

**An Evaluation  
of the  
Needles Gold-Silver Property**

**Nye County, Nevada, USA**

**TECHNICAL REPORT**

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**DeMatties & Munroe**

**GEOLOGICAL-GEOPHYSICAL CONSULTANTS**

**CAMBRIDGE, MINNESOTA USA**

**An Evaluation  
Of The  
Needles Gold-Silver Property**

**Nye County, Nevada, USA**

**TECHNICAL REPORT**

**Prepared for**

**Taranis Resources Inc.  
14247 West Iliff Avenue  
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**January 9, 2003**

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Looking west from the Eastern shaft to the main Arrowhead mine workings (middle background of photo). Both mines are localized along an inferred E-W- trending cross fault designated the "South Splay".

Cover – “Looking West from the Eastern Shaft to the Arrowhead Mine Workings  
Located on the Needles Property.”

## TABLE OF CONTENTS

<b>1.0</b>	<b>TABLE OF CONTENTS</b>	<b>1</b>
	<b>2.0 APPENDICES</b>	<b>3</b>
	<b>3.0 SUMMARY</b>	<b>4</b>
<b>4.0</b>	<b>INTRODUCTION AND TERMS OF REFERENCE</b>	<b>8</b>
	<b>5.0 DISCLAIMER</b>	<b>8</b>
<b>6.0</b>	<b>PROPERTY DESCRIPTION AND LOCATION</b>	<b>9</b>
6.1	Legal Description.....	9
6.2	Property Interests, Title, Taxes and Other Legal Obligations .....	9
6.3	Environmental Liabilities.....	10
6.4	Exploration Permits .....	10
<b>7.0</b>	<b>ACCESSIBILITY CLIMATE, LOCAL RESOURCES, INFRASTRUCTURE AND PHYSIOGRAPHY</b>	<b>11</b>
	<b>8.0 HISTORY</b>	<b>11</b>
8.1	District.....	11
8.2	Property.....	12
	<b>9.0 GEOLOGIC SETTING</b>	<b>12</b>
9.1	District and Property Geology .....	12
	<b>10.0 DEPOSIT TYPES</b>	<b>14</b>
10.1	District and Property .....	14
10.2	Exploration Model .....	15
10.3	Basis for an Exploration Program Plan.....	17
	<b>11.0 MINERALIZATION</b>	<b>17</b>
	<b>12.0 EXPLORATION</b>	<b>19</b>
12.1	Geochemistry .....	19
12.1.1	Rock Chip Sampling.....	19
12.1.2	Statistical Analysis of Geochemical Data.....	19
12.1.3	Results of Rock Chip Sampling.....	21
12.1.4	Geochemical Interpretation.....	21
12.2	Geophysics.....	21
12.2.1	Total Field Magnetic Surveys.....	21
12.2.2	Preliminary Interpretation.....	22
12.2.3	Electromagnetic Surveys (VLF) .....	22
12.2.4	Preliminary Interpretation.....	23
	<b>14.0 SAMPLING METHOD AND APPROACH</b>	<b>24</b>
14.1	Rock Chip Sampling.....	24
	<b>15.0 SAMPLE PREPARATION, ANALYSIS AND SECURITY</b>	<b>25</b>
15.1	Sample Preparation .....	25
15.1.1	Rock Chip Samples.....	25
15.2	Sample Analysis.....	25
15.2.1	Rock Chip Samples.....	25
15.3	Security .....	26

15.4 Quality Control .....	26
<b>17.0 ADDITIONAL PROPERTIES</b>	<b>26</b>
<b>18.0 MINERAL PROCESSING AND METALLURGICAL TESTING</b>	<b>27</b>
<b>19.0 MINERAL RESOURCE AND MINERAL RESERVE ESTIMATIONS</b>	<b>27</b>
<b>20.0 OTHER RELEVANT DATA AND INFORMATION</b>	<b>27</b>
<b>21.0 INTERPRETATION AND CONCLUSIONS</b>	<b>27</b>
21.1 Interpretation.....	27
21.2 Conclusions.....	28
2.0 Proposed Budget.....	31
<b>23.0 REFERENCES</b>	<b>33</b>
<b>24.0 CERTIFICATE OF AUTHOR</b>	<b>34</b>

### TABLES

Table 1.	Partial Assay Results for Arrowhead Mine Dump Samples.
Table 2.	Partial Assay Results for Eastern Mine Dump Samples.

### FIGURES

Figure 1a	Index Map (source: TRI).
Figure 1b	Needles Property, General Overview Map (source: TRI).
Figure 2	Geologic Map of the Arrowhead Mining District (source: Ekren, Rogers and Dixon, 1973).
Figure 3a	Land Status Map of the Eastern Portion of the Needles Property; Gordo Claim Block (source: TRI).
Figure 3b	Land Status Map of the Western Portion of the Needles Property; Tomahawk Claim block (source: TRI).
Figure 4	Geologic Map of the Eastern Portion of the Needles Property; Gordo Claim Block (source: Ekren, Rogers and Dixon, 1973 and TRI geophysical data).
Figure 5	Rock Chip/Mine Dump Sample Location Map (source: TRI)
Figure 6	Rock Chip/Mine Dump Sample Location Map with Gold Values (source: TRI).
Figure 7	Rock Chip/ Mine Dump Sample Location Map with Silver Values (source: TRI).
Figure 8	Graphic Plot-Percent pyrite verses Au content in Rock Chip Samples (source: TRI).
Figure 9	Graphic Plot – Ag verses Au values in Rock Chip Samples (source: TRI).
Figure 10	VLF Anomaly Map; Gordo Claim Block (source TRI and J. Munroe).
Figure 11	Total Field Magnetic Map; Gordo Claim Block (source: TRI and J. Munroe).

## PHOTOGRAPHS

- Photo 1 Looking south across the Gordo claim block at the Arrowhead Mine site.
- Photo 2 Looking east across to Gordo claim boundary at Newcrest's claim and Eastern Shaft area.
- Photo 3 Looking north at the Arrowhead Mineshaft.
- Photo 4 Looking northeast across the Tomahawk claim block from the Tomahawk Shaft.
- Photo 5 Hand sample of contact between welded rhyolitic tuff and laminated tuffaceous sediments (prospect east of Arrowhead shaft).
- Photo 6 Hand sample of advanced argillic alteration with cross cutting vuggy quartz veinlets (Arrowhead Mine).
- Photo 7 Hand sample of quartz vein material with cross cutting quartz veinlets (Arrowhead Mine).
- Photo 8 Hand sample of massive, vuggy quartz vein material (Arrowhead Mine).
- Photo 9 Outcrop of limonite stained and altered (steam-heated, advanced argillic alteration) Monotony Tuff with cross cutting limonite (after pyritic stockwork veining (east of Arrowhead Mine)).
- Photo 10 A "red thumb" outcrop characteristic of pyritic steam-heated, advanced argillic alteration (altered Tuff of Arrowhead at north end of Gordo claim block).

## 2.0 APPENDICES

- Appendix A Schematic illustrating epithermal deposit models (after Buchanan, 1981 et al).
- Appendix B Original assay certificates for TRI samples (ALS Chemex Labs).
- Appendix C Original assay certificates for authors check assay samples (ALS Chemex Labs)
- Appendix D Analytical spreadsheet for author's check samples collected from Needles property.
- Appendix E Conversion of weights and measures.
- Appendix F Analytical data (2002) spreadsheet of all rock chip samples collected on the Needles property (disk in pocket).

### 3.0 SUMMARY

At the request of Taranis Resources Inc. (“TRI”) an evaluation was completed by the author of geological, geochemical, geophysical and land databases developed for the Needles property, located in Nye County, Nevada. Sources for these data and other information include geochemical and geophysical databases generated by TRI, the author’s field notes as well as published literature and public land records (Bureau of Land Management and Nye County Records Office).

The following technical report is based upon this evaluation and intended for use by TRI in support of a transaction that will allow the company to complete an “Initial Public Offering” on the TSX Venture Tier II Exchange. It describes and assesses the precious metal potential of the property and provides recommendations including a work plan and budget for future exploration. The report follows prescribed criteria and guidelines set forth by the Canadian Securities Association and described in National Instrument 43-101-*Standards of Disclosure for Mineral Projects*, Companion Policy 43-101CP and Form 43-101F1 (Technical Report).

TRI successfully located 14 unpatented lode claims in September 2002 (Gordo claim block). In late October a modest exploration program was initiated that included limited rock chip sampling (48 samples), limited mapping, establishment of a survey grid (18 grid lines) and geophysical surveying (12.5 miles of Very Low Frequency “VLF” electromagnetics and total field magnetics). In early December an additional 9 unpatented lode claims (Tomahawk claim block) were staked to the west to further consolidate TRI’s land position. A minimum expenditure of US\$40,000 is reported and documented by TRI for exploration on the property to date.

After visiting the property, the author has concluded that the quality and reliability of TRI’s geologic and geochemical data generated from its exploration program is adequate for early stage exploration. In the opinion of the author all mapping and rock chip sampling procedures performed by TRI were standard and acceptable methods currently in use by the mining-exploration industry. TRI’s geophysical data has been independently reviewed by consulting geophysicist John Munroe who has reported it to be adequate and reliable.

The Needles property consists of a contiguous land block of 23 unpatented mining lode claims (Gordo and Tomahawk claim blocks) that are located in surveyed Township 3 North, Range 51 1/2 East, portions of Sections 24 and 25 and Township 3N, Range 52 East, a portion of Section 31 (Mount Diablo Meridian), Arrowhead Mining District, Nye County, Nevada. TRI’s current land position covers an area of approximately 475 acres (~192 hectares). At the time of this report, the Tomahawk claims (9) were being staked and filing of the claims is pending, the Gordo claims (14) are in good standing.

The claim blocks control the two main mines in the district, (Arrowhead and Arrowhead Extension), as well as the other smaller mines and prospects. Previous

mapping indicates these workings are confined to a narrow, north trending alteration zone developed within the Tertiary-age Tuff of Arrowhead, Monotony Tuff and associated rhyodacite intrusions. The zone is reported to be structurally bound to the east and west by arcuate subparallel faults and shear zones (Kleinhampl and Ziony, 1984). The Oligocene and Miocene rocks within the zone are variably bleached, argillized, propylitized and silicified.

Available information indicates that structurally controlled, silver-antimony-gold-bearing quartz veins–vein stockworks were the main deposit types developed in the mines. Productive quartz vein deposits are controlled by a fault-fracture structural system developed within the claim blocks and district. Pyritic (2%-8% disseminated pyrite) alteration zones (extensive bleaching, argillization (steam-heated, advance argillic) propylitic alteration and silicification) that commonly envelope the veins are characteristic of metallization in the district. Pyritization accompanies nearly all known gold-silver mineralization.

In the opinion of the author, an epithermal deposit model would be most appropriate to describe base-precious mineralization in the claim block and prospect area. In spite of the high pyrite content, known ore/gangue mineralogy, textures and alteration mineralogy suggest mid to upper levels of an overprinted intermediate-sulfidation system is present. This preliminary interpretation is based on limited data collected by TRI and the author's field review.

Based upon his property visit, and own sampling, as well as review of TRI's assay data, the author can verify the presence of the described mineralization on the property and confirm that rock chip sampling was actually completed in a reasonable and satisfactory manor by TRI. Sample sites described by TRI were found identified and sample areas located in the workings and on surface. Although limited, assay results for check samples (including mine dump samples) collected by the author agree reasonably well with those of TRI in both order of magnitude and absolute values.

The author has made the following conclusions after reviewing all relevant exploration data for this property:

- 1) TRI has identified on the property mid to upper levels of an overprinted, intermediate-sulfidation epithermal system developed mainly in a Tertiary-age volcanic sequence that includes the Tuff of Arrowhead, Monotony Tuff and a rhyodacite subvolcanic intrusion.
- 2) At the Arrowhead, Arrowhead Extension as well as several other mine sites, TRI has confirmed, based on limited sampling, the presence of anomalous to ore-grade precious metal mineralization.
- 3) Investigation of mine dumps, cuts and outcrops on the property indicates precious metal mineralization occurs as pyrite-bearing replacement quartz vein – vein stockworks that are enveloped by zones of silicification and locally (Arrowhead

Mine) intense pyrite-bearing propylitic alteration. No argillic altered (clay-dominant) volcanic rocks were located. However, an outer halo of pyritic advanced argillic (microcrystalline quartz-alunite  $\pm$  clay) alteration is evident at most mine and a number of outcrop sites. The pyritic advanced argillic alteration is believed to be a later steam-heated (acid leach alteration) overprint that could possibly have been focused along feeder conduit structures at deeper levels below the paleo water table. Erosional levels, aerial distribution and zoning patterns of associated alteration are poorly known. However, previous mapping suggests alteration in the district may be concentrated within a narrow corridor (~2,500' wide, ~10,000' long) that is related to a major N-northwest-trending structural zone (Arrowhead structural zone).

- 4) Initial geophysical surveying has further refined the structural framework within the epithermal system. Coupled with previous surface mapping, a significant north-northwest-trending structural zone (Arrowhead structural zone that includes a major northwest-trending fault lineament designated the Arrowhead lineament), several northeast-trending faults (and lineaments) and a series of en-echelon, east-west (inferred) and northeast-southwest-trending cross faults have been delineated. These structural data clearly demonstrate that the Arrowhead and Arrowhead Extension as well as other mines/prospect in the prospect area are localized at major and minor fault-fracture intersections.
- 5) Interpretation of geophysical data suggests argillic (clay-dominated) alteration may be confined to mapped northeast-southwest and inferred east-west-trending cross faults. These linear-shaped alteration patterns are inferred from VLF anomalies and have not been confirmed by surface or underground mapping. In addition, a large (1000' x 600') area of possible pyrite-bearing argillic alteration (intersected by at least three east-west-trending inferred cross faults, a major northeast-trending magnetic linear and a mapped northeast-trending fault) at the north end of the Gordo claim block has been delineated by VLF and magnetic data. Though not confirmed, this area may represent deeper widespread pyritic argillic (clay dominated) alteration that may be associated with and marginal to bonanza-vein development at depth (silicification is likely associated directly with bonanza veins).
- 6) A major structural intersection has been identified at the north end of the Gordo claim block. Here, the area of possible argillic (pyritic clay) alteration is positioned at the juncture of the major north-northwest-trending structural zone (Arrowhead structural zone) with a mapped northeast-trending fault and inferred northeast-trending magnetic lineament (fault). Altered and bleached (steam-heated, pyritic advanced argillic alteration) volcanic tuffs have been noted in this area and at mines/prospects during the author's visit. This target area is considered a high priority based on limited data generated by TRI. Other structural zones and intersections (potential feeder conduits) delineated by TRI's geophysical survey on the property may also be perspective and the locus of bonanza-grade quartz veins (e.g. South Splay).

In the opinion of the author, this property's overall character has more than sufficient merit to justify continuation of an exploration program. The following recommendations concerning a next phase of exploration work include the following:

- 1) Detailed geologic and alteration mapping and additional rock chip sampling should be completed for the entire property. Aerial distribution of surface geochemical and hydrothermal alteration zoning patterns is poorly understood due to lack of mapping and high-density rock chip sampling. Of particular importance is mapping steam-heated advanced argillic alteration that may (at deeper levels in the epithermal system) overlie and/or penetrate important structural feeder conduits. Outcrop on the property is fairly abundant and overburden generally thin which should help facilitate mapping and sampling.
- 2) Complete an IP/resistivity survey of the entire claim block. The survey should, in conjunction with surface mapping, confirm inferred structures and possible pyritic argillic alteration zones identified by the previous VLF-magnetic surveys and delineate deeper argillic (clay-rich) alteration (IP chargeability highs), silicification (resistivity highs) and pyritic zones (IP chargeability highs) that would be associated with and marginal to potentially economic bonanza quartz veins at depth.
- 3) To compliment the IP/resistivity survey, complete DEM (digital elevation measurements) modeling of the prospect area to confirm and refine previously mapped faults. This may help delineate new fault lineaments that may represent potential feeder conduits to bonanza vein development.
- 4) To further evaluate IP/resistivity anomalies generated, a soil geochemical survey over the entire property is recommended. Results of the survey could help establish zoning patterns in covered areas and will aid in prioritizing geophysical anomalies.
- 5) Surface trenching, and then diamond drilling should be undertaken for testing targets identified from the ground follow-up surveys.
- 6) The Tomahawk claims should be perfected by paying the necessary county recording and BLM fees.
- 7) Expansion of TRI's land position to the north is recommended to gain additional control of prospective ground near the high priority structural intersection and a prominent northeast-trending (designated "North Splay") fault that may represent a mineralized range front structure (main feeder conduit structure).

A proposed budget of approximately US\$287,000 is intended to support an exploration program based upon the above recommendations. These include geological-alteration mapping, rock chip sampling, geochemical-geophysical surveying, DEM

modeling, trenching and diamond core drilling as well as additional claim staking. The program would be completed in several phases. Phase I including ground follow-up surveys and a Phase II drilling program should follow trenching.

#### **4.0 INTRODUCTION AND TERMS OF REFERENCE**

At the request of Taranis Resources Inc. (“TRI”), the author completed an evaluation of geological, geochemical, geophysical and land databases developed for the Needles property, located in Nye County, Nevada. Sources for these data and other information include geochemical and geophysical databases generated by TRI, the author’s field notes as well as published literature, and public land records (Bureau of Land Management and Nye County Recorders Office).

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TRI successfully located 14 unpatented lode claims (Gordo claim block) in September 2002. In late October an exploration program was initiated that included, limited rock chip sampling (48 samples), establishing a survey grid (18 lines), limited mapping and geophysical surveying (12.65 miles of Very Low Frequency “VLF” electromagnetics and total field magnetics). In early December an additional 9 unpatented lode claims (Tomahawk claim block) were staked to the west. A minimum expenditure of US\$40,000 is reported and documented by TRI for exploration on the property to date.

The author personally visited the property and surrounding prospect area on December 10, 2002. One day was spent examining and sampling old workings, surface outcrops (8 samples collected) as well as reviewing geological and geophysical data generated by previous exploration. Results of the field examination (including assay results) are used to verify data provided by TRI.

#### **5.0 DISCLAIMER**

A portion of this report relies upon data and interpretations provided by TRI (Gardiner and Helgeson, 2002). Although the author believes every reasonable effort was made to ensure the accuracy of factual data provided by TRI, and the author, on which this report is partially based, he cannot warrant or guarantee that there are no errors. Efforts have been made by the author to ensure that all of his interpretations conform to sound geologic, geophysical and cartographic principles. No claim is made

that the interpretations made in this report are rigorously correct.

## 6.0 PROPERTY DESCRIPTION AND LOCATION

### 6.1 Legal Description

The Needles property consists of a contiguous land block of 23 unpatented mining lode claims that are located in surveyed Township 3 North, Range 51 1/2 East, portions of Sections 24 and 25 and Township 3N, Range 52 East, portions of Section 3 (Mount Diablo Meridian), Arrowhead mining District, Nye County, Nevada (Figs. 1a, 1b, 3a and 3b). TRI's current land position covers an area of approximately 475 acres (~ 192 hectares). The property can be divided into two claim blocks. These include the Gordo claim block that constitutes the eastern portion of the property (14 claims covering 289 acres (117hectares)) and the recently staked, contiguous Tomahawk block (9 claims covering 186 acres (75 hectares)) situated to the west. The later claims have not been filed and recorded at the time of this report but remain within the 90-day holding period. Recording information on the Gordo claims is given below.

Claim Name	Legal Description	County Number	Federal Number NMC
Gordo No. 1	T3N R52E, Section 31 SW 1/4 east of MDBM	542753	834070
Gordo No. 2	T3N R52E, Section 31 SW 1/4 east of MDBM	542754	834071
Gordo No. 3	T3N R52E, Section 31 SW 1/4 east of MDBM	542755	834072
Gordo No. 4	T3N R52E, Section 31 SW 1/4 east of MDBM	542756	834073
Gordo No. 5	T3N R52E, Section 31 NW 1/4 east of MDBM	542757	834074
Gordo No. 6	T3N R52E, Section 31 NW 1/4 east of MDBM	542758	834075
Gordo No. 7	T3N R52E, Section 31 NW 1/4 east of MDBM	542759	834076
Gordo No. 8	T3N R52E, Section 31 NW 1/4 east of MDBM	542760	834077
Gordo No. 9	T3N R52E, Section 31 NW 1/4 east of MDBM	542761	834078
Gordo No. 10	T3N R52E, Section 31 NW 1/4 east of MDBM	542762	834079
Gordo No. 11	T3N R51 1/2E, Section 25 NE 1/4 east of MDBM	542763	834080
Gordo No. 12	T3N R52E, Section 30 SW 1/4 east of MDBM	542764	834081
Gordo No. 13	T3N R51 1/2E, Section 24 SE 1/4 east of MDBM	542765	834082
Gordo No. 14	T3N R51 1/2E, Section 24 SE 1/4 east of MDBM	542766	834083

The Gordo claim block controls the area surrounding the dominant mine sites in the district that include the Arrowhead and Arrowhead Extension Mine. The Tomahawk claims were located by TRI in mid-November and at the time of the author's visit in December.

### 6.2 Property Interests, Title, Taxes and Other Legal Obligations

TRI controls 100% interest in the both the Gordo and Tomahawk claim blocks. However, as previously mentioned, the Tomahawk claims were recently located at the

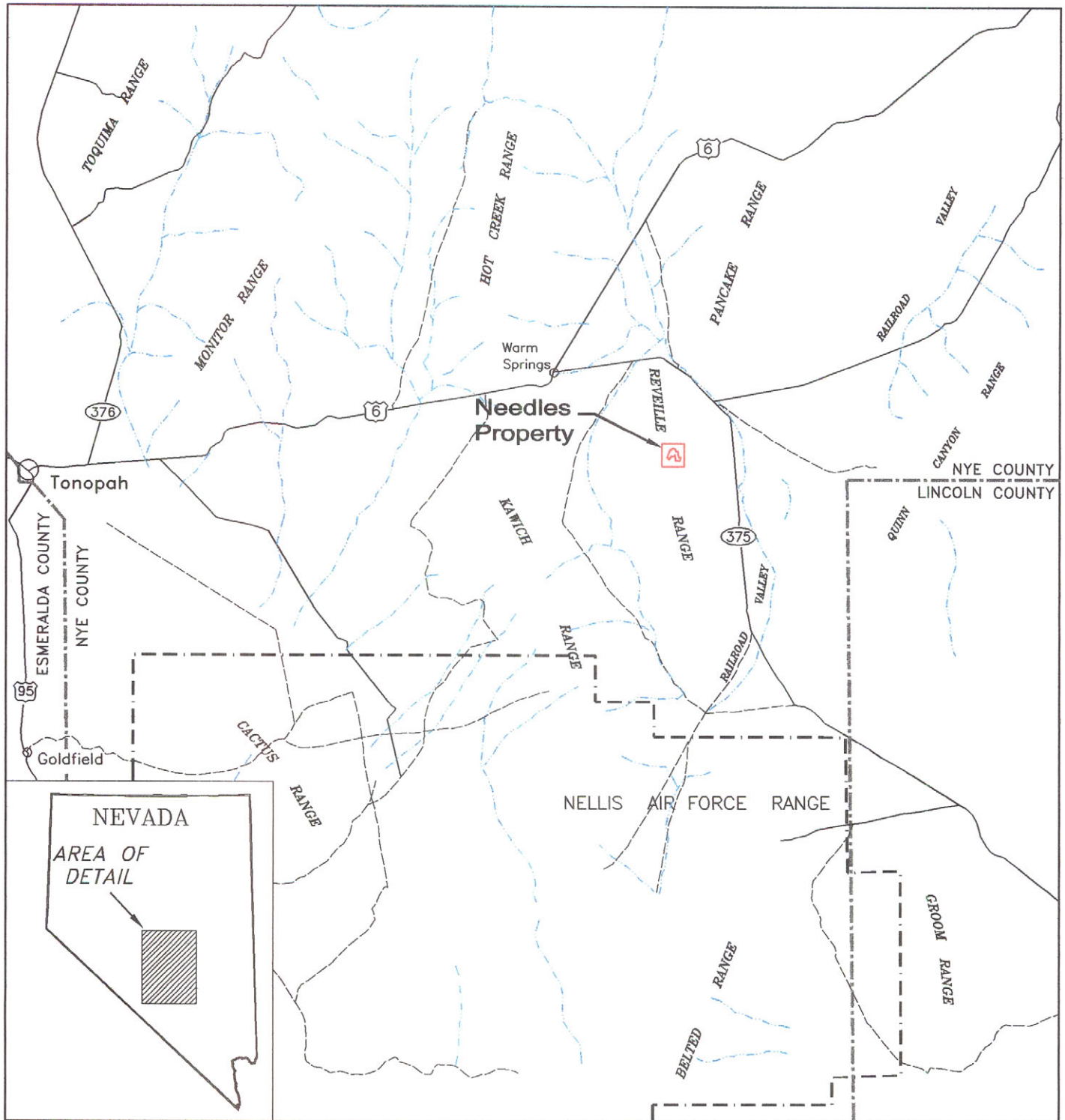
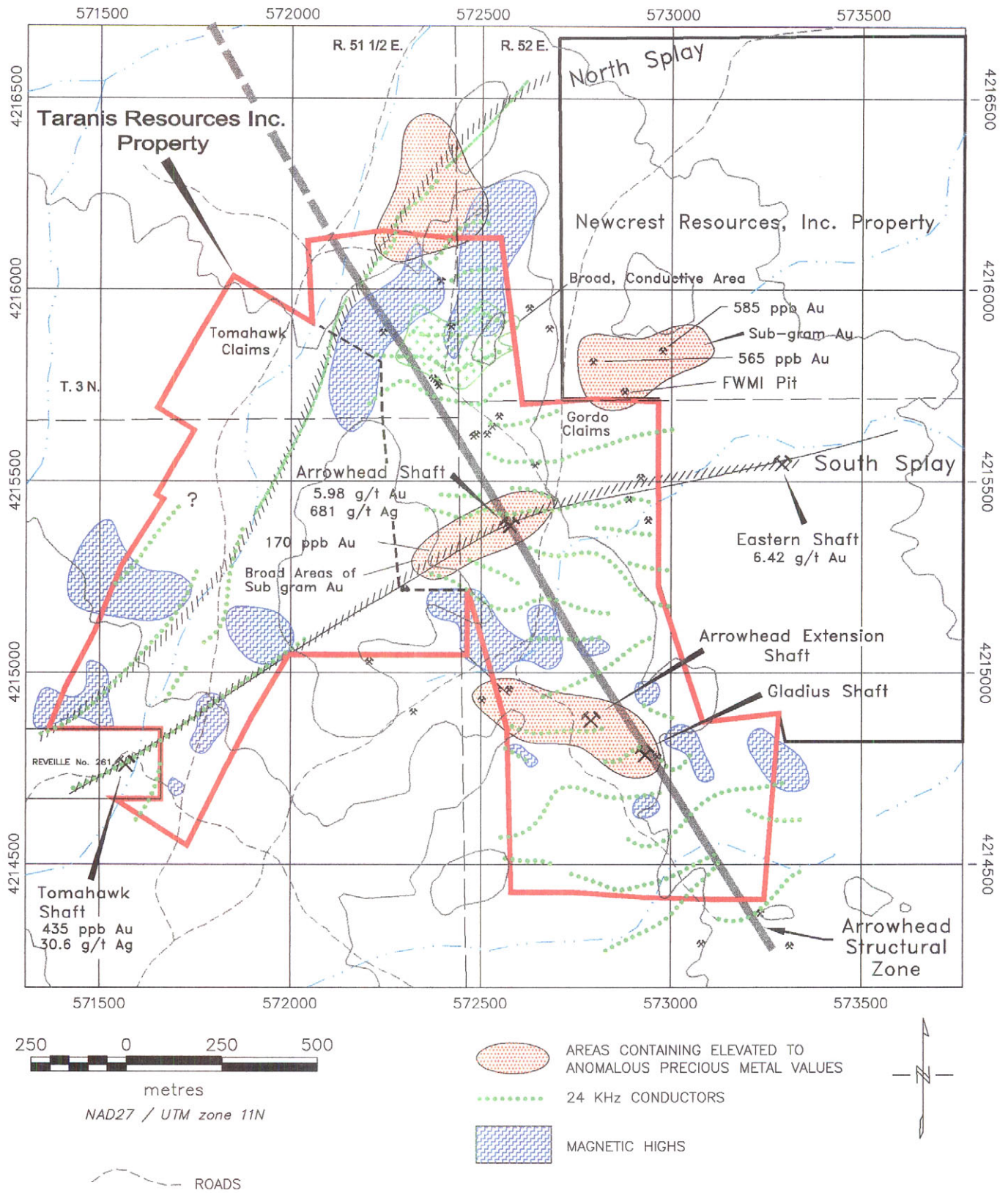


Figure 1a  
General Location Map

Needles Property  
Nye County, Nevada

(source: TRI).



**Figure 1b**  
**Needles Property**  
**General Overview Map**  
**Nye County, Nevada**

(source: TRI).

Area of Figure 4

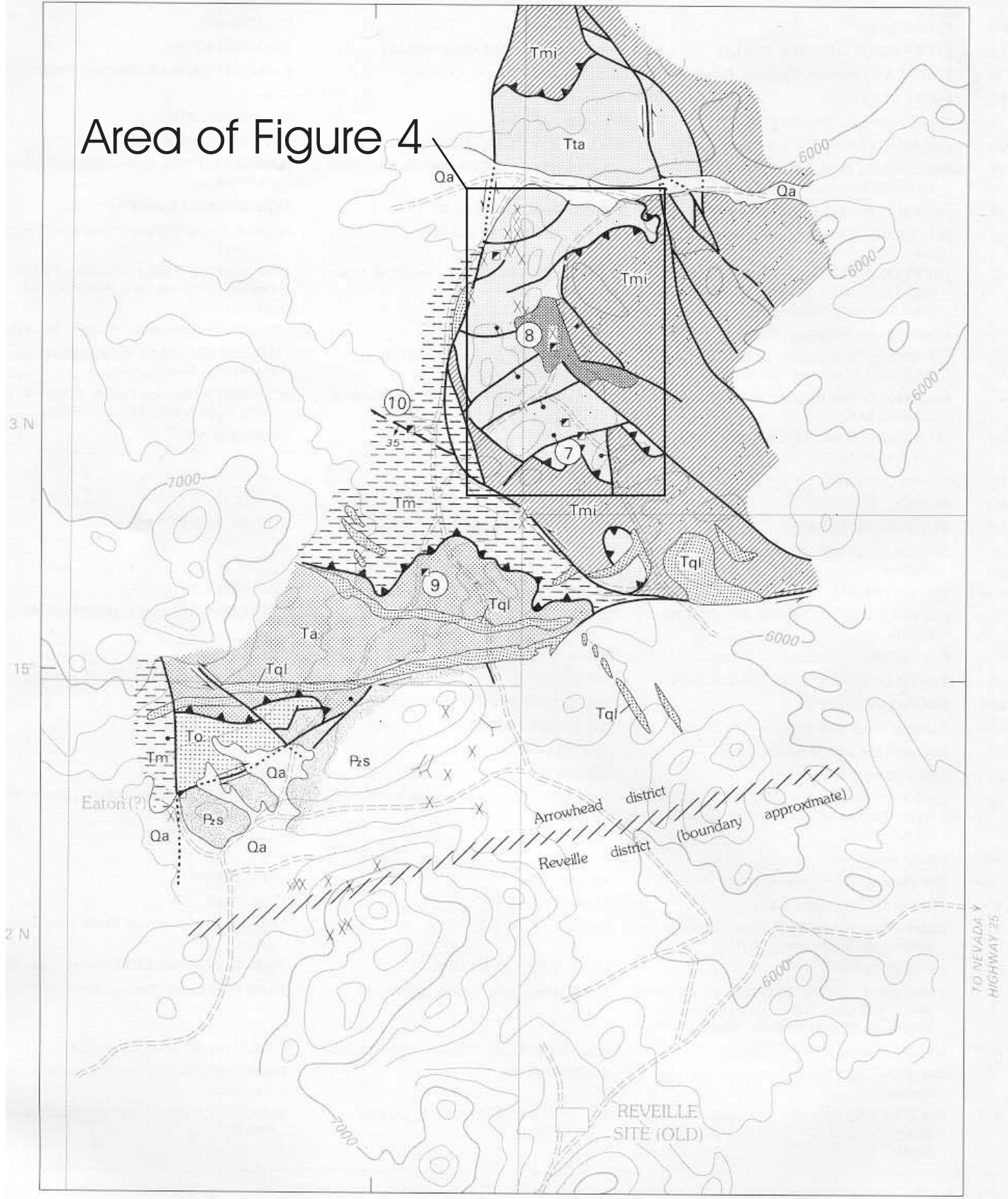


Figure 2

Geologic Map of the Arrowhead Mining District

Source: Ekren, Rogers and Dixon, 1973

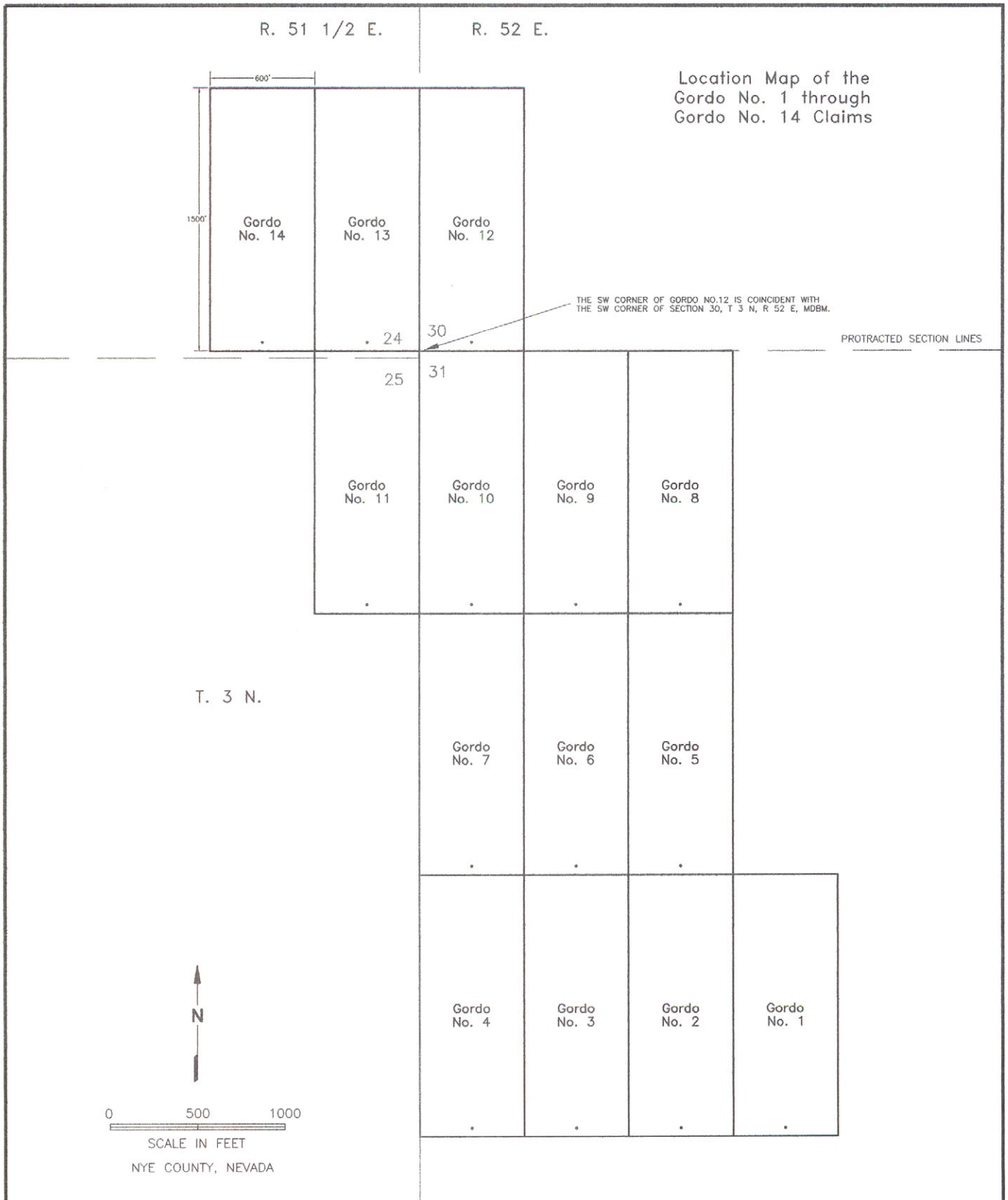
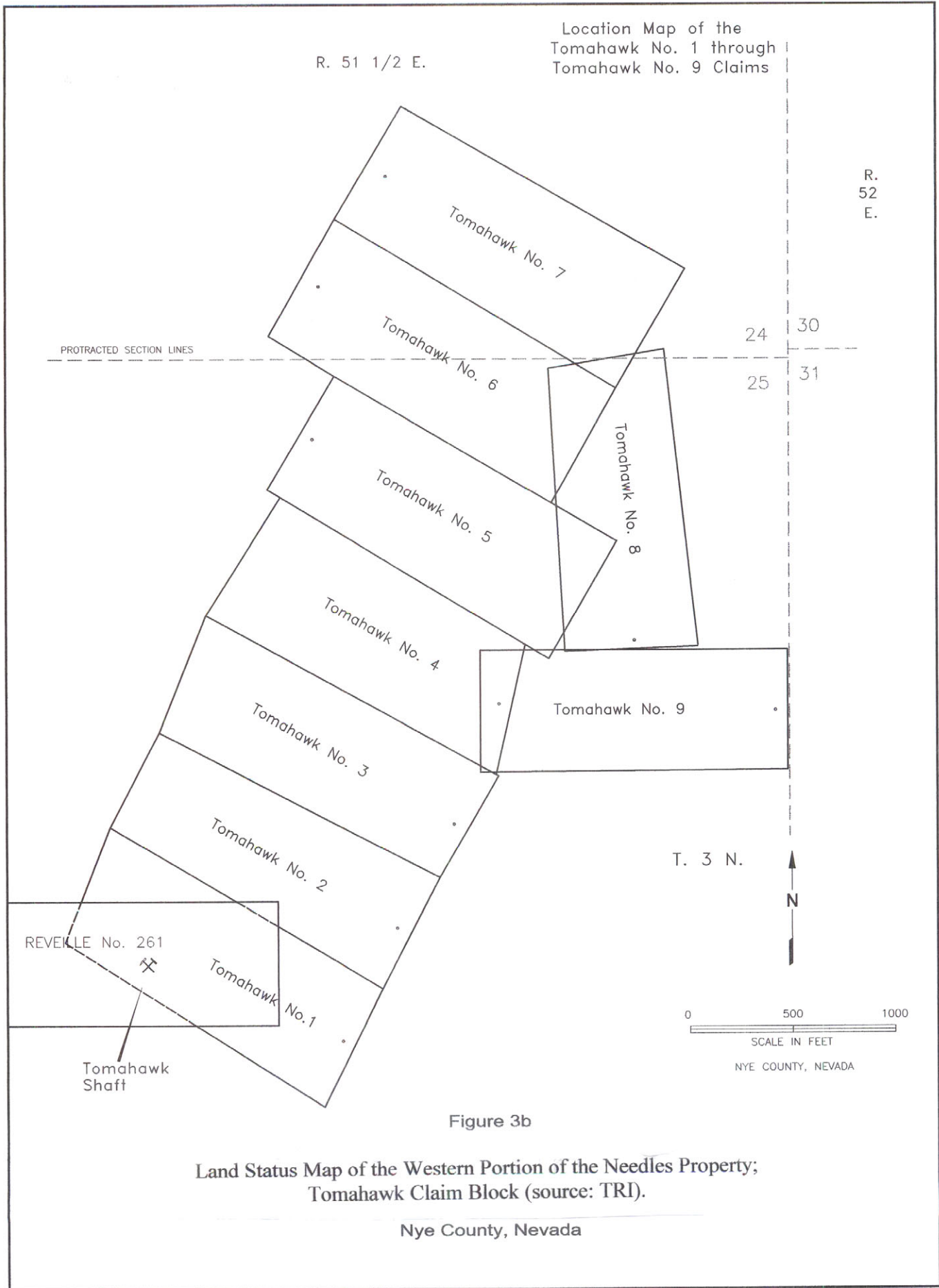


Figure 3a

Land Status Map of the Eastern Portion of the Needles Property;  
Gordo Claim Block (source: TRI).

Nye County, Nevada



end of the year. These claims must be filed and recorded within 90 days after discovery monuments were set in place and notices posted; all filings would be due by February 17 (Tomahawk claims No.1 through 4) and March 12, 2003 (Tomahawk No. 5 through 9). There are no other underlying agreements or obligations encumbering the property that can be determined by the author. Because the claims are unpatented, no local or county based property taxes have been assessed against them.

TRI's unpatented claims are located on federal public domain lands that are managed (both surface and mineral estates) by the Bureau of Land Management ("BLM"). This ground was open to mining claim location with no significant restrictions on either claim block. Location certificates for all the Gordo claims staked have been filed and recorded with the BLM and the Nye County Recorder's Office in Tonopah according to federal and state laws/ regulations. As previous mentioned, the Tomahawk claims remain to filed and recorded. The Gordo lode claims are in good standing at the time of this report.

During staking, TRI utilized Global Positioning Systems ("GPS") surveying to locate claim corners and discovery monuments in the field. Boundaries of the claims have not been legally surveyed.

Holding costs for the Gordo claims in assessment year 2003 include an annual BLM maintenance fee of \$100/claim (total of US\$1,400) due by August 31st, 2003. County recording costs of \$12.50 for the first claim and \$8.50/claim thereafter (total US\$123) and "Intent to Hold" notices that must be filed by November 1, 2003 to keep the claims valid. First time BLM filing and county-recording fees for the Tomahawk claims will cost \$135/claim (total of \$1,215) and \$35/claim (plus \$4.00 for recording claim map; total of \$319) respectively. In addition 2003 holding costs (BLM maintenance fee (total of \$900) and country recording costs (total of \$80.50)) will have to be paid for this assessment year to keep the claims in good standing.

### ***6.3 Environmental Liabilities***

A number of small prospecting pits and short exploration adits are found throughout the property. All adit portals observed by the author have not been fenced off according to state specifications. The Nevada Bureau of Mines may require fencing in the future. Minor oxidized waste rock and dumps occur down slope below several adit portals. It is estimated that these dumps contain less than several short tons of material. Sulfides are present in the dumps but there is no evidence of any acid generation.

### ***6.4 Exploration Permits***

BLM permits are required to conduct drilling and trenching on the unpatented claim block. For disturbance of over 5 acres, a "plan of operations" must be submitted to the BLM for approval and a reclamation bond set. Lead times for approval are generally 2-6 months or longer depending on environmental conditions. A 15-day "notice" to the BLM and reclamation bond is required for disturbances of 5 acres or less.

In addition, if drilling, trenching or other exploration activity disturbs more than 5 surface acres or more than 36,500 tons of material is removed a “reclamation permit” must be filed with, and approved by the Nevada Division of Environmental Protection (“NDEP”). A reclamation bond is normally required before issuance of the permit.

## **7.0 ACCESSIBILITY CLIMATE, LOCAL RESOURCES, INFRASTRUCTURE AND PHYSIOGRAPHY**

The property is located in the Reveille Range (Reveille 7.5’ quadrangle) in northeastern Nye County, approximately 75 miles east of the town of Tonopah (Fig.1a). Travel east along State Highway 6 to access the Needles property. From Highway 6, turn onto the “Extra Terrestrial Highway” (State Highway 25) at Warm Springs. Travel southeast to the sign marking the turn to the abandon town site of Reveille. Turn right and proceed 4.0 miles along the gravel road until it forks. Proceed along the right fork and continue 1.0 mile to a second road fork. Turn right and proceed 0.2 miles until the road forks again. Turn right again and proceed 1.2 miles until you reach the Arrowhead mine dump. Other unimproved 4x4 roads and all terrain trails cross the property.

The property lies at an elevation of approximately 5,100 feet above sea level (“ASL”) on the canyon floor and increases to 7,400 feet ASL along the highest ranges (Fig. 1b). Local relief is from 500 to 1000 feet (Photos 1, -2 and-4). It is interesting to note the presences numerous needle-like erosional spires developed on knobs peripheral to the district (hence the name “Needles”). The property is covered by sagebrush with juniper and fir at higher elevations and some cottonwood along creek banks. The climate is semiarid. There is essentially no infrastructure in area of the claim block.

## **8.0 HISTORY**

### ***8.1 District***

The Arrowhead District, known as the Needles District during earlier times, was organized in 1919 around its main mines, which were the Arrowhead and Arrowhead Extension Mines. There is little documentation regarding the discovery of the orebodies on which they were developed. It is likely they were discovered shortly after first mineral discovery in the Old Reveille camp in the late 1860’s. Total production was small, only 335 tons of silver-antimony-gold ores have been reported from 1920 to 1939 for at total value of \$13,449. Production data after 1939 is not available but believed to be minor (Kleinhampl and Ziony, 1984).

At the Arrowhead Mine, two ore shoots 3 to 8 feet wide in a replacement vein were developed. The vein hosted silver-bearing sulfide mineralization that graded \$24 to \$50/ton. Four levels of drifts exploited the orebody from a 345-foot deep inclined shaft.

To the south the Arrowhead extension developed a vein (at a depth of 55 feet) from a two-compartment shaft 150 feet deep. Vein material is reported to have assayed



**Photo 1** Looking south across the Gordo claim block to the Arrowhead mine dump. Note bleached (white) outcrop area above the workings (right-center in photo) where intense steam-heated, advanced argillic alteration is exposed at surface (altered rhyodacitic subvolcanic intrusion [Trd] and/or Tuff of Arrowhead [Tta]).



**Photo 2** Looking east across of the Gordo claim block boundary toward Newcrest's ground (Stealth claims). Note the bleached (white) and altered area (steam-heated, advanced argillic alteration of Monotony Tuff) in the right-center of photo that marks the Eastern shaft. Goblin Knobs (Needles) can be seen in the background. The hill located behind the shaft area is held up by unaltered Monotony Tuff (Tmi) outcrop.

from \$1.20 to \$71.55/ton when the mine was operating in 1920 (Kleinhampl and Ziony, 1984).

Other active properties in the district at the time were the Arrowhead Signal Mines; the Arrowhead Syndicate Mines, which tapped quartz veins from a 200-foot shaft; the Arrowhead Wonder Mines Company that developed two rich veins (one assaying \$110/ton) that were believed to be extensions from the main Arrowhead Mine, the South Arrowhead and West Arrowhead Companies (Kleinhampl and Ziony, 1984).

## ***8.2 Property***

The history of the Needles property (Gordo and Tomahawk claim blocks) follows that of the Arrowhead and Arrowhead Extension Mines described above. There is no known documentation regarding recent development activity from 1939 to 1979. However, the property was restaked and prospected (prospect pits and short exploration adits) during this time period, and the former owners of the claims are not known.

Inspection of the property by TRI revealed some recent (past 20 years) exploration activity. At least two vertically drilled reverse circulation hole were observed on the south end of the claim block; it is not known who drilled these holes. Other work includes minor trenching on the north end of the property that failed to penetrate alluvium and reach bedrock.

In October 2002, Newcrest Mining Company located 30 unpatented claims (Stealth claims) along the eastern margin of the Gordo claim block. This ground controls the Eastern shaft area (Photo 2).

## **9.0 GEOLOGIC SETTING**

### ***9.1 District and Property Geology***

Geologic studies of the Arrowhead District have been completed by Ekren, Rogers and Dixon (1973) and Martin and Naumann (1995). These studies have established a general stratigraphic and structural framework within which TRI has conducted its exploration program. This complex geologic framework, presented in Figure 2, includes a dominantly Tertiary-age (Miocene to Oligocene) intermediate to felsic volcanic sequence that has been segmented and disrupted by thrust, strike slip, and block (normal) faulting. Paleozoic basement sedimentary rocks are exposed and in fault contact with the Tertiary section at the south end of the district (Fig.2). Miocene-age intrusive rhyolite, dacite and quartz latite dikes, sills and plugs were emplaced into the section. Pliocene basalt volcanoes are peripheral to the district and associated extensive flows locally cover older rocks.

Specific Tertiary-age volcanic rock units recognized on the property and surrounding prospect area include the following (Fig.4).

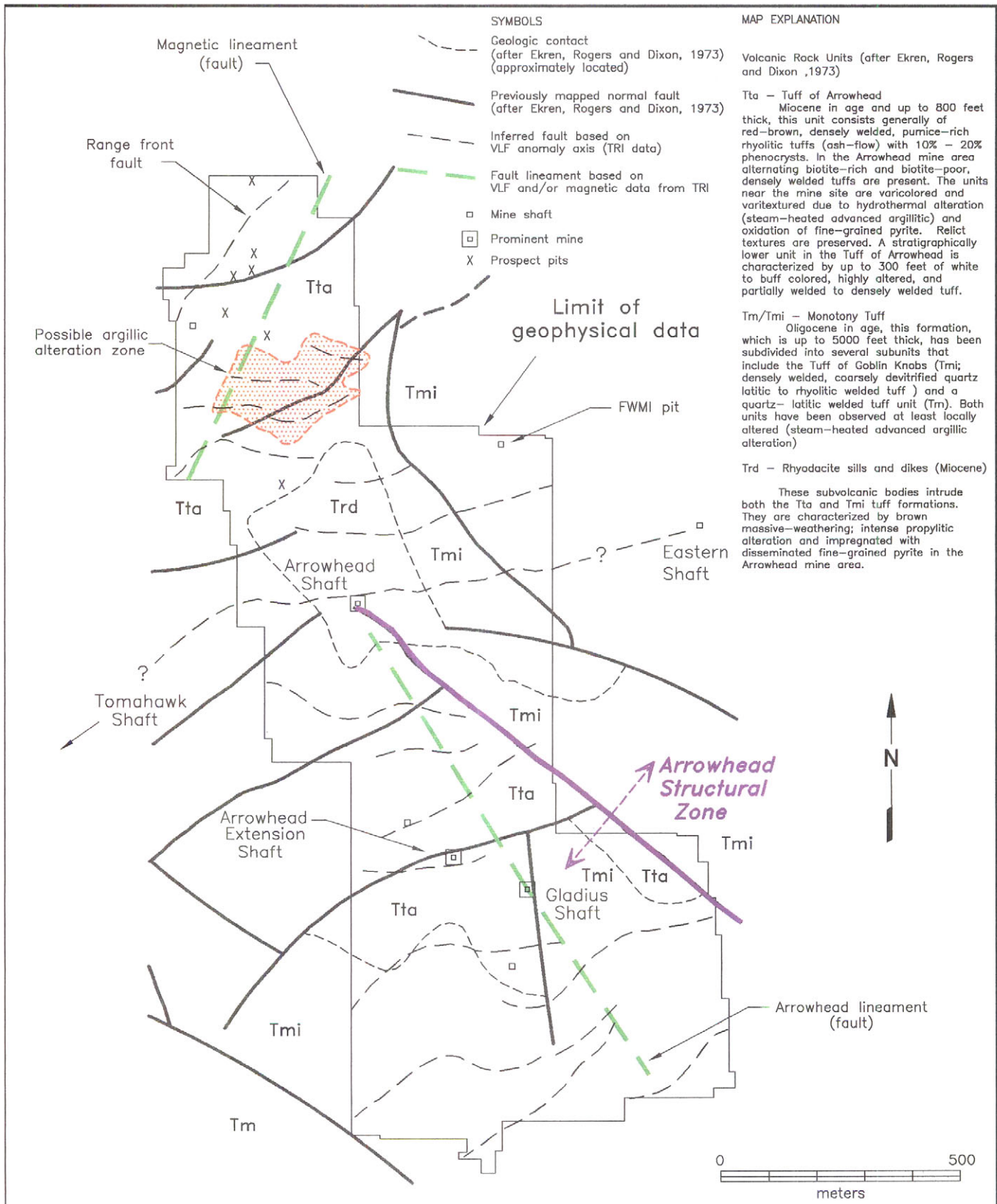


Figure 4

Geologic Map of the Eastern Portion of the Needles Property;  
 Gordo Claim Block  
 (source: Ekren, Rogers and Dixon, 1973 and TRI geophysical data).

- 1) ***Tuff of Arrowhead (Tta)*** – Miocene in age and up to 800 feet thick, this unit consists generally of red-brown, densely welded, pumice-rich, rhyolitic tuffs (ash-flow) with 10%-20% phenocrysts. At the Arrowhead Mine site alternating biotite-rich and biotite-poor, densely welded tuffs are present. The units here are varicolored and varitextured due to hydrothermal alteration and oxidation of fine-grained pyrite. Relict textures are often preserved. A stratigraphically lower unit in the Tuff of Arrowhead is characterized by up to 300 feet of white to buff colored, highly altered, and partially welded to densely welded tuff.
- 2) ***Monotony Tuff (Tm, Tmi)*** – Oligocene in age, this formation, which is up to 5,000 feet thick, has been subdivided into several subunits that include the Tuff of Goblin Knobs (*Tmi*; densely welded, coarsely devitrified quartz latitic to rhyolitic welded tuff) and a quartz-latitic welded tuff unit (*Tm*). Both subunits have been observed to be at least locally hydrothermally altered.
- 3) ***Rhyodacite Sills and Dikes (Miocene-age)*** – These subvolcanic bodies intrude both the *Tta* and *Tmi* tuff formations. They are characterized by massive brown weathering; intense propylitic alteration and impregnation of disseminated fine-grained pyrite in the Arrowhead Mine area.

Mapping by Ekren, Rogers and Dixon (1973) in the district, suggest a thrust fault contact separates the younger Tuff of Arrowhead from older Tuff of Goblin Knobs (*Tmi* thrust over *Tta*). Their mapping also indicates high-angle, north-northwest-trending normal and strike-slip faults disrupt the volcanic stratigraphy. Normal faults also penetrate unconsolidated alluvium (Kleinhampl and Ziony, 1984).

Surface mapping (Ekren, Rogers and Dixon, 1973) coupled with TRI's geophysical survey have defined further the structural framework within the current Gordo claim block and prospect area. Included are a significant north-northwest-trending structural zone (Arrowhead structural zone that includes a major northwest-trending fault lineament designated the Arrowhead lineament), several northeast-trending faults (and lineaments) and a series of en echelon, east-west and northeast, southwest-trending cross faults that have been delineated (Figs. 1b and 4). The larger *Trd* plug mapped on property appears localized along a fault lineament within the structural zone (Fig.4).

According to Kleinhampl and Ziony (1984), the two main mines, the Arrowhead and Arrowhead Extension, as well as the other mines and prospects are confined to a narrow (approximately  $\frac{1}{2}$  mile wide), north-northwest-trending alteration zone developed within the *Tta* and *Trd* units and to a lesser extent *Tmi* unit. Structural margins of the zone are believed bounded to the east and west by arcuate subparallel faults and shear zones. The Oligocene and Miocene rocks within the zone (rhyolitic to quartz latitic welded tuffs, tuffaceous sedimentary strata, rhyodacite intrusions) are variably bleached, argillized, propylitized and silicified (Kleinhampl and Ziony, 1984). This alteration may be centered along a northwest-trending structural zone and have a strike length of over

10,000 feet. TRI's Gordo claim block now controls the majority of the structural zone that includes the Arrowhead and Arrowhead Extension Mine workings.

Deeper workings may have penetrated the zone in the *Tta* unit. The Arrowhead shaft (345' deep) has likely passed entirely through the Tertiary volcanic section into underlying Paleozoic basement that contains units of calcareous quartzite and pyritic calc-hornfels as evidenced by dump material (Kleinhampl and Ziony, 1984).

A few prospects controlled by the Tomahawk claim block occur outside the zone in structurally higher Monotony Tuff units that include the weakly pyritized andesite unit (*Ta*) and quartz-latitude tuff (*Tm*). However, strong alteration is exhibited at several mine sites (Tomahawk and Eastern; Fig.1b) developed within these units outside the claim blocks (see Section 11).

The Paleozoic strata (*Pzs*) in the southern end of the district hosts minor prospects and mines developed by shallow shafts and adits as much as several hundred feet long. Workings are associated with jasperoid zones in faulted carbonate strata, and also with intermediate dikes along steep faults (Kleinhampl and Ziony, 1984).

## 10.0 DEPOSIT TYPES

### 10.1 District and Property

There is little documentation describing in detail the metaliferous deposits in the district and the property. Available information indicates that structurally controlled, silver-antimony-gold-bearing epithermal quartz veins are the main deposit type. Areas of high-grade gold-silver mineralization are characterized by quartz stockwork replacement veins containing silver and arsenic-bearing sulfides-sulfosalts (pyrargyrite and proustite). Some mineralization is antimonial and contains significant stibnite. Highly anomalous levels of mercury, arsenic and antimony accompany most of the mineralization.

The quartz vein deposits are controlled by the fault-fracture structural intersections developed within the district (this clearly demonstrated by structural data generated by TRI). It is reported that pyritic (2-8% disseminated pyrite) alteration (bleaching, argillization, propylitic alteration and silicification) zones commonly overlie and envelope productive veins in the district; pyritization accompanies virtually all known gold/silver mineralization.

Productive quartz veins developed in the past appear to have been small. Ore shoots that hosted the silver-bearing sulfide-sulfosalt mineralization were typically 3 to 8 feet wide (as at the Arrowhead Mine) and ran values ranging from \$24 to \$110/ton. The deposits have extensively oxidized at surface. Outcroppings and shallow pits are observed to contain large amounts of limonite related to oxidation of the primary pyrite. Mine records indicate the depth of this oxidation extends perhaps from surface to 120 feet below surface.



**Photo 3** Looking north at the Arrowhead mineshaft. Note bleached (white) steam-heated, pyritic advanced argillic alteration exposed in cut behind shaft (left-center of photo). Dark brown rubble of propylitized and pyritic rhyodacite intrusion (Trd) can be seen above cut. Dump samples of pyritic quartz vein material near shaft assayed as high as 0.19opt Au and 21.9opt Ag.



**Photo 4** Looking northeast across the Tomahawk claim block from the Tomahawk shaft. Bleached area of widespread limonite-stained steam-heated, advanced argillic alteration (altered Monotony Tuff [Tm]) lies along a range front fault (North Splay) that strikes across the north end of the Gordo claim block.

Other minor deposits are hosted in less altered intermediate Tertiary rocks including volcanic flows and dikes associated with steep faults (Kleinhampl and Ziony, 1984).

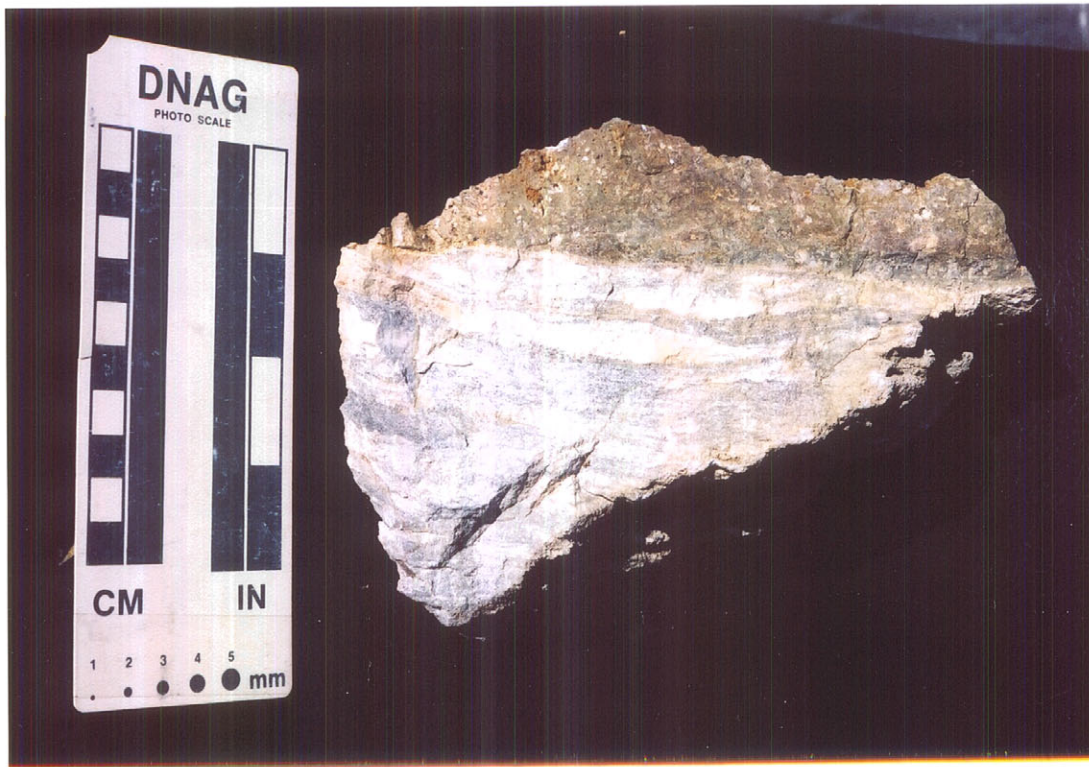
Genetically, precious metal mineralization may be associated with the emplacement of commonly pyritized rhyodacite subvolcanic sills and plugs that have been mapped in the district. These intrusions are undated but crosscut early to middle Miocene volcanic rocks.

## ***10.2 Exploration Model***

In the opinion of the author an epithermal deposit model would be most appropriate to describe base-precious metal mineralization in the prospect area (Appendix A). In spite of abundant pyrite present on the property, known ore/gangue mineralogy, textures and alteration mineralogy are more suggestive of an upper to mid-level, overprinted intermediate-sulfidation system rather than a high-sulfidation one.

Epithermal models have been described extensively in the literature (Buchanan, 1981, Bonham, 1988, White and Hedenquist, 1995, et al). Some general characteristics of a low to intermediate (hot springs) style precious metal system are given below (Panteleyev, 1989, White and Hedenquist, 1995).

- 1) These deposits form at or near a paleosurface to a maximum depth of approximately 3,000 feet. They also have a restricted vertical extent typically averaging 1,000 feet. Ore zones typically bottom out in barren rock or economic to sub-economic zones containing base-metals (Pb-Zn with Ag (minor Au) sulfides).
- 2) Veins are the most common ore host; they tend to branch or flare upward into complicated wedge-like or cone-like features. Vein breccias, stockworks, fractures and replacements can also be important hosts particularly in high sulfidation systems.
- 3) Deposits form in extensional tectonic settings, in areas with well-developed tension fracture systems and high-angle normal faults.
- 4) Mineralization commonly occurs in volcanic terrains but can be found in any rock type that maintains primary or structurally induced permeability and permits focused hydrothermal fluid flow.
- 5) Ore and associated minerals are deposited as open space fillings with banded crustiform, vuggy, drusy, colloform and cockscomb textures (low-sulfidation systems). Replacement textures can also be important as well but generally do not dominate in low sulfidation systems. Hydrothermal brecciation may be common.



**Photo 5** Hand sample exhibiting the contact between unaltered densely welded, crystal rich rhyolitic tuff with laminated, calcareous and tuffaceous sediments (prospect pit east of Arrowhead shaft). These units belong to the Monotony Tuff (Tmi).



**Photo 6** Hand sample exhibiting steam-heated, advanced argillic alteration (quartz-alunite [?]  $\pm$  clay) that hosts a stockwork of vuggy quartz veinlets (Arrowhead mine site).

- 6) Gold and silver are the main economic minerals and occur with anomalous amounts of Hg, As, Sb, Zn, Pb, Se and K (Cu and Te/Se are anomalously low) in low sulfidation systems. Gold to silver ratio is variable with silver typically more abundant than gold. Hypogene ore minerals include native gold and silver, electrum, silver sulfides, silver-bearing arsenic-antimony sulfosalts and/or selenides; minor galena, sphalerite and/or chalcopyrite that are common locally.
- 7) Gangue minerals are mainly quartz and calcite, dolomite and/or manganese carbonate with lesser fluorite, barite, chlorite, hematite and rhodochrosite. Pyrite is ubiquitous. Low sulfidation systems are characterized by the presence of adularia.
- 8) Hydrothermal alteration marginal to veins is pronounced and commonly expressed as zones of silicification (associated with ore), flanking zones of illite-sericite (phyllitic) and clay (argillic) alteration enveloped by a larger (district or regional-scale) zone of chlorite-epidote-carbonate-pyrite (propylitic) alteration. Near the paleosurface (above the paleo water table) broad acid-leached, vapor-phase alteration (steam-heated advanced argillic alteration) may develop (commonly as blankets). It forms from the condensation and oxidation of H<sub>2</sub>S and reaction of the resultant H<sub>2</sub>SO<sub>4</sub> with rocks. Characterized by the presence of alunite, these zones may overprint previously developed alteration as a result of downward percolation of steam-heated acid-sulfate water along structural zones.
- 9) The size of the sericite-clay zones tends to be proportional to that of related orebodies – the larger the alteration zone, the larger the zone of mineralization.

All epithermal deposit types, including high, intermediate and low sulfidation may develop exceptional tonnages and grades. Many contain high-grade (bonanza grades averaging at least 1oz/ton Au) shoots. Sillitoe (1993) considered “bonanza” epithermal deposits as those in which 1 million ounces of gold are present in ore averaging 1 ounce/ton Au.

Other key features in the general model are the occurrences of mineralized, interbedded, sinter and explosion breccia (at the paleosurface) and a downward transition into hydrofractured, mineralized breccia and then into bonanza veins. Two important features that the author believes relate directly to the Needles property are the common occurrence of the acid-leached, vapor phase-altered rock (steam-heated advanced argillic alteration overprint) above and/or actually overprinting the boiling zone (zone of bonanza vein development) and the possible occurrence of a silicified zone containing gold-silver mineralization beneath the acid-leached zone (Bonham, 1988).

The epithermal deposit type described is very common in Nevada. Notable examples close to the Needles property are Round Mountain, Antone-Corcoran Canyons and Gold Hill deposits. These deposits are generally low to intermediate sulfidation systems and characterized by two basic but important components. These are: 1) large, low-grade stockwork (strata-bound) vein-replacement mineralization with associated

widespread and zoned alteration that is generally underlain by structurally controlled bonanza veins 2) structurally lower high-grade, mineralized basement “feeder” faults with and without quartz veining/jasperoid development.

### ***10.3 Basis for an Exploration Program Plan***

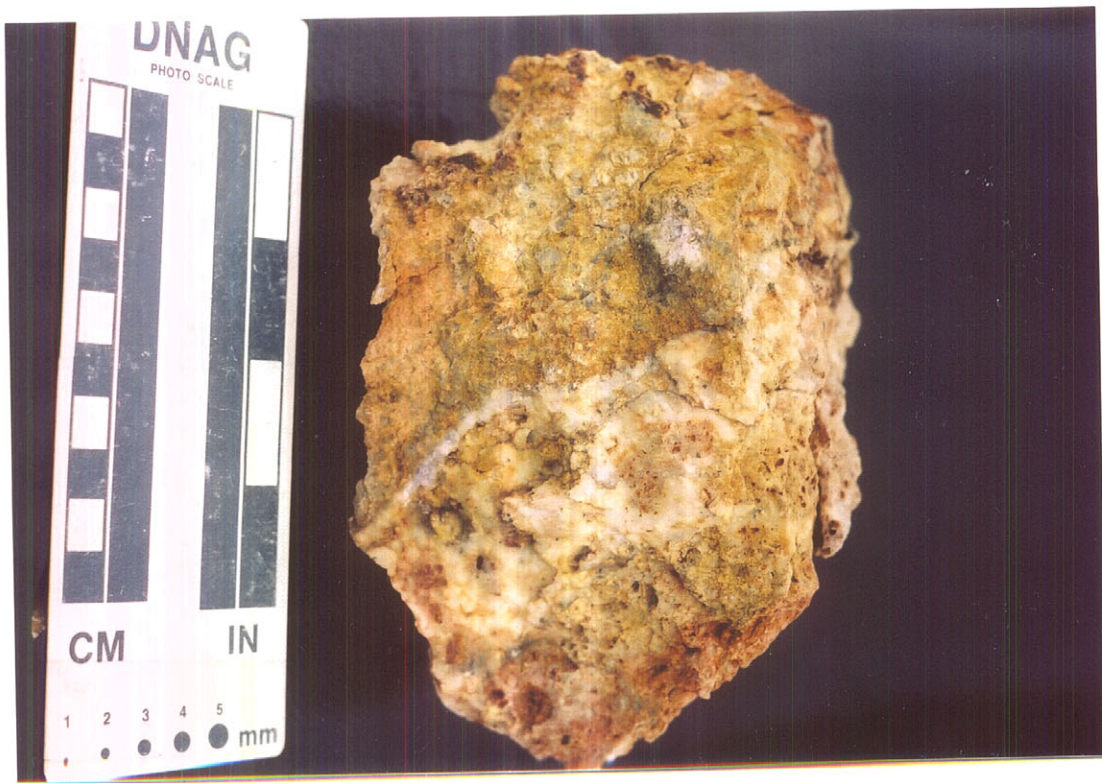
Based on the epithermal deposit model described above and in the preceding discussion, the author would interpret the structurally controlled silver-antimony-gold-bearing quartz veins and associated alteration zones documented in the Arrowhead Mine area as characteristic of upper levels in a modest to relatively large-size Tertiary-age intermediate sulfidation epithermal system. This system appears to overprint the Tuff of Arrowhead, an associated rhyodacite plug and extends to some degree into structurally higher (stratigraphically lower) Monotony Tuff and vertically down into Paleozoic basement rock units.

Known surface alteration zones at Needles (dominantly stream-heated advanced argillic, see Section 11) likely represent acid-leached, vapor phase-altered rock located above, and possibly overprinting the zone of boiling (zone of bonanza vein development) in the epithermal system. Bonanza vein development at depth is suggested by the presence of mineralized epithermal quartz vein material found on several mine dumps. There is geologic evidence that implies productive quartz veins are directly associated with silicification and enveloped by propylitic and possibly argillic alteration (inferred from geophysical data). However, primary alteration zoning patterns are complicated whereby early alteration assemblages and possibly the quartz veins are overprinted by zones of late pyritic and advanced argillic alteration. The overprint could be interpreted as deeper (below the main alteration blanket and paleo water table) pyritic advanced argillic alteration focused along feeder conduit structures.

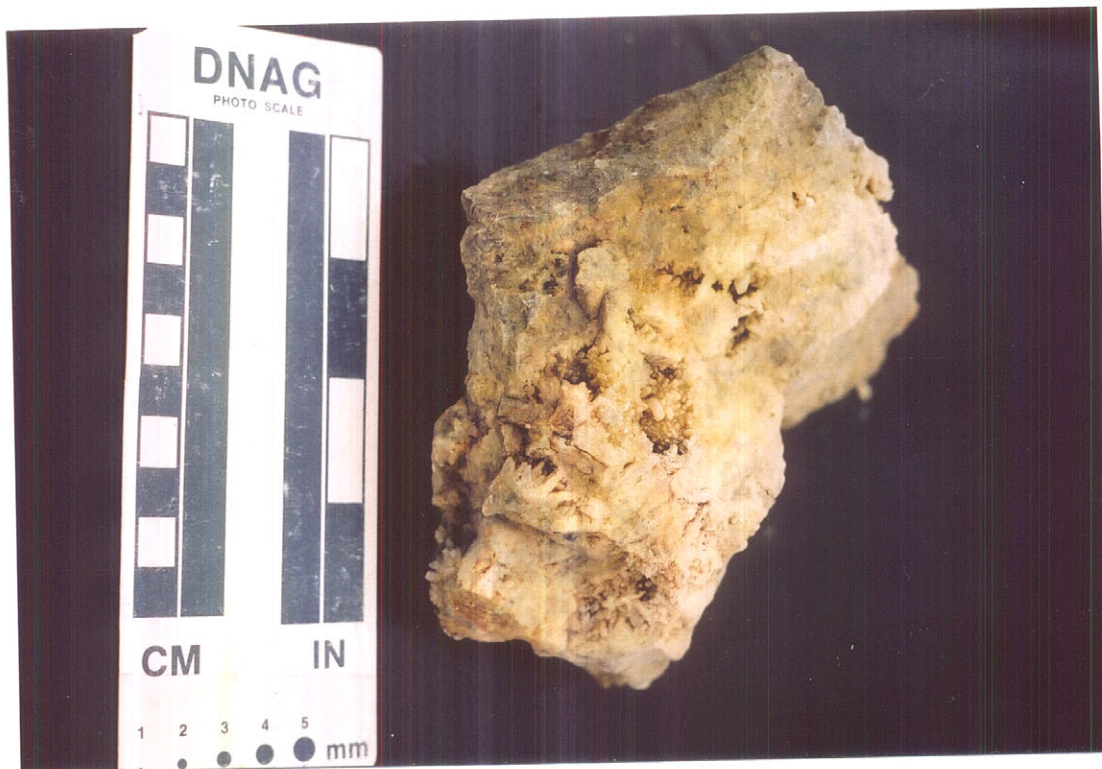
These interpretations provide a premise and an initial working exploration model for a future exploration program on the property. Further, preliminary geologic and geophysical data collected to date coupled with the epithermal model would suggest that further exploration on the property has a reasonable chance for discovery of potentially economic bonanza vein deposits.

## **11.0 MINERALIZATION**

Precious metal mineralization and associated alteration is best observed at the Arrowhead Mine site workings within the Gordo claim block. Representative samples of quartz vein material were found on the mine dumps. Samples are characterized by limonite-stained (hematite-jarosite dominant), vuggy (quartz-lined vugs), light gray to white-colored, aphanitic to fine-grained quartz veins-vein (veinlets < 1” thick) stockworks containing disseminated (< 3%) fine-grained, subhedral to euhedral pyrite/oxidized pyrite casts (Photos 7 and 8). No obvious silver sulfide-sulfosalt minerals were present in any of the dump samples. However, local dark gray to black streaks in some samples may represent submicroscopic sulfide-sulfosalt minerals.



**Photo 7** Hand sample of limonite-stained (hematite-jarosite dominant) vuggy quartz vein material crosscut by later white quartz veinlets (Arrowhead mine site). Multiple veining indicates more than one hydrothermal fluid event. Note local disseminated, fine-grained, FeO-stained sulfide-sulfosalt (?) casts.



**Photo 8** Massive, vuggy quartz vein material (Arrowhead mine site). Note singly terminated quartz crystals (druse) lining vug cavity walls.

Two samples of vein material were collected by TRI from the Arrowhead Mine dump, and returned the following analyses:

Table 1-Partial Assay Results for Arrowhead Mine Dump Samples

<i>Sample Number</i>	<i>Gold (ppb)</i>	<i>Silver (ppm)</i>	<i>Arsenic (ppm)</i>	<i>Mercury (ppm)</i>	<i>Antimony (ppm)</i>
AR-1	5,980	681	78	<1	16
AR-2	2,090	371	86	<1	44

Sample AR-1 translates to 0.19 opt Au and 21.9 opt Ag. However, high gold values in vein material were not confirmed by assays from several dump samples collected by the author during his visit to the property (see Appendix D).

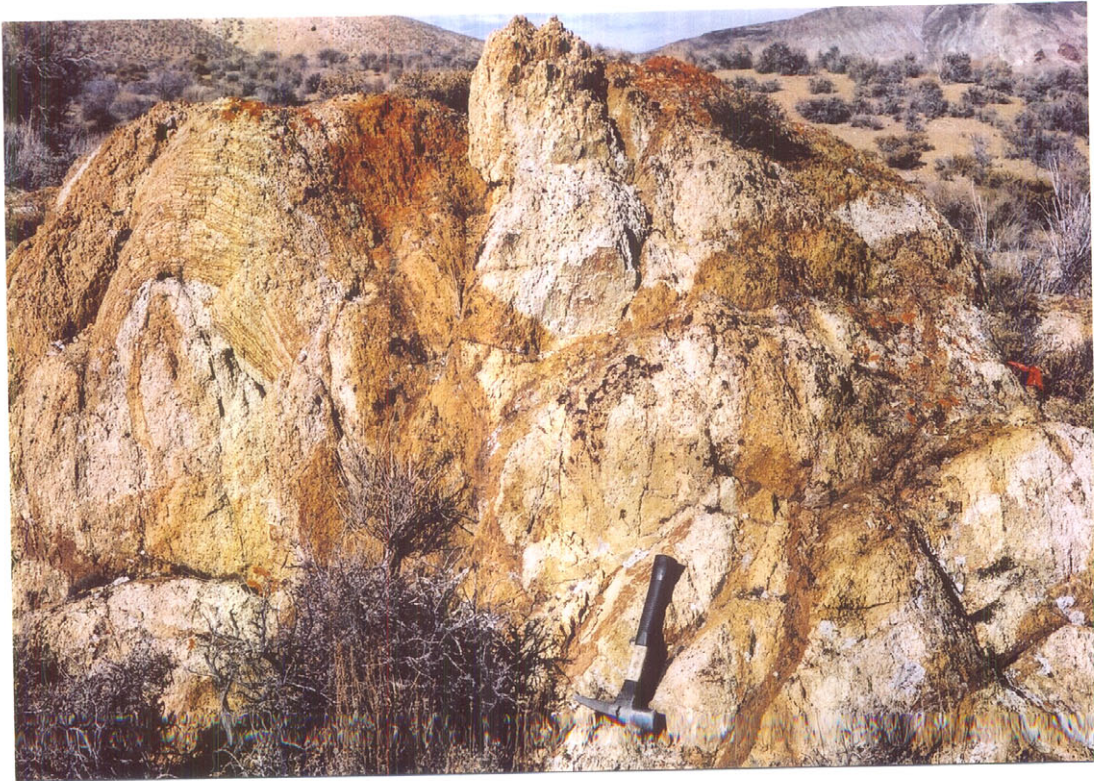
Further investigation of the mine dumps reveals that the productive quartz veins are enveloped by greenish-yellow stained, gray colored, fine-grained to aphanitic, pervasive silicification. The size of silicification envelopes around individual veins is unknown but assay data collected to date suggests these envelopes may contain significant precious metal values (up 2,570 ppb Au and 1,115 ppm Ag in the author's samples) particularly when found with quartz veining (Appendix D and F).

Surface cuts in the main shaft area expose massive (somewhat porous), strongly bleached (bright white colored), porcelaneous textured alteration (Photos 3). Other than quartz phenocrysts, all relict volcanic textures are obliterated by the alteration. Close examination of samples indicates the bleaching is from a mixture of microcrystalline quartz, alunite (tentatively identified) and clay. The alteration is commonly iron oxide-stained and hosts disseminated, oxidized pyrite casts (locally gossanous) and numerous cross cutting limonite (dominantly hematite) after pyrite veinlets, veins and vein stockworks ( $\leq 1$  to 6", up to 1' in exposures away from the mine (Photo 9)). Relict pyrite grains are rare in surface exposures. Other outcrops and prospecting pits expose a similar type of alteration (Photo 10). Aerial distribution has not been mapped in detail but this type of alteration was observed mainly within Tuff of Arrowhead but also within the Monotony Tuff. Most of the mine workings in the district examined by the author were collared in areas of similar iron-oxide-stained alteration with limonite veining (Photo 4).

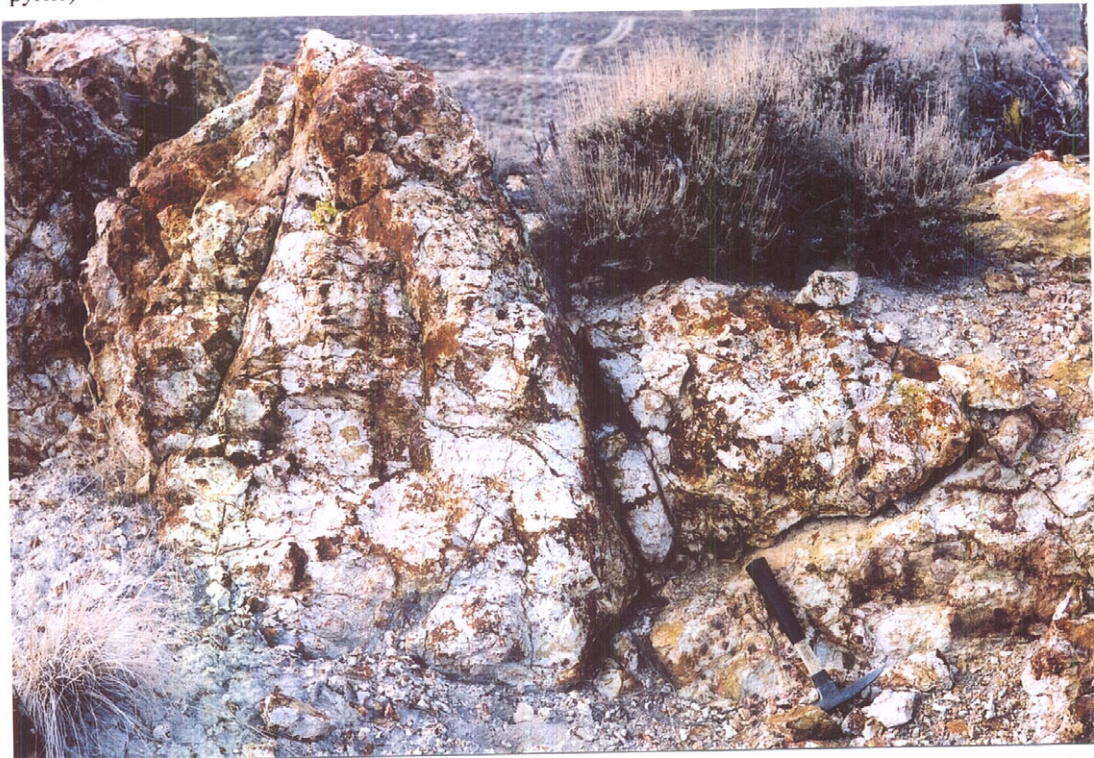
Assays from samples of quartz-alunite-clay-pyrite alteration generally exhibit low precious metal values (Appendices D and F). However, similar alteration extending into the structurally higher Monotony Tuff (Tmi) and containing cross cutting quartz veins was sampled by TRI at the "Eastern" shaft dump immediately east of the Arrowhead Mine workings (Figs.1b and 4). One assay demonstrates that ore-grade gold values can occur in this type of alteration if quartz veining is present (Photo 4).

Table 2-Partial Assay Results for Eastern Mine Dump Sample

<i>Sample Number</i>	<i>Gold (ppb)</i>	<i>Silver (ppm)</i>	<i>Arsenic (ppm)</i>	<i>Mercury (ppm)</i>	<i>Antimony (ppm)</i>
AW-4	6,420	101	692	<1	22



**Photo 9** Outcrop of limonite-stained (jarosite-dominant?) altered (steam-heated, advanced argillic alteration) Monotony Tuff [Tmi] located east of Arrowhead mine site. Note well-developed limonite (after pyrite) vein stockwork.



**Photo 10** A “Red thumb” outcrop. Bleaching and limonite staining (hematite-dominant) characteristic of intense steam-heated, advanced argillic alteration (quartz-alunite[?] ± clay) and oxidizing disseminated pyrite (altered Tuff of Arrowhead [Tta]). Outcrop occurs at the northwest end of the Gordo claim block near a possible range front fault (North Splay) and major structural intersection.

It should be noted that the alteration mineral assemblage of quartz-alunite-clay-pyrite is characteristic of steam-heated, advanced argillic alteration within the intermediate sulfidation system. As previously mentioned, this type of alteration typically forms a blanket above the paleo water table over the system but can also overprint alteration associated with the zone of bonanza vein development. The author believes this may be the situation at the Needles property i.e. primary propylitic alteration, silicification and possibly quartz veining are overprinted by steam-heated pyritic advance argillic alteration along feeder conduits and other structures. There is no supporting evidence thus far that the stratigraphic top of the system (and steam-heated alteration blanket) is preserved. It is likely that much of the steam-heated blanket is eroded off above the paleo water table.

Although aerial distribution and vertical extent of advance argillic alteration is poorly known within the epithermal system, it does appear restricted on surface to isolated outcrops and mine dumps. Strong early argillic (clay dominant) alteration is conspicuously absent at surface (expected to be generally recessive and not crop out) or in mine/exploration workings. However, its presence along structures under cover and at depth is implied by geophysics (VLF survey, see *Sections 12.2.3 and 12.2.4*).

## **12.0 EXPLORATION**

Since late 2002, a minimum expenditure of US\$40,000 has been reported and documented by TRI for exploration work completed on the property. This included location of 23 mining lode claims (Gordo and Tomahawk claim blocks), establishing a survey grid, outcrop (rock chip) – mine dump sampling (48 samples) and geophysical surveying (12.65 miles of VLF electromagnetics and total field magnetics). Officers of TRI conducted this work, including the geophysical surveys. Rock samples were submitted to ALS Chemex Labs Inc., located in Reno, Nevada and Vancouver, British Columbia, Canada.

### ***12.1 Geochemistry***

#### ***12.1.1 Rock Chip Sampling***

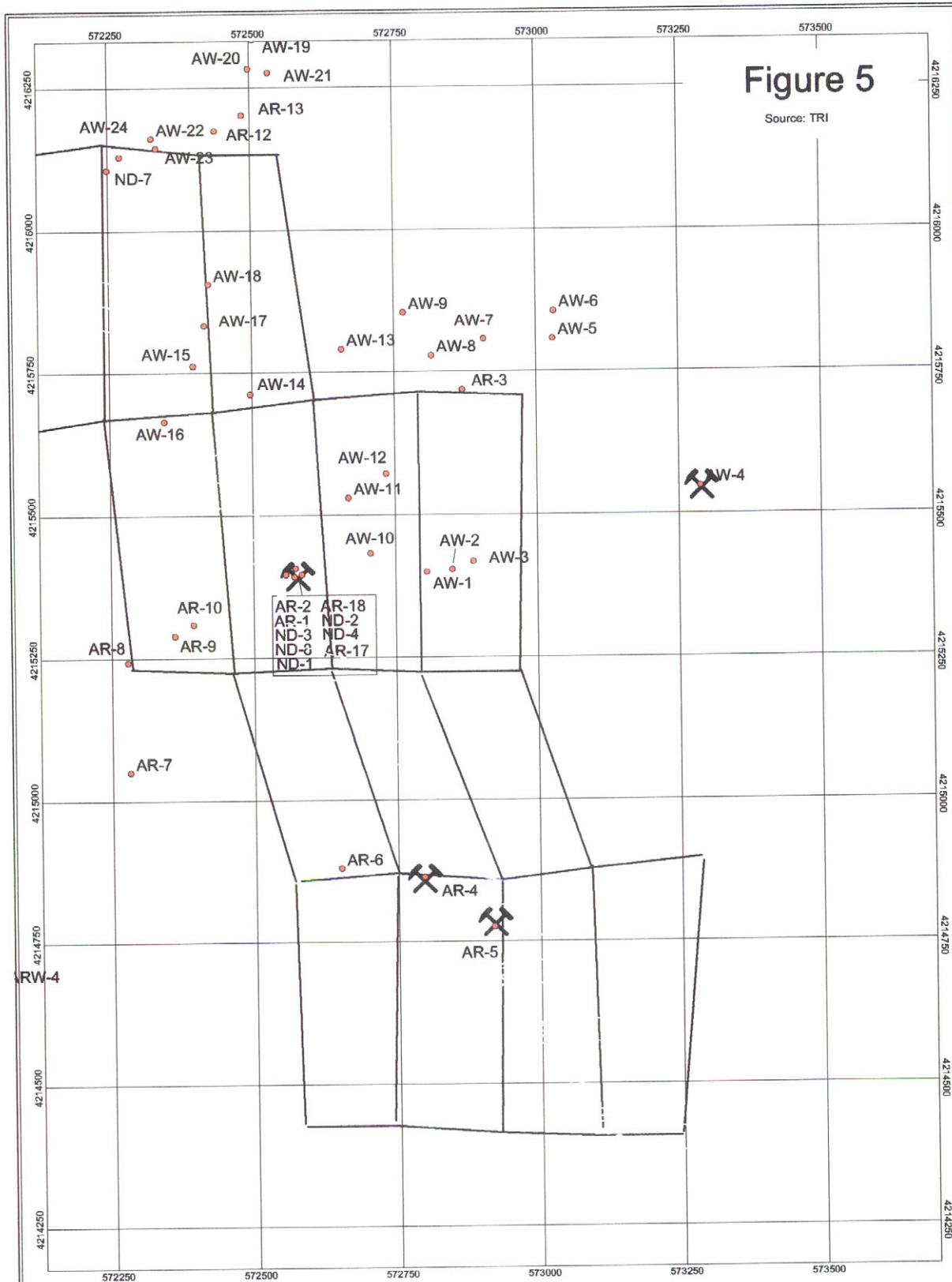
To date, 48 rock chip samples have been collected on the property (Fig. 5). Assay-geochemical results for these samples have been compiled and presented in Figures 6 and 7 and Appendix F. Most rock specimens were collected from outcrops and mine/exploration workings and dumps. Composite “grab” samples were taken to determine the presence or absence of precious metals and pathfinder elements. In general, sample distribution is random and limited to exposed areas or exploration workings.

#### ***12.1.2 Statistical Analysis of Geochemical Data***

Figure 8 is a plot of gold content versus the theoretical pyrite content prepared by TRI. The pyrite content is computed theoretically by taking all of the available sulfur in

# Figure 5

Source: TRI



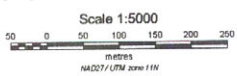
AR-2	AR-18
AR-1	ND-2
ND-3	ND-4
ND-5	AR-17
ND-1	

ARW-4



Mine Shaft

● Prospect (sampled)



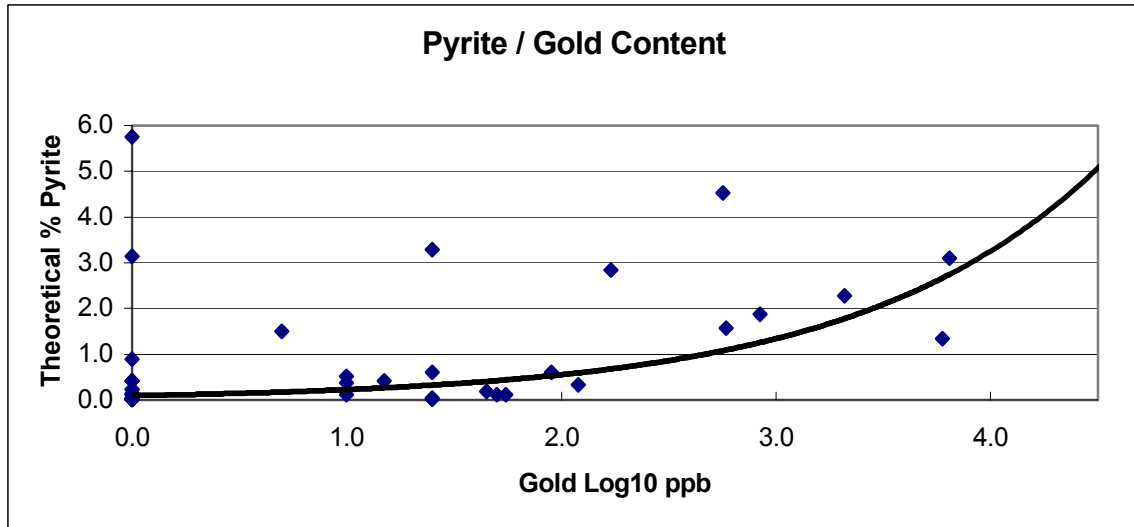
<b>Taranis Resources Inc.</b>
<b>Needles Gold/Silver Project</b> Nye County, Nevada <b>Sample Locations and Numbers</b>
UTM Zone 11N, NAD 27 Grab Sample Locations Database: Needles Geochem.gdb Date: December 9, 2002
<b>John J. Gardiner</b>



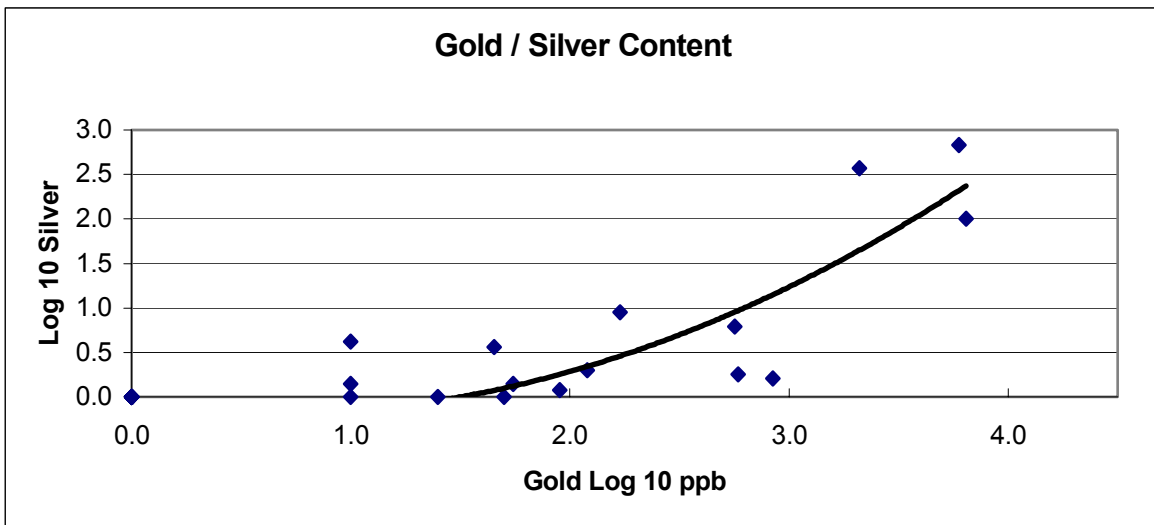


the samples (Chemex ICP-32 method) and converting it with iron to form pyrite ( $\text{FeS}_2$ ). The plot suggests that gold mineralization is related to sulfide content. However, this correlation is based on a limited amount of data and may change after more geochemical data are obtained.

**Figure 8**



Further statistical analysis by TRI suggests gold and silver exhibit a strong correlation (Fig.9), i.e. where there is higher-grade gold there also is higher-grade silver. Although this is a typical correlation seen in other epithermal gold properties in Nye County, it too is based on limited data and may change with the addition of more assay results.



**Figure 9**

### *12.1.3 Results of Rock Chip Sampling*

Preliminary rock chip sampling has been sufficient to confirm the presence of significant ore-grade mineralization with anomalous to high-grade silver-gold values (with supporting pathfinder elements) on the property. Statistical analysis of the geochemical data suggests a possible correlation between high gold values with high pyrite content and high silver values. Sampling density is far too low to establish any primary geochemical dispersion patterns on the property.

### *12.1.4 Geochemical Interpretation*

Significant precious metal values are present at least locally in pyritic epithermal quartz vein material, silicified volcanic tuff and pyritic advanced argillic with quartz veining. The possible correlation of pyrite content (typically ½ to 5% of the rock) in mineralized samples makes I.P./resistivity particularly useful in outlining other mineralized zones on the property (chargeability anomaly highs). However, it should be noted that many samples have considerable pyrite (3-6%) but no significant gold values. Silicified samples that are mineralized should be expressed as resistivity anomalies (highs).

## **12.2 Geophysics**

At the request of the author, all geophysical data collected on the Needles property has been independently reviewed and assessed by geophysicist John Munroe. The following are his findings.

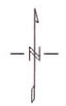
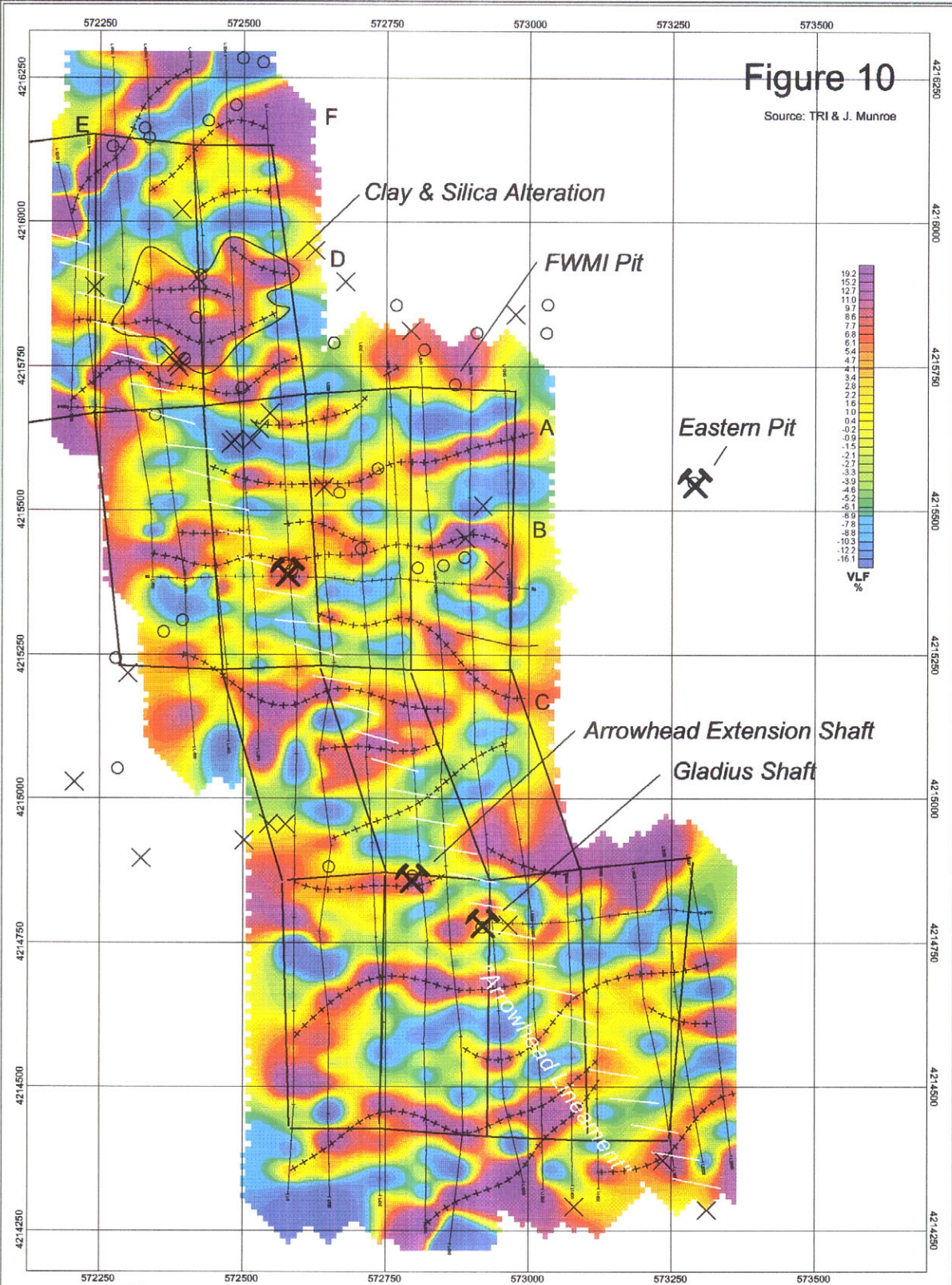
The geophysical equipment employed to complete the magnetic and VLF surveys on the Needles property was rented from Scintrex Ltd. of Denton Texas, and consisted of the ENVI Mag/VLF geophysical system. The ENVI Mag/VLF system is a very robust and high quality portable, digital acquisition system that accurately measures and records the magnetic field and VLF electromagnetic field parameters with excellent precision for mineral exploration programs.

### *12.2.1 Total Field Magnetic Surveys*

Ground magnetic surveying at the Needles property was completed on 18-survey grid and baselines lines spanning the exploration area, totaling 12.65 line miles. Magnetic field measurements were taken at 50-foot station spacing for appropriate detailed coverage of the property. Diurnal magnetic field variations were recorded in the field via a base station magnetometer, and all raw magnetic field data were appropriately corrected to produce an accurate final magnetic field measurement at each station. All magnetic data was digitally recorded and downloaded and imported into a final Geosoft Montaj database to facilitate data processing, gridding, and map making. The Geosoft Montaj software package is the premiere geophysical processing software package in the minerals exploration business.

**Figure 10**

Source: TRI & J. Munroe



Structure

Mine Shaft

Scale 1:5000

50 0 50 100 150 200 250

METERS

NAD83/UTM zone 11N

○ Prospect (sampled)

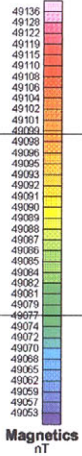
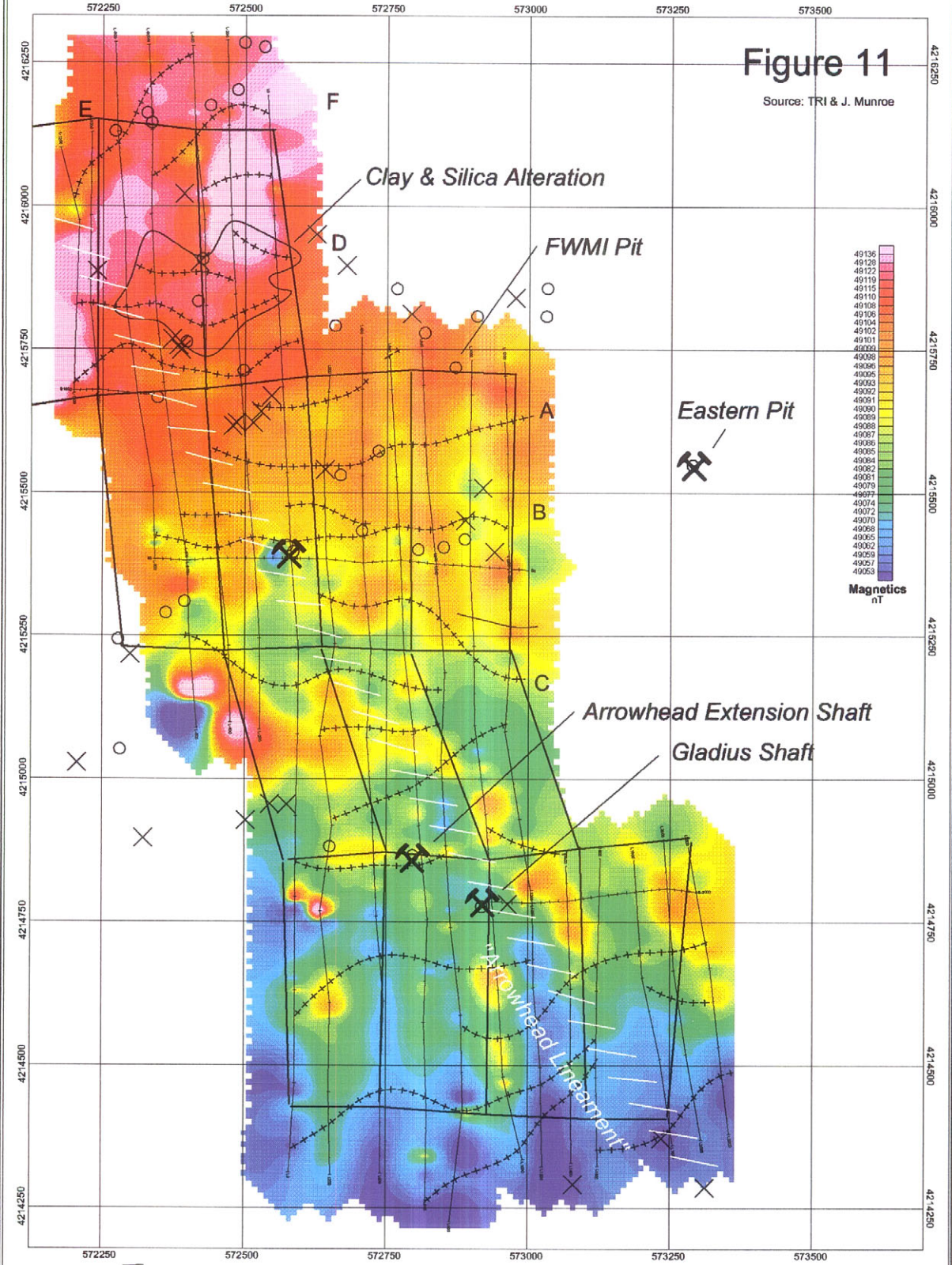
× Prospect (not sampled)

VLF Conductor Axis

Taranis Resources Inc.
Needles Gold/Silver Project Nye County, Nevada VLF Cutler - Maine (24kt)
Located Survey Lines & Prospects Instrumentation - Scintrex Emvi VLF System Database: Needles Mag.gdb Date: December 9, 2002
<b>USExploration Geophysicist: John F. Munroe</b>

# Figure 11

Source: TRI & J. Munroe



- Structure
- Mine Shaft
- Prospect (sampled)
- Prospect (not sampled)
- VLF Conductor Axis

<b>Taranis Resources Inc.</b> <b>Needles Gold/Silver Project</b> <b>Nye County, Nevada</b> <b>Total Field Magnetism</b> Located Survey Lines & Prospects Instrumentation - Scintrex Ervi Magnetometer Database: Needles Mag.gdb Date: December 9, 2002 <b>USExploration Geophysicist: John F. Munroe</b>
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Through an independent examination of the Needles magnetic data, via the re-processing of the data in Geosoft Montaj<sup>®</sup>, which included a line-by-line profile analysis and noise level determination, re-gridding and imaging, it is my determination that the ground magnetic survey data can be deemed accurate and adequate.

### *12.2.2 Preliminary Interpretation*

In general, the imaged total field magnetic data reflect and increase in total field intensity to the north across the Needles prospect area. Increased magnetic intensity is observed in the northwest portion of the grid area and may reflect an increased thickness of Tertiary volcanics. The imaged ground magnetics in this particular area appears to reflect a northeast-southwest linear (structure) intersecting an identified large contiguous area of possible clay and iron oxide alteration. In fact, this large alteration zone appears to be at the juncture with a dominant northwest-southeast structure (designated the Arrowhead Lineament) and the above-mentioned northeast-southwest fault.

As stated above, the most prominent feature traversing the grid area is a lengthy northwest-southeast structure, which is observed in the magnetic image as a weak demagnetized linear. The Arrowhead and Gladius Shafts appear to plot on this apparent structure, and indeed this fault can be extended to the northwest to intersect with the mapped clay and silica alteration zone. The extension of this structure is particularly revealed and supported by the imaged VLF data.

The magnetic image of the Needles property also reveals a possible northeast-southwest cross structure (designated “South Splay”) that traverses through the Arrowhead and Eastern shaft areas. Another northeast-southwest structure passes through the Arrowhead Extension shaft as well.

### *12.2.3 Electromagnetic Surveys (VLF)*

A ground VLF survey was also completed on the Needles property, spanning 18 grid and base lines, totaling 12.65 line miles. As with the magnetic coverage, data was collected at 50-foot station spacings along each survey line utilizing the ENVI Mag/VLF geophysical system. All pertinent VLF field parameters were digitally recorded at each station including total field strength, dip angle, vertical in-phase and quadrature components. The Cutler Maine VLF transmitting station was utilized to provide the proper orientation with respect to the grid lines at the Needles property. The resultant digital VLF data was downloaded and imported into the Geosoft Montaj geophysical software package for final Fraser filtering, gridding, imaging and map making.

For data quality assessment purposes, the Needles VLF database was loaded and re-processed in the Geosoft Montaj<sup>®</sup> software package, and it is my determination that the VLF data can be deemed accurate and adequate.

#### 12.2.4 Preliminary Interpretation

With reference to the Fraser filtered VLF grid imaged data, numerous stacked VLF anomalies have been identified striking in an east-west fashion across the grid area. All prominent VLF conductor axes and trends are identified A through E on the Needles VLF plan and grid map (all conductors identified and prioritized by John J. Gardiner).

It can be stated without question that these east-west conductor trends can be correlated with the existing historic mine shafts (Arrowhead, Arrowhead Extension, Gladius), and may be responding to clay-altered zones with and without sulfides within an east-west-trending bedrock fault-fracture system. These structures may also be water saturated depending upon the thickness of the near surface zone of oxidation and present water table depth.

Also evident in the imaged VLF data is the prominent northwest-southeast structure (Arrowhead lineament) previously identified in the imaged magnetic data set. In fact, the VLF data extends this structure to the northwest where it encroaches upon the large area of clay and silica alteration that is also responding to the VLF. It is interesting to note that VLF conductor E and its southern subsidiary strikes in a northeast-southwest fashion and correlates with the defined structure and magnetic grain depicted by the imaged magnetic data.

In viewing both the magnetic and VLF data, it appears that a major structural intersection has been identified, and that the large area of clay-silica alteration is positioned at the juncture of a northwest, southeast-trending linear (Arrowhead lineament) and a northeast-southwest fault.

To further evaluate the Needles property area via geophysical means, and in particular to help evaluate the VLF conductor trends, the IP/Resistivity method should prove discriminatory. Since sulfide mineralization has been mapped in association with the VLF conductors and clay altered zones, the IP/Resistivity geophysical technique would certainly be the method of choice to map significant disseminated sulfides and/or silicified zones possibly associated with economic gold mineralization on the Needles property. Furthermore, it may be fruitful to complete a structural interpretation of the immediate Needles property area by imaging readably available DEM topographic data in conjunction with regional magnetic and gravity data.

### 12.3 Reliability of Data

After visiting the property, the author has concluded that the quality and reliability of TRI's geologic and geochemical data is adequate for early stage exploration. In the opinion of the author all mapping and rock chip sampling procedures performed by TRI were standard and acceptable methods currently in use by the mining-exploration industry. As previously noted, TRI geophysical data that has been independently reviewed by consulting geophysicist John Munroe who has reported it to be adequate and deemed reliable.

After a field review of many rock chip-sampling sites, the author believes TRI personnel collected represented samples of both mineralized and unmineralized material. However, because all rock chip specimens collected were essentially “grab” samples there may be some inherent bias to the sampling particularly when mineralized material was collected. As previously stated, sampling sites were somewhat random, and sampling density to date is low.

### **13.0 DRILLING**

TRI has not completed any drilling on the property to date. There has not been any documented drilling activity on most of the property to the knowledge of the author or TRI. However, as previously mentioned there is evidence of two reverse circulation drillhole sites, although no record of drilling has been obtained by TRI.

### **14.0 SAMPLING METHOD AND APPROACH**

#### ***14.1 Rock Chip Sampling***

Two samplers (officers of the company) using a hammer and chisel collected all outcrop and mine/exploration workings samples. Rock exposures were chipped (grab sample) and cuttings caught by or placed in a cloth bag; mine dump grab samples were also collected. Sample weights varied from 2 to 5 kilograms. TRI believes care was exercised to insure the same amount of material was collected at each sample site and that these samples were representative of mineralization and/or host rocks present. Sample sites were located using a Global Positioning System (GPS) unit. Bags were labeled, tied and at the end of the day placed in a secure area of the exploration camp. Samples were taken directly to ALS Chemex (Chemex) in Reno then sent to its preparation lab in Elko, Nevada. Precious metal fire assays were completed in Chemex’s Reno lab and 32-element ICP analysis in their Vancouver B.C. laboratory. Chemex is registered to ISO 9001:2000 for the “provision of assay and geochemical analytical services.”

Sampling of outcrops and mine/exploration workings were completed in exposed areas both within and outside the property boundaries. There was no grid sampling but rather TRI conducted prospecting over the entire property as well as the adjacent mine sites. Sampling was focused in the central Arrowhead Mine area and portions of the claim block where there is good exposure, mine/exploration workings and surface mineralization. TRI did manage to collect representative samples of non-mineralized outcrops to balance the sampling program. Although sample density is relatively low, most of the claim block was prospected for mineralized areas in a reconnaissance manner. From what the author has observed during his visit, sample quality and distribution are adequate for this early stage of exploration.

## 15.0 SAMPLE PREPARATION, ANALYSIS AND SECURITY

### *15.1 Sample Preparation*

#### *15.1.1 Rock Chip Samples*

Rock Samples as received by the Chemex preparation lab were put through a primary jaw crusher and then a secondary cone crusher to reduce the material to approximately 10-mesh. A 300-gram sub-sample was obtained using a riffle splitter and pulverized with a vibratory ring pulverizer to-150 mesh for analysis.

### *15.2 Sample Analysis*

#### *15.2.1 Rock Chip Samples*

Geochemical procedures used by Chemex included trace level methods using conventional Inductively Coupled Plasma-Atomic Emission Spectroscopy (“ICP-AES”) analysis with sample decomposition by triple acid digestion.

A prepared sample (0.50 gram) was digested with perchloric, nitric and hydrofluoric acids to dryness. The residue was taken up in a volume of 25 ml of 10% hydrochloric acid and the resulting solution was analyzed by ICP. Results are corrected for spectral inter-element interferences. A 32-element package (excluding Au) was completed for TRI.

Silver values exceeding 100 ppm for any of these samples were typically analyzed for “ore grade” silver, lead and zinc content using atomic absorption spectroscopy (“AAS”) with a nitric-aqua regia digestion. A prepared sample (0.2 to 2.0g) was digested with concentrated nitric acid for one half hour. After cooling, hydrochloric acid was added to produce aqua regia and the mixture was then digested for an additional hour and a half. An ionization suppressant was added if molybdenum was to be measured. The resulting solution was diluted to volume (100 or 250 ml) with demineralized water, mixed and then analyzed by atomic absorption spectrometry against matrix-matched standards.

Gold was analyzed by AAS with sample decomposition by fire assay fusion. A prepared sample was fused with a mixture of lead oxide, sodium carbonate, borax, silica and other reagents as required inquarted with 6 mg of gold-free silver and then cupelled to yield a precious metal bead. The bead was digested for ½ hour in dilute nitric acid. Hydrochloric acid was then added and the solution was digested for an additional hour. The digested solution was cooled, diluted to 7.5 ml with demineralized water, homogenized and then analyzed by atomic absorption spectrometry.

### **15.3 Security**

As previously stated, samples collected in the field were transported directly to the lab in Reno (Chemex) by the samplers. The author's samples were also transported directly to the Chemex's Reno lab. Further, the author has discussed security protocol with representatives of Chemex and was satisfied that they meet reasonable stands for protection of sample integrity.

### **15.4 Quality Control**

In the author's opinion, sampling techniques, sample quality, sample preparation, and security were adequate for early stage exploration purposes; sampling procedures preformed by TRI were standard and acceptable methods currently in use by the mining-exploration industry. The author observed rock chip sampling in progress during the time of his visit and believes representative mineralized and unmineralized samples were collected on the property by TRI. Analytical procedures utilized on TRI's samples by Chemex are considered standard for the industry.

No additional check (duplicate) or external blank samples were submitted by TRI or requested from Chemex. However, to establish some degree of quality control for this report the author collected 8 represented grab samples of mineralized material previously sampled by TRI. These samples were submitted to Chemex for assay (Appendix C and D).

As previously stated, all rock specimens collected, including the author's, were composite "grab" samples that could introduce some inherent bias to assay values. However, this is not considered a problem at this stage of exploration since the purpose of the sampling was to confirm or determine the presence of precious metal mineralization.

## **16.0 DATA VERIFICATION**

Based upon his property visit and review of check sampling data, the author can verify the presence of the described mineralized showings on the property and confirm that rock chip sampling was actually completed in a reasonable and satisfactory manner by TRI. Sample sites described by TRI were found identified and sample areas located in the workings and on surface. Although limited, assay results for check samples (including dump samples) collected by the author agree reasonably well with those of TRI in both order of magnitude and absolute values (Appendices B, C, D and F).

## **17.0 ADDITIONAL PROPERTIES**

There are no significant mineral prospects or occurrences adjacent to the Needles property (Gordo claim block). However, the Reville District lies several miles to the south. In the Reville District, rich fault controlled Zn-Pb-Sb-Ag-Au-bearing quartz vein

deposits were developed from 1866 to 1963. Although the geologic setting is similar to the Arrowhead District, most of the deposits were hosted in Paleozoic basement rocks along or near a major, irregular, moderately south dipping fault that separates the Tertiary section from the up-thrown Paleozoic strata. These deposits are likely Tertiary in age, and the major fault may represent a feeder structure developed in deeper levels of an epithermal system that is possibly related to ore-deposits found in the Arrowhead District.

## **18.0 MINERAL PROCESSING AND METALLURGICAL TESTING**

The author is not aware of any recent or past mineral processing or metallurgical testing by TRI or other parties of base-precious metal-bearing material from the Needles property.

## **19.0 MINERAL RESOURCE AND MINERAL RESERVE ESTIMATIONS**

There has not been sufficient assay data (from drilling, trenching, underground workings, etc) collected on the claims to establish mineral resources or reserves.

## **20.0 OTHER RELEVANT DATA AND INFORMATION**

None at this time.

## **21.0 INTERPRETATION AND CONCLUSIONS**

### ***21.1 Interpretation***

In the opinion of the author, all available field exploration data generated by TRI on the Needles property can be interpreted as geologic components characteristic of an overprinted, intermediate-sulfidation epithermal precious metal system.

The structural component of the system is interpreted as a complex system of northeast-trending faults, a north, northwest-trending structural zone (includes 3 mapped faults and 1 inferred fault lineament termed the “Arrowhead Lineament”). Also, a series of east-west and northeast-southwest-trending inferred and mapped cross faults transect both the Tertiary Tuff of Arrowhead (*Tta*) and Monotony Tuff formations (*Tmi* and *Tm*) as well as subvolcanic intrusive rhyodacite (*Trd*) dikes, sills and plugs (Fig. 4). Known precious metal-bearing quartz vein deposits and showings within this system, including those at Arrowhead and Arrowhead Extension Mines, appear localized at the intersections of the east-west and northeast-southwest-trending cross faults with the Arrowhead Lineament.

The presence on the property of high-grade gold-silver bearing pyritic quartz vein material associated with silicification, pyritic advanced argillic and propylitic alteration support the geologic component of the epithermal system. Although erosion levels, aerial distribution and zoning patterns are poorly known, alteration may be centered along the

major north-northwest-trending Arrowhead structural zone (where high structural permeability is present). Pyritic advanced argillic alteration is interpreted to overprint at least in part pyrite-bearing propylitic-argillic alteration, silicification and possibly quartz veining. This steam-heated overprint alteration could be focused vertically along important fault conduits. Its depth along such structures (below the paleo water table) is probably limited, eventually giving way to early alteration assemblages at deeper depths in the epithermal system. Interpretation of geophysical data suggests argillic (clay-dominated) alteration may be confined to the east-west and northeast-southwest-trending cross faults and at least one broad area at the northwest end of Arrowhead Lineament. This broader area of inferred argillic alteration occurs at a major intersection of the Arrowhead Lineament with a mapped northeast-trending fault and magnetic lineament (fault), and may be peripheral to bonanza vein development at depth.

## ***21.2 Conclusions***

The author has made the following conclusions after reviewing all relevant exploration data for this property:

- 1) TRI has identified on the property mid to upper levels of an overprinted, intermediate-sulfidation epithermal system developed in a Tertiary-age sequence consisting of Tuff of Arrowhead, a rhyodacite plug and the Monotony Tuff.
- 2) At the Arrowhead and Arrowhead Extension Mines, as well as other mine sites, TRI has confirmed the presence of anomalous to ore-grade precious metal mineralization.
- 3) Investigation of cuts, outcrops and mine dumps indicates precious metal mineralization occurs as pyritic replacement quartz vein – vein stockworks that are enveloped by zones of silicification and locally (at the Arrowhead Mine) intense pyrite-bearing propylitic alteration. No argillic (clay-dominated) has been located. However, an outer halo of pyritic steam-heated, pyritic advanced argillic (quartz-alunite+clay) alteration (acid leach alteration) is evident in many outcrops and at most mine sites.
- 4) The advanced argillic alteration is likely a late overprint upon early-formed silicification, propylitic and argillic (if present) as well as possibly the quartz veins themselves. It is possible that the advanced alteration overprint is focused vertically along feeder fault conduits. Aerial distribution and zoning patterns of associated alteration are poorly known but is probably complicated due to the overprint.

- 5) Previous mapping suggests alteration may be concentrated within a narrow (~ 2,500' wide, ~10,000' long) corridor that is related to a major northwest-trending structural zone (Arrowhead structural zone).
- 6) Initial geophysical surveying coupled with previous mapping has defined a structural framework within the epithermal system that includes several mapped and inferred northeast-trending faults (lineaments), a major north-northwest-trending structural zone (designated the Arrowhead structural zone that includes a major fault lineament (Arrowhead lineament)) and a series of en echelon east-west (inferred) and northeast-southwest (mapped)-trending cross faults. Quartz vein deposits are localized along fault-fracture structural intersections.
- 7) Interpretation of geophysical data suggests argillic (clay dominated) alteration may be confined to the inferred east-west and mapped northeast-southwest-trending cross faults. A linear alteration pattern is interpreted from VLF anomalies and has not been confirmed by surface or underground mapping. In addition, a large (1000' x 600') area of possible argillic (clay-dominant) alteration (intersected by at least three inferred east-west-trending cross faults, a mapped northeast-trending fault and northeast-trending magnetic lineament) at the north end of the claim block has also been delineated by VLF and magnetic data. These data suggest this area may represent more widespread argillic alteration that is peripheral to bonanza-vein development at depth.
- 8) A major structural intersection has been identified at the north end of the claim block. Here the area of possible argillic alteration is positioned at the juncture of a mapped northeast-trending fault and northeast-trending magnetic lineament with the north-northwest-trending Arrowhead structural zone (including the Arrowhead lineament). Altered and bleached (steam heated, pyritic, advanced argillic alteration) volcanic tuffs have been noted in this area and at numerous other prospects in the district during the author's visit. This target area is considered a high priority based on the limited data generated to date by TRI.

## 22.0 RECOMMENDATIONS

In the opinion of the author, this property's overall character has more than sufficient merit to justify continuation of an exploration program. The following recommendations concerning a next phase of exploration work include the following:

- 1) Detailed geologic and alteration mapping and additional rock chip sampling should be completed for the entire claim block. The aerial distribution of surface geochemical and hydrothermal alteration zoning patterns is poorly known at this time.
- 2) Complete an IP/resistivity survey of the entire claim block. The survey should in conjunction with surface mapping, confirm inferred structures and alteration zones identified by the previous VLF-magnetic surveys and delineate new argillic (clay-rich) alteration (IP chargeability highs), silicification (resistivity highs; most important because it is directly related to ore veins) and sulfide zones (IP chargeability highs; there may be a strong correlation between pyrite and precious metal grades) that may be associated with and related to potentially economic bonanza quartz veins at depth.
- 3) To compliment the IP/resistivity survey, complete DEM (digital elevation measurements) modeling of the prospect area to refine and delineate new fault lineaments.
- 4) To further evaluate IP-resistivity anomalies generated from undertaking further geophysical work, soil geochemical surveys over the entire claim block are recommended. Results of the survey will help define geochemical zoning patterns in covered areas as well as aid in prioritizing geophysical anomalies.
- 5) Surface trenching and diamond drilling should be utilized to test targets identified. The Tomahawk claims should be perfected by paying the required county recording and BLM fees.
- 6) Expansion of TRI's land position to the north and west is recommended. Additional ground will provide protection of the high priority structural intersection area and also control prospective ground particularly near a northeast-trending ("North Splay") fault that may represent a mineralized range front structure (potential feeder structure).

## **2.0 Proposed Budget**

The following proposed budget is intended for an exploration program that includes geological-alteration mapping, rock chip sampling geochemical-geophysical surveys, trenching and diamond core drilling. The program would be completed in several phases. This would include Phase I follow-up geologic/geophysical/geochemical surveys, and trenching, followed by a Phase II drilling program.

### **Phase I**

Personnel	
Geologist (40 days @ US\$350/day) (includes report writing)	<b>\$14,000</b>
Technician #1 (30 days @ US\$125/day)	<b>\$3,750</b>
Drafting (200 hrs @ US\$24/hr)	<b>\$22,550</b>
Geochemistry (soil and rock chip; 32-element ICP analysis with fire assay for Au)	
100 rock chip (~US\$12/sample)	\$1,200
500 soil (~US\$12/sample)	<u>\$6,000</u>
	<b>\$7,200</b>
Geophysics IP-resistivity survey)	
15 days @ \$1,500/day plus \$1,000 for mobilization-demobilization	<b>\$23,500</b>
DEM modeling (7days @ \$300/day)	<b>\$2,100</b>
Land (Holding Costs for 2003)	
Unpatented claims (Gordo claim block)	
BLM (14 claims @ \$100/claim)	\$1,400
County recording (14 claims @ \$12.50 for the first claim and \$8.50/claim thereafter)	\$183
New land acquisition (Tomahawk claim block)	
BLM fees (9 claims @ \$135/claim)	\$1,215
County recording (claims @ \$25/claim + \$4.00)	\$229
Holding costs for Tomahawk claim block in 2003	
BLM (9 claims @ \$100/claim)	\$900
County recording (9 claims @ \$12.50 for the first claim and \$8.50/claim thereafter)	\$80.50
New Acquisition (10 claims at the north end of current property) staking and filing fees estimated to be \$300/claim (10 claims @ \$300/claim)	<u>\$3,000</u>
	<b>\$7,007.50</b>
Trenching (track-mounted backhoe)	
10days (80 hrs @ \$85/hr)	<b>\$6,800</b>

**Phase II**

Drilling (5000 feet of HQ-size core in 15 holes)	
Direct drilling costs (\$23/ft)	<b>\$115,000</b>
Mob-demobilization	<b>\$1,200</b>
Contingency (10%)	<b>\$15,000</b>
Drill site preparation and reclamation (\$1,000/hole)	<b>\$15,000</b>
Assays on drill core samples (200 samples @ \$12/sample)	<b>\$2,400</b>
Supervision	
Geologist (80 days @ \$350/day)	<b>\$28,000</b>
(includes 20 days for report writing)	
Technician (60 days @ \$125/day)	<b>\$7,500</b>
\$184,100	
Support (30 days for Phase I and 60 days for Phase II)	
Camp operation (includes food, supplies, gas, wireless phone, ATV and software leasing) (90 days @ \$250/day)	\$22,500
2Vehicle (rental, gas, insurance, etc, US\$1,200/month)	\$7,200
Contingency (~ 10%)	\$3,000
Plane fares	<u>\$1,000</u>
	<b>\$33,700</b>

**Total proposed budget: ~US\$287,000**

## 23.0 REFERENCES

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- White, N.C., and Hedenquest, J.W., 1995, Epithermal Gold Deposits: Styles, Characteristics and Exploration: Society of Economic Geology Newsletter, October 1995, No. 23, p. 1, 9-13.

## 24.0 CERTIFICATE OF AUTHOR

I, Theodore A. DeMatties, do hereby certify that:

- 1) I am an independent consulting geologist with a residence and business address of 34,898 University Ave., Cambridge, Minnesota, 55008 USA.
- 2) I have received the following degrees in geological sciences:  
B.S. (1971) and M.A.(1974), State University of New York, Oneonta, New York.
- 3) I am a certified and licensed geologist with the American Institute of Professional Geologists (CPG # 4446), State of Minnesota (License # 30184) and State of Wisconsin (License # 186-013).
- 4) I have been practicing as a professional geologist for 29 years since my graduation from university.
- 5) I have read the definition of “qualified person” set out in National Instrument 43-101(NI 43-101) and certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfill the requirements to be a “qualified person” for the purposes of NI 43-101.
- 6) I am responsible for the preparation of all sections of the technical report titled *An Evaluation of the Needles Gold-Silver Property, Nye County, Nevada, USA* and dated January 1, 2003 relating to the Needles property. I have visited the Needles property on December 10, 2002 for 1 day.
- 7) I have had no prior involvement with the property that is the subject of the Technical Report.
- 8) I am not aware of any material fact or material change with respect to the subject matter of the Technical Report that is not reflected in the Technical Report, the omission to disclose which makes the Technical Report misleading.
- 9) I am independent of the issuer applying all of the tests set out in Section 1.5 of National Instrument 43-101.
- 10) I have read National Instrument 43-101 and Form 43-101 F1, and the Technical Report has been prepared in compliance with that instrument and form.
- 11) I consent to the filing of the Technical Report with any stock exchange and other regulatory authority and any publication by them, including electronic publication in the public company files on their websites accessible by the public, of the Technical Report.

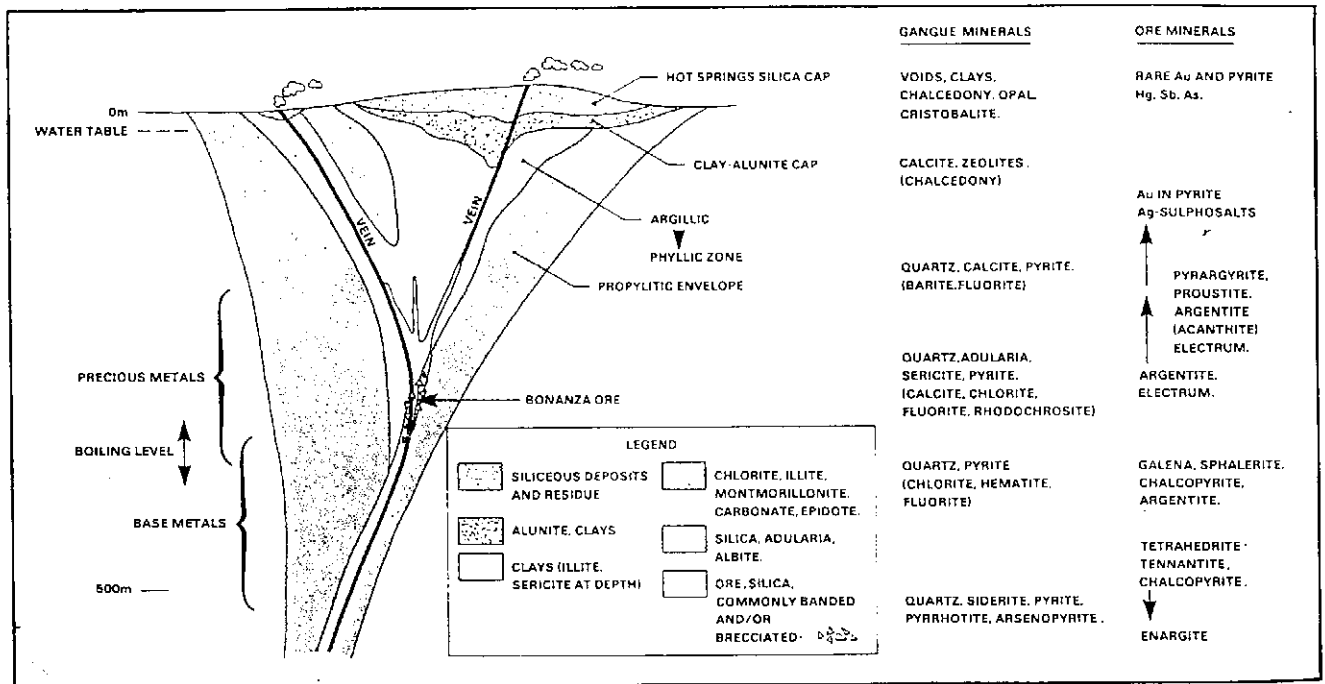
Dated this 1st Day of February, 2003

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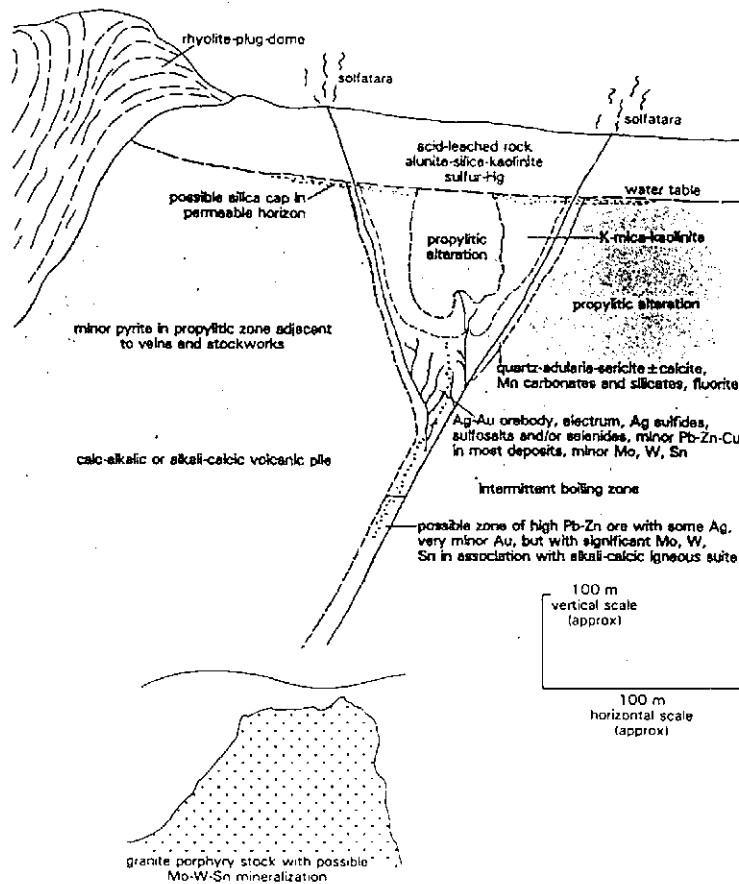
Theodore A. DeMatties, CPG

## **APPENDIX A**

Schematic illustrating epithermal deposit models  
(after Buchanan, 1981 et al).



Idealized section of a bonanza epithermal deposit. (After Buchanan, 1981). Real systems are commonly more complex because this single-stage model is overprinted by several stages of mineralization related to migration of fluid boiling or degassing levels.



Schematic cross section of epithermal precious metal mineralization related to granite-rhyolite magmatism. Modified in part from Randall (1979), Buchanan (1981), and Giles and Nelson (1982).

**APPENDIX B**

Original assay certificates for TRI Samples  
(ALS Chemex Labs).



# ALS Chemex

Chemex Labs, Inc.  
 Analytical Chemists \* Geochemists \* Registered Assayers  
 994 Glendale Ave., Unit 3, Sparks  
 Nevada, U.S.A. 89431  
 PHONE: 775-356-5395 FAX: 775-355-0179

To: TARANIS RESOURCES INC.  
 14247 W. ILIFF AVE.  
 LAKEWOOD, COLORADO  
 80228, USA

A0222933

Comments: ATTN: JIM HELGESON

## CERTIFICATE

A0222933

(TLX) - TARANIS RESOURCES INC.

Project: TR  
 P.O. #:

Samples submitted to our lab in Sparks, NV  
 This report was printed on 02-SEP-2002.

### SAMPLE PREPARATION

METHOD CODE	NUMBER SAMPLES	DESCRIPTION
205	5	Geochem ring to approx 150 mesh
226	5	0-3 Kg crush and split
3202	5	Rock - save entire reject
229	5	ICP - Aq Digestion charge

\* NOTE 1:

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

## ANALYTICAL PROCEDURES

METHOD CODE	NUMBER SAMPLES	DESCRIPTION	METHOD	DETECTION LIMIT	UPPER LIMIT
AU-AA23	5	AU-AA23 : Au ppb: Fuse 30 grams	FA-AAS	5	10000
Ag-ICP41	5	Ag ppm: 32 element, soil & rock	ICP-AES	0.2	100.0
Al-ICP41	5	Al %: 32 element, soil & rock	ICP-AES	0.01	15.00
As-ICP41	5	As ppm: 32 element, soil & rock	ICP-AES	2	10000
B-ICP41	5	B ppm: 32 element, rock & soil	ICP-AES	10	10000
Ba-ICP41	5	Ba ppm: 32 element, soil & rock	ICP-AES	10	10000
Be-ICP41	5	Be ppm: 32 element, soil & rock	ICP-AES	0.5	100.0
Bi-ICP41	5	Bi ppm: 32 element, soil & rock	ICP-AES	2	10000
Ca-ICP41	5	Ca %: 32 element, soil & rock	ICP-AES	0.01	15.00
Cd-ICP41	5	Cd ppm: 32 element, soil & rock	ICP-AES	0.5	500
Co-ICP41	5	Co ppm: 32 element, soil & rock	ICP-AES	1	10000
Cr-ICP41	5	Cr ppm: 32 element, soil & rock	ICP-AES	1	10000
Cu-ICP41	5	Cu ppm: 32 element, soil & rock	ICP-AES	1	10000
Fe-ICP41	5	Fe %: 32 element, soil & rock	ICP-AES	0.01	15.00
Ga-ICP41	5	Ga ppm: 32 element, soil & rock	ICP-AES	10	10000
Hg-ICP41	5	Hg ppm: 32 element, soil & rock	ICP-AES	0.01	10.00
K-ICP41	5	K %: 32 element, soil & rock	ICP-AES	10	10000
La-ICP41	5	La ppm: 32 element, soil & rock	ICP-AES	0.01	15.00
Mg-ICP41	5	Mg %: 32 element, soil & rock	ICP-AES	5	10000
Mn-ICP41	5	Mn ppm: 32 element, soil & rock	ICP-AES	1	10000
Mo-ICP41	5	Mo ppm: 32 element, soil & rock	ICP-AES	0.01	10.00
Na-ICP41	5	Na %: 32 element, soil & rock	ICP-AES	1	10000
Ni-ICP41	5	Ni ppm: 32 element, soil & rock	ICP-AES	10	10000
P-ICP41	5	P ppm: 32 element, soil & rock	ICP-AES	2	10000
Pb-ICP41	5	Pb ppm: 32 element, soil & rock	ICP-AES	0.01	10.00
S-ICP41	5	S %: 32 element, rock & soil	ICP-AES	2	10000
Sb-ICP41	5	Sb ppm: 32 element, soil & rock	ICP-AES	1	10000
Sc-ICP41	5	Sc ppm: 32 elements, soil & rock	ICP-AES	1	10000
Sr-ICP41	5	Sr ppm: 32 element, soil & rock	ICP-AES	0.01	10.00
Ti-ICP41	5	Ti %: 32 element, soil & rock	ICP-AES	10	10000
Tl-ICP41	5	Tl ppm: 32 element, soil & rock	ICP-AES	10	10000
U-ICP41	5	U ppm: 32 element, soil & rock	ICP-AES	1	10000
V-ICP41	5	V ppm: 32 element, soil & rock	ICP-AES	1	10000
W-ICP41	5	W ppm: 32 element, soil & rock	ICP-AES	10	10000
Zn-ICP41	5	Zn ppm: 32 element, soil & rock	ICP-AES	2	10000

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# ALS Chemex

Chemex Labs, Inc.  
 Analytical Chemists \* Geochemists \* Registered Assayers  
 994 Glendale Ave., Unit 3, Sparks  
 Nevada, U.S.A. 89431  
 PHONE: 775-356-5395 FAX: 775-355-0179

To: TARANIS RESOURCES INC.  
 14247 W. ILIFF AVE.  
 LAKEWOOD, COLORADO  
 80228, USA

Project: TR  
 Comments: ATTN: JIM HELGESON

Page Number : 1-A  
 Total Pages : 1  
 Certificate Date: 02-SEP-2002  
 Invoice No. : 10222933  
 P.O. Number :  
 Account : TLX

## CERTIFICATE OF ANALYSIS A0222933

SAMPLE	PREP CODE	Au ppb FR+AA	Ag ppm	Al %	As ppm	B ppm	Ba ppm	Be ppm	Bi ppm	Ca %	Cd ppm	Co ppm	Cr ppm	Cu ppm	Fe %	Ga ppm	Hg ppm	K %	La ppm	Mg %
TR-1	226	5	< 0.2	0.53	366	< 10	210	2.5	1.4	0.21	21.0	59	11	< 1	>15.00	< 10	< 1	0.11	< 10	0.17
TR-2	226	1040	88.2	0.15	1120	< 10	70	0.5	318	0.08	15.0	3	60	58	9.56	< 10	< 1	0.01	< 10	0.03
TR-3	226	170	54.0	0.20	244	< 10	30	< 0.5	70	0.07	20.5	12	55	26	4.17	< 10	1	0.06	< 10	0.05
AR-1	226	5980	>100.0	0.13	78	< 10	20	< 0.5	< 2	0.05	< 0.5	1	54	29	0.74	< 10	< 1	0.12	< 10	0.01
AR-2	226	2090	>100.0	0.12	86	< 10	20	< 0.5	< 2	0.05	< 0.5	1	74	18	1.00	< 10	< 1	0.11	< 10	0.01

CERTIFICATION: \_\_\_\_\_



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 994 Glendale Ave., Unit 3, Sparks  
 Nevada, U.S.A. 89431  
 PHONE: 775-356-5395 FAX: 775-355-0179

To: TARANIS RESOURCES INC.  
 14247 W. ILIFF AVE.  
 LAKEWOOD, COLORADO  
 80228, USA

Project: TR  
 Comments: ATTN: JIM HELGESON

Page Number : 1-B  
 Total Pages : 1  
 Certificate Date: 02-SEP-2002  
 Invoice No. : I0222933  
 P. O. Number :  
 Account : TLX

## CERTIFICATE OF ANALYSIS A0222933

SAMPLE	PREP CODE	Mn ppm	Mo ppm	Na %	Ni ppm	P ppm	Pb ppm	S %	Sb ppm	Sc ppm	Sr ppm	Ti %	Tl ppm	U ppm	V ppm	W ppm	Zn ppm
TR-1	205 226	2320	20	0.01	17	200	22	0.03	< 2	< 1	35	< 0.01	< 10	480	33	80	2320
TR-2	205 226	25	78	< 0.01	4	100	2670	0.06	2	< 1	18	< 0.01	< 10	10	391	10	2360
TR-3	205 226	85	20	0.01	7	60	>10000	0.20	10	< 1	39	< 0.01	< 10	< 10	7	< 10	>10000
AR-1	205 226	95	< 1	< 0.01	1	190	174	0.36	16	< 1	6	< 0.01	< 10	< 10	1	10	66
AR-2	205 226	90	3	< 0.01	2	220	186	0.61	44	< 1	6	< 0.01	< 10	< 10	4	10	100

CERTIFICATION:



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994 Glendale Ave., Unit 3, Sparks  
Nevada, U.S.A. 89431  
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To: TARANIS RESOURCES INC.  
14247 W. ILIFF AVE.  
LAKEWOOD, COLORADO  
80228, USA

A0223513

Comments: ATTN: JIM HELGESON

## CERTIFICATE

A0223513

(TLX) - TARANIS RESOURCES INC.

Project: TR  
P.O. #:

Samples submitted to our lab in Sparks, NV  
This report was printed on 05-SEP-2002.

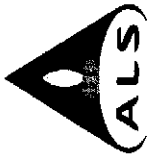
## SAMPLE PREPARATION

METHOD CODE	NUMBER SAMPLES	DESCRIPTION
212	3	Overlimit pulp, to be found

## ANALYTICAL PROCEDURES

METHOD CODE	NUMBER SAMPLES	DESCRIPTION	METHOD	DETECTION LIMIT	UPPER LIMIT
Ag-AA46	2	Ag g/t: Conc. Nitric HCl dig'n	AAS	1	1500
Pb-AA46	1	Pb %: Conc. Nitric-HCl dig'n	AAS	0.01	50.0
Zn-AA46	1	Zn %: Conc. Nitric-HCl dig'n	AAS	0.01	50.0

The results of this assay were based solely upon the content of the sample submitted. Any decision to invest should be made only after the potential investment value of the claim or deposit has been determined based on the results of assays of multiple samples of geologic materials collected by the prospective investor or by a qualified person selected by him/her and based on an evaluation of all engineering data which is available concerning any proposed project  
Statement required by Nevada State Law NRS 519



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To: TARANIS RESOURCES INC.  
 14247 W. ILIFF AVE.  
 LAKEWOOD, COLORADO  
 80228, USA

Project: TR  
 Comments: ATTN: JIM HELGESON

Page Number : 1  
 Total Pages : 1  
 Certificate Date: 05-SEP-2002  
 Invoice No. : 10223513  
 P.O. Number :  
 Account : TLX

## CERTIFICATE OF ANALYSIS      A0223513

SAMPLE	PREP CODE	Ag g/t	Pb %	Zn %	CERTIFICATE OF ANALYSIS			
TR-3	212	681	4.83	1.14				
AR-1	212	371						
AR-2	212							

CERTIFICATION: \_\_\_\_\_



# ALS Chemex

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 Analytical Chemists \* Geochemists \* Registered Assayers  
 994 Glendale Ave., Unit 3,  
 Sparks  
 Nevada, U.S.A.  
 PHONE: 775-356-5395 FAX: 775-955-0179

## CERTIFICATE

**A0228685**

(TLX) - TARANIS RESOURCES INC.

Project: N  
 P.O. #:

Samples submitted to our lab in Elko, NV  
 This report was printed on 28-NOV-2002.

### SAMPLE PREPARATION

METHOD CODE	NUMBER SAMPLES	DESCRIPTION
PUL-31	6	Pulv. <250g to >85%/-75 micron
STO-21	6	Reject Storage-First 90 Days
LOG-22	6	Samples received without barcode
CRU-31	6	Crush to 70% minus 2mm
SPL-21	6	Splitting Charge
229	6	ICP - AQ 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.

To: TARANIS RESOURCES INC.

14247 W. ILIFF AVE.  
 LAKEWOOD, COLORADO  
 80228, USA

Comments: ATTN: JOHN GARDNER CC: JIM HELGESON

## ANALYTICAL PROCEDURES 1 of 2

METHOD CODE	NUMBER SAMPLES	DESCRIPTION	METHOD	DETECTION LIMIT	UPPER LIMIT
AU-AA23	6	AU-AA23 : Au Ppb: Fuse 30 grams	FA-AAS	5	10000
Ag-ICP41	6	Ag ppm: 32 element, soil & rock	ICP-AES	0.2	100.0
Al-ICP41	6	Al %: 32 element, soil & rock	ICP-AES	0.01	15.00
As-ICP41	6	As ppm: 32 element, soil & rock	ICP-AES	2	10000
B-ICP41	6	B ppm: 32 element, rock & soil	ICP-AES	10	10000
Ba-ICP41	6	Ba ppm: 32 element, soil & rock	ICP-AES	10	10000
Be-ICP41	6	Be ppm: 32 element, soil & rock	ICP-AES	0.5	100.0
Bi-ICP41	6	Bi ppm: 32 element, soil & rock	ICP-AES	2	10000
Ca-ICP41	6	Ca %: 32 element, soil & rock	ICP-AES	0.01	15.00
Cd-ICP41	6	Cd ppm: 32 element, soil & rock	ICP-AES	0.5	500
Co-ICP41	6	Co ppm: 32 element, soil & rock	ICP-AES	1	10000
Cr-ICP41	6	Cr ppm: 32 element, soil & rock	ICP-AES	1	10000
Cu-ICP41	6	Cu ppm: 32 element, soil & rock	ICP-AES	0.01	15.00
Fe-ICP41	6	Fe %: 32 element, soil & rock	ICP-AES	10	10000
Ga-ICP41	6	Ga ppm: 32 element, soil & rock	ICP-AES	1	10000
Hg-ICP41	6	Hg ppm: 32 element, soil & rock	ICP-AES	0.01	10.00
K-ICP41	6	K %: 32 element, soil & rock	ICP-AES	10	10000
La-ICP41	6	La ppm: 32 element, soil & rock	ICP-AES	0.01	10.00
Mg-ICP41	6	Mg %: 32 element, soil & rock	ICP-AES	10	10000
Mn-ICP41	6	Mn ppm: 32 element, soil & rock	ICP-AES	0.01	15.00
Mo-ICP41	6	Mo ppm: 32 element, soil & rock	ICP-AES	5	10000
Na-ICP41	6	Na %: 32 element, soil & rock	ICP-AES	1	10000
Ni-ICP41	6	Ni ppm: 32 element, soil & rock	ICP-AES	0.01	10.00
P-ICP41	6	P ppm: 32 element, soil & rock	ICP-AES	1	10000
Pb-ICP41	6	Pb ppm: 32 element, soil & rock	ICP-AES	10	10000
S-ICP41	6	S %: 32 element, rock & soil	ICP-AES	2	10000
Sb-ICP41	6	Sb ppm: 32 element, soil & rock	ICP-AES	0.01	10.00
Sc-ICP41	6	Sc ppm: 32 elements, soil & rock	ICP-AES	2	10000
Sr-ICP41	6	Sr ppm: 32 element, soil & rock	ICP-AES	1	10000
Tl-ICP41	6	Tl %: 32 element, soil & rock	ICP-AES	0.01	10.00
Ti-ICP41	6	Ti ppm: 32 element, soil & rock	ICP-AES	10	10000
U-ICP41	6	U ppm: 32 element, soil & rock	ICP-AES	10	10000
V-ICP41	6	V ppm: 32 element, soil & rock	ICP-AES	1	10000
W-ICP41	6	W ppm: 32 element, soil & rock	ICP-AES	10	10000

The results of this assay were based solely upon the content of the sample submitted. Any decision to invest should be made only after the potential investment value of the claim or deposit has been determined based on the results of assays of multiple samples of geologic materials collected by the prospective investor or by a qualified person selected by him/her and based on an evaluation of all engineering data which is available concerning any proposed project. Statement required by Nevada State Law NRS 519



# ALS Chemex

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 Analytical Chemists \* Geochemists \* Registered Assayers  
 994 Glendale Ave., Unit 3, Sparks  
 Nevada, U.S.A. 89431  
 PHONE: 775-356-5395 FAX: 775-355-0179

To: TARANIS RESOURCES INC.  
 14247 W. ILIFF AVE.  
 LAKEWOOD, COLORADO  
 80228, USA

A0228685

Comments: ATTN: JOHN GARDINER CC: JIM HELGESON

## CERTIFICATE A0228685

(TLX) - TARANIS RESOURCES INC.

Project: N  
 P.O. #:

Samples submitted to our lab in Elko, NV  
 This report was printed on 28-NOV-2002.

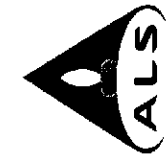
SAMPLE PREPARATION	
METHOD NUMBER CODE SAMPLES	DESCRIPTION
PUL-31 6	Pulv. <250g to >95%/-75 micron
STO-21 6	Reject Storage-First 90 Days
LOG-22 6	Samples received without barcode
CRU-31 6	Crush to 70% minus 2mm
SPL-21 6	Splitting Charge
229 6	ICP - AQ Digestion charge

\* 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 2 of 2					
METHOD CODE	NUMBER SAMPLES	DESCRIPTION	METHOD	DETECTION LIMIT	UPPER LIMIT
Zn-ICP41	6	Zn ppm: 32 element, soil & rock	ICP-AES	2	10000

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 Statement required by Nevada State Law NRS 519



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 Nevada, U.S.A. 89431  
 PHONE: 775-356-5395 FAX: 775-355-0179

To: TARANIS RESOURCES INC.  
 14247 W. ILIFF AVE.  
 LAKEWOOD, COLORADO  
 80228, USA

Project: N  
 Comments: ATTN: JOHN GARDINER CC: JIM HELGESON

Page Number : 1-A  
 Total Pages : 1  
 Certificate Date : 28-NOV-2002  
 Invoice No. : 10228685  
 P.O. Number :  
 Account : TLX

## CERTIFICATE OF ANALYSIS A0228685

SAMPLE	PREP CODE	Au ppb FA+AA	Ag ppm	Al %	As ppm	B ppm	Ba ppm	Be ppm	Bi ppm	Ca %	Cd ppm	Co ppm	Cr ppm	Cu ppm	Fe %	Ga ppm	Hg ppm	K %	La ppm	Mg %
ARW-1	94139402	435	30.6	0.15	978	< 10	10	< 0.5	2	0.04	< 0.5	< 1	65	6	1.01	< 10	< 1	0.16	< 10	0.01
ARW-2	94139402	< 5	< 0.2	4.32	166	< 10	170	1.0	2	0.43	2.0	3	8	1	14.05	< 10	< 1	0.12	10	0.54
ARW-3	94139402	10	1.0	1.39	676	10	110	1.5	< 2	0.23	< 0.5	3	13	3	9.55	< 10	< 1	0.16	10	0.08
ARW-4	94139402	25	8.0	0.31	990	< 10	280	0.5	< 2	0.21	< 0.5	< 1	21	5	6.55	< 10	< 1	0.21	30	0.05
AR-17	94139402	< 5	0.6	0.47	56	< 10	180	4.0	< 2	0.22	0.5	60	23	5	4.57	< 10	< 1	0.22	10	0.05
AR-18	94139402	75	0.6	0.50	74	10	1020	3.5	4	0.24	< 0.5	8	18	8	10.20	< 10	< 1	0.18	10	0.05

CERTIFICATION: *Sparks*



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To: TARANIS RESOURCES INC.  
 14247 W. ILIFF AVE.  
 LAKEWOOD, COLORADO  
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Page Number : 1-B  
 Total Pages : 1  
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 P.O. Number :  
 Account : TLX

Project: N  
 Comments: ATTN: JOHN GARDINER CC: JIM HELGESON

A0228685

## CERTIFICATE OF ANALYSIS

SAMPLE	PREP CODE	Mn ppm	Mo ppm	Na %	Ni ppm	P ppm	Pb ppm	S %	Sb ppm	Sc ppm	Sr ppm	Ti %	Tl ppm	U ppm	V ppm	W ppm	Zn ppm
ARW-1	94139402	10	45 < 0.01		2	120	68	0.74	10	< 1	36 < 0.01	< 10	< 10	< 10	1	< 10	12
ARW-2	94139402	7830	4 < 0.02		2	360	12	0.06	< 2	10	274 < 0.01	< 10	< 10	< 10	103	< 10	146
ARW-3	94139402	725	8 < 0.01		< 1	510	24	0.04	6	5	71 < 0.01	< 10	< 10	< 10	60	< 10	104
ARW-4	94139402	35	287 < 0.01		1	460	50	0.06	46	< 1	45 < 0.01	< 10	< 10	< 10	3	< 10	120
AR-17	94139402	>10000	11 < 0.01		6	550	24	0.01	< 2	1	111 < 0.01	< 10	< 10	< 10	8	< 10	222
AR-18	94139402	1335	23 < 0.01		3	1600	18	0.05	2	1	71 < 0.01	< 10	< 10	< 10	5	< 10	90

*John Gardiner*

CERTIFICATION:



# ALS Chemex

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994 Glendale Ave., Unit 3, Sparks  
Nevada, U.S.A. 89431  
PHONE: 775-356-5395 FAX: 775-355-0179

To: TARANIS RESOURCES INC.  
14247 W. ILIFF AVE.  
LAKEWOOD, COLORADO  
80228, USA

A0226133

Comments: Attn: John Gardiner CC: Jim Helgeson

## CERTIFICATE A0226133

(TLX) - TARANIS RESOURCES INC.

Project: N  
P.O. #:

Samples submitted to our lab in Elko, NV  
This report was printed on 16-Oct-2002.

SAMPLE PREPARATION	
METHOD CODE	DESCRIPTION
212	1 Overlimit pulp, to be found

ANALYTICAL PROCEDURES					
METHOD CODE	NUMBER SAMPLES	DESCRIPTION	METHOD	DETECTION LIMIT	UPPER LIMIT
Ag-AA46	1	Ag oz/T: Conc. Nitric-HCl dig'n	AAS	0.03	50.0

The results of this assay were based solely upon the content of the sample submitted. Any decision to invest should be made only after the potential investment value of the claim or deposit has been determined based on the results of assays of multiple samples of geologic materials collected by the prospective investor or by a qualified person selected by him/her and based on an evaluation of all engineering data which is available concerning any proposed project. Statement required by Nevada State Law NRS 519



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To: TARANIS RESOURCES INC.  
14247 W. ILIFF AVE.  
LAKEWOOD, COLORADO  
80228, USA

Project: N  
Comments: Attn: John Gardiner CC: Jim Helgeson

Page Number : 1  
Total Pages : 1  
Certificate Date: 16-OCT-2002  
Invoice No. : 10226133  
P.O. Number :  
Account : TLX

SAMPLE		PREP CODE	Ag oz/ton	CERTIFICATE OF ANALYSIS						A0226133	
AW-04		212 --	3.12								

CERTIFICATION: \_\_\_\_\_

Comments: Attn: John Gardiner CC: Jim Helgeson

**CERTIFICATE**      **A0225638**

(TLX) - TARANIS RESOURCES INC.

Project: N  
 P.O. # :

Samples submitted to our lab in Elko, NV  
 This report was printed on 15-OCT-2002.

**SAMPLE PREPARATION**

METHOD CODE	NUMBER SAMPLES	DESCRIPTION
205	37	Geochem ring to approx 150 mesh
226	37	0-3 Kg crush and split
3204	37	Save 1 Kg reject for 90 days
229	37	ICP - AQ Digestion charge

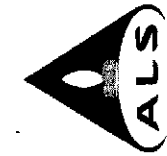
\* NOTE 1:

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**

METHOD CODE	NUMBER SAMPLES	DESCRIPTION	METHOD	DETECTION LIMIT	UPPER LIMIT
Au-AA23	37	Au ppm: Fuse 30 grams	FA-AAS	5	10000
Ag-ICP41	37	Ag ppm: 32 element, soil & rock	ICP-AES	0.2	100.0
Al-ICP41	37	Al %: 32 element, soil & rock	ICP-AES	0.01	15.00
As-ICP41	37	As ppm: 32 element, soil & rock	ICP-AES	2	10000
B-ICP41	37	B ppm: 32 element, rock & soil	ICP-AES	10	10000
Ba-ICP41	37	Ba ppm: 32 element, soil & rock	ICP-AES	10	10000
Be-ICP41	37	Be ppm: 32 element, soil & rock	ICP-AES	0.5	100.0
Bi-ICP41	37	Bi ppm: 32 element, soil & rock	ICP-AES	2	10000
Ca-ICP41	37	Ca %: 32 element, soil & rock	ICP-AES	0.01	15.00
Cd-ICP41	37	Cd ppm: 32 element, soil & rock	ICP-AES	0.5	500
Co-ICP41	37	Co ppm: 32 element, soil & rock	ICP-AES	1	10000
Cr-ICP41	37	Cr ppm: 32 element, soil & rock	ICP-AES	1	10000
Cu-ICP41	37	Cu ppm: 32 element, soil & rock	ICP-AES	0.01	15.00
Fe-ICP41	37	Fe %: 32 element, soil & rock	ICP-AES	10	10000
Ga-ICP41	37	Ga ppm: 32 element, soil & rock	ICP-AES	1	10000
Hg-ICP41	37	Hg ppm: 32 element, soil & rock	ICP-AES	1	10000
K-ICP41	37	K %: 32 element, soil & rock	ICP-AES	0.01	10.00
La-ICP41	37	La ppm: 32 element, soil & rock	ICP-AES	10	10000
Mg-ICP41	37	Mg %: 32 element, soil & rock	ICP-AES	0.01	15.00
Mn-ICP41	37	Mn ppm: 32 element, soil & rock	ICP-AES	5	10000
Mo-ICP41	37	Mo ppm: 32 element, soil & rock	ICP-AES	1	10000
Na-ICP41	37	Na %: 32 element, soil & rock	ICP-AES	0.01	10.00
Ni-ICP41	37	Ni ppm: 32 element, soil & rock	ICP-AES	1	10000
P-ICP41	37	P ppm: 32 element, soil & rock	ICP-AES	10	10000
Pb-ICP41	37	Pb ppm: 32 element, soil & rock	ICP-AES	2	10000
S-ICP41	37	S %: 32 element, rock & soil	ICP-AES	0.01	10.00
Sb-ICP41	37	Sb ppm: 32 element, soil & rock	ICP-AES	2	10000
Sc-ICP41	37	Sc ppm: 32 elements, soil & rock	ICP-AES	1	10000
Sr-ICP41	37	Sr ppm: 32 element, soil & rock	ICP-AES	1	10000
Tl-ICP41	37	Tl %: 32 element, soil & rock	ICP-AES	0.01	10.00
Ti-ICP41	37	Ti ppm: 32 element, soil & rock	ICP-AES	10	10000
U-ICP41	37	U ppm: 32 element, soil & rock	ICP-AES	10	10000
V-ICP41	37	V ppm: 32 element, soil & rock	ICP-AES	1	10000
W-ICP41	37	W ppm: 32 element, soil & rock	ICP-AES	10	10000
Zn-ICP41	37	Zn ppm: 32 element, soil & rock	ICP-AES	2	10000

The results of this assay were based solely upon the content of the sample submitted. Any decision to invest should be made only after the potential investment value of the claim or deposit has been determined based on the results of assays of multiple samples of geologic materials collected by the prospective investor or by a qualified person selected by him/her and based on an evaluation of all engineering data which is available concerning any proposed project. Statement required by Nevada State Law NRS 519



# ALS Chemex

Chemex Labs, Inc.  
 Analytical Chemists \* Geochemists \* Registered Assayers  
 994 Glendale Ave., Unit 3, Sparks  
 Nevada, U.S.A. 89431  
 PHONE: 775-356-5395 FAX: 775-355-0179

To: TARANIS RESOURCES INC.  
 14247 W. ILIFF AVE.  
 LAKEWOOD, COLORADO  
 80228, USA

Project: N  
 Comments: Attn: John Gardiner CC: Jim Helgeson

Page Number : 1-A  
 Total Pages : 1  
 Certificate Date: 15-OCT-2002  
 Invoice No. : 10225638  
 P.O. Number :  
 Account : TLX

## CERTIFICATE OF ANALYSIS A0225638

SAMPLE	PREP CODE	Au ppb FA+AA	Ag ppm	Al %	As ppm	B ppm	Ba ppm	Be ppm	Bi ppm	Ca %	Cd ppm	Co ppm	Cr ppm	Cu ppm	Fe %	Ga ppm	Hg ppm	K %	La ppm	Mg %	
AW-01	205 226	< 5	< 0.2	0.48	10	< 10	60	0.5	< 2	1.04	< 0.5	2	34	6	1.13	< 10	< 1	0.24	30	0.09	
AW-02	205 226	< 5	< 0.2	0.20	14	220	80	< 0.5	< 2	>15.00	< 0.5	< 1	7	4	0.14	< 10	< 1	0.05	< 10	0.44	
AW-03	205 226	< 5	< 0.2	0.37	6	< 10	60	0.5	< 2	2.08	< 0.5	3	25	5	2.10	< 10	< 1	0.20	30	0.03	
AW-04	205 226	6420	>100.0	0.28	692	< 10	120	< 0.5	< 2	0.08	< 0.5	< 1	59	70	3.98	< 10	< 1	0.52	< 10	0.01	
AW-05	205 226	25	0.6	0.05	20	< 10	50	0.5	< 2	>15.00	< 0.5	< 1	21	16	0.82	10	< 1	0.02	< 10	0.70	
AW-06	205 226	50	1.0	0.23	110	< 10	30	< 0.5	< 2	0.30	< 0.5	1	70	29	1.19	< 10	< 1	0.17	10	0.03	
AW-07	205 226	585	1.8	0.41	1855	10	50	1.0	< 2	0.18	0.5	3	20	22	12.90	10	< 1	0.32	< 10	0.04	
AW-08	205 226	845	1.6	0.20	3270	< 10	20	0.5	< 2	>15.00	1.5	< 1	21	50	7.89	10	< 1	0.30	< 10	0.08	
AW-09	205 226	10	< 0.2	0.39	32	< 10	50	1.0	< 2	0.32	< 0.5	< 1	19	3	1.64	< 10	< 1	0.30	30	0.03	
AW-10	205 226	< 5	< 0.2	0.23	14	< 10	30	0.5	< 2	2.07	< 0.5	3	28	5	1.73	< 10	< 1	0.14	10	0.12	
AW-11	205 226	< 5	< 0.2	0.40	20	< 10	60	< 0.5	< 2	0.13	< 0.5	< 1	33	5	1.13	< 10	< 1	0.20	20	0.02	
AW-12	205 226	< 5	< 0.2	0.32	10	< 10	30	0.5	< 2	1.02	< 0.5	2	37	6	1.13	< 10	< 1	0.18	30	0.03	
AW-13	205 226	< 5	< 0.2	0.32	114	< 10	60	0.5	< 2	0.31	< 0.5	2	32	4	1.36	< 10	< 1	0.20	30	0.01	
AW-14	205 226	< 5	< 0.2	0.25	36	< 10	30	< 0.5	< 2	0.12	< 0.5	< 1	36	3	0.74	< 10	< 1	0.16	30	0.01	
AW-15	205 226	< 5	< 0.2	0.32	18	< 10	140	< 0.5	< 2	0.24	< 0.5	< 1	34	3	2.39	< 10	< 1	0.45	10	0.05	
AW-16	205 226	5	0.4	0.36	74	< 10	110	0.5	< 2	0.15	< 0.5	4	32	6	3.27	< 10	< 1	0.29	10	0.03	
AW-17	205 226	< 5	< 0.2	0.37	14	< 10	80	1.5	< 2	0.75	< 0.5	4	23	4	3.20	< 10	< 1	0.23	20	0.06	
AW-18	205 226	< 5	< 0.2	0.38	18	< 10	40	0.5	< 2	0.22	< 0.5	< 1	26	4	0.49	< 10	< 1	0.23	40	0.04	
AW-19	205 226	< 5	< 0.2	0.31	16	< 10	60	< 0.5	< 2	0.30	< 0.5	< 1	46	3	0.36	< 10	< 1	0.23	40	0.07	
AW-20	205 226	< 5	< 0.2	0.48	114	< 10	580	0.5	< 2	0.22	< 0.5	1	23	7	4.25	< 10	< 1	0.19	20	0.08	
AW-21	205 226	< 5	0.2	0.61	254	< 10	130	6.0	< 2	0.56	1.5	5	10	9	10.75	< 10	< 1	0.19	10	0.06	
AW-22	205 226	25	0.8	0.17	404	< 10	20	1.0	< 2	0.05	< 0.5	6	50	6	1.38	< 10	< 1	0.10	10	0.01	
AW-23	205 226	15	0.6	0.22	94	< 10	40	< 0.5	< 2	0.06	< 0.5	< 1	50	7	0.73	< 10	< 1	0.18	< 10	0.01	
AW-24	205 226	25	0.4	0.16	120	< 10	70	< 0.5	< 2	0.05	< 0.5	< 1	80	4	0.72	< 10	< 1	0.12	< 10	0.01	
AR-03	205 226	565	6.2	0.32	3060	< 10	60	0.5	< 2	0.24	3.0	3	16	18	>15.00	10	< 1	0.69	< 10	0.06	
AR-04	205 226	55	1.4	0.17	410	< 10	560	< 0.5	< 2	0.09	< 0.5	< 1	57	18	0.74	< 10	< 1	0.16	30	0.03	
AR-05	205 226	25	1.0	0.20	86	< 10	70	< 0.5	< 2	0.06	< 0.5	< 1	29	1	1.17	< 10	< 1	0.22	< 10	0.01	
AR-06	205 226	90	1.2	0.22	1125	< 10	90	< 0.5	< 2	0.18	< 0.5	< 1	81	6	1.70	< 10	< 1	0.24	10	0.03	
AR-07	205 226	< 5	< 0.2	0.03	2	< 10	100	< 0.5	< 2	1.36	< 0.5	< 1	123	5	0.39	< 10	< 1	0.01	< 10	0.25	
AR-08	205 226	< 5	0.2	0.23	122	< 10	100	< 0.5	< 2	0.07	< 0.5	< 1	58	7	2.09	< 10	< 1	0.16	10	0.06	
AR-09	205 226	< 5	0.6	0.31	2980	20	60	1.5	< 2	0.20	0.5	1	29	5	5.16	< 10	< 1	0.21	30	0.06	
AR-10	205 226	170	9.0	0.23	962	< 10	140	< 0.5	< 2	0.06	< 0.5	< 1	81	5	2.58	< 10	< 1	0.36	20	0.02	
AR-12	205 226	120	2.0	0.20	170	< 10	100	1.5	< 2	0.14	< 0.5	3	63	63	4.2	1.63	< 10	< 1	0.12	20	0.01
AR-13	205 226	45	3.6	0.28	260	< 10	450	0.5	< 2	0.12	< 0.5	4	63	24	4.77	< 10	< 1	0.11	< 10	0.02	
AR-14	205 226	10	4.2	0.12	126	< 10	80	< 0.5	< 2	0.05	< 0.5	1	100	5	0.91	< 10	< 1	0.11	< 10	< 0.01	
AR-15	205 226	10	1.4	0.18	74	< 10	40	< 0.5	< 2	0.08	< 0.5	< 1	102	6	1.34	< 10	< 1	0.16	< 10	0.01	
AR-16	205 226	< 5	< 0.2	0.11	22	< 10	50	< 0.5	< 2	0.07	< 0.5	< 1	39	2	0.47	< 10	< 1	0.10	10	0.01	

CERTIFICATION:



# ALS Chemex

Chemex Labs, Inc.  
 Analytical Chemists \* Geochemists \* Registered Assayers  
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 Nevada, U.S.A. 89431  
 PHONE: 775-356-5395 FAX: 775-355-0179

To: TARANIS RESOURCES INC.  
 14247 W. ILIFF AVE.  
 LAKEWOOD, COLORADO  
 80228, USA

Project: N  
 Comments: Attn: John Gardiner CC: Jim Helgeson

Page Number : 1-B  
 Total Pages : 1  
 Certificate Date: 15-OCT-2002  
 Invoice No. : 10225638  
 P.O. Number :  
 Account : TLX

## CERTIFICATE OF ANALYSIS A0225638

SAMPLE	PREP CODE	Mn ppm	Mo ppm	Na %	Ni ppm	P ppm	Pb ppm	S %	Sb ppm	Sc ppm	Sr ppm	Ti %	Tl ppm	U ppm	V ppm	W ppm	Zn ppm
AW-01	205 226	460	3	0.03	3	310	20	< 0.01	2	1	22	< 0.01	< 10	< 10	4	< 10	42
AW-02	205 226	60	< 1	0.01	3	340	10	< 0.01	2	< 1	1275	0.01	< 10	10	6	< 10	6
AW-03	205 226	325	< 1	0.01	1	530	16	< 0.01	< 2	1	20	< 0.01	< 10	< 10	5	< 10	52
AW-04	205 226	25	170	0.04	3	370	230	0.83	22	< 1	612	< 0.01	< 10	< 10	36	< 10	16
AW-05	205 226	2090	5	< 0.01	2	50	28	< 0.01	2	< 1	289	< 0.01	10	< 10	2	< 10	34
AW-06	205 226	110	14	< 0.01	5	90	26	0.03	< 2	< 1	18	< 0.01	< 10	< 10	3	< 10	30
AW-07	205 226	510	203	0.01	1	580	76	0.42	8	6	367	< 0.01	< 10	< 10	85	< 10	82
AW-08	205 226	1940	56	0.02	1	260	46	0.50	12	2	648	< 0.01	< 10	< 10	15	< 10	24
AW-09	205 226	210	7	< 0.01	1	120	18	0.03	< 2	< 1	13	< 0.01	< 10	< 10	4	< 10	38
AW-10	205 226	430	1	0.01	3	430	16	1.54	< 2	1	214	< 0.01	< 10	< 10	1	< 10	42
AW-11	205 226	35	1	0.04	2	530	14	0.24	< 2	1	210	< 0.01	< 10	< 10	3	< 10	32
AW-12	205 226	250	1	0.01	1	350	20	< 0.01	< 2	1	18	< 0.01	< 10	< 10	5	< 10	46
AW-13	205 226	270	4	0.01	2	220	20	0.03	< 2	< 1	23	< 0.01	< 10	< 10	1	< 10	48
AW-14	205 226	10	4	< 0.01	2	70	34	0.06	< 2	< 1	23	< 0.01	< 10	< 10	< 1	< 10	6
AW-15	205 226	15	3	0.07	1	520	18	0.84	< 2	< 1	80	< 0.01	< 10	< 10	2	< 10	6
AW-16	205 226	190	5	0.04	1	560	10	0.40	2	< 1	94	< 0.01	< 10	< 10	4	< 10	36
AW-17	205 226	265	3	0.01	2	330	14	0.11	< 2	1	46	< 0.01	< 10	< 10	7	< 10	124
AW-18	205 226	100	1	< 0.01	1	210	10	< 0.01	< 2	< 1	15	< 0.01	< 10	< 10	3	< 10	26
AW-19	205 226	25	2	< 0.01	3	100	8	0.01	< 2	< 1	17	< 0.01	< 10	< 10	2	< 10	12
AW-20	205 226	200	3	0.03	3	740	14	0.04	< 2	3	33	< 0.01	< 10	< 10	9	< 10	48
AW-21	205 226	240	6	0.01	4	1700	18	0.11	< 2	4	51	< 0.01	< 10	< 10	14	< 10	330
AW-22	205 226	200	32	< 0.01	4	220	36	0.01	14	< 1	9	< 0.01	< 10	< 10	5	< 10	86
AW-23	205 226	15	29	0.01	4	130	16	0.11	2	< 1	55	< 0.01	< 10	< 10	2	< 10	10
AW-24	205 226	35	32	< 0.01	4	100	10	0.16	< 2	< 1	11	< 0.01	< 10	< 10	3	< 10	10
AR-03	205 226	475	33	0.05	2	310	46	1.21	18	6	227	< 0.01	< 10	< 10	55	< 10	90
AR-04	205 226	15	3	< 0.01	4	50	12	0.03	8	< 1	31	< 0.01	< 10	< 10	1	< 10	6
AR-05	205 226	10	< 1	0.01	1	40	8	0.88	2	< 1	7	< 0.01	< 10	< 10	< 1	< 10	< 2
AR-06	205 226	20	9	0.01	5	180	16	0.16	40	< 1	169	< 0.01	< 10	< 10	12	< 10	12
AR-07	205 226	55	1	< 0.01	11	60	< 2	< 0.01	2	< 1	13	< 0.01	< 10	< 10	2	< 10	4
AR-08	205 226	35	106	0.03	3	100	20	0.06	6	< 1	13	< 0.01	< 10	< 10	6	< 10	16
AR-09	205 226	30	16	0.01	3	130	18	0.01	28	< 1	46	< 0.01	< 10	< 10	35	< 10	86
AR-10	205 226	50	60	0.06	4	90	130	0.76	30	< 1	92	< 0.01	< 10	< 10	6	< 10	10
AR-12	205 226	2960	11	< 0.01	5	300	26	0.09	12	< 1	23	< 0.01	< 10	< 10	6	< 10	90
AR-13	205 226	820	47	< 0.01	5	690	96	0.05	8	1	25	< 0.01	< 10	< 10	11	< 10	114
AR-14	205 226	125	310	< 0.01	7	200	192	0.10	14	< 1	138	< 0.01	< 10	< 10	1	< 10	30
AR-15	205 226	35	53	0.01	5	100	32	0.14	4	< 1	36	< 0.01	< 10	< 10	5	< 10	16
AR-16	205 226	10	9	< 0.01	3	30	8	0.03	< 2	< 1	11	< 0.01	< 10	< 10	2	< 10	8

CERTIFICATION:

**APPENDIX C**

Original assay certificates for author's check assay samples  
(ALS Chemex Labs)

**ALS Chemex**  
EXCELLENCE IN ANALYTICAL CHEMISTRY

ALS USA Inc.  
994 Glendale Avenue, Unit 3  
Sparks Nevada 89431-5730 USA  
Phone: 775 356 5395 Fax: 775 355 0179



To: TARANIS RESOURCES INC.  
14247 W. ILIFF AVE  
LAKEWOOD CO 80228

Page #: 1  
Date : 8-Jan-2003  
Account: TLX

**CERTIFICATE EL02007145**

Project: N

P.O. No:

This report is for 8 ROCK samples submitted to our lab in Elko, Nevada, USA on 13-Dec-2002.

The following have access to data associated with this certificate:

JOHN GARDINER  
JIM HELGESON

SAMPLE PREPARATION	
ALS CODE	DESCRIPTION
WEI-21	Received Sample Weight
LOG-22	Sample login - Rcd w/o BarCode
CRU-31	Fine crushing - 70% <2mm
SPL-21	Split sample - riffle splitter
PUL-31	Pulverize split to 85% <75 um

ANALYTICAL PROCEDURES		
ALS CODE	DESCRIPTION	INSTRUMENT
AU-AA23	Au 30g FA-AA finish	AAS
ME-IJP41	34 Element Aqua Regia ICP-AES	ICP-AES
Ag-AA46	Ore grade Ag - aqua regia/AA	AAS

To: TARANIS RESOURCES INC.  
ATTN: JOHN GARDINER  
14247 W. ILIFF AVE  
LAKEWOOD CO 80228

This is the Final Report and supersedes any preliminary report with this certificate number. Results apply to samples as submitted. All pages of this report have been checked and approved for release.

Signature:



**ALS Chemex**  
 EXCELLENCE IN ANALYTICAL CHEMISTRY

ALS USA Inc.  
 994 Glendale Avenue, Unit 3  
 Sparks Nevada 89431-5730 USA  
 Phone: 775 356 5395 Fax: 775 356 0179

To: TARANIS RESOURCES INC.  
 14247 W. ILIFF AVE  
 LAKEWOOD CO 80228

Page #: 2 - A  
 Total # of pages : 2 (A - C)  
 Date : 8-Jan-2003  
 Account: TLX

Project : N

**CERTIFICATE OF ANALYSIS EL02007145**

Method Analyte Units LDR	WEL-21 Recvd Wt Kg	AU-AA23 Au ppm	AU-AA23 Au Check ppm	ME-ICP41 Ag ppm	ME-ICP41 Al %	ME-ICP41 As ppm	ME-ICP41 B ppm	ME-ICP41 Ba ppm	ME-ICP41 Be ppm	ME-ICP41 Bi ppm	ME-ICP41 Ca %	ME-ICP41 Cd ppm	ME-ICP41 Co ppm	ME-ICP41 Cr ppm	ME-ICP41 Cu ppm
ND-1	1.90	0.126	0.005	26.1	0.17	59	<10	10	<0.5	<2	0.13	<0.5	1	5	5
ND-2	0.98	1.055		>100	0.12	68	<10	20	<0.5	<2	0.04	1.1	1	6	15
ND-3	3.14	0.653		76.3	0.17	42	<10	30	<0.5	<2	0.03	<0.5	1	72	21
ND-4	0.84	2.57		>100	0.23	87	<10	30	<0.5	<2	0.09	<0.5	1	4	104
ND-5	1.06	0.504		46.8	0.16	1005	<10	10	<0.5	<2	0.05	<0.5	<1	5	7
ND-6	1.50	0.005	0.005	0.3	0.41	44	<10	40	0.6	4	1.68	<0.5	1	32	5
ND-7	2.42	0.030		2.0	0.17	90	<10	250	<0.5	<2	0.10	<0.5	<1	6	8
ND-8	1.40	0.251		63.5	0.10	92	<10	20	<0.5	<2	0.03	0.5	2	6	8



Project : N

**CERTIFICATE OF ANALYSIS EL02007145**

Method Analyte Units LOR	ME-ICP41 Fe % 0.01	ME-ICP41 Ga ppm 10	ME-ICP41 Hg ppm 1	ME-ICP41 K % 0.01	ME-ICP41 La ppm 10	ME-ICP41 Mg % 0.01	ME-ICP41 Mn ppm 5	ME-ICP41 Mo ppm 1	ME-ICP41 Na % 0.01	ME-ICP41 Ni ppm 1	ME-ICP41 P ppm 10	ME-ICP41 Pb ppm 2	ME-ICP41 S % 0.01	ME-ICP41 Sb ppm 2	ME-ICP41 Sc ppm 1
ND-1	1.60	<10	<1	0.12	<10	0.02	98	3	<0.01	4	250	211	1.02	<2	<1
ND-2	3.50	<10	<1	0.11	<10	0.01	39	4	<0.01	4	190	2980	3.20	7	<1
ND-3	0.87	<10	<1	0.17	10	0.02	122	2	<0.01	4	200	13	0.35	2	<1
ND-4	1.56	<10	<1	0.20	10	0.02	60	1	0.01	3	300	160	1.14	71	<1
ND-5	1.13	<10	<1	0.15	10	0.01	14	32	<0.01	3	90	42	0.63	13	<1
ND-6	0.93	<10	1	0.25	30	0.06	370	4	0.02	2	70	22	0.32	<2	1
ND-7	1.10	<10	<1	0.13	<10	0.01	15	40	<0.01	4	120	57	0.09	4	<1
ND-8	2.30	<10	<1	0.08	10	0.02	462	14	<0.01	4	200	296	1.00	8	1

**ALS Chemex**  
 EXCELLENCE IN ANALYTICAL CHEMISTRY

ALS USA Inc.  
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 Sparks Nevada 89431-5730 USA  
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To: TARANIS RESOURCES INC.  
 14247 W. ILIFF AVE  
 LAKEWOOD CO 80228

Project: N

**CERTIFICATE OF ANALYSIS EL02007145**

Method Analyte Units LOR	ME-ICP41 Sr ppm 1	ME-ICP41 Ti % 0.01	ME-ICP41 Ti ppm 10	ME-ICP41 U ppm 10	ME-ICP41 V ppm 1	ME-ICP41 W ppm 10	ME-ICP41 Zn ppm 2	ME-ICP41 Ag ppm 1
ND-1	10	<0.01	<10	<10	3	<10	150	
ND-2	6	<0.01	<10	<10	2	<10	1005	293
ND-3	6	<0.01	<10	<10	2	<10	11	
ND-4	8	<0.01	<10	<10	2	<10	110	1115
ND-5	29	<0.01	<10	<10	1	<10	11	
ND-6	255	<0.01	<10	<10	<1	<10	35	
ND-7	70	<0.01	<10	<10	6	<10	21	
ND-8	6	<0.01	<10	<10	2	<10	473	

## **APPENDIX D**

**Analytical spreadsheet for author's samples from Needles property.**

**APPENDIX D****Analytical Spreadsheet for Samples Collected by the Author  
Needles Property, Nye Co., Nevada**

<b>Sample Number</b>	<b>Location</b>		<b>Au</b>	<b>Au</b>	<b>Ag</b>	<b>Ag</b>	<b>Sample Description</b>
	T 3N, R 51 1/2E		ppb	opt	ppm	opt	
	UTM Easting	UTM Northing					
	Arrowhead mine dump						
ND-1	572572E	4215392N	126		26.1	0.76	Quartz vein material w/ fg diss. py $\leq$ 3%; minor FeO-staining.
ND-2	572572E	4215392N	1055	0.03	>100		Stockwork qtz veinlets in silicified volcanic tuff; strong FeO-staining.
ND-3	572572E	4215392N	653		76.3	2.21	Silicified tuff w/ X-cutting, vuggy white qtz and amethyst veinlets.
ND-4	572572E	4215392N	2570	0.074	>100		FeO-stained, silicified tuff w/ fine X-cutting qtz veinlets & diss. py 1-2%.
ND-8	572572E	4215392N	251		83.5	2.42	FeO-stained, vuggy quartz vein material w/ fg py $\leq$ 3%.
	Tomahawk mine dump						
ND-5	571600E	4214763N	504		46.8	1.35	FeO-stained, silicified tuff w/ X-cutting quartz veinlets.
ND-6	571600E	4214763N	5		0.3		Strongly altered (advanced argillic alteration) volcanic tuff.
	Prospect at north end of Gordo claim block.						
ND-7	572249E	4216107N	30		2		Strongly altered (advance argillic alteration) and oxidized hematite after py veins/diss) volcanic tuff.

	<b>Method</b>	<b>WEI-21</b>	<b>Au-AA23</b>	<b>ME-ICP41</b>	<b>ME-ICP41</b>	<b>ME-ICP41</b>	<b>ME-ICP41</b>	<b>ME-ICP41</b>
	<b>Analyte</b>	<b>Recvd Wt.</b>	<b>Au</b>	<b>Ag</b>	<b>Al</b>	<b>As</b>	<b>B</b>	<b>Ba</b>
		<b>kg</b>	<b>ppm</b>	<b>ppm</b>	<b>%</b>	<b>ppm</b>	<b>ppm</b>	<b>ppm</b>
1	ND-1	1.9	0.126	26.1	0.17	59	<10	10
2	ND-2	0.98	1.055	>100	0.12	68	<10	20
3	ND-3	3.14	0.653	76.3	0.17	42	<10	30
4	ND-4	0.84	2.57	>100	0.23	87	<10	30
5	ND-5	1.06	0.504	46.8	0.16	1005	<10	10
6	ND-6	1.5	0.005	0.3	0.41	44	<10	40
7	ND-7	2.42	0.03	2	0.17	90	<10	250
8	ND-8	1.4	0.251	83.5	0.1	92	<10	20

ME-ICP41	ME-ICP41	ME-ICP41	ME-ICP41	ME-ICP41	ME-ICP41	ME-ICP41	ME-ICP41	ME-ICP41
Be	Bi	Ca	Cd	Co	Cr	Cu	Fe	Ga
ppm	ppm	%	ppm	ppm	ppm	ppm	%	ppm
<0.5	<2	0.13	<0.5	1	5	5	1.6	<10
<0.5	<2	0.04	1.1	1	6	15	3.5	<10
<0.5	<2	0.03	<0.5	1	72	21	0.87	<10
<0.5	<2	0.09	<0.5	1	4	104	1.56	<10
<0.5	<2	0.05	<0.5	<1	5	7	1.13	<10
0.6	4	1.68	<0.5	1	32	5	0.93	<10
<0.5	<2	0.1	<0.5	<1	6	8	1.1	<10
<0.5	<2	0.03	0.5	2	6	8	2.3	<10

ME-ICP41	ME-ICP41	ME-ICP41	ME-ICP41	ME-ICP41	ME-ICP41	ME-ICP41	ME-ICP41	ME-ICP41
Hg	K	La	Mg	Mn	Mo	Na	Ni	P
ppm	%	ppm	%	ppm	ppm	%	ppm	ppm
<1	0.12	<10	0.02	98	3	<0.01	4	250
<1	0.11	<10	0.01	39	4	<0.01	4	190
<1	0.17	10	0.02	122	2	<0.01	4	200
<1	0.2	10	0.02	60	1	0.01	3	300
<1	0.15	10	0.01	14	32	<0.01	3	90
1	0.25	30	0.06	370	4	0.02	2	70
<1	0.13	<10	0.01	15	40	<0.01	4	120
<1	0.08	10	0.02	462	14	<0.01	4	200

ME-ICP41	ME-ICP41	ME-ICP41	ME-ICP41	ME-ICP41	ME-ICP41	ME-ICP41	ME-ICP41	ME-ICP41
Pb	S	Sb	Sc	Sr	Ti	Tl	U	V
ppm	%	ppm	ppm	ppm	%	ppm	ppm	ppm
211	1.02	<2	<1	10	<0.01	<10	<10	3
2980	3.2	7	<1	6	<0.01	<10	<10	2
13	0.35	2	<1	6	<0.01	<10	<10	2
160	1.14	71	<1	8	<0.01	<10	<10	2
42	0.63	13	<1	29	<0.01	<10	<10	1
22	0.32	<2	1	255	<0.01	<10	<10	<1
57	0.09	4	<1	70	<0.01	<10	<10	6
296	1	8	1	6	<0.01	<10	<10	2

<b>ME-ICP41</b>	<b>ME-ICP41</b>	<b>Ag-AA46</b>	<b>Au-AA23</b>
<b>W</b>	<b>Zn</b>	<b>Ag</b>	<b>Au Check</b>
<b>ppm</b>	<b>ppm</b>	<b>ppm</b>	<b>ppm</b>
<10	150		
<10	1005		
<10	11		
<10	110		
<10	11		
<10	35		0.005
<10	21		
<10	473		

## **APPENDIX E**

Conversion of weights and measures.

## Conversion of Weights and Measures

1 troy ounce	= 31.1 grams
1 kilogram	= 32.15 troy ounces
1 kilogram	= 2.2046 pounds
1 (metric) tonne	= 1,000 kilograms
1 (metric) tonne	= 2,204.6 pounds
1 (short) ton	= 2,000 pounds
1 (metric) tonne	= 1.1023 (short) tons
1 gram per (metric) tonne	= 0.02917 troy ounces per (short) ton
	= 0.03215 troy ounces per (metric) tonne .
1 kilometre	= 0.6214 miles
1 hectare	= 2.47 acres

1 meter = 3.28 feet

**APPENDIX F**

Analytical data (2002) spreadsheet of all rock chip samples collected on the Needles property (disk in pocket).

SAMPLE DESCRIPTION	Recvd Wt. kg	Au DDB	Ag DDM	Ag DLS	Al %	As DDM	B DDM	Ba DDM	Be DDM	Bi DDM	Cs %	Cd DDM	Co DDM	Cr DDM	Cu DDM	Fe %	Ga DDM	Hg DDM	K %	La DDM
AR-1	-	5980	>100.0	681	0.13	76	<10	20	<0.5	<2	0.05	<0.5	1	54	29	0.74	<10	<1	<1	<10
AR-2	-	2080	>100.0	371	0.12	88	<10	20	<0.5	<2	0.05	<0.5	1	74	18	1.00	<10	<1	0.11	<10
ARW-1	-	435	30.8	-	0.15	978	<10	170	1	2	0.04	<0.5	<1	65	6	1.01	<10	<1	0.16	<10
ARW-2	-	-	<0.2	-	4.32	186	<10	170	1	2	0.43	2	3	8	1	14.05	10	<1	0.12	10
ARW-3	-	10	1	-	1.39	676	10	110	1.5	<2	0.23	<0.5	3	13	3	9.55	<10	<1	0.16	10
ARW-4	-	25	6	-	0.31	980	<10	280	0.5	<2	0.21	<0.5	<1	21	5	6.56	<10	1	0.21	30
AW-01	-	<5	<0.2	-	0.48	10	<10	60	0.5	<2	1.04	<0.5	2	34	6	1.13	<10	<1	0.24	30
AW-02	-	<5	0.2	-	0.2	14	220	80	<0.5	<2	>15.00	<0.5	3	7	4	0.14	<10	<1	0.05	<10
AW-03	-	<5	<0.2	-	0.37	6	<10	60	0.5	<2	2.08	<0.5	3	25	5	2.10	<10	<1	0.2	30
AW-04	-	8420	>100.0	101	0.28	682	<10	120	<0.5	<2	0.08	<0.5	<1	59	70	3.98	<10	<1	0.52	<10
AW-05	-	25	0.6	-	0.05	20	<10	50	0.5	<2	>15.00	<0.5	<1	21	16	0.82	<10	<1	0.02	<10
AW-06	-	50	1	-	0.23	110	<10	30	<0.5	<2	0.3	<0.5	1	70	29	1.19	<10	<1	0.17	10
AW-07	-	585	1.8	-	0.41	1855	10	50	1	<2	0.18	0.5	3	20	22	12.80	10	<1	0.32	<10
AW-08	-	845	1.6	-	0.2	3270	<10	20	0.5	<2	>15.00	1.5	<1	21	50	7.89	10	<1	0.3	<10
AW-09	-	10	<0.2	-	0.39	32	<10	50	1	<2	0.32	<0.5	<1	19	3	1.64	<10	<1	0.3	30
AW-10	-	<5	<0.2	-	0.23	14	<10	30	0.5	<2	2.07	<0.5	<1	28	5	1.73	<10	<1	0.14	10
AW-11	-	<5	<0.2	-	0.4	20	<10	60	0.5	<2	0.13	<0.5	<1	33	5	1.13	<10	<1	0.2	20
AW-12	-	<5	<0.2	-	0.32	10	<10	30	0.5	<2	1.02	<0.5	2	13	6	1.13	<10	<1	0.18	30
AW-13	-	<5	<0.2	-	0.32	114	<10	60	0.5	<2	0.31	<0.5	2	32	4	1.36	<10	<1	0.2	30
AW-14	-	<5	<0.2	-	0.25	36	<10	30	<0.5	<2	0.12	<0.5	<1	36	3	0.74	<10	<1	0.16	30
AW-15	-	<5	<0.2	-	0.32	18	<10	140	<0.5	<2	0.24	<0.5	<1	34	3	2.39	<10	<1	0.45	10
AW-16	-	5	0.4	-	0.36	74	<10	110	0.5	<2	0.15	<0.5	4	32	6	3.27	<10	<1	0.28	10
AW-17	-	<5	<0.2	-	0.37	14	<10	80	1.5	<2	0.75	<0.5	4	23	4	3.20	<10	<1	0.23	40
AW-18	-	<5	<0.2	-	0.38	18	<10	40	0.5	<2	0.22	<0.5	<1	28	4	0.49	<10	<1	0.23	40
AW-19	-	<5	<0.2	-	0.31	16	<10	60	<0.5	<2	0.3	<0.5	<1	46	3	0.36	<10	<1	0.23	40
AW-20	-	<5	<0.2	-	0.48	114	<10	560	0.5	<2	0.22	<0.5	1	23	7	4.25	<10	<1	0.19	20
AW-21	-	<5	0.2	-	0.81	254	<10	130	6	<2	0.56	1.5	5	10	9	10.75	<10	<1	0.19	10
AW-22	-	25	0.8	-	0.17	404	<10	20	1	<2	0.05	<0.5	8	50	6	1.38	<10	<1	0.1	10
AW-23	-	15	0.6	-	0.22	94	<10	40	<0.5	<2	0.06	<0.5	<1	50	7	0.73	<10	<1	0.18	<10
AW-24	-	25	0.4	-	0.16	120	<10	70	<0.5	<2	0.05	<0.5	<1	80	4	0.72	<10	<1	0.12	<10
AR-03	-	565	6.2	-	0.32	3080	<10	60	0.5	<2	0.24	3	3	16	18	>15.00	<10	<1	0.69	<10
AR-04	-	95	1.4	-	0.17	410	<10	960	<0.5	<2	0.09	<0.5	<1	57	18	0.74	<10	<1	0.16	30
AR-05	-	25	1	-	0.2	86	<10	70	<0.5	<2	0.06	<0.5	<1	29	1	1.17	<10	<1	0.22	<10
AR-06	-	90	1.2	-	0.22	1125	<10	80	<0.5	<2	0.18	<0.5	<1	81	6	1.70	<10	<1	0.24	10
AR-07	-	<5	<0.2	-	0.03	2	<10	100	<0.5	<2	1.36	<0.5	<1	123	5	0.39	<10	<1	0.01	<10
AR-08	-	<5	0.2	-	0.23	122	<10	100	<0.5	<2	0.07	<0.5	<1	58	7	2.09	<10	<1	0.16	10
AR-08	-	<5	0.6	-	0.31	2080	20	60	1.5	<2	0.2	0.5	1	29	5	5.18	<10	1	0.21	30
AR-10	-	170	9	-	0.23	962	<10	140	<0.5	<2	0.06	<0.5	<1	81	5	2.58	<10	<1	0.36	20
AR-12	-	120	2	-	0.2	170	<10	100	1.5	<2	0.14	<0.5	3	63	42	1.63	10	<1	0.12	20
AR-13	-	45	3.6	-	0.28	280	<10	450	0.5	<2	0.12	<0.5	4	63	24	4.77	<10	<1	0.11	<10
AR-14	-	10	4.2	-	0.12	128	<10	80	<0.5	<2	0.05	<0.5	1	100	5	0.91	<10	<1	0.11	<10
AR-15	-	10	1.4	-	0.18	74	<10	40	<0.5	<2	0.08	<0.5	<1	102	6	1.34	<10	<1	0.16	<10
AR-16	-	<5	<0.2	-	0.11	22	<10	50	<0.5	<2	0.07	<0.5	60	23	5	4.57	<10	<1	0.1	10
AR-17	-	<5	0.6	-	0.47	56	<10	180	4	<2	0.22	0.5	6	18	8	10.20	<10	<1	0.22	10
AR-18	-	75	0.6	-	0.5	74	10	1020	3.5	4	0.13	<0.5	6	5	5	1.6	<10	<1	0.18	10
ND-1	1.9	0.128	26.1	-	0.17	59	<10	10	<0.5	<2	0.04	<0.5	1	5	5	1.6	<10	<1	0.12	<10
ND-2	0.88	1.085	>100	289	0.12	68	<10	20	<0.5	<2	0.04	1.1	1	6	15	3.5	<10	<1	0.11	<10
ND-3	3.14	0.653	78.3	-	0.23	42	<10	30	<0.5	<2	0.03	<0.5	1	72	21	0.87	<10	<1	0.17	10
ND-4	0.84	2.57	>100	1115	0.17	87	<10	30	<0.5	<2	0.09	<0.5	1	4	104	1.56	<10	<1	0.2	10
ND-5	1.08	0.504	46.6	-	0.16	1005	<10	10	<0.5	<2	0.05	<0.5	<1	5	7	1.13	<10	<1	0.15	10
ND-6	1.5	0.005	0.3	-	0.41	44	<10	40	0.6	4	1.68	<0.5	<1	32	5	0.93	<10	1	0.25	30
ND-7	2.42	0.03	2	-	0.17	90	<10	250	<0.5	<2	0.1	<0.5	<1	6	8	1.1	<10	<1	0.13	<10
ND-8	1.4	0.251	83.5	-	0.1	92	<10	20	<0.5	<2	0.03	0.5	2	6	8	2.3	<10	<1	0.08	10

SAMPLE DESCRIPTION	Recvd Wt. kg	Mg %	Mn ppm	Mo ppm	Na %	Ni ppm	P ppm	Pb ppm	S %	Sb ppm	Sc ppm	Sr ppm	Ti %	Tl ppm	U ppm	V ppm	W ppm	Zn ppm
AR-1	-	0.01	95	<1	<0.01	1	190	174	0.36	16	<1	6	<0.01	<10	<10	1	10	66
AR-2	-	0.01	90	3	<0.01	2	220	186	0.81	44	<1	6	<0.01	<10	<10	4	10	100
ARW-1	-	0.01	10	46	<0.01	2	120	68	0.74	10	<1	36	<0.01	<10	<10	1	<10	12
ARW-2	-	0.54	7830	4	0.02	2	360	12	0.06	<2	10	274	<0.01	<10	<10	103	<10	146
ARW-3	-	0.08	725	8	<0.01	<1	510	24	0.04	6	5	71	<0.01	<10	<10	60	<10	104
ARW-4	-	0.05	35	287	<0.01	1	460	50	0.06	46	<1	46	<0.01	<10	<10	3	<10	120
AW-01	-	0.09	460	3	0.03	3	310	20	<0.01	2	1	22	<0.01	<10	<10	4	<10	42
AW-02	-	0.44	60	<1	0.01	3	340	10	<0.01	2	<1	1275	0.01	<10	<10	6	<10	6
AW-03	-	0.03	325	<1	0.01	1	530	16	<0.01	<2	1	20	<0.01	<10	<10	5	<10	52
AW-04	-	0.01	25	170	0.04	3	370	230	0.83	22	<1	612	<0.01	<10	<10	36	<10	18
AW-05	-	0.7	2060	5	<0.01	2	50	28	<0.01	2	<1	289	<0.01	<10	<10	2	<10	34
AW-06	-	0.03	110	14	<0.01	5	90	26	0.03	<2	<1	18	<0.01	<10	<10	3	<10	30
AW-07	-	0.04	510	203	0.01	1	580	76	0.42	8	6	367	<0.01	<10	<10	85	<10	82
AW-08	-	0.08	1940	56	0.02	1	260	46	0.5	12	2	648	<0.01	<10	<10	15	<10	24
AW-09	-	0.03	210	7	<0.01	1	120	18	0.03	<2	<1	13	<0.01	<10	<10	4	<10	38
AW-10	-	0.12	430	1	0.01	3	430	16	1.54	<2	1	214	<0.01	<10	<10	1	<10	42
AW-11	-	0.02	35	1	0.04	2	530	14	0.24	<2	1	210	<0.01	<10	<10	3	<10	32
AW-12	-	0.03	250	1	0.01	1	350	20	<0.01	<2	1	18	<0.01	<10	<10	5	<10	46
AW-13	-	0.03	270	4	0.01	2	220	20	0.03	<2	<1	23	<0.01	<10	<10	1	<10	48
AW-14	-	0.01	10	4	<0.01	2	70	34	0.06	<2	<1	23	<0.01	<10	<10	<1	<10	6
AW-15	-	0.05	15	3	0.07	1	520	18	0.84	<2	<1	80	<0.01	<10	<10	2	<10	6
AW-16	-	0.03	190	5	0.04	1	560	10	0.4	2	<1	94	<0.01	<10	<10	4	<10	36
AW-17	-	0.06	265	3	0.01	2	330	14	0.11	<2	1	46	<0.01	<10	<10	7	<10	124
AW-18	-	0.04	100	1	<0.01	1	210	10	<0.01	<2	<1	15	<0.01	<10	<10	3	<10	26
AW-19	-	0.07	25	2	<0.01	3	100	8	0.01	<2	<1	17	<0.01	<10	<10	2	<10	12
AW-20	-	0.08	200	3	0.03	3	740	14	0.04	<2	3	33	<0.01	<10	<10	9	<10	48
AW-21	-	0.06	240	6	0.01	4	1700	18	0.11	<2	4	51	<0.01	<10	<10	14	<10	330
AW-22	-	0.01	200	32	<0.01	4	220	36	0.01	14	<1	9	<0.01	<10	<10	5	<10	86
AW-23	-	0.01	15	29	<0.01	4	130	29	0.11	2	<1	55	<0.01	<10	<10	2	<10	10
AW-24	-	0.01	35	32	<0.01	4	100	10	0.16	<2	<1	11	<0.01	<10	<10	3	<10	10
AR-03	-	0.06	475	33	0.05	2	310	46	1.21	18	6	227	<0.01	<10	<10	55	10	90
AR-04	-	0.03	16	3	<0.01	4	50	12	0.03	8	<1	31	<0.01	<10	<10	1	<10	6
AR-05	-	0.01	10	<1	0.01	1	40	8	0.88	2	<1	7	<0.01	<10	<10	<1	<10	<2
AR-06	-	0.03	20	9	0.01	5	180	16	0.16	40	<1	169	<0.01	<10	<10	12	<10	12
AR-07	-	0.25	55	1	<0.01	11	60	<2	<0.01	2	<1	13	<0.01	<10	<10	2	<10	4
AR-08	-	0.06	36	106	0.03	3	100	20	0.06	6	<1	46	<0.01	<10	<10	6	<10	16
AR-09	-	0.06	30	16	0.01	3	130	18	0.01	28	<1	46	<0.01	<10	<10	36	<10	86
AR-10	-	0.02	50	60	0.06	4	90	130	0.76	30	<1	92	<0.01	<10	<10	6	<10	10
AR-12	-	0.01	2960	11	<0.01	5	300	26	0.09	12	1	23	<0.01	<10	<10	6	<10	90
AR-13	-	0.02	828	47	<0.01	5	690	96	0.05	8	1	25	<0.01	<10	<10	11	<10	114
AR-14	-	<0.01	125	310	<0.01	7	200	192	0.1	14	<1	138	<0.01	<10	<10	1	<10	30
AR-15	-	0.01	35	53	0.01	5	100	32	0.14	4	<1	36	<0.01	<10	<10	5	<10	16
AR-16	-	0.01	10	9	<0.01	3	30	8	0.03	<2	<1	11	<0.01	<10	<10	2	<10	8
AR-17	-	0.05	>10000	11	<0.01	6	550	24	0.01	<2	1	111	<0.01	<10	<10	8	<10	222
AR-18	-	0.05	1335	23	<0.01	3	1600	18	0.05	2	1	71	<0.01	<10	<10	5	<10	90
ND-1	1.9	0.02	98	3	<0.01	4	250	211	1.02	<2	<1	10	<0.01	<10	<10	3	<10	150
ND-2	0.98	0.01	39	4	<0.01	4	190	2980	3.2	7	<1	6	<0.01	<10	<10	2	<10	1005
ND-3	3.14	0.02	122	2	<0.01	4	200	13	0.36	2	<1	8	<0.01	<10	<10	2	<10	11
ND-4	0.84	0.02	60	1	0.01	3	300	160	1.14	71	<1	8	<0.01	<10	<10	2	<10	110
ND-5	1.06	0.01	14	32	<0.01	3	90	42	0.63	13	<1	29	<0.01	<10	<10	1	<10	11
ND-6	1.5	0.06	370	4	0.02	2	70	22	0.32	<2	1	255	<0.01	<10	<10	<1	<10	35
ND-7	2.42	0.01	15	40	<0.01	4	120	57	0.09	4	<1	70	<0.01	<10	<10	6	<10	21
ND-8	1.4	0.02	462	14	<0.01	4	200	296	1	8	1	6	<0.01	<10	<10	2	<10	473

Location and Description of Samples, Needles Property

UTM Zone 11, NAD 27

Sample Number	Heading	Description
AW-1	4215400	Volcanic, intense FeOx alteration, coarse phenocrysts, NE of old Arrow Mine
AW-2	4215403	Volcanic, very distinctive grey colored marble?, epithermal calcite vein. Old pit with intense FeOx in volcanics (calcite/barite?) - vein crosscut by small volcanic strata and dykes 1 cm wide.
AW-3	4215418	Volcanic outcrop w/ intense FeOx fractures. Generally N-S trend, but very erratic. Leisenpangue textures
AW-4	4215488	Old vertical 80 degree inclined inclined shaft w/ dump, silicified volcanic, FeOx grey color, ~1,000 ton dump, lots of grey qtz stringers, 75, 55SW strike of veins in shaft
AW-5	4215507	Old vertical shaft, felsic cg. Fragmental volcanic unit w/ bot FeOx. Also banded calcite vein striking generally E-W. Local coarse calcite/ankerite and also chalcedonic grey qtz veins (Bx)
AW-6	4215586	Small blasted pit 5' deep, white cg. Lithic volcanic w/ abd't FeOx, not very exciting
AW-7	4215607	FeOx altered volcanics, bleached white with intense clay altered matrix, FeOx in fractures generally N-S
AW-8	4215718	Old pit 12' deep, previously sampled with tags '6906' and 'A-5742', banded ankerite vein - calcite in volcanics, vein almost 1' wide - 50% FeOx calcite/50% barren vein - vein vertical, striking NW?
AW-9	4215665	Old pit, 5' deep in bleached white volcanic. FeOx in fractures trending NNW, dipping 80 degrees to the East approx.
AW-10	4215433	Old shaft, ~ 50 deep w - 300 tons of rock around it. Cg. White, lithic turf w/ abd't FeOx, 2% fg. pyrite, silicified. Sample is FeOx fines in the dump.
AW-11	4215630	Shaft ~ 50' deep, in white altered volcanics, bleached with abd't FeOx - green tinge
AW-12	4215572	Pronounced FeOx weathering outcrop. NE-striking fracture w/ abd't FeOx, vertical dip - extends SW to Arrow Mine
AW-13	4215190	Old trench, 30' long, 5' deep. FeOx volcanics - abd't FeOx alteration - nothing spectacular
AW-14	4215712	White-grey volcanic with FeOx alteration - Pit 12' long, 5' deep, silicified along joint surfaces, crystalline, minor yellow color
AW-15	4215787	Trench 10' long, 5' deep, white clay altered volcanic w/ abd't FeOx and yellow color. Groundmass silicified, qtz eyes
AW-16	4215688	Old pit trending NE, white bleached volcanic w/ abd't FeOx - weak yellow tinge, silicified groundmass
AW-17	4215633	Trench along side of hill trending NNE, 50' long, barren? - white volcanic, fg. in FeOx, weakly silicified, backhoe trench
AW-18	4215607	Pit 5' deep, grey-white volcanic/FeOx. Silicified, min yellow color, scree from hillside.
AW-19	4215333	White, grey volcanic - FeOx. Pit 50' deep, now caved - lots of slumped scree material, dead looking. Small road leading in, very old
AW-20	4216283	Small pit, abd't chocolate brown FeOx along fracture surfaces. White, abd't volcanic protolith, pit caved
AW-21	4216276	Small pit, white volcanic-silicified with FeOx and yellow tinge. Old, caved, lots of FeOx concentrated along fractures trending NE
AW-22	4216162	Old shaft, ~80' deep. Abd't FeOx caved volcanic, silicified? Minor yellow color tinge, minor grey qtz stringers. Structure trending NNW, dipping 70 degrees West in shaft
AW-23	4216146	Slightly south of AW-22, intense bleached white-grey volcanics; abd't FeOx, minor yellow tinge, old pit 5' deep, caved
AW-24	4215130	Old wooden shaft, vertical, depth ~100'. Dump mostly grey, FG, volcanic. Numerous silica veins w/ abd't yellow oxide material, 6" wide biggest piece. Highly mineralized, yellow Bx - volcanic fresh, minor FeOx.
AR-1	4215398	Vuggy qtz. Vein material from main Arrowhead dump, pyrite +aspyrite? In aggregates with associated abundant green/yellow FeOx
AR-2	4215407	Same as AR-1
AR-3	4215718	Float sample, qtz vein/gossan with strong black and red FeOx.
AR-4	4214865	Quartz vein stockwork material from Arrowhead Ex? dump, grey/green oxide moderate with dias, black Ag? oxide and very minor pyrite.
AR-5	4214776	Ciz vein stockwork with some silica replacement of volcanics, vfg dias, pyrite approximately 2-3%.
AR-6	4214681	From trench, 40' long, qtz, stockwork veins strike AZ 307. Well oxidized stockwork with strong FeOx.
AR-7	4215051	Shaft colared in volcanics, from dump, massive vein/breccia, low-temp looking, weak FeOx.
AR-8	4215243	Silicified and brecciated volcanics, strong FeOx.
AR-9	4215288	Brecciated volcanics, strongly oxidized with minor stockwork veins, vfg sulfide visible, minor.
AR-10	4215398	Old. Vein stockwork with sub parallel crustiform veins, strong FeOx on vein margins + disseminated sulfide casts
AR-12	4216175	From shaft dump, shear AZ 50, dip 80 NW, crustiform qtz veins with strong brown/black FeOx
AR-13	4216202	From pit exposing AZ N65E, dip vertical shear. Qtz vein and stockwork vein material with very strong black Ag? Oxide, nice stuff.
AR-14	4216362	From shaft exposing shear AZ 353, dip 82 W. Qtz vein material with strong red and black FeOx, silicified maroon oxide in matrix.
AR-15	4216432	Silicified breccia with multi-phase quartz veining, and internal crustiform texture, mod. FeOx.
AR-16	4216560	Brecciated and silicified volcanics with crustiform quartz vein stockwork, strong black Ag? oxide locally, weak-moderate distinctive maroon oxide in matrix.
AR-17	4215396	Altered volcanics from prospect pit near main Arrowhead shaft. Very strong FeOx/MnOx (?), in stockwork veinlets.
AR-18	4215396	Altered volcanics from surface near main Arrowhead shaft. Very strong FeOx veins with gossan texture.
ARW-1	4214763	Silicified volcanics, with cross-cutting qtz veinlets. Fg., dark grey sulfides? in matrix. From Tomahawk shaft.
ARW-2	4215153	Andesite, grey/green, weakly silicified (?), with cross-cutting FeOx veinlets. From shaft.
ARW-3	4215135	Volcanics, bleached, with strong brown FeOx veinlets cross-cutting rock matrix. Weakly brecciated. From prospect pit.
ARW-4	4214680	Bleached volcanics, sample from iron oxide veins striking 315 AZ, dipping 80 degrees northeast, in outcrop.
ND-1	4215392	Arrowhead Shaft. Quartz vein material w/ fg dias, py < 3%, minor FeOx-staining.
ND-2	4215392	Arrowhead Shaft. Silicified qtz veinlets in silicified volcanic turf; strong FeOx-staining.
ND-3	4215392	Arrowhead Shaft. Silicified turf w/ X-ozing, vuggy white qtz and smelt/yest veinlets.
ND-4	4215392	Arrowhead Shaft. FeOx-stained, silicified turf w/ fine X-cutting qtz veinlets & dias, py 1-2%.
ND-5	4214763	Tomahawk Mine. FeOx-stained, vuggy quartz vein material w/ fg py < 3%.
ND-6	4214763	Tomahawk Mine. Strongly altered (advanced argillic alteration) volcanic turf.
ND-7	4216107	Prospect at North end of Gerdo Claim Block. Strongly altered (advanced argillic alteration) and oxidized hematite after pyrite vein(silic) volcanic turf

**Location and description of Needles Pits that were not sampled**

**Location and Description of Pits (unsampled), Needles Property**

UTM Zone 11, Nad 27

<u>Easting</u>	<u>Northing</u>	<u>Description of Pit</u>
572939	4215396	Old pit 20' long
572976	4215839	Pit 6' deep in FeOx volcanics
572793	4215811	Old pit 4' deep, previously sampled J-12470. Bleached white volcanics FeOx leisengangi
572641	4215540	2' deep blasted pit, FeOx volcanic
572678	4215896	Old pit with caved-in FeOx white volcanics
572625	4215950	Bleached white volcanics, abd't FeOx
572485	4215621	Samll pit, bleached, caved white volcanics
572514	4215621	Old pit with bleached white volcanics, FeOx
572528	4215641	Old pit with bleached white volcanics, FeOx
572546	4215668	White volcanics w FeOx, NE-trending, ~100' long
572372	4215767	Pit 10' deep, round shape
572387	4215748	Pit 10' deep, round shape
572240	4215886	Very large trench, perpendicular to hillside 90' long. Grey, white volcanic, FeOx
572964	4214780	Pit 3-4' feet deep, feox in volcanics.
573312	4214285	Weak feox in volcanics exposed in pit.
573235	4214371	Shear zone, AZ 342, dip unknown, with feox and weak silicic in volcanics.
573080	4214291	Mod. Bleached volcanic tuff with brown\yellow feox.
572574	4214955	Pit exposing feox volcanics.
572544	4214956	Very short adit in feox-stained, bleached volcanis, feox veins strike AZ 15, dip 75 West.
572502	4214927	Pit on AZ 15, dip unknown, shear with feox, mod. bleached volcanics.
572322	4214896	Weak feox, volcanics.
572206	4215028	Bleached volcanics, weak feox.
572299	4215217	Pit on N60E, dip 75 NW stringers, has local yellow\green oxide, should be sampled.
572919	4215508	Weak qtz. stockwork in feox stained volcanics, shears strike AZ 70, dip 75 NW.
572888	4215451	Feox\shear in volcanics, strike AZ 72, dip vertical.
572478	4215616	Bleached volcanics, weak feox.
572383	4215756	Feox, bleached volcanics.
572419	4215902	Feox, bleached volcanics.
572392	4216021	Locally strong feox in tuff.