## GEOLOGY OF THE

## ORO CLAIMS

## Osoyoos Mining Division

## NTS 92H/1W

$$
\begin{aligned}
& 49^{\circ} \circ 8^{\prime} \\
& 10^{\circ} 18^{\prime}
\end{aligned}
$$

BY
Calvin Church, B.Sc., Michael Renning, Prospector

August 1991

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TABLE OF CONTENTS


## SUMMARY

1. In late April and early May 1991 a limited program of geological orientation was carried out at a time when the property was mostly covered in an unusually persistent snow cover.
2. Under difficult conditions, some soil geochemistry was performed along the southwest boundary of ORO 1 and the northwest boundary of ORO 2 .
3. Results indicate there may be a bismuth/gold association proximal to the diatreme observed on the western end of the ORO 2 claim. This is encouraging since the much smaller diatreme within the Lucky/Bill claim group, owned by Renning and Baldys to the south, yield up to $0.36 \%$ copper and $2.39 \mathrm{~g} / \mathrm{t}$ gold over 20 feet along with higher bismuth values.
4. It seems probable that there will be an area within the large diatreme where copper/gold and bismuth values will be enriched. An extensive program of mapping and soil sampling is recommended in the area of the diatreme and on other areas of the claims where there may be evidence of any high level epithermal alteration , 'pebble dykes' or quartz-sericite-pyrite alteration relating to the centre of the copper/molybdenum porphyry on International Prism Resources property.

## INTRODUCTION

Several property examinations carried out by several major mining companies on the neighboring group of claims owned by Renning and Baldys during the summer of 1990, revealed that there is an enrichment within the small copper/gold diatreme of bismuth (up to 2880 ppm Bi by A.I.Betmanis of Teck Explorations Limited, October 9,1990). Perhaps more significantly, well defined bismuth anomalies are easily observable in soil analysis (contained in report by John A. McClintock P.Eng., Feb. 6, 1988 - North Grid Geochemistry).

The writer undertook a preliminary property examination in unfavorable weather conditions to examine the diatreme reported to occur at the western end of the ORO 2 claim where it represents only a small eastern portion of the feature. A total of 22 soil samples were collected and submitted to ACME Analytical Laboratories and were analyzed for 32 elements plus gold.

## LOCATION AND ACCESS

The property is located about 25 miles southwest of Keremeos B.C. on a ridge between the Ashnola River and Cat Creek. Access is by the Ashnola river road or from the west over Placer Mountain on a good 4-wheel drive gravel road from the Hope/Princeton Highway.

## TOPOGRAPHY AND VEGETATION

The area is characterized by rugged terrain with steepwalled glaciated valleys. However, at the higher elevations on the ORO claims, there is no evidence of glaciation. Local relief is about 1500 feet. The region is abundantly forested, particularly in the valley bottoms and lower slopes, with lodgepole pine (Pinus contorta) and ponderosa pine (Pinus ponderosa).


PROPERTY LOCATION MAP

## CLAIM STATUS

The ORO claims are two contiguous claims consisting of 30 units and grouped under the group name ORO. They are located in the Osoyoos Mining Division and are illustrated on mineral titles map $92 \mathrm{H} / 1 \mathrm{~W}$. Upon acceptance of this report for assessment purposes, the claims will have the new expiry date shown below.


## HISTORY AND PREVIOUS WORK

The Ashnola Property adjoining the ORO claims to the southwest received episodic exploration activity during the 1960s' and 1970s'. At least eleven companies carried out programs that included geological mapping, stream sediment and soil surveys, geophysics, trenching and diamond drilling. During this time, emphasis was on base metal exploration, in particular for a Mo-Cu-W porphyry (Dr. A.J.Sinclair, P.Eng. July 20, 1978). One of the best intersections from the central zone in one of six holes drilled by Getty Mines Ltd. averaged $0.17 \%$ copper across 500 feet.

In March 1983 the Mac 1 and Mac 2 claims were staked covering the exact area the ORO claims cover now. These claims were included as part of a larger block of claims later that year and explored by Minequest Exploration Associates. Their work included geological mapping, magnetometer surveys, silt, soil and rock chip sampling all concentrated mainly north of Cool Creek. Recent exploration targets in the ORO claim area are concerned with anomalous gold values associated with porphyry style copper mineralization. Although the areas to the northeast and southwest of the ORO claims have been covered in considerable detail, very little data is available for the area between. Minequest Exploration Associates has noted elevated gold, silver and arsenic values occurring in feldspar porphyritic rhyolites in the area of the claims.


## REGIONAL GEOLOGY

The regional geology of the area is dominated by Upper Triassic - Lower Jurassic plutonic stocks of the coast Plutonic Complex. Late Cretaceous volcanic and sedimentary units of the Kingsvale Group occur in the region and are intruded by late Lightening creek dykes. The Kingsvale Group contains a unique suite of volcanic rocks known as the Young Creek body and is unique to the Ashnola River area. The ORO claims are located within the Young Creek Volcanic field. A number of major northeast trending structures cross the region and are thought to control intrusive stock or dyke emplacement.

## LOCAL GEOLOGY

The majority of the property is covered by volcanic rocks belonging to the Young Creek body. The bulk of the formation consists of lava and unsorted or poorly sorted crystal tuffs ranging in colour from brown, buff, purple-green, pale green and white. They all contain fragments of rocks and minerals but their presence is not always readily apparent. In general composition, the rocks are rhyolitic to dacitic and all conspicuously contain glassy quartz shards and occasionally feldspar 'ghosts'.

The southwest portion of the ORO 2 claim contains part of the large diatreme mostly lying within the Prism ground and on the Dino claim of the Renning/Baldys partnership. Near the edge of the diatreme, numerous quartz stringers along with sericite alteration and occasional quartz crystal-lined vugs are contained within a dark grey to light grey and white rhyolite. Because of the high level of frost shattering, the angular overburden obscures'all but the steepest slopes in this area. Mapping any geological boundaries will be difficult in the cat Creek valley where a large portion of the diatreme lies.

## SOIL SAMPLE RESULTS

The soil samples were taken every 50 metres along the lines which are separated by 100 metres. These lines were numbered in accordance with, and tied onto, the North Grid established by Murtec Resources Ltd. in November of 1987. Further, in cooperation with Renning \& Baldys, the results from their soil sample survey were combined with the survey in discussion for a more accurate statistical analysis.

Soils have formed in three distinct but overlapping environments. At higher elevations, there were no observed glacial deposits or features and the soil developed either directly on bedrock or on a varying thickness of frost shattered bedrock on steeper slopes. Valley bottoms are covered with fluvio - glacial deposits.

There is clearly an interesting anomalous area developing nearest to the diatreme. Anomalous copper and gold with a near overprint of bismuth, antimony and arsenic occurs in this area. It is very encouraging to observe such a good correlation between a few key pathfinder elements with copper and gold. Also in this area, molybdenum, lead and silver appear to be anomalous. This area is characterized by frost shattered rock varying from 1 to 3 metres in thickness.

## CONCLUSIONS AND RECOMMENDATIONS

At this time the most favorable exploration target is at the southwest corner of the ORO group of claims and any mapping sampling or other surveys should start from there. In addition, any Prism ground to the southwest should be acquired as it comes available. Even though the ground to the north has been gone over for gold by Minequest Exploration Associates, it should be looked at a second time since the truly first significant gold results were found in 1987 on the Lucky and Bill claims and thus any further exploration in the area should focus around the knowledge gained from it.

1. The ORO claim group should be mapped at a scale of 1:5000 with special notation given to the glaciated areas.
2. The portion of the claims near and including the diatreme should be soil sampled more extensively by infilling; the lines to be separated by 50 metres and stations by 25 metres.
3. Following the results of the soil survey, an extensive trenching program along with bulk, panel rock chip sampling.



New Horizon Software.




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## REFERENCES

Hadley, M.G. and Hodgson, G.D., 1984; Geological Mapping and Rock Sampling on the Cool Creek claims; Report to Minequest Exploration Associates Limited; Assessment Report \# 13370 B.C. Ministry of Energy, Mines and Petroleum Resources.

Montgomery J.H., Cochrane D.R. and Sinclair A.J., 1974; Discovery and Exploration of Ashnola Porphyry Copper Deposit, Near Keremeos, B.C.: A Geochemical Case History

Rice, H.M.A., 1947; Geology and Mineral Deposits of the Princeton Map Area, British Columbia; Geological Survey of Canada, Mem. 243

Watt, D.D., 1989; A Report on Precious Metal Geochemistry on the Ashnola Claim Group; Assessment Report \# 18415, B.C. Ministry of Energy, Mines and Petroleum Resources.

APPENDIX 1

SOIL SAMPLE ASSAY CERTIFICATES


ISP - . 500 GRAM SAMPLE IS DIGESTED WITH 3ML 3-1-2 HCL-HNO3-H20 AT 95 DEG. C FOR ONE HOUR AND IS DILUTED TO 10 ML WITH MATER. THIS LEACH IS PARTIAL FOR MN FE SR CA P LA CR MG BA TI B 4 AND LIMITED FOR NA AND AL. AU DETECTION LIMIT BY IMP IS 3 PPM. - SAMPLE TYPE: SOIL AU* ANALYSIS BY ACID LEACH/AM FROM 10 GM SAMPLE. Samples beginning 'RE' are duplicate samples.

DATE RECEIVED: AUG 81991 DATE REPORT MAILED: - $\operatorname{nog} 13 / 41$

SIGNED BY...A.....TOYE, C.LEONG, J. WANG; CERTIFIED BIC. ASSAYERS

## APPENDIX 2

## SOIL SAMPLE STATISTICS



ARITHMETIC


Number Samples $=64$
Minimum Value $=2$
Maximum Value $=25$
SUBSET CRITERIA
Property Code (s) = [] East
Sample Type (s) $=$ [
Lab. Code (s) = []

## COMBINED STATISTICS FOR 1991 SOIL GEOCHEMISTRY

## OSOYOOS M.D.

| DINO/ORO CLAIM GROUPS |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| Project Code | Dade | Report No. | N.TS. | Fig. No. |
|  | AUGUST 1991 |  | 92H/W |  |
| RENNING/BALDYS \& MALAHOFF |  |  |  |  |




## ARITHMETIC



```
Number Samples = 64
Minimum Value = 2
```

Maximum Value $=16$

SUBSET CRITERIA
Property Code (s) = [] East
Sample Type (s) $=[]$

COMBINED STATISTICS FOR 1991 SOIL GEOCHEMISTRY

## OSOYOOS M.D.

Project Name
DINO/ORO CLAIM GROUPS

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| RENNING/BALDYS \& MALAHOFF |  |  |  |  |

## ARITHMETIC <br>  <br> Concentration <br> Mean $=3.219$ $\mathrm{SD}=1.175$

```
Number Samples = 64
Minimum Value =2
Maximum Value =7
```


## COMBINED STATISTICS FOR 1991 SOIL GEOCHEMISTRY

OSOYOOS M.D.
Project Name
DINO/ORO CLAIM GROUPS

| Project Code | Dde | Report No. | NT.S. | Fig. No. |
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|  | AUGUST 1991 |  | 92H/W |  |
|  |  |  | HOFF |  |

## ARITHMETIC



Number Samples $=64$
Minimum Value $=1$
Maximum Value $=1$
Maximum Value $=1$

SUBSET CAITERIA
Property Code (s) = [] East
Sample Type (s) $=[]$
Lab. Code (s) = []

## OSOYOOS M.D.

Project Name
DINO/ORO CLAIM GROUPS

| Project Code | Date | Report No. | ${ }^{\text {NT.TS. }}$ | \|F9. No. |
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|  | AUGUST 1991 |  | 92H/1W |  |
|  |  | NNING/BAL | AHOFF |  |



```
Number Samples = 64
Minimum Value = .03
Maximum Value = . 21
```

Property Code (s) a [] Sample Type (s) = []
Lab. Code (s) = []

OSOYOOS M.D.
Project Name
DINO/ORO CLAIM GROUPS

| Project Code | Date | Report No. | NT.S. <br>  <br>  <br>  AUGUST 1991 | $92 \mathrm{H} / 1 \mathrm{~W}$ |
| :--- | :--- | :--- | :--- | :--- |$\quad$ Fig. No.




TRUNCATED ARITHMETIC


Concentration
Mean $=18.197$
$S D=12.223$

ARITHMETIC


Concentration
Mean $=21.188$
SD $=18.558$

Number Samples $=64$
Minimum Value $=4$
Maximum Value $=96$

TRUNCATED LOGARITHMIC


LOGARITHMIC


Concentration
Mean $=15.975$
SD $=.319$

SUBSET CRITERIA
Property Code (s) $=[] \quad$ East North
Sample Type (s)
Lab. Code (s)
$=[]$
$=[]$

## COMBINED STATISTICS FOR 1991 SOIL GEOCHEMISTRY

OSOYOOS M.D.

## Project Name

DINO/ORO CLAIM GROUPS

| Proect Code | Date <br> AUGUST 1991 | Report No. | N.T.S. <br> 92H/W | Fo. No. |  |
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| RENNING/BALDYS \& MALAHOFF |  |  |  |  |  |

ARITHMETIC


Number Samples $=64$
Minimum Value $=1$
Maximum Value $=17.4$

SUBSET CAITERIA
Property Code (s) Sample Type (s) Lab. Code (s)

East
$\left.\begin{array}{l}=1] \\ =\end{array}\right]$
$=[]$
$=[]$

North

COMBINED STATISTICS FOR 1991 SOIL GEOCHEMISTRY
OSOYOOS M.D.
Project Name
DINO/ORO CLAIM GROUPS

| Project Code | Date <br> AUGUST 1991 | Report No. <br> $92 \mathrm{H} / 1 \mathrm{~W}$ | Fig. No. |
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TRUNCATED ARITHMETIC


## ARITHMETIC



```
Number Samples = 64
Minimum Value = 2
Maximum Value = 37
```

LOGARITHMIC


SUBSET CRITERIA
Property Code (s) $=[]$ East North Sample Type (s) Lab. Code (s)

## OSOYOOS M.D.

Project Name
DINO/ORO CLAIM GROUPS

| Project Code | Date |  |  |
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| RENNING/BALDYS \& MALAHOFF |  |  |  |

TRUNCATED ARITHMETIC


## ARITHMETIC



Number Samples = 64
Minimum Value $=7$
Maximum Value $=435$

TRUNCATED LOGARITHMIC


LOGARITHMIC


SUBSET CRITERIA
Property Code (s) = [] East
Sample Type (s) $=$
Lab. Code (s) $=$ []

## COMBINED STATISTICS FOR 1991 SOIL GEOCHEMISTRY

## OSOYOOS M.D.

| Project Name |  |  |  |  |
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| RENNING/BALDYS \& MALAHOFF |  |  |  |  |

ARITHMETIC


```
Number Samples = 64
Minimum Value = .03
```

Maximum Value $=.27$

SUBSET CRITERIA
Property Code (s) = [] East East

North

Sample Type (s)
Lab. Code (s) $=$ []

OSOYOOS M.D.

| Project Name |  |  |  |  |
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| RENNING/BALDYS \& MALAHOFF |  |  |  |  |



Number Samples $=64$
Minimum Value $=1$
Maximum Value $=1$

COMBINED STATISTICS FOR 1991 SOIL GEOCHEMISTRY

## OSOYOOS M.D.

Project Name
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Number Samples $=64$
Minimum Value $=1$ Maximum Value $=23$

SUBSET CRITERIA
Property Code (s) = [] East Sample Type (s) Lab. Code (s)

North
$=[]$
$=[]$

DINO/ORO CLAIM GROUPS

| Project Code | Date <br> AUSGUST 1991 |  | NT.T. <br> $92 H / 1 W$ | Fig. No. |
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| RENNING/BALDYS \& MALAHOFF |  |  |  |  |





Number Samples $=64$
Minimum Value $=.02$
Maximum Value $=.16$
SUBSET CRITERIA
Property Code (s) $=[] \quad$ East
Sample Type (s) $=[]$
Lab. Code (s) $=[]$

## COMBINED STATISTICS FOR 1991 SOIL GEOCHEMISTAY

OSOYOOS M.D.
Project Name

## DINO/ORO CLAIM GROUPS

| Project Code | AUGUST 1991 | Report No. | N.T.S. 92H/1W | Fig. No. |
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TRUNCATED ARITHMETIC


ARITHMETIC


LOGARITHMIC


TRUNCATED LOGARITHMIC


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\begin{aligned}
\text { Mean } & =14.977 \\
\text { SD } & =197
\end{aligned}
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| :--- |
| $\dot{5}$ |
| $\dot{8}$ |

Number Samples $=64$
Minimum Value $=6$

- Maximum Value $=127$

COMBINED STATISTICS FOR 1991 SOIL GEOCHEMISTRY
OSOYOOS M.D.

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| RENNING/BALDYS \& MALAHOFF |  |  |  |  |

New Horizon Software.


## ARITHMETIC <br> 

| Number Samples | $=64$ |
| ---: | :--- |
| Minimum Value | $=1$ |
| Maximum Value | $=11$ |

SUBSET CRITERIA
Property Code (s) = [] East Sample Type (s) $=$ [ Lab. Code (s) $=$ []

COMBINED STATISTICS FOR 1991 SOIL GEOCHEMISTRY
OSOYOOS M.D.
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DINO/ORO CLAIM GROUPS

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\begin{aligned}
& \text { Number Samples }=64 \\
& \text { Minimum Value }=1 \\
& \text { Maximum Value }=2
\end{aligned}
$$

Property Code (s) = [] East Sample Type (s) Lab. Code (s)
$=[]$
$=[]$
North

| COMBINED STATISTICS FOR 1991 SOIL GEOCHEMISTRY |  |  |  |  |
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| RENNING/BALDYS \& MALAHOFF |  |  |  |  |


Number Samples $=64$
Minimum Value $=5$
Maximum Value $=5$

SUBSET CAITERIA
Property Code (s) = [] East
Sample Type (s)
$=[]$
Lab. Code (s) = []

## COMBINED STATISTICS FOR 1991 SOIL GEOCHEMISTRY

## OSOYOOS M.D.

Project Name
DINO/ORO CLAIM GROUPS

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```
Number Samples = 64
Minimum Value = 17
. Maximum Value =51
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SUBSET CRITEAIA
Property Code (s) = [] East
Sample Type (s) = []
Lab. Code (s)

North
$=[]$
$=[]$

## COMBINED STATISTICS FOR 1991 SOIL GEOCHEMISTRY

## OSOYOOS M.D.

Project Name
DINO/ORO CLAIM GROUPS

| Project Code | Date <br> AUGUUST No. 1991 | N.T. <br> $92 H / 1 W$ | Fig. No. |
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| RENNING/BALDYS \& MALAHOFF |  |  |  |



## APPENDIX 3

COST BREAKDOWN

## COST BREARDOWN

PersonelCal Church, B.Sc Geology3 field days @ \$350.00/day............... $\$ 1050.00$
Michael Renning, Prospector
4 field days @ $\$ 300.00 /$ day ..... $\$ 1200.00$
Report Writing and PreparationCal Church, B.Sc Geology1 office day @ \$125.00/day................ $\$ 125.00$
Michael Renning, Prospector
2 office days @ \$100.00/day ..... $\$ 200.00$
Sample Analysis22 Soil Samples, 32 element ICP analysis \&Geochem Au analysis by acid leach....... $\$ 258.94$
Soil statistics and plots
22 samples @ \$2.00/sample ..... \$44.00
1 Diskette @ \$6.42. .....  $\$ 6.42$
Meals \& Accommodation
1 night at motel in Keremeos ..... $\$ 42.00$
3 meals in Hope and Keremeos ..... \$70.00
Groceries purchased in Keremeos. ..... $\$ 110.00$
Transportation
Ford Bronco, 4 days @ $\$ 35.00 /$ day ..... $\$ 140.00$
Fuel ..... \$118.00
GRAND TOTAL. ..... \$3364.36

