick respectively). Between these CBEX units is a 8.7 m-thick unit																																				
				.	.		of what appears to be PmDS. This package of CBEX + PmDS seems to correlate reasonably																																				
				.	.		well with the BAEX + SmSX units of hole 97-78 (@ ~285m depth). Note: The CBEX units of																																				
				.	.		this hole may contain Ba.																																				
				.	.		Many fault-gouge zones appear throughout hole but are more common in lower half of hole.																																				
				.	.		The fault @ 304.2m which was provisionally mapped as a major thrust fault may not be a																																				
				.	.		major thrust as we don't see any major change in stratigraphy across the fault. Kano Hill strata																																				
				.	.		appears below the fault with interbedded carbonaceous argillite																																				
				.	.		Overall the hole is a mixed bag of clastic sediments + volcanics. A definitive zonation in																																				
				.	.		the mineralized horizons is lacking and this can not give proper top indicators. The upper																																				
				.	.		most horizon appears to be right-way-up with ARGL above the intersection and volcanics																																				
				.	.		below. The lowermost horizon may be slightly folded with BSHT + ARGL above and below intersection.																																				
				.	.		A similar situation may also exist for the CBEX - PmDS - BAEX horizons																																				
				.	.																																				
				.	.																																				
				.	.																																				
				.	.																																				
				.	.																																				
				.	.																																				
				.	.																																				

ATNA RESOURCES LTD

DIAMOND DRILL LOG

Project: MARG (RE-LOG)

Drill Hole Id.: 96-52

Hole Azimuth: 003° **Dip:** -60° **Total Depth:** 293.2m

Date Started: _____ **Date Completed:** _____ **Core Size:** _____

	Northing	Easting	Elevation
UTM Location:	7098106.17	526098.32	1518.28
Grid Location:			
Collar Survey:			

Down Hole Survey

Survey Method: _____

Depth	Azimuth	Dip*

*corrected

Sample Information

Split By: _____

# of Samples: 188137 → 188146 Type: _____

Date Shipped: _____ Assay Certificate # : A002667

Analytical Lab: ACME

Drill Information

Drill Contractor: _____ Drill Size: _____

Driller: _____
Driller: _____
Helper: _____
Helper: _____

Shift	Distance	Shift	Distance

Geological Summary

Purpose / Target: SECTION 2100E

Comments: _____

Key Intersections

From	To	Results

Logged By: LHW

Project: MARG

Logged By: LHW

Atna Resources Ltd.

Diamond Drill Log

Hole Id.: 96-52

Page: 2 of 7

I	Flag F	L	G	Interval FROM XXX.X	TO XXX.X	G-tec % Rec / % RQD	Fm	Lithology LITH 1 / LITH 2	%Mix	RM1 / RM2	S	CL	Color	Components C1	%	C3 / C4	Texture Tx1 / Tx3	Tx2 / Tx4	Fragments Ty / Sh	Sz / %	MxP / Sort	M / H	Structure SD1 / SD2	AC / AC	Veins Vm / Or	AT / V/M	Alteration Qz / Cl H	Amt	Cb / Ep H	Amt	Ms / Cy H	Amt	Ba H	Amt	Mineralization Py / Cp H	Amt	Sp / Gn H	Amt	Po H	Amt	Sum AF / MF	In
F				0.0	6.4			OVER																																	
P				6.4	37.9			QZIT			5	A		QZ	80		MX	VN									V	10	3	05										
L				.	.									CB	05																										
R				.	.			Highly broken/shattered heavily fe-stained (unsheared) QZT GRWK @ 6.98-10.5m. Fault gouge @ 28.0m (20 cm thick -																																					
				.	.			origin of graphitic ARGL ?) and @ 36.1m (x 50 cm thick in graphitic ARGL?). Lower contact is sharp and marked																																					
				.	.			at 20° cm - thick fault gouge																																					
				.	.																																					
P				37.9	38.9			ASHT			8	GA		MS	30	QZ	CR	FO						FD	55			V	03	3	10	P	30								
L				.	.									CB	10																										
R				.	.			Pale green/grey ASHT. Strong sericitic alteration. Highly broken and moderate to heavy fe-staining. Lower contact																																					
				.	.			is sharp and marked by heavily broken core (rubble).																																					
P				38.9	42.1			QZIT			5	A		QZ	80		MX	VN									V	05	3	05										
L				.	.			GRWK	10					CB	05		IB																									
R				.	.			Highly broken, moderately fe-stained QZIT with interbedded GRWK. GRWK interbeds are 20-30 cm thick. Lower contact																																					
				.	.			is sharp and marked by 10cm - thick buff qtz vein.																																					
P				42.1	43.4			ASHT			6	DG		CB	20	MS	FS	FD									P	15	3	20	P	15								
L				.	.			(GNST?)						QZ	15												$	QZ													
R				.	.			Strong Fe-carb altered FGN (?) or GNST (?) Siliceous Massive to weakly foliated - foliation is ~80-90° to core																																					
				.	.			axis. Possibly QZ% sheeted chlorite. Rare 1-2mm blebs of bright green mica. Lower contact is sharp.																																					
P				43.4	47.1			QZIT			5	A		QZ	80		MX	VN									V	10	3	05										
L				.	.									CB																										
R				.	.			Highly broken/shattered QZT (very poor recovery). Fault gouge @ 43.7m (~20 cm thick). Lower contact is sharp.																																					
P				47.1	54.6			ASHT			8	G		MS	25	QZ	MT											V	10	3	10	P	25								
L				.	.									CB	10	CL											$	10													
R				.	.			Pale green (LCA ~10%) mixed ASHT. QZ is in the form of sweats and sericitizations. Strong sericitic alteration																																					
				.	.			Fault gouge (~5%) and broken core between 53.6 - 54.0 m. Lower contact is gradational with extensive																																					
				.	.			mixing of ASHT with underlying QZIT + GRWK																																					
				.	.																																					

Project: MPPS GRST = grit stone

Atna Resources Ltd.

QF = Qtz. + feldspar

Hole Id.: 96-52

Logged By: LHW

Diamond Drill Log

Page: 3 of 7

I	Flag F	L	G	Interval FROM / TO	G-tec % Rec / % RQD	Lithology Fm / LITH 1 / LITH 2	%Mbd	RM1 / RM2	Color S / CL	Components C1 % C3 / C2 % C4	Texture Tx1 Tx2 / Tx3 Tx4	Fragments Ty Sz MxP / Sh % Sort	M	Structure SD1 AC / SD2 AC	Veins Vm AT / Or V/M	Alteration Qz / Cl H Amt	Cb / Ep H Amt	Ms / Cy H Amt	Ba / ?r H Amt	Mineralization Py / Cp H Amt	Sp / Gn H Amt	Po H Amt	Sum AF / MF	In
N				53.0 / 56.6		FLTZ				GG 55														
				. / .		Highly broken core and fault gouge																		
P				54.6 / 61.1		GRWK			4 A	QZ 60 CB	MT IB					V 10	3 10	$ 15						
L				. / .						MS 15 GR									$ 02					
R				. / .		Extremely heterogeneous unit of thin graphitic ARGL, GRWK and QZIT → total mixed bag! Lowermost 1.5 m is																		
				. / .		GRWK & QZIT. Lower contact is relatively sharp																		
D				61.1 / 66.0		GNST(?)			5 OG	CB 20 PY	FG MX					? 15	? 20	$ 05		D 03				
L				. / .						QZ 15 MS	IB		H	6										
R				. / .		Very fine-grained massive siliceous (hardness 5-6) GNST? Py is in the form of fine-grained anhedral 0.5-1.0 cm																		
				. / .		aggregates. 5-10 cm interbeds of graphitic ARGL throughout GNST portion of unit shows strong Fe-carb																		
				. / .		alteration. Lower contact is sharp.																		
P				66.0 / 82.9		ARGL			NN	GR 05 PY	MT LB			BN 70		V 15	3 03			D 05				
L				. / .						QZ 15 CB									P 05					
R				. / .		Mottled / lenticular banded graphitic ARGL. Py forms fine-grained subhedral aggregates (0.5 - 1.5 cm) to disseminated euh																		
				. / .		cubes 2-4 mm. Lower contact is sharp and marked by bull qtz vein.																		
D				82.9 / 84.0		GNST(?)			E OG	CB 20 MS	FG MX					P 15	P 20	$ 05		D 02				
L				. / .						QZ 15 PY						$ 05								
R				. / .		Fine-grained massive siliceous (hardness 5-6) GNST(?) Sheeted chlorite (?) Difficult to determine modal mineralogy																		
				. / .		due to fine-grained nature of rock. Strong Fe-carb alteration. 13 cm-thick interbed of graphitic ARGL.																		
				. / .		Py occurs as fine-grained disem. aggregates ~0.5 cm. Lower contact is sharp marked by 5cm bull qtz. vein																		
D				84.0 / 122.3		ARGL			NN	GR 07 CB	GR MT	QF 02 05		FO 70		V 10	3 07			D 07				
L				. / .		(GRST)	10			QZ 10 PY	FO	SA 20 3							P 07					
R				. / .		Carbonaceous gritstone. ~20% subangular to angular QF (Qtz + feldspar) fragments. Py occurs as disseminated cubes																		
				. / .		averaging 1-3 mm max. 0.5 cm. Core is highly broken. Fault gouge @ 90.1 m (~70 cm thick); @ 102.7m																		
				. / .		(~70 cm thick); and @ 121.7 m (~85 cm thick). Lower contact is sharp.																		
				. / .																				
				. / .																				
				. / .																				

Project: MARG

Logged By: LHW.

Atna Resources Ltd.

QF = qutz + feldspar

Diamond Drill Log

Hole Id.: 96-52

Page: 4 of 7

I	Flag F	L	G	Interval FROM XXX.X	TO XXX.X	G-tec % Rec % RQD	Lithology Fm	LITH 1 / LITH 2	%Mix	RM1 / RM2	Color S	CL	Components C1	%	C3 / C4	Texture Tx1 / Tx2	Fragments Ty / Sh	Sz / %	MxP / Sort	M / H	Structure SD1 / SD2	AC / AC	Veins Vm / Or	AT / VM	Alteration Qz / Cl H	Amt	Cb / Ep H	Amt	Ms / Cy H	Amt	Ba / Gr H	Amt	Mineralization Py / Cp H	Amt	Sp / Gn H	Amt	Po H	Amt	Sum AF	In / MF	In
P				122.3	129.1			GNST			5	06	QF	20	MS	FG	FD				FD	60			V	05	V	15	$	05			D	02							
L				.	.								CB	15	CL										$	05?					but still	not entirely convinced!								
R				.	.		Fine-grained moderately Fe-carb altered. Medium green colour → more predominantly GNST. Hardness ~ 5.5, looks siliceous																																					
				.	.		likely predominantly QTZ + FELDSPAR aggregates. Graphitic ARGL interbed @ 126.80 - 127.0 m. Py occurs																																					
				.	.		as 0.5 - 1.0 cm fine-grained aggregates. Mixing of GNST + graphitic ARGL in lowermost 1.0 m of unit. Lower																																					
				.	.		contact is sharp and marked by patchy bull qtz. Weakly foliated.																																					
P				129.1	148.8			ARGL				NN	GR	05	PY	MT	LB								V	10	3	05					D	07							
L				.	.								QZ	10	CB																P	05									
R				.	.		Mottled / lenticular banded graphitic ARGL. Py occurs as disseminated EU cubes averaging 2 - 3 mm and max of																																					
				.	.		1.0 cm. Lower contact is sharp.																																					
P				148.8	155.3			GNST			5	06	QF	20	MS	FG	LM								V	01	3	15	$	05			D	01							
L				.	.								CB	15	CL	IB									$	05?															
R				.	.		Moderately to strongly carb-altered 2 - 10 cm laminae / interbeds of graphitic ARGL throughout Groundmass																																					
				.	.		predominantly QF (qtz + feldspar) ? → fine-grained Lower contact is sharp and marked by 50 cm Thick																																					
				.	.		bull qtz vein																																					
				.	.																																					
P				155.3	196.3			ARGL				NN	GR	05	CB	MT	LB								V	15	3	05					D	07							
L				.	.								QZ	5	PY	IB															P	05									
R				.	.		Mottled to lenticular banded graphitic ARGL. 5 - 40 cm interbeds of ASHT → in uppermost 18m of unit. Lower is just like GNST unit + at me																																					
				.	.		thinks intermediate vol. Some these interbeds (GNST? or int vol (ASHT?)) are moderately carb altered Py forms																																					
				.	.		EU cubes averaging 1 - 3 mm, max of 1.0 cm. ARGL interbeds @ 179.1 - 189.1 m and 189.9 - 190.8 m.																																					
				.	.		Lower contact is sharp.																																					
P				196.8	212.3			QZIT			5	A	QZ	80		MX	VN								V	10															
L				.	.											IB																									
R				.	.		Interbedded Karo qtz with graphitic ARGL to carbonaceous siltstone → interbeds 5 cm - 1 m thick. Broken																																					
				.	.		core and fault angle @ 20° 0m to 60cm thick. Lower contact is sharp.																																					
P				212.3	223.8			GRWK			5	A	GR	07	PY	FG	MX				FD	65			V	02	3	01					D	03							
L				.	.			(SLST)					MS	05	CB	FD															P	07									
R				.	.		Massive to weakly foliated graphitic GRWK to SLST (siltstone). Lacks the abundant qtz. veins and sweats																																					
				.	.		rusty ars common to the ARGL unit. Lower contact is sharp and marked by 15 cm-thick bull qtz.																																					

Project: MARG

Logged By: LHW

Atna Resources Ltd.

Diamond Drill Log

Hole Id.: 96-52

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	Flag			Interval		G-tec	Lithology				Color		Components			Texture		Fragments				Structure			Veins		Alteration								Mineralization						Sum	
																										Qz		Cb		Ms		Ba		Py		Sp		Po			
																										Cl		Ep		Cy		Gr		Cp		Gn					
I	F	L	G	FROM	TO	% Rec	Fm	LITH 1	%Mbd	RM_1	S	CL	C1	%	C3	Tx_1	Tx_2	Ty	Sz	MxP	M	SD_1	AC	Vm	AT	H	Amt	H	Amt	H	Amt	H	Amt	H	Amt	H	Amt	H	Amt	AF	In
				XXX.X	XXX.X	% RQD		LITH 2		RM_2			C2	%	C4	Tx_3	Tx_4	Sh	%	Sort	H	SD_2	AC	Or	V/M	H	Amt	H	Amt	H	Amt	H	Amt	H	Amt	H	Amt	H	Amt	MF	In
P				223.8	234.8			QZIT			5	A	QZ	80		MT	VN									V	15	3	01											
L				.	.			ARGL	10							MX	IB																							
R				.	.			Interbedded Kona Hill qtzite with graphitic ARGL to siltstone → graphitic ARGL interbeds are 20cm – 1.0m thick.																																			
				.	.	*		Fault gouge @ 229.0m (~70cm thick) → gouge in graphitic ARGL. GNST(?) / ASHT(?) between 230.4 – 231.1m (med.																																			
				.	.			grey/brn, fine-grained, mod. carb alteration). Lower contact is sharp.																																			
				.	.																																			
P				234.8	248.4			ARGL				NN	GR	07	CB	MT	LB									V	10	3	07					D	03					
L				.	.			QZIT	05				QZ	10	PY	IB															P	07							
R				.	.			Graphitic ARGL with interbedded QZIT. QZIT @ 239.8 – 240.7m and @ 242.9 – 244.9m. Foliation is variable to																																			
				.	.			folded. Uppermost ~5.0m of unit is highly broken with fault gouge throughout; fault gouge @ 238.4m																																			
				.	.			(~1.4m thick). Lowermost 3m of unit shows strong carb-alteration above MSSX unit → stratigraphy appears																																			
				.	.			to be right way up.																																			
P				248.4	249.3			MSSX					SX	70		BN																			M	60	L	05			
L				.	.								GR	05																					J	05	D	TR			
R				.	.			MSSX in graphitic ARGL. Weakly banded → defined by dark grey sphalerite.																																			
				.	.																																			
P				249.3	255.3			ARGL				NN	GR	07	QZ	MT										V	10	3	10											
L				.	.								CB	10																	P	07							
R				.	.			Highly broken / shattered graphitic ARGL → grey pieces of core show strong carb alteration. Overall, very poor recovery.																																			
				.	.			Fault gouge @ 251.4m (~60cm thick). Lower contact is sharp.																																			
P				255.3	256.6			MSSX					SX	80		BN																			M	70	L	07			
L				.	.																															J	05	D	01			
R				.	.			Banded MSSX – banding defined by dark grey sphalerite. Lower contact is sharp.																																			
				.	.																																			
P				256.6	260.1			ARGL				NN	GR	05	CB	MT	LB									V	10	3	10											
L				.	.								QZ	10		FD															P	05							
R				.	.			Moderately to strongly carb-altered graphitic ARGL. Lower contact is sharp and marked by 5cm-thick bull qtz																																			
				.	.																																			
				.	.																																			
				.	.																																			

Project: MARG

Logged By: LHW

Atna Resources Ltd.

Diamond Drill Log

Hole Id.: 96-52

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I	Flag F	L	G	Interval FROM XXX.X	TO XXX.X	G-tec % Rec % RQD	Fm	Lithology LITH 1 / LITH 2	%Mix	RM1 / RM2	Color S	CL	Components C1 / C2	%	C3 / C4	Texture Tx1 / Tx3	Tx2 / Tx4	Fragments Ty / Sh	Sz / %	MxP / Sort	M / H	Structure SD1 / SD2	AC	Veins Vm / Or	AT / V/M	Alteration Qz / Cl H	Amt	Cb / Ep H	Amt	Ms / Cy H	Amt	Ba / Gr H	Amt	Mineralization Py / Cp H	Amt	Sp / Gn H	Amt	Po H	Amt	Sum AF	In / MF	In
P				260.1	261.4			ASHT(?)			5	AG	MS	30	QZ	MT	LM									V	10	3	15	P	30									
L				.	.								CB	15	GR	CR	LB															8	03								
R				.	.			Mixed bag of strongly sericitized ASHT(?) → silver phyllite and graphitic ARGL. Mottled to laminated QZ stockworks																																					
				.	.			define lenticoid banding. ARGL laminae are 2mm'-5mm thick. Lower contact is sharp and marked by 5° cm																																					
				.	.			thick bull qtz																																				
				.	.																																					
P				261.4	293.2			ARGL	60			NN	GR	05	CB	MT	LB									V	15	3	07												
L				.	.			QZIT	40				QZ	15		IB															P	05									
R				.	.			Heterogeneous unit of graphitic ARGL + Keno Hill qtzite. Qtzite becomes more abundant towards bottom of unit.																																					
				.	.			Qtzite interbeds range in thickness from 20cm' to 2m. Contacts between interbeds are gradational. Foliation is																																					
				.	.			highly variable to folded.																																				
				.	.																																					
A	0	0	2	196.8	212.3			188137																																		
				212.3	283.8			188138																																		
				223.8	234.8			188139 QZIT																																		
				234.8	244.5			188140 ARGL																																		
				244.5	248.4			188141 CARB-ALTERED ARGL																																		
				249.3	255.3			188142																																		
				256.6	260.1			188143																																		
				260.1	261.4			188144 ASHT(?) + LAMINATED GRAPH. ARGL																																		
				261.4	278.0			188145 ARGL																																		
				278.0	293.2			188146 ARGL																																		
				.	(EOH).																																				
				.	.																																				
R	Sum			0.0	293.2			Overall an unusual hole which is almost entirely sediments with very little volcanics. The uppermost ~60m of																																				
				.	(EOH).			hole is predominantly Keno Hill qtzite with minor ASHT or GNST (?). Underlying Keno Hill qtzite is approxi-																																				
				.	.			mately 130m of graphitic ARGL with minor GNST → still a little confused about this GNST unit. It is																																				
				.	.			alwaysis moderately to strongly carb-altered fine-grained and relatively hard. Bright green mica																																				
				.	.			(fuchsite?) often occurs within this unit in trace amount. This unit appears to be predominantly																																				
				.	.			qtz. + feldspar. It often has a medium to dark green colour which may be attributed to the presence																																				

Project: MARG

Logged By: LHW

Atna Resources Ltd.

Diamond Drill Log

Hole Id.: 96-52

Page: 7 of 7

Flag				Interval		G-tec	Lithology					Color	Components			Texture		Fragments				Structure			Veins		Alteration								Mineralization						Sum	
																											Qz		Cb		Ms		Ba		Py		Sp		Po			
																											Cl		Ep		Cy				Cp		Gn					
I	F	L	G	FROM	TO	% Rec	Fm	LITH 1	%Mix	RM_1	S	CL	C1	%	C3	Tx_1	Tx_2	Ty	Sz	MxP	M	SD_1	AC	Vm	AT	H	Amt	H	Amt	H	Amt	H	Amt	H	Amt	H	Amt	H	Amt	AF	In
				XXX.X	XXX.X	% RQD		LITH 2		RM_2			C2	%	C4	Tx_3	Tx_4	Sh	%	Sort	H	SD_2	AC	Or	V/M	H	Amt	H	Amt	H	Amt	H	Amt	H	Amt	H	Amt	H	Amt	MF	In
RS	UM			0.0	293.2	CONT.																																			
				.	(EOH)			of chlorite or possibly some other matic mineral. Contact relationships suggest that it is not intrusive																																			
				.	.			Possibly a lateral equivalent to one of the other units.																																			
				.	.																																				
				.	.	continuing...																																				
				.	.			Underlying the thick ARGL package is approximately 10m of Keno Hill qtzte + GRWK + graphitic ARGL																																			
				.	.			graphitic ARGL becoming more abundant towards bottom of the hole. This package is likely a fold																																			
				.	.			repeat of the uppermost Keno Hill qtzte package at the top of the hole.																																			
				.	.																																				
				.	.			Two massive sulphide intersections occur within the lower Keno Hill qtzte + graphitic ARGL.																																			
				.	.			MSSX @ 248.4 - 249.3 m																																			
				.	.			MSSX @ 255.3 - 256.6 m																																			
				.	.			Graphitic ARGL occurs above and below both MSSX intersections and is strongly CARB altered.																																			
				.	.			Only one thin unit of ASHT(?) occurs below the second intersection @ 260.1 - 261.4 m, however it is																																			
				.	.			uncertain whether this is truly an ASHT → has a tuffaceous appearance but there is a lot of																																			
				.	.			graphitic ARGL mixed in with this unit.																																			
				.	.																																				
				.	.			Much fault gouge throughout entire hole.																																			
				.	.																																				
				.	.			NOTE: Box numbers mislabelled → no Box # 52 or #59, however footages match up.																																			
				.	.

ATNA RESOURCES LTD

DIAMOND DRILL LOG

Project: MARG (RE-LOG)

Drill Hole Id.: 96-54

Hole Azimuth: 003° **Dip:** -80° **Total Depth:** 346.6m

Date Started: _____ **Date Completed:** _____ **Core Size:** _____

	Northing	Easting	Elevation
UTM Location:	7098105.56	526089.42	1518.36
Grid Location:			
Collar Survey:			

Down Hole Survey

Survey Method: _____

Depth	Azimuth	Dip*

*corrected

Sample Information

# of Samples: 188147 → 188160

Date Shipped: _____

Analytical Lab: Acme

Split By: _____

Type: _____

Assay Certificate # : A002667

Drill Information

Drill Contractor: _____

Drill Size: _____

Driller: _____
Driller: _____
Helper: _____
Helper: _____

Shift	Distance	Shift	Distance

Geological Summary

Purpose / Target: SECTION 2100E

Comments: _____

Key Intersections

From	To	Results

Logged By: LHW

Project: MARG

Atna Resources Ltd.

Hole Id.: 96-54

Logged By: LHW

Diamond Drill Log

Page: 2 of 7

I	F	L	G	FROM	TO	% Rec	Fm	LITH 1	%Mix	RM1	S	CL	C1	%	C3	Tx1	Tx2	Ty	Sz	MxP	M	SD1	AC	Vm	AT	Qz Cl H	Qz Cl Amt	Cb Ep H	Cb Ep Amt	Ms Cy H	Ms Cy Amt	Ba Gr H	Ba Gr Amt	Py Cp H	Py Cp Amt	Sp Gn H	Sp Gn Amt	Po H	Po Amt	Sum AF	Sum In
				XXX.X	XXX.X	% RQD		LITH 2		RM2			C2	%	C4	Tx3	Tx4	Sh	%	Sort	H	SD2	AC	Or	V/M															MF	In
D				0.0	1.3			OVER																																
L				.	.																																			
D				1.8	5.6			QZIT			5	A	QZ	90		MX	VN									V	15	3	05										
L				.	.								CB	05																										
R				.	.			Highly broken, moderately to heavily Fe-stained (weathered) Keno Hill Qtzite. Lower contact is sharp and marked																																			
				.	.			by 20cm-thick band of GRWK.																																			
D				5.6	13.7			GRWK					QZ	60	CB	MX	GR					FO	05			V	03	3	05	&	10								
L				.	.								MS	10	GR	FO															&	02							
R				.	.			Highly broken, heavily Fe-stained (weathered) GRWK. Fe-stained granular appearance. Lower contact is sharp																																			
				.	.																																			
D				13.7	51.5			QZIT			5	A	QZ	90		MX	VN									V	15	3	05										
L				.	.			GRWK 05					CB	05		IB																								
R				.	.			Massive to interbedded Keno Hill Qtzite with graphitic GRWK. GRWK interbeds are 20-50 cm thick. Patchy																																			
				.	.			intervals where core is highly broken (rubble). Very broken core @ 43.3m (1.0m thick). Lowermost 1.0m of																																			
				.	.			unit is broken core and fault gouge (grit). Thick unit is moderately to heavily Fe stained.																																			
				.	.																																			
D				51.5	63.7			ASHT			8	G	MS	30	QZ	MT	BR									V	15	3	15	P	30								
L				.	.								CB	15	CL	CR	IB									&	10												
R				.	.			Highly broken. Strong sericite and clark alteration. 10-20 cm-thick zones (without GRWK) which are Si-rich (silicified?) and																																			
				.	.			have brecciated appearance. 10-15 cm-thick fault gouge throughout unit. Graphitic sediment (GRWK)																																			
				.	.			@ 60.0-60.5m and 62.8-63.0 m → this graphitic sediment is ~90° fault gouge. Lower contact is relatively																																			
				.	.			sharp.																																	
D				63.7	66.3			GRWK			4	A	MS	25	QZ	MT	LM					FO	60			3	15	3	15	&	25								
L				.	.								CB	15	GR	CR	FO															&	05						
R				.	.			Heterogeneous unit of GRWK + 2mm-1.0cm laminae of graphitic ARGL + PSHT. Strong foliation and recumbent folding																																			
				.	.			10-15 cm thick intervals of broken core and fault gouge throughout. Lower contact is relatively sharp.																																			
D				66.3	70.0			ASHT			8	G	MS	25	CL	MT	FO					FO	50			3	10	3	10	P	25					D	TR		
L				.	.								CB	10	QZ	IB									&	10					&	03						
R				.	.			Heterogeneous unit of ASHT and interlaminated graphitic ARGL. Graphitic ARGL occurs as laminae/beds 1-10 cm thick																																			
				.	.			Lowest contact is gradational. Pyrite forms rare porphyroblastic cubes.																																			

Project: MARG GRST = grit stone

Logged By: LHW

Atna Resources Ltd.

Diamond Drill Log

Hole Id.: 96-54

Page: 3 of 7

I	Flag F	L	G	Interval FROM XXX.X	TO XXX.X	G-tec % Rec / % RQD	Fm	Lithology LITH 1 / LITH 2	%Mix	RM1 / RM2	S	CL	Color C1	%	C3 / C4	Components Tx1 / Tx3	Tx2 / Tx4	Texture Ty / Sh	Sz / %	Fragments MxP / Sort	M / H	Structure SD1 / SD2	AC / AC	Veins Vm / Or	AT / VM	Alteration Qz / Cl H	Amt	Cb / Ep H	Amt	Ms / Cy H	Amt	Ba / Gr H	Amt	Mineralization Py / Cp H	Amt	Sp / Gn H	Amt	Po H	Amt	Sum AF	In / MF	In
P				70.0	71.2			ARGL				NN	GR	05	CB	MT										V	10	3	05					D	03						
L				.	.			AGHT	05				QZ	10	PY																P	05								
R				.	.			Fairly broken core. Hematitic EU cubes 1-3mm. Lower contact is very sharp.					ARGL: Upper contact 30 cm is mixed with overlying AGHT. Py occurs as disseminated																													
D				71.2	76.3			GNST			6	05	QF	30	MS	FG	MT						FO	60			V	05	3	15	S	05			D	03						
L				.	.			ARGL	10				CB	15	PY	FG	LB				S																			
R				.	.			Massive to weakly foliated GNST. Light green on fresh surface. Contains 1-2mm subrounded soft → possible sericite after feldspar. Strong carb-alteration. Graphitic ARGL interbedded 5-50 cm thick throughout → contact between ARGL + GNST are fairly gradational. Py forms EU cubes to subhedral aggregates 2mm - 5mm. Lower contact of unit is sharp.																																					
D				76.3	97.8			ARGL				NN	GR	07	PY	MT	LB									V	15	3	05					D	05						
L				.	.								QZ	15	CB																P	07								
R				.	.			Mottled to laminated banded graphitic ARGL. Py forms disseminated anhedral aggregates → average is 2mm - 4mm, max. is 10mm. Fault occurs at 94.6m (~30 cm thick). Lower contact is simple marked by the appearance of 15-20% angular fragments ie. no real contact → gradational.																																					
D				97.8	148.0			GRST				NN	QF	20	PY	MT	FR	QF	02	05			FO	65		V	05	3	05					D	05						
L				.	.			ARGL	20				GR	07	CB	FO		SR	20	3										P	07								
R				.	.			Fragmental graphitic grit stone → identical to ARGL unit however fewer qtz. sweats and segregations and contains 15-20% angular qtz + feldspar fragments. Py forms EU cubes 2-4 mm (max. 5mm) to anhedral aggregates (1.5 cm). Minor 10-15 cm thick fault zone throughout. Lower contact is sharp																																					
D				148.0	152.5			AGHT			3	AS	MS	30	QZ	MT	CB									3	10	3	10	5	05			D	07						
L				.	.								CB	10	CL											$	10													
R				.	.			Mottled recrystallized to foliated (~55° → A) AGHT. Py forms anhedral fine grained aggregates 1.5cm - 3cm. 10-15 cm bull qtz veins throughout. Lower contact is sharp.																																					
P				152.5	202.1			ARGL				NN	GR	05	PY	MT	LB									V	15	3	07					D	10						
L				.	.								QZ	15	CB																P	05								
R				.	.			Mottled / laminated banded graphitic ARGL Py forms disseminated EU cubes 2mm - 3mm - max. 5 mm																																					
				.	.			* NOTE: Mottled to laminated strong carb-alteration @ 179.3 m - 176.5 m; this interval is fine-grained and HARD - silicified? Lower contact is sharp.																																					

Project: MAPG

Logged By: LHW

Atna Resources Ltd.

Diamond Drill Log

Hole Id.: 96-54

Page: 4 of 7

I	Flag F	L	G	Interval FROM / XXX.X	TO / XXX.X	G-tec % Rec / % RQD	Fm	Lithology LITH 1 / LITH 2	%Mix	RM1 / RM2	S	CL	C1 / C2	%	C3 / C4	Tx1 / Tx3	Tx2 / Tx4	Fragments Ty / Sh	Sz / %	MxP / Sort	M / H	Structure SD1 / SD2	AC	Veins Vm / Or	AT / V/M	Alteration Qz / Cl H	Amt	Cb / Ep H	Amt	Ms / Cy H	Amt	Ba / Gr H	Amt	Mineralization Py / Cp H	Amt	Sp / Gn H	Amt	Po H	Amt	Sum AF	In	MF	In
D				202.1	205.5			ASHT			6	AG	MS	25	CL	FG	FD					FO	70			3	05	3	15	P	25			D	01							
L				.	.			ARGL	40				CB	15	PY	IB										$	05															
R				.	.			Fine grained weakly foliated ASHT. Foliation varies from steep @ 70° to CA to parallel to CA. Interbeds of graphitic																																						
				.	.			ARGL are 5-50 cm thick → contacts btwn. interbeds are sharp to gradational. ASHT is moderately Carb-																																						
				.	.			altered. Lower contact of unit is relatively sharp																																						
				.	.																																						
D				205.5	222.0			ARGL				NN	GR	07	CB	MT	LB					FO	60			V	15	3	10					D	07							
L				.	.								QZ	15	PY	FD															P	07									
R				.	.			Mottled ilensoid banded graphitic ARGL. Weak Carb-alteration throughout. Py forms disseminated EU cubes																																						
				.	.			(2-3mm). Lower contact is sharp																																					
P				222.0	223.0			ASHT			5	AG	MS	25	CB	FG	FD					FO	60			V	07	3	10	P	25			D	05							
L				.	.								CL	15	QZ											0	15															
R				.	.			Foliated ASHT. Strong sericitic and Carb- alteration. Chlorite is sheeted and forms 1-2mm spots throughout →																																						
				.	.			Chlorite after ?? Py forms EU cubes 1-3mm. Lower contact is sharp and marked by 5cm bull qtz.																																						
D				223.0	227.0			ARGL				NN	GR	05	CB	MT	LB					FO	70			V	10	3	10					D	05							
L				.	.			ASHT	10				QZ	10	PY	IB	FD															P	05									
R				.	.			Mottled graphitic ARGL. Foliation varies from 20° to CA to parallel to CA. ASHT is sericitic altered (strong) and																																						
				.	.			weakly Carb. altered. ASHT beds are 5-20 cm thick and contacts are gradational. Py forms disseminated EU																																						
				.	.			cubes 1-3mm. ARGL is weakly Carb-altered. Lower contact of unit is gradational.																																						
				.	.																																						
D				227.0	231.9			ASHT			6	AG	QZ	20	CB	MT	FD					FO	65			P	20	3	15	$	20											
L				.	.								MS	20	CL											$	07															
R				.	.			Mottled silicified - sericitic ASHT. Silicification is in the form of sporadic 15-cm thick ARGL band																																						
				.	.			@ 231.1 m. Lower contact is sharp and marked by 45 cm-thick bull qtz. vein.																																						
D				231.9	235.2			ARGL				NN	GR	05	CB	MT	LB			C						V	10	3	07					D	05							
L				.	.								QZ	10	PY																	P	05									
R				.	.			Mottled / ilensoid banded graphitic ARGL. Lower contact is sharp and marked by 8 cm-thick bull qtz vein																																						
				.	.																																						
				.	.																																						
				.	.																																						

Project: MARG

Atna Resources Ltd.

Hole Id.: 96-54

Logged By: LHW.

Page: 5 of 7

Diamond Drill Log

I	Flag F	L	G	Interval FROM / XXX.X	TO / XXX.X	G-tec % Rec / % RQD	Fm	Lithology LITH 1 / LITH 2	%Mbd	RM1 / RM2	Color S	CL	Components C1 / C2	%	C3 / C4	Texture Tx1 / Tx3	Tx2 / Tx4	Fragments Ty / Sh	Sz / %	MxP / Sort	M / H	Structure SD1 / SD2	AC	Veins Vm / Or	AT / V/M	Alteration Qz / Cl H	Amt	Cb / Ep H	Amt	Ms / Cy H	Amt	Ba / Gr H	Amt	Mineralization Py / Cp H	Amt	Sp / Gn H	Amt	Po H	Amt	Sum AF / MF	In
D				235.2	255.8			QXAT			6	AG	MS	25	CB	MT	IB									3	20	3	15	P	25									
L				.	.			ARGL	35				QZ	20	QX																									
R				.	.			Mottled QXAT QX are in the form of blue qz eyes (1-3mm) → qtz. eyes are rare (<1%). Patchy argo.																																				
				.	.			alt unit look porphyritic. Unit is moderately to strongly sericitized. Qtz. is predominantly in the forms of segregations																																		
				.	.			and is pervasive throughout entire unit. Foliation is visible variable to folded. Basaltic ARGL 5-40 cm																																		
				.	.			thick beds between 240.7 m and 244.4 m. Fault gouge @ 241.5 m (~20 cm thick) and broken core + ~80%																																		
				.	.			gouge @ 242.2 m (~1.0 m thick). Lower contact is sharp.																																		
				.	.																																				
P				255.8	265.7			ARGL				NN	GR	05	CB	MT	LB									V	15	3	15					D	02					
L				.	.			ASHT	05				QZ	15	PY	IB															P	05							
R				.	.			Moderately to strongly Carb- altered graphitic ARGL. Strongly sericitized (silver phyllite) ASHT @ 261.5 - 262.4 m;																																		
				.	.			fault gouge within ASHT ~40 cm thick @ 262.0 m. Lower contact is sharp.																																		
P				265.7	267.8			ASHT			6	A	MS	35	CB	FG	FD					FD	65			3	15	3	15	P	35									
L				.	.								QZ	15		patchy silver phyllite									$	05													
R				.	.			Foliated ASHT. Strongly sericitized. Highly broken (and crit) → hard to get good lithic. Lie core atc. Fault																																		
				.	.			gouge @ 268.0 m (~20 cm thick). Lower contact is gradational into massive sulphide																																		
D				267.8	270.2			MSSX					SX	95		BN						BN	55											M	70	L	10			
L				.	.																													J	07	D	02			
R				.	.			Nice intersection → can actually see galena / Red / brown sphalerite defines banding. Lower contact is gradational.																																		
				.	.																																				
P				270.2	281.4			QXAT			7	A	MS	35	CB	MT	PP					FD	70			3	20	3	15	D	35									
L				.	.								QZ	20	QX	FD																								
R				.	.			Mottled and strongly sericitized (silver phyllite) QXAT. QX are in the form of 1-3mm blue qz. eyes → QX are																																		
				.	.			in patchy abundance → zones as high as 10% QX, but overall ~3%. Possible lithic fragments ?! →																																		
				.	.			Hornfels, 0.5 - 1.0 cm, 1-2%.																																		
				.	.																																				
N				270.6	271.5			FLTZ					GG	95																											
				.	.			Fault gouge in strongly sericitized (silver phyllite) ASHT ~40 cm of core missing.																																		
				.	.																																				
				.	.																																				

Project: MARS

Logged By: LHW.

Atna Resources Ltd.

Diamond Drill Log

Hole Id.: 96-54

Page: 6 of 7

Flag				Interval		G-tec	Lithology					Color		Components			Texture		Fragments				Structure		Veins		Alteration								Mineralization						Sum	
																											Qz		Cb		Ms		Ba		Py		Sp		Po			
																											Cl		Ep		Cy		Gr		Cp		Gn					
I	F	L	G	FROM	TO	% Rec	Fm	LITH 1	%Mix	RM1	S	CL	C1	%	C3	Tx1	Tx2	Ty	Sz	MxP	M	SD1	AC	Vn	AT	H	Amt	H	Amt	H	Amt	H	Amt	H	Amt	H	Amt	H	Amt	AF	In
				XXX.X	XXX.X	% RQD		LITH 2		RM2			C2	%	C4	Tx3	Tx4	Sh	%	Sort	H	SD2	AC	Or	V/M	H	Amt	H	Amt	H	Amt	H	Amt	H	Amt	H	Amt	H	Amt	MF	In
P				281.4	253.1			MSSX					SX	85	GR	ZN	FD					FD	60									5	05			M	70	L	05				
L				.	.								MS	05																			5	03	J	05	D	01				
R				.	.		MSSX hosted in ASHT unit. Banding defined by dark grey sphalerite.											fine laminae of graphitic ARGL									? → graphite in these laminae. laminae are 1-3mm.																
P				233.1	296.8			ASHT				OA	MS	30	CB	LM	IB					FD	65			3	15	3	15					L	10	L	03				
L				.	.			ARGL	15				QZ	15	PY	FD																			T	02						
R				.	.		Strong sericitized FSU-						silver phyllite). Strong carb-alteration. 30%															5-10 cm-thick graphitic ARGL interbed is																
				.	.		uppermost 2 m of unit. Massive sulphide bands 1-8 cm thick throughout unit. Lower contact is gradational.																																						
				.	.		Strong carb-altered graphitic ARGL (?) 295.1-296.3 m → thin ARGL interbed in sharp contact with sericitic																																						
				.	.		alteration unit																																						
P				296.8	297.6			SMSX					SX	45	GR	LM	FD					FD	70									5	15			L	35	L	05				
L				.	.								MS	15																			5	03	J	05	D	TR				
R				.	.		SMSX hosted in intensely tuff unit with fine laminae of graphitic sediment (1-3mm). Strong Carb + sericitic alteration.																																						
				.	.		Lower contact is gradational.																																						
D				297.6	301.4			ARGL				NN	GR	03	QZ	LM	FD					FD	60			V	05	3	15					L	05	L	02				
L				.	.			SMSX	07				CB	15	SX																				J	01						
R				.	.		Strong carb-altered aphanitic (weakly aphyritic) ARGL. 0.5cm - 2cm bands of MSSX sulfide throughout Lower																																						
				.	.		contact is sharp with underlying silver phyllite + MSSX.																																						
P				301.4	302.7			MSSX					SX	85	CB	BN	FD					FD	70			5	10	3	05					M	65	L	10				
L				.	.			ASHT	05				MS	10																				T	05	D	01				
R				.	.		MSSX hosted in ASHT. FSHT → strongly sericitized silver phyllite. LIGHT upper 1mm and innermost 10 cm of																																						
				.	.		unit. Banding in MSSX defined by dark grey sphalerite.																																						
P				302.7	305.4			ARGL					GR	03	QZ	BN	IB					FD	30			V	10	2	15					L	07	L	02				
L				.	.			ASHT	10				CB	15	SX	FD																			T	01						
R				.	.		Strong (carb altered ARGL and interbedded strongly sericitized FSHT (silver phyllite) → LIGHT interbed:																																						
				.	.		10-15cm thick. MSSX bands (~95%) throughout unit → 0.5-3 cm thick. Lower contact is sharp																																						
P				305.4	310.3			QSPT				FG	QX	10	QZ	PP	FD					FD	70			?	15	?	15	3	05										
L				.	.								MS	25	CB																											
R				.	.		Moderately sericitized QSPT. Qz in the form of 1-3mm clear to white QVEINS. VEINS are [illegible]																																						
				.	.		stockwork. Lower contact is sharp																																						

Project: MAIN

Logged By: LHW

Atna Resources Ltd.

Diamond Drill Log

Hole Id.: 96-54

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I	Flag F	L	G	Interval FROM XXX.X	TO XXX.X	G-tec % Rec / % RQD	Lithology Fm	LITH 1 / LITH 2	%Mix	RM1 / RM2	S	CL	Color C1	%	C3 / C4	Components C2	%		Texture Tx1 / Tx3	Tx2 / Tx4	Fragments Ty / Sh	Sz / %	MxP / Sort	M / H	Structure SD1 / SD2	AC / AC	Veins Vm / Or	AT / V/M	Alteration Qz / Cl H	Amt	Cb / Ep H	Amt	Ms / Cy H	Amt	Ba H	Amt	Mineralization Py / Cp H	Amt	Sp / Gn H	Amt	Po H	Amt	Sum AF / MF	In
P				310.3	346.6			ARGL				NN	5R	05	PY	MT	LB											V	15	3	05					D	10						
L				.	EOH			DZIT	01				DZ	15	CB	IB																												
R				.	.		Mafic dyke @ 325.9 - 326.6 m → moderately to strongly brecciated; Minor ASHT zone @ 325.9 - 326.6 m; grading to fine-grained, dark grey, EOH									graphitic																																
				.	.																																							
				.	.																																							
				.	.																																							
				.	.																																							
				.	.																																							
				.	.																																							
				.	.																																							
A	0	0	2	212.5	227.0			188147		ARGL																																			
				227.0	231.9			188148																																					
				231.9	235.2			188149																																					
				235.2	244.8			188150																																					
				244.8	255.9			188151																																					
				255.8	265.7			188152																																					
				265.7	267.8			188153		ASHT																																			
				270.2	281.4			188154																																					
				283.1	296.8			188155		ASHT																																			
				297.6	301.4			188156																																					
				302.7	305.4			188157		ARGL																																			
				305.4	310.3			188158		SYHT																																			
				310.3	321.9			188159																																					
				321.9	346.6			188160		ARGL																																			
				.	.																																							
				.	.																																							
				.	.																																							
				.	.																																							

Mafic dyke @ 325.9 - 326.6 m → moderately to strongly brecciated; Minor ASHT zone @ 325.9 - 326.6 m; grading to fine-grained, dark grey, EOH

- Minor Kspar alteration @ 327.0 - 328.3 m @ 340.5 - 341.0 m; and @ 343.7 - 344.1 m; and @ 346.2 - 346.6 m EOH
- Fault zone (N) and broken core @ 341.1 m - 346.2 m: N 20° fault gouge throughout → 11 - 3.0 cm thick
- Uppermost 4.5 m of unit displays moderate to strong carb-alteration.

ATNA RESOURCES LTD

DIAMOND DRILL LOG

Project: MARG (RE-LOG)

Drill Hole Id.: 96-55

Hole Azimuth: 006° **Dip:** -66° **Total Depth:** 406.8 m

Date Started: _____ **Date Completed:** _____ **Core Size:** _____

	Northing	Easting	Elevation
UTM Location:	7097951.87	526079.62	1449.15
Grid Location:			
Collar Survey:			

Down Hole Survey

Survey Method: _____

Depth	Azimuth	Dip*

*corrected

Sample Information

# of Samples: 188161 → 188164
188515 → 188518

Date Shipped: _____

Analytical Lab: ACME

Split By: _____

Type: _____

Assay Certificate #: A002841
A002844

Drill Information

Drill Contractor: _____

Drill Size: _____

Driller: _____
Driller: _____
Helper: _____
Helper: _____

Shift	Distance	Shift	Distance

Geological Summary

Purpose / Target: SECTION 2100E

Comments: _____

Key Intersections

From	To	Results

Logged By: LHW

Project: MARG

Logged By: LHW

Atna Resources Ltd.

Diamond Drill Log

Hole Id.: 96-55

Page: 2 of 9

	Flag				Interval		G-tec	Lithology					Color		Components				Texture		Fragments				Structure		Veins		Alteration								Mineralization						Sum	
																													Qz		Cb		Ms		Ba		Py		Sp		Po			
																													Cl		Ep		Cy		Gr		Cp		Gn					
I	F	L	G	FROM	TO	% Rec	Fm	LITH 1	%Mix	RM_1	S	CL	C1	%	C3	Tx_1	Tx_2	Ty	Sz	MxP	M	SD_1	AC	Vm	AT	H	Amt	H	Amt	H	Amt	H	Amt	H	Amt	H	Amt	H	Amt	AF	In
				XXX.X	XXX.X	% RQD		LITH 2		RM_2			C2	%	C4	Tx_3	Tx_4	Sh	%	Sort	H	SD_2	AC	Or	V/M	H	Amt	H	Amt	H	Amt	H	Amt	H	Amt	H	Amt	H	Amt	MF	In
P				0.0	5.8			OVER.																																	
				.	.																																				
P				5.8	31.7			QZIT			5	A	QZ	80		1B	VN					FO	65			V	10														
L				.	.			GRWK	30				CB	10		FO																									
R				.	.			Interbedded Kano Hill strata and graphitic GRWK. Contacts between GRWK and QZIT are predominantly gradational.																																				
				.	.			Overall very mixed unit. Interbeds of GRWK are 10 cm – 1.5m thick. Core is broken and moderately to heavily																																				
				.	.			Fe-stained. Lowermost 1.6m of unit is heavily broken (FLTZ). Lower contact appears to be sharp.																																				
N				5.8	31.7			GRWK			4	A	QZ	60	GR	MT	FO																									
L				.	.								CB	10	MS	GR	LM					FO	60			V	10	3	10	$	05	$	05							
R				.	.			MoHed GRWK with graphitic ARGL matrix. Qz gives a granular appearance with 120-25%. Flattened/stretched																																				
				.	.			grains. Moderate to strong Fe-carb alteration. Strong foliation to crenulation cleavage.																																				
				.	.																																				
N	FL	T		28.4	31.7			FLTZ					GG	10																											
R				.	.			Nested fault zone between GRWK and ASHT. Broken core → lowermost 40cm is fault gouge.																																				
P				31.7	34.0			ASHT			6	AG	MS	30	QZ	FG	FO					FO	70			3	10	3	15	$	30									
L				.	.								CB	15		CR																									
R				.	.			Fe-carb altered ASHT. Strong sericitic alteration. Upper 5cm is fault gouge. Lower contact is sharp.																																				
				.	.																																				
P				34.0	47.3			SRWK			4	A	QZ	60	GR	FO	1B					FO	70			P	30	3	15											
L				.	.			QZIT	20				CB	15		CR																		$	03						
R				.	.			Interbedded graphitic GRWK with Kano Hill QZIT interbeds are 15-60 cm thick → contact between intervals																																				
				.	.			are sharp to gradational. Unit is moderately Carb-altered. Lower contact of unit is relatively sharp.																																				
P				47.3	51.3			ASHT			6	AG	MS	25	CB	FG	FO					FO	70			3	20	3	10	P	25			7.	01					
L				.	.								QZ	20	PY																									
R				.	.			Light to pale green-grey sericitic silicified FLTZ. Fault zone is broken core @ 49.4m (~70cm thick) Belt.																																				
				.	.			this fault zone unit becomes hard (5.6) and has silicified appearance. Lower contact of unit																																				
				.	.			is gradational																																			
				.	.																																				
				.	.																																				
				.	.																																				

Project: MARG

Logged By: LHW

Atna Resources Ltd.

July 25 - fresh snow on mountains

Hole Id.: 96-55

Page: 3 of 9

Diamond Drill Log

I	Flag F	L	G	Interval FROM XXX.X	TO XXX.X	G-tec % Rec % RQD	Fm	Lithology LITH 1 / LITH 2	%Mix	RM1 / RM2	Color S	CL	Components C1 / % / C3 / C2 / % / C4	Texture Tx1 / Tx2 / Tx3 / Tx4	Fragments Ty / Sz / MxP / Sh / % / Sort	M	Structure SD1 / AC / SD2 / AC	Veins Vm / AT / Or / VM	Alteration Qz / Cb / Ms / Ba / Cl / Ep / Cy / Gr — H / Amt	Mineralization Py / Sp / Po / Cp / Gn — H / Amt	Sum AF / In / MF / In
T				50.2	60.4			GRWK			4	A	QZ 40 GR	GR FD			FO 65		P 40 E 15	D TR	
L				.	.								CB 15 PY	LM CR					Ba 05		
R				.	.			Mottled / granular graphitic GRWK. Finely laminated graphitic ARGL throughout GRWK ~ 20% of rock. Veinlets are												
				.	.			1-3mm thick. Strong FD. Core alteration between 56.3 - 60.8 m. Lower contact is gradational and marked by												
				.	.			(N appearance of Kena Hill otzte													
				.	.																
T				60.4	73.8			QZT			5	A	QZ 80 GR	VN FD			FO 60		V 15 E 05		
L				.	.			GRWK	20				CB 05	IR					Ba 02		
R				.	.			Massive to strongly foliated Kena Hill otzte. GRWK interbeds are 1-3m in thick & contacts between interbeds are												
				.	.			gradational. Thin laminae of graphitic ARGL (2-5mm) within GRWK and QZT. Lower contact of unit is sharp.												
?				73.8	75.4			GNST			6	G	CB 25 CL	FG PP			FO 65		3 25 E 15		
L				.	.								MS 15	FD					Ba 05		
R				.	.			Light to medium green GNST. Has porphyritic appearance defined by carbonate after ?? feldspar ? Weakly												
				.	.			foliated. Lower contact is sharp and marked by 15 cm wide interval of patchy dull-otzte. Veins ~ 5% of rock												
?				75.4	77.3			QZT					QZ 80 CB	MT IB					V 15 E 05		
L				.	.			GRWK	10				GR 05	VN					Ba 05		
R				.	.			Mottled / veined Kena Hill otzte interbedded with graphitic GRWK 2-5mm graphitic ARGL laminae throughout												
				.	.			entire unit. Uppermost 10 cm (in Kena Hill otzte) is silicified near GNST contact. GRWK interbeds ~ 5-20cm												
				.	.			thick. Ashy interval @ 76.5 m (20cm thick) lower contact is gradational with a moderate amount of												
				.	.			mixing with underlying ASHT													
?				77.3	80.9			ASHT			in	AE	MS 30 CL	FE FD			FO 60		3 10 3 15 P 30	D TR	
L				.	.								CB 15 QZ						E 10		
R				.	.			Light green to green-grey ASHT ± strongly silicified and strongly foliated. Lowermost 5m (?) of unit is mixed												
				.	.			ASHT + GRWK ARGL ~ 50% ?? Lower contact of unit is sharp												
?				80.9	84.3			GNST?			5	OA	CB 30 CL	FG FD			FO 65		3 05 E 30 E 10	D 01	
L				.	.			ARGL	20				MS 10 PY	IB					Ba 05		
?				.	.			Buff to orange grey/green GNST. light grey on fresh surface. Patchy areas where unit is coarser grained and												
				.	.			is porphyritic appearance defined by carbonate spots (same as GNST unit above). Other areas unit is massive												
				.	.			to weakly foliated and very fine grained. ARGL interbeds are graphitic with abundant otz veinlets. Interbeds are												
				.	.			5-10 cm thick scattered throughout unit and are in sharp contact with surrounding GNST. Lower contact												
								of unit is relatively sharp.													

Project: MARG

Atna Resources Ltd.

Hole Id.: 96-55

Logged By: LHW

Diamond Drill Log

Page: 4 of 9

I	F	L	G	FROM / TO	% Rec / % RQD	Fm	LITH 1 / LITH 2	%Mix	RM1 / RM2	S	CL	C1 / C2	%	C3 / C4	Tx1 / Tx3	Tx2 / Tx4	Ty / Sh	Sz / %	MxP / Sort	M / H	SD1 / SD2	AC	Vm / Or	AT / VM	Qz / Cl H	Amt	Cb / Ep H	Amt	Ms / Cy H	Amt	Ba / Sr H	Amt	Py / Cp H	Amt	Sp / Gn H	Amt	Po H	Amt	Sum AF	In
D				84.3 / 91.0			ARGL				NN	6R / QZ	05 / 20	PY / CB	MT	FD					FO	60			V	20	3	07					D	10						
L				. / .																											P	05								
R				. / .			Mottled / lensoid banded (defined by qtz sweats and segregations) graphitic ARGL. Py forms disseminated/																																				
				. / .			wisps averaging 3-5mm; maximum is 1.0cm. Foliation varies from 60° to core axis to																																				
				. / .			wide open fold. Lower contact is relatively sharp.																																				
				. / .			* GNST interbed @ 90.7m - 90.9m (sharp contact with surrounding ARGL)																																				
D				41.7 / 100.8			ASHT			2	5	MS / CB	30 / 20	QZ / CL	FG	FD					FO	60			3	20	3	20	D	30			D	TR						
L				. / .																					$	10														
R				. / .			Light green, strongly sericitized ASHT. Lowermost 1.0m of unit is heterogeneous with extensive mixing with graphitic																																				
				. / .			ARGL → graphitic ARGL forms laminae 2mm to 10cm thick; lower contact of unit is gradational.																																				
P				100.8 / 122.0			ARGL				NN	6R / QZ	07 / 20	PY / CB	MT	LB					FO	45			3	20	3	05					D	05						
L				. / .			GNST								FO	LB															P	07								
R				. / .			Mottled to lensoid banded (defined by qtz) graphitic ARGL. Foliation variable → is mottled to parallel to core axis to																																				
				. / .			45° to CA to crenulated. Lower contact is sharp. Interbeds of Fe-carb altered GNST → interbeds form																																				
				. / .			sharp contacts with ARGL; GNST 5-45 cm thick. Thicker interbeds: @ 103.4 - 103.8 m and @ 120.4 - 120.95 m																																				
P				122.0 / 127.3			GNST			5	05	CB / MS	25 / 15	CL / PY	FG	PP					FO	55			V	03	P	25	$	15			D	01						
L				. / .			ARGL	05							FD	LB									$	10														
R				. / .			Strongly Fe-carb altered aphanitic greenstone with minor graphitic ARGL → ARGL interbed @ 122.5 - 122.8m; sharp contact																																				
				. / .			between ARGL and surrounding GNST. GNST has porphyritic appearance defined by Fe-carb spots after ???																																				
				. / .			Lowermost 2m of unit is very strongly carb-altered (has dark red-brown colour). Lower contact is sharp.																																				
				. / .			Fault gouge @ 124.3 m (~15cm thick)																																				
D				127.3 / 130.5			ARGL				NN	6R / QZ	03 / 20	PY / CB	MT	LB					FO	55			V	20	3	05					D	05						
L				. / .											FD																P	03								
R				. / .			Mottled/lensoid banded (defined by silic. sweats + segregations) graphitic ARGL. Py forms disseminated, porphyroblastic																																				
				. / .			cubes 0.5mm. Lower contact is sharp. Bull qtz vein @ 129.7 - 130.0 m.																																				
D				130.5 / 131.9			GNST			6	06	CB / MS	30 / 15	CL / QZ	FG	FD					FO	55			V	03	P	30	$	15			T	01						
L				. / .																					$	10														
R				. / .			Strongly Fe-carb altered GNST. Porphyritic appearance defined rare spots after feldspar? Lower contact is																																				
				. / .			sharp																																				

Project: MARG

Atna Resources Ltd.

Hole Id.: 96-55

Logged By: LHW

Diamond Drill Log

Page: 5 of 9

	Flag			Interval		G-tec	Lithology				Color		Components			Texture		Fragments				Structure		Veins		Alteration								Mineralization						Sum	
																									Qz		Cb		Ms		Ba		Py		Sp		Po			
																									Cl		Ep		Cy		6r		Cp		Gn					
I	F	L	G	FROM	TO	% Rec	Fm	LITH 1	%Mix	RM$_1$	S	CL	C1	%	C3	Tx$_1$	Tx$_2$	Ty	Sz	MxP	M	SD$_1$	AC	Vm	AT	H	Amt	H	Amt	H	Amt	H	Amt	H	Amt	H	Amt	H	Amt	AF	In
				XXX.X	XXX.X	% RQD		LITH 2		RM$_2$			C2	%	C4	Tx$_3$	Tx$_4$	Sh	%	Sort	H	SD$_2$	AC	Or	V/M	H	Amt	H	Amt	H	Amt	H	Amt	H	Amt	H	Amt	H	Amt	MF	In
D				31.0	195.6			ARGL				NN	GR	07	DI	MT	LB									3	20	3	07					D	10						
L				.	.								QZ	20	CB	FD	FR															P	07						
R				.	.			MoHld / lensoid banded graphitic ARGL. Py forms porphyroblastic EU cubes averaging 2-3 mm; max is 1.0 cm. Frag-																																			
				.	.			ments (carbonaceous siltstone or argillite mudstone) patchy zones between 142.4 m and 157.0 m → up to 20% 1-3 mm																																			
				.	.			angular fragments ± r-z. + fg Py-cpy * Sample taken for Rotation (D @ 149.4 – 149.5 m																																			
				.	.			*5-10 cm Fe-carb altered interbeds of GNST between 160.1 – 164.8 → ~ 20% of this interval is GNST).																																			
				.	.			* FSHT intervals 1-40 cm thick) + extensive mixing of AGLT + ARGL between 174.4 – 177.2 m																																			
				.	.			Strong Fe-carb alteration of ARGL @ 170.7 – 175.3 m below fault zone. Lower contact is gradational.																																			
M	F	L	T	162.2	170.7			FLTZ					GS	50																											
				.	.			Broken core and fault gouge within graphitic ARGL.																																			
D				195.6	201.1			QXAT			6	AC	MS	30	CB	FG	PP	QX	02			FD	55			P	20	3	10	P	30									
L				.	.								QZ	20	QX	FD		RD	02																					
R				.	.			Light grey silicified QXAT → QX and rare blue qtz eyes. Extremely interpenetrative unit with intensive mixing																																			
				.	.			of QXAT and graphitic ARGL (~ 30% of unit is graphitic ARGL). Lowermost 70 cm of unit is graphitic ARGL.																																			
				.	.			Lower contact is sharp.																																			
D				201.1	208.8			GNST			6	06	CB	30	QZ	FG	FN					FD	65			V	05	P	30	G	15									
L				.	.			ARGL	15				MS	15	CL	IB										G	03													
R				.	.			Fine-grained strongly Fe-carb altered GNST interbedded with graphitic ARGL. ARGL interbeds are 5-50 cm thick and																																			
				.	.			contacts are sharp. Patchy bull qtz. between 207.0 and 207.6 m. Lower contact is sharp.																																			
D				208.8	271.7			ARGL				NN	GR	05	CB	MT	LB									3	20	3	10					D	10						
L				.	.			ASHT	05				QZ	20	PY	IB															P	05								
R				.	.			MoHld to lensoid banded graphitic ARGL. Py forms disseminated porphyroblastic cubes averaging 1-3 mm; max is																																			
				.	.			~1.0 cm. 5-20 cm thick GNST interbeds at top of unit between 208.8 m and 213.8 m. ARGL is moderately to																																			
				.	.			strongly Fe-carb altered between 215.0 and 221.0 m. Fault gouge @ 221.6 m (~50 cm thick). Moderate to strong																																			
				.	.			Fe-carb alteration between 260.0 m and 266.5 m. Lower contact is relatively sharp.																																			
M				208.8	271.7			ASHT			4	AG	MS	25	PY	MT	CO									3	05	3	20	G	25			D	10						
				.	.								CB	20	QZ																									
D				.	.			Dark grey green to olive green ASHT. Moderate to strong Fe-carb alteration. Colloform banded → Possible 5% zinc																																			
				.	.			in interval between 230.0 m and 232.0 m (NOTE: this interval was sawed, and sampled for assay). Bedding contacts																																			

down. ASHT and ARGL are diffuse → extensive mixing. ASHT interbeds are 20 cm to ~1.0 m thick. Py forms disseminated cubes (1-4 mm) and fine-grained disseam. aggregates (5 mm).

Project: MARG

Logged By: LHW

Atna Resources Ltd.

Diamond Drill Log

Hole Id.: 96-55

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I	Flag F	L	G	Interval FROM / TO	G-tec % Rec / % RQD	Lithology Fm / LITH 1 / LITH 2	%Mix	RM1 / RM2	Color S	CL	Components C1 / % / C3 / C2 / % / C4	Texture Tx1 / Tx2 / Tx3 / Tx4	Fragments Ty / Sz / MxP / Sh / % / Sort	M / H	Structure SD1 / AC / SD2 / AC	Veins Vm / AT / Or / V/M	Alteration Qz-Cl / Cb-Ep / Ms-Cy / Ba-Sr (H / Amt)	Mineralization Py-Cp / Sp-Gn / Po (H / Amt)	Sum AF / In / MF / In
P				271.7 / 292.0		ASHT			6	A	MS 25 CB / QZ 20 PY	MT FO			FO 70		3 20 / 3 15 / P 25 /	D TR	
L				. / .															
R				. / .		Mottled ASHT. Foliation is highly variable from parallel to C.A. to 45° to core axis. Intervals of graphitic ARGL @ 282.4 m – 283.1 m. Overall moderate sericitic alteration.												
P				292.0 / 306.7		ARGL				NN	QR 07 CB / QZ 15 PY	MT LB / FO			FO 65		3 15 / 3 10 / / P 05	D TR	
L				. / .															
R				. / .		Mottled to lensoid / banded graphitic ARGL 10 cm thick band @ massive sulphide at 305.25 m → massive fine-grained Py (80%) with banded foliation (10%) interstitial to banded Cp (5%) and irregular disseminated Sp. Lower contact is sharp. Lowermost 6.0 m of unit is strongly Fe-carb altered.												
P				306.7 / 310.9		MSSX					SX 90 QZ / MS 05	BN FD			FO 60		3 05 / / 5 05	N 70 L 10 / J 07 D 01	
L				. / .															
R				. / .		Banded MSSX defined by dark grey Py laminae. Uppermost 1.8 m of unit contains ~5% graphitic ARGL. Remainder of unit appears to be layered by tuffaceous material (up to 5%). Lower contact is gradational with underlying SMSX in ASHT.												
P				310.9 / 335.4		ASHT (w/ ARGL)			6	A	MS 35 CB / QZ 20 SX	MT IB / FD			FO 70		3 20 / 3 20 / P 35 / (silver phyllite)	L 10 / D TR	
L				. / .		ARGL	05												
R				. / .		Interbedded (radially highly mixed) heterogeneous unit of strongly sericitized ASHT to QxET and graphitic ARGL. Graphitic ARGL-rich zones are 20-70 cm thick and contain up to 15-20% disseminated to laminated fine-grained Py with trace Cp. ASHT contains trace blue qtz. eyes 2-3 mm. Uppermost 6 m of unit contains ~15% 5-30 cm thick bull qtz. veins. Argillaceous zones display strong Fe-carb alteration. Lower contact is relatively sharp.												
P				335.4 / 337.7		ARGL				NN	GR 03 QZ / QZ LM	FD			FO 75		3 10 / 3 15 / /	L 07 E 03? / D TR	
L				. / .		SMSX	10				SX 10 CB								
R				. / .		Strongly Fe-carb altered graphitic ARGL with bands of SMSX. SMSX consists of bands of massive fine-grained Py ± Sp with trace disseminated interstitial Cp. Lower contact is gradational.												
P				337.7 / 345.4		ASHT			6	A	MS 35 QZ / CB 20	MT IB / FD			FO 60		3 15 / 3 20 / P 35 /	D 07	
L				. / .		ARGL	25												
R				. / .		Heterogeneous unit of strongly sericitized LSHT (silver sericite) and strong Fe-carb altered graphitic ARGL. ARGL interbeds are 60 cm – 1.2 m thick and contacts are gradational. Py occurs as fine-grained disseminated. Lower contact is relatively sharp.												

Project: MARG

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Diamond Drill Log

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	Flag			Interval		G-tec	Lithology					Color		Components			Texture		Fragments				Structure		Veins		Alteration								Mineralization						Sum	
																											Qz		Cb		Ms		Ba		Py		Sp		Po			
																											Cl		Ep		Cy		Sr		Cp		Gn					
I	F	L	G	FROM	TO	% Rec	Fm	LITH 1	%Mix	RM$_1$	S	CL	C1	%	C3	Tx$_1$	Tx$_2$	Ty	Sz	MxP	M	SD$_1$	AC	Vm	AT	H	Amt	H	Amt	H	Amt	H	Amt	H	Amt	H	Amt	H	Amt	AF	In
				XXX.X	XXX.X	% RQD		LITH 2		RM$_2$			C2	%	C4	Tx$_3$	Tx$_4$	Sh	%	Sort	H	SD$_2$	AC	Or	V/M	H	Amt	H	Amt	H	Amt	H	Amt	H	Amt	H	Amt	H	Amt	MF	In
P				345.4	346.8			ARGL				NN	SX	20	QZ	LM	FD					FD	65			3	05	3	05					L	10	L	05				
L				.	.			SMSX	20				GR	03	CB																P	03	J	01	D	TR				
R				.	.		Laminated massive sulphide within graphitic ARGL. Massive sulphide bands are 1mm to 5cm thick and are weakly																																					
				.	.		banded → banding defined by Sp-rich zones. Fault gouge @ 346.1m (~10cm thick). Lower contact is																																					
				.	.		sharp.																																				
				.	.																																				
P				346.8	376.5			QxAT				6	A	MS	30	QX	MT	IB	QX	01	02		FD	30			3	20	3	20	P	30			D	10					
L				.	.			ARGL	25					CB	20	PY			RD	05																					
R				.	.		Extremely heterogeneous unit of strongly sericitized QXAT (silver phyllite). Where only moderate sericitic alteration, Qx are																																					
				.	.		preserved as 1-2mm qtz eyes and are up to 10%. In abundance. Overall, the unit is moderately to strongly Fe-Carb																																					
				.	.		altered → stronger Carb alteration within ARGL zones. ARGL interbeds are 10cm - 60cm thick with gradational																																					
				.	.		contacts. Py is finely disseminated throughout fg-grained Py laminae 1-3mm thick. Lower contact is																																					
				.	.		gradational. Lowermost ~9m of unit is ARGL-rich. Two brecciated zones of brecciated ARGL in bull qtz → @																																					
				.	.		370.5m (~15cm thick) and @ 372.1m (~10cm thick)																																					
P				376.5	377.9			ARGL				NN	SX	20	QZ	FD	LM					FD	70			3	10	3	10					M	10	L	05				
L				.	.			SMSX	30				GR	05	CB																P	05	J	03	D	TR				
R				.	.		Laminated SMSX and graphitic ARGL. Massive sulphide band @ 377.5m (~20cm thick). SMSX laminae average																																					
				.	.		1mm - 5mm. Lower contact is gradational.																																					
P				377.9	379.2			ARGL				NN	GR	03	BN	MT	LB					FD	65			3	20	3	05					D	07						
L				.	.								QZ	20	CB	FD															P	03								
R				.	.		Typical mottled to lensoid banded (defined by qtz sweats + segregations) graphitic ARGL. Only weak to moderate																																					
				.	.		Fe-Carb alteration. Lower contact is relatively sharp and marked by ~10cm of gouge.																																					
?				379.2	383.7			ARGL				NN	SX	30	QZ	MT	LM					FD				3	10	3	10					N	20	L	07				
L				.	.			SMSX	30				GR	03	CB	BN	FD															P	03	J	03	D	TR				
R				.	.		Highly broken laminated/interbedded graphitic ARGL with semi-massive to massive sulphide. Massive sulphide																																					
				.	.		interbeds @ 382.1m (~25cm thick) and @ 383.1m (~35cm → this massive sulphide zone is highly																																					
				.	.		broken + rubbly ie SULPHIDE HORIZON HERE IS FAULTED OUT). Fault gouge @ 382.9m (~20cm thick.																																					
				.	.		Approx. 0.7m of core missing overall from unit. + Silver phyllite from 382.9 - 383.1m. Lower contact																																					
				.	.		is relatively sharp and marked by the disappearance of sulphides																																					
				.	.																																					

Project: MARG

Logged By: LHW

Atna Resources Ltd.

Diamond Drill Log

Hole Id.: 96-55

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	Flag			Interval		G-tec	Lithology					Color		Components			Texture		Fragments				Structure		Veins		Alteration								Mineralization						Sum	
																											Qz		Cb		Ms		Ba		Py		Sp		Po			
																											Cl		Ep		Cy		Sr		Cp		Gn					
	F	L	G	FROM	TO	% Rec	Fm	LITH 1	%Mbd	RM_1	S	CL	C1	%	C3	Tx_1	Tx_2	Ty	Sz	MxP	M	SD_1	AC	Vm	AT	H	Amt	H	Amt	H	Amt	H	Amt	H	Amt	H	Amt	H	Amt	AF	In
				XXXX	XXXX	% RQD		LITH 2		RM_2			C2	%	C4	Tx_3	Tx_4	Sh	%	Sort	H	SD_2	AC	Or	V/M	H	Amt	H	Amt	H	Amt	H	Amt	H	Amt	H	Amt	H	Amt	MF	In
N	F	L	T	382.7	386.5			FLTZ					GG	20																											
				.	.		Highly broken core/rubble with ~ 20% fault gouge * SMSX to MSSX is faulted.																																				
D				353.7	386.5			ARGL				NN	GR	03	CB	MT	LB					FO	80			3	10	3	10					D	05						
L				.	.			ASHT	05				QZ	10	PY	FO																								
R				.	.		Mottled to unsrtd bedded (dk grn/gy to lt gy) graphitic ARGL. Moderately to strongly Fe-carb altered interbed of strongly																																				
				.	.		sericitized ASHT (silver sheen) @ 385.8m - 386.2m. Lowermost 30cm of unit is fault gouge. Lower contact																																				
				.	.		is sharp. Overall, unit is very rubbly.																																				
				.	.																																				
P				390.5	391.9			QZIT					QZ	80		MX	VN									V	10	3	05												
L				.	.			GRWK	10				CB	05		IB																								
R				.	.		Interbedded Keno Hill qtzite. with graphitic greywacke to graphitic ARGL → graphitic interbeds are 5-30cm thick																																				
				.	.		and have sharp contacts with qtzite. Argillaceous interbeds are foliated to crenulated, when foliated																																				
				.	.		foliation is 50° to core axis. Lower contact of unit is sharp.																																				
				.	.																																				
P				391.9	406.8			ARGL				NN	GR	05	CB	MT	LB					FO	75			V	15	3	10					D	10						
L				.	(EOH).			QZIT	05				QZ	20	PY	IB	FO																								
R				.	.		Interbedded graphitic ARGL and Keno Hill qtzite. QZIT interbeds begin @ 397.4m and are throughout remainder of																																				
				.	.		unit towards end of hole. QZIT interbeds are 10cm to 1.0m thick and are in sharp contact with ARGL. ARGL																																				
				.	.		is moderately Fe-Carb altered. Py occurs as disseminated cubes averaging 1-3mm, max is 5mm.																																				
				.	.		Thick buff qtz veins @ 398.0m (~60cm thick) and @ 399.5m (~80cm thick)																																				
				.	.																																				
A	D	D	2	271.7	281.7		188161																																		
				281.7	292.0		188162							Light green ASHT (Fe-skarnlike) → 49.7 - 49.75m																												
				292.0	299.9		188163																			SMSX → 82.1 - 82.2m																
				299.9	306.7		188164																			ARGL → 108.2 - 108.35m																
				230.0	230.7		188515																			ASHT → 289.8 - 289.9m.																
				230.7	231.7		188516													graphitic greystone → 149.4 - 149.5m (not excellent example #50 DDH 96-54 + 96-57																				
				231.7	233.2		188517																			QZIT → 403.6 - 403.7m.																
				233.2	233.8		188518																																				

Project: MARG

Logged By: LHW

Atna Resources Ltd.

Diamond Drill Log

Hole Id.: 96-55

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I	Flag F	L	G	Interval FROM / TO	G-tec % Rec / % RQD	Lithology Fm / LITH 1 / LITH 2	%Mix	RM1 / RM2	Color S	CL	Components C1 / % / C3 / C2 / % / C4	Texture Tx1 / Tx2 / Tx3 / Tx4	Fragments Ty / Sz / MxP / Sh / % / Sort	M	Structure SD1 / AC / SD2 / AC	Veins Vm / AT / Or / V/M	Alteration Qz / Cb / Ms / Ba / Cl / Ep / Cy	H / Amt	Mineralization Py / Sp / Po / Cp / Gn	H / Amt	Sum AF / In / MF / In
A	D	0	2	306.7 / 307.6		188165															
A	D	0	2	307.6 / 308.2		188166															
A	D	0	2	308.2 / 309.3		188167			RESULTS MISSING - NOT SENT?												
A	D	0	2	309.3 / 310.2		188168															
A	D	0	2	310.2 / 310.9		188169															

ATNA RESOURCES LTD

DIAMOND DRILL LOG

Project: MARG (RE-LOG)

Drill Hole Id.: M96_57

Hole Azimuth: 003° **Dip:** -52° **Total Depth:** 288.0m

Date Started: _____ **Date Completed:** _____ **Core Size:** _____

	Northing	Easting	Elevation
UTM Location:	7098106.87	526099.26	1519.29
Grid Location:			
Collar Survey:			

Down Hole Survey

Survey Method: _____

Depth	Azimuth	Dip*

*corrected

Sample Information

# of Samples: 188170 → 188180 **Split By:** _____

Type: GEOCHEM

Date Shipped: _____ **Assay Certificate # :** A00 2841

Analytical Lab: ACME

Drill Information

Drill Contractor: _____ **Drill Size:** _____

Driller: _____
Driller: _____
Helper: _____
Helper: _____

Shift	Distance	Shift	Distance

Geological Summary

Purpose / Target: SECTION 2100E MOST NORTHERLY HOLE

Comments: HOLE IS ALMOST ALL SEDIMENTS GEOCHEMICAL SAMPLING TO SEE IF MIN. HORIZONS CAN BE TRACED THROUGH ARGILLITE/SHALE. RE 10. HOLE SUPPORTS INFOLDED QZIT ("M-FOLD") AND OVERALL ANTIFORM (WRAPPING FOR QZIT & MINE SEQUENCE.

Key Intersections

From	To	Results

Logged By: PMH

Project: MARC

Logged By: PMH

Atna Resources Ltd.

Diamond Drill Log

Hole Id.: M96-57

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Flag				Interval		G-tec	Lithology					Color		Components				Texture		Fragments			Structure		Veins		Alteration								Mineralization						Sum	
																											Qz / Cl		Cb / Ep		Ms / Cy		Ba		Py / Cp		Sp / Gn		Po		
I	F	L	G	FROM	TO	% Rec	Fm	LITH 1	%Mix	RM1	S	CL	C1	%	C3	Tx1	Tx2	Ty	Sz	MxP	M	SD1	AC	Vm	AT	H	Amt	H	Amt	H	Amt	H	Amt	H	Amt	H	Amt	H	Amt	AF	In
				XXX.X	XXX.X	% RQD		LITH 2		RM2			C2	%	C4	Tx3	Tx4	Sh	%	Sort	H	SD2	AC	Or	VM	H	Amt	H	Amt	H	Amt	H	Amt	H	Amt	H	Amt	H	Amt	MF	In
P				0	9.0			CASE																																
				.	.																																			
P				9.0	38.2		KHQ	QZIT			7	A	QZ	65		Mx	LM						BD	80			3	15													
L				.	.								GR	10		ST							FD	80																
R				.	.	MIXED "DIRTY & CLEAN" QZIT. DIRTY VARIETY IS GRAPHITIC (OR BIOTITE) RICH W/ BLACK SHEETED LAYERS, THAT WHEN CONCENTRATED GIVE THE																																					
				.	.	ROCK A FINE-FRAGMENTAL APPEARANCE. NUMEROUS FRACTURE ZONES @ 20.4 (30cm); 29.9 (30cm); 26.5 (1m); 36.8 (1m).																																					
M	F	L	T	36.8	37.8			FLTZ	X																																
				.	.																																			
P	F	L	T	38.2	50.8			QZIT			5	A	QZ	50	GG	IB	SH						LM	80			3	10	Q	10	P	10									
L				.	.																																				
R				.	.	PREDOMINANTLY QZIT W/ INTERBEDDED PALE GREEN ASH UNITS AND Fe-CARB ALTERED ASH OR GREENSTONE (42.5-46m). NUMEROUS																																					
				.	.	CRUSH-FAULT ZONES: 38.7 (30cm); 42.3 (30cm); 44.2 (3m); 50.6 (1.2m).																																					
P	F	L	T	50.8	61.7			QXAT			3	G	QX	10	GR	LM	IB						FD	85			3	05	L	10											
L				.	.								CB	10	MS	FD																									
R				.	.	PALE GREEN QZ-CRYSTAL ASH TUFF INTERBEDDED AND INTERMIXED WITH ARGL AND QZIT. FIRST 3m IS STRONGLY ALTERED OR																																					
				.	.	OXIDIZED, DUE TO FRACTURING? INTERVAL STEEPS IN GOUGE AND GRADES INTO CRUSHED ROCK THAN FRACTURED ROCK OVER 1.5m.																																					
N				58.5	61.7			QZIT	50																																	
				.	.																																			
D				61.7	67.0			CARB			5	O	CB	AD	PY	GC	MX												P	40	P	10			D	02				
L				.	.								MS	10		FG																								
R				.	.	DISTINCTIVE ORANGE WEATHERING CARB UNIT. INTERBEDDED CONTACTS + MTN. LOOKS LIKE BUSTED QZIT BUT PRESENCE OF PY																																					
				.	.	SUGGESTS A DIFFERENT UNIT.																																					
P	F	L	T	67.0	106.7			ARGL		SI		NN	GR	05	PY	FD	LM						FD	80			3	15	D	05	S	01			D	05				
L				.	.								QZ	15	CB								LM	80																
R				.	.	BLACK, SILICEOUS ARGL. QZ AS SWEATS, VEINS AND PATCHES BUT ALSO FINELY INTERLAMINATED (QZIT QZ OR VOLCANIC QZ?)																																					
				.	.	2m OF PALE GREY LAMINATED SILICA @ 89m (SEX ??). NUMEROUS FRACTURE-FAULT ZONES BUT A LARGE ONE @ 93.5 TO																																					
				.	.	97.2 AND 104.2' TO 105m. MUCH ZONE OF "CARBONACEOUS QZ GRIT" OR 20% QZ GRIT FRAGS IN MUDSTONE — MAY BE PARTLY																																					
				.	.	TECTONIC IN ORIGIN. INTERVAL ENDS AT TRANSITION FROM HQ TO NQ.																																					
D				106.7	189.0			ARGL		SI		NN	GR	10	PY	FD	LM											3	10	O	02					D	07				
				.	.								QZ	10	CB																									
				.	.	BLACK, SILICEOUS ARGL W/ LESSER QZ SWEATS THAN ABOVE BUT STILL SUBSTANTIAL QZ IN MATRIX. ABUNDANT FINE GRND DISSEM PY																																					
				.	.	PLUS MINOR COARSE PY PORPHYROBLASTS OF CRYSTAL AGGREGATES. NARROW BANDS OF CNST OR TUFF; NOT AS W AT 155.5 TO																																					
				.	.	157.4. LOWER CONTACT 45? QZIT IS GRADATIONAL VIA INTERBEDDING. FAULTS AT: 123.5 (20cm); 110.8 (40cm); 138.0 (20cm) 145.4 (10cm)																																					
				.	.	179.3 (40cm).																																					
N				155.5	157.4			CARB			5	TG				LM	GC																									
				.	.																																				
P				189.0	236.3			QZIT			3	A	QZ	40	CB	IB	LM						LM	70			3	10	L	05					L	05				
				.	.			ARGL	40				GR	10	PY	FD																									

Project: MARG

Logged By: Pmtt.

Atna Resources Ltd.

Diamond Drill Log

Hole Id.: M96-57

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	Flag			Interval		G-tec	Lithology				Color		Components				Texture		Fragments				Structure			Veins		Alteration								Mineralization						Sum
																											Qz		Cb		Ms		Ba		Py		Sp		Po		
																											Cl		Ep		Cy				Cp		Gn				
I	F	L	G	FROM	TO	% Rec	Fm	LITH 1	%Mix	RM1	S	CL	C1	%	C3	Tx1	Tx2	Ty	Sz	MxP	M	SD1	AC	Vm	AT	H	Amt	H	Amt	H	Amt	H	Amt	H	Amt	H	Amt	H	Amt	AF	In
				XXX.X	XXX.X	% RQD		LITH 2		RM2			C2	%	C4	Tx3	Tx4	Sh	%	Sort	H	SD2	AC	Or	V/M	H	Amt	H	Amt	H	Amt	H	Amt	H	Amt	H	Amt	H	Amt	MF	In
R				·	·	PALE TO MED DARK GREY QZ-T INTERBEDDED/LAMINATED WITH ARGL AND MINOR CNST (?). THE INTERLAYERED ARGL IS GRAPHITIC,																																				
				·	·	QZ POOR, FOLDED AND CONTAINS THIN LAMINAE OF PY.																																				
M				189.0	236.3			ARGL	40			NN					FD																			L	10					
				·	·																																				
P				236.3	288.0			ARGL					GR	15	QZ	IB	LM					LM	BO			3	10	+	02					L	10					
U				·	·			QZ-T	40				PY	10	CB	FD																									
L				·	·	SAME UNIT AS ABOVE BUT THE RATIO OF QZ-T TO ARGL IS REVERSED. LAMINATED PY IN ARGL BUT NOT (NEVER) IN QZ-T																																				
				·	·	ABUNDANT BREAKAGE ZONES							AT: 237 (40cm); 240 (50cm); 248.7 (20cm); 258.3 (30cm); 264.8 (30cm); 279.2 (20cm).																														
				·	·																																				
				·	·																																				
A	Q	Q	Z	67.0	76.8			188170																																	
				76.8	89.5			171																																	
				89.5	99.6			172																																	
				99.6	106.7			173																																	
				106.7	118.0			174																																	
				118.0	127.1			175																																	
				127.1	136.3			176																																	
				136.3	145.4			177																																	
				145.4	155.5			178																																	
				155.5	172.8			179																																	
				172.8	189.0			180																																	
				·	·																																				
R	Sum			0	288.		UNUSUAL HOLE IN THAT IT IS ALMOST ALL SEDIMENTS AND QZ-T BEARING UNIT BEGINS HIGH UP IN HOLE. COULD BE OF																																				
				·	·	AREAS THAT MIGHT MARK MIN HORIZONS SO GEOCHEMICAL SAMPLING AS WELL AS TO SEE IF "MINE-SEQUENCE"																																				
				·	·	ARGL ARE CHEMICALLY DIFFERENT FROM QZ-T RELATED (KHO) ARGL.																																				
				·	·	PRIMARY QUESTION IN THIS HOLE IS THE KHO FAULTED OR FOLDED HOLE.																																				
				·	·																																				
				·	·																																				
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ATNA RESOURCES LTD

DIAMOND DRILL LOG

Project: MARG - (RE-LOG)

Drill Hole Id.: 97-78

Hole Azimuth: 360° **Dip:** -70° **Total Depth:** 404.5 m

Date Started: _____ **Date Completed:** _____ **Core Size:** _____

	Northing	Easting	Elevation
UTM Location:	7097910.97	525491.61	1406.60
Grid Location:			
Collar Survey:			

Down Hole Survey

Survey Method: _____

Depth	Azimuth	Dip*

*corrected

Sample Information

Split By: _____

# of Samples: 188001 → 188032 Type: _____

Date Shipped: _____ Assay Certificate # : A002143

Analytical Lab: ACME

Drill Information

Drill Contractor: _____ Drill Size: _____

Driller: _____
Driller: _____
Helper: _____
Helper: _____

Shift	Distance	Shift	Distance

Geological Summary

Purpose / Target: SECTION 1500E

Comments: _____

Key Intersections

From	To	Results

Logged By: PMH & LHW

Project: MARG

Logged By: PmH ; LHW

Atna Resources Ltd.

Qz = Qz segregations.

Diamond Drill Log

Hole Id.: 97-78

Page: 2 of 5

I	F	L	G	FROM / XXX.X	TO / XXX.X	% Rec / % RQD	Fm	LITH 1 / LITH 2	%Mix	RM1 / RM2	S	CL	C1 / % / C3 / C2 / % / C4	Tx1 / Tx2 / Tx3 / Tx4	Ty / Sz / MxP / Sh / % / Sort	M / SD1 / AC / SD2 / AC	Vm / AT / Or / V/M	Alteration: Qz' Cl / Cb Ep / Ms Cy / Ba — H / Amt	Mineralization: Py Cp / Sp Gn / Po — H / Amt	Sum: AF / MF, in / in
P				0.0	20.7			OVER												
P				20.7	47.4			ARGL				BW	QG 20 PY / GR 5 MS / C2 % C4	LM CB / LB		FO 60			+ 01 P 15 / D 05	
R						TYPICAL SHALE-MUDSTONE WITH ABUNDANT METAMORPHIC QZ SEGREGATIONS GIVING THE ROCK A REVERSE ZEBRA APPEARANCE. FAINT												
						COARSE @ 29.4 TO 30.0 m. ROCK HAS MUSCOVITE SHEEN AND MODERATELY ABUNDANT PY.												
P				47.4	56.0			QXAT			5	T	CB 30 QZ / MS 25 CL	FG IB					P 25	
L								ARGL	30							FO 70		P 30		
R						PROBABLE DYKE ROCK OF INTERMEDIATE COMPOSITION CONVERTED TO MUSC + Fe-Mg CARB. CONTACTS ON DYKES W/ SEDS ARE									D 02				
						EITHER KNIFE SHARP OR MARKED BY 10-40cm BULL QZ INTERVALS - SUGGESTIVE OF THERMAL CONTACT.												
P				56.0	112.1			ARGL				BW	QG 15 PY / GR 10 MS	IB LB		FO 55			+ 03 P 10		D 07
L								ASHT	20											
R						SIMILAR TO PREVIOUS INTERVAL BUT 20% INTERBEDDED PALE GREEN ASH LAYERS. CONTACTS W/ ASH ARE SHARP TO GRADATIONAL. SLIGHTLY LESS QZ												
						AND MORE GRAPHITE (= CARBONACEOUS) THAN PREVIOUS INTERVAL. FLT GOUGE @ 108.8 TO 109.2 ; 111.5 - 111.8												
M				56.	112.1			ASHT			7	G	CB 35 QZ / MS 30	TF MT / GR FR				J 30	0 35 $ 30		D 03	
L																				
R						THIN LAMINAE TO 30cm THICK BEDS OF TUFFACEOUS MATERIAL. VARIABLE TEXTURE SUGGESTS ASH INSTEAD OF VOLC SILTSTONES. RARE QZ												
						PHENOCLASTS AND FIAMME-LOOKING SPECKS. TOTALLY ALTERED TO QZ + MS + CB.												
P				112.1	118.8			LLTF			7	G	MS 30 XF / LF 15 CB	FR ST / FL 05 M	LF 0.5 20	FO 50			0 15 P 30		D Fe
L																				
R						PALE GREEN TO MUSTARD COLOURED XTAL-LITHIC ASH WITH RARE (?) CLASTS TO 2cm. STRONG SERICITE ALTERATIONS. UPPER & LOWER												
						CONTACTS ARE SHARP.														
P				118.8	167.3			ARGL			5	A	QS 20 QR / MS 15 CB	LB MT / CR FD		FO 55		Q 20	+ 05 P 15		D 05
L								ASHT	40											
R						INTERVAL CONSISTS OF ARGL WITH 40% INTERBEDDED ASH-/+ VSLT BEDS. PARTIAL BEDDING INCLUDES BOTH DISCRETE BEDS PLUS INTERMIXED												
						MATERIAL. INTERVAL HAS PREVIOUSLY BROKEN UP INTO MUSC AND GRAPHITE PHYLLITES. CARB INCREASES TOWARDS BOTTOM OF INTERVAL.												
N				118.8	167.3			ASHT			7	G	MS 35 QZ / CB 15 PY					Q 20	O 15 P 35		D 03
						MOSTLY ASH TO SILTSTONE PREDOMINANTLY RE-CRYSTALLISED AND GRANULATED. RARE QZ PHENOS												
P				167.3	186.5			ARGL			5	A	QS 25 PY / CB 20 MS	FD CR / LB LM		FO 60 / CC 90		Q 25	X 20 P 15		L 05
L								ASHT	10											
R						THINLY LAMINATED ARGL W/ MINOR ASH LAYERS. QZ OCCURS AS DISCRETE BULL QZ VEINS & STRINGERS 10 cm THICK. BOTH LAMINATED AND												
						DISSEMINATED PY BUT LAMINATIONS ARE GREATER. MODERATE WITH LOCAL INTENSE Fe-CARB ALTERATION. 20cm GOUGE @ 186.0 m.												
P				186.5	192.5			QXTF			5	AG	QX 03 QZ / CB 20 MS	PP CR / FD FD		FO 60 / CB 80		Q 15	Q 20 P 20		L 10
L								ARGL	20											
R						SOMEWHAT HETEROGENEOUS INTERVAL CONSISTING OF GREEN ASH ARGL (10%) AND COARSER GRAINED QZ-PHYRIC MATERIAL THAT COULD BE												
						RHYOLITE FLOW BUT DUE TO THINNESS OF INTERVAL TUFF IS A BETTER CALL. INTERSECTING FOLIATIONS PRODUCES A GRANULAR TEXTURE.												

Project: _____

Atna Resources Ltd.

Hole Id.: 97-78

Logged By: _____

Diamond Drill Log

Page: 3 of 5

I	Flag F	L	G	Interval FROM XXX.X	TO XXX.X	G-tec % Rec / % RQD	Fm	Lithology LITH 1 / LITH 2	%Mix	RM1 / RM2	Color S	CL	Components C1	%	C3 / C4	Texture Tx1	Tx2 / Tx3	Tx4	Fragments Ty / Sh	Sz / %	MxP / Sort	M / H	Structure SD1	AC	SD2	AC	Veins Vm / Or	AT / V/M	Alteration Qz / Cl H	Amt	Cb / Ep H	Amt	Ms / Cy H	Amt	Ba H	Amt	Mineralization Py / Cp H	Amt	Sp / Gn H	Amt	Po H	Amt	Sum AF / MF	In
P	M	I	N	192.5	196.00			CBEX				BW	CB	50	QZ	BX	MT											J	20	O	50			L	05	6	20						
L				·	·								SX	25	GR																					D	02						
R				·	·	ODD TEXTURED CARBONATE QZ AND SX. CARB IS DOLOMITE (NOT RUST!) WHICH IS BROKEN INTO BLOCKS AND IRREGULAR FRAGMENTS.																																				
				·	·	INTERSTITIAL QZ AND LAMINATED, STREAKY AND DISSEM. Py.																				LOCAL DISS. CP. PRESUMED TO REPRESENT EXHALATIVE MATERIAL.																		
P	M	I	N	196.0	205.4			MSSX					SX	70		LM	IB							LM	80			Q	20							L	40	L	10				
L				·	·			QXTF	10				QZ	20																							L	10	L	5				
R				·	·	NICE INTERSECTION! UPPER PART OF INTERSECTION CONSISTS OF MASSIVE CRUDELY BANDED Py WITH PATCHES & CRYSTAL MOLDS OF CP AND PATCHES OF BAL QZ YIELDS TO LAMINATED SX WITH ALTERNATING Py-Sp RICH BANDS. CALCITE IS DIFFICULT TO SEE. SP IS RED TO BLACK.																																				
				·	·	ZONES OF INTERBEDDED QXTF UP TO 1.1m THICK. LOWER CONTACT IS GRADATIONAL AND BASE METALS FADE-OUT & BOUNDARY IS FUZZY.																																				
				·	·	BOTTOM OF INTERVAL C.L. ZONATION IS NOT CLEAR VISUALLY ALTHOUGH THE UPPER PART DOES APPEAR TO BE C.L. ZONED.																																				
P				205.4	225.7			ASHT			5	AG	MS	30	CB	LM	IB							FO	75			L	15	7	15	P	30			L	10	L	02				
				·	·			ARGL	20				QZ	20	GR	MT	CR																			L	02	D	01				
				·	·	HETEROGENEOUS UNIT COMPOSED OF INTIMATELY INTERBEDDED ASH, XTAL TUFF AND ARGL. PATCHILY BANDED AND CR IMPLIED. MOD TO INTENSE CARB ALT^N WITH POOR TO FR CARB. LAMINATED AND DISSEM SX TO 10% LOCALLY FOLIATED FOR SPLIT.																																				
P				225.7	251.0			QXLT		RY	9	A	QX	02	MS	LB	PP							FO	80					O	15	P	30			B	05						
L				·	·			ARGL	10.				LF	20		MT																												
R				·	·	VARIABLE TEXTURED UNIT. UPPER 7.5m IS CARBONACEOUS MATRIX WITH FELSIC FRAGS. QZ PHENOS ARE RARE BUT UBIQUITOUS AND COMMONLY BLUE. SOME ARENS ARE POSSIBLY PSEUDO FRAGMENTAL TEXTURE. REMAINDER CONSISTS OF LAMINATE ASH AND SEXL (?). LOWER CONTACT IS RELATIVELY SHARP.																																				
P				251.0	257.9			ARGL				BB	QZ	05	PY	QS	CR							FO	75			L	15	O	03					6	15						
L				·	·								QX	15	QX	FO																											
R				·	·	ARGL WITH SHARP CONTACTS (3cm BLU QZ AT LOWER CONTACT). MINOR FG EYES NEAR MIDDLE. LAMINATED Py.																																				
P				257.9	265.8			QXTF.				7	A	QX	04	MS	PP	LB							FO	70					D	15	P	15			7	05						
L				·	·								CB	15	PY																												
R				·	·	SILVER PHYLLITE WITH INCREASE IN QX. Fe CARB ALT^N. MUSC-CARB ALT^N QUITE INTENSE.																																				
P				265.8	266.3			SEXL		??	9	A	QZ	80	SX	MX	LM											MX	80	D	05	$	10			7	10	L	01				
L				·	·								MS	10																							L	01				
R				·	·	POSSIBLE SEXL, MIGHT BE CALLED QZITE. IRREGULAR LAMINAE OF Py + Sp. SHEARED MS AND DISSEM TO SPOTTY CB																																				
P				266.3	276.3			XLAT				7	A	QX	01	PY	CR	LM							FO	75			P	20	O	05	P	40			D	05	D	TR				
L				·	·								MS	40	CB	LB																											
R				·	·	SILVER PHYLLITE LOOKS LIKE SILICIFIED ASH TUFF, INTENSE MS ALT^N AND CRUMPLING. MINOR CARBONACEOUS SEDIMENTS 10cm CORE @ 276.1'																																				
P	B	P	X	276.3	280.8			BAEX				WN	BA	40	PY	MY	SG							LM	80					L	30	$	05	L	40	D	05	D	04				
L				·	·								CA	30	SP																												
R				·	·	WHITE TO LIGHT GREY MASSIVE, SUGARY LAMINATED BARITE & CALCITE WITH MINOR SHEETED MUSCOVITE AND POSSIBLE LAMINATED HONEY SP.																																				

Project: _____

Logged By: _____

Atna Resources Ltd.

Diamond Drill Log

Hole Id.: 97-78

Flag				Interval		G-tec	Lithology					Color		Components					Texture		Fragments				Structure			Veins		Alteration								Mineralization						Sum	
																													Qz		Cb		Ms		Ba		Py		Sp		Po			
																													Cl		Ep		Cy				Cp		Gn					
I	F	L	G	FROM	TO	% Rec	Fm	LITH 1	%Mix	RM1	S	CL	C1	%	C3	Tx1	Tx2	Ty	Sz	MxP	M	SD1	AC	Vm	AT	H	Amt	H	Amt	H	Amt	H	Amt	H	Amt	H	Amt	H	Amt	AF	In
				XXX.X	XXX.X	% RQD		LITH 2		RM2			C2	%	C4	Tx3	Tx4	Sh	%	Sort	H	SD2	AC	Or	VM	H	Amt	H	Amt	H	Amt	H	Amt	H	Amt	H	Amt	H	Amt	MF	in
P				280.8	288.8			XLAT			5	A	QX	02	MS	FR	FL									3	10	0	10	P	30			6	05	L	.5				
L				.	.								LF	10	QZ	CB																								
R				.	.		CREY LITHIC XTAL ASH TUFF. LITHIC FLAGS ARE LIKELY BUT COULD BE STRUCTURAL ARTEFACTS. SOME FX. ARGL INTERVALS																																	
				.	.		FROM 10-50 cm (3). 30 cm GRADE (ARGL) AT BOTTOM OF INTERVAL.																																	
P				288.8	306.0			XLAT			3	A	LF	07	GR	LM	IB									3	10	W	05	P	20			6	07						
L				.	.			ARGL	30				QX	02	MS																										
R				.	.		ANOTHER INTERMIXED INTERVAL. PREDOMINANTLY VOLCANIC BUT 3-5% CARBONACEOUS SEDIMENTS. MODERATE MUSK ALT'N. FOLIATION																																	
				.	.		VARIES FROM 0 TO 90°. LOWER CONTACT DEFINED BY INCREASE IN SX CONTENT.																																	
P	N	W		306.0	309.0			SMSX			3	A	SX	20	QZ	LM									3	05	0	03	P	25			6	20	L	01				
L				.	.								MS	25	CB																				L	02				
R				.	.		ALTERED ASH + BLACK SED. MUDST WITH ± 30% MASSIVE TO SEMI-MASSIVE BANDS OF Py WITH TRACE Cp & Sp. IS THIS A LENS?																																	
				.	.																																				
P				309.0	320.0			ARGL				NN	GR	03	QZ	LM	IB	LF	05	10		FO	50			3	05	0	05	F	10			U	10						
L				.	.			ASHT	20				PY	10	CB			FL	10																						
R				.	.		BLACK ARGL WITH UP TO 10% FLATTENED FELSIC LITHIC FRAGMENTS AND 10% PORPHYROBLASTIC PYRITE CUBES TO 1 cm.																																	
				.	.																																				
P				320.	349.9			QXLT			5	AG	QX	10	CB	PP	FR	LF	3	20		FO	60			V	07	0	10	P	15			D	03						
L				.	.								LF	20	MS			FL	20																						
R				.	.		VERY CLEAN FELSIC VOLCANIC. QZ EYES TO 1cm BUT MORE COMMONLY 3mm. FLAGS ARE FLATTENED AND UP TO 20 cm IN SIZE. WEAK MUSK ALTERATION																																	
				.	.		BUT PREDOMINANT VARIOUS CARBONATE SPOTS TO 5mm.																																	
P				349.	374.8			ASHT					MS	10	QZ			LF	1	10		FO	60			V	15	0	10	P	10			D	02						
L				.	.			ARGL	40				CB	10				FL	5																						
R				.	.		HETEROGENEOUS UNIT COMPOSED OF FELSIC ASH AND ARGL WHICH IS BOTH INTERMIXED AND INTERBEDDED. THICKEST ARGL BED IS 3m.																																	
				.	.		MUSK. ALT INCREASES DOWNWARDS																																	
P	F	L	T	374.8	377.1			ELTZ					GG	BD																												
				.	.																																				
P				377.1	378.7			MSSX					SX	90		LM	MX					LM	80													L	70	L	10				
L				.	.																															L	10	L	03				
R				.	.		APPEARS TO BE HIGH GRADE, EXTREMELY MASSIVE (90%), LAMINATED SULPHIDE.																																	
				.	.																																				
P				378.7	397.0			ARGL				NN	GR	02	PY	LM	IB									V	05	L	15					U	10						
L				.	.			ASHT	20				CB	15	QZ	PB																									
R				.	.		ARGL WITH MINOR INTERBED ASH LAMINAE W/ SHARP CONTACTS. CARB ALT'N (ANKERITE AND SIDERITE OF Fe-DOLO) IS INTENSE. ANKERITE																																	
				.	.		ALTERATION IS VERY INTENSE FOR 70cm BEGINNING 70cm BELOW MSSX. ASH INTERVALS ARE STRONGLY REPLACED BY YELLOW CARB.																																	
P				397.0	404.5			GRST			5	OT	CB	30	QZ	IB								FO	50		V	05	P	30	P	10			D	02						
L				.	.			ARGL	20				MS	10																											
R				.	.		PALE GREEN FINE GRAINED UNIT IS STRONGLY REPLACED BY Fe-CARB. 20% INTERBEDDED ARGL.																																	
				.	.																																				

Project: _____

Logged By: _____

Atna Resources Ltd.

Diamond Drill Log

Sample
- 50 above
- 50 below (or ave.)

Hole Id.: 97-78

Page: 5 of 5

Flag				Interval		G-tec	Lithology					Color		Components					Texture		Fragments				Structure			Veins		Alteration								Mineralization						Sum	
																													Qz		Cb		Ms		Ba		Py		Sp		Po			
																													Cl		Ep		Cy				Cp		Gn					
I	F	L	G	FROM	TO	% Rec	Fm	LITH 1	%Mix	RM_1	S	CL	C1	%	C3	Tx_1	Tx_2	Ty	Sz	MxP	M	SD_1	AC	Vm	AT	H	Amt	H	Amt	H	Amt	H	Amt	H	Amt	H	Amt	H	Amt	H	Amt	AF	In
				XXX.X	XXX.X	% RQD		LITH 2		RM_2			C2	%	C4	Tx_3	Tx_4	Sh	%	Sort	H	SD_2	AC	Or	V/M	H	Amt	H	Amt	H	Amt	H	Amt	H	Amt	H	Amt	H	Amt	H	Amt	MF	in
RS			M	0.	404.5	FIRST HOLE OF RELOG PROGRAM. HOLE CAN BE SUMMARIZED AS																	0-193 m		PREDOMINANTLY BLACK CLASTICS W/ MINOR TUFFACEOUS																			
				.	.	MATERIAL. BOTTOM OF THIS ARGL IS STRONGLY CARB ALTERED AND OVERLIES CARB ENHANCED AND 19m OF MASSIVE SULPHIDE. BELOW ROCK																																							
				.	.	IS INTERMIXED VOLC MATERIAL AND BLACK SEDIMENT; BELOWING MORE VOLCANIC DOWNWARDS. POSSIBLE SILICA EXHALITE AND																																							
				.	.	BARITE OVERLIE INTENSE MSSX ALT^N AT 280m BUT MSSX IS NOTABLY ABSENT. GOOD FOSSIL TYPES W/ INTERBEDDED																																							
				.	.	ARGL TO 377 m WHERE ANOTHER 1.6m INTERVAL OF MSSX OCCURS. THIS LATTER MSSX IS UNDERLAIN BY ARGL W/ INTERBEDDED																																							
				.	.	ASH WHICH IS INTENSELY CARB ALTERED.																																							
				.	.																																						
				.	.	ALTHOUGH NOT CLASSIC THE LATTER MSSX APPEARS TO BE RIGHT SIDE UP WHEREAS THE LOWER INTERVAL IS OVERTURNED.																																							
				.	.	HOWEVER THE SERIC AND BARITE + INTENSE MS ALTERATION IN THE MIDDLE IS ONLY SOMEWHAT PROXIMAL TO WEAK																																							
				.	.	SULPHIDE MINERALIZATION.																																							
				.	.																																						
				.	.	NUMEROUS CORE AND BROKEN ZONES OCCUR THROUGHOUT THE HOLE BUT NONE APPEARS TO BE A MAJOR THRUST, ALTHOUGH																																							
				.	.	THE ONE ABOVE THE LOWERMOST MSSX COULD HAVE DISPLACED SOME SULPHIDE MATERIAL.																																							
				.	.																																						
A	0	0	2	142.0	156.4			188001									346.6	357.0		1880	25																						
				156.	163.5			188002										366.1			26																						
				163.5	168.2			03										379.8			27																						
				.	177.5			04									380.2	383.8			28																						
				.	186.5			05										390.5			29																						
				.	190.3			06										395.4			30																						
				206.4	213.7			07										397.0			31																						
				213.7	219.5			08										404.5			32																						
				220.0	225.7			09																																				
				.	237.2			10																																				
				.	247.1			11																																				
				.	256.6			12																																				
				.	269.7			13																																				
				.	266.7			14	SER																																			
				.	276.3			15																																				
				.	280.5			16	BAR																																				
				.	285.6			17																																				
				.	291.7			18																																				
				.	303.0			19																																				
				.	311.2			20	SBT MATERIAL AVOIDED 0.5m MSSX.																																						
				.	319.3			21																																				
				.	326.5			22																																				
				.	337.4			23																																				
				.	346.6			24																																				

ATNA RESOURCES LTD

DIAMOND DRILL LOG

Project: MARG. (RE-LOG.)

Drill Hole Id.: 97-82

Hole Azimuth: 010° **Dip:** -70° **Total Depth:** 463.9m

Date Started: _____ **Date Completed:** _____ **Core Size:** _____

	Northing	Easting	Elevation
UTM Location:	7097957	525491	1440
Grid Location:			
Collar Survey:			

Down Hole Survey

Survey Method: _____

Depth	Azimuth	Dip*

*corrected

Sample Information

# of Samples: 188079 → 188087

Date Shipped: _____

Analytical Lab: ACME

Split By: _____

Type: _____

Assay Certificate # : A002572

Drill Information

Drill Contractor: _____

Drill Size: _____

Driller: _____

Driller: _____

Helper: _____

Helper: _____

Shift	Distance	Shift	Distance

Geological Summary

Purpose / Target: SECTION 1500E

Comments: _____

Key Intersections

From	To	Results

Logged By: LHW

Project: MARG

Logged By: LHW.

Atna Resources Ltd.

Diamond Drill Log

Hole Id.: 97-82

Page: 2 of 6

I	F	L	G	FROM / XXX.X	TO / XXX.X	% Rec / % RQD	Fm	LITH 1 / LITH 2	%Mix	RM1 / RM2	S	CL	C1 / C2	%	C3 / C4	Tx1 / Tx3	Tx2 / Tx4	Ty / Sh	Sz / %	MxP / Sort	M / H	SD1 / SD2	AC	Vm / Or	AT / VM	Qz Cl H	Qz Cl Amt	Cb Ep H	Cb Ep Amt	Ms Cy H	Ms Cy Amt	Ba Gr H	Ba Gr Amt	Py Cp H	Py Cp Amt	Sp Gn H	Sp Gn Amt	Po H	Po Amt	AF / MF	Sum In
P				0.0	6.8			OVER																																
P				6.8	19.1			QZIT			5	A	Qz	75	CB	LM	IB					FO	60			V	05	3	07	$	10									
L								ARGL	10				MS	10		FG																								
R								Laminated Keno Hill qtzite with carbonaceous argillite. MS-alteration within argillaceous laminae and beds. Qtzite is relatively dirty - appears																																				
								china a greywacke, however still has the characteristic veined K.H.Q. look. Heterogeneous unit with much mixing between qtzite and ARGL.																																				
P				19.1	20.3			ASHT			6	AG	MS	20	QZ	FG	TF					FO	60			V	02	3	03	P	20									
L													CB	05																										
R								Moderately MS-altered ASHT. Qz appears mainly as segregations or stz-sweats, not truly veined. No visible sulphides. Unit highly broken up. 20° cm fault gouge at 19.3 m.																																				
P				20.3	35.0			QZIT			4	A	Qz	10	CB	Lm	IB					FO	70			V	15	3	15	$	20			EU	01					
L								ARGL	40				MS	20		FG																								
R								Heterogeneous unit of interbedded/laminated carbonaceous ARGL with Keno Hill qtzite. MS-within ARGL laminae. Uppermost 6.5 m																																				
								of unit is moderately to strongly carb-altered with abundant Qtz. sweats; this part of unit also very broken up. Lowermost 1.2m																																				
								of unit is predominantly carbonaceous ARGL with ~1% EU PY cubes. Lower contact is gradational with much mixing over ~30 cm of core																																				
P				35.0	39.2			ASHT			7	AG	MS	25	CB	FG	IB									V	03	3	10	P	25			D	01					
L								ARGL	25				QZ	10	CL	TF									$	TR														
R								Interbedded ARGL + Keno Hill qtzite with distinct light green tuff. Trace chlorite which has now been almost completely replaced by sericite.																																				
								Strong sericitic alteration. Strong crenulation cleavage. Lower contact is sharp.																																				
P				39.2	55.3			ARGL				NN	GR	05	PY	IB	FG					FO	45			V	03	3	02	P	25			D	03					
L								QZIT	10				QZ	03																		D	05								
R								Interbedded ARGL to dark grey siltstone with minor 5-50 cm thick beds of Keno Hill qtzite. Qtz. is predominantly in the form of qtz sweats																																				
								within ARGL; EU PY within ARGL. Minor (less than 5%) light green tuffaceous interbeds (2 @ 10-cm thick). Mostly interval of broken core +																																				
								fault gouge. **Lowermost 4m of unit weakly to moderately silicified. Lower contact is sharp.																																				
N				48.9	51.5			FLTZ					GG	50																										
P				55.3	59.4			QRST			5	OU	CB	30	CL	FO						FO	50			V	02	P	30	P	20									
L													MS	20												$	05												
R								Strongly Fe-CB altered greenstone dyke/sill? Qtz. is in the form of segregations or sweats. Lower contact is relatively sharp.																																				
P				59.4	64.7			QZIT			5	A	Qz	30	MS	BR	IB									V	30	P	20	$	05									
L								ARGL	10				CB	20		MT																								
R								Strongly Fe-CB altered Keno Hill qtzite + ARGL and med.-grey siltstone. Very broken core. 30cm-thick fault gouge in ARGL at 64.1 m																																				
								Lower contact with black ARGL is sharp. Uppermost 50-cm of unit is bull qtz. and much bull qtz. throughout entire unit.																																				
N				64.1	64.3			FLTZ						26		40																								

PMH VERSION

Project: MARG

Logged By: LHW

Atna Resources Ltd.

Diamond Drill Log

Hole Id.: 97-82

I	F	L	G	FROM XXX.X	TO XXX.X	% Rec / % RQD	Fm	LITH 1 / LITH 2	%Mod	RM1 / RM2	S	CL	C1 / C2	%	C3 / C4	Tx1 / Tx3	Tx2 / Tx4	Ty / Sh	Sz / %	MxP / Sort	M / H	SD1 / SD2	AC	Vm / Or	AT / V/M	Alteration: Qz Cl / Cb Ep / Ms Cy / Ba Gr — H	Amt	H	Amt	H	Amt	H	Amt	Mineralization: Py Cp — H	Amt	Sp Gn — H	Amt	Po — H	Amt	Sum AF	In MF
P				64.7	89.6			ARGL				NN	GR	05	QZ	IB	FG					FO	50			V	05	3	07					D	05						
L				·	·			ASHT	05				CB	07	PY	LB	PB															P	05						
R				·	·			Interbedded ARGL + ASHTF. ASHTF beds are mirror green-tan colour, weakly carb-altered and ~50 cm thick. PY forms																																				
				·	·			disc. subedral cubes in the ARGL; cubes up to 15mm. 50 cm thick bull quartz vein at 79.3 m. Foliation varies from																																				
				·	·			~50° to CA to parallel to CA. Fault gouge + broken core in lowermost 1.8 m. Note: This package of sediment much more																																				
				·	·			graphitic and lacking in Keno Hill style. Possibly folded in package of lower Earn Group rocks?																																				
N				87.8	89.6			FLTZ					66	70																												
				·	·																																						
P				89.6	106.8			QZIT			5	A	QZ	25	PY	VN	IB					FO	60			V	25	3	10					D	03						
L				·	·			ASHT	20				CB	10	1	FO										$	05?														
R				·	·			Interbedded Keno Hill style with ASHT. Tuff contains ~10% sheared to laminated black material - some of black																																				
				·	·			material appears to have a micaceous habit when scratched - possibly chlorite? Tuff becomes almost entirely tuffaceous in																																				
				·	·			heterogeneous - total mixed bag of tuff + carbonaceous ARGL. Unit becomes almost entirely tuffaceous in																																				
				·	·			lowermost 5.3m of unit. 20-50 cm thick bull qtz. in lowermost 2.0m of unit. 5 cm gouge at 105.5 m. Sharp lower contact.																																				
				·	·			Approx. 5% D, EU PY cubes within tuff. PY up to 15 mm.																																				
P				106.8	122.2			ARGL				NN	6R	05	PY	IB	FO					FO	60			V	10	3	07					D	10						
L				·	·			ASHT	20				QZ	10	CB																	P	05						
R				·	·			Interbedded graphitic argillite with ASHT. ASHT is moderately to strongly CARB altered. CARB-alteration becomes stronger moving down																																				
				·	·			the unit. Porphyroblastic EU PY cubes within ARGL up to 15 mm. 30-cm gouge at 107 m; 10-cm gouge @ 119.2 m. Lower																																				
				·	·			contact relatively sharp. 15 cm bull qtz @ 121.8 m. NOTE: Graphitic ARGL + ASHT facies - may be lower Earn Group																																				
P				122.2	124.9			QZIT			5	A	QZ	90		MX	VN									V	05														
L				·	·																																						
R				·	·			Lilac med-grey Keno Hill style. Lower contact is sharp.																																				
P				124.9	165.2			ARGL				NN	GR	07	PY	IB	MT					FO	80			V	15	3	05					D	10						
L				·	·			QXTF	05				QZ	15	CB																	P	07						
R				·	·			Interbedded graphitic arg. with QXTF. QXTF contains less than 1% QZ-eyes. PY is finely diss. to porphyroblastic with EU PY cubes																																				
				·	·			up to 1.0 cm. QXTF moderately CARB altered. Lowermost 4.3 m is highly broken up. 20-cm fault gouge @ 144.0 m; 20-cm																																				
				·	·			fault gouge at 162.6 m. Lower contact sharp.																																				
P				165.2	169.4			GRST			6	IG	CB	15	CL	FG	MX									P	15	P	15					D	01						
L				·	·								QZ	15	PY											$	02														
R				·	·			Very fine-grained siliceous argillstone. Moderately CARB altered. Dyke or sill? Lower contact is sharp.																																				
P				169.4	144.4			QXLT	60		6	A	MS	30	QX	MT	CR	LF											3	10	P	30			D	10						
L				·	·			ARGL	40				CB	10	LF	IB		FL	05																						

R

Heterogeneous highly mixed QXLT in ARGL. QX are rare (<1%) 2mm blue qtz. eyes. PY is fine gr. diss. to f.g. PMH VERSION laminated in tuff to porph. EU 10-20 mm cubes within ARGL. ARGL is graphitic with ~5% graphite. Foliation is shallow to parallel to CA. Lower contact is sharp.

Project: MARG

Logged By: LHW

Atna Resources Ltd.

Diamond Drill Log

Hole Id.: 97-82

Page: 4 of 6

	Flag			Interval		G-tec		Lithology				Color		Components			Texture		Fragments				Structure		Veins		Alteration								Mineralization						Sum	
																										Qz Cl		Cb Ep		Ms Cy		Ba Gr		Py Cp		Sp Gn		Po			
I	F	L	G	FROM XXX.X	TO XXX.X	% Rec % RQD	Fm	LITH 1 LITH 2	%Mix	RM1 RM2	S	CL	C1 C2	% %	C3 C4	Tx1 Tx3	Tx2 Tx4	Ty Sh	Sz %	MxP Sort	M H	SD1 SD2	AC AC	Vm Or	AT V/M	H	Amt	H	Amt	H	Amt	H	Amt	H	Amt	H	Amt	H	Amt	AF MF	In in
P				194.4	209.9			ARGL				NN	GR	05	PY	IB	FO								V	10	3	05					D	07						
L				·	·			QXTF	05				QZ	10	CB																P	05						
R				·	·			Interbedded ARGL + QXTF. QXTF contains ~1-2% 2mm blue qtz. eyes. Sharp contacts between tuff and ARGL (x less mixing compared with previous unit). Ell PY porphyroblast: up to 1cm within ARGL. Lower contact is sharp Tuff accounts																																	
				·	·			beds up to 80 cm thick. 5-cm fault zone at 212.2 m. ±cm gouge + 40 cm broken core at 206.0 m.																																	
				·	·																																		
P				209.9	220.8			LATF				7	AG	MS	60	QZ	FO	IR	LF			FO	60		V	05	3	05	P	60									
L				·	·									LF	10	CB	—		FL	10																			
R				·	·			Stranolo altered (sericite) LATF, FO varies from parallel to CA at top of unit to 60 to CA in lower half of unit. Lowermost 2m of unit highly broken. Lower contact is sharp.																																	
P				220.8	235.9			ARGL				NN	BR	03	CB	MT									V	55	3	05					D	10						
L				·	·								QZ	05	PY																P	03						
R				·	·			Mottled graphitic ARGL. Foliation is predominantly parallel to CA. ?V is fine-grained. Diss. Lower contact is gradational and mixed with underlying tuff. Uppermost 90 cm is broken core + gouge.																																	
N				220.8	221.7			FLTZ						GG	80																										
				·	·																																		
P				235.9	255.5			QXLT				6	A	MS	20	CB	MT	FR	LF						V	05	3	05	P	20			D	03					
L				·	·									QX	05	PY			FL	07																			
R				·	·			Mottled QXLT. Varies from zones of high sericitic alteration to siliceous zones abundant (~20%) in 1-5mm qtz-eyes. This siliceous (rhyolitic zones) is at 237.3m and is ~1.8m thick. Foliation is shallow to predominantly parallel to CA. Intrusive Krit. Lower contact is sharp and marked by 30 cm thick bull qtz.																																	
				·	·																																		
P				255.5	266.4			ARGL				NN	GR	07	PY	MT	16					FO	50		V	15	3	15					D	10						
L				·	·			ASHT	05				QZ	15	CB	FO																P	07	D	TR				
R				·	·			Interbedded ARGL with medium tanned-green ASHT → ASHT strongly sericitized. ARGL contains up to 10% porphyroblastic PY EU cubes; PY cubes avg. btwn. 3 and 5 mm. Interbed contacts are sharp. 1.1 thick unit of GNST (?) @ 263.6 m - strong Fl-herb alteration ~5% chlorite - less sericite alteration and more silicates. Color is med. to dark rusty orange-green contact btwn. GNST (?) and ARGL is sharp however not truly defined. Lower contact of ARGL unit is sharp 3cm thick band of massive PY + dissem. CY @ 260.3m. Tuffaceous interbeds 20cm thick @ 256.8m + 262.7m.																																			
				·	·																																		
P				266.4	277.7			ASHT				6	A	MS	25	CB	MT	IG							V	05	3	05	P	25			6	07					
L				·	·			ARGL	10					QZ	05	PY																							
R				·	·			Light green ASHT interbedded and mixed with graphitic ARGL. Foliation is shallow to parallel to CA. 20-30 thick bull qtz veins throughout. Lower contact is gradational into SMSX hosted in more ASHT.																																	
P				277.7	283.4			SMSX				4	A	MS	20	CB	BN	MT				FO	45		V	10	3	15	P	20			6	15	L	01				
L				·	·									PY	15	CP	FG																	J	03				
R				·	·			SMSX hosted in ASHT. Minor 5-15 cm bull qtz veins. FO is shallow (~45°) to almost parallel to CA.																																	
				·	·																																		

PMH VERSION

Project: MARG

Logged By: LHW

Atna Resources Ltd.

Diamond Drill Log

Hole Id.: 97-82

Page: 5 of 6

I	Flag F	L	G	Interval FROM XXX.X	TO XXX.X	G-tec % Rec % RQD	Lithology Fm	LITH 1 / LITH 2	%Mix	RM1 / RM2	S	CL	Color C1 / C2	%	C3 / C4	Components Tx1 / Tx3	Tx2 / Tx4	Texture Ty / Sh	Sz / %	MxP / Sort	M / H	Fragments SD1 / SD2	AC / AC	Structure Vm / Or	AT / V/M	Veins	Alteration Qz / Cl H	Amt	Cb / Ep H	Amt	Ms / Cy H	Amt	Ba / Gyp H	Amt	Mineralization Py / Cp H	Amt	Sp / Gn H	Amt	Po H	Amt	Sum AF / MF	In / in
P				283.4	285.8			MSSX					SX	60	QZ	BN						LM	70				J	10	J	10	$	10			M	40	L	10				
L				.	.								CB	10	MS																				J	07	D	01				
R				.	.			MSSX hosted by ASHT. MSSX is banded; banding defined by Sp laminae. Sp is disseminated throughout MSSX. MSSX grades into a thin unit ARGL																																						
P				285.8	290.0			ARGL				NN	GR	03	PY	LM						FO					V	05	3	03					D	07						
L				.	.								QZ	05	CB																		P	03								
R				.	.			interbedded/laminated ARGL w ASHT. EU Py porphyroblasts are between 3 and 5mm. Heterogeneous unit																																						
				.	.			Lower contact relatively sharp and marked by 10cm of bull qtz.																																					
D				290.0	321.6			ASHT			5	AG	MS	20	CL	MT	BN			U		FO	50				V	07	3	15	P	20			L	03	L	TR				
L				.	.								CB	15	QZ	FO											$	10							D	01						
R				.	.			Moderately silicified, chlorite-rich ASHTF. Minor banded fine-grained to coarse-grained Py ± associated laminated sphalerite and disseminated Sp. Lower contact is sharp.																																						
P				321.6	364.9			ARGL				NN	GR	07	QZ	IB	FO					FO	55				V	05	3	10					D	05						
L				.	.			ASHT 45					CB	10	PY																		P	07	D	TR						
R				.	.			Heterogeneous unit of interbedded ARGL and ASHT. ASHT is moderately to strongly sericitized (light grey). Uppermost ~2.5m of unit and lowermost ~15m of unit moderately to strongly Fe-carb altered.																																						
				.	.			*NOTE: Lowermost 10.5m of unit weakly to moderately silicified (SEXL 9). Lower contact is relatively sharp																																						
P				364.9	369.2			CBEX				9	A	CA	50	PY	MT	MX									J	10	M	50			L	10	L	03	L	02				
L				.	.								BA	10	SP																										
R				.	.			Massive calcite (CBEX) with laminated barite. SMSX @ 366.1m, ~50 cm thick; laminated to fracture filling of PY + SP. Lower contact is sharp.																																						
P				369.2	460.7			ASHT				6	A	MS	30	CB	MT	PP					FO	60				V	15	3	07	P	30			D	03						
L				.	.								QZ	15	PY	FO																										
R				.	.			Relatively homogeneous unit of moderately to strongly sericitized ASHT. Minor sections of QXLT → QX are rare (~1%) and																																						
				.	.			lithics (ash) ~3% in these sections. 30cm fault gouge @ 384.0m. One interval of graphitic ARGL @ 409.4 – 412.3m;																																						
				.	.			ARGL unit in relative sharp contact w/ tuffaceous unit. Lower contact of unit is sharp and marked by 30cm bull qtz																																						
P				460.7	463.9			ARGL				NN	GR	07	CB	MT	LB										V	15	3	05					D	05						
L				.	.								QZ	15	PY																		P	07								
R				EOH	.			Heterogeneous graphitic with minor mixed in tuff. Py form EU cubes averaging 3mm to 5mm, up to 10mm. Uppermost																																						
				.	.			25cm of unit is strongly CARB altered. 60cm fault gouge @ 463.2m.																																						
				.	.																																						
				.	.																																						
R	SUM			0.0	463.9			Uppermost 125m interbedded ARGL QZLT and minor tuffs → this package of sediments belongs to the																																						
				.	.			Kaho Hill Otzte package of sediments. The rest of hole is interbedded ARGL and tuffs → volcanics																																						
				.	.			become more abundant in lower third of hole																																						
				.	.																																						

CONT →

PMH VERSION

Project: MARG

Logged By: LHW.

Atna Resources Ltd.

Diamond Drill Log

Hole Id.: 97-82

Page: 6 of 6

Flag				Interval		G-tec	Lithology					Color	Components					Texture		Fragments				Structure		Veins		Alteration								Mineralization						Sum	
																												Qz		Cb		Ms		Ba		Py		Sp		Po			
																												Cl		Ep		Cy				Cp		Gn					
I	F	L	G	FROM	TO	% Rec	Fm	LITH 1	%Mix	RM1	S	CL	C1	%	C3	Tx1	Tx2	Ty	Sz	MxP	M	SD1	AC	Vm	AT	H	Amt	H	Amt	H	Amt	H	Amt	H	Amt	H	Amt	H	Amt	AF	In
				XXX.X	XXX.X	% RQD		LITH 2		RM2			C2	%	C4	Tx3	Tx4	Sh	%	Sort	H	SD2	AC	Or	V/M	H	Amt	H	Amt	H	Amt	H	Amt	H	Amt	H	Amt	H	Amt	MF	in
R	S	um		0.0	463.9		Ov	mineralized				horizon	occurs		at			277.7m	and	is	approximately		8.1	m	Thick.		15.7	m of	SmSx	and	2.4	m of	mSSx!								
				.	.		This	intersection				can	be		reasonably			correlated		across		the		entire		section.																
				.	.																																				
				.	.		CBEX	+	barite			is	found		at	364.9m		is	approximately		4.3	m	Thick.		This		CBEX		can		also		be		correlated						
				.	.		across	section.				At	SmSx		zone	at	366.1m	(1~5cm	thick)		occurs		within		the		CBEX		and		consists		Py	+	Sp						
				.	.		infilling	fractures.				Just	above		this	CBEX		is	approximately		10.5	m	thick		zone		of		weakly		to		moderately								
				.	.		silicified		volcanics	→		this	silicified		zone	appears		to		correlate		widely		with		a		SEXI		in		hole		97-78!						
				.	.																																				
				.	.		Overall	units	correlate		reasonably		well		across		section.		There		are		definite		repeats		in		packages		of										
				.	.		units	implying		folding.		Keno	Hill		quartzite		at		the		end		of		hole		97-82		and		then		re-appearing		at		the				
				.	.		bottom		of		hole		90-45		along		section		also		implies		some		regional		scale		folding.												
				.	.																																				
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				.	.																																				
				.	.																																				
A	0	0	2	255.5	266.4		189079																																			
				266.4	277.7		188080																																			
				277.7	283.4		188081	ASHT + SmSx																																			
				286.1	290.0		188082																																			
				290.0	303.6		188083																																			
				303.6	321.6		188084																																			
				357.4	364.9		188085	silicified	ASHT	*	Sample	ASHT.																														
				364.9	369.2		188086	CBEX	+	BARITE																																	
				369.2	380.1		188087																																			
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PMH VERSION

APPENDIX II

GEOCHEMICAL CERTIFICATES OF ANALYSIS

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

GEOCHEMICAL ANALYSIS CERTIFICATE

Atna Resources Ltd. File # A002143

1550 - 409 Granville St., Vancouver BC V6C 1T2 Submitted by: Rob Wilson

SAMPLE#	Mo ppm	Cu ppm	Pb ppm	Zn ppm	Ag ppm	Ni ppm	Co ppm	Mn ppm	Fe %	As ppm	U ppm	Au ppm	Th ppm	Sr ppm	Cd ppm	Sb ppm	Bi ppm	V ppm	Ca %	P %	La ppm	Cr ppm	Mg %	Ba ppm	Ti %	B ppm	Al %	Na %	K %	W ppm	Ba* %
E 188001	3	18	16	59	<.3	16	8	327	2.74	13	<8	<2	9	42	<.2	<3	<3	4	.90	.039	7	11	1.39	114	<.01	<3	1.24	.05	.09	2	-
E 188002	3	44	14	215	<.3	63	23	416	4.52	31	<8	<2	4	44	.7	<3	<3	43	1.11	.081	5	25	1.11	152	<.01	4	1.95	.05	.12	2	-
E 188003	1	24	18	106	<.3	26	11	153	3.01	25	<8	<2	10	36	.2	3	<3	9	.61	.039	7	17	.98	81	<.01	3	1.15	.05	.12	2	-
E 188004	5	57	18	275	<.3	73	17	334	4.48	31	<8	<2	3	30	1.0	<3	<3	40	.46	.062	6	31	1.08	149	<.01	5	1.88	.04	.17	<2	-
E 188005	3	47	23	206	<.3	53	14	220	3.96	51	<8	<2	5	27	1.0	3	<3	25	.32	.046	7	22	1.07	88	<.01	4	1.49	.04	.15	3	-
E 188006	7	33	25	212	<.3	12	15	527	4.89	35	<8	<2	10	40	.7	<3	<3	15	.64	.031	7	10	3.23	88	<.01	3	2.97	.01	.14	4	-
E 188007	4	33	119	214	<.3	43	10	131	2.87	74	<8	<2	8	41	.8	3	<3	21	.55	.054	6	18	1.42	82	<.01	<3	1.35	.06	.10	3	-
E 188008	6	2342	2388	4769	5.2	5	6	232	2.83	424	<8	<2	12	46	18.4	12	8	<1	.83	.016	8	6	1.78	79	<.01	8	1.40	.04	.15	2	-
E 188009	5	927	1005	2208	3.2	5	12	413	4.47	359	<8	<2	14	69	7.5	32	7	4	1.64	.032	5	6	3.52	82	<.01	4	2.43	.03	.10	<2	-
E 188010	5	40	65	117	<.3	6	4	123	2.59	53	<8	<2	20	47	.3	<3	<3	2	.59	.037	7	8	1.26	49	<.01	3	1.12	.06	.13	2	-
RE E 188010	6	38	61	119	<.3	6	4	122	2.62	56	<8	<2	20	48	.4	3	<3	2	.60	.037	7	7	1.28	53	<.01	6	1.15	.06	.13	3	-
RRE E 188010	6	32	53	107	<.3	6	4	120	2.60	48	<8	<2	21	46	.3	<3	<3	1	.61	.036	7	7	1.20	58	<.01	4	1.00	.05	.11	2	-
E 188011	3	7	39	71	.3	2	1	55	1.75	24	<8	<2	19	56	<.2	<3	<3	<1	.42	.020	11	7	.90	75	<.01	4	.82	.05	.13	2	-
E 188012	21	64	26	827	1.0	103	12	271	4.17	138	<8	<2	4	190	7.9	7	<3	68	2.23	.261	2	17	.85	21	<.01	4	.42	.01	.18	<2	-
E 188013	12	169	471	1418	4.8	3	4	96	4.66	271	<8	<2	14	72	2.1	18	3	<1	.58	.008	8	8	.12	18	<.01	4	.40	.01	.19	4	-
E 188014	3	31	364	1017	2.1	2	<1	43	2.52	236	<8	<2	8	88	1.5	12	<3	<1	.43	.002	12	5	.03	45	<.01	7	.27	.01	.15	2	-
E 188015	11	36	416	669	2.2	2	1	82	1.90	279	<8	<2	18	82	1.1	14	<3	<1	.54	.014	11	11	.51	58	<.01	<3	.54	.02	.18	2	-
E 188016	1	8	<3	18	<.3	5	2	1093	.34	4	<8	<2	<2	651	<.2	<3	<3	20	7.56	.038	1	3	.09	432	<.01	<3	.23	<.01	.01	<2	43.30
E 188017	6	14	39	90	<.3	5	3	124	2.27	21	<8	<2	13	72	.4	5	<3	<1	.64	.042	7	7	.37	36	<.01	5	.87	.01	.18	3	-
E 188018	7	42	11	369	<.3	31	5	495	1.75	33	<8	<2	8	583	4.9	9	<3	36	5.66	.096	3	7	.43	48	<.01	3	.77	.01	.13	2	-
E 188019	12	49	251	532	.3	6	1	68	2.20	374	<8	<2	16	38	.9	10	<3	1	.38	.011	10	8	.52	39	<.01	4	.62	.03	.17	<2	-
E 188020	14	606	1461	3613	3.6	25	5	140	4.30	199	<8	<2	16	54	8.8	40	6	1	.82	.033	5	8	.64	22	<.01	3	.38	.03	.16	<2	-
E 188021	13	170	153	553	.7	65	14	273	5.02	146	<8	<2	8	67	3.2	3	<3	22	1.77	.084	3	20	1.04	28	<.01	3	.55	.06	.16	2	-
E 188022	6	9	33	56	<.3	2	1	129	2.49	23	<8	<2	22	56	<.2	3	<3	<1	.81	.017	8	6	1.66	58	<.01	4	.63	.07	.10	<2	-
RE E 188022	6	8	33	58	<.3	2	1	129	2.49	21	<8	<2	23	57	<.2	3	<3	<1	.82	.018	8	6	1.69	58	<.01	<3	.65	.07	.10	<2	-
RRE E 188022	7	8	32	55	<.3	2	1	124	2.45	23	<8	<2	22	56	<.2	3	<3	<1	.79	.017	8	10	1.64	56	<.01	4	.68	.08	.10	<2	-
E 188023	4	8	30	46	<.3	3	2	65	1.70	55	<8	<2	24	37	<.2	4	<3	<1	.30	.024	12	7	1.23	92	<.01	4	.98	.05	.12	<2	-
E 188024	5	7	34	39	<.3	3	3	59	2.27	48	<8	<2	25	54	<.2	<3	<3	<1	.40	.040	11	5	1.46	66	<.01	5	1.23	.06	.15	<2	-
E 188025	3	10	171	340	.3	3	2	45	1.99	120	<8	<2	21	40	.6	4	<3	<1	.25	.025	13	5	.83	70	<.01	6	.64	.03	.19	<2	-
E 188026	3	8	60	114	<.3	1	1	60	1.65	85	<8	<2	18	58	<.2	4	<3	<1	.37	.010	16	7	1.06	151	<.01	<3	.61	.04	.17	2	-
E 188027	4	183	51	323	<.3	19	4	66	2.89	66	<8	<2	14	26	1.0	5	<3	4	.25	.043	9	9	.58	52	<.01	6	.60	.04	.18	2	-
E 188028	5	147	20	235	<.3	38	16	422	4.55	104	<8	<2	12	56	1.1	3	<3	20	1.41	.094	4	11	1.15	115	<.01	3	.68	.04	.17	<2	-
E 188029	8	80	95	339	.4	82	16	188	3.87	114	<8	<2	6	25	1.7	3	<3	14	.47	.047	6	13	.77	94	<.01	6	.51	.04	.21	<2	-
E 188030	3	37	<3	139	<.3	301	51	962	6.83	270	<8	<2	<2	121	.8	<3	<3	69	4.90	.079	3	278	6.07	28	<.01	<3	1.51	.09	.03	2	-
E 188031	6	60	14	388	<.3	95	18	237	4.18	57	<8	<2	7	24	3.1	<3	<3	13	.48	.058	6	12	.99	185	<.01	4	.44	.04	.21	<2	-
E 188032	1	112	3	147	<.3	75	31	1050	6.07	31	<8	<2	2	67	.9	<3	<3	75	5.43	.071	4	66	2.31	150	<.01	<3	1.88	.06	.12	2	-
STANDARD C3	25	64	39	170	5.4	36	11	782	3.39	55	19	2	19	29	23.1	14	21	78	.57	.088	18	161	.62	154	.09	23	1.84	.04	.16	14	-
STANDARD G-2	1	4	5	48	<.3	8	4	538	2.04	<2	<8	<2	4	70	<.2	<3	<3	38	.65	.093	7	66	.62	218	.13	3	.94	.07	.45	2	-

GROUP 1D - 0.50 GM SAMPLE LEACHED WITH 3 ML 2-2-2 HCL-HNO3-H2O AT 95 DEG. C FOR ONE HOUR, DILUTED TO 10 ML, ANALYSED BY ICP-ES.
UPPER LIMITS - AG, AU, HG, W = 100 PPM; MO, CO, CD, SB, BI, TH, U & B = 2,000 PPM; CU, PB, ZN, NI, MN, AS, V, LA, CR = 10,000 PPM.
BA* BY LIBO2 FUSION, ANALYSIS BY ICP.
ASSAY RECOMMENDED FOR ROCK AND CORE SAMPLES IF CU PB ZN AS > 1%, AG > 30 PPM & AU > 1000 PPB
- SAMPLE TYPE: CORE Samples beginning 'RE' are Reruns and 'RRE' are Reject Reruns.

DATE RECEIVED: JUL 4 2000 DATE REPORT MAILED: July 15/00 SIGNED BY: C. LEONG, D. TOYE, C. LEONG, J. WANG; CERTIFIED B.C. ASSAYERS

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

Data FA

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

GEOCHEMICAL ANALYSIS CERTIFICATE

Atna Resources Ltd. File # A002143R

1550 - 409 Granville St., Vancouver BC V6C 1T2 Submitted by: Rob Wilson

SAMPLE#	Mo ppm	Cu ppm	Pb ppm	Zn ppm	Ag ppm	Ni ppm	Co ppm	Mn ppm	Fe %	As ppm	U ppm	Au ppm	Th ppm	Sr ppm	Cd ppm	Sb ppm	Bi ppm	V ppm	Ca %	P %	La ppm	Cr ppm	Mg %	Ba ppm	Ti %	B ppm	Al %	Na %	K %	W ppm
E 188001	1	9	18	42	<.3	7	1	336	1.01	2	<8	<2	8	44	.7	<3	<3	2	1.03	.046	4	10	.98	262	<.01	<3	.78	.05	.06	<2
E 188002	1	26	14	207	<.3	41	4	415	3.18	<2	<8	<2	3	48	1.1	<3	<3	32	1.31	.093	2	26	1.00	187	<.01	<3	1.47	.05	.09	2
E 188003	<1	10	9	76	<.3	9	<1	132	1.02	<2	<8	<2	7	36	.3	<3	<3	5	.66	.043	3	13	.67	251	<.01	7	.73	.04	.09	<2
E 188004	1	37	13	250	<.3	41	3	324	3.12	<2	<8	<2	2	30	1.1	<3	<3	29	.52	.068	3	33	.89	191	<.01	3	1.41	.03	.11	<2
E 188005	1	29	17	167	<.3	19	1	205	2.11	2	<8	<2	4	26	.7	<3	<3	18	.36	.053	3	20	.75	186	<.01	<3	1.10	.03	.10	<2
E 188006	2	18	22	146	<.3	3	2	442	2.26	7	<8	<2	9	46	.6	3	<3	8	.75	.035	3	9	1.94	272	<.01	7	1.75	.01	.09	2
E 188007	1	18	118	140	<.3	7	1	112	.80	9	<8	<2	7	40	.7	<3	<3	11	.59	.058	2	13	.77	194	<.01	<3	.71	.04	.07	2
E 188008	1	334	2346	1294	3.6	1	<1	216	.65	3	<8	<2	9	48	5.5	<3	6	<1	.87	.018	5	7	.94	274	<.01	5	.66	.03	.10	<2
E 188009	1	269	1038	997	2.4	2	1	358	1.36	4	<8	<2	13	75	3.2	4	8	1	1.76	.036	4	6	2.10	198	<.01	<3	1.22	.02	.07	<2
E 188010	1	21	56	79	<.3	2	<1	110	.47	4	<8	<2	20	49	.3	<3	<3	<1	.65	.042	3	9	.77	421	<.01	12	.66	.05	.09	<2
RE E 188010	<1	20	53	78	.3	2	<1	109	.47	5	<8	<2	20	48	.2	<3	<3	<1	.64	.040	3	8	.76	405	<.01	3	.63	.05	.09	<2
RRE E 188010	<1	14	45	66	<.3	2	1	108	.42	3	<8	<2	20	48	.4	<3	<3	<1	.66	.041	3	6	.71	343	<.01	3	.54	.04	.07	<2
E 188011	1	1	28	48	<.3	1	<1	44	.27	3	<8	<2	17	59	<.2	<3	<3	<1	.49	.023	6	8	.54	470	<.01	<3	.50	.04	.10	<2
E 188012	1	14	18	783	<.3	18	1	264	.51	33	8	<2	3	233	8.0	4	<3	38	2.30	.289	2	14	.87	464	<.01	7	.25	.01	.11	2
E 188013	1	14	459	1101	1.0	1	<1	59	.24	10	<8	<2	11	86	2.0	4	3	<1	.60	.009	6	8	.11	414	<.01	3	.30	.01	.14	2
E 188014	1	2	393	859	.7	2	<1	37	.17	3	<8	<2	6	99	1.2	3	<3	<1	.48	.002	10	7	.03	269	<.01	4	.22	.01	.13	2
E 188015	1	2	429	495	.6	1	<1	64	.23	7	<8	<2	15	92	.8	<3	<3	<1	.59	.015	5	10	.41	592	<.01	8	.39	.02	.13	2
E 188016	<1	<1	<3	5	<.3	2	7	1170	.01	<2	<8	<2	<2	915	.2	<3	<3	9	8.42	.041	<1	1	.10	11726	<.01	5	.25	<.01	.01	<2
E 188017	1	<1	28	49	<.3	2	7	105	.13	2	<8	<2	12	166	.2	3	<3	<1	.67	.043	3	7	.35	12207	<.01	3	.75	.01	.14	<2
E 188018	1	7	9	295	<.3	5	8	485	.12	7	<8	<2	7	1062	3.7	5	<3	10	6.17	.099	2	7	.40	12200	<.01	4	.67	.01	.09	<2
E 188019	1	8	259	396	<.3	2	2	42	.30	14	<8	<2	16	49	.8	4	<3	<1	.43	.012	6	9	.40	4031	<.01	4	.48	.03	.13	2
E 188020	<1	156	1430	1772	1.7	3	<1	125	.44	7	<8	<2	13	60	4.7	10	4	<1	.86	.037	3	9	.61	280	<.01	5	.26	.02	.11	<2
E 188021	1	82	153	441	<.3	15	1	263	1.96	13	<8	<2	8	71	2.3	<3	<3	16	1.81	.090	1	18	1.04	221	<.01	<3	.40	.04	.10	2
E 188022	1	1	30	43	<.3	2	<1	116	.72	2	<8	<2	20	57	<.2	<3	<3	<1	.86	.019	4	6	1.51	412	<.01	<3	.38	.06	.07	<2
RE E 188022	<1	1	24	43	<.3	1	<1	113	.70	2	<8	<2	20	55	<.2	3	<3	<1	.84	.019	4	7	1.49	400	<.01	3	.38	.06	.07	<2
RRE E 188022	1	<1	18	37	<.3	1	<1	106	.69	2	<8	<2	19	55	<.2	<3	<3	<1	.81	.018	4	9	1.43	418	<.01	<3	.40	.06	.07	<2
E 188023	1	<1	24	22	<.3	2	<1	38	.37	3	<8	<2	21	35	<.2	<3	<3	<1	.31	.024	4	7	.65	553	<.01	3	.48	.04	.08	<2
E 188024	1	1	23	13	<.3	1	<1	34	.44	2	<8	<2	24	54	<.2	<3	<3	<1	.44	.044	4	6	.75	414	<.01	<3	.63	.05	.10	<2
E 188025	1	1	173	295	<.3	1	<1	25	.42	4	<8	<2	18	41	.4	<3	<3	<1	.27	.026	5	7	.61	319	<.01	<3	.38	.03	.13	<2
E 188026	2	<1	53	91	<.3	1	<1	45	.54	3	<8	<2	13	59	<.2	<3	<3	<1	.41	.010	11	8	.87	284	<.01	3	.38	.03	.12	2
E 188027	1	85	43	243	<.3	4	<1	49	.62	3	<8	<2	11	25	1.0	3	<3	2	.27	.047	4	10	.42	190	<.01	3	.37	.03	.12	2
E 188028	1	83	18	210	.3	16	2	428	3.34	4	<8	<2	12	59	.7	<3	<3	16	1.53	.103	2	11	1.14	147	<.01	4	.52	.04	.11	3
E 188029	1	33	97	288	.3	31	3	188	2.77	6	<8	<2	5	25	1.3	3	<3	9	.51	.052	2	14	.76	173	<.01	3	.38	.03	.13	<2
E 188030	<1	13	5	108	<.3	95	5	947	6.18	7	<8	<2	<2	121	<.2	<3	<3	42	5.42	.083	1	153	5.50	22	<.01	<3	.78	.07	.02	2
E 188031	1	19	15	341	.3	47	6	230	3.48	<2	<8	<2	6	24	2.4	3	<3	9	.50	.062	2	13	.93	143	<.01	4	.30	.03	.12	<2
E 188032	1	23	12	118	.4	47	10	1149	5.81	<2	<8	<2	2	70	.3	5	<3	62	5.89	.080	2	59	2.27	89	<.01	4	1.53	.05	.07	2
STANDARD C3	17	62	30	172	5.9	35	11	774	3.00	52	21	<2	3	26	24.0	4	24	61	.53	.090	11	129	.53	153	.04	28	1.64	.04	.13	8
STANDARD G-2	2	1	4	44	<.3	8	4	487	1.51	<2	<8	<2	3	59	<.2	<3	<3	26	.59	.100	4	54	.57	218	.10	<3	.87	.06	.45	<2

GROUP 1D - 0.50 GM SAMPLE LEACHED WITH 10% HCL AT 95 DEG. C FOR ONE HOUR, DILUTED TO 10 ML, ANALYSED BY ICP-ES.
UPPER LIMITS - AG, AU, HG, W = 100 PPM; MO, CO, CD, SB, BI, TH, U & B = 2,000 PPM; CU, PB, ZN, NI, MN, AS, V, LA, CR = 10,000 PPM.
ASSAY RECOMMENDED FOR ROCK AND CORE SAMPLES IF CU PB ZN AS > 1%, AG > 30 PPM & AU > 1000 PPB
- SAMPLE TYPE: CORE PULP Samples beginning 'RE' are Reruns and 'RRE' are Reject Reruns.

DATE RECEIVED: JUL 18 2000 DATE REPORT MAILED: July 21/00 SIGNED BY..... D. TOYE, C.LEONG, J. WANG; CERTIFIED B.C. ASSAYERS

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

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

GEOCHEMICAL ANALYSIS CERTIFICATE

Atna Resources Ltd. File # A002143R2

1550 - 409 Granville St., Vancouver BC V6C 1T2 Submitted by: Rob Wilson

SAMPLE#	Hg ppb
E 188001	25
E 188002	60
E 188003	40
E 188004	90
E 188005	55
E 188006	105
E 188007	85
E 188008	2655
E 188009	1295
E 188010	85
RE E 188010	110
RRE E 188010	105
E 188011	65
E 188012	540
E 188013	3210
E 188014	3105
E 188015	1875
E 188016	120
E 188017	135
E 188018	250
E 188019	830
E 188020	2015
E 188021	190
E 188022	20
RE E 188022	20
RRE E 188022	25
E 188023	170
E 188024	160
E 188025	580
E 188026	300
E 188027	245
E 188028	360
E 188029	165
E 188030	15
E 188031	135
E 188032	30
STANDARD C3	885

ASSAY RECOMMENDED FOR ROCK AND CORE SAMPLES IF CU PB ZN AS > 1%, AG > 30 PPM & AU > 1000 PPB
- SAMPLE TYPE: CORE PULP HG GROUP 1C - ANALYSIS BY FLAMELESS AA FROM A.R. LEACH.
Samples beginning 'RE' are Reruns and 'RRE' are Reject Reruns.

DATE RECEIVED: JUL 20 2000 DATE REPORT MAILED: July 24/00 SIGNED BY: C. Leong D. TOYE, C.LEONG, J. WANG; CERTIFIED B.C. ASSAYERS

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

Data 1 FA

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

GEOCHEMICAL ANALYSIS CERTIFICATE

Atna Resources Ltd. File # A002251

1550 - 409 Granville St., Vancouver BC V6C 1T2 Submitted by: Rob Wilson

SAMPLE#	Mo ppm	Cu ppm	Pb ppm	Zn ppm	Ag ppm	Ni ppm	Co ppm	Mn ppm	Fe %	As ppm	U ppm	Au ppm	Th ppm	Sr ppm	Cd ppm	Sb ppm	Bi ppm	V ppm	Ca %	P %	La ppm	Cr ppm	Mg %	Ba ppm	Ti %	B ppm	Al %	Na %	K %	W ppm	Ba* %
E 188033	14	67	27	1119	1.3	72	12	119	3.25	79	<8	<2	3	28	12.1	5	<3	48	.46	.048	4	25	.58	95	<.01	7	.91	.03	.15	3	-
E 188034	14	50	16	499	.9	54	9	114	2.78	83	<8	<2	2	28	6.1	5	3	48	.48	.064	4	24	.48	107	<.01	<3	.80	.03	.17	4	-
E 188035	5	17	30	222	<.3	4	16	446	4.80	23	<8	<2	14	60	.5	<3	<3	5	.94	.011	8	7	5.49	367	<.01	6	4.63	.01	.08	<2	-
E 188036	56	236	293	3032	2.1	202	13	169	3.56	400	17	<2	4	78	33.9	14	5	309	1.54	.472	3	32	.37	33	<.01	5	.95	.03	.32	4	-
E 188037	3	22	35	147	<.3	3	22	612	5.55	52	<8	<2	8	142	.4	3	3	2	2.49	.022	4	7	4.51	142	<.01	3	2.61	.03	.07	2	-
E 188038	2	753	857	2209	4.5	6	21	482	5.23	317	<8	<2	16	109	7.3	23	14	4	1.28	.036	6	9	5.58	135	<.01	<3	4.25	.03	.11	<2	-
E 188039	4	247	199	464	.6	4	4	221	1.96	10	<8	<2	16	18	1.2	6	5	<1	.20	.025	17	8	2.14	95	<.01	6	1.86	.02	.17	<2	-
E 188040	2	12	10	142	<.3	3	4	256	2.48	32	<8	<2	16	20	<.2	4	<3	<1	.27	.034	17	7	2.70	108	<.01	<3	2.45	.02	.20	2	-
E 188041	3	134	135	395	<.3	3	9	316	3.07	436	<8	<2	17	16	.9	3	3	<1	.25	.031	16	6	2.53	97	<.01	3	2.31	.02	.15	<2	-
E 188042	5	83	369	423	1.0	3	13	484	4.80	32	<8	<2	14	53	1.1	<3	5	2	.65	.009	12	5	7.09	95	<.01	3	5.25	.02	.10	<2	-
RE E 188042	5	85	380	443	1.0	2	14	492	4.88	35	<8	<2	14	54	1.3	<3	6	2	.66	.008	12	5	7.17	95	<.01	7	5.28	.02	.10	<2	-
RRE E 188042	5	76	455	500	1.2	2	14	505	4.83	36	<8	<2	14	55	1.3	<3	7	3	.69	.010	11	5	7.00	78	<.01	<3	5.07	.01	.08	<2	-
E 188043	8	10	402	819	.7	2	1	90	2.11	160	<8	<2	16	72	1.0	6	3	<1	.75	.005	12	7	.55	75	<.01	<3	.47	.02	.20	3	-
E 188044	3	6	31	56	<.3	2	1	72	2.13	51	<8	<2	17	53	<.2	<3	<3	<1	.48	.019	9	5	.58	79	<.01	4	.42	.01	.16	3	-
E 188045	26	83	22	1691	2.7	112	8	166	2.92	96	<8	<2	4	104	23.4	31	<3	161	1.11	.236	2	19	.28	42	.01	14	.61	.01	.26	5	-
E 188046	8	11	28	170	.3	4	2	112	3.12	94	<8	<2	14	54	.5	4	<3	<1	.45	.029	7	6	.23	45	<.01	5	.35	.01	.16	6	-
E 188047	30	65	15	1377	.7	145	11	106	3.38	89	<8	<2	<2	16	16.8	16	<3	121	.44	.126	1	22	.12	43	.01	4	.88	.01	.20	6	-
E 188048	15	23	34	231	.4	29	3	96	2.66	50	<8	<2	5	11	1.5	8	3	129	.38	.064	7	12	.15	66	.03	7	2.51	.01	.16	2	-
E 188049	11	3	15	229	<.3	29	9	1264	.41	13	17	<2	2	3918	2.4	5	<3	108	21.36	.073	9	11	.65	13910	.02	<3	1.17	.01	.02	3	-
E 188050	31	88	19	3667	2.8	167	11	192	2.68	69	11	<2	2	50	48.0	31	<3	293	1.52	.481	2	20	.26	36	.01	14	1.06	.01	.27	3	-
E 188051	4	55	3	317	.3	31	9	1662	1.56	22	<8	<2	<2	1041	1.3	9	<3	47	14.31	.019	4	9	.36	2425	.01	<3	1.18	.01	.04	<2	8.80
E 188052	4	6	21	79	<.3	3	1	91	2.06	13	<8	<2	19	36	.2	3	<3	<1	.44	.021	13	6	1.17	79	<.01	5	.87	.05	.12	3	-
E 188053	4	7	34	57	<.3	3	2	136	1.96	32	<8	<2	23	71	.2	3	3	<1	1.07	.028	7	7	.93	69	<.01	<3	.57	.04	.12	3	-
E 188054	21	59	17	630	1.1	74	9	297	2.85	74	<8	<2	3	60	7.1	6	<3	31	2.22	.119	2	18	.47	59	<.01	3	.34	.02	.14	5	-
RE E 188054	20	60	14	626	1.1	73	9	295	2.85	74	<8	<2	4	60	7.1	6	<3	30	2.21	.120	2	16	.47	57	<.01	3	.34	.02	.14	6	-
RRE E 188054	21	57	13	644	1.1	74	9	292	2.86	74	<8	<2	3	62	7.3	7	<3	34	2.24	.127	2	19	.47	48	<.01	<3	.37	.02	.15	4	-
E 188055	22	59	22	347	.6	88	11	234	3.69	52	<8	<2	4	35	3.4	3	<3	12	1.39	.049	2	16	.63	63	<.01	<3	.31	.02	.15	5	-
E 188056	20	56	18	782	1.1	74	9	198	2.96	59	<8	<2	3	32	8.4	16	<3	27	1.21	.053	3	18	.39	74	<.01	<3	.33	.02	.16	5	-
E 188057	22	47	24	220	.3	70	10	178	3.43	70	<8	<2	4	31	1.3	8	<3	6	1.02	.035	3	15	.44	67	<.01	4	.25	.02	.13	5	-
E 188058	10	185	520	1170	1.0	4	<1	110	3.33	87	<8	<2	15	31	2.5	66	4	<1	.53	.003	19	13	.67	49	<.01	3	.50	.04	.16	3	-
E 188059	3	309	192	791	.5	84	29	908	6.32	193	<8	<2	<2	139	3.2	3	<3	31	4.20	.074	2	24	2.42	138	<.01	<3	.33	.08	.05	2	-
E 188060	37	3493	3656	8983	10.4	113	14	146	4.82	218	8	<2	4	44	30.3	92	14	78	.86	.118	3	25	.37	27	<.01	8	.41	.02	.17	5	-
E 188061	1	65	8	120	<.3	102	39	1109	6.62	128	<8	<2	<2	110	.6	17	<3	33	5.75	.103	2	52	4.39	73	<.01	<3	.63	.09	.04	2	-
E 188062	6	78	445	1271	.6	15	2	153	2.62	54	<8	<2	24	43	3.3	25	<3	<1	1.27	.011	21	11	1.48	91	<.01	3	.59	.04	.17	2	-
E 188063	1	46	6	91	<.3	128	39	1143	6.31	69	<8	<2	<2	97	.3	21	<3	42	5.59	.101	4	88	4.82	59	<.01	<3	1.19	.09	.03	<2	-
E 188064	2	50	5	77	<.3	183	45	1161	6.71	35	<8	<2	<2	233	.5	3	<3	157	5.98	.098	6	325	5.50	37	.17	<3	3.77	.03	.01	<2	-
STANDARD C3	26	62	37	170	5.4	36	11	766	3.35	56	20	<2	20	29	23.1	15	22	77	.57	.086	17	159	.62	149	.09	25	1.82	.04	.16	16	-
STANDARD G-2	2	3	3	46	<.3	8	4	541	2.06	<2	<8	<2	4	71	<.2	<3	<3	38	.66	.096	7	69	.62	226	.13	5	.95	.07	.46	3	-

GROUP 1D - 0.50 GM SAMPLE LEACHED WITH 3 ML 2-2-2 HCL-HNO3-H2O AT 95 DEG. C FOR ONE HOUR, DILUTED TO 10 ML, ANALYSED BY ICP-ES.
UPPER LIMITS - AG, AU, HG, W = 100 PPM; MO, CO, CD, SB, BI, TH, U & B = 2,000 PPM; CU, PB, ZN, NI, MN, AS, V, LA, CR = 10,000 PPM.
ASSAY RECOMMENDED FOR ROCK AND CORE SAMPLES IF CU PB ZN AS > 1%, AG > 30 PPM & AU > 1000 PPB
- SAMPLE TYPE: CORE BA* .2 GM SAMPLE FUSED WITH 1.2 GM LIBO2, ANALYSIS BY ICP.
Samples beginning 'RE' are Reruns and 'RRE' are Reject Reruns.

DATE RECEIVED: JUL 11 2000 DATE REPORT MAILED: July 20/00 SIGNED BY C. Leong

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

D. TOYE; C. LEONG; J. WANG; CERTIFIED B.C. ASSAYERS

ACME ANALYTICAL LABORATORIES LTD. (ISO 9002 Accredited Co.)
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GEOCHEMICAL ANALYSIS CERTIFICATE

Atna Resources Ltd. File # A002252

1550 - 409 Granville St., Vancouver BC V6C 1T2 Submitted by: Rob Wilson

SAMPLE#	Mo ppm	Cu ppm	Pb ppm	Zn ppm	Ag ppm	Ni ppm	Co ppm	Mn ppm	Fe %	As ppm	U ppm	Au ppm	Th ppm	Sr ppm	Cd ppm	Sb ppm	Bi ppm	V ppm	Ca %	P %	La ppm	Cr ppm	Mg %	Ba ppm	Ti %	B ppm	Al %	Na %	K %	W ppm
E 188501	2	23	5	297	.5	37	24	278	9.26	21	<8	<2	3	18	.9	3	<3	161	.43	.181	7	27	3.36	145	.02	<3	5.05	.03	.10	<2
E 188502	<1	151	3	170	<.3	217	43	886	5.68	5	<8	<2	<2	35	1.4	3	<3	86	.87	.074	5	290	3.28	8	.23	<3	3.28	.03	<.01	<2
E 188503	<1	167	5	108	<.3	95	43	1301	7.31	4	<8	<2	<2	29	.6	3	<3	133	2.37	.070	4	88	3.51	19	.16	<3	4.58	<.01	.01	<2
E 188504	6	22	11	217	.8	32	14	140	6.48	39	<8	<2	5	15	<.2	5	<3	94	.19	.107	6	29	1.95	213	.01	<3	2.98	.04	.14	<2
E 188505	4	24	11	101	.3	12	4	148	3.36	<2	<8	<2	6	13	<.2	<3	<3	20	.06	.034	14	35	.65	190	.01	4	1.41	.02	.20	4
RE E 188505	3	24	8	102	<.3	13	4	149	3.40	<2	<8	<2	6	13	<.2	<3	<3	21	.06	.034	15	35	.66	187	.01	3	1.42	.02	.19	3
E 188506	4	9	10	45	1.0	13	1	35	.93	14	<8	<2	4	7	<.2	5	<3	12	.01	.012	13	16	.02	291	<.01	<3	.22	.02	.11	4
E 188507	2	154	3	155	<.3	224	53	1528	8.60	15	<8	<2	<2	103	1.4	<3	<3	225	6.21	.072	7	317	4.76	17	.02	<3	5.24	.01	.01	<2
STANDARD C3	27	64	35	168	5.5	37	12	784	3.36	58	22	2	21	29	23.2	19	20	78	.56	.087	18	169	.61	149	.09	23	1.77	.04	.16	19
STANDARD G-2	2	3	6	45	<.3	8	5	552	2.06	<2	<8	<2	4	71	<.2	<3	3	38	.67	.095	7	70	.63	225	.13	4	.98	.09	.45	<2

GROUP 1D - 0.50 GM SAMPLE LEACHED WITH 3 ML 2-2-2 HCL-HNO3-H2O AT 95 DEG. C FOR ONE HOUR, DILUTED TO 10 ML, ANALYSED BY ICP-ES.
UPPER LIMITS - AG, AU, HG, W = 100 PPM; MO, CO, CD, SB, BI, TH, U & B = 2,000 PPM; CU, PB, ZN, NI, MN, AS, V, LA, CR = 10,000 PPM.
ASSAY RECOMMENDED FOR ROCK AND CORE SAMPLES IF CU PB ZN AS > 1%, AG > 30 PPM & AU > 1000 PPB
- SAMPLE TYPE: ROCK Samples beginning 'RE' are Reruns and 'RRE' are Reject Reruns.

DATE RECEIVED: JUL 11 2000 **DATE REPORT MAILED:** July 20/00 **SIGNED BY** C. Leong D. TOYE, C.LEONG, J. WANG; CERTIFIED B.C. ASSAYERS

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

Data / FA

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GEOCHEMICAL ANALYSIS CERTIFICATE

Atna Resources Ltd. File # A002571 Page 1

1550 - 409 Granville St., Vancouver BC V6C 1T2

SAMPLE#	Mo ppm	Cu ppm	Pb ppm	Zn ppm	Ag ppm	Ni ppm	Co ppm	Mn ppm	Fe %	As ppm	U ppm	Au ppm	Th ppm	Sr ppm	Cd ppm	Sb ppm	Bi ppm	V ppm	Ca %	P %	La ppm	Cr ppm	Mg %	Ba ppm	Ti %	B ppm	Al %	Na %	K %	W ppm
L10+00E 12+00N	5	75	17	247	.6	44	14	366	3.56	22	<8	<2	2	28	1.1	5	<3	51	.16	.111	15	27	.58	133	.02	3	1.41	.01	.04	<2
L10+00E 11+75N	7	108	16	302	.6	51	16	406	3.91	28	<8	<2	<2	33	1.7	5	<3	62	.23	.128	14	38	.79	182	.02	<3	1.56	.01	.04	<2
L10+00E 11+50N	5	92	10	214	.4	42	18	668	4.23	21	<8	<2	<2	16	2.3	<3	<3	91	.18	.076	10	41	.87	182	.03	4	1.66	.01	.03	2
L10+00E 10+75N	4	77	12	147	<.3	31	10	330	3.58	17	<8	<2	<2	9	.7	<3	<3	54	.07	.101	11	30	.48	85	.02	<3	1.39	.01	.04	<2
L10+00E 10+25N	3	75	15	132	.3	32	14	551	3.51	16	<8	<2	<2	10	.6	<3	3	55	.08	.081	19	33	.60	193	.02	3	1.66	.01	.03	<2
L10+00E 9+50N	3	75	12	198	<.3	39	13	348	3.20	16	<8	<2	3	13	1.1	<3	<3	40	.28	.097	19	25	.48	158	.03	4	1.19	.01	.03	2
L10+00E 9+25N	3	53	16	126	<.3	31	10	385	3.84	14	<8	<2	<2	9	<.2	<3	<3	53	.09	.085	19	35	.60	176	.02	3	1.81	.01	.04	<2
L10+00E 9+00N	2	25	11	71	<.3	16	6	215	2.52	9	<8	<2	<2	6	.2	<3	<3	39	.05	.049	9	20	.35	75	.03	<3	1.01	.01	.02	<2
L10+00E 8+75N	2	64	17	131	<.3	29	11	347	3.60	17	<8	<2	<2	7	.4	<3	<3	50	.08	.064	11	27	.51	72	.04	<3	1.34	<.01	.02	<2
L10+00E 8+50N	2	20	14	49	.5	11	3	126	2.33	13	<8	<2	<2	6	<.2	<3	<3	48	.04	.052	9	19	.21	64	.02	5	.76	.01	.03	<2
L10+00E 8+25N	2	23	14	64	<.3	16	4	191	2.57	12	<8	<2	<2	6	<.2	<3	<3	40	.05	.065	11	22	.29	58	.01	<3	1.07	.01	.03	<2
L10+00E 8+00N	2	13	10	42	<.3	10	3	165	1.38	9	<8	<2	<2	9	.3	<3	<3	29	.21	.046	10	10	.11	133	.01	4	.55	<.01	.03	<2
L11+00E 12+00N	3	29	11	147	.3	27	4	118	2.56	21	<8	<2	<2	12	.6	4	<3	32	.22	.073	11	20	.37	100	.01	<3	1.00	.01	.03	2
L11+00E 11+75N	4	29	14	159	<.3	23	9	842	2.53	15	<8	<2	<2	22	6.0	<3	<3	37	.32	.174	5	20	.20	203	.01	<3	.76	.01	.06	<2
L11+00E 11+50N	2	41	15	205	.4	34	9	379	3.02	19	<8	<2	<2	21	3.2	<3	<3	34	.39	.104	9	22	.39	176	.01	3	1.09	<.01	.04	<2
L11+00E 11+25N	3	33	15	130	<.3	25	6	213	2.69	17	<8	<2	<2	19	.5	<3	<3	36	.23	.094	9	19	.38	223	.01	3	1.10	.01	.04	<2
L11+00E 11+00N	4	64	17	224	.6	38	12	346	3.52	19	<8	<2	<2	27	1.9	3	<3	48	.28	.089	14	30	.56	213	.01	3	1.32	.01	.04	<2
L11+00E 10+75N	3	47	13	254	.3	41	12	235	4.66	15	<8	<2	2	24	1.9	<3	<3	46	.38	.094	10	30	.63	254	.01	<3	1.39	.01	.03	<2
L11+00E 10+50N	4	50	8	149	.3	31	7	200	3.38	15	<8	<2	<2	22	2.5	<3	<3	55	.37	.079	8	35	.65	169	.01	<3	1.45	.01	.03	<2
L11+00E 10+25N	3	59	14	328	<.3	47	10	261	7.08	18	<8	<2	<2	11	1.6	<3	<3	52	.13	.094	10	42	.64	182	.01	4	1.83	.01	.03	<2
L11+00E 10+00N	2	53	14	173	<.3	36	9	274	3.33	14	<8	<2	<2	19	.9	<3	<3	46	.41	.106	9	29	.63	262	.01	<3	1.49	.01	.04	<2
L11+00E 9+75N	3	49	14	148	<.3	29	8	216	3.39	19	<8	<2	<2	8	.6	<3	<3	44	.06	.053	11	25	.49	75	.02	3	1.17	.01	.03	<2
L11+00E 9+50N	2	35	14	100	<.3	20	7	391	2.62	14	<8	<2	<2	7	.3	3	<3	37	.07	.073	9	20	.30	108	.01	3	.98	<.01	.03	<2
L11+00E 9+25N	3	37	16	168	<.3	30	7	232	2.61	12	<8	<2	<2	10	.7	<3	<3	39	.17	.061	12	23	.46	183	.02	<3	1.17	.01	.03	<2
L11+00E 9+00N	3	87	16	296	<.3	46	14	491	3.93	16	<8	<2	<2	13	1.2	<3	<3	55	.26	.093	22	36	.71	380	.02	<3	1.79	.01	.04	<2
RE L11+00E 9+00N	3	83	13	285	<.3	44	13	474	3.82	15	<8	<2	<2	13	1.3	<3	<3	54	.25	.091	21	35	.69	372	.02	4	1.72	.01	.04	<2
L11+00E 8+75N	3	101	15	254	.4	47	18	574	4.33	13	<8	<2	<2	16	.6	<3	<3	55	.37	.112	30	36	.76	415	.01	<3	1.99	.01	.04	<2
L11+00E 8+00N	1	29	15	126	.4	25	6	150	2.53	10	<8	<2	2	11	.2	<3	<3	32	.25	.058	14	24	.47	294	.01	<3	1.26	.01	.03	<2
L12+00E 12+00N	1	15	8	38	.3	9	3	175	1.70	11	<8	<2	<2	6	.2	<3	<3	36	.04	.115	6	12	.09	49	.01	<3	.52	<.01	.03	<2
L12+00E 11+75N	1	38	12	107	<.3	26	8	217	2.59	18	<8	<2	<2	9	.7	4	<3	33	.16	.068	11	18	.35	115	.01	<3	1.12	.01	.02	<2
L12+00E 11+50N	2	18	17	69	<.3	14	4	249	3.32	15	<8	<2	<2	9	.7	<3	<3	62	.10	.065	11	22	.24	145	.02	3	1.17	.01	.05	<2
L12+00E 11+25N	2	26	16	125	<.3	19	6	306	2.59	16	<8	<2	<2	17	.6	<3	<3	39	.30	.102	10	20	.32	266	.01	<3	1.21	.01	.04	<2
L12+00E 11+00N	3	21	23	124	<.3	19	7	384	2.84	20	<8	<2	<2	13	1.0	<3	<3	38	.20	.080	9	19	.30	135	.01	<3	.98	.01	.04	<2
L12+00E 10+50N	2	21	12	120	<.3	17	5	353	1.99	10	<8	<2	<2	17	1.7	<3	<3	28	.24	.136	8	16	.26	176	.01	<3	.86	.01	.04	<2
STANDARD C3	26	63	38	168	5.6	35	11	772	3.40	59	26	3	20	27	23.9	17	23	75	.57	.087	17	157	.63	147	.09	22	1.73	.04	.15	16
STANDARD G-2	2	3	4	42	<.3	8	4	523	2.03	<2	<8	<2	4	76	<.2	<3	<3	37	.65	.094	7	71	.61	230	.13	4	1.01	.11	.48	<2

GROUP 1D - 0.50 GM SAMPLE LEACHED WITH 3 ML 2-2-2 HCL-HNO3-H2O AT 95 DEG. C FOR ONE HOUR, DILUTED TO 10 ML, ANALYSED BY ICP-ES.
UPPER LIMITS - AG, AU, HG, W = 100 PPM; MO, CO, CD, SB, BI, TH, U & B = 2,000 PPM; CU, PB, ZN, NI, MN, AS, V, LA, CR = 10,000 PPM.
- SAMPLE TYPE: SOIL Samples beginning 'RE' are Reruns and 'RRE' are Reject Reruns.

DATE RECEIVED: JUL 25 2000 DATE REPORT MAILED: Aug 3/00 SIGNED BY: C. Leong D. TOYE, C.LEONG, J. WANG; CERTIFIED B.C. ASSAYERS

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

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ACME ANALYTICAL

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SAMPLE#	Mo ppm	Cu ppm	Pb ppm	Zn ppm	Ag ppm	Ni ppm	Co ppm	Mn ppm	Fe %	As ppm	U ppm	Au ppm	Th ppm	Sr ppm	Cd ppm	Sb ppm	Bi ppm	V ppm	Ca %	P %	La ppm	Cr ppm	Mg %	Ba ppm	Ti %	B ppm	Al %	Na %	K %	W ppm
L12+00E 10+25N	3	22	11	170	<.3	22	5	201	2.85	15	<8	<2	<2	16	.8	<3	<3	32	.25	.110	7	19	.41	219	.01	<3	1.15	.01	.03	2
L12+00E 10+00N	4	49	14	203	<.3	30	10	359	3.78	16	<8	<2	<2	21	2.5	4	<3	43	.15	.092	9	24	.48	160	.01	<3	1.19	.01	.03	<2
L12+00E 9+75N	3	28	15	149	<.3	26	9	293	3.15	15	<8	<2	<2	9	.7	<3	<3	35	.08	.060	8	22	.40	121	.01	4	1.13	.01	.03	2
L12+00E 9+50N	2	49	15	323	<.3	48	15	469	5.25	15	<8	<2	<2	20	1.9	3	<3	40	.39	.090	7	28	.56	251	.01	3	1.41	.01	.03	2
L12+00E 9+25N	2	35	16	140	<.3	27	8	217	4.38	14	<8	<2	<2	10	.5	3	<3	43	.12	.097	8	25	.44	202	.01	3	1.30	.01	.03	2
L12+00E 8+75N	2	54	16	220	<.3	42	12	254	3.42	12	<8	<2	<2	11	.6	<3	<3	47	.20	.089	18	29	.61	490	.01	<3	1.66	.01	.03	<2
L12+00E 8+50N	2	12	18	36	.3	9	2	60	2.02	18	<8	<2	<2	5	<.2	3	<3	25	.06	.060	7	14	.20	72	.01	3	.70	<.01	.02	<2
L12+00E 8+25N	3	40	29	87	.7	19	10	334	2.79	24	<8	<2	<2	9	.4	<3	<3	25	.20	.094	9	13	.21	157	.01	<3	.93	.01	.02	<2
L12+00E 8+00N	3	69	33	202	.3	33	15	379	3.74	41	<8	<2	<2	5	.7	8	<3	26	.07	.077	9	15	.31	100	.01	4	.89	.01	.02	3
L13+00E 12+00N	<1	28	17	86	<.3	20	9	354	2.62	35	<8	<2	<2	15	.5	3	<3	29	.47	.094	8	21	.36	133	.01	3	1.09	.01	.03	2
L13+00E 11+75N	<1	42	34	95	.4	25	7	227	2.54	43	<8	<2	<2	11	.7	4	<3	22	.37	.061	8	15	.25	121	.01	<3	.94	.01	.03	<2
L13+00E 11+25N	2	24	28	107	<.3	21	6	192	2.50	20	<8	<2	<2	6	.7	<3	<3	33	.07	.052	8	15	.28	91	.01	<3	.98	<.01	.03	<2
L13+00E 11+00N	2	24	27	118	<.3	18	9	280	2.30	15	<8	<2	<2	9	1.4	3	<3	30	.13	.082	7	14	.29	144	.01	<3	.92	<.01	.03	2
L13+00E 10+75N	2	22	47	112	.3	14	19	863	2.31	16	<8	<2	<2	15	1.6	3	<3	40	.25	.145	7	11	.17	256	.01	<3	.84	.01	.04	<2
L13+00E 10+50N	2	37	85	176	.7	27	13	549	3.30	33	<8	<2	<2	9	1.4	7	<3	29	.19	.093	8	16	.28	145	.01	<3	1.12	<.01	.03	<2
L13+00E 10+25N	2	34	73	105	1.1	20	4	69	1.70	14	<8	<2	<2	7	1.1	3	<3	25	.15	.073	7	18	.30	100	.01	<3	.93	<.01	.03	2
L13+00E 10+00N	3	31	11	160	.4	24	6	106	3.42	17	<8	<2	3	12	.8	<3	<3	30	.16	.063	9	20	.44	130	<.01	<3	1.00	<.01	.02	2
L13+00E 9+75N	2	39	12	186	.3	29	12	331	3.26	16	<8	<2	<2	17	1.1	4	<3	36	.18	.088	9	19	.43	152	.01	<3	1.09	<.01	.03	<2
L13+00E 9+50N	2	29	12	152	.4	24	11	346	3.35	12	<8	<2	<2	18	1.1	<3	<3	37	.24	.107	8	22	.42	240	.01	<3	1.16	.01	.03	<2
L13+00E 9+25N	2	33	30	242	1.0	29	19	753	4.77	16	<8	<2	<2	20	1.6	<3	<3	38	.40	.106	7	23	.41	443	.01	<3	1.29	<.01	.04	<2
L13+00E 9+00N	2	53	55	265	1.0	47	32	568	4.84	34	<8	<2	2	16	2.6	<3	<3	40	.30	.103	9	26	.42	327	.01	<3	1.39	.01	.03	<2
L13+00E 8+75N	2	65	36	195	.3	53	15	422	3.92	36	<8	<2	2	10	1.1	5	<3	32	.19	.066	10	36	.45	140	.01	<3	1.21	.01	.03	3
L13+00E 8+50N	2	36	37	161	.3	29	8	414	3.37	20	15	<2	3	34	.6	<3	<3	22	.57	.148	6	19	.41	145	<.01	<3	1.07	.01	.03	<2
L13+00E 8+25N	2	50	47	128	.4	32	10	232	2.97	20	14	<2	3	39	.6	<3	<3	25	.54	.115	9	19	.41	363	.01	<3	1.06	.01	.03	<2
L13+00E 8+00N	1	54	16	115	.7	42	9	687	3.27	10	<8	<2	2	35	.7	<3	<3	23	.72	.167	11	22	.40	256	<.01	<3	1.30	.01	.04	<2
RE L13+00E 8+00N	2	55	19	115	.8	42	9	723	3.34	10	<8	<2	2	35	.6	<3	<3	23	.71	.167	11	24	.40	258	<.01	<3	1.30	.01	.04	<2
L14+00E 12+00N	1	14	17	49	<.3	10	5	160	1.58	14	<8	<2	<2	5	.2	<3	<3	15	.11	.043	6	10	.18	70	.01	<3	.54	<.01	.01	<2
L14+00E 11+75N	1	23	30	70	.4	14	6	213	2.26	22	<8	<2	<2	7	.3	3	<3	23	.17	.066	5	10	.25	125	.01	4	.83	<.01	.02	<2
L14+00E 11+50N	<1	9	13	39	<.3	8	3	95	1.39	11	<8	<2	<2	4	<.2	<3	<3	16	.09	.032	5	9	.20	74	.01	<3	.52	<.01	.01	<2
L14+00E 11+25N	1	15	21	62	<.3	11	6	160	1.80	16	<8	<2	<2	6	.4	3	<3	19	.15	.047	5	11	.22	84	.01	<3	.62	<.01	.02	<2
L14+00E 11+00N	<1	25	32	138	.3	21	7	134	2.27	18	<8	<2	<2	10	.8	<3	<3	25	.30	.061	6	16	.31	137	.01	<3	.88	<.01	.02	<2
L14+00E 10+75N	1	31	47	183	<.3	30	12	312	2.83	23	<8	<2	<2	8	1.2	3	<3	33	.10	.070	9	20	.36	165	.01	<3	1.22	<.01	.03	2
L14+00E 10+50N	2	39	74	257	.6	37	13	435	3.39	31	<8	<2	<2	8	.5	3	<3	36	.11	.095	10	22	.42	203	.01	<3	1.47	.01	.03	<2
L14+00E 10+25N	2	45	104	329	.8	36	10	271	3.51	41	<8	<2	<2	10	1.6	6	<3	31	.23	.097	8	20	.40	179	.01	3	1.21	.01	.03	<2
STANDARD C3	26	64	36	166	5.6	36	12	784	3.47	59	24	3	20	27	24.4	18	19	74	.58	.089	17	152	.64	148	.07	21	1.72	.04	.15	19
STANDARD G-2	2	2	<3	41	<.3	7	4	508	1.99	2	<8	<2	4	77	<.2	<3	<3	34	.64	.093	5	65	.60	229	.11	7	1.02	.12	.49	2

Sample type: SOIL. Samples beginning 'RE' are Reruns and 'RRE' are Reject Reruns.

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SAMPLE#	Mo ppm	Cu ppm	Pb ppm	Zn ppm	Ag ppm	Ni ppm	Co ppm	Mn ppm	Fe %	As ppm	U ppm	Au ppm	Th ppm	Sr ppm	Cd ppm	Sb ppm	Bi ppm	V ppm	Ca %	P %	La ppm	Cr ppm	Mg %	Ba ppm	Ti %	B ppm	Al %	Na %	K %	W ppm
L14+00E 10+00N	2	69	157	184	.4	24	13	365	2.80	47	<8	<2	2	8	.9	8	4	22	.11	.065	9	11	.27	83	.01	3	.72	<.01	.02	3
L14+00E 9+75N	1	53	82	222	.4	33	11	362	3.07	35	<8	<2	3	10	2.0	5	3	19	.21	.069	9	11	.28	87	.01	3	.69	<.01	.02	<2
L14+00E 9+25N	2	82	164	210	<.3	27	8	232	3.49	55	<8	<2	2	8	.4	9	3	28	.11	.067	9	19	.35	91	.01	<3	.98	<.01	.02	<2
L14+00E 9+00N	1	43	102	115	<.3	19	5	173	2.60	35	<8	<2	<2	14	.2	5	<3	28	.25	.075	8	16	.37	148	.01	4	1.07	.01	.03	2
L14+00E 8+75N	1	46	93	96	.3	21	5	132	2.31	23	<8	<2	3	13	<.2	5	<3	26	.22	.072	11	18	.40	133	.01	5	1.14	.01	.02	2
L14+00E 8+50N	3	81	76	121	<.3	22	5	228	3.04	32	<8	<2	3	10	<.2	6	3	24	.15	.082	9	15	.33	148	.01	4	1.06	<.01	.02	2
L14+00E 8+25N	2	30	9	46	<.3	14	4	404	2.33	10	<8	<2	2	14	<.2	<3	<3	9	.23	.092	5	8	.20	123	<.01	3	.57	<.01	.01	<2
L14+00E 8+00N	2	27	7	47	<.3	13	3	292	1.93	7	<8	<2	<2	10	.2	<3	<3	10	.11	.081	6	9	.21	136	<.01	3	.54	<.01	.02	<2
L15+00E 12+00N	1	30	21	136	.3	29	9	250	2.46	17	<8	<2	<2	14	.8	<3	<3	26	.52	.094	6	16	.36	163	.01	<3	1.07	.01	.03	2
L15+00E 11+75N	1	30	23	164	.3	31	9	195	2.20	15	<8	<2	2	10	.8	<3	<3	24	.22	.051	9	16	.37	143	.01	<3	.98	.01	.03	2
L15+00E 11+50N	1	25	26	143	<.3	25	7	164	2.60	17	<8	<2	<2	9	.7	<3	<3	32	.13	.094	8	17	.31	167	.01	<3	1.13	.01	.03	<2
L15+00E 11+25N	<1	31	22	171	<.3	31	11	282	2.55	15	<8	<2	3	10	.6	<3	<3	31	.14	.055	13	20	.44	220	.02	5	1.20	.01	.03	3
L15+00E 11+00N	2	48	71	236	.5	32	12	389	3.44	36	<8	<2	<2	12	1.5	6	4	28	.25	.095	8	16	.36	169	.01	<3	.99	.01	.03	<2
L15+00E 10+75N	1	42	77	198	<.3	28	8	176	2.85	30	<8	<2	2	9	1.2	4	<3	24	.19	.080	8	13	.29	147	.01	<3	.86	<.01	.02	3
L15+00E 10+50N	1	53	43	188	<.3	37	11	372	3.16	25	<8	<2	2	14	1.2	<3	<3	21	.33	.077	8	15	.30	130	.01	5	.86	.01	.02	2
L15+00E 10+25N	3	54	109	178	.3	23	5	137	3.17	40	<8	<2	2	6	.4	7	<3	19	.09	.063	8	13	.25	37	.01	<3	.63	<.01	.02	3
L15+00E 10+00N	3	51	116	139	<.3	22	6	281	3.74	45	<8	<2	<2	12	.2	5	<3	29	.21	.070	9	18	.34	89	.01	3	1.11	<.01	.03	2
L15+00E 9+75N	2	31	32	129	<.3	27	9	413	3.30	20	<8	<2	4	11	.2	<3	3	14	.20	.085	8	15	.33	74	<.01	<3	.92	<.01	.02	2
L15+00E 9+50N	1	62	81	187	<.3	32	10	404	3.65	34	<8	<2	3	11	.2	3	3	25	.21	.066	11	19	.41	120	.01	4	1.13	<.01	.03	3
L15+00E 9+25N	1	38	59	98	<.3	19	5	216	2.94	23	<8	<2	2	7	.2	<3	<3	24	.11	.051	11	17	.37	123	.01	<3	1.12	<.01	.02	2
L15+00E 9+00N	3	30	19	90	<.3	24	9	452	3.52	13	<8	<2	5	5	<.2	<3	<3	14	.09	.067	11	18	.44	98	<.01	4	1.17	<.01	.02	2
L15+00E 8+75N	2	46	31	139	<.3	37	16	563	4.47	20	<8	<2	7	9	<.2	<3	<3	14	.19	.067	11	20	.51	72	<.01	4	1.19	<.01	.02	2
L15+00E 8+50N	3	43	26	103	.3	31	11	463	3.91	18	<8	<2	4	10	.2	<3	<3	17	.24	.116	8	22	.44	104	<.01	3	1.16	.01	.02	<2
L15+00E 8+25N	2	36	32	114	<.3	27	8	317	3.36	16	<8	<2	2	12	.3	<3	4	20	.27	.125	8	17	.40	118	.01	4	1.16	.01	.03	<2
L15+00E 8+00N	3	29	25	84	<.3	22	5	212	2.83	18	<8	<2	<2	10	.2	<3	<3	33	.14	.096	9	20	.35	154	.01	<3	1.22	.01	.04	<2
RE L15+00E 8+00N	3	29	27	79	<.3	20	5	211	2.74	18	<8	<2	<2	10	<.2	<3	<3	31	.13	.092	9	21	.33	153	.01	6	1.18	.01	.04	2
L16+00E 12+00N	1	28	28	163	<.3	36	9	284	2.48	17	<8	<2	2	12	.7	<3	<3	28	.30	.076	9	20	.37	229	.01	<3	1.14	<.01	.04	2
L16+00E 11+75N	1	41	35	255	<.3	51	13	237	2.37	19	<8	<2	2	15	1.0	<3	<3	27	.38	.083	9	20	.39	228	.01	4	1.17	.01	.03	<2
L16+00E 11+50N	2	52	58	211	<.3	34	10	263	2.92	23	<8	<2	3	19	1.4	<3	3	21	.36	.077	9	16	.34	128	.01	<3	.87	<.01	.03	<2
L16+00E 11+25N	1	60	69	189	.3	26	10	250	2.76	35	<8	<2	3	11	.9	4	4	17	.18	.066	9	13	.24	73	.01	4	.61	<.01	.02	3
L16+00E 11+00N	2	65	80	163	<.3	29	9	427	3.01	23	<8	<2	3	28	1.2	3	3	26	.53	.091	9	22	.41	253	.01	4	1.16	.01	.03	3
L16+00E 10+75N	2	57	73	167	<.3	30	10	378	3.38	20	<8	<2	5	14	.5	<3	3	19	.25	.072	11	16	.40	126	<.01	3	1.10	<.01	.03	2
L16+00E 10+50N	2	49	84	172	<.3	29	9	277	3.20	23	<8	<2	4	21	.8	<3	<3	18	.42	.073	9	15	.38	133	<.01	5	1.01	<.01	.03	2
L16+00E 10+25N	1	46	35	193	<.3	54	13	1069	3.93	17	<8	<2	4	37	2.2	<3	<3	14	.69	.093	8	17	.40	134	<.01	5	1.08	<.01	.03	3
STANDARD C3	26	62	36	173	5.5	36	11	733	3.39	64	16	3	20	27	24.8	17	23	72	.57	.086	17	147	.63	144	.08	24	1.71	.04	.15	18
STANDARD G-2	1	2	<3	44	<.3	8	4	505	2.04	<2	<8	<2	3	78	<.2	<3	4	35	.66	.095	6	65	.61	235	.13	3	1.02	.11	.50	3

Sample type: SOIL. Samples beginning 'RE' are Reruns and 'RRE' are Reject Reruns.

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Data FA

SAMPLE#	Mo ppm	Cu ppm	Pb ppm	Zn ppm	Ag ppm	Ni ppm	Co ppm	Mn ppm	Fe %	As ppm	U ppm	Au ppm	Th ppm	Sr ppm	Cd ppm	Sb ppm	Bi ppm	V ppm	Ca %	P %	La ppm	Cr ppm	Mg %	Ba ppm	Ti %	B ppm	Al %	Na %	K %	W ppm
L16+00E 10+00N	2	36	31	177	<.3	30	10	413	3.04	15	<8	<2	4	29	1.3	<3	<3	12	.72	.084	7	19	.34	73	<.01	7	.88	<.01	.03	3
L16+00E 9+75N	1	49	34	155	<.3	44	15	753	3.56	14	<8	<2	4	53	1.6	<3	<3	11	1.42	.097	5	16	.37	126	<.01	10	.98	<.01	.04	2
L16+00E 9+50N	2	48	35	188	<.3	45	14	730	4.16	18	<8	<2	6	32	1.3	<3	<3	14	.77	.115	6	18	.39	80	<.01	5	1.09	<.01	.04	3
L16+00E 9+25N	2	43	32	167	<.3	45	21	1098	4.24	21	<8	<2	7	7	.8	<3	<3	13	.11	.069	10	20	.38	53	<.01	7	.98	<.01	.03	3
L16+00E 9+00N	2	34	36	140	<.3	36	23	1022	4.28	19	<8	<2	7	11	<.2	<3	<3	13	.18	.069	14	17	.41	51	<.01	9	1.02	<.01	.02	2
L16+00E 8+75N	1	55	28	157	<.3	50	20	804	4.04	16	<8	<2	10	10	.4	<3	<3	11	.18	.060	22	17	.40	45	<.01	6	.98	<.01	.02	2
L16+00E 8+50N	2	36	31	156	<.3	41	15	858	3.81	18	<8	<2	6	18	.7	<3	<3	13	.33	.071	8	19	.37	51	<.01	5	.86	<.01	.03	2
L16+00E 8+25N	<1	57	33	150	<.3	51	19	882	4.07	17	<8	<2	8	15	.6	<3	<3	11	.30	.053	12	17	.43	50	<.01	4	.99	<.01	.03	3
L16+00E 8+00N	1	25	21	104	<.3	28	10	468	3.45	15	<8	<2	5	12	.2	<3	<3	12	.23	.072	9	17	.36	61	<.01	7	.94	<.01	.02	2
L17+00E 12+00N	2	42	50	126	<.3	23	7	279	2.51	27	<8	<2	4	21	.4	3	<3	29	.30	.091	14	20	.36	231	.02	6	.92	.01	.03	2
L17+00E 11+75N	1	35	39	97	<.3	19	6	278	2.36	21	<8	<2	3	19	.2	3	<3	29	.27	.085	14	21	.35	250	.02	7	.93	.01	.03	2
L17+00E 11+50N	1	43	41	95	<.3	20	6	236	2.26	19	<8	<2	3	25	.5	<3	<3	27	.40	.087	11	18	.37	351	.02	6	.90	.01	.03	<2
L17+00E 11+25N	2	25	39	76	<.3	15	5	147	2.27	20	<8	<2	3	21	.2	3	<3	27	.33	.076	10	15	.32	227	.02	7	.80	.01	.03	<2
L17+00E 11+00N	1	54	33	95	<.3	17	4	94	1.64	19	<8	<2	2	22	.4	<3	<3	21	.38	.088	11	23	.31	152	.01	6	.77	.01	.03	2
L17+00E 10+75N	2	51	82	363	<.3	47	8	212	3.36	42	<8	<2	3	24	.8	5	<3	29	.43	.092	11	20	.31	86	.02	10	.91	<.01	.03	<2
L17+00E 10+50N	1	69	60	155	<.3	29	9	303	2.95	24	<8	<2	4	19	.4	<3	<3	23	.32	.075	13	18	.36	79	.01	6	1.00	<.01	.03	2
L17+00E 10+25N	1	57	59	162	<.3	42	13	783	3.54	22	<8	<2	5	17	.3	<3	<3	26	.27	.075	14	19	.40	94	.01	5	1.14	<.01	.03	2
L17+00E 10+00N	2	49	31	147	<.3	46	16	91	2.83	17	<8	<2	7	23	1.0	<3	<3	12	.45	.064	8	22	.45	59	<.01	<3	1.06	<.01	.02	<2
RE L17+00E 10+00N	2	47	27	141	<.3	44	16	87	2.81	16	<8	<2	7	22	1.0	<3	<3	12	.43	.061	8	20	.43	55	<.01	<3	1.02	<.01	.02	2
L17+00E 9+75N	1	40	23	126	<.3	41	15	593	3.45	15	<8	<2	9	18	.5	<3	<3	9	.33	.083	18	15	.37	30	<.01	<3	.77	<.01	.02	<2
L17+00E 9+50N	1	52	33	153	<.3	48	18	957	3.66	15	<8	<2	6	25	.9	<3	<3	11	.56	.077	9	15	.39	37	<.01	<3	.88	<.01	.04	2
L17+00E 9+25N	1	41	26	155	<.3	42	15	569	3.54	15	<8	<2	5	21	.8	<3	<3	11	.46	.073	8	16	.39	47	<.01	<3	.93	<.01	.02	2
L17+00E 9+00N	1	54	28	156	<.3	52	20	966	3.89	18	<8	<2	7	20	.7	<3	<3	11	.38	.072	12	18	.43	40	<.01	3	.95	<.01	.02	2
L17+00E 8+75N	1	50	28	148	<.3	46	17	757	3.50	14	<8	<2	6	19	.9	<3	<3	11	.36	.070	11	15	.38	42	<.01	3	.87	<.01	.02	2
L17+00E 8+50N	2	60	30	174	<.3	58	22	1019	4.19	18	<8	<2	9	16	1.0	<3	<3	11	.28	.068	13	18	.45	39	<.01	<3	.97	<.01	.03	2
STANDARD C3	25	63	36	169	5.3	36	11	756	3.34	58	19	4	21	28	23.9	18	23	73	.56	.085	17	154	.61	147	.09	24	1.73	.04	.15	19
STANDARD G-2	2	3	7	44	<.3	8	4	527	2.07	<2	<8	<2	4	74	<.2	<3	<3	37	.66	.097	7	69	.63	229	.13	5	1.01	.09	.48	2

Sample type: SOIL. Samples beginning 'RE' are Reruns and 'RRE' are Reject Reruns.

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

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

GEOCHEMICAL ANALYSIS CERTIFICATE

Atna Resources Ltd. File # A002572 Page 1

1550 - 409 Granville St., Vancouver BC V6C 1T2

SAMPLE#	Mo ppm	Cu ppm	Pb ppm	Zn ppm	Ag ppm	Ni ppm	Co ppm	Mn ppm	Fe %	As ppm	U ppm	Au ppm	Th ppm	Sr ppm	Cd ppm	Sb ppm	Bi ppm	V ppm	Ca %	P %	La ppm	Cr ppm	Mg %	Ba ppm	Ti %	B ppm	Al %	Na %	K %	W ppm
E 188065	12	61	22	181	<.3	38	5	67	3.90	131	<8	<2	5	48	.5	<3	<3	42	.33	.183	6	30	1.00	140	<.01	3	1.51	.04	.12	4
E 188066	7	90	28	168	<.3	9	1	72	2.28	53	<8	<2	13	25	1.3	3	<3	2	.11	.017	18	9	1.29	306	<.01	3	1.41	.05	.10	4
E 188067	5	57	32	224	<.3	8	19	332	4.41	158	<8	<2	18	16	.8	4	<3	<1	.21	<.001	9	4	4.91	178	<.01	<3	4.30	.01	.06	<2
E 188068	21	61	37	563	.6	87	9	205	4.46	125	<8	<2	2	88	5.4	11	<3	50	1.83	.280	2	18	.70	26	<.01	<3	.63	.02	.12	2
E 188069	3	763	387	1417	2.1	6	9	194	2.73	1293	<8	<2	15	35	10.0	<3	7	1	.67	.010	6	10	.40	40	<.01	<3	.50	.02	.22	<2
E 188070	1	583	246	934	.4	5	19	446	4.67	287	<8	<2	11	33	3.4	4	3	<1	.54	.022	5	8	4.16	83	<.01	<3	3.42	.01	.06	<2
E 188071	6	29	106	201	.3	6	3	352	3.19	70	<8	<2	15	93	1.2	3	<3	<1	1.75	.028	5	9	1.13	29	<.01	<3	.42	.02	.22	<2
E 188072	15	176	271	524	.8	23	5	243	3.23	68	<8	<2	10	82	1.6	72	3	<1	1.32	.032	3	9	.76	29	<.01	<3	.27	.01	.13	<2
E 188073	3	8	30	66	<.3	5	3	163	2.18	18	<8	<2	18	81	.2	<3	<3	<1	1.12	.051	6	10	1.00	42	<.01	<3	.45	.02	.18	2
E 188074	52	98	74	675	.6	121	10	178	4.52	203	<8	<2	3	114	7.0	19	<3	70	1.48	.275	2	20	.53	21	<.01	<3	.38	.01	.17	3
RE E 188074	53	97	76	680	.8	120	10	178	4.49	199	9	<2	3	112	7.1	18	<3	70	1.48	.275	2	20	.53	22	<.01	8	.38	.01	.17	4
RRE E 188074	55	101	71	692	.8	119	10	181	4.42	204	<8	<2	3	110	7.1	19	<3	82	1.46	.268	2	26	.55	22	<.01	<3	.43	.02	.20	4
E 188075	1	9	33	79	<.3	5	3	145	2.79	15	<8	<2	15	65	.2	<3	<3	<1	1.19	.086	6	8	1.52	55	<.01	<3	.41	.05	.12	2
E 188076	2	7	29	98	<.3	5	3	198	2.65	11	<8	<2	15	76	.2	<3	<3	<1	1.32	.102	7	9	1.52	55	<.01	<3	.57	.06	.15	3
E 188077	8	15	23	52	<.3	17	3	198	3.12	42	<8	<2	<2	56	<.2	<3	<3	2	1.19	.096	1	12	.50	33	<.01	3	.19	.02	.07	4
E 188078	2	8	25	99	<.3	4	4	139	2.34	11	<8	<2	16	74	.3	<3	<3	<1	1.12	.070	7	8	1.31	65	<.01	<3	.54	.06	.14	3
E 188079	7	61	19	326	<.3	92	20	221	4.90	68	<8	<2	3	23	1.8	<3	<3	39	.29	.059	4	32	1.09	49	<.01	3	1.82	.04	.15	<2
E 188080	5	28	120	234	<.3	2	8	304	2.79	28	<8	<2	11	52	.8	8	<3	<1	1.02	.010	13	5	2.69	54	<.01	<3	1.93	.03	.13	<2
E 188081	6	266	416	751	1.4	2	19	559	5.82	193	<8	<2	9	52	1.7	8	12	<1	1.31	<.001	7	4	3.60	26	<.01	3	2.56	.02	.09	<2
E 188082	7	61	48	271	<.3	63	14	148	4.25	116	<8	<2	4	27	1.1	<3	<3	30	.31	.046	5	28	1.28	40	<.01	3	1.61	.04	.15	<2
E 188083	4	56	26	139	<.3	2	27	774	6.64	57	<8	<2	12	113	.3	<3	<3	<1	1.93	.001	4	3	6.11	83	<.01	<3	4.80	.01	.03	3
E 188084	5	268	327	728	.9	1	27	514	6.32	83	<8	<2	12	71	2.9	71	4	<1	1.36	.001	3	2	6.27	105	<.01	<3	4.92	.02	.06	<2
E 188085	4	189	142	367	.7	3	2	121	1.89	150	<8	<2	8	63	1.3	23	<3	7	.94	.018	6	8	.57	57	<.01	4	1.14	.01	.15	<2
E 188086	3	7	674	247	1.1	6	2	828	.21	17	<8	<2	<2	1503	1.2	366	<3	25	11.30	.016	4	5	.19	1888	<.01	<3	.29	<.01	<.01	<2
RE E 188086	3	6	686	254	1.1	6	2	827	.20	16	<8	<2	<2	1516	1.3	377	<3	25	11.28	.016	4	6	.19	2034	<.01	<3	.29	<.01	<.01	<2
RRE E 188086	3	3	589	211	.9	6	2	807	.18	23	<8	<2	<2	1533	1.1	319	<3	26	11.24	.016	4	3	.16	2571	<.01	<3	.29	<.01	<.01	<2
E 188087	4	10	297	583	.4	3	2	84	2.24	101	<8	<2	21	54	.7	6	<3	<1	.41	.027	8	7	.47	32	<.01	<3	.50	.02	.18	2
E 188088	3	41	<3	380	<.3	143	40	992	6.72	93	<8	<2	<2	177	3.5	<3	<3	40	7.07	.121	2	69	3.41	232	<.01	<3	1.30	.05	.08	<2
E 188089	4	806	246	558	2.2	4	6	86	2.12	167	<8	<2	14	24	2.0	6	17	<1	.39	.036	8	9	.27	42	<.01	<3	.43	.01	.21	2
E 188090	2	11	32	225	<.3	4	15	403	3.88	84	<8	<2	12	35	.2	<3	<3	<1	.23	.024	12	5	3.74	250	<.01	<3	3.02	.01	.11	<2
E 188091	2	17	28	206	<.3	3	15	542	3.78	47	<8	<2	12	68	.5	<3	<3	<1	.22	.011	19	3	3.00	313	<.01	<3	2.44	.01	.19	<2
E 188092	3	36	32	161	<.3	3	10	812	4.77	50	<8	<2	13	39	.2	<3	4	<1	.40	.004	11	1	2.94	194	<.01	<3	2.21	.01	.18	3
E 188093	3	9	28	31	<.3	6	4	102	2.49	30	<8	<2	13	33	.2	<3	<3	<1	.46	.027	8	6	.81	49	<.01	<3	.80	.02	.22	2
E 188094	65	611	2051	5246	13.3	187	15	81	6.99	513	19	2	4	23	30.9	228	<3	47	.32	.099	2	20	.19	12	<.01	<3	.38	.01	.16	<2
STANDARD C3	25	63	38	169	5.4	36	11	774	3.44	60	24	3	19	29	24.8	13	21	74	.58	.087	16	153	.63	150	.09	23	1.82	.04	.16	16
STANDARD G-2	1	2	4	42	<.3	7	4	513	2.00	<2	<8	<2	4	71	<.2	<3	<3	35	.64	.094	6	68	.61	224	.11	3	.95	.07	.47	<2

GROUP 1D - 0.50 GM SAMPLE LEACHED WITH 3 ML 2-2-2 HCL-HNO3-H2O AT 95 DEG. C FOR ONE HOUR, DILUTED TO 10 ML, ANALYSED BY ICP-ES.
UPPER LIMITS - AG, AU, HG, W = 100 PPM; MO, CO, CD, SB, BI, TH, U & B = 2,000 PPM; CU, PB, ZN, NI, MN, AS, V, LA, CR = 10,000 PPM.
ASSAY RECOMMENDED FOR ROCK AND CORE SAMPLES IF CU PB ZN AS > 1%, AG > 30 PPM & AU > 1000 PPB
- SAMPLE TYPE: CORE Samples beginning 'RE' are Reruns and 'RRE' are Reject Reruns.

DATE RECEIVED: JUL 25 2000 **DATE REPORT MAILED:** Aug 4/00 **SIGNED BY** ..... D. TOYE, C.LEONG, J. WANG; CERTIFIED B.C. ASSAYERS

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

Data ___ FA ___

SAMPLE#	Mo ppm	Cu ppm	Pb ppm	Zn ppm	Ag ppm	Ni ppm	Co ppm	Mn ppm	Fe %	As ppm	U ppm	Au ppm	Th ppm	Sr ppm	Cd ppm	Sb ppm	Bi ppm	V ppm	Ca %	P %	La ppm	Cr ppm	Mg %	Ba ppm	Ti %	B ppm	Al %	Na %	K %	W ppm
E 188095	3	6	25	46	<.3	6	3	327	2.16	27	<8	<2	13	114	.3	<3	<3	<1	1.60	.032	4	6	.97	42	<.01	<3	.34	.02	.16	3
E 188096	3	5	26	46	<.3	3	2	206	2.06	15	<8	<2	14	107	.2	<3	<3	<1	1.38	.066	7	6	1.10	56	<.01	<3	.77	.02	.17	2
E 188097	39	135	104	695	1.6	124	13	253	4.79	291	9	<2	2	134	5.9	15	3	71	1.56	.358	2	22	.50	20	<.01	<3	.45	.02	.21	6
E 188098	5	7	35	222	<.3	3	3	109	2.51	53	<8	<2	22	48	.5	<3	3	<1	.51	.051	6	7	.50	31	<.01	<3	.53	.02	.21	<2
E 188099	3	6	34	93	<.3	4	3	118	2.28	30	13	<2	26	47	<.2	<3	<3	<1	.51	.030	8	3	.71	36	<.01	<3	.66	.04	.18	2
E 188100	7	23	220	286	.5	3	2	242	3.18	125	<8	<2	23	88	.6	8	<3	<1	1.20	.028	6	4	.94	26	<.01	<3	.56	.05	.17	2
E 188101	8	61	16	412	.5	84	15	236	4.40	64	8	<2	7	32	3.6	<3	<3	27	.70	.080	4	19	1.04	73	<.01	<3	.95	.04	.19	2
E 188102	6	57	15	280	.5	76	15	205	4.02	96	<8	<2	3	35	2.1	<3	<3	38	.43	.056	4	29	.94	68	<.01	<3	1.36	.04	.16	2
E 188103	3	238	296	739	1.4	4	16	528	4.44	465	<8	<2	17	53	2.7	11	6	6	1.29	.015	5	7	4.46	77	<.01	<3	3.36	.03	.09	<2
E 188104	3	5	28	89	<.3	2	13	272	3.78	16	<8	<2	9	26	.2	<3	8	5	.23	.020	7	5	3.84	125	<.01	8	3.19	.01	.09	3
E 188105	2	7	17	110	<.3	3	7	311	2.92	20	<8	<2	13	79	.4	<3	3	<1	1.39	.030	6	5	2.79	170	<.01	<3	2.02	.01	.14	3
E 188106	4	150	260	503	1.3	7	4	199	3.05	137	<8	<2	20	58	2.2	3	5	<1	.99	.035	5	7	.64	26	<.01	<3	.50	.02	.22	<2
E 188107	3	6	34	72	<.3	4	2	233	2.08	23	<8	<2	15	108	.2	<3	<3	<1	1.45	.030	5	3	.97	38	<.01	<3	.41	.02	.15	2
RE E 188107	3	6	32	72	<.3	4	2	246	2.19	24	<8	<2	16	115	.2	<3	<3	<1	1.52	.031	6	5	1.02	38	<.01	3	.42	.02	.16	2
RRE E 188107	4	6	31	73	<.3	3	2	249	2.24	23	<8	<2	16	114	.2	<3	<3	<1	1.54	.030	6	8	1.04	38	<.01	<3	.51	.02	.18	3
E 188108	3	175	104	623	1.2	3	4	435	2.67	498	<8	<2	12	95	1.7	13	3	<1	2.53	.027	11	7	1.58	36	<.01	<3	.37	.02	.17	2
E 188109	5	6	32	107	<.3	4	3	97	2.45	42	9	<2	20	73	.3	3	<3	<1	.55	.048	7	6	.50	38	<.01	6	.52	.02	.19	3
E 188110	2	5	24	87	<.3	3	3	69	1.72	23	<8	<2	22	36	.3	<3	<3	<1	.44	.040	8	3	.82	50	<.01	4	.68	.03	.14	2
E 188111	15	69	12	745	.9	93	12	200	3.78	126	<8	<2	5	45	9.8	<3	<3	42	1.20	.169	3	21	.69	53	<.01	3	.47	.04	.19	3
STANDARD C3	26	61	33	162	5.9	36	12	808	3.49	61	25	<2	17	29	25.1	12	24	73	.59	.088	17	151	.65	156	.09	22	1.88	.04	.16	21
STANDARD G-2	1	2	5	38	<.3	7	4	522	1.98	<2	<8	<2	3	69	<.2	<3	<3	33	.63	.093	6	64	.59	216	.12	6	.92	.07	.46	2

Sample type: CORE. Samples beginning 'RE' are Reruns and 'RRE' are Reject Reruns.

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GEOCHEMICAL ANALYSIS CERTIFICATE

Atna Resources Ltd. File # A002573

1550 - 409 Granville St., Vancouver BC V6C 1T2

SAMPLE#	Mo ppm	Cu ppm	Pb ppm	Zn ppm	Ag ppm	Ni ppm	Co ppm	Mn ppm	Fe %	As ppm	U ppm	Au ppm	Th ppm	Sr ppm	Cd ppm	Sb ppm	Bi ppm	V ppm	Ca %	P %	La ppm	Cr ppm	Mg %	Ba ppm	Ti %	B ppm	Al %	Na %	K %	W ppm
E 188508	4	23	9	70	.4	17	3	54	3.12	9	<8	<2	7	10	.2	<3	<3	26	.05	.047	6	29	.43	360	<.01	4	1.08	.03	.17	4
E 188509	2	3	27	4	<.3	2	<1	17	1.01	7	<8	<2	6	9	<.2	<3	<3	2	.01	.024	20	6	.01	335	<.01	3	.25	.01	.16	2
E 188510	4	3	34	6	<.3	2	<1	23	1.82	17	<8	<2	9	19	<.2	<3	<3	2	.01	.055	17	8	.02	337	<.01	<3	.32	<.01	.21	2
E 188511	1	2	22	4	<.3	2	<1	18	1.15	7	<8	<2	9	19	<.2	<3	<3	1	.01	.039	19	6	.01	401	<.01	6	.28	<.01	.18	2
E 188512	4	4	23	24	<.3	3	<1	48	1.96	9	<8	<2	7	9	<.2	<3	<3	1	.03	.043	38	13	.18	647	<.01	3	.55	.01	.16	3
RE E 188512	3	4	21	23	<.3	3	<1	44	1.79	10	<8	<2	7	8	<.2	<3	<3	1	.03	.042	34	8	.17	561	<.01	<3	.52	.01	.15	2
E 188513	2	11	20	77	<.3	4	1	372	4.62	4	<8	<2	14	16	<.2	<3	<3	15	.17	.096	15	14	.94	371	.14	<3	1.56	.02	.09	<2
E 188514	6	4	18	11	<.3	3	<1	26	5.30	18	<8	<2	2	6	<.2	<3	3	<1	<.01	.031	14	9	.01	15	<.01	<3	.27	<.01	.17	5
STANDARD C3	26	61	33	162	5.9	36	12	808	3.49	61	25	<2	17	29	25.1	12	24	73	.59	.088	17	151	.65	156	.09	22	1.88	.04	.16	21
STANDARD G-2	1	2	5	38	<.3	7	4	522	1.98	<2	<8	<2	3	69	<.2	<3	<3	33	.63	.093	6	64	.59	216	.12	6	.92	.07	.46	2

GROUP 1D - 0.50 GM SAMPLE LEACHED WITH 3 ML 2-2-2 HCL-HNO3-H2O AT 95 DEG. C FOR ONE HOUR, DILUTED TO 10 ML, ANALYSED BY ICP-ES.
UPPER LIMITS - AG, AU, HG, W = 100 PPM; MO, CO, CD, SB, BI, TH, U & B = 2,000 PPM; CU, PB, ZN, NI, MN, AS, V, LA, CR = 10,000 PPM.
ASSAY RECOMMENDED FOR ROCK AND CORE SAMPLES IF CU PB ZN AS > 1%, AG > 30 PPM & AU > 1000 PPB
- SAMPLE TYPE: ROCK Samples beginning 'RE' are Reruns and 'RRE' are Reject Reruns.

DATE RECEIVED: JUL 25 2000 **DATE REPORT MAILED:** Aug 4/00 **SIGNED BY** C. Leong .D. TOYE, C.LEONG, J. WANG; CERTIFIED B.C. ASSAYERS

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

Data A FA ___

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

GEOCHEMICAL ANALYSIS CERTIFICATE

Atna Resources Ltd. File # A002667 Page 1

1550 - 409 Granville St., Vancouver BC V6C 1T2 Submitted by: Rob Wilson

SAMPLE#	Mo ppm	Cu ppm	Pb ppm	Zn ppm	Ag ppm	Ni ppm	Co ppm	Mn ppm	Fe %	As ppm	U ppm	Au ppm	Th ppm	Sr ppm	Cd ppm	Sb ppm	Bi ppm	V ppm	Ca %	P %	La ppm	Cr ppm	Mg %	Ba ppm	Ti %	B ppm	Al %	Na %	K %	W ppm
E 188112	8	56	17	149	.3	59	5	60	3.15	64	11	<2	5	23	.9	4	<3	47	.09	.049	6	36	.64	211	<.01	<3	1.31	.02	.18	4
E 188113	7	184	73	404	1.2	8	4	137	2.56	29	<8	<2	20	29	2.2	6	<3	3	.29	.008	16	4	1.58	317	<.01	<3	1.70	.04	.19	2
E 188114	20	124	41	366	1.4	110	4	34	3.39	136	14	<2	3	99	3.5	17	<3	123	1.14	.533	4	35	.09	40	<.01	<3	1.02	.01	.19	8
E 188115	4	83	119	240	<.3	10	14	264	3.09	61	<8	<2	10	38	1.5	<3	<3	6	.67	.023	9	8	2.28	156	<.01	<3	2.17	.02	.16	<2
E 188116	4	17	22	137	<.3	3	12	453	3.54	24	<8	<2	10	93	1.0	<3	<3	5	1.98	.026	9	9	2.61	152	<.01	<3	2.15	.03	.17	<2
E 188117	5	10	38	58	<.3	<1	3	220	3.34	40	<8	<2	17	77	.6	5	<3	1	1.48	.019	5	7	1.00	52	<.01	<3	.52	.02	.21	4
E 188118	6	23	72	136	.4	4	2	118	2.84	67	<8	<2	23	41	.7	10	<3	1	.63	.019	8	4	.63	50	<.01	<3	.62	.04	.20	2
E 188119	23	335	818	1740	2.4	52	5	120	3.28	317	10	<2	2	82	9.1	12	<3	105	1.37	.318	3	24	.42	42	<.01	<3	.54	.02	.19	6
E 188120	20	2260	2956	6010	13.5	62	17	398	5.94	831	<8	<2	5	81	24.5	27	9	33	1.96	.092	<1	26	.93	34	<.01	<3	.40	.02	.13	3
E 188121	4	54	94	331	.4	4	6	127	1.84	21	<8	<2	17	69	2.6	<3	<3	2	.98	.018	12	8	1.45	296	<.01	<3	1.25	.02	.19	2
E 188122	23	69	20	526	2.1	74	7	120	3.36	98	<8	<2	<2	108	8.5	20	<3	122	1.45	.285	3	36	.46	47	<.01	<3	.59	.02	.19	7
RE E 188122	22	65	17	501	2.5	71	6	114	3.20	95	10	<2	2	104	8.0	18	<3	116	1.37	.273	2	34	.44	43	<.01	<3	.55	<.01	.17	8
RRE E 188122	20	69	19	530	2.3	78	8	121	3.26	95	15	<2	2	111	8.4	19	<3	105	1.47	.282	3	24	.49	47	<.01	<3	.52	.05	.18	6
E 188123	8	1151	1968	2900	1.7	2	35	396	7.21	523	17	<2	9	60	9.7	9	49	6	1.10	.011	3	9	4.69	100	<.01	9	3.74	.03	.06	<2
E 188124	32	281	559	1313	2.3	62	7	125	3.32	318	<8	<2	3	65	9.0	14	<3	55	1.00	.105	2	19	.40	38	<.01	<3	.34	.02	.13	6
E 188125	6	1048	253	570	5.9	3	2	280	2.69	476	<8	<2	19	105	2.1	79	<3	1	2.03	.024	7	10	1.29	58	<.01	<3	.52	.02	.18	3
E 188126	34	162	402	817	3.2	71	6	171	3.87	143	24	<2	2	134	4.2	17	8	62	1.37	.232	3	24	.42	35	<.01	<3	.41	<.01	.17	7
E 188127	8	64	23	299	.9	82	18	171	4.32	28	<8	<2	4	37	2.4	<3	<3	42	.53	.065	4	35	.91	121	<.01	<3	1.60	.04	.15	<2
E 188128	9	56	15	392	.8	76	13	152	3.67	37	<8	<2	3	29	3.7	<3	4	52	.40	.061	5	35	.88	131	<.01	<3	1.45	.06	.17	3
E 188129	5	10	27	76	<.3	3	5	215	2.09	14	<8	<2	17	33	.2	<3	<3	2	.48	.006	23	10	2.27	184	<.01	6	2.04	.03	.17	4
E 188130	6	965	2488	4822	5.2	2	9	323	4.55	145	<8	<2	17	76	10.2	7	11	1	1.76	.008	7	5	3.98	131	<.01	<3	2.58	.03	.12	<2
E 188131	31	66	61	343	1.4	60	6	81	3.33	134	10	<2	2	39	3.8	17	3	101	.64	.101	3	28	.24	37	<.01	3	.44	.02	.17	7
E 188132	4	277	256	645	1.6	7	28	333	4.52	634	<8	<2	8	70	2.0	14	33	6	1.15	.011	5	10	2.66	155	<.01	<3	2.16	.02	.19	2
E 188133	30	357	1013	1437	5.3	34	5	55	3.73	229	<8	<2	3	8	4.4	108	4	8	.11	.001	3	24	.08	31	<.01	5	.23	.01	.11	8
E 188134	4	15	32	193	.4	1	1	251	2.08	30	12	<2	20	89	.5	5	<3	1	1.73	.030	5	5	1.14	71	<.01	<3	.42	.02	.16	3
RE E 188134	4	15	28	185	<.3	6	3	243	2.02	27	10	<2	19	86	.8	<3	<3	1	1.68	.028	6	6	1.10	83	<.01	8	.39	.02	.14	2
RRE E 188134	6	13	30	192	<.3	3	3	259	2.06	31	<8	<2	19	91	.7	4	<3	1	1.80	.027	7	11	1.16	76	<.01	6	.45	.02	.16	3
E 188135	53	123	143	633	2.6	115	9	132	3.20	145	16	<2	<2	55	5.7	42	<3	96	.93	.145	3	22	.30	34	<.01	<3	.36	<.01	.14	6
E 188136	5	11	34	94	.3	4	2	376	3.00	22	<8	<2	18	99	.2	<3	<3	2	1.69	.048	6	12	1.29	71	<.01	<3	.74	.03	.19	4
E 188137	1	4	3	19	<.3	6	2	75	.80	5	<8	<2	<2	6	.2	6	<3	4	.50	.009	4	20	.20	25	<.01	<3	.15	.01	.01	4
E 188138	3	40	24	117	.6	48	14	152	2.55	33	<8	<2	11	19	.6	4	3	31	.36	.082	9	44	.33	114	<.01	<3	1.53	.06	.10	2
E 188139	1	6	3	25	<.3	5	2	59	.81	8	<8	<2	2	3	.2	<3	<3	6	.08	.014	7	23	.16	19	<.01	3	.33	.01	.01	5
E 188140	3	24	14	75	.4	50	13	174	2.76	69	<8	<2	13	31	.2	5	<3	31	1.06	.131	9	42	.44	140	<.01	<3	1.75	.07	.10	3
E 188141	18	52	25	337	1.4	79	14	259	3.82	123	12	<2	8	59	3.1	7	<3	42	1.66	.177	3	34	.71	81	<.01	<3	1.10	.05	.11	2
STANDARD C3	26	67	37	167	6.0	37	12	779	3.39	62	18	4	22	29	23.5	15	26	81	.58	.086	20	171	.63	150	.09	20	1.84	.04	.16	16
STANDARD G-2	1	4	<3	42	<.3	7	2	527	2.04	<2	<8	<2	4	70	.3	<3	<3	41	.65	.095	8	79	.61	225	.13	<3	.94	.06	.45	3

GROUP 1D - 0.50 GM SAMPLE LEACHED WITH 3 ML 2-2-2 HCL-HNO3-H2O AT 95 DEG. C FOR ONE HOUR, DILUTED TO 10 ML, ANALYSED BY ICP-ES.
UPPER LIMITS - AG, AU, HG, W = 100 PPM; MO, CO, CD, SB, BI, TH, U & B = 2,000 PPM; CU, PB, ZN, NI, MN, AS, V, LA, CR = 10,000 PPM.
ASSAY RECOMMENDED FOR ROCK AND CORE SAMPLES IF CU PB ZN AS > 1%, AG > 30 PPM & AU > 1000 PPB
- SAMPLE TYPE: CORE Samples beginning 'RE' are Reruns and 'RRE' are Reject Reruns.

DATE RECEIVED: JUL 31 2000 **DATE REPORT MAILED:** Aug 9/00 **SIGNED BY** ..... D. TOYE, C.LEONG, J. WANG; CERTIFIED B.C. ASSAYERS

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

Data ✓ FA ___

SAMPLE#	Mo ppm	Cu ppm	Pb ppm	Zn ppm	Ag ppm	Ni ppm	Co ppm	Mn ppm	Fe %	As ppm	U ppm	Au ppm	Th ppm	Sr ppm	Cd ppm	Sb ppm	Bi ppm	V ppm	Ca %	P %	La ppm	Cr ppm	Mg %	Ba ppm	Ti %	B ppm	Al %	Na %	K %	W ppm
E 188142	19	753	1971	4606	5.7	65	15	219	4.56	393	<8	<2	4	42	19.0	15	<3	31	1.34	.147	3	25	.57	47	<.01	<3	.59	.04	.10	5
E 188143	39	315	654	1575	4.4	83	10	319	4.85	266	<8	<2	7	44	7.1	23	<3	34	1.39	.085	3	28	.61	26	<.01	<3	.50	.05	.16	8
E 188144	8	285	440	979	2.3	10	1	386	2.78	53	<8	<2	14	102	3.0	5	<3	4	2.78	.029	6	8	1.56	99	<.01	6	.48	.04	.15	3
E 188145	5	31	22	132	1.1	42	13	199	3.23	75	<8	<2	8	50	.2	3	<3	30	1.66	.104	6	42	.59	103	<.01	<3	1.84	.04	.10	3
E 188146	4	24	9	518	1.1	46	13	205	3.00	64	<8	<2	11	52	<.2	4	<3	28	1.73	.148	9	42	.40	120	<.01	<3	1.79	.04	.13	3
E 188147	9	64	21	363	1.2	87	17	191	4.28	29	<8	<2	6	29	3.0	<3	<3	42	.51	.053	4	32	.91	109	<.01	<3	1.50	.05	.14	3
E 188148	4	4	29	59	<.3	1	4	228	1.72	3	<8	<2	12	84	<.2	<3	<3	2	1.53	.026	12	9	1.54	308	<.01	4	1.14	.07	.12	4
E 188149	8	102	24	337	1.1	107	22	89	5.03	198	<8	<2	7	24	3.0	<3	<3	43	.23	.072	4	33	.99	56	<.01	3	1.60	.03	.15	<2
E 188150	4	24	47	174	.7	<1	1	97	1.61	23	<8	<2	19	59	.9	<3	<3	1	.83	.010	19	8	1.27	218	<.01	3	1.23	.04	.19	4
E 188151	4	25	67	199	.3	8	4	155	1.77	24	<8	<2	22	78	1.0	9	<3	4	1.28	.058	9	6	1.37	172	<.01	<3	.95	.04	.14	2
E 188152	24	76	31	753	2.2	84	9	153	3.52	148	15	<2	4	78	10.2	17	<3	113	1.52	.263	4	31	.71	44	<.01	<3	.67	.04	.18	6
E 188153	7	172	271	745	1.4	1	4	108	4.43	432	<8	<2	25	37	1.8	17	<3	2	.48	.039	8	6	.61	32	<.01	<3	.76	.07	.19	3
E 188154	5	16	97	184	4.7	<1	3	290	2.22	133	<8	<2	19	133	.5	12	<3	1	2.69	.073	5	11	1.81	119	<.01	<3	.67	.04	.17	3
RE E 188154	5	17	97	187	4.4	3	4	290	2.23	135	<8	<2	20	132	<.2	8	<3	2	2.69	.074	5	9	1.81	98	<.01	<3	.65	.06	.18	3
RRE E 188154	4	18	110	204	5.3	<1	3	310	2.28	134	<8	<2	21	141	.4	6	<3	1	2.88	.073	4	6	1.88	107	<.01	<3	.58	.02	.15	3
E 188155	14	1605	2770	5778	8.0	3	7	197	4.19	323	<8	<2	16	68	16.2	41	12	<1	1.21	.023	5	8	.90	45	<.01	<3	.54	.05	.16	3
E 188156	22	549	790	1872	2.6	73	8	169	4.05	261	<8	<2	3	78	12.1	11	<3	85	1.43	.270	4	21	.47	31	<.01	<3	.45	.03	.16	6
E 188157	25	669	615	1615	4.1	54	10	339	4.22	284	<8	<2	6	117	8.1	21	7	34	2.46	.138	2	23	1.24	42	<.01	<3	.43	.03	.15	6
E 188158	3	11	27	234	<.3	3	5	163	2.35	12	<8	<2	15	75	<.2	6	<3	2	1.20	.085	7	8	.82	84	<.01	<3	.58	.03	.14	3
E 188159	10	90	95	379	1.3	50	10	380	4.38	105	<8	<2	7	105	2.8	5	<3	15	2.50	.115	3	18	1.32	73	<.01	<3	.44	.01	.07	2
E 188160	4	48	21	198	1.0	55	16	179	3.49	37	<8	<2	9	29	.6	<3	<3	37	.66	.066	6	38	.62	181	<.01	<3	1.62	.07	.14	4
STANDARD C3	26	63	39	167	5.9	32	12	768	3.38	59	24	4	21	29	23.6	16	23	79	.58	.088	19	172	.63	148	.10	20	1.86	.05	.16	15
STANDARD G-2	2	2	4	41	<.3	1	4	520	2.04	<2	<8	<2	6	71	<.2	<3	<3	40	.65	.094	7	76	.61	228	.15	<3	.93	.07	.45	4

Sample type: CORE. Samples beginning 'RE' are Reruns and 'RRE' are Reject Reruns.

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

Data FA

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

GEOCHEMICAL ANALYSIS CERTIFICATE

Atna Resources Ltd. File # A002668 Page 1
1550 - 409 Granville St., Vancouver BC V6C 1T2 Submitted by: Rob Wilson

SAMPLE#	Mo ppm	Cu ppm	Pb ppm	Zn ppm	Ag ppm	Ni ppm	Co ppm	Mn ppm	Fe %	As ppm	U ppm	Au ppm	Th ppm	Sr ppm	Cd ppm	Sb ppm	Bi ppm	V ppm	Ca %	P %	La ppm	Cr ppm	Mg %	Ba ppm	Ti %	B ppm	Al %	Na %	K %	W ppm
LEYLA L20+00E 22+00N	1	40	19	129	<.3	31	10	316	2.33	13	<8	<2	<2	14	<.2	<3	<3	33	.25	.071	13	21	.38	312	.01	<3	1.14	.01	.04	<2
LEYLA L20+00E 21+25N	2	44	35	183	.4	33	12	485	2.94	17	<8	<2	2	15	.5	<3	<3	36	.31	.076	12	23	.42	332	.01	<3	1.26	<.01	.05	<2
LEYLA L20+00E 21+00N	1	31	20	132	<.3	27	7	159	2.14	12	<8	<2	<2	16	.3	3	<3	32	.33	.072	10	18	.37	265	.01	<3	1.05	.01	.04	<2
LEYLA L20+00E 20+75N	1	38	25	162	.3	35	14	602	2.72	13	<8	<2	2	17	.9	<3	<3	36	.36	.077	10	22	.41	363	.01	<3	1.17	.01	.05	<2
LEYLA L20+00E 20+50N	1	52	22	164	.4	37	12	474	2.72	11	<8	<2	<2	16	1.0	<3	<3	38	.33	.084	13	24	.43	354	.01	<3	1.25	<.01	.05	<2
LEYLA L20+00E 20+25N	2	44	23	147	<.3	33	10	367	2.49	12	<8	<2	2	14	.4	<3	<3	35	.26	.077	13	23	.41	324	.01	<3	1.17	.01	.04	<2
LEYLA L20+00E 19+75N	2	42	28	139	.3	30	8	235	2.42	14	<8	<2	<2	13	.7	<3	<3	33	.25	.077	11	18	.38	291	.01	<3	1.08	<.01	.05	<2
LEYLA L20+00E 19+50N	1	36	22	124	<.3	30	8	202	2.28	11	<8	<2	<2	14	.5	<3	<3	35	.25	.069	11	20	.37	297	.01	<3	1.07	<.01	.05	<2
LEYLA L20+00E 19+25N	1	31	14	134	<.3	29	10	350	2.37	11	<8	<2	2	16	.7	<3	<3	31	.31	.082	12	20	.39	262	.01	<3	1.02	<.01	.05	<2
LEYLA L20+00E 19+00N	1	44	18	158	<.3	36	13	492	2.61	13	<8	<2	2	18	.5	<3	<3	36	.36	.087	13	23	.42	371	.01	<3	1.26	<.01	.05	<2
LEYLA L20+00E 18+75N	2	63	18	162	.4	40	13	385	2.87	9	<8	<2	2	22	.7	3	<3	38	.46	.088	14	23	.44	420	.01	<3	1.32	.01	.05	<2
LEYLA L20+00E 18+50N	2	51	18	119	.4	30	8	224	2.89	19	<8	<2	2	18	<.2	<3	<3	40	.36	.079	11	21	.39	328	.01	<3	1.27	<.01	.03	<2
LEYLA L20+00E 18+25N	2	77	18	170	<.3	42	18	1051	3.11	12	<8	<2	3	16	.4	<3	<3	42	.26	.089	18	24	.44	447	.01	<3	1.53	.01	.05	<2
LEYLA L21+00E 21+25N	2	51	38	185	.5	37	12	389	2.77	17	<8	<2	2	17	.6	<3	<3	36	.35	.080	12	24	.45	293	.01	<3	1.23	.01	.05	<2
LEYLA L21+00E 21+00N	2	62	29	200	<.3	36	14	370	2.56	24	<8	<2	5	10	1.2	4	<3	23	.19	.082	16	16	.30	109	.02	<3	.69	<.01	.02	<2
LEYLA L21+00E 20+75N	3	66	71	254	.6	44	15	385	3.20	28	<8	<2	<2	14	1.2	<3	<3	41	.24	.083	17	26	.46	226	.01	<3	1.31	<.01	.04	<2
LEYLA L21+00E 20+50N	2	55	65	187	.5	34	12	323	2.77	27	<8	<2	2	11	.6	3	<3	38	.13	.072	16	21	.42	157	.01	<3	1.08	<.01	.05	<2
LEYLA L21+00E 20+25N	2	50	39	180	.6	38	13	341	2.59	20	<8	<2	3	13	.9	3	<3	40	.23	.078	17	22	.44	191	.01	<3	1.16	<.01	.04	<2
LEYLA L21+00E 20+00N	2	53	25	196	.4	42	15	389	2.95	19	<8	<2	4	14	.8	<3	<3	45	.21	.084	19	26	.51	253	.01	<3	1.45	<.01	.05	<2
LEYLA L21+00E 19+75N	3	72	27	259	.6	59	27	668	3.25	19	<8	<2	3	17	1.5	4	<3	46	.32	.095	26	29	.53	269	.01	<3	1.54	<.01	.06	<2
LEYLA L21+00E 19+50N	3	62	24	198	.6	46	32	609	3.18	15	<8	<2	4	14	.7	<3	<3	44	.20	.093	19	28	.56	205	.01	<3	1.49	<.01	.04	2
LEYLA L21+00E 19+25N	2	40	15	134	.4	31	8	158	2.29	11	<8	<2	<2	13	.2	<3	<3	39	.20	.083	16	24	.47	176	.01	<3	1.21	<.01	.03	<2
LEYLA L21+00E 19+00N	2	38	22	129	.6	30	13	400	2.97	19	<8	<2	2	13	.3	<3	<3	50	.18	.091	12	28	.49	221	.01	<3	1.44	<.01	.05	<2
LEYLA L21+00E 18+75N	2	25	20	98	.5	23	8	219	2.26	15	<8	<2	<2	14	.4	<3	<3	39	.20	.078	11	22	.34	226	.01	<3	1.15	<.01	.04	<2
RE LEYLA L21+00E 18+75N	2	26	19	95	.6	23	8	214	2.22	12	<8	<2	<2	14	.4	<3	<3	39	.20	.078	11	21	.34	223	.01	<3	1.12	<.01	.04	<2
LEYLA L21+00E 18+50N	4	47	35	126	.4	36	14	424	5.59	52	<8	<2	2	16	.2	3	<3	51	.28	.098	13	29	.37	269	.01	9	1.50	.01	.04	2
LEYLA L21+00E 18+25N	2	30	20	117	.7	25	9	204	2.53	23	<8	<2	4	13	.3	4	<3	34	.17	.084	16	22	.35	198	.01	<3	1.25	.01	.05	<2
LEYLA L21+00E 18+00N	2	24	18	103	.4	22	9	277	2.34	15	<8	<2	2	12	.4	<3	<3	38	.16	.084	14	23	.36	270	.01	<3	1.24	.01	.05	<2
LEYLA L22+00E 21+25N	2	62	47	392	.3	71	25	1046	3.12	20	<8	<2	3	31	4.2	4	<3	31	.46	.083	16	20	.39	287	.01	<3	1.17	<.01	.05	<2
LEYLA L22+00E 21+00N	2	50	49	239	.4	35	18	624	2.99	23	<8	<2	5	15	1.9	<3	<3	29	.21	.083	18	18	.41	166	.02	<3	1.03	<.01	.05	<2
LEYLA L22+00E 20+75N	2	40	71	208	.6	35	21	803	3.03	26	<8	<2	2	12	1.4	3	<3	38	.16	.097	16	21	.44	182	.01	<3	1.27	.01	.07	<2
LEYLA L22+00E 20+50N	3	45	38	251	1.1	43	18	554	3.30	32	<8	<2	2	12	1.8	<3	<3	42	.14	.113	13	25	.42	222	.01	4	1.40	.01	.05	2
LEYLA L22+00E 20+25N	3	47	25	265	1.0	46	39	1309	3.00	24	<8	<2	2	12	2.5	<3	<3	38	.16	.105	12	21	.39	232	.01	<3	1.30	.01	.04	<2
LEYLA L22+00E 20+00N	2	30	18	203	.5	34	13	412	2.38	19	<8	<2	2	10	1.3	<3	<3	28	.13	.071	13	17	.34	132	.01	<3	.94	<.01	.04	2
STANDARD C3	27	66	38	169	5.5	38	12	800	3.36	60	22	5	22	28	25.7	15	22	80	.57	.087	18	169	.62	147	.09	24	1.82	.04	.16	16
STANDARD G-2	1	2	<3	44	<.3	8	4	553	2.05	<2	<8	<2	5	73	<.2	<3	<3	42	.65	.094	6	79	.62	230	.14	<3	.95	.08	.46	3

GROUP 1D - 0.50 GM SAMPLE LEACHED WITH 3 ML 2-2-2 HCL-HNO3-H2O AT 95 DEG. C FOR ONE HOUR, DILUTED TO 10 ML, ANALYSED BY ICP-ES.
UPPER LIMITS - AG, AU, HG, W = 100 PPM; MO, CO, CD, SB, BI, TH, U & B = 2,000 PPM; CU, PB, ZN, NI, MN, AS, V, LA, CR = 10,000 PPM.
- SAMPLE TYPE: SOIL Samples beginning 'RE' are Reruns and 'RRE' are Reject Reruns.

DATE RECEIVED: JUL 31 2000 **DATE REPORT MAILED:** Aug 8/00 **SIGNED BY.** C. Leong .....D. TOYE, C.LEONG, J. WANG; CERTIFIED B.C. ASSAYERS

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

Data ✓ FA ___

SAMPLE#	Mo ppm	Cu ppm	Pb ppm	Zn ppm	Ag ppm	Ni ppm	Co ppm	Mn ppm	Fe %	As ppm	U ppm	Au ppm	Th ppm	Sr ppm	Cd ppm	Sb ppm	Bi ppm	V ppm	Ca %	P %	La ppm	Cr ppm	Mg %	Ba ppm	Ti %	B ppm	Al %	Na %	K %	W ppm
LEYLA L22+00E 19+75N	2	44	24	258	1.3	42	24	718	2.92	20	<8	<2	<2	13	1.9	3	<3	39	.26	.121	10	21	.38	238	.01	<3	1.33	.01	.02	<2
LEYLA L22+00E 19+50N	3	45	27	217	1.1	37	11	206	2.59	18	<8	<2	<2	11	.6	3	<3	40	.11	.107	11	23	.40	215	.01	<3	1.42	.01	.04	<2
LEYLA L22+00E 19+25N	2	36	19	183	1.1	35	12	156	2.38	16	<8	<2	<2	12	.7	<3	<3	36	.14	.087	10	21	.37	197	.01	<3	1.24	.01	.03	<2
LEYLA L22+00E 19+00N	4	69	67	194	1.3	44	164	3108	3.69	28	<8	<2	<2	12	1.7	<3	<3	50	.14	.166	12	26	.37	248	.01	<3	1.69	.01	.05	<2
LEYLA L22+00E 18+75N	3	45	33	222	1.6	42	17	457	3.27	25	<8	<2	<2	14	.5	3	<3	45	.16	.111	10	26	.40	251	.01	<3	1.48	.01	.04	<2
LEYLA L22+00E 18+50N	3	107	24	380	.6	63	22	567	4.19	19	<8	<2	<2	13	1.1	5	<3	53	.17	.095	9	20	.38	180	.01	<3	1.32	<.01	.04	<2
LEYLA L22+00E 18+25N	2	30	18	96	.4	22	5	179	3.17	13	<8	<2	<2	19	.5	<3	<3	40	.36	.063	7	22	.29	108	.01	<3	1.02	<.01	.02	<2
LEYLA L22+00E 18+00N	2	30	13	102	.3	28	8	272	2.80	23	<8	<2	<2	14	.3	3	<3	36	.19	.079	13	20	.37	96	.02	<3	.98	<.01	.04	<2
LEYLA L22+50E 21+50N	1	42	20	236	.4	48	12	378	2.75	18	<8	<2	4	28	3.1	3	<3	33	.44	.088	13	21	.47	353	.02	<3	1.04	.01	.05	<2
LEYLA L22+50E 21+25N	1	51	21	236	.5	52	14	510	2.86	14	<8	<2	4	23	2.6	<3	<3	34	.38	.090	16	22	.45	282	.02	3	1.01	.01	.04	<2
LEYLA L22+50E 21+00N	1	77	73	371	.4	64	14	535	3.03	24	<8	<2	4	34	4.3	6	<3	26	.94	.102	14	16	.57	233	.01	<3	.84	.01	.03	<2
LEYLA L22+50E 20+75N	1	37	20	240	.4	44	14	594	2.49	13	<8	<2	2	25	3.5	3	<3	29	.41	.080	13	16	.36	242	.01	<3	1.00	.01	.04	<2
LEYLA L22+50E 20+50N	2	39	22	218	.3	41	19	685	2.61	17	<8	<2	5	17	2.0	3	<3	31	.28	.080	14	20	.41	226	.01	<3	1.08	.01	.05	<2
LEYLA L22+50E 20+25N	2	40	17	231	.5	46	20	743	2.62	13	<8	<2	2	18	2.8	<3	<3	32	.28	.081	13	21	.40	262	.01	<3	1.05	.01	.04	<2
LEYLA L23+00E 20+00N	2	30	24	180	.4	33	13	513	2.75	16	<8	<2	3	14	1.8	4	<3	34	.19	.081	11	19	.35	263	.01	<3	1.06	<.01	.05	<2
LEYLA L23+00E 19+75N	3	46	24	256	.5	42	15	496	3.41	29	<8	<2	<2	10	1.7	6	<3	35	.16	.084	10	20	.36	167	.01	<3	1.03	<.01	.03	2
LEYLA L23+00E 19+50N	2	21	16	183	.3	26	17	729	2.45	13	<8	<2	<2	12	1.2	3	<3	33	.15	.082	13	17	.34	190	.01	<3	1.02	<.01	.03	<2
LEYLA L23+00E 19+25N	2	24	13	191	.3	27	9	230	2.26	14	<8	<2	3	14	.9	<3	<3	27	.20	.081	18	15	.36	168	.02	<3	.92	<.01	.02	<2
LEYLA L23+00E 19+00N	3	25	14	180	.7	28	10	292	2.47	12	<8	<2	3	14	.9	3	<3	33	.19	.086	13	19	.37	242	.01	<3	1.14	<.01	.03	<2
LEYLA L23+00E 18+75N	3	29	16	152	.7	31	7	136	2.78	19	<8	<2	2	14	1.1	3	<3	37	.18	.093	12	18	.34	240	.01	<3	1.16	<.01	.02	<2
LEYLA L23+00E 18+50N	2	24	14	167	.7	32	15	473	2.31	14	<8	<2	<2	14	.8	<3	<3	33	.23	.087	11	17	.36	252	.01	<3	1.12	.01	.03	<2
LEYLA L23+00E 18+25N	3	44	15	180	.7	35	12	351	2.74	16	<8	<2	4	12	.8	4	<3	30	.19	.078	14	18	.33	206	.01	<3	.98	<.01	.03	<2
LEYLA L23+00E 18+00N	2	38	14	279	.4	46	9	231	3.04	22	<8	<2	5	13	2.7	5	<3	28	.19	.078	15	16	.33	167	.02	<3	.77	<.01	.03	<2
RE LEYLA L23+00E 18+00N	2	38	16	273	.4	45	9	227	3.00	20	<8	<2	4	13	2.6	4	<3	27	.18	.075	14	15	.33	164	.02	<3	.75	<.01	.02	<2
LEYLA L24+00E 21+90N	1	37	29	128	.4	24	7	177	2.60	22	<8	<2	4	20	.6	4	<3	29	.31	.094	14	19	.34	135	.01	<3	.75	.01	.02	<2
LEYLA L24+00E 21+75N	2	58	50	153	.6	24	9	213	2.85	32	<8	<2	6	12	.6	5	<3	25	.20	.080	13	16	.33	134	.01	<3	.76	<.01	.01	<2
LEYLA L24+00E 21+50N	1	49	30	184	.7	38	17	633	2.98	20	<8	<2	4	36	1.2	4	<3	26	.80	.077	12	18	.39	216	.01	<3	1.05	.01	.03	<2
LEYLA L24+00E 21+25N	1	35	33	157	1.0	26	9	397	2.90	21	<8	<2	3	19	.6	4	3	34	.28	.070	12	20	.39	254	.01	<3	1.12	.01	.05	<2
LEYLA L24+00E 21+00N	1	28	19	100	.6	23	7	232	2.50	14	<8	<2	<2	16	.6	3	<3	31	.21	.058	12	19	.35	192	.01	<3	.83	.01	.04	<2
LEYLA L24+00E 20+75N	1	44	21	183	.9	37	14	661	3.07	19	<8	<2	4	28	1.8	4	<3	35	.47	.087	16	23	.46	456	.01	<3	1.20	.01	.06	<2
LEYLA L24+00E 20+50N	2	35	19	137	.7	30	11	427	2.86	14	<8	<2	3	23	.8	4	4	34	.32	.081	16	21	.45	394	.01	<3	1.13	.01	.06	<2
LEYLA L24+00E 20+25N	1	36	19	155	.5	33	10	386	2.92	19	<8	<2	3	28	1.1	<3	<3	33	.46	.087	16	21	.47	370	.01	<3	1.14	.01	.08	<2
LEYLA L24+00E 20+00N	1	18	14	77	.3	18	7	237	2.09	10	<8	<2	2	12	.2	3	<3	27	.11	.062	13	16	.29	233	.01	<3	.81	<.01	.04	<2
LEYLA L24+00E 19+75N	2	32	17	138	.6	27	12	453	2.76	19	<8	<2	2	14	1.8	3	<3	33	.14	.073	15	21	.37	257	.01	<3	1.01	.01	.03	<2
STANDARD C3	27	67	39	172	5.7	38	13	819	3.47	59	24	4	20	29	25.7	18	24	83	.58	.088	16	177	.63	152	.08	22	1.93	.04	.16	15
STANDARD G-2	1	3	<3	42	<.3	7	4	538	1.99	<2	<8	<2	<2	70	<.2	<3	<3	39	.64	.093	6	76	.61	221	.13	<3	.90	.07	.45	2

Sample type: SOIL. Samples beginning 'RE' are Reruns and 'RRE' are Reject Reruns.

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

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SAMPLE#	Mo ppm	Cu ppm	Pb ppm	Zn ppm	Ag ppm	Ni ppm	Co ppm	Mn ppm	Fe %	As ppm	U ppm	Au ppm	Th ppm	Sr ppm	Cd ppm	Sb ppm	Bi ppm	V ppm	Ca %	P %	La ppm	Cr ppm	Mg %	Ba ppm	Ti %	B ppm	Al %	Na %	K %	W ppm
LEYLA L24+00E 19+50N	1	26	41	105	.5	14	6	282	3.59	22	<8	<2	7	23	<.2	<3	<3	17	.15	.106	21	9	.39	106	.03	<3	.96	.01	.05	<2
LEYLA L24+00E 19+25N	2	29	22	119	<.3	19	6	211	2.79	24	<8	<2	6	13	.3	4	4	20	.18	.104	19	11	.22	94	.01	<3	.54	<.01	.03	<2
LEYLA L24+00E 19+00N	2	41	17	150	<.3	28	7	165	2.93	32	<8	<2	2	9	.5	4	<3	36	.06	.058	15	15	.27	103	.02	<3	.74	<.01	.03	<2
LEYLA L24+00E 18+75N	2	42	17	134	.3	29	10	427	2.86	25	10	<2	6	15	.5	4	<3	30	.19	.094	20	17	.37	129	.02	<3	.94	<.01	.04	<2
LEYLA L24+00E 18+50N	2	46	17	143	.6	28	7	219	2.97	25	<8	<2	3	13	.3	5	<3	33	.12	.083	17	17	.35	121	.02	<3	.91	.01	.05	<2
LEYLA L24+00E 18+25N	2	35	22	162	.5	29	11	411	3.03	29	<8	<2	<2	17	3.0	4	<3	41	.21	.079	14	23	.41	159	.01	<3	1.20	.01	.04	<2
LEYLA L24+00E 18+00N	2	45	16	303	<.3	44	12	387	2.97	22	<8	<2	2	22	3.5	4	3	28	.34	.110	13	17	.37	148	.01	<3	.91	.01	.03	<2
LEYLA L25+00E 21+75N	1	23	17	90	<.3	22	6	294	2.47	14	<8	<2	2	17	<.2	<3	<3	26	.25	.083	16	17	.35	154	.02	<3	.85	<.01	.06	<2
LEYLA L25+00E 21+50N	1	34	25	110	<.3	26	11	414	2.86	19	<8	<2	3	15	<.2	5	3	31	.19	.085	15	20	.38	218	.01	<3	1.06	.01	.05	<2
LEYLA L25+00E 21+25N	1	36	21	125	.4	29	10	352	2.92	20	<8	<2	5	17	.4	4	5	36	.21	.082	19	22	.45	247	.02	<3	1.12	.01	.05	<2
LEYLA L25+00E 21+00N	1	47	24	143	.3	28	10	362	2.81	16	<8	<2	7	17	.5	<3	<3	30	.22	.094	19	18	.42	195	.02	<3	.97	<.01	.04	<2
LEYLA L25+00E 20+75N	1	31	12	108	.3	23	7	299	2.80	21	<8	<2	<2	14	<.2	4	<3	31	.17	.090	15	18	.31	75	.03	<3	.80	.01	.04	<2
LEYLA L25+00E 20+50N	2	15	12	77	.3	16	5	203	2.45	20	<8	<2	2	10	<.2	<3	4	33	.09	.048	12	19	.29	75	.02	<3	.86	<.01	.03	<2
LEYLA L25+00E 20+25N	2	20	16	68	<.3	12	4	214	2.44	23	<8	<2	<2	8	<.2	<3	<3	33	.08	.044	14	13	.15	64	.02	<3	.59	<.01	.03	<2
LEYLA L25+00E 19+75N	1	37	23	137	.3	29	11	420	2.82	20	<8	<2	2	17	.6	<3	<3	31	.22	.074	15	19	.38	295	.01	<3	1.02	.01	.06	<2
LEYLA L25+00E 19+50N	2	34	20	142	.4	27	9	244	2.68	17	<8	<2	2	26	1.0	<3	<3	30	.34	.086	15	17	.42	305	.01	<3	1.02	<.01	.06	<2
LEYLA L25+00E 19+25N	2	29	14	152	.5	29	10	451	2.70	20	<8	<2	3	28	.9	<3	<3	32	.40	.086	15	20	.45	343	.01	<3	1.15	.01	.06	<2
LEYLA L25+00E 19+00N	1	26	11	122	<.3	23	8	285	2.46	17	<8	<2	2	17	.5	<3	3	27	.26	.083	15	16	.36	260	.01	<3	.90	<.01	.04	<2
LEYLA L25+00E 18+75N	2	36	19	145	.4	28	10	451	2.79	18	<8	<2	2	34	1.5	<3	<3	31	.56	.092	15	18	.42	345	.01	<3	1.15	.01	.06	<2
LEYLA L25+00E 18+50N	2	39	17	150	.6	33	11	379	2.94	18	<8	<2	<2	18	1.0	<3	<3	35	.23	.086	15	20	.43	307	.01	<3	1.13	.01	.06	<2
LEYLA L25+00E 18+25N	1	43	13	350	.5	60	15	537	2.86	14	<8	<2	3	21	4.8	<3	<3	36	.36	.085	15	22	.48	273	.01	<3	1.12	.01	.05	<2
LEYLA L25+00E 18+00N	2	59	18	297	.7	47	12	396	3.16	19	<8	<2	2	27	3.4	<3	<3	38	.54	.091	11	21	.47	353	.01	<3	1.34	.01	.05	<2
LEYLA L26+00E 22+00N	3	68	37	156	.5	59	22	939	4.55	26	<8	<2	5	15	.8	<3	<3	17	.30	.070	18	14	.25	96	<.01	<3	.95	<.01	.03	<2
LEYLA L26+00E 21+75N	2	23	21	90	.5	19	7	243	3.49	19	<8	<2	2	7	<.2	<3	<3	36	.04	.043	13	20	.33	91	.01	<3	1.24	<.01	.03	<2
LEYLA L26+00E 21+50N	1	22	14	101	.5	22	7	261	2.39	14	<8	<2	<2	19	.4	<3	<3	26	.30	.062	12	15	.32	218	.01	<3	.94	<.01	.04	<2
LEYLA L26+00E 21+25N	2	28	19	126	.3	26	12	429	3.00	20	<8	<2	3	22	.7	<3	<3	36	.36	.074	14	22	.46	431	.01	<3	1.48	.01	.06	<2
RE LEYLA L26+00E 21+25N	2	27	22	124	.4	26	11	415	2.92	16	<8	<2	2	22	.6	<3	<3	35	.35	.073	13	21	.45	421	.01	<3	1.44	.01	.07	<2
LEYLA L26+00E 21+00N	2	22	17	110	.9	22	6	184	2.70	19	<8	<2	2	17	.5	<3	<3	39	.25	.072	12	19	.42	260	.01	<3	1.34	.01	.06	<2
LEYLA L26+00E 20+75N	2	18	15	103	<.3	20	8	307	2.47	13	<8	<2	3	12	.3	<3	4	29	.15	.072	16	16	.33	152	.01	<3	.99	<.01	.03	<2
LEYLA L26+00E 20+50N	2	23	14	100	<.3	21	8	307	2.25	13	<8	<2	<2	12	.7	<3	<3	28	.16	.066	14	15	.33	185	.01	<3	.97	<.01	.04	<2
LEYLA L26+00E 20+25N	2	23	14	101	.4	20	7	222	2.35	14	<8	<2	<2	12	.6	<3	<3	31	.15	.071	13	16	.33	173	.01	<3	.99	<.01	.06	<2
LEYLA L26+00E 20+00N	2	37	25	126	.4	24	8	204	2.41	15	<8	<2	2	18	.8	<3	<3	28	.26	.077	15	16	.32	224	.01	<3	.90	<.01	.04	<2
LEYLA L26+00E 19+75N	2	24	16	94	<.3	21	6	205	2.20	15	<8	<2	<2	15	.8	<3	<3	28	.21	.066	12	16	.30	243	.01	<3	.91	<.01	.04	<2
LEYLA L26+00E 19+50N	2	33	19	125	.4	24	10	373	2.80	19	10	<2	<2	19	.4	<3	<3	37	.27	.079	14	19	.41	284	.01	<3	1.27	.01	.05	<2
STANDARD C3	26	66	36	172	5.9	37	13	783	3.39	63	22	5	19	29	25.6	15	26	80	.58	.087	16	166	.62	149	.08	23	1.86	.04	.16	16
STANDARD G-2	1	4	3	45	<.3	8	4	533	2.03	3	9	<2	3	71	<.2	<3	<3	40	.65	.095	6	74	.62	227	.13	<3	.93	.07	.46	<2

Sample type: SOIL. Samples beginning 'RE' are Reruns and 'RRE' are Reject Reruns.

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

Data L FA ___

SAMPLE#	Mo ppm	Cu ppm	Pb ppm	Zn ppm	Ag ppm	Ni ppm	Co ppm	Mn ppm	Fe %	As ppm	U ppm	Au ppm	Th ppm	Sr ppm	Cd ppm	Sb ppm	Bi ppm	V ppm	Ca %	P %	La ppm	Cr ppm	Mg %	Ba ppm	Ti %	B ppm	Al %	Na %	K %	W ppm
LEYLA L26+00E 19+25N	2	40	22	166	.4	31	14	681	3.20	21	<8	<2	2	31	.8	<3	<3	37	.44	.093	16	19	.43	458	.01	<3	1.45	.01	.06	<2
LEYLA L26+00E 19+00N	1	27	20	166	.6	26	13	607	3.06	19	<8	<2	3	18	.7	<3	<3	29	.26	.096	20	15	.38	216	.01	<3	1.06	<.01	.05	<2
LEYLA L26+00E 18+75N	2	25	18	127	<.3	20	6	305	2.68	22	<8	<2	<2	12	.3	<3	<3	35	.14	.084	17	17	.34	147	.01	<3	1.00	<.01	.05	<2
LEYLA L26+00E 18+50N	2	32	17	146	.5	26	9	433	2.65	22	<8	<2	<2	19	.9	<3	<3	34	.32	.097	13	17	.39	286	.01	<3	1.14	.01	.07	<2
LEYLA L26+00E 18+25N	2	45	16	166	.5	30	10	393	2.80	23	<8	<2	<2	23	1.2	<3	<3	34	.42	.102	14	17	.39	355	.01	<3	1.17	<.01	.05	<2
LEYLA L26+00E 18+00N	2	33	17	134	.5	24	8	291	2.55	20	<8	<2	2	19	.6	<3	<3	31	.31	.093	13	18	.38	289	.01	<3	1.05	<.01	.06	<2
LEYLA L27+00E 22+00N	2	21	18	106	<.3	29	12	697	2.69	16	<8	<2	2	18	.4	<3	<3	29	.24	.078	14	19	.35	331	.01	<3	1.03	<.01	.05	<2
LEYLA L27+00E 21+75N	2	26	19	106	.4	25	10	396	3.04	20	<8	<2	6	13	.2	<3	<3	30	.16	.077	23	18	.42	244	.01	<3	1.17	<.01	.06	<2
LEYLA L27+00E 21+50N	1	18	12	90	.3	21	8	336	2.39	13	<8	<2	2	14	.3	<3	3	30	.17	.083	18	18	.38	248	.01	<3	1.08	<.01	.07	<2
LEYLA L27+00E 21+25N	2	16	13	87	<.3	19	8	310	2.37	14	<8	<2	3	16	.2	<3	<3	30	.20	.090	20	18	.38	198	.01	<3	.99	<.01	.05	<2
LEYLA L27+00E 21+00N	1	16	10	72	.3	16	5	135	1.99	14	<8	<2	2	14	.2	<3	<3	26	.18	.081	18	15	.33	159	.01	<3	.84	<.01	.04	<2
LEYLA L27+00E 20+75N	1	15	15	65	.6	16	5	148	2.13	10	<8	<2	<2	13	.3	<3	<3	31	.15	.086	16	17	.36	260	.01	<3	1.06	<.01	.06	<2
LEYLA L27+00E 20+50N	2	22	15	98	<.3	20	8	271	2.57	19	<8	<2	5	14	.3	3	<3	31	.17	.080	20	16	.37	210	.01	<3	1.04	<.01	.06	<2
LEYLA L27+00E 20+25N	2	26	16	109	.4	22	8	303	2.73	20	<8	<2	3	15	.2	<3	<3	34	.16	.075	18	18	.37	258	.01	<3	1.14	<.01	.06	<2
LEYLA L27+00E 20+00N	2	33	18	128	<.3	27	9	237	2.89	22	<8	<2	3	19	.3	<3	<3	31	.23	.082	19	19	.39	303	.01	<3	1.18	<.01	.06	<2
LEYLA L27+00E 19+75N	2	26	15	111	<.3	23	8	301	2.54	16	<8	<2	4	14	.3	3	<3	26	.16	.078	22	14	.31	162	.01	<3	.87	<.01	.06	<2
LEYLA L27+00E 19+50N	2	21	13	95	<.3	18	7	284	2.53	15	<8	<2	3	14	.2	<3	<3	31	.18	.076	21	16	.36	159	.01	<3	1.06	<.01	.05	<2
LEYLA L27+00E 19+25N	3	26	21	135	<.3	21	9	525	2.97	17	<8	<2	2	17	.5	<3	<3	34	.25	.092	16	17	.38	276	.01	<3	1.19	<.01	.06	<2
RE LEYLA L27+00E 19+25N	3	25	16	132	<.3	21	10	528	2.94	20	<8	<2	2	17	.3	<3	3	34	.24	.091	16	17	.38	272	.01	<3	1.18	<.01	.05	<2
LEYLA L27+00E 19+00N	2	25	14	91	<.3	18	5	169	2.31	12	<8	<2	2	13	.5	<3	<3	27	.16	.083	15	15	.32	162	.01	<3	.97	<.01	.05	<2
LEYLA L27+00E 18+75N	2	33	11	114	.3	22	7	196	2.39	16	<8	<2	<2	14	.6	<3	<3	32	.17	.086	15	18	.37	194	.01	<3	1.08	<.01	.04	<2
LEYLA L27+00E 18+50N	2	41	13	124	<.3	25	7	210	2.79	18	<8	<2	2	15	.5	3	<3	32	.20	.090	16	18	.38	207	.01	<3	1.12	<.01	.04	<2
LEYLA L27+00E 18+25N	2	38	13	135	.5	24	6	152	2.25	14	<8	<2	<2	19	1.0	<3	<3	32	.29	.097	13	18	.40	293	.01	<3	1.15	.01	.06	<2
LEYLA L27+00E 18+00N	2	48	13	184	.4	27	10	330	3.00	18	<8	<2	<2	18	1.0	<3	<3	40	.28	.109	13	21	.43	286	.01	<3	1.32	<.01	.05	<2
STANDARD C3	25	62	34	171	5.6	35	12	769	3.33	64	19	4	19	28	25.0	16	25	77	.56	.086	18	161	.61	145	.08	21	1.84	.04	.15	15
STANDARD G-2	2	3	3	46	<.3	8	4	543	2.07	4	<8	<2	4	73	<.2	<3	<3	41	.66	.096	6	76	.64	232	.13	<3	.94	.07	.49	2

Sample type: SOIL. Samples beginning 'RE' are Reruns and 'RRE' are Reject Reruns.

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

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

GEOCHEMICAL ANALYSIS CERTIFICATE

Atna Resources Ltd. PROJECT MARG File # A002841

1550 - 409 Granville St., Vancouver BC V6C 1T2 Submitted by: Rob Wilson

SAMPLE#	Mo ppm	Cu ppm	Pb ppm	Zn ppm	Ag ppm	Ni ppm	Co ppm	Mn ppm	Fe %	As ppm	U ppm	Au ppm	Th ppm	Sr ppm	Cd ppm	Sb ppm	Bi ppm	V ppm	Ca %	P %	La ppm	Cr ppm	Mg %	Ba ppm	Ti %	B ppm	Al %	Na %	K %	W ppm
E 188161	4	15	24	99	<.3	8	5	91	2.13	14	<8	<2	13	48	.3	<3	<3	1	.63	.078	9	8	1.19	103	<.01	<3	1.09	.06	.12	<2
E 188162	2	5	13	53	<.3	2	2	226	1.56	15	<8	<2	18	133	<.2	<3	<3	<1	2.40	.021	9	4	1.93	255	<.01	<3	.72	.03	.10	<2
E 188163	14	61	12	752	1.8	88	7	190	3.09	94	<8	<2	3	138	9.7	23	<3	84	2.42	.469	2	18	.86	36	<.01	<3	.43	.02	.15	<2
E 188164	21	69	23	937	1.2	82	7	150	3.29	115	<8	<2	2	95	10.8	14	<3	84	1.37	.271	2	16	.44	36	<.01	<3	.39	.01	.13	2
E 188170	5	74	21	392	.5	73	15	253	4.13	9	<8	<2	6	26	5.0	<3	<3	20	.78	.086	2	17	.85	127	<.01	<3	.73	.02	.15	<2
E 188171	16	58	16	759	1.2	83	11	195	3.11	19	<8	<2	4	37	10.6	<3	<3	34	.85	.111	2	17	.65	129	<.01	<3	.58	.01	.12	<2
E 188172	20	74	17	985	2.0	111	10	206	3.73	47	<8	<2	3	60	14.6	5	<3	48	1.36	.121	1	14	.59	38	<.01	<3	.31	.01	.12	<2
E 188173	18	56	11	974	1.6	100	8	110	3.93	60	<8	<2	3	65	14.2	10	<3	75	1.36	.266	1	14	.37	36	<.01	<3	.33	.01	.15	2
E 188174	16	58	14	1112	1.9	81	7	171	2.88	40	<8	<2	2	57	17.0	12	<3	79	1.31	.181	1	18	.50	91	<.01	<3	.36	.01	.13	2
E 188175	16	61	14	682	.9	100	11	195	3.56	39	<8	<2	5	45	11.3	<3	<3	61	1.31	.215	2	21	.72	83	<.01	<3	.81	.01	.14	2
E 188176	7	80	16	418	.9	97	19	224	4.93	17	<8	<2	9	18	3.6	<3	<3	27	.68	.069	1	26	1.07	106	<.01	<3	1.55	.02	.13	<2
RE E 188176	6	79	17	410	.9	97	19	226	4.97	19	<8	<2	9	18	3.5	<3	<3	27	.68	.070	1	26	1.08	108	<.01	<3	1.55	.02	.13	<2
RRE E 188176	6	80	20	410	.7	95	19	225	4.91	18	<8	<2	9	18	3.5	<3	<3	27	.68	.069	1	26	1.07	108	<.01	<3	1.54	.02	.13	<2
E 188177	10	52	16	453	.9	81	15	182	4.32	27	<8	<2	7	17	4.3	<3	<3	29	.65	.107	1	21	.72	90	<.01	<3	1.03	.01	.13	2
E 188178	10	63	16	554	.8	80	14	221	4.22	24	<8	<2	6	22	6.3	<3	<3	34	.91	.117	1	21	.74	84	<.01	<3	.72	.02	.17	<2
E 188179	13	56	14	773	1.0	92	12	197	4.06	51	<8	<2	4	38	11.4	3	<3	53	1.32	.220	1	18	.59	39	<.01	<3	.59	.01	.14	3
E 188180	4	39	10	207	.4	62	16	274	3.87	19	<8	<2	8	23	1.8	<3	<3	41	1.12	.113	3	33	.98	140	<.01	<3	2.00	.04	.11	2
E 188181	5	142	50	337	<.3	8	3	119	2.40	54	<8	<2	29	29	2.9	5	<3	<1	.28	.042	9	6	.24	60	<.01	4	.45	.02	.16	<2
E 188182	6	190	53	922	<.3	5	2	113	2.08	66	<8	<2	14	32	4.7	4	<3	<1	.21	.010	14	5	.61	64	<.01	<3	.61	.03	.11	<2
E 188183	4	10	31	130	<.3	5	3	115	2.21	28	<8	<2	25	63	1.4	3	<3	<1	.52	.038	8	5	.61	57	<.01	<3	.52	.02	.14	2
E 188184	4	7	29	79	<.3	5	2	108	1.86	25	<8	<2	24	89	<.2	3	<3	<1	.66	.030	9	6	.57	86	<.01	<3	.39	.02	.14	2
E 188185	4	6	28	116	<.3	4	2	107	1.80	24	<8	<2	25	56	<.2	3	<3	<1	.58	.041	8	4	1.28	118	<.01	<3	.50	.03	.11	2
E 188186	7	1479	1116	2746	6.6	14	7	142	3.63	155	<8	<2	21	37	9.3	837	6	<1	.44	.021	10	7	.79	34	<.01	<3	.29	.03	.13	<2
E 188187	18	177	18	2950	2.2	88	12	247	2.85	97	<8	<2	3	41	41.4	9	<3	77	1.15	.183	3	17	.42	110	<.01	<3	.40	.02	.17	<2
E 188188	15	74	23	545	.5	89	17	347	4.68	47	<8	<2	5	54	3.2	6	<3	13	1.13	.080	2	11	.85	79	<.01	<3	.35	.03	.12	2
RE E 188188	15	77	26	593	.6	95	18	373	4.96	51	<8	<2	5	57	3.5	4	<3	14	1.22	.086	2	12	.92	68	<.01	<3	.38	.03	.13	2
RRE E 188188	15	76	26	578	.7	94	18	365	4.88	52	<8	<2	5	56	3.2	4	<3	14	1.19	.083	2	12	.90	75	<.01	<3	.38	.03	.13	2
E 188189	16	61	15	623	.8	102	13	149	3.87	28	<8	<2	4	35	7.1	<3	<3	39	.57	.079	3	23	.62	82	<.01	3	.90	.02	.16	<2
E 188190	5	49	5	97	.8	28	7	111	1.41	17	<8	<2	2	21	1.0	<3	<3	9	.45	.030	2	13	.13	95	<.01	3	.15	.01	.07	5
E 188191	20	48	14	709	.9	73	7	125	3.07	27	<8	<2	3	47	8.9	3	<3	91	1.04	.177	2	22	.36	76	<.01	3	.46	.01	.12	<2
E 188192	18	72	18	1300	1.7	102	11	129	3.37	39	8	<2	4	40	17.9	7	<3	71	1.11	.192	1	15	.48	60	<.01	<3	.62	.01	.16	3
STANDARD C3	25	62	35	168	5.6	35	11	757	3.35	58	17	<2	19	28	23.8	15	22	76	.57	.087	17	156	.62	144	.08	20	1.81	.04	.16	15
STANDARD G-2	2	3	<3	44	<.3	7	4	528	2.06	<2	<8	<2	3	73	<.2	<3	<3	39	.65	.094	7	71	.62	234	.13	<3	.96	.07	.47	2

GROUP 1D - 0.50 GM SAMPLE LEACHED WITH 3 ML 2-2-2 HCL-HNO3-H2O AT 95 DEG. C FOR ONE HOUR, DILUTED TO 10 ML, ANALYSED BY ICP-ES.
UPPER LIMITS - AG, AU, HG, W = 100 PPM; MO, CO, CD, SB, BI, TH, U & B = 2,000 PPM; CU, PB, ZN, NI, MN, AS, V, LA, CR = 10,000 PPM.
ASSAY RECOMMENDED FOR ROCK AND CORE SAMPLES IF CU PB ZN AS > 1%, AG > 30 PPM & AU > 1000 PPB
- SAMPLE TYPE: CORE R150 60C Samples beginning 'RE' are Reruns and 'RRE' are Reject Reruns.

DATE RECEIVED: AUG 8 2000 DATE REPORT MAILED: Aug 17/00 SIGNED BY: D. TOYE, C.LEONG, J. WANG; CERTIFIED B.C. ASSAYERS

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

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

GEOCHEMICAL ANALYSIS CERTIFICATE

Atna Resources Ltd. PROJECT MARG File # A002842

1550 - 409 Granville St., Vancouver BC V6C 1T2 Submitted by: Rob Wilson

SAMPLE#	Mo ppm	Cu ppm	Pb ppm	Zn ppm	Ag ppm	Ni ppm	Co ppm	Mn ppm	Fe %	As ppm	U ppm	Au ppm	Th ppm	Sr ppm	Cd ppm	Sb ppm	Bi ppm	V ppm	Ca %	P %	La ppm	Cr ppm	Mg %	Ba ppm	Ti %	B ppm	Al %	Na %	K %	W ppm
E 188545	6	41	6	269	<.3	49	7	84	2.86	20	<8	<2	4	6	1.9	<3	<3	67	.25	.101	7	20	.49	326	<.01	<3	.99	.03	.14	<2
E 188546	<1	221	12	226	.7	129	44	1131	8.98	62	<8	<2	<2	77	2.0	<3	<3	132	4.30	.089	3	136	3.02	97	<.01	<3	3.02	.03	.06	<2
E 188547	10	34	20	180	.7	32	6	124	3.71	33	<8	<2	5	11	.5	4	<3	34	.25	.063	5	18	.27	247	<.01	<3	.62	.03	.13	3
RE E 188547	11	33	19	186	.7	33	6	126	3.77	33	<8	<2	5	11	.5	4	<3	35	.25	.064	5	19	.28	242	<.01	<3	.63	.03	.13	3

GROUP 1D - 0.50 GM SAMPLE LEACHED WITH 3 ML 2-2-2 HCL-HNO3-H2O AT 95 DEG. C FOR ONE HOUR, DILUTED TO 10 ML, ANALYSED BY ICP-ES.
UPPER LIMITS - AG, AU, HG, W = 100 PPM; MO, CO, CD, SB, BI, TH, U & B = 2,000 PPM; CU, PB, ZN, NI, MN, AS, V, LA, CR = 10,000 PPM.
ASSAY RECOMMENDED FOR ROCK AND CORE SAMPLES IF CU PB ZN AS > 1%, AG > 30 PPM & AU > 1000 PPB
- SAMPLE TYPE: ROCK R150 60C Samples beginning 'RE' are Reruns and 'RRE' are Reject Reruns.

DATE RECEIVED: AUG 8 2000 **DATE REPORT MAILED:** Aug 17/00 **SIGNED BY** ..... D. TOYE, C.LEONG, J. WANG; CERTIFIED B.C. ASSAYERS

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

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

GEOCHEMICAL ANALYSIS CERTIFICATE

Atna Resources Ltd. PROJECT MARG File # A002843 Page 1

1550 - 409 Granville St., Vancouver BC V6C 1T2 Submitted by: Rob Wilson

SAMPLE#	Mo ppm	Cu ppm	Pb ppm	Zn ppm	Ag ppm	Ni ppm	Co ppm	Mn ppm	Fe %	As ppm	U ppm	Au ppm	Th ppm	Sr ppm	Cd ppm	Sb ppm	Bi ppm	V ppm	Ca %	P %	La ppm	Cr ppm	Mg %	Ba ppm	Ti %	B ppm	Al %	Na %	K %	W ppm
MAX L57+00E 62+00N	1	19	26	48	<.3	22	9	412	3.04	16	<8	<2	6	9	.2	<3	<3	12	.17	.048	15	9	.12	68	.01	4	.66	<.01	.02	<2
MAX L57+00E 61+75N	2	10	15	37	<.3	9	3	117	2.18	8	<8	<2	<2	6	.2	<3	<3	36	.04	.033	14	17	.20	62	.01	4	.98	<.01	.03	<2
MAX L57+00E 61+50N	3	23	14	74	<.3	17	5	216	3.11	17	<8	<2	<2	11	<.2	<3	<3	43	.08	.058	16	23	.38	100	.01	3	1.45	<.01	.04	<2
MAX L57+00E 61+25N	3	16	16	73	<.3	18	7	350	2.72	14	<8	<2	<2	15	<.2	<3	<3	42	.16	.061	18	22	.44	193	.02	3	1.48	.01	.05	<2
MAX L57+00E 61+00N	2	63	15	139	<.3	21	8	262	2.81	25	<8	<2	2	27	.9	<3	<3	38	.42	.087	15	19	.42	290	.01	4	1.18	.01	.05	<2
MAX L57+00E 60+75N	3	28	19	150	.3	22	6	269	2.65	20	<8	<2	<2	14	2.1	<3	<3	30	.19	.085	13	16	.26	285	.01	<3	.98	<.01	.04	<2
MAX L57+00E 60+50N	3	48	20	212	.6	38	12	486	3.44	24	<8	<2	2	17	.9	<3	<3	44	.26	.126	14	25	.44	302	.01	3	1.57	.01	.04	<2
MAX L57+00E 60+25N	3	46	18	222	.4	37	13	598	3.19	21	<8	<2	<2	17	1.6	<3	<3	41	.28	.114	12	23	.44	226	.01	3	1.40	.01	.04	<2
MAX L57+00E 60+00N	3	20	18	94	<.3	18	6	290	3.85	19	<8	<2	<2	13	.8	<3	<3	61	.19	.058	11	24	.34	149	.03	3	1.15	<.01	.05	<2
MAX L57+00E 59+75N	4	18	21	85	<.3	18	7	389	4.01	16	<8	<2	<2	12	.6	<3	<3	69	.12	.041	12	28	.36	104	.03	3	1.36	<.01	.05	<2
MAX L57+00E 59+50N	3	16	18	60	<.3	16	6	334	4.23	17	<8	<2	<2	8	.3	<3	<3	67	.06	.042	12	29	.36	68	.04	4	1.40	.01	.04	<2
MAX L57+00E 59+00N	3	19	14	60	<.3	16	5	207	2.89	12	<8	<2	<2	10	.2	<3	<3	56	.07	.050	13	26	.40	90	.02	<3	1.60	.01	.05	<2
MAX L57+00E 58+50N	3	15	12	54	<.3	15	5	201	2.93	18	<8	<2	<2	9	.3	<3	<3	61	.07	.038	12	26	.32	99	.02	3	1.43	<.01	.04	<2
MAX L58+00E 62+00N	4	57	16	183	<.3	29	4	88	3.35	32	<8	<2	<2	4	.5	3	3	39	.03	.055	9	11	.16	46	.01	5	.57	<.01	.02	2
MAX L58+00E 61+75N	2	31	14	100	<.3	20	8	301	2.78	13	<8	<2	5	15	.4	<3	<3	23	.18	.067	20	12	.42	166	.03	<3	.95	<.01	.03	<2
MAX L58+00E 61+50N	2	35	26	129	.3	23	10	459	4.13	13	<8	<2	4	23	.7	<3	<3	28	.35	.081	40	16	.72	358	.01	<3	1.76	.01	.05	<2
MAX L58+00E 61+25N	1	28	25	107	<.3	20	17	578	3.61	8	<8	<2	8	23	.7	<3	<3	14	.25	.111	32	8	.54	119	.02	<3	1.14	<.01	.06	<2
MAX L58+00E 61+00N	2	20	15	79	<.3	24	8	465	3.49	14	<8	<2	<2	9	.3	<3	<3	43	.06	.046	13	26	.40	80	.02	<3	1.31	<.01	.04	<2
MAX L58+00E 60+75N	4	13	13	48	.3	12	3	163	2.85	17	<8	<2	<2	11	.5	<3	<3	47	.11	.074	12	21	.31	167	.01	4	1.23	.01	.04	<2
MAX L58+00E 60+50N	2	28	20	48	<.3	8	2	194	4.25	11	<8	<2	3	11	.2	<3	<3	34	.03	.058	18	12	.27	107	.03	5	1.22	.01	.03	<2
MAX L58+00E 60+25N	8	15	33	68	.6	12	4	161	2.60	27	<8	<2	<2	18	.3	5	<3	31	.11	.102	15	16	.26	165	.01	4	1.04	.01	.04	<2
MAX L58+00E 59+75N	5	40	34	187	.3	43	7	139	5.59	59	<8	<2	<2	14	<.2	3	<3	54	.03	.114	13	27	.33	54	.01	<3	1.08	.01	.03	2
MAX L58+00E 59+50N	3	22	18	81	.4	18	4	132	3.56	21	<8	<2	<2	7	<.2	<3	<3	60	.04	.054	11	22	.20	61	.02	4	1.11	.01	.03	<2
MAX L58+00E 59+25N	3	16	18	67	.4	10	2	126	3.57	19	<8	<2	<2	7	<.2	<3	<3	53	.04	.081	11	19	.17	61	.02	3	.91	.01	.04	<2
MAX L58+00E 59+00N	3	14	20	56	<.3	14	4	276	4.98	17	<8	<2	2	11	<.2	<3	<3	79	.04	.050	10	27	.27	99	.03	4	1.31	.01	.04	<2
RE MAX L58+00E 59+00N	3	14	21	56	<.3	14	4	280	5.04	18	<8	<2	<2	10	<.2	<3	<3	78	.04	.051	10	27	.27	99	.04	<3	1.32	.01	.04	<2
MAX L58+00E 58+75N	2	10	10	28	<.3	6	3	169	2.29	11	<8	<2	<2	8	<.2	<3	<3	76	.05	.029	12	12	.15	50	.04	5	.79	<.01	.03	<2
MAX L58+00E 58+50N	1	68	16	85	<.3	25	8	324	3.47	17	<8	<2	2	12	.5	<3	<3	43	.15	.072	13	26	.46	120	.03	4	1.72	.01	.04	<2
MAX L59+00E 61+50N	1	13	16	60	<.3	15	5	293	3.02	12	<8	<2	<2	8	.4	<3	<3	56	.06	.036	13	27	.34	93	.03	3	1.41	.01	.04	<2
MAX L59+00E 61+25N	2	16	15	67	<.3	16	6	333	3.35	15	<8	<2	<2	9	<.2	<3	<3	53	.07	.039	11	30	.41	89	.02	<3	1.68	.01	.05	<2
MAX L59+00E 61+00N	1	27	38	104	<.3	29	18	807	4.74	26	<8	<2	2	11	.3	<3	<3	46	.11	.074	22	25	.38	131	.02	5	1.61	.01	.05	<2
MAX L59+00E 60+75N	1	12	20	65	<.3	14	6	364	4.10	32	<8	<2	3	7	<.2	<3	<3	49	.04	.038	12	19	.42	62	.04	<3	1.61	<.01	.03	<2
MAX L59+00E 60+50N	1	23	20	89	.4	18	6	394	2.59	10	<8	<2	4	18	.6	<3	<3	20	.41	.109	20	9	.21	924	<.01	<3	.89	<.01	.03	<2
MAX L59+00E 60+00N	6	33	12	221	.3	23	5	57	2.45	31	<8	<2	<2	4	.6	<3	<3	48	.03	.080	12	8	.04	71	<.01	<3	.38	<.01	.03	<2
MAX L59+00E 59+75N	2	82	17	80	<.3	24	6	253	3.08	17	<8	<2	<2	10	.8	<3	<3	44	.10	.065	12	25	.44	102	.02	<3	1.65	.01	.04	<2
STANDARD C3	27	65	40	166	5.8	37	11	791	3.37	59	21	3	21	28	24.1	18	21	78	.57	.087	19	164	.62	145	.09	23	1.80	.04	.16	15
STANDARD G-2	2	4	<3	42	<.3	8	4	550	2.05	2	<8	<2	4	72	<.2	<3	<3	39	.66	.094	7	74	.62	233	.13	<3	.97	.08	.46	2

GROUP 1D - 0.50 GM SAMPLE LEACHED WITH 3 ML 2-2-2 HCL-HNO3-H2O AT 95 DEG. C FOR ONE HOUR, DILUTED TO 10 ML, ANALYSED BY ICP-ES.
UPPER LIMITS - AG, AU, HG, W = 100 PPM; MO, CO, CD, SB, BI, TH, U & B = 2,000 PPM; CU, PB, ZN, NI, MN, AS, V, LA, CR = 10,000 PPM.
- SAMPLE TYPE: SOIL SS80 60C Samples beginning 'RE' are Reruns and 'RRE' are Reject Reruns.

DATE RECEIVED: AUG 8 2000 DATE REPORT MAILED: Aug 13/00 SIGNED BY: D. TOYE, C.LEONG, J. WANG; CERTIFIED B.C. ASSAYERS

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

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ACME ANALYTICAL

SAMPLE#	Mo ppm	Cu ppm	Pb ppm	Zn ppm	Ag ppm	Ni ppm	Co ppm	Mn ppm	Fe %	As ppm	U ppm	Au ppm	Th ppm	Sr ppm	Cd ppm	Sb ppm	Bi ppm	V ppm	Ca %	P %	La ppm	Cr ppm	Mg %	Ba ppm	Ti %	B ppm	Al %	Na %	K %	W ppm
MAX L59+00E 59+50N	2	17	8	76	<.3	22	10	340	3.12	12	<8	<2	4	10	.3	<3	<3	54	.08	.033	13	29	.49	187	.03	3	2.19	.01	.04	<2
MAX L59+00E 59+25N	3	49	14	204	.3	41	12	289	3.60	22	<8	<2	<2	9	1.4	<3	<3	58	.10	.080	10	27	.30	82	.02	4	1.24	.01	.04	2
MAX L59+00E 59+00N	14	45	34	115	.8	19	3	63	6.99	72	<8	<2	<2	4	<.2	14	4	66	.01	.139	9	25	.24	74	.01	<3	1.13	<.01	.03	<2
MAX L59+00E 58+75N	4	70	12	192	<.3	42	15	497	3.54	20	<8	<2	<2	14	<.2	3	<3	55	.20	.099	13	31	.60	243	.02	3	2.05	.01	.05	2
MAX L60+00E 61+50N	1	30	14	100	<.3	29	9	320	3.01	12	<8	<2	3	7	.4	<3	<3	28	.07	.047	11	20	.40	73	.02	<3	1.27	<.01	.03	<2
MAX L60+00E 61+00N	3	130	17	297	.4	54	35	634	3.55	19	<8	<2	2	14	1.7	3	3	39	.22	.126	23	20	.45	283	.01	<3	1.78	.01	.04	<2
MAX L60+00E 60+75N	8	99	10	446	.5	99	29	455	6.56	39	<8	<2	<2	20	2.3	12	<3	50	.79	.117	9	30	.36	150	.01	<3	1.09	.01	.02	<2
MAX L60+00E 60+50N	3	37	19	67	<.3	15	3	115	3.06	16	<8	<2	<2	6	.2	<3	3	37	.06	.056	11	19	.25	61	.02	<3	.89	<.01	.03	<2
MAX L60+00E 60+25N	3	22	21	87	<.3	14	4	146	3.29	17	<8	<2	<2	9	.4	<3	<3	51	.07	.054	11	22	.26	84	.02	<3	1.18	<.01	.04	<2
MAX L60+00E 60+00N	3	28	18	75	<.3	21	6	198	3.56	20	<8	<2	3	5	.2	<3	<3	37	.06	.050	10	25	.33	79	.02	<3	1.84	<.01	.03	<2
MAX L60+00E 59+75N	3	25	12	73	<.3	17	5	152	2.92	16	<8	<2	<2	7	.2	<3	<3	42	.07	.046	11	22	.31	83	.02	<3	1.45	<.01	.03	<2
MAX L60+00E 59+50N	3	20	20	92	<.3	20	8	388	3.99	18	<8	<2	2	8	.3	<3	<3	51	.07	.050	12	30	.42	106	.03	<3	1.94	.01	.04	<2
MAX L60+00E 59+25N	2	14	9	49	<.3	12	3	140	2.88	12	<8	<2	<2	8	<.2	<3	<3	55	.06	.042	12	24	.35	86	.02	<3	1.64	<.01	.03	<2
MAX L60+00E 59+00N	3	41	15	134	<.3	24	5	173	2.92	14	<8	<2	<2	9	.2	<3	<3	51	.07	.059	13	28	.41	108	.02	<3	1.69	.01	.04	<2
MAX L60+00E 58+75N	1	50	3	36	<.3	11	4	125	1.85	7	<8	<2	<2	8	<.2	<3	<3	30	.10	.039	10	14	.31	52	.03	<3	.87	<.01	.02	<2
MAX L61+00E 61+50N	1	16	<3	36	<.3	22	8	239	2.65	5	<8	<2	<2	7	.2	3	<3	92	.13	.027	3	76	.70	17	.38	<3	1.20	<.01	.01	<2
MAX L61+00E 61+25N	6	89	8	115	.7	25	6	146	3.27	19	<8	<2	<2	12	4.0	<3	<3	53	.11	.081	16	29	.42	98	.03	4	1.37	.01	.03	<2
MAX L61+00E 61+00N	4	30	8	53	2.2	11	4	164	2.85	13	<8	<2	3	8	.3	<3	<3	61	.05	.052	12	24	.23	68	.02	3	1.71	<.01	.03	<2
MAX L61+00E 60+75N	3	44	9	56	.3	14	4	150	7.26	38	<8	<2	7	9	<.2	<3	<3	66	.07	.169	12	30	.37	105	.03	<3	1.55	.01	.06	<2
MAX L61+00E 60+50N	3	10	10	34	.3	8	2	100	2.69	15	<8	<2	2	7	<.2	<3	<3	60	.04	.035	13	17	.18	52	.03	<3	1.08	<.01	.03	<2
MAX L61+00E 60+25N	3	9	6	35	<.3	7	2	75	2.07	13	<8	<2	2	5	<.2	<3	<3	85	.03	.022	14	11	.07	35	.04	<3	.69	<.01	.02	<2
MAX L61+00E 60+00N	4	25	18	63	.3	17	4	121	3.76	27	<8	<2	2	6	.3	3	<3	62	.04	.042	12	21	.19	73	.03	<3	1.19	<.01	.02	<2
RE MAX L61+00E 60+00N	4	24	19	63	.3	17	4	122	3.80	26	<8	<2	3	6	.2	<3	<3	63	.04	.042	12	21	.19	77	.03	<3	1.20	<.01	.02	<2
MAX L61+00E 59+75N	2	25	22	43	.4	10	2	72	1.97	10	<8	<2	<2	6	.2	<3	<3	35	.04	.084	9	16	.18	57	.01	<3	1.03	<.01	.03	<2
MAX L61+00E 59+50N	2	21	15	55	<.3	12	3	141	3.08	17	<8	<2	2	4	.2	<3	<3	33	.03	.036	10	17	.21	47	.03	<3	.93	<.01	.02	<2
MAX L61+00E 59+25N	3	33	72	98	<.3	13	3	138	3.23	63	<8	<2	<2	5	.3	18	11	37	.04	.038	10	20	.29	58	.02	<3	1.25	<.01	.03	<2
MAX L61+00E 59+00N	2	16	21	77	<.3	17	6	260	3.88	19	<8	<2	2	7	.2	3	<3	50	.06	.039	12	24	.33	59	.04	3	1.23	<.01	.03	<2
MAX L61+00E 58+50N	3	14	12	52	<.3	12	5	260	3.05	13	<8	<2	3	9	<.2	<3	3	55	.08	.048	13	27	.37	82	.03	3	1.93	.01	.04	<2
MAX L62+00E 61+50N	4	32	20	103	.4	19	4	201	3.30	20	<8	<2	<2	11	.6	<3	<3	55	.08	.072	14	28	.40	101	.02	<3	1.50	<.01	.04	<2
MAX L62+00E 61+25N	4	60	16	104	.9	23	5	150	3.53	18	<8	<2	2	14	.8	<3	<3	48	.11	.104	13	29	.42	117	.01	<3	1.91	.01	.04	<2
MAX L62+00E 61+00N	4	30	17	84	.4	22	6	209	3.24	18	<8	<2	2	10	.3	<3	<3	55	.09	.067	15	27	.43	134	.02	<3	1.66	<.01	.04	<2
MAX L62+00E 60+75N	2	58	20	116	.4	31	12	266	3.78	20	<8	<2	5	8	.6	<3	<3	44	.07	.043	12	28	.48	115	.03	<3	2.11	.01	.04	<2
MAX L62+00E 60+50N	2	25	12	75	<.3	19	8	299	4.38	15	<8	<2	3	7	.4	<3	<3	55	.06	.041	12	32	.43	95	.03	<3	1.87	.01	.04	<2
MAX L62+00E 60+25N	3	23	21	81	<.3	16	4	173	3.92	16	<8	<2	4	13	<.2	3	<3	48	.11	.079	16	32	.47	108	.02	<3	1.49	.01	.05	<2
MAX L62+00E 60+00N	5	45	17	68	.4	15	4	155	3.21	15	<8	<2	<2	10	.2	<3	<3	65	.06	.055	15	31	.41	97	.02	<3	2.05	.01	.04	<2
STANDARD C3	25	66	32	170	5.6	36	11	779	3.43	58	21	3	20	29	23.7	19	23	77	.58	.089	18	161	.63	150	.09	21	1.81	.04	.16	17
STANDARD G-2	2	3	<3	47	<.3	8	5	575	2.22	<2	<8	<2	4	78	<.2	<3	<3	41	.72	.102	7	76	.68	249	.14	3	1.06	.08	.50	<2

Sample type: SOIL SS80 60C. Samples beginning 'RE' are Reruns and 'RRE' are Reject Reruns.

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

Data ✓ FA ___

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Atna Resources Ltd. PROJECT MARG FILE # A002843

ACME ANALYTICAL

SAMPLE#	Mo ppm	Cu ppm	Pb ppm	Zn ppm	Ag ppm	Ni ppm	Co ppm	Mn ppm	Fe %	As ppm	U ppm	Au ppm	Th ppm	Sr ppm	Cd ppm	Sb ppm	Bi ppm	V ppm	Ca %	P %	La ppm	Cr ppm	Mg %	Ba ppm	Ti %	B ppm	Al %	Na %	K %	W ppm
MAX L62+00E 59+75N	10	15	25	38	3.6	8	2	159	3.63	21	<8	<2	<2	8	<.2	9	<3	67	.03	.036	12	24	.17	48	.03	4	1.03	<.01	.03	<2
MAX L62+00E 59+50N	2	13	15	54	.3	13	4	196	2.80	11	<8	<2	<2	8	<.2	<3	<3	53	.06	.039	12	24	.35	85	.02	<3	1.63	<.01	.04	<2
MAX L62+00E 59+25N	8	33	141	190	1.3	19	1	153	6.08	73	<8	<2	<2	14	<.2	51	3	61	.02	.107	12	40	.43	87	.01	3	1.38	.01	.03	2
MAX L62+00E 59+00N	6	30	24	138	.5	20	3	160	4.33	37	<8	<2	3	46	<.2	13	<3	41	.02	.112	17	29	.37	102	.01	<3	1.42	<.01	.03	<2
MAX L62+00E 58+75N	2	72	25	391	.7	41	20	624	3.29	19	<8	<2	<2	17	.9	4	<3	54	.22	.174	8	27	.42	279	.01	3	1.81	.01	.06	<2
MAX L62+00E 58+50N	1	51	14	113	<.3	34	12	459	3.30	12	<8	<2	3	16	<.2	<3	<3	48	.23	.078	14	30	.60	140	.04	<3	1.81	.01	.06	<2
MAX L63+00E 61+50N	2	29	18	89	<.3	19	5	224	4.48	19	<8	<2	<2	6	.2	<3	3	51	.04	.050	10	28	.28	69	.03	3	1.20	<.01	.03	<2
MAX L63+00E 61+25N	1	76	18	118	<.3	33	15	472	3.37	20	<8	<2	4	10	.4	<3	<3	40	.16	.082	16	22	.55	109	.03	<3	1.39	<.01	.04	<2
MAX L63+00E 61+00N	1	44	13	74	<.3	21	8	295	3.49	14	<8	<2	<2	8	.2	<3	<3	42	.10	.048	10	19	.48	66	.05	<3	1.22	<.01	.02	<2
MAX L63+00E 60+75N	2	17	13	44	<.3	10	3	170	2.17	30	<8	<2	<2	9	<.2	<3	<3	58	.06	.043	11	18	.19	79	.02	<3	1.13	<.01	.03	<2
MAX L63+00E 60+50N	2	16	16	57	<.3	13	4	217	3.06	14	<8	<2	<2	6	<.2	<3	<3	44	.04	.038	11	19	.24	64	.03	<3	.96	<.01	.03	<2
MAX L63+00E 60+25N	1	25	17	71	<.3	20	7	275	2.81	13	<8	<2	<2	12	.3	<3	<3	34	.14	.064	11	20	.37	78	.03	<3	1.21	.01	.03	<2
MAX L63+00E 60+00N	<1	15	13	65	.4	12	3	135	2.19	8	<8	<2	<2	7	<.2	<3	<3	32	.05	.049	10	18	.24	70	.01	<3	1.03	<.01	.03	<2
RE MAX L63+00E 60+00N	1	15	9	63	.3	11	3	132	2.19	8	<8	<2	<2	7	<.2	<3	<3	32	.05	.048	10	16	.24	70	.01	<3	1.02	<.01	.03	<2
MAX L63+00E 59+75N	1	20	9	59	<.3	14	5	254	3.38	13	<8	<2	<2	6	<.2	<3	<3	44	.04	.040	10	25	.30	65	.03	4	1.28	<.01	.03	<2
MAX L63+00E 59+50N	1	23	14	63	<.3	15	4	183	3.25	14	<8	<2	<2	5	<.2	<3	<3	33	.04	.036	11	20	.33	52	.05	<3	.98	<.01	.02	<2
MAX L63+00E 59+25N	1	29	17	61	<.3	16	4	162	2.64	12	<8	<2	<2	7	<.2	<3	<3	26	.09	.047	11	18	.33	56	.03	<3	.88	<.01	.02	<2
MAX L63+00E 59+00N	1	7	12	21	<.3	6	1	68	1.80	5	<8	<2	<2	6	<.2	<3	<3	30	.04	.030	11	13	.15	64	.02	<3	.75	<.01	.03	<2
MAX L63+00E 58+75N	<1	23	15	70	<.3	16	5	258	2.87	12	<8	<2	<2	6	<.2	<3	<3	31	.06	.045	13	19	.33	73	.02	<3	1.14	<.01	.03	<2
MAX L63+00E 58+50N	1	12	12	43	<.3	11	3	127	2.38	11	<8	<2	<2	5	<.2	<3	<3	33	.04	.031	11	14	.27	42	.03	<3	.82	<.01	.02	<2
STANDARD C3	24	61	32	164	5.4	34	11	744	3.33	57	19	3	19	28	22.7	18	21	73	.56	.086	17	155	.61	143	.09	24	1.77	.04	.16	17
STANDARD G-2	1	3	5	44	<.3	8	4	532	2.07	2	<8	<2	4	73	<.2	<3	<3	37	.66	.096	7	71	.63	236	.13	3	.98	.07	.47	2

Sample type: SOIL SS80 60C. Samples beginning 'RE' are Reruns and 'RRE' are Reject Reruns.

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

Data FA

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

GEOCHEMICAL ANALYSIS CERTIFICATE

Atna Resources Ltd. File # A002844

1550 - 409 Granville St., Vancouver BC V6C 1T2 Submitted by: Peter Holbek

SAMPLE#	Mo ppm	Cu ppm	Pb ppm	Zn ppm	Ag ppm	Ni ppm	Co ppm	Mn ppm	Fe %	As ppm	U ppm	Au ppm	Th ppm	Sr ppm	Cd ppm	Sb ppm	Bi ppm	V ppm	Ca %	P %	La ppm	Cr ppm	Mg %	Ba ppm	Ti %	B ppm	Al %	Na %	K %	W ppm
E 188515	4	75	19	280	<.3	112	37	201	5.08	37	<8	<2	2	63	1.5	3	<3	55	.52	.089	3	33	1.06	156	<.01	<3	1.87	.07	.12	<2
E 188516	9	152	20	257	.7	162	75	37	5.33	85	<8	<2	<2	96	2.3	7	<3	31	.54	.224	2	23	.11	38	<.01	<3	.71	.10	.12	<2
E 188517	9	102	20	394	.6	235	123	57	6.10	89	<8	<2	<2	102	3.1	9	<3	32	.61	.226	2	19	.24	40	<.01	6	.84	.10	.12	<2
E 188518	13	62	14	687	.3	111	17	168	3.83	35	<8	<2	2	45	7.0	<3	<3	39	.54	.044	3	24	.55	78	<.01	<3	.92	.03	.15	<2
RE E 188518	13	62	13	682	<.3	109	17	167	3.81	34	<8	<2	2	45	7.1	<3	<3	39	.53	.044	3	25	.55	85	<.01	<3	.92	.03	.15	<2

GROUP 1D - 0.50 GM SAMPLE LEACHED WITH 3 ML 2-2-2 HCL-HNO3-H2O AT 95 DEG. C FOR ONE HOUR, DILUTED TO 10 ML, ANALYSED BY ICP-ES.
UPPER LIMITS - AG, AU, HG, W = 100 PPM; MO, CO, CD, SB, BI, TH, U & B = 2,000 PPM; CU, PB, ZN, NI, MN, AS, V, LA, CR = 10,000 PPM.
ASSAY RECOMMENDED FOR ROCK AND CORE SAMPLES IF CU PB ZN AS > 1%, AG > 30 PPM & AU > 1000 PPB
- SAMPLE TYPE: CORE R150 60C Samples beginning 'RE' are Reruns and 'RRE' are Reject Reruns.

DATE RECEIVED: AUG 8 2000 **DATE REPORT MAILED:** Aug 21/00 **SIGNED BY.** C. Leong .D. TOYE, C.LEONG, J. WANG; CERTIFIED B.C. ASSAYERS

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

Data 1/ FA ___

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

GEOCHEMICAL ANALYSIS CERTIFICATE

Atna Resources Ltd. File # A002845

1550 - 409 Granville St., Vancouver BC V6C 1T2 Submitted by: Peter Holbek

SAMPLE#	Mo ppm	Cu ppm	Pb ppm	Zn ppm	Ag ppm	Ni ppm	Co ppm	Mn ppm	Fe %	As ppm	U ppm	Au ppm	Th ppm	Sr ppm	Cd ppm	Sb ppm	Bi ppm	V ppm	Ca %	P %	La ppm	Cr ppm	Mg %	Ba ppm	Ti %	B ppm	Al %	Na %	K %	W ppm
E 188519	<1	<1	<3	5	<.3	1	1	237	.23	2	<8	<2	<2	84	<.2	<3	<3	<1	19.56	.011	<1	2	9.01	3	<.01	<3	.01	.01	<.01	<2
E 188520	1	11	21	69	<.3	5	1	47	4.18	8	<8	<2	9	8	<.2	<3	<3	4	.15	.083	18	10	.20	341	.01	<3	.58	.05	.17	2
E 188521	3	36	7	50	<.3	13	13	257	8.47	3	<8	<2	12	13	.4	<3	<3	8	.63	.063	24	8	.26	115	.12	<3	.42	.04	.30	<2
E 188523	3	33	9	41	<.3	11	12	306	8.33	<2	<8	<2	12	14	.2	<3	<3	10	.30	.071	19	9	.09	90	.14	<3	.38	.04	.27	2
E 188524	6	22	18	41	<.3	15	17	92	12.47	19	<8	<2	8	6	.2	<3	<3	5	.16	.047	13	10	.11	53	.12	<3	.39	.03	.19	<2
E 188526	3	35	12	41	<.3	12	10	116	7.40	2	<8	<2	12	10	<.2	<3	<3	10	.22	.064	21	9	.11	99	.14	5	.43	.03	.30	2
E 188527	3	16	18	51	<.3	11	15	124	10.52	21	<8	<2	9	9	.3	<3	<3	10	.25	.084	19	10	.23	60	.12	<3	.46	.04	.22	2
E 188528	4	24	30	45	<.3	13	16	201	11.67	21	<8	<2	9	12	.6	<3	3	5	.38	.047	18	9	.06	64	.08	<3	.29	.05	.16	<2
E 188529	4	80	4	15	1.1	20	9	435	9.01	<2	<8	<2	<2	1	<.2	<3	<3	1	.01	.022	4	11	.03	10	<.01	<3	.07	<.01	.01	<2
E 188531	1	9	21	87	.4	7	6	629	4.71	2	<8	<2	11	28	.3	<3	<3	15	.34	.079	9	15	1.21	327	.13	<3	2.20	.03	.23	<2
E 188532	5	28	32	41	.6	8	1	82	1.70	<2	<8	<2	5	6	.6	<3	<3	31	.05	.033	12	24	.29	287	.10	8	.54	.02	.11	<2
E 188533	4	17	9	140	<.3	16	7	246	5.01	<2	<8	<2	13	11	.5	<3	<3	10	.17	.082	27	10	.96	215	.02	<3	1.75	.03	.11	2
E 188534	5	477	3	237	.3	63	51	1030	9.22	5	<8	<2	<2	12	1.7	9	<3	147	.78	.141	5	15	2.52	7	.28	<3	3.37	<.01	<.01	<2
E 188535	<1	653	149	36	2.4	131	163	171	32.85	8	10	<2	<2	3	1.5	<3	<3	8	.15	.037	4	3	.19	57	.04	<3	.36	.02	.06	<2
RE E 188535	<1	677	147	35	2.3	130	163	166	32.79	11	11	<2	<2	3	2.5	<3	<3	9	.15	.038	5	4	.18	55	.04	<3	.36	.02	.06	<2
E 188536	5	405	15	27	3.5	27	17	161	8.64	8	<8	<2	<2	1	.2	6	<3	5	.03	.010	6	22	.16	9	.02	3	.26	<.01	.01	<2
E 188537	4	47	16	20	<.3	17	19	257	24.10	<2	<8	<2	4	5	<.2	<3	<3	3	.13	.026	8	4	.04	60	.04	<3	.20	.02	.10	<2
E 188538	5	107	17	5	3.7	11	16	24	8.82	27	<8	<2	<2	1	<.2	4	<3	<1	.01	.003	1	14	<.01	9	<.01	4	.03	<.01	.01	<2
E 188539	4	6	24	6	.6	8	1	20	3.27	6	<8	<2	6	5	<.2	<3	<3	<1	.03	.026	4	10	.03	147	<.01	3	.28	.02	.19	<2
E 188542	4	27	17	37	<.3	14	10	114	13.80	2	<8	<2	7	6	.6	<3	<3	5	.14	.041	14	10	.06	54	.07	<3	.22	.04	.08	<2
STANDARD C3	25	64	33	167	5.6	35	11	772	3.33	58	19	3	21	26	23.9	20	23	75	.55	.086	17	157	.61	139	.09	28	1.67	.04	.15	17
STANDARD G-2	2	3	<3	45	<.3	8	4	554	2.08	<2	<8	<2	4	79	<.2	<3	<3	38	.68	.096	7	72	.64	245	.13	<3	1.05	.12	.50	<2

GROUP 1D - 0.50 GM SAMPLE LEACHED WITH 3 ML 2-2-2 HCL-HNO3-H2O AT 95 DEG. C FOR ONE HOUR, DILUTED TO 10 ML, ANALYSED BY ICP-ES.
UPPER LIMITS - AG, AU, HG, W = 100 PPM; MO, CO, CD, SB, BI, TH, U & B = 2,000 PPM; CU, PB, ZN, NI, MN, AS, V, LA, CR = 10,000 PPM.
ASSAY RECOMMENDED FOR ROCK AND CORE SAMPLES IF CU PB ZN AS > 1%, AG > 30 PPM & AU > 1000 PPB
- SAMPLE TYPE: ROCK R150 60C Samples beginning 'RE' are Reruns and 'RRE' are Reject Reruns.

DATE RECEIVED: AUG 8 2000 **DATE REPORT MAILED:** Aug 21/00 **SIGNED BY.** C. Leong D. TOYE, C.LEONG, J. WANG; CERTIFIED B.C. ASSAYERS

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

Data FA

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

WHOLE ROCK ICP ANALYSIS

Atna Resources Ltd. File # A002846

1550 - 409 Granville St., Vancouver BC V6C 1T2 Submitted by: Peter Holbek

SAMPLE#	SiO2 %	Al2O3 %	Fe2O3 %	MgO %	CaO %	Na2O %	K2O %	TiO2 %	P2O5 %	MnO %	Cr2O3 %	Ba ppm	Ni ppm	Sc ppm	LOI %	TOT/C %	TOT/S %	SUM %
E 188522	53.27	12.94	14.49	3.87	2.32	2.04	3.33	3.12	.63	.17	.003	4185	<20	44	3.3	.40	.05	99.96
E 188525	44.25	15.29	17.00	5.44	3.64	3.36	.90	4.02	.37	.17	.009	2088	<20	49	5.3	.71	.04	99.99
E 188530	58.85	15.06	10.59	2.76	1.63	1.54	4.46	1.33	.27	.07	<.001	6899	<20	21	2.3	.28	.03	99.63
E 188543	47.80	12.57	12.10	5.67	7.65	1.90	.06	1.96	.20	.18	.005	51	65	33	9.8	1.61	.03	99.91
E 188544	37.57	10.57	23.02	4.35	8.36	1.38	.66	5.29	.09	.23	<.001	678	65	36	8.1	.86	.01	99.71
RE E 188544	37.53	10.56	22.85	4.36	8.38	1.36	.65	5.32	.12	.23	.002	680	57	37	8.2	.87	.01	99.65
STANDARD SO-15/CSB	49.55	12.25	7.30	7.26	5.87	2.41	1.80	1.79	2.70	1.39	1.061	1919	78	12	5.9	2.40	5.30	99.51

GROUP 4A - 0.200 GM SAMPLE BY LIBO2 FUSION, ANALYSIS BY ICP-ES. LOI BY LOSS ON IGNITION.
TOTAL C & S BY LECO. (NOT INCLUDED IN THE SUM)
- SAMPLE TYPE: ROCK R150 60C
Samples beginning 'RE' are Reruns and 'RRE' are Reject Reruns.

DATE RECEIVED: AUG 8 2000 DATE REPORT MAILED: Aug 22/00 SIGNED BY: C. Leong D. TOYE, C.LEONG, J. WANG; CERTIFIED B.C. ASSAYERS

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

Data FA

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

GEOCHEMICAL ANALYSIS CERTIFICATE

Atna Resources Ltd. File # A002846 (a)
1550 - 409 Granville St., Vancouver BC V6C 1T2 Submitted by: Peter Holbek

SAMPLE#	Co ppm	Cs ppm	Ga ppm	Hf ppm	Nb ppm	Rb ppm	Sn ppm	Sr ppm	Ta ppm	Th ppm	Tl ppm	U ppm	V ppm	W ppm	Zr ppm	Y ppm	La ppm	Ce ppm	Pr ppm	Nd ppm	Sm ppm	Eu ppm	Gd ppm	Tb ppm	Dy ppm	Ho ppm	Er ppm	Tm ppm	Yb ppm	Lu ppm
E 188522	18.0	17.7	25.1	7.1	22.5	129.9	242	171.3	2.7	9.5	1.2	2.5	83	1	309.2	44.5	40.7	81.9	10.00	42.1	8.6	2.27	8.79	1.38	8.58	1.67	5.28	.65	4.26	.65
E 188525	30.7	2.0	28.8	7.4	21.2	32.2	73	113.0	1.7	9.5	1.0	2.2	214	<1	324.6	44.6	37.9	80.9	9.96	39.7	8.8	2.60	8.47	1.35	8.60	1.63	5.37	.63	4.37	.67
E 188530	9.8	7.0	25.1	12.7	23.8	165.6	362	295.4	3.5	25.4	1.2	5.0	59	2	572.8	50.9	79.4	157.1	18.06	74.0	13.7	1.73	10.91	1.65	9.97	1.89	5.97	.73	4.79	.66
E 188543	39.6	.2	19.3	3.0	8.6	1.7	79	240.1	.7	1.5	.4	.6	300	<1	129.2	28.1	11.8	26.3	3.62	17.0	4.4	1.84	5.22	.84	5.27	1.02	3.18	.37	2.49	.36
E 188544	71.1	6.6	23.1	2.7	7.7	26.8	65	150.5	.7	.6	.6	.2	1618	<1	109.2	19.9	6.3	14.9	2.12	10.4	3.0	1.22	3.48	.57	3.73	.77	2.36	.30	1.95	.29
RE E 188544	69.7	6.2	22.7	2.6	7.3	27.3	67	141.7	.6	.6	.6	.2	1642	<1	103.1	19.6	5.6	13.4	1.92	9.8	2.5	1.21	3.37	.59	3.70	.73	2.39	.26	1.81	.27
STANDARD SO-15	21.8	3.0	15.8	27.0	31.6	62.4	19	398.7	1.8	22.9	.9	21.0	160	13	1073.5	23.0	30.3	59.4	6.19	24.0	4.4	1.04	3.93	.62	3.75	.78	2.62	.35	2.51	.41

GROUP 4B - REE - LiBO2 FUSION, ICP/MS FINISHED.
- SAMPLE TYPE: ROCK R150 60C
Samples beginning 'RE' are Reruns and 'RRE' are Reject Reruns.

DATE RECEIVED: AUG 8 2000 DATE REPORT MAILED: Aug 22/00 SIGNED BY..... D. TOYE, C.LEONG, J. WANG; CERTIFIED B.C. ASSAYERS

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

Data FA

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

GEOCHEMICAL ANALYSIS CERTIFICATE

Atna Resources Ltd. File # A002846 (b)

1550 - 409 Granville St., Vancouver BC V6C 1T2 Submitted by: Peter Holbek

SAMPLE#	Mo ppm	Cu ppm	Pb ppm	Zn ppm	Ni ppm	As ppm	Cd ppm	Sb ppm	Bi ppm
E 188222	1	2	4	163	1	3	<.2	<.5	<.5
E 188525	<1	1	5	157	5	7	<.2	<.5	<.5
E 188530	1	2	18	126	11	<2	<.2	<.5	<.5
E 188543	<1	121	5	119	70	<2	<.2	.5	<.5
E 188544	<1	184	<3	155	67	2	<.2	4.7	<.5
RE E 188544	<1	174	<3	154	67	<2	<.2	3.3	<.5
STANDARD C3	26	62	34	167	35	64	20.3	15.6	23.3
STANDARD G-2	1	1	<3	46	7	53	<.2	<.5	<.5

GROUP 1D - 0.50 GM SAMPLE LEACHED WITH 3 ML 2-2-2 HCL-HNO3-H2O AT 95 DEG. C FOR ONE HOUR, DILUTED TO 10 ML, ANALYSED BY ICP-ES.
UPPER LIMITS - AG, AU, HG, W = 100 PPM; MO, CO, CD, SB, BI, TH, U & B = 2,000 PPM; CU, PB, ZN, NI, MN, AS, V, LA, CR = 10,000 PPM.
ASSAY RECOMMENDED FOR ROCK AND CORE SAMPLES IF CU PB ZN AS > 1%, AG > 30 PPM & AU > 1000 PPB
- SAMPLE TYPE: ROCK R150 60C Samples beginning 'RE' are Reruns and 'RRE' are Reject Reruns.

DATE RECEIVED: AUG 8 2000 DATE REPORT MAILED: Aug 22/00 SIGNED BY: ..... D. TOYE, C.LEONG, J. WANG; CERTIFIED B.C. ASSAYERS

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

Data ___ FA ___

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

GEOCHEMICAL ANALYSIS CERTIFICATE

Atna Resources Ltd. PROJECT MARG File # A002986 Page 1

1550 - 409 Granville St., Vancouver BC V6C 1T2 Submitted by: Rob Wilson

SAMPLE#	Mo ppm	Cu ppm	Pb ppm	Zn ppm	Ag ppm	Ni ppm	Co ppm	Mn ppm	Fe %	As ppm	U ppm	Au ppm	Th ppm	Sr ppm	Cd ppm	Sb ppm	Bi ppm	V ppm	Ca %	P %	La ppm	Cr ppm	Mg %	Ba ppm	Ti %	B ppm	Al %	Na %	K %	W ppm
M1-1	6	94	3	226	.6	46	15	470	3.93	21	<8	<2	4	15	1.6	<3	<3	50	.10	.100	24	28	.47	106	.02	3	1.13	.01	.04	<2
M1-2	13	69	561	412	3.2	83	11	303	5.36	180	<8	<2	6	26	2.3	4	<3	24	.05	.138	23	36	.31	435	.01	4	.60	.02	.06	<2
M1-3	2	23	54	121	.4	16	10	757	3.42	88	<8	<2	15	29	.5	<3	<3	17	.12	.091	48	10	.21	406	.03	3	.67	.02	.15	<2
M1-4	1	20	75	92	.3	20	12	511	3.37	33	<8	<2	8	14	<.2	<3	<3	31	.15	.062	15	19	.43	138	.04	3	1.34	.01	.11	<2
M1-5	1	14	24	70	<.3	12	7	384	3.36	9	<8	<2	5	10	.3	<3	<3	31	.07	.044	16	15	.40	152	.05	<3	1.18	<.01	.14	<2
M1-6	1	20	23	78	<.3	18	10	490	3.26	6	<8	<2	11	15	<.2	<3	<3	24	.20	.071	28	16	.51	228	.05	<3	1.33	<.01	.16	<2
M1-7	1	17	16	77	.3	14	8	355	3.17	7	<8	<2	11	18	<.2	<3	<3	31	.22	.081	34	16	.47	311	.07	<3	1.37	.01	.26	<2
M1-9	2	21	14	91	<.3	19	11	411	2.94	6	<8	<2	7	14	.3	<3	<3	31	.17	.069	18	17	.42	161	.08	<3	1.31	.01	.27	<2
M1-10	2	14	19	60	<.3	13	5	234	2.80	7	<8	<2	4	10	<.2	<3	<3	36	.11	.057	22	17	.28	131	.04	<3	1.16	.01	.15	<2
M1-12	2	23	12	80	<.3	20	9	365	3.20	9	<8	<2	4	14	.2	<3	<3	40	.15	.065	16	21	.46	270	.07	3	1.41	.01	.18	<2
M1-13	1	18	15	81	<.3	15	8	402	3.35	6	<8	<2	11	14	.2	<3	<3	28	.21	.086	24	14	.59	338	.07	<3	1.36	.01	.23	<2
M1-14	1	16	14	78	<.3	13	9	360	2.98	8	<8	<2	14	12	<.2	<3	<3	29	.20	.088	39	15	.42	245	.14	<3	1.20	.01	.42	<2
M1-15	1	15	17	75	<.3	15	8	376	3.60	4	<8	<2	9	14	<.2	<3	<3	34	.20	.062	21	19	.51	198	.20	<3	1.64	.01	.43	<2
M1-16	1	15	12	65	<.3	10	5	266	3.44	4	<8	<2	4	8	.2	<3	<3	41	.08	.041	16	16	.26	231	.13	<3	1.36	.01	.34	<2
M1-17	1	18	23	100	<.3	13	10	643	3.03	6	<8	<2	17	11	.2	<3	<3	25	.25	.088	24	14	.21	268	.20	<3	1.14	<.01	.41	<2
M1-18	1	11	14	76	<.3	11	8	340	2.73	5	<8	<2	7	7	<.2	<3	<3	26	.13	.049	13	14	.21	154	.12	<3	1.20	<.01	.25	<2
M1-19	1	21	10	86	<.3	17	9	366	2.44	5	<8	<2	8	14	.2	<3	<3	29	.22	.077	17	18	.29	163	.11	3	1.09	.01	.28	<2
M1-20	4	27	81	107	.5	20	7	242	3.71	7	<8	<2	10	19	.4	<3	<3	31	.11	.072	30	17	.47	262	.08	<3	1.34	.01	.31	<2
M1-21	<1	6	11	85	<.3	3	3	621	3.51	<2	<8	<2	7	4	.2	<3	<3	19	.13	.064	17	7	.40	307	.23	<3	1.34	.01	.57	<2
M1-22	1	21	12	79	<.3	16	7	353	2.97	10	<8	<2	6	17	.2	<3	<3	31	.18	.073	27	16	.50	300	.07	<3	1.38	.01	.22	<2
M1-23	2	18	15	63	<.3	17	7	229	2.62	6	<8	<2	4	13	<.2	<3	<3	36	.15	.059	18	20	.43	180	.03	3	1.42	.01	.08	<2
M1-24	1	15	9	64	<.3	15	6	233	2.79	6	<8	<2	4	15	.2	<3	<3	33	.16	.061	12	18	.48	131	.06	<3	1.45	.01	.14	<2
M1-25	2	10	11	44	<.3	9	3	168	2.60	7	<8	<2	<2	8	<.2	<3	<3	48	.05	.032	9	14	.24	80	.04	<3	1.00	.01	.07	<2
RE M1-25	2	11	12	44	<.3	10	3	162	2.55	6	<8	<2	<2	8	<.2	<3	<3	47	.05	.032	9	15	.23	79	.04	<3	.98	.01	.07	<2
M1-27	3	32	16	114	<.3	25	11	529	3.65	14	<8	<2	9	22	.5	<3	<3	35	.20	.096	27	19	.64	218	.09	<3	1.50	.01	.28	<2
M1-28	2	18	41	74	.5	12	5	385	3.49	12	<8	<2	10	26	.4	<3	<3	23	.20	.071	20	14	.69	334	.09	<3	1.19	.01	.40	<2
M1-29	<1	34	28	134	.3	19	29	1470	8.29	<2	<8	<2	6	28	1.5	4	<3	121	.34	.101	23	40	2.24	1231	.32	<3	3.70	.01	1.44	2
M1-30	2	15	16	83	<.3	16	8	401	3.64	5	<8	<2	8	10	.2	<3	<3	37	.16	.065	15	19	.52	224	.19	3	1.61	.01	.50	<2
M1-31	1	21	12	94	<.3	17	9	474	3.21	4	<8	<2	8	12	<.2	<3	<3	34	.20	.077	23	18	.42	271	.17	<3	1.42	.01	.30	<2
M1-32	2	14	13	61	<.3	16	5	264	3.00	7	<8	<2	2	13	.2	<3	<3	47	.06	.034	14	21	.35	114	.03	<3	1.29	.01	.06	<2
M1-34	12	27	64	69	1.0	16	6	231	2.47	16	<8	<2	6	32	.4	3	<3	49	.11	.096	17	14	.27	1027	.05	3	.94	.01	.11	<2
M1-35	3	35	19	95	<.3	25	9	438	2.96	12	<8	<2	5	16	.5	<3	<3	43	.17	.081	19	23	.45	472	.06	<3	1.24	.01	.11	<2
M1-36	2	36	12	121	.3	25	7	388	2.63	13	<8	<2	<2	14	1.3	<3	<3	43	.17	.082	11	23	.40	216	.02	<3	1.14	.01	.04	<2
M2-1	8	106	23	164	.8	55	22	1144	4.49	24	<8	<2	<2	34	1.0	3	<3	56	.34	.159	24	35	.63	305	.01	<3	1.43	.02	.06	<2
STANDARD C3	27	68	32	164	5.8	37	11	801	3.37	58	22	3	22	28	24.3	20	20	77	.55	.086	18	167	.61	136	.07	23	1.62	.04	.17	16
STANDARD G-2	2	4	4	45	<.3	9	4	560	2.05	<2	<8	<2	4	93	<.2	<3	<3	40	.69	.095	7	78	.63	253	.12	<3	1.10	.19	.60	<2

GROUP 1D - 0.50 GM SAMPLE LEACHED WITH 3 ML 2-2-2 HCL-HNO3-H2O AT 95 DEG. C FOR ONE HOUR, DILUTED TO 10 ML, ANALYSED BY ICP-ES.
UPPER LIMITS - AG, AU, HG, W = 100 PPM; MO, CO, CD, SB, BI, TH, U & B = 2,000 PPM; CU, PB, ZN, NI, MN, AS, V, LA, CR = 10,000 PPM.
- SAMPLE TYPE: SOIL SS80 60C Samples beginning 'RE' are Reruns and 'RRE' are Reject Reruns.

DATE RECEIVED: AUG 14 2000 DATE REPORT MAILED: Aug 24/00 SIGNED BY. C. Leong .D. TOYE, C.LEONG, J. WANG; CERTIFIED B.C. ASSAYERS

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

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SAMPLE#	Mo ppm	Cu ppm	Pb ppm	Zn ppm	Ag ppm	Ni ppm	Co ppm	Mn ppm	Fe %	As ppm	U ppm	Au ppm	Th ppm	Sr ppm	Cd ppm	Sb ppm	Bi ppm	V ppm	Ca %	P %	La ppm	Cr ppm	Mg %	Ba ppm	Ti %	B ppm	Al %	Na %	K %	W ppm
M2-2	5	50	15	129	.5	30	7	336	3.77	23	<8	<2	<2	19	.6	<3	<3	56	.09	.113	26	29	.49	148	.01	3	1.57	.01	.05	<2
M2-3	15	131	794	605	3.9	193	48	976	5.95	731	9	<2	5	40	5.4	6	3	44	.14	.200	39	68	.50	184	.01	<3	1.17	.01	.04	<2
M2-4	6	54	15	157	.5	33	9	368	3.72	28	<8	<2	<2	17	.7	<3	<3	55	.13	.111	23	30	.54	164	.02	3	1.50	.01	.04	<2
M2-5	3	20	23	90	<.3	17	7	410	3.35	17	<8	<2	<2	12	.7	<3	<3	71	.09	.083	16	27	.29	248	.01	3	1.34	.01	.05	<2
M2-6	4	42	48	147	.5	29	12	602	3.98	116	<8	<2	6	18	.7	<3	<3	40	.12	.101	45	24	.45	386	.03	5	1.49	.01	.13	<2
M2-7	2	14	16	66	<.3	13	5	238	2.56	12	<8	<2	<2	9	<.2	<3	<3	49	.05	.067	19	18	.22	133	.01	3	1.31	<.01	.07	<2
M2-8	1	20	37	96	<.3	17	7	338	3.24	18	<8	<2	7	12	.3	<3	<3	34	.13	.065	31	18	.45	252	.06	<3	1.55	.01	.17	<2
M2-9	2	18	39	87	<.3	18	7	395	3.44	15	<8	<2	4	14	.2	<3	<3	40	.12	.068	26	19	.45	311	.04	<3	1.64	.01	.16	<2
M2-10	2	19	22	80	<.3	16	7	314	2.86	8	<8	<2	4	14	.2	<3	<3	33	.16	.073	22	17	.45	237	.05	<3	1.41	.01	.13	<2
M2-11	1	25	22	99	<.3	20	10	562	3.34	12	<8	<2	9	17	.3	<3	<3	40	.18	.089	26	19	.49	336	.08	<3	1.76	.01	.18	<2
M2-12	2	19	36	91	<.3	17	8	488	3.34	15	<8	<2	4	13	.3	<3	<3	37	.12	.078	25	19	.45	355	.04	<3	1.73	.01	.16	<2
M2-13	2	15	21	65	<.3	12	5	291	2.33	10	<8	<2	<2	11	<.2	<3	<3	32	.07	.071	19	14	.23	276	.02	<3	1.08	<.01	.12	<2
M2-15	1	18	15	86	<.3	17	9	503	3.23	7	<8	<2	10	13	.3	<3	<3	33	.17	.069	23	18	.57	471	.11	4	1.62	.01	.34	<2
M2-17	1	21	26	89	<.3	19	8	443	3.45	9	<8	<2	5	18	.3	<3	<3	42	.18	.081	29	22	.58	431	.08	3	1.83	.01	.24	<2
M2-20	1	16	19	79	<.3	15	7	386	2.92	7	<8	<2	11	13	.4	<3	<3	33	.22	.071	35	18	.37	266	.14	3	1.37	.01	.33	<2
M2-21	<1	11	14	68	<.3	12	5	197	2.46	4	<8	<2	9	12	<.2	<3	<3	30	.18	.064	23	17	.30	196	.13	<3	1.28	<.01	.27	<2
M2-23	2	17	14	83	<.3	15	11	427	3.39	12	<8	<2	5	11	<.2	<3	<3	60	.20	.065	15	25	.70	324	.12	3	1.61	.01	.28	<2
M2-24	2	17	23	89	<.3	14	7	533	3.30	12	<8	<2	3	13	.2	<3	<3	44	.18	.088	25	21	.38	657	.06	<3	1.57	.01	.24	<2
M2-25	1	19	14	79	<.3	15	6	287	2.97	8	<8	<2	6	14	<.2	<3	<3	43	.21	.085	24	22	.47	380	.09	<3	1.38	.01	.18	<2
M2-26	1	15	15	67	<.3	12	5	338	3.09	9	<8	<2	2	12	.3	<3	<3	39	.13	.059	25	20	.43	442	.08	3	1.39	.01	.19	<2
M2-29	1	15	14	75	<.3	15	6	299	2.98	8	<8	<2	2	13	.3	<3	<3	41	.12	.045	13	19	.43	160	.06	<3	1.34	.01	.10	<2
M2-30	1	16	12	84	<.3	15	7	334	3.07	7	<8	<2	4	12	.3	<3	<3	39	.15	.057	14	18	.45	219	.08	<3	1.49	.01	.15	<2
M2-31	2	23	22	135	.5	15	8	575	3.80	12	<8	<2	7	16	.7	<3	<3	34	.22	.084	25	18	.58	635	.14	<3	1.92	.01	.31	<2
RE M2-31	1	24	23	135	.3	16	8	586	3.82	14	<8	<2	8	15	.3	<3	<3	34	.22	.086	25	16	.57	632	.14	3	1.91	.01	.31	<2
J3-1	9	80	20	210	1.2	37	8	434	4.32	15	<8	<2	3	38	1.1	<3	<3	46	.13	.199	24	20	.29	193	.02	<3	.94	.01	.05	<2
J3-2	13	84	31	186	1.9	31	5	311	4.70	22	<8	<2	<2	47	1.0	4	<3	69	.06	.243	28	25	.28	319	.01	<3	1.05	.01	.06	<2
J3-3	7	92	21	466	.9	81	16	323	4.36	17	<8	<2	11	20	3.7	<3	<3	65	.12	.081	36	33	.28	87	<.01	<3	.62	<.01	.02	<2
J3-4	10	66	24	240	.7	36	6	156	3.68	18	<8	<2	4	14	.9	<3	<3	58	.02	.099	37	28	.25	142	<.01	<3	.72	<.01	.02	<2
J3-5	2	32	13	70	<.3	20	7	280	2.87	11	<8	<2	<2	10	.6	<3	<3	46	.11	.048	10	22	.38	78	.04	4	1.21	.01	.04	<2
J3-6	2	140	10	112	<.3	41	17	432	3.28	13	<8	<2	2	12	.5	<3	<3	55	.14	.040	11	49	.79	185	.08	<3	1.77	.01	.07	<2
J3-7	2	106	20	396	.3	105	25	662	6.30	31	<8	<2	2	10	1.6	4	<3	134	.17	.081	10	228	2.72	37	.08	4	3.39	<.01	.01	<2
J3-8	3	296	12	218	<.3	69	28	604	4.51	22	<8	<2	2	13	1.0	<3	<3	76	.17	.086	18	29	.91	133	.06	<3	2.28	.01	.04	<2
J3-9	<1	329	16	350	.6	92	75	2759	7.87	23	<8	<2	3	20	3.6	4	<3	198	.71	.128	20	31	2.25	181	.03	<3	3.87	.01	.02	<2
J3-10	8	161	20	595	1.4	175	54	1234	7.45	129	<8	<2	3	22	6.2	<3	<3	38	.35	.096	11	51	.71	65	<.01	<3	.99	.01	.02	<2
STANDARD C3	26	65	36	165	5.7	36	11	801	3.37	60	23	3	21	27	24.5	19	22	77	.56	.087	17	163	.62	143	.09	22	1.74	.04	.15	16
STANDARD G-2	3	4	5	42	<.3	8	4	550	2.05	<2	<8	<2	4	75	<.2	<3	<3	39	.66	.094	7	74	.62	237	.13	<3	1.00	.10	.48	<2

Sample type: SOIL SS80 60C. Samples beginning 'RE' are Reruns and 'RRE' are Reject Reruns.

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

Data / FA ___

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SAMPLE#	Mo ppm	Cu ppm	Pb ppm	Zn ppm	Ag ppm	Ni ppm	Co ppm	Mn ppm	Fe %	As ppm	U ppm	Au ppm	Th ppm	Sr ppm	Cd ppm	Sb ppm	Bi ppm	V ppm	Ca %	P %	La ppm	Cr ppm	Mg %	Ba ppm	Ti %	B ppm	Al %	Na %	K %	W ppm
J3-11	46	13	15	86	2.7	9	<1	9	1.99	29	<8	<2	4	74	<.2	12	<3	36	.01	.053	10	4	.01	308	<.01	<3	.09	.01	.05	<2
J3-12	4	26	16	103	.3	22	6	283	3.46	14	<8	<2	<2	10	.5	<3	<3	61	.06	.061	12	25	.33	90	.02	3	1.49	.01	.04	2
J3-13	6	73	11	234	.7	43	6	225	3.92	8	<8	<2	2	21	.5	4	<3	34	.07	.106	18	17	.18	72	.01	<3	.69	<.01	.03	<2
J3-14	44	57	32	209	4.3	22	<1	44	4.44	92	<8	<2	2	120	.3	36	<3	92	.04	.332	13	7	.05	262	<.01	<3	.29	.01	.09	<2
J3-15	26	48	34	131	2.7	17	1	54	3.34	27	<8	<2	10	67	.4	4	<3	36	.06	.261	25	6	.06	447	<.01	3	.30	.01	.07	2
J3-16	3	19	18	105	<.3	18	8	343	3.58	16	<8	<2	4	13	.4	<3	<3	40	.09	.057	20	19	.46	315	.05	<3	1.58	.01	.11	<2
J3-17	2	24	26	193	<.3	25	13	640	4.36	8	<8	<2	14	22	1.1	<3	3	27	.28	.100	36	14	.74	524	.19	<3	1.91	.01	.44	3
J3-18	2	26	30	137	.3	20	26	1381	4.79	15	<8	<2	10	25	.3	<3	<3	31	.27	.082	33	17	.64	396	.17	<3	1.98	.01	.48	<2
J3-19	2	7	14	43	<.3	8	3	157	2.67	8	<8	<2	3	7	<.2	<3	<3	43	.04	.023	10	12	.19	84	.07	4	.82	<.01	.06	<2
J3-20	1	13	17	75	<.3	12	7	455	3.88	14	<8	<2	5	10	<.2	<3	<3	32	.06	.035	9	14	.54	150	.23	<3	1.41	.01	.20	<2
J3-21	2	23	29	85	<.3	17	7	390	3.54	10	<8	<2	3	18	<.2	<3	<3	28	.19	.094	30	16	.51	359	.05	<3	1.42	.01	.16	<2
J3-22	2	15	26	82	<.3	11	7	372	3.38	8	<8	<2	4	20	.2	<3	<3	21	.19	.079	17	11	.56	184	.05	3	1.21	.01	.15	<2
J3-23	2	20	14	90	<.3	17	5	243	3.06	22	<8	<2	2	7	<.2	<3	<3	41	.05	.039	11	17	.22	98	.02	<3	.97	<.01	.03	<2
J3-24	2	19	25	101	<.3	13	11	511	4.56	12	<8	<2	12	25	.2	<3	3	26	.26	.080	34	13	.86	400	.15	<3	1.97	.01	.37	<2
J3-25	3	36	35	175	<.3	27	17	632	4.74	23	<8	<2	11	39	.4	<3	<3	23	.26	.097	27	11	.71	241	.16	<3	1.52	.02	.28	2
J3-26	2	35	47	155	<.3	23	20	733	4.73	16	<8	<2	11	33	.3	<3	4	22	.40	.084	26	12	.96	329	.12	<3	1.95	.01	.28	<2
RE J3-26	1	34	49	154	<.3	22	19	717	4.62	14	<8	<2	11	32	.3	<3	<3	22	.39	.081	25	13	.93	326	.12	<3	1.89	<.01	.27	2
J3-27	1	14	20	142	<.3	13	15	424	3.33	7	<8	<2	13	19	.2	<3	3	16	.23	.086	42	8	.42	157	.14	<3	1.00	.01	.30	<2
J3-28	<1	21	28	150	<.3	17	16	456	4.02	10	<8	<2	11	22	.2	<3	5	18	.34	.084	31	10	.75	314	.18	<3	1.52	.01	.48	<2
J3-29	2	19	33	117	<.3	18	13	519	3.52	10	<8	<2	14	31	.4	<3	<3	15	.33	.091	43	9	.40	132	.15	<3	.93	.01	.43	<2
J3-30	1	13	25	93	<.3	13	10	472	2.92	9	<8	<2	15	22	<.2	<3	<3	12	.30	.093	36	7	.28	117	.11	<3	.68	<.01	.27	<2
D00-PH05	9	1863	1125	1479	3.5	59	44	1040	13.92	156	<8	<2	13	9	1.8	6	<3	15	.03	.161	18	12	.09	45	<.01	<3	.64	.01	.03	<2
STANDARD C3	27	67	35	164	5.8	37	11	805	3.52	57	23	4	21	28	24.6	19	21	76	.58	.090	17	163	.64	146	.09	22	1.76	.04	.16	18
STANDARD G-2	2	3	4	44	<.3	9	4	567	2.16	<2	<8	<2	4	83	<.2	<3	<3	40	.71	.101	6	75	.66	258	.13	<3	1.10	.13	.53	<2

Sample type: SOIL SS80 60C. Samples beginning 'RE' are Reruns and 'RRE' are Reject Reruns.

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

Data / FA

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

GEOCHEMICAL ANALYSIS CERTIFICATE

Atna Resources Ltd. PROJECT MARG File # A002987 Page 1

1550 - 409 Granville St., Vancouver BC V6C 1T2 Submitted by: Rob Wilson

SAMPLE#	Mo ppm	Cu ppm	Pb ppm	Zn ppm	Ag ppm	Ni ppm	Co ppm	Mn ppm	Fe %	As ppm	U ppm	Au ppm	Th ppm	Sr ppm	Cd ppm	Sb ppm	Bi ppm	V ppm	Ca %	P %	La ppm	Cr ppm	Mg %	Ba ppm	Ti %	B ppm	Al %	Na %	K %	W ppm
E 188193	3	27	30	70	<.3	3	1	60	1.47	17	<8	<2	23	43	.3	3	<3	<1	.25	.020	17	9	1.43	358	<.01	4	1.36	.11	.08	2
E 188194	4	6	27	81	<.3	5	4	99	1.63	23	<8	<2	23	39	1.0	<3	<3	<1	.56	.030	11	7	1.13	107	<.01	<3	.94	.06	.06	2
E 188195	8	65	25	367	<.3	85	18	269	4.85	70	<8	<2	8	26	2.1	<3	<3	22	.54	.075	5	28	.95	93	<.01	<3	.94	.05	.18	<2
E 188196	4	98	434	1317	.8	6	3	128	2.27	54	<8	<2	25	37	2.3	4	<3	<1	.32	.016	12	7	1.16	159	<.01	<3	.46	.06	.11	<2
E 188197	13	342	4409	7194	9.2	8	<1	52	5.44	941	<8	<2	15	21	13.3	111	<3	<1	.16	.007	9	9	.16	18	<.01	4	.47	.04	.17	3
E 188198	23	13	37	434	<.3	9	<1	82	6.21	266	8	<2	12	50	1.0	31	<3	<1	.79	.002	6	7	.44	35	<.01	<3	.17	.06	.02	<2
E 188199	8	190	572	1065	1.2	18	6	105	3.39	79	<8	<2	18	28	3.7	16	3	3	.30	.045	7	10	.16	40	<.01	<3	.41	.03	.19	2
E 188200	6	810	552	1234	1.1	13	6	68	4.92	132	<8	<2	16	32	6.3	45	9	3	.16	.035	6	9	.07	28	<.01	<3	.42	.03	.18	2
E 188202	4	8	21	209	<.3	7	1	147	2.61	14	<8	<2	16	25	<.2	6	<3	1	.29	.005	19	10	1.55	191	<.01	<3	.56	.09	.09	2
E 188203	2	90	38	203	<.3	11	5	87	2.34	24	<8	<2	19	19	.6	<3	<3	2	.17	.040	10	9	.86	284	<.01	<3	1.04	.05	.09	<2
E 188204	3	134	34	310	<.3	12	6	141	2.12	24	<8	<2	21	43	1.2	<3	<3	3	.66	.041	10	12	1.21	144	<.01	<3	1.23	.07	.13	<2
RE E 188204	3	136	34	317	<.3	12	6	143	2.15	24	<8	<2	21	44	1.3	<3	<3	2	.67	.042	10	11	1.23	129	<.01	<3	1.24	.08	.14	<2
RRE E 188204	3	157	36	346	<.3	12	6	141	2.13	23	<8	<2	23	45	1.3	<3	<3	2	.64	.043	11	10	1.22	118	<.01	<3	1.29	.08	.15	<2
E 188205	6	64	38	419	<.3	9	5	144	2.62	28	<8	<2	22	38	1.8	<3	<3	1	.60	.050	7	9	1.16	54	<.01	<3	.98	.07	.12	<2
E 188206	7	865	183	744	<.3	90	15	132	4.21	390	<8	<2	9	22	3.5	<3	<3	12	.15	.062	5	13	.86	41	<.01	<3	.55	.05	.12	2
E 188207	4	773	66	411	<.3	19	4	113	2.66	77	<8	<2	27	43	1.5	5	<3	1	.55	.057	7	11	.32	65	<.01	3	.57	.03	.21	<2
E 188208	2	303	91	1102	<.3	14	9	175	2.86	61	<8	<2	30	42	3.8	3	<3	<1	.38	.056	7	5	.56	48	<.01	<3	.50	.04	.15	<2
E 188209	39	62	46	593	.6	89	10	188	5.34	78	<8	<2	7	67	3.3	14	<3	19	.74	.038	3	29	.54	20	<.01	3	.44	.04	.13	6
E 188210	4	87	28	1646	<.3	20	11	244	2.31	12	<8	<2	20	24	5.9	<3	<3	<1	.20	.032	11	9	.25	59	<.01	3	.55	.04	.11	<2
E 188211	35	68	30	758	1.2	100	11	143	4.46	112	<8	<2	2	149	5.3	22	<3	82	1.10	.192	3	27	.35	26	<.01	3	.45	.02	.17	5
E 188212	3	7	20	134	<.3	5	2	74	2.14	15	<8	<2	21	33	.2	3	<3	<1	.38	.023	13	7	.99	81	<.01	<3	.77	.06	.09	3
E 188213	3	7	25	65	<.3	3	2	89	1.88	17	<8	<2	23	45	<.2	<3	<3	<1	.43	.039	22	12	1.18	77	<.01	<3	1.02	.06	.15	3
E 188214	3	7	29	65	<.3	3	2	53	1.96	20	<8	<2	26	24	<.2	<3	<3	<1	.18	.032	21	5	1.41	84	<.01	<3	1.22	.06	.11	<2
E 188215	7	5	18	83	<.3	3	<1	186	2.11	49	<8	<2	13	39	<.2	3	<3	<1	.73	.006	20	14	.63	59	<.01	5	.36	.11	.02	4
E 188216	4	7	24	104	<.3	3	1	57	1.84	24	<8	<2	21	23	<.2	<3	<3	<1	.15	.007	30	4	1.16	113	<.01	<3	1.06	.05	.10	<2
RE E 188216	3	7	23	107	<.3	3	1	59	1.89	23	<8	<2	21	24	<.2	<3	<3	<1	.16	.007	30	4	1.20	85	<.01	<3	1.10	.05	.11	2
RRE E 188216	5	7	27	111	<.3	3	1	65	1.99	23	<8	<2	23	30	.2	3	<3	<1	.16	.008	34	11	1.35	70	<.01	3	1.36	.08	.16	3
E 188217	2	6	18	149	<.3	3	1	29	1.21	6	<8	<2	18	22	.3	<3	<3	<1	.05	.002	36	5	1.29	326	<.01	<3	1.24	.07	.11	2
E 188218	15	360	1440	3602	4.6	84	18	342	5.42	172	<8	<2	6	80	12.2	5	4	40	1.63	.078	3	24	1.23	28	<.01	<3	1.02	.04	.18	<2
E 188219	6	14	43	118	.3	5	2	106	2.66	35	<8	<2	18	44	.5	3	<3	<1	.49	.032	11	3	.44	43	<.01	<3	.66	.04	.19	2
E 188220	7	93	25	489	.4	71	18	277	5.50	126	<8	<2	6	59	5.0	4	<3	47	.91	.096	4	33	1.13	54	<.01	4	1.30	.04	.17	<2
E 188221	1	48	<3	115	<.3	31	34	1586	7.56	61	<8	<2	<2	248	1.0	<3	<3	116	6.04	.156	8	25	3.02	74	<.01	<3	2.21	.07	.05	<2
E 188222	6	60	17	341	.3	82	19	303	4.45	125	<8	<2	6	50	1.5	<3	<3	32	.71	.074	7	29	1.05	189	<.01	<3	1.27	.05	.21	<2
E 188223	10	9	43	182	<.3	14	3	116	2.53	44	<8	<2	21	49	.8	<3	<3	1	.65	.032	6	6	.43	56	<.01	<3	.45	.02	.18	3
STANDARD C3	26	65	35	170	5.6	36	11	803	3.42	61	20	<2	21	29	24.6	15	23	78	.59	.088	18	167	.64	148	.09	23	1.85	.04	.16	15
STANDARD G-2	2	3	<3	43	<.3	8	4	540	2.02	<2	<8	<2	4	70	<.2	<3	<3	38	.63	.093	7	76	.60	227	.12	<3	.94	.07	.45	<2

GROUP 1D - 0.50 GM SAMPLE LEACHED WITH 3 ML 2-2-2 HCL-HNO3-H2O AT 95 DEG. C FOR ONE HOUR, DILUTED TO 10 ML, ANALYSED BY ICP-ES.
UPPER LIMITS - AG, AU, HG, W = 100 PPM; MO, CO, CD, SB, BI, TH, U & B = 2,000 PPM; CU, PB, ZN, NI, MN, AS, V, LA, CR = 10,000 PPM.
ASSAY RECOMMENDED FOR ROCK AND CORE SAMPLES IF CU PB ZN AS > 1%, AG > 30 PPM & AU > 1000 PPB
- SAMPLE TYPE: CORE R150 60C Samples beginning 'RE' are Reruns and 'RRE' are Reject Reruns.

DATE RECEIVED: AUG 14 2000 DATE REPORT MAILED: Aug 24/00 SIGNED BY: D. TOYE, C.LEONG, J. WANG; CERTIFIED B.C. ASSAYERS

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

Data FA

ACME ANALYTICAL

Atna Resources Ltd. PROJECT MARG FILE # A002987 Page 2

ACME ANALYTICAL

SAMPLE#	Mo ppm	Cu ppm	Pb ppm	Zn ppm	Ag ppm	Ni ppm	Co ppm	Mn ppm	Fe %	As ppm	U ppm	Au ppm	Th ppm	Sr ppm	Cd ppm	Sb ppm	Bi ppm	V ppm	Ca %	P %	La ppm	Cr ppm	Mg %	Ba ppm	Ti %	B ppm	Al %	Na %	K %	W ppm
E 188226	4	10	26	149	<.3	7	3	119	2.08	28	<8	<2	22	47	.4	<3	<3	<1	.80	.038	8	8	.82	80	<.01	<3	.64	.04	.11	4
E 188229	4	9	54	50	<.3	5	4	87	1.96	17	<8	<2	19	30	<.2	<3	<3	<1	.37	.048	10	15	.55	56	<.01	<3	.61	.05	.22	4
E 188230	3	10	33	58	<.3	5	4	89	2.10	14	<8	<2	27	55	<.2	4	4	<1	.62	.050	6	7	1.11	61	<.01	<3	.66	.06	.12	2
E 188231	7	6	27	46	<.3	3	3	125	2.18	16	<8	<2	22	41	<.2	3	<3	<1	.48	.036	8	10	1.38	58	<.01	<3	.53	.08	.12	2
E 188232	4	7	27	50	<.3	4	3	99	2.31	17	<8	<2	25	39	<.2	<3	<3	<1	.43	.045	7	5	1.07	36	<.01	<3	.48	.08	.11	2
E 188233	5	6	25	44	<.3	4	3	112	2.10	20	<8	<2	21	38	<.2	3	<3	<1	.40	.040	7	7	1.25	49	<.01	<3	.47	.07	.11	2
E 188234	4	8	30	45	<.3	4	4	167	2.43	23	<8	<2	26	66	<.2	<3	<3	<1	.86	.049	5	7	.95	42	<.01	<3	.46	.05	.16	2
E 188235	9	32	31	189	<.3	15	5	93	3.03	52	<8	<2	26	25	.4	<3	<3	2	.21	.059	8	11	.35	33	<.01	<3	.59	.05	.15	5
E 188236	2	20	29	165	<.3	6	4	177	2.03	12	<8	<2	24	35	.5	3	<3	<1	.32	.042	8	7	1.31	103	<.01	<3	.44	.06	.09	4
RE E 188236	2	19	28	162	<.3	7	4	171	1.96	13	<8	<2	24	34	.5	<3	<3	<1	.31	.040	8	7	1.27	116	<.01	<3	.43	.06	.09	4
RRE E 188236	3	20	31	154	<.3	7	4	166	2.03	13	<8	<2	25	34	.6	<3	<3	<1	.30	.041	8	9	1.27	99	<.01	4	.46	.06	.10	4
E 188237	3	60	45	207	<.3	13	5	197	2.42	38	<8	<2	24	44	.4	4	<3	<1	.62	.052	6	6	.84	72	<.01	8	.42	.04	.13	<2
E 188238	5	111	47	163	<.3	13	5	96	2.77	52	<8	<2	27	42	.7	<3	3	2	.33	.061	8	10	.31	50	<.01	<3	.54	.03	.20	6
E 188239	4	87	46	162	<.3	11	4	119	2.42	36	<8	<2	23	32	.8	<3	<3	1	.38	.049	7	7	.46	65	<.01	<3	.43	.03	.19	4
E 188240	7	72	28	392	.5	65	15	276	4.63	95	<8	<2	6	42	3.5	<3	<3	22	.86	.125	4	19	.82	77	<.01	3	.46	.05	.17	3
STANDARD C3	27	67	36	168	5.9	39	12	839	3.42	62	23	2	22	29	25.8	16	23	82	.58	.087	19	175	.64	145	.09	25	1.81	.04	.16	16
STANDARD G-2	2	3	3	42	<.3	8	4	567	2.03	<2	<8	<2	4	70	<.2	<3	<3	41	.64	.093	8	79	.60	226	.13	<3	.94	.07	.45	2

Sample type: CORE R150 60C. Samples beginning 'RE' are Reruns and 'RRE' are Reject Reruns.

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

Data / FA

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

ASSAY CERTIFICATE

Atna Resources Ltd. PROJECT MARG File # A002987R
1550 - 409 Granville St., Vancouver BC V6C 1T2 Submitted by: Rob Wilson

SAMPLE#	Ba %
E 188202	.21

BA BY FUSION, ANALYSIS BY WHOLE ROCK ICP ASSAY.
ASSAY RECOMMENDED FOR ROCK AND CORE SAMPLES IF CU PB ZN AS > 1%, AG > 30 PPM & AU > 1000 PPB
- SAMPLE TYPE: CORE PULP

DATE RECEIVED: AUG 25 2000 DATE REPORT MAILED: Aug 30/00 SIGNED BY: C. Leong .D. TOYE, C.LEONG, J. WANG; CERTIFIED B.C. ASSAYERS

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

Data ✓ FA ___

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

GEOCHEMICAL ANALYSIS CERTIFICATE

Atna Resources Ltd. PROJECT MARG File # A002988

1550 - 409 Granville St., Vancouver BC V6C 1T2 Submitted by: Rob Wilson

SAMPLE#	Mo ppm	Cu ppm	Pb ppm	Zn ppm	Ag ppm	Ni ppm	Co ppm	Mn ppm	Fe %	As ppm	U ppm	Au ppm	Th ppm	Sr ppm	Cd ppm	Sb ppm	Bi ppm	V ppm	Ca %	P %	La ppm	Cr ppm	Mg %	Ba ppm	Ti %	B ppm	Al %	Na %	K %	W ppm
E 188548	4	102	4	83	<.3	16	4	106	2.16	<2	<8	<2	8	5	1.5	<3	<3	25	.07	.044	11	27	.61	290	.01	<3	1.11	.01	.17	<2
E 188549	6	32	6	65	.8	6	<1	60	3.73	<2	<8	<2	7	5	<.2	<3	<3	19	.01	.046	3	19	.43	343	<.01	3	.81	.02	.16	<2
E 188550	4	94	132	28	.6	4	3	26	3.13	31	<8	<2	5	7	<.2	<3	4	4	.01	.026	15	14	.03	88	<.01	<3	.37	.01	.24	3
E 188551	2	14	13	100	<.3	9	4	233	3.49	<2	<8	<2	13	18	<.2	<3	<3	10	.36	.091	27	11	.76	237	<.01	<3	1.14	.02	.12	<2
E 188552	2	6	53	16	<.3	5	2	71	4.77	15	<8	<2	7	42	.2	<3	<3	1	.31	.026	4	12	.03	19	<.01	<3	.28	.02	.21	3
E 188553	1	8	43	16	<.3	4	2	182	1.04	<2	<8	<2	11	49	<.2	3	<3	<1	.43	.032	6	5	.70	173	.01	<3	.68	.01	.31	<2
E 188554	3	6	34	15	<.3	4	3	43	6.94	46	<8	<2	5	11	<.2	8	3	1	.18	.067	10	13	.01	12	<.01	8	.24	.05	.11	3
E 188555	2	23	12	5	<.3	2	<1	32	1.66	<2	<8	<2	10	13	<.2	<3	<3	4	.17	.066	13	12	.02	287	.07	<3	.19	.03	.16	4
E 188557	3	2	24	6	.8	3	2	22	3.07	35	<8	<2	3	3	<.2	3	<3	1	.01	.003	12	14	.01	30	<.01	3	.25	.01	.17	2
E 188558	2	3	22	11	<.3	3	<1	29	3.22	22	<8	<2	9	11	<.2	3	<3	1	.07	.057	11	9	.02	35	<.01	3	.25	.02	.23	2
E 188559	2	7	31	55	<.3	1	<1	229	4.95	7	<8	<2	8	32	<.2	<3	<3	2	.26	.082	11	12	.56	80	.10	<3	1.01	.02	.14	3
E 188560	4	19	69	101	1.0	5	3	38	3.72	8	<8	<2	9	12	.8	<3	<3	2	.14	.070	23	11	.01	39	.01	3	.26	.03	.13	3
E 188561	2	251	<3	44	<.3	30	14	181	11.32	46	<8	<2	2	4	<.2	23	3	10	.01	.025	2	21	.07	11	<.01	5	.22	.03	.02	2
RE E 188561	2	256	4	45	<.3	30	14	183	11.48	46	<8	<2	<2	4	<.2	25	3	10	.01	.026	2	21	.07	11	<.01	4	.22	.03	.02	2
E 188562	11	168	15	592	<.3	37	<1	258	24.63	46	<8	<2	17	9	3.3	19	<3	4	.07	.128	12	8	.02	431	<.01	3	.48	.01	.08	<2
E 188563	<1	168	<3	90	<.3	57	44	1187	8.56	9	<8	<2	<2	36	1.0	4	<3	421	1.15	.049	3	16	2.38	546	.41	4	3.77	.01	.04	<2
E 188564	6	244	11	712	.8	171	18	328	8.81	64	15	<2	6	30	4.7	9	3	64	.58	.460	5	45	.09	190	<.01	6	1.60	.03	.06	2
E 188565	4	69	5	7	.5	5	6	52	4.58	13	<8	<2	<2	1	<.2	<3	<3	9	.01	.009	3	22	.12	5	.01	3	.21	<.01	<.01	3
STANDARD C3	26	66	33	168	5.8	38	11	816	3.52	60	20	2	21	30	24.9	16	24	80	.58	.093	18	173	.62	152	.08	22	1.84	.04	.16	14
STANDARD G-2	2	4	<3	42	<.3	8	4	553	2.07	<2	<8	<2	5	72	<.2	3	<3	39	.64	.099	8	79	.59	234	.12	3	.95	.07	.45	2

GROUP 1D - 0.50 GM SAMPLE LEACHED WITH 3 ML 2-2-2 HCL-HNO3-H2O AT 95 DEG. C FOR ONE HOUR, DILUTED TO 10 ML, ANALYSED BY ICP-ES.
UPPER LIMITS - AG, AU, HG, W = 100 PPM; MO, CO, CD, SB, BI, TH, U & B = 2,000 PPM; CU, PB, ZN, NI, MN, AS, V, LA, CR = 10,000 PPM.
ASSAY RECOMMENDED FOR ROCK AND CORE SAMPLES IF CU PB ZN AS > 1%, AG > 30 PPM & AU > 1000 PPB
- SAMPLE TYPE: ROCK R150 60C Samples beginning 'RE' are Reruns and 'RRE' are Reject Reruns.

DATE RECEIVED: AUG 14 2000 DATE REPORT MAILED: Aug 24/00 SIGNED BY. C. Leong ..D. TOYE, C.LEONG, J. WANG; CERTIFIED B.C. ASSAYERS

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

Data FA

ALS Chemex

Aurora Laboratory Services Ltd.
Analytical Chemists * Geochemists * Registered Assayers
212 Brooksbank Ave., North Vancouver
British Columbia, Canada V7J 2C1
PHONE: 604-984-0221 FAX: 604-984-0218

To: ATNA RESOURCES LTD.

1550 - 409 GRANVILLE ST.
VANCOUVER, BC
V6C 1T2

A0028121

Comments: ATTN: PETER HOLBECK

CERTIFICATE A0028121

(OGV) - ATNA RESOURCES LTD.

Project: MARG
P.O. # :

Samples submitted to our lab in Vancouver, BC.
This report was printed on 13-SEP-2000.

SAMPLE PREPARATION

CHEMEX CODE	NUMBER SAMPLES	DESCRIPTION
208	11	Assay ring to approx 150 mesh
226	11	0-3 Kg crush and split
3202	11	Rock - save entire reject
233	11	Assay AQ ICP digestion charge

* NOTE 1:

The 32 element ICP package is suitable for trace metals in soil and rock samples. Elements for which the nitric-aqua regia digestion is possibly incomplete are: Al, Ba, Be, Ca, Cr, Ga, K, La, Mg, Na, Sr, Ti, Tl, W.

ANALYTICAL PROCEDURES

CHEMEX CODE	NUMBER SAMPLES	DESCRIPTION	METHOD	DETECTION LIMIT	UPPER LIMIT
983	11	Au ppb: Fuse 30 g sample	FA-AAS	5	10000
4001	11	Ag ppm : A30 ICP package	ICP-AES	1	200
4002	11	Al %: A30 ICP package	ICP-AES	0.01	15.00
4003	11	As ppm: A30 ICP package	ICP-AES	10	50000
4004	11	Ba ppm: A30 ICP package	ICP-AES	20	20000
4005	11	Be ppm: A30 ICP package	ICP-AES	5	100
4006	11	Bi ppm: A30 ICP package	ICP-AES	10	50000
4007	11	Ca %: A30 ICP package	ICP-AES	0.01	30.0
4008	11	Cd ppm: A30 ICP package	ICP-AES	5	1000
4009	11	Co ppm: A30 ICP package	ICP-AES	5	50000
4010	11	Cr ppm: A30 ICP package	ICP-AES	10	20000
4011	11	Cu ppm: A30 ICP package	ICP-AES	5	50000
4012	11	Fe %: A30 ICP package	ICP-AES	0.01	30.0
4013	11	Hg ppm: A30 ICP package	ICP-AES	10	10000
4014	11	K %: A30 ICP package	ICP-AES	0.01	10.00
4015	11	Mg %: A30 ICP package	ICP-AES	0.01	30.0
4016	11	Mn ppm: A30 ICP package	ICP-AES	10	50000
4017	11	Mo ppm: A30 ICP package	ICP-AES	5	50000
4018	11	Na %: A30 ICP package	ICP-AES	0.01	20.0
4019	11	Ni ppm: A30 ICP package	ICP-AES	5	50000
4020	11	P ppm: A30 ICP package	ICP-AES	100	10000
4021	11	Pb ppm: A30 ICP package	ICP-AES	5	50000
4022	11	Sb ppm: A30 ICP package	ICP-AES	10	10000
4023	11	Sc ppm: A30 ICP package	ICP-AES	5	10000
4024	11	Sr ppm: A30 ICP package	ICP-AES	5	10000
4025	11	Ti %: A30 ICP package	ICP-AES	0.01	10.00
4026	11	Tl ppm: A30 ICP package	ICP-AES	20	10000
4027	11	U ppm: A30 ICP package	ICP-AES	20	10000
4028	11	V ppm: A30 ICP package	ICP-AES	20	50000
4029	11	W ppm: A30 ICP package	ICP-AES	20	10000
4030	11	Zn ppm: A30 ICP package	ICP-AES	5	50000
16	11	Se ppm: HCl-KClO3 digest, ext	AAS-BKGD CORR	0.2	100.0

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To: ATNA RESOURCES LTD. *

1550 - 409 GRANVILLE ST.
VANCOUVER, BC
V6C 1T2

Project : MARG
Comments: ATTN: PETER HOLBECK

Page Number : 1-A
Total Pages : 1
Certificate Date: 13-SEP-2000
Invoice No. : I0028121
P.O. Number :
Account : OGV

CERTIFICATE OF ANALYSIS A0028121

SAMPLE	PREP CODE		Au ppb FA+AA	Ag ppm	Al %	As ppm	Ba ppm	Be ppm	Bi ppm	Ca %	Cd ppm	Co ppm	Cr ppm	Cu ppm	Fe %	Hg ppm	K %	Mg %	Mn ppm	Mo ppm	Na %
188165	208	226	1280	86	0.34	12220	300	< 5	50	0.62	135	75	100	12540	22.5	< 10	0.23	0.34	200	25	0.07
188166	208	226	950	73	0.05	8450	20	< 5	80	0.21	250	65	90	10470	28.6	< 10	0.14	0.14	290	25	0.06
188167	208	226	660	53	< 0.01	2120	20	< 5	160	0.15	265	100	90	15240	>30.0	< 10	0.09	0.08	600	5	0.06
188168	208	226	545	52	0.08	3760	80	< 5	100	0.58	285	105	60	19890	>30.0	10	0.09	0.31	310	15	0.04
188169	208	226	450	24	0.10	260	20	< 5	170	4.22	120	185	70	19470	>30.0	< 10	0.12	1.79	1030	15	0.06
188201	208	226	1860	81	< 0.01	7330	20	< 5	60	0.60	85	20	80	6110	>30.0	30	0.20	0.16	220	5	0.06
188224	208	226	1585	135	0.03	9830	40	< 5	120	0.45	210	85	90	46400	29.6	30	0.21	0.27	140	25	0.06
188225	208	226	745	123	0.09	3670	80	< 5	420	0.30	270	135	70	28400	>30.0	10	0.19	0.23	120	15	0.05
188227	208	226	1265	124	0.13	10500	100	< 5	200	0.33	345	125	90	40500	27.1	30	0.14	0.23	180	15	0.06
188228	208	226	1325	108	0.02	11500	60	< 5	70	< 0.01	215	55	100	20600	28.2	50	0.08	0.01	40	15	0.05
188241	208	226	1650	132	0.10	11480	60	< 5	110	0.51	310	100	80	17960	>30.0	30	0.07	0.31	200	15	0.05

CERTIFICATION: *

ALS Chemex

Aurora Laboratory Services Ltd.
Analytical Chemists * Geochemists * Registered Assayers
212 Brooksbank Ave., North Vancouver
British Columbia, Canada V7J 2C1
PHONE: 604-984-0221 FAX: 604-984-0218

To: ATNA RESOURCES LTD. *

1550 - 409 GRANVILLE ST.
VANCOUVER, BC
V6C 1T2

Project : MARG
Comments: ATTN: PETER HOLBECK

Page Number :1-B
Total Pages :1
Certificate Date: 13-SEP-2000
Invoice No. :I0028121
P.O. Number :
Account :OGV

CERTIFICATE OF ANALYSIS A0028121

SAMPLE	PREP CODE		Ni ppm	P ppm	Pb ppm	Sb ppm	Sc ppm	Sr ppm	Ti %	Tl ppm	U ppm	V ppm	W ppm	Zn ppm	Se ppm
188165	208	226	30	700	24900	640	< 5	50	< 0.01	20	< 20	< 20	< 20	45600	24.8
188166	208	226	35	600	33900	200	< 5	20	< 0.01	< 20	< 20	< 20	< 20	>50000	17.6
188167	208	226	25	500	18580	120	< 5	15	< 0.01	< 20	< 20	< 20	< 20	>50000	9.8
188168	208	226	15	600	37200	70	< 5	30	< 0.01	< 20	< 20	< 20	< 20	>50000	8.0
188169	208	226	< 5	600	9220	30	< 5	150	< 0.01	< 20	< 20	< 20	< 20	29100	3.2
188201	208	226	5	600	46800	620	< 5	40	< 0.01	20	< 20	< 20	< 20	>50000	9.8
188224	208	226	40	600	33600	3450	< 5	30	< 0.01	40	< 20	< 20	< 20	>50000	11.8
188225	208	226	40	700	36800	730	< 5	25	< 0.01	< 20	< 20	< 20	< 20	>50000	10.2
188227	208	226	30	700	>50000	490	< 5	25	< 0.01	< 20	< 20	< 20	< 20	>50000	18.4
188228	208	226	15	700	37800	1350	< 5	15	< 0.01	40	< 20	< 20	< 20	>50000	19.6
188241	208	226	5	700	41400	1540	< 5	25	< 0.01	< 20	< 20	< 20	< 20	>50000	13.6

CERTIFICATION: _____ *

ALS Chemex
Aurora Laboratory Services Ltd.
Analytical Chemists * Geochemists * Registered Assayers
212 Brooksbank Ave., North Vancouver
British Columbia, Canada V7J 2C1
PHONE: 604-984-0221 FAX: 604-984-0218

To: ATNA RESOURCES LTD.

1550 - 409 GRANVILLE ST.
VANCOUVER, BC
V6C 1T2

A0028845

Comments: ATTN: PETER HOLBECK

CERTIFICATE A0028845

(OGV) - ATNA RESOURCES LTD.

Project: MARG
P.O. # :

Samples submitted to our lab in Vancouver, BC.
This report was printed on 14-SEP-2000.

SAMPLE PREPARATION

CHEMEX CODE	NUMBER SAMPLES	DESCRIPTION
212	9	Overlimit pulp, to be found

ANALYTICAL PROCEDURES

CHEMEX CODE	NUMBER SAMPLES	DESCRIPTION	METHOD	DETECTION LIMIT	UPPER LIMIT
312	1	Pb %: Conc. Nitric-HCl dig'n	AAS	0.01	100.0
316	9	Zn %: Conc. Nitric-HCl dig'n	AAS	0.01	100.0

ALS Chemex

Aurora Laboratory Services Ltd.
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212 Brooksbank Ave., North Vancouver
British Columbia, Canada V7J 2C1
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To: ATNA RESOURCES LTD. *

1550 - 409 GRANVILLE ST.
VANCOUVER, BC
V6C 1T2

Project : MARG
Comments: ATTN: PETER HOLBECK

Page Number :1
Total Pages :1
Certificate Date: 14-SEP-2000
Invoice No. :I0028845
P.O. Number :
Account :OGV

CERTIFICATE OF ANALYSIS A0028845

SAMPLE	PREP CODE	Pb %	Zn %
188166	212 --	-----	6.60
188167	212 --	-----	6.74
188168	212 --	-----	7.36
188201	212 --	-----	7.34
188224	212 --	-----	7.24
188225	212 --	-----	10.30
188227	212 --	5.11	10.40
188228	212 --	-----	5.48
188241	212 --	-----	7.38

CERTIFICATION:

OVERLIMITS from A0028121

APPENDIX III

STATEMENT OF EXPENDITURES

Statement of Expenditures

Marg Project 2000

The following costs apply to the claims worked as noted in the Application for a Certificate of Work and have been pro-rated where appropriate.

Wages			
P. Holbek	9 days @ $450/day	$4050.00	
R. Wilson	11 days @ $350/day	$3850.00	
D. Copeland	27 days @ $220/day	$5940.00	
L. Weston	16 days @ $200/day	$3200.00	
N. Mitchel	27 days @ $180/day	$4860.00	
D. MacRae	19 days @ $180/day	$3420.00	
		24870.00	24870.00
Camp Costs			
Food, fuel, supplies & camp rental (incl. Maintenance)			
109 crew days @ $150.00/crew day			16350.00
Geochemical Surveys			
Shipping (pro-rated)		347.00	
Soil Samples:	297 samples @ $6.08/sample	1805.76	
Rock Samples:	46 samples @ $8.76/sample	402.96	
Core Samples:	135 samples @ $8.76/sample	1182.60	
		3738.32	3738.32
Helicopter			
Pro-rated			8431.00
Communications			
Hand-held radios, repeater & satellite phone rentals			
Pro-rated			1188.00
Supplies			
Field consumables & map prints			439.66
Rentals			
Computer & transport/supply vehicle (pro-rated)			1428.00
Reporting			
Report writing, map drafting, printing & assembly			2500.00
Totals			58944.98

APPENDIX IV

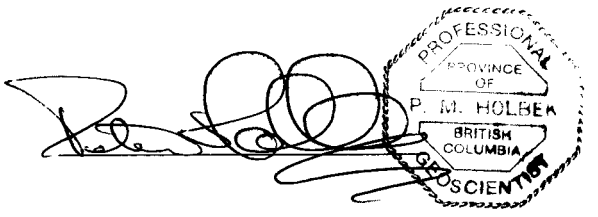
GEOLOGIST'S CERTIFICATES

OF QUALIFICATIONS

CERTIFICATE OF QUALIFICATIONS

I, Peter M. Holbek with a business address of 1550 - 409 Granville Street, Vancouver, British Columbia, V6C 1T2, do hereby certify that:

1. I am a professional geologist registered under the Professional Engineers and Geoscientists Act of the Province of British Columbia and a member in good standing with the Association of Professional Engineers and Geoscientists of British Columbia.
2. I am a graduate of The University of British Columbia with a B.Sc. in geology 1980 and an M.Sc. in geology, 1988.
3. I have practiced my profession continuously since 1980.
4. I am Vice President of Atna Resources having a business address as given above.
5. I provided overall supervision for the work program conducted on the Marg Property as described in this report.



Peter Holbek, M.Sc., P.Geo.

CERTIFICATE OF QUALIFICATIONS

I, Robert G. Wilson, with a business address of 1550 – 409 Granville Street, Vancouver, V6C 1T2 in the Province of British Columbia, DO HEREBY CERTIFY:

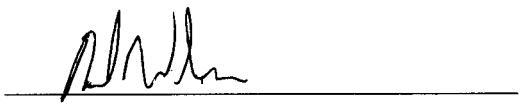
1. THAT I am employed by Atna Resources Ltd. of 1550 - 409 Granville St., Vancouver B.C.

2. THAT I am a graduate of the University of British Columbia with a Bachelor of Science degree in Geology.

3. THAT I am a Professional Geoscientist registered in good standing with the Association of Professional Engineers and Geoscientists of the Province of British Columbia.

4. THAT this report is based on property work I directly supervised as described in this report.

DATED at Vancouver, British Columbia, this 14th day of August, 2001.



Robert G. Wilson, P.Geo.

CERTIFICATION

I DAVID A COPELAND OF 10440 64 AVENUE, EDMONTON, ALBERTA, CERTIFY THAT I AM A GRADUATE OF THE UNIVERSITY OF NEW BRUNSWICK WITH A B.SC. IN GEOLOGY (1995) AND AN M.SC. IN STRUCTURAL GEOLOGY (1999). I AM REGISTERED AS A GEOLOGIST IN TRAINING WITH THE ASSOCIATION OF PROFESSIONAL ENGINEERS, GEOLOGISTS AND GEOPHYSICISTS OF ALBERTA.

MY EXPERIENCE INCLUDES SERVICE AS A JUNIOR GEOLOGIST WITH THE GEOLOGICAL SURVEY OF CANADA DURING 1995 and 1996. I HAVE WORKED AS AN EXPLORATION GEOLOGIST WITH JUNIOR EXPLORATION AND MINING COMPANIES AND SINCE 1997, AND AS A CONSULTANT WITH APEX GEOSCIENCE LTD. SINCE 1998. AS SUCH I HAVE CONDUCTED PROPERTY EXAMINATIONS, PROPERTY EVALUATIONS AND EXPLORATION PROGRAMS PROVIDING GEOSCIENTIFIC CONSULTING TO BOTH PRIVATE INDUSTRY AND TO GOVERNMENT AGENCIES.

THIS REPORT IS BASED UPON STUDY OF PUBLISHED AND UNPUBLISHED DATA. I HAVE PERFORMED AN EXTENSIVE FIELD EVALUATION OF THE MARG PROPERTY.



DAVID A. COPELAND, M.SC., G.I.T.

MARCH, 2001
EDMONTON, ALBERTA

094 E 15
Y.D

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& RESOURCES LIBRARY
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WHITEHORSE, YUKON Y1A 2C6

MARG PROPERTY

YEAR 2000 ASSESSMENT REPORT

Geological & Geochemical Surveys

Volume 2 - Maps

Mayo Mining District

Marg 87 – 144 (YB02471 – YB02528)
Marg 159 – 178 (YB02594 – YB02613)
Mayo Mining District

NTS 105M/15 & 16, 106D/1 & 2
63°59'N 134°37'W
YUKON TERRITORY

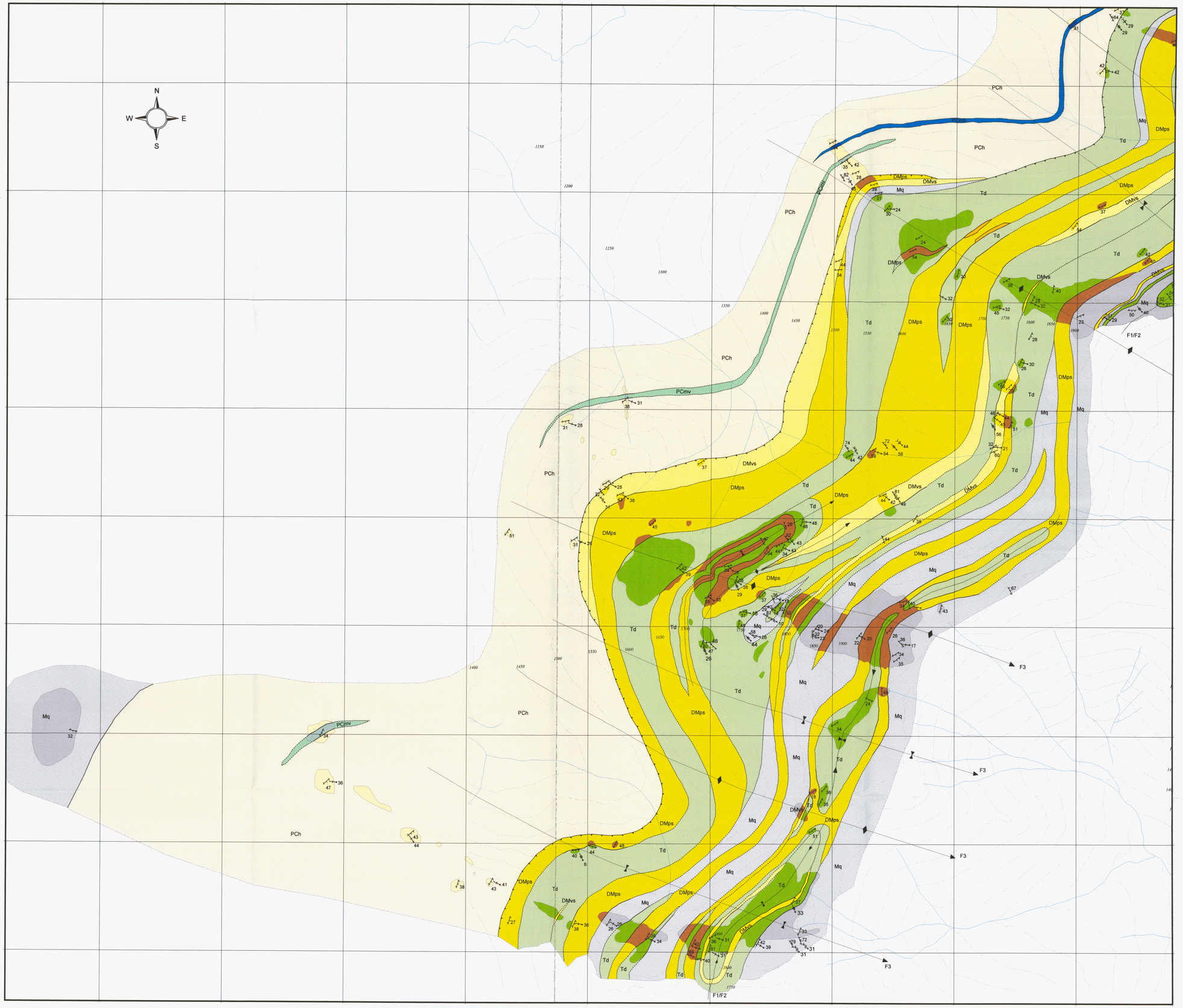
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SEP 2001
MINING RECORDER
MAYO, Y.T.
INDIAN & NORTHERN AFFAIRS

Claims owned by
ATNA RESOURCES LTD.
1550-409 Granville Street
Vancouver, B.C., Canada
V6C 1T2

Field work completed June 20 to August 4, 2000

Peter M. Holbek, M.Sc., P. Geo.
Rob G. Wilson, P.Geo
David A. Copeland, M.Sc., G.I.T.

September 6, 2000



LEGEND

Triassic

- **Td** — diorite, gabbro, pyroxenite; massive to foliated; locally porphyritic; chilled margins, contact aureoles and hornfels at contacts with country rock
- **Tcrb** — Fe-carbonate altered mafic intrusive and metavolcanic rocks; contact metamorphic zones around mafic intrusions

Mississippian

- **Mq** — Keno Hill Quartzite; dominated by homogeneous quartzite with lesser intercalations of graphitic argillite and felsic metavolcanic rocks; lateral or conformable contact with older Earn Group rocks

Devonian to Mississippian

- **DMps** — argillaceous metasedimentary rocks; varies from graphite rich to more siliceous varieties locally; intercalated with massive homogeneous quartzite and felsic metavolcanic rocks. Equivalent to the Earn Group
- **DMvs** — felsic metavolcanic rocks; quartz-sericite phyllite, typically containing blue quartz eyes; sericite alteration; phyllitic texture; intercalated with graphitic argillite; host to massive sulphide mineralization; Marg deposit; equivalent to the Earn Group
- **DMvs1** — undivided felsic metavolcanic and metasedimentary rocks (greywacke, argillite, marble); felsic metavolcanic rocks are occasionally blue quartz eye bearing; may be in part equivalent to Earn Group

Neoproterozoic to Cambrian

- **PCh** — undivided felsic metavolcanic and metasedimentary rocks (greywacke, argillite, marble); also intercalated with mafic metavolcanic rocks and volcaniclastic metasedimentary rocks (PCmv); unit is typified by the abundance of blue quartz eyes (up to 15%)
- **PCmv** — basalt; locally amygdaloidal, occurs as thin (3-5m) discontinuous sequences within unit PCh
- **PCmb** — marble; white homogeneous, massive with occassional dolomite layers and intercalations; units are thin (5-10m) and continous along strike for several hundred metres. These rocks are hosted within unit PCh and may be, in part, equivalent to the Hyland Group

Structural Geology

- S1 foliation
- L2 lineation, intersection
- L1 lineation, mineral, intersection, stretching
- plunge F3 folds, z-asymmetry
- plunge F3 folds, s-asymmetry
- plunge F3 folds, symmetrical
- F3 axial trace
- plunge F2 folds, z-asymmetry
- plunge F2 folds, s-asymmetry
- plunge F2 folds, symmetrical
- F2 axial trace
- plunge of F1 folds, s-asymmetry
- plunge of F1 folds, symmetrical, sheath
- F1 axial trace
- L3 lineation; mineral, intersection
- outcrop outline
- limit of 2000 mapping
- geological contacts, inferred
- topographic contours
- geological contacts, observed
- low-angle reverse fault

Map Projection - Universal Transverse Mercator
Map Datum - North American Datum 1927
Contour Interval - 50 metres
Geology by D. Copeland and N. Mitchell
Drawing by D. Copeland

ATNA RESOURCES LTD.

Marg Property, Yukon
NTS 106D1,2; 105M15,16
Mayo Mining District

094235
094235

PROPERTY GEOLOGY

West Sheet

100 0 100 200 300 400 500 600 Meters

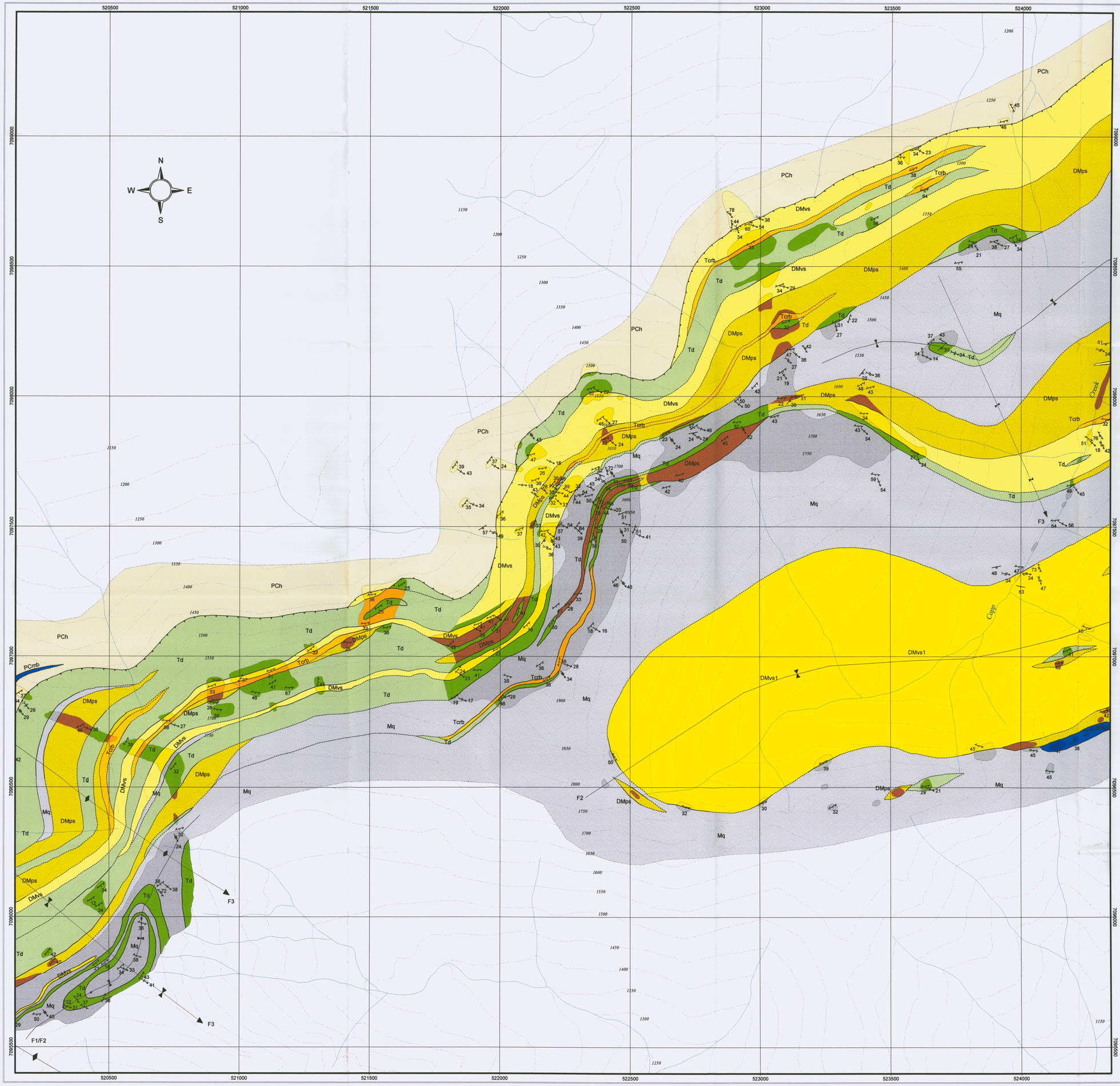
Scale 1:5,000

Vancouver, British Columbia

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WHITEHORSE, YUKON Y1A 2C6

September, 2000

Figure 2.4a



LEGEND

Triassic

- **Td** — diorite, gabbro, pyroxenite; massive to foliated; locally porphyritic; chilled margins, contact aureoles and hornfels at contacts with country rock
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Mississippian

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- S1 foliation
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- plunge F3 folds, s-asymmetry
- plunge F3 folds, symmetrical
- F3 axial trace
- plunge F2 folds, z-asymmetry
- plunge F2 folds, s-asymmetry
- plunge F2 folds, symmetrical
- F2 axial trace
- plunge of F1 folds, s-asymmetry
- plunge of F1 folds, symmetrical, sheath
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- L3 lineation; mineral, intersection
- outcrop outline
- limit of 2000 mapping
- geological contacts, inferred
- topographic contours
- geological contacts, observed
- low-angle reverse fault

Map Projection - Universal Transverse Mercator
Map Datum - North American Datum 1927
Contour Interval - 50 metres
Geology by D. Copeland and N. Mitchell
Drawing by D. Copeland

ATNA RESOURCES LTD.

Marg Property, Yukon
NTS 106D1,2; 105M15,16
Mayo Mining District

094235

PROPERTY GEOLOGY

100 0 100 200 300 400 500 600 Meters

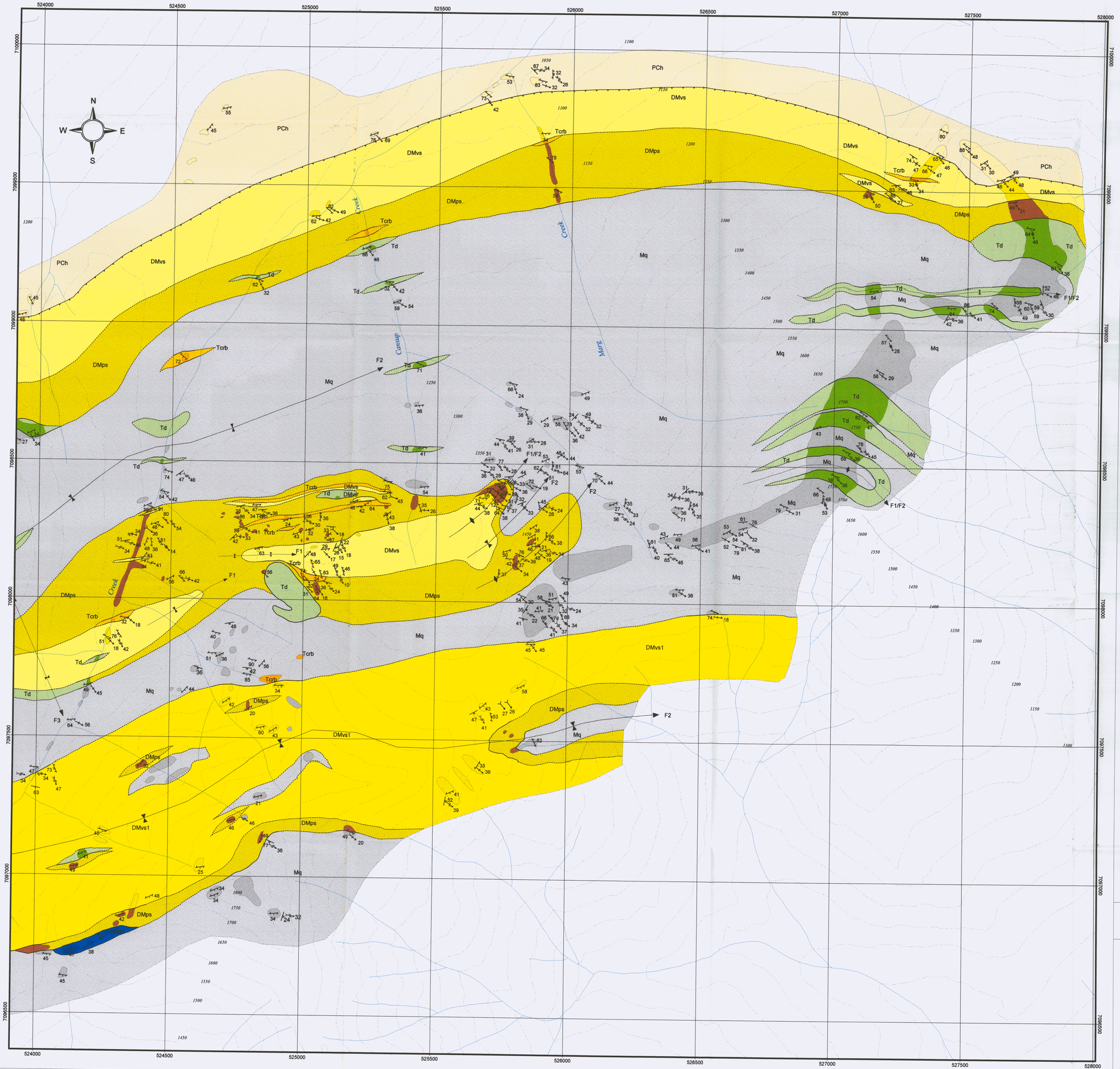
Scale 1:5,000

Vancouver, British Columbia

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Figure 2.4b

September, 2000



LEGEND

Triassic

- diorite, gabbro, pyroxenite; massive to foliated; locally porphyritic; chilled margins, contact aureoles and hornfels at contacts with country rock
- Fe-carbonate altered mafic intrusive and metavolcanic rocks; contact metamorphic zones around mafic intrusions

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- undivided felsic metavolcanic and metasedimentary rocks (greywacke, argillite, marble); felsic metavolcanic rocks are occasionally blue quartz eye bearing; may be in part equivalent to Earn Group

Neoproterozoic to Cambrian

- undivided felsic metavolcanic and metasedimentary rocks (greywacke, argillite, marble); also intercalated with mafic metavolcanic rocks and volcaniclastic metasedimentary rocks (PCmv); unit is typified by the abundance of blue quartz eyes (up to 15%)
- basalt; locally amygdaloidal, occurs as thin (3-5m) discontinuous sequences within unit PCh
- marble; white homogeneous, massive with occassional dolomite layers and intercalations; units are thin (5-10m) and continous along strike for several hundred metres. These rocks are hosted within unit PCh and may be, in part, equivalent to the Hyland Group

Structural Geology

- 32 — S1 foliation
- 32 — L2 lineation, intersection
- 32 — L1 lineation, mineral, intersection, stretching
- 32 — plunge F3 folds, z-asymmetry
- 32 — plunge F3 folds, s-asymmetry
- 32 — plunge F3 folds, symmetrical
- 35 — F3 axial trace
- 32 — plunge F2 folds, z-asymmetry
- 32 — plunge F2 folds, s-asymmetry
- 32 — plunge F2 folds, symmetrical
- 32 — F2 axial trace
- 32 — plunge of F1 folds, s-asymmetry
- 32 — plunge of F1 folds, symmetrical, sheath
- 32 — F1 axial trace
- 32 — L3 lineation; mineral, intersection
- outcrop outline
- limit of 2000 mapping
- geological contacts, inferred
- 1750 — topographic contours
- geological contacts, observed
- low-angle reverse fault

Map Projection - Universal Transverse Mercator
Map Datum - North American Datum 1927
Contour Interval - 50 metres
Geology by D. Copeland and N. Mitchell
Drawing by D. Copeland

ATNA RESOURCES LTD.

Marg Property, Yukon
NTS 106D1,2; 105M15,16
Mayo Mining District

094235

PROPERTY GEOLOGY

100 0 100 200 300 400 500 Meters

Scale 1:5,000

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WHITEHORSE YUKON Y1A 2C6

Vancouver, British Columbia

Figure 2.4c

September, 2000

Claim Boundary

Leyla Grid

Max Grid

Penny Grid

Camp

Airstrip

E 188508
E 188509
E 188511
E 188514
E 188510
E 188562
E 188512
E 188513
E 188561
E 188544
E 188504
E 188507
E 188505
E 188502
E 188543
E 188545
E 188546
E 188547
E 188503
E 188506
E 188563
E 188564
E 188565
E 188560
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E 188542
E 188537
E 188523
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E 188531
E 188520
E 188529
E 188552
E 188550
E 188553
E 188551
E 188530
E 188549
E 188548
E 188533
E 188530
E 188525

J3-20
J3-30
J3-10
J3-1

M1-19
M2-20
M1-10
M2-10
M1-1
M2-1

7100000 mN
7099000 mN
7098000 mN
7097000 mN
7096000 mN
7095000 mN
7094000 mN
7093000 mN

517000 mE
518000 mE
519000 mE
520000 mE
521000 mE
522000 mE
523000 mE
524000 mE
525000 mE
526000 mE

N

LEGEND

Geology

For geological descriptions, see property geology maps, figures 2.4a - 2.4c

Samples

- Grid Soil Samples
- M2-10 — Reconnaissance soil sample location
- E 188506 — Rock sample (ICP analysis only)
- E 188525 — Rock sample (whole rock and ICP analysis)
- Marg Deposit Location
- Sulphide showing / prospect location
- Road
- Diamond Drill Hole

Contour interval 50 metres

094235

Atna Resources Ltd.

Marg Property
Soil Geochemical Grid & Rock Sample Locations

Date:15/5/2001	
Author: RGW	
Office: Van., B.C.	
Drawing: 3.1	
Scale: 1:10000	Projection: UTM Zone 8 (NAD 27 for Canada)

0 125 250 500 metres

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PO BOX 2703
WHITEHORSE, YUKON Y1A 2C6

Claim Boundary

Leyla Grid

Max Grid

Penny Grid

Camp

23,9,70
3,27,4
2,22,4
3,34,6
4,23,24
11,20,77
4,18,11
168,15,592
251,1,44
184,1,155
22,11,217
154,3,155
24,11,101
151,3,170
121,5,119
41,6,289
221,12,226
34,20,160
167,5,108
9,10,45
168,1,90
244,11,712
69,5,7
19,69,101
7,31,55
23,12,5
6,34,15
3,22,11
653,149,36
1,1,5
2,4,163
107,17,5
405,15,61
28,32,41
24,30,45
35,12,41
16,18,51
22,18,41
27,17,37
47,16,20
J3-30
J3-20
33,9,41
36,7,50
9,21,87
J3-10
11,21,69
80,1,15
6,53,16
94,132,28
6,49,16
477,3,232
9,24,6
14,13,106
32,6,66
102,4,83
17,8,140
J3-1
2,18,126
1,5,157
M1-19
M2-20
M1-10
M2-10
M1-1
M2-1

7100000 mN
7099000 mN
7098000 mN
7097000 mN
7096000 mN
7095000 mN
7094000 mN
7093000 mN

517000 mE
518000 mE
519000 mE
520000 mE
521000 mE
522000 mE
523000 mE
524000 mE
525000 mE
526000 mE

Contour interval 50 metres

LEGEND

Geology

For geological descriptions, see property geology maps, figures 2.4a - 2.4c

Samples

- Grid Soil Samples
- M2-10 — Reconnaissance soil sample location
- 19, 69, 101 — Rock sample results (ICP): Cu (ppm), Pb (ppm), Zn (ppm)
- Rock sample (whole rock and ICP analysis)
- Marg Deposit Location
- Sulphide showing / prospect location
- Road
- Diamond Drill Hole

094235

Atna Resources Ltd.

Marg Property
Rock Sample Results in ppm
Cu, Pb, Zn

Date: 15/5/2001
Author: RGW
Office: Van., B.C.
Drawing: 3.14
Scale: 1:10000
Projection: UTM Zone 8 (NAD 27 for Canada)

0 125 250 500
metres

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