



## **HENTY GOLD LIMITED**

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### ***Final Report***

***2003***

***EL 25/2001  
Lake Margaret***

**Vol 1 of 1**

**HELD BY: AURIONGOLD EXPLORATION PTY LTD**

**MANAGER & OPERATOR: AURIONGOLD EXPLORATION PTY LTD**

**AUTHOR(s): Michael Vicary**

**17 March 2003**

**PROSPECTS:**

**MAP SHEETS:**

**1:250,000:**

**1:100,000:**

**GEOGRAPHIC COORDS**

**Min East:**

**Min North:**

**Max East:**

**Max North:**

**COMMODITY(s): Au, Cu, Pb, Zn**

**KEY WORDS:**

**Distribution:**

- o Placer Dome Asia Pacific – Brisbane Office:**
- o Placer Dome Asia Pacific – Henty Mine Limited:**
- o Mineral Resources Tasmania**

## **SUMMARY**

This report documents the work completed on EL 25/2001 – Lake Margaret by AurionGold Exploration.

In late 2002, AurionGold Exploration was acquired by Placer Dome Asia Pacific and a detailed review of Tasmanian exploration program completed. As a result of the review all non-mine lease exploration was suspended and several exploration tenements (including the Lake Margaret EL) were recommended to be relinquished.

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## **1 INTRODUCTION**

EL 25/2001 – Lake Margaret is held and explored by AurionGold Exploration Pty Ltd (formerly Goldfields Exploration Pty Ltd). It was granted on 18 January 2002 for a period of 5 years. The EL has an area of 5 square kilometres.

In January 2003, AurionGold Exploration Pty Ltd was acquired by Placer Dome Asia Pacific. Exploration activities in western Tasmania were transferred to the Henty Gold Mine.

### **1.1 Location and Access**

The Lake Margaret EL is located about 10 kilometres north of Queenstown in western Tasmania (Figure 1). Access to the EL is limited to a series of 4WD roads and walking tracks near the Lake Margaret power station. A series of grid lines provide additional foot access within the tenement.

### **1.2 Topography and Vegetation**

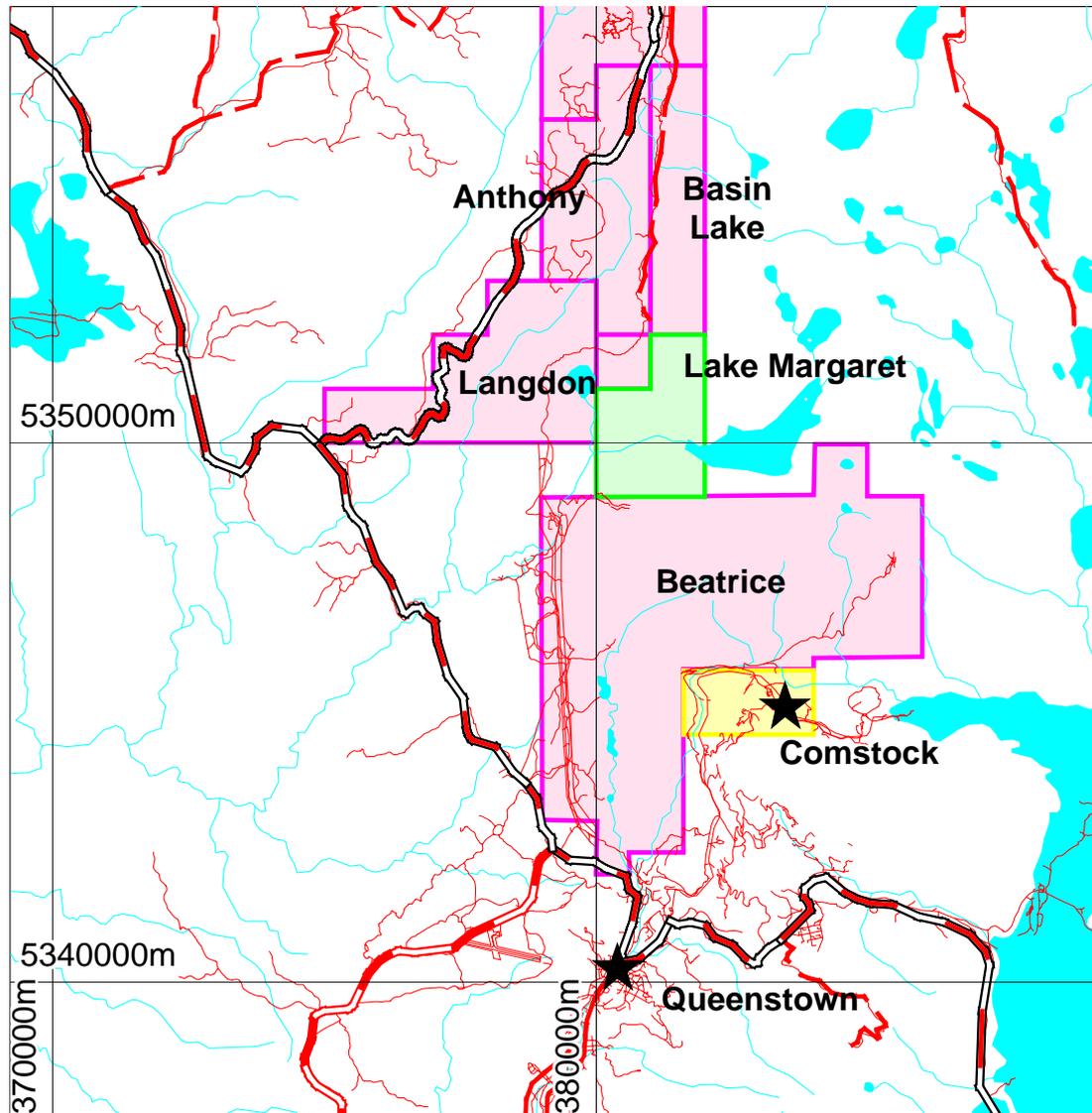
The Lake Margaret EL lies along the eastern slopes of the Tyndall Range. The Yolande River is located in the central portion of the EL. The vegetation consists of a mosaic of button grass plains, light tea tree scrub, medium eucalypt forest and rainforest. The area has been extensively glaciated.

### **1.3 Tenure**

The EL comprises: Land Vested in HEC.  
Tyndall Range Regional Reserve

The licence area contains areas which are listed on the Registrar of the National Estate kept under the Australian Heritage Commission Act 1975.

Figure 1. Lake Margaret EL - Location Map.



#### **1.4 Aims**

The AurionGold Tasmanian exploration program is targeted at the discovery of a Henty style gold mineralisation and polymetallic gold rich base metal mineral deposit in the Cambrian Mount Read Volcanics. The principal aim of the exploration program is to find additional Au resources to supplement production at the AurionGold owned Henty Mine or to define a resource that could be developed as a stand alone operation.

AurionGold has been actively exploring the southern Mount Read Volcanics for several years and has developed an integrated exploration model for Henty and Mt Lyell style mineralisation. Such deposits are considered to represent the submarine equivalents to porphyry copper - high sulphidation - epithermal deposits. Henty style deposits form in the highest levels and margins of the system and have the best potential for gold mineralisation. The high sulphidation - porphyry copper deposits general form at a deeper level and although generally base metal rich can still host significant Au resources.

The Lake Margaret EL is located in Mount Read Volcanics approximately 10 kilometres north of Queenstown. It is highly prospective for both Henty style and Mt Lyell style mineralisation. The tenement is a strategic block that links several tenements to the south of the Henty Mine Lease with the Beatrice tenement adjacent to the Comstock Deposit. This deposit has many lithological and chemical similarities with Henty and has been the subject of a lengthy negotiation with Copper Mines of Tasmania.

#### **1.5 Exploration Model**

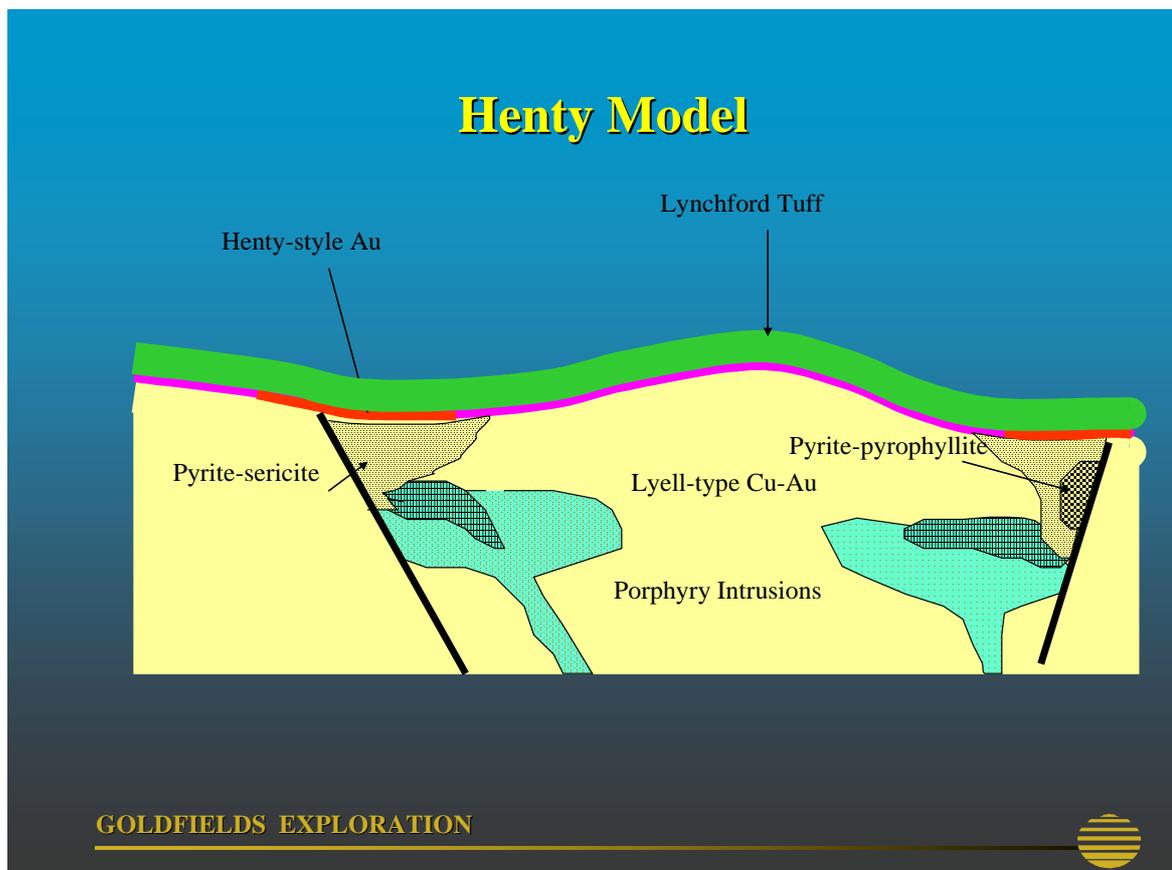
The Mount Read Volcanics are host to several world class gold rich base metal mineral deposits at Rosebery, Hellyer, Que River, Hercules, and Mount Lyell and to gold mineralisation at the Henty Mine. The Henty Mine is the only gold only producer in Western Tasmania, all the other deposits produce gold as a by-product of base metal treatment. In June 2000, the Henty Mine had an inferred Resource of 1,373,000 tonnes @ 10.3 g/t Au (452,900 ounces).

AurionGold Exploration is actively exploring the southern portion of the Mount Read Volcanics in the Henty, South Henty, Basin Lake and Red Hills areas. Exploration to date has focused on systematic drill testing the Henty Horizon, which is defined as a zone of mineralisation, alteration and carbonate developed at the contact between the basal Tyndall Group and the underlying Central Volcanic Sequence. The exploration program has been highly successful and an inferred gold resource of 731000 tonnes @ 7.6 g/t Au at Mount Julia in the south of the Henty Mine Lease has recently been delineated.

An integrated exploration model for Henty and Mt Lyell style mineralisation has been developed. Such deposits are considered to represent the submarine equivalents to porphyry copper - high sulphidation - epithermal deposits. Henty style deposits form in the highest levels and margins of the system and have the best potential for gold mineralisation. The high sulphidation - porphyry copper deposits general form at a deeper level and although generally base metal rich can still host significant Au resources.

An integrated exploration model for the genesis of Henty style Au and Mt Lyell style Cu - Au mineralisation is shown on Figure 2.

Figure 2 Henty Model



The critical components of the model are outlined below:-

A. Position underlying the Lynchford Tuff

The Lynchford Tuff (or Lynchford Formation) is the basal unit of the Tyndall Group. The dominant facies is a feldspar rich volcanoclastic sandstone with subordinate basalt, carbonate horizons and quartz feldspar phyric intrusives / lavas. It overlies and can be interbedded with dacitic pumice breccias and lavas of the Central Volcanic Sequence.

The base of the Lynchford Tuff represents a major exhalite horizon (the Henty Horizon) as indicated by mineralisation at Henty, Comstock, Lynchford, Red Hills, Howards Anomaly and Beatrice.

B. Proximity to major faults

There is a close spatial association between exhalitive mineralisation at the Henty Horizons and major faults. The Henty, Howards Anomaly and Comstock deposits are located near the intersection of the Henty Horizon with the regional (N-S) Henty and Great Lyell Faults. The intersection of second order (E-W) faults with the Henty Horizon is a primary control on mineralisation at Lynchford and Comstock.

The regional (N-S) and second order (E-W) faults were active growth structures during Cambrian volcanism and mineralisation and focused the ascent of deep seated hydrothermal fluids to the inferred seafloor position at the Henty Horizon.

C. Proximity to "Suite 2" porphyries and other related rock types.

Exploration at Mt Lyell, Garfield, Basin Lake, Anthony and South Henty has highlighted the close spatial association of "Suite 2" quartz feldspar porphyry intrusives and feldspar hornblende phyric andesites. These subvolcanic intrusives and their eruptive equivalents are considered to be the source of the magmatic dominated fluids which characterise Henty and Mt Lyell type deposits (Halley, 1996, Callaghan, 1998, Street, 1999 and Williams, 2000).

They range in composition from medium to high calc-alkaline to highly evolved shoshonitic and tholeiitic compositions (Crawford, Corbett and Everard, 1992).

There is good field evidence in the Henty - South Henty area that intrusion of the Suite 2 rock types is synchronous with the deposition of the Lynchford Tuff.

D. Associated Footwall Style Alteration.

Sub-seafloor alteration in the Central Volcanic Sequence is wide spread in the southern Mount Read Volcanics and hosts mineralisation at Mt Lyell, Basin Lake, Anthony and South Henty. There are two principal types:- pyrite-sericite and pyrite-pyrophyllite. The latter forming under more acid conditions.

These alteration zones represent the feeder zones to the overlying exhalative mineralisation at the Henty Horizons or seafloor position.

Deposits of this type commonly display features that are typically associated with High Sulphidation porphyry style mineralisation (Low  $\delta^{34}\text{S}$  values, pyrophyllite-kaolinite-alunite, enargite-tennantite etc). They are usually Cu rich in contrast to mineralisation forming at the overlying seafloor position, which generally have epithermal characteristics (Au and Ag rich).

## **2 PREVIOUS EXPLORATION**

Early exploration in the Lake Margaret was completed by Pickands Mather who conducted a limited dipole –dipole IP survey (Wuerch, 1971).

Mt Lyell held the ground as part of EL 9/66 and 41/71 and conducted limited mapping and stream sediment sampling (Fitzgerald, 1987).

In 1987 the area was held by Billiton as part of EL 103/87. Two lines of CSAMT data were collected (Creagh and Hungerford, 1990 and Randell, 1991).

A detailed Helimag survey was flown over the EL by RGC in early 1995 (Vicary, 1998).

In the late 1990's Pasminco re-established the Billiton grid and conducted a multi-element partial leach soil survey (Denwer et al, 2000).

## **3 WORK COMPLETED**

Due to uncertainties associated with both the merger with Delta Gold to form AurionGold and the subsequent take over by Placer Dome no exploration was completed on EL 25/2001.

## **4 DISCUSSION and RECOMMENDATIONS**

The Lake Margaret EL is covered by extensive Quaternary glacial deposits (Figure 3).

The Great Lyell Fault is a major topographic feature in the centre of the EL and forms the boundary between Cambrian Volcanics in the west and the Ordovician Owen Conglomerate in the east. The Conglomerate forms a high range reaching 1080m in elevation between The Chin and the northern slopes of Sedgwick Bluff.

There is only limited outcrop of Cambrian Volcanics on the peneplain developed to the west of the Great Lyell Fault. A few outcrops of dacitic volcanoclastic sandstone, black siltstone and quartz porphyry have been reported in the upper parts of the Yolande River, just downstream from the Lake Margaret Dam. These outcrops require further evaluation, however the volcanoclastic and siltstone have been correlated with the Central Volcanics Sequence. Bedding suggests that the sequence dips to the east however the facing has not been determined.

The Quartz Porphyry requires chemical analysis to determine lithogeochemical affinity. Suite II porphyry's have been mapped on the adjacent Anthony and Basin Lake EL's and host high sulphidation mineralisation. If this unit has a Suite II composition then the prospectivity of the EL is increased.

The contact between the Central Volcanics Sequence and the Quartz Porphyry exposed in the upper Yolande River has many similarities to the contact between the Central Volcanics Sequence and Anthony Road Andesite at the Basin Lake Prospect, and may be equivalent. It is believed that the Anthony Road Andesite was deposited/intruded during deposition of the Lower Tyndall Group and hence the

contact between the Central Volcanics and the Anthony Road Andesite at the Basin Lake Prospect may correlate with the Henty Horizon.

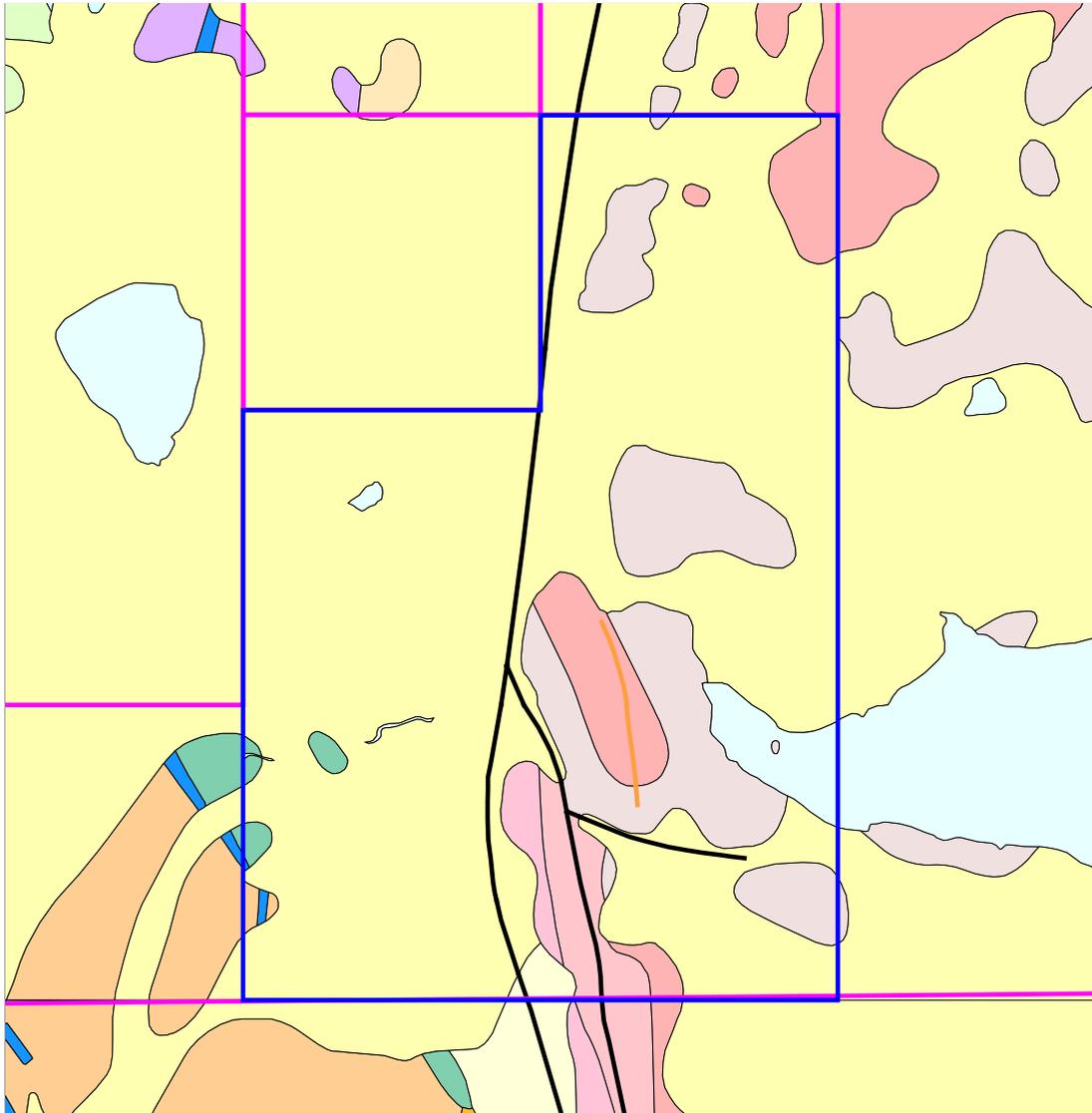
Figure 4 shows an interpretation of the regional magnetic data in the Lake Margaret area. The Cambrian sequence to the west of the Great Lyell Fault is highly complex. A series of magnetic highs within the Lake Margaret EL are correlated with the highly magnetic andesite, which crops out in the Basin Lake-Crown Hill-Comstock areas. It is unlikely that the andesite is exposed in the Lake Margaret area due to thick glacial cover.

Recent exploration in the Lake Margaret EL and on the adjacent Beatrice EL by Pasmenco involved grid cutting, geological mapping and an extensive partial leach soil sampling program. In areas with minimal to no glacial cover the partial leach survey showed a high degree of correlation with the bed rock geology. However in areas of thick glacial cover, including most of the Lake Margaret EL the results were generally inconclusive (Figure 5).

New helimag, radiometric and HEM data recently have been made available from the Western Tasmania Regional Minerals Program. The helimag data set is most useful in determining the sub glacial geology (Figure 4). The radiometrics and HEM data (figure 6) are dominated by the response of the extensive glacial deposits in the Basin Lake area.

Despite lack of previous exploration success in the Lake Margaret area there still exists potential to discover sulphide mineralisation in the Cambrian volcanics adjacent to the Great Lyell Fault. The limited ground base electrical geophysical surveys (dipole – dipole IP, CSAMT) completed in the area should be re-evaluated and if results seem positive then a more detailed survey conducted. Although both methods are successful in finding buried sulphide mineralisation, inversion dipole – dipole IP data proved a highly efficient technique on the adjacent Basin Lake and Anthony ELs.

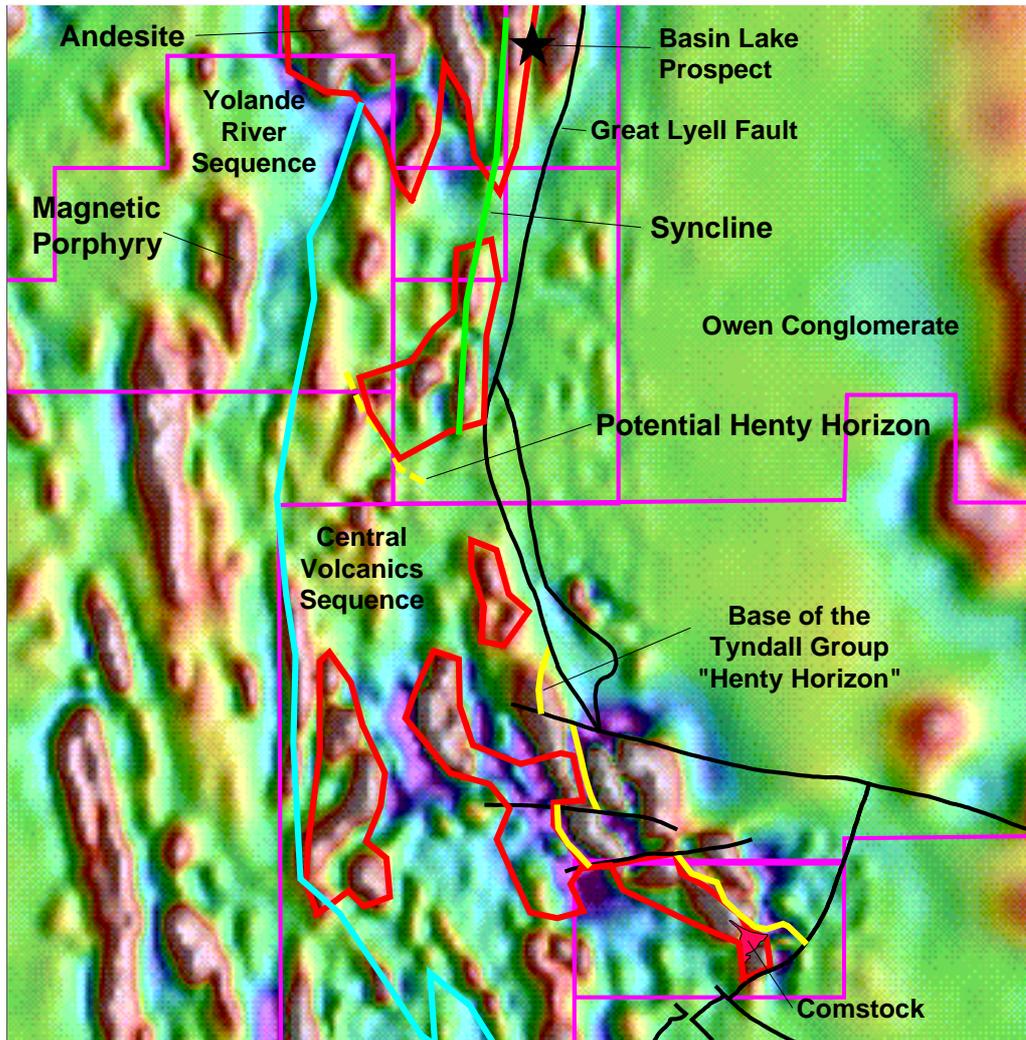
**Figure 3. Simplified Geology of Lake Margaret area.**  
(Geology modified from MRT 1:25000 digital geology)



**Legend for Figure 3**



Figure 4. 1VD Magnetic Image of Lake Margaret area.



**Figure 5. Partial Leach Soil Survey - Raw La Image.**

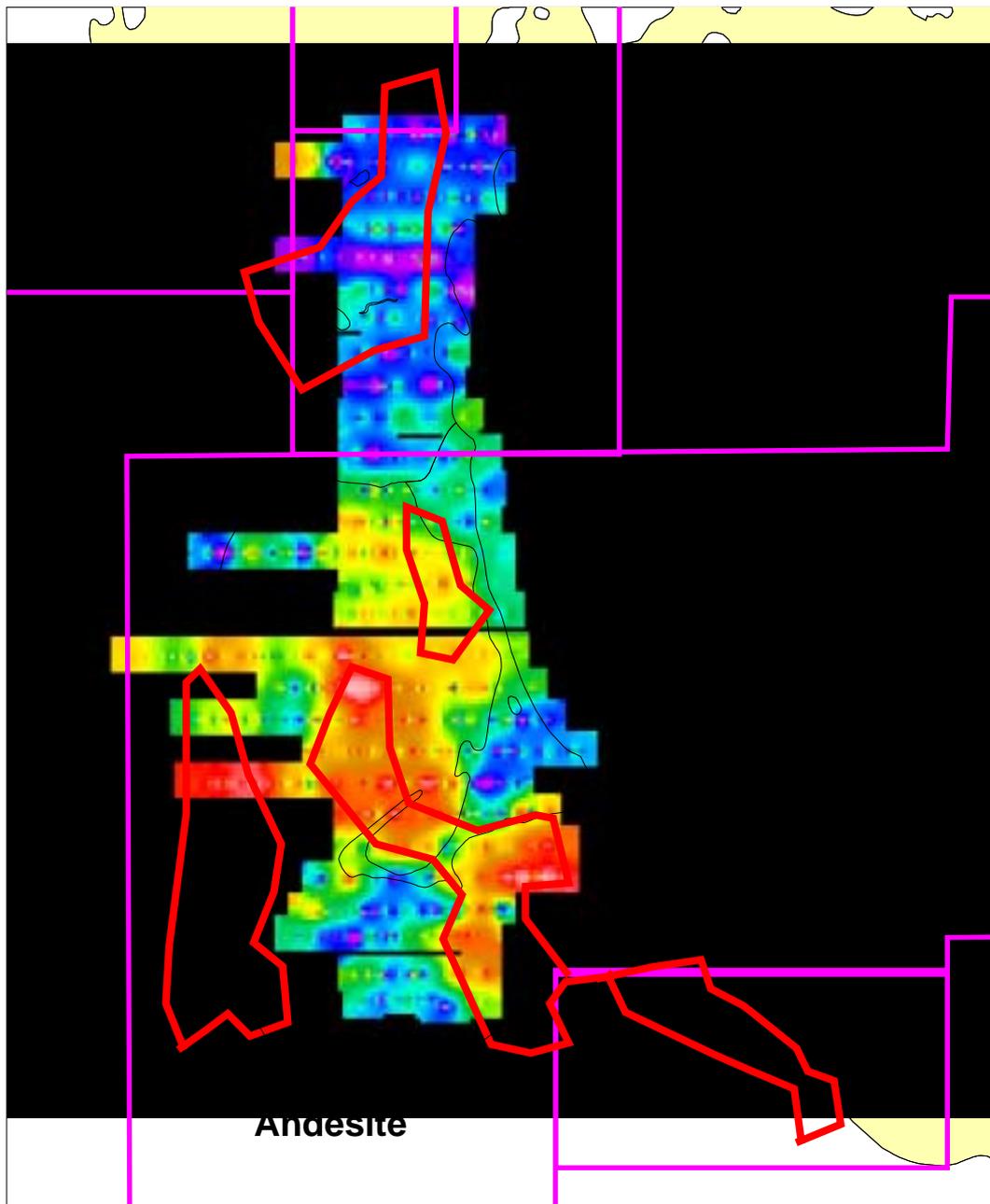
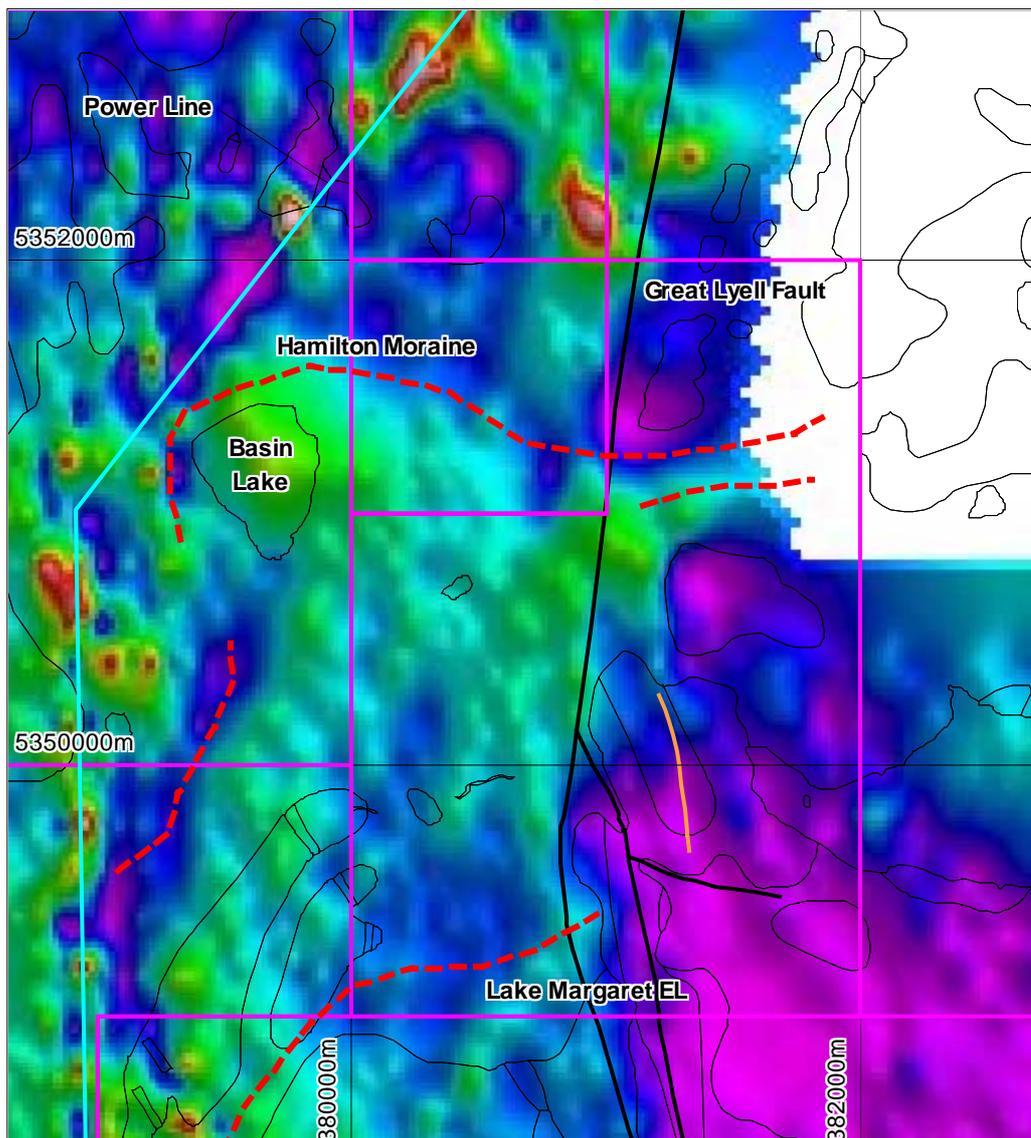


Figure 6. WTRMP HEM Survey – ResCX980 image.



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