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# Assessment Report

## Geophysical Ground VLF EM Survey

Completed for Advance United Holdings Inc.  
Over Mining Claims held by Talisker Gold Corp. (a subsidiary of Advance United Holdings Inc.)

On the  
**Paint Lake Road - Joint Venture Property**

In Abbie Lake Area and Pukaskwa River Area Townships, District of Thunder Bay  
Provincial Cell Grid Numbers 42C03 and 42C04

Prepared For  
**Advance United Holdings Inc.**

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Superior Exploration & Climbing Co. Ltd.

September 28, 2022

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## **Introduction**

Superior Exploration has completed a ground VLF geophysics survey over mining claims held by Talisker Gold Corp., a subsidiary of Advance United Holdings Inc. located in the Townships of Abbie Lake Area and Pukaskwa River Area, District of Thunder Bay.

The objective of the VLF Em-16 Survey was to identify and trace the trend of VLF EM anomalies on claims northeast of Wesdome Gold Mine's Mishi Pit, following strong linears that might be carrying gold.

This report discusses the results of the VLF survey and provides new insight into the potential of Advance United's (Talisker Gold) claims. Several VLF EM anomalies related to shear structures in the bedrock have been identified by the survey.

Overall, 13 lines (19.14km) of geophysical VLF survey was completed, modelled and interpreted. Fieldwork was performed September 7, 8, 9, 10,11,13,14,15, 2022, for a total of 8 days.

The Coordinate System used was UTM Zone 16, NAD 83

### **Mineral deposit type being explored**

The Property is prospective for Archean Lode Gold deposits similar to the nearby Wesdome mine and other gold deposits.

### **Geological model/concept being applied:**

Lode gold deposits are known to be related to Regional and local structures. The program was designed to identify shear zones.

### **Reason for exploration work / type performed**

Structural features and shear zones are known to be responsive to VLF EM.

## **Mining Claim Information**

### **Tenure and Ownership**

The property consists of 78 single mining claim cells (SCMC) and covers an area of approximately 1,680.80 hectares (Map 1).

Talisker Gold, a Subsidiary of Advance United Holdings Inc. owns a 100% interest to the right and title to the mining claims that constitute the Paint Lake Road JV Property. The joint venture is between Talisker Gold and Frontline Gold. A list of the claims can be found in Appendix A.

# Property Information

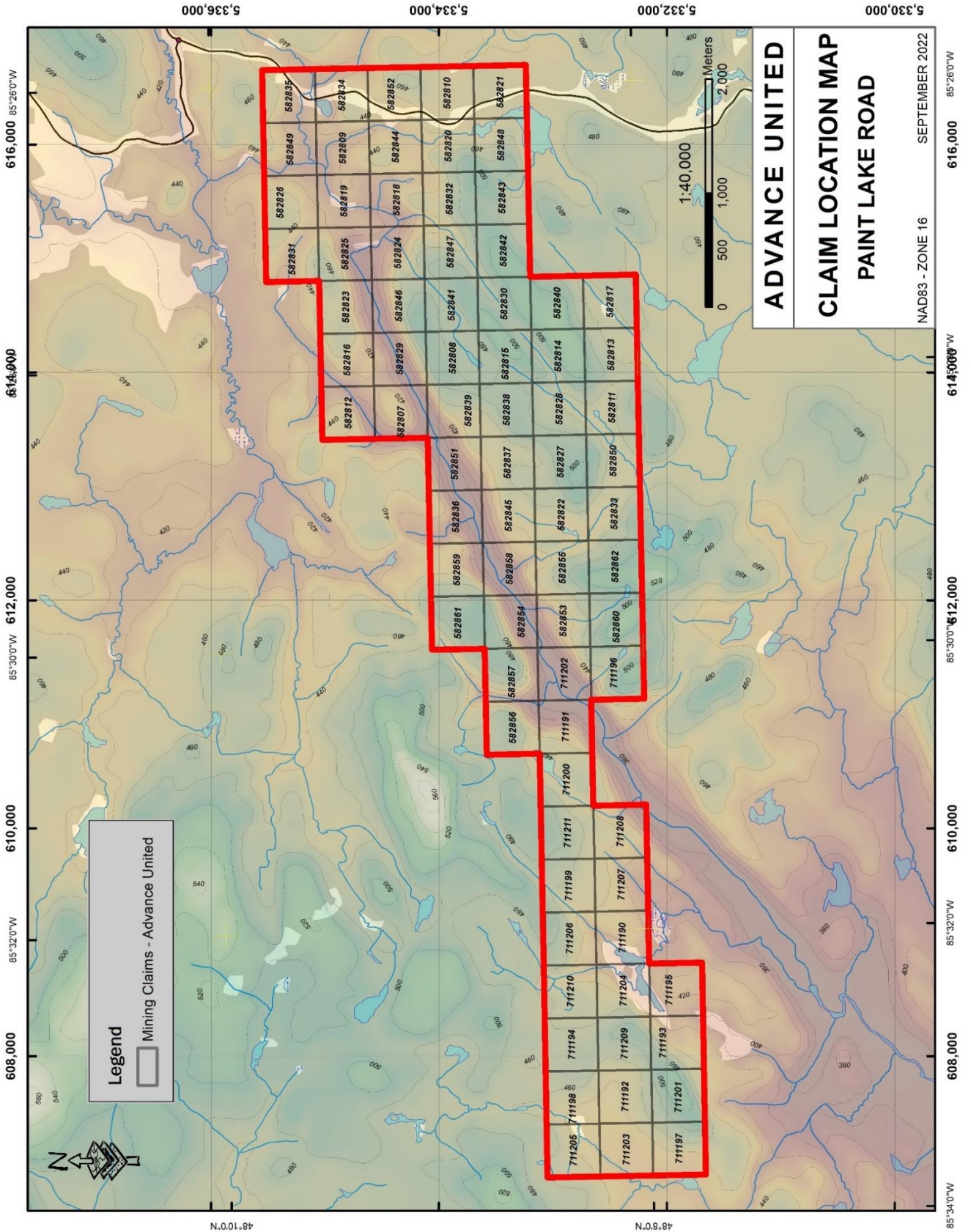
## Location

The property is located approximately 42 km west of Highway 17 along the Paint Lake Road, some 40 kilometers north of Wawa, Ontario

## Map 1 Property Location



# Map 2 Advance United (Talisker Gold Corp.) Claims

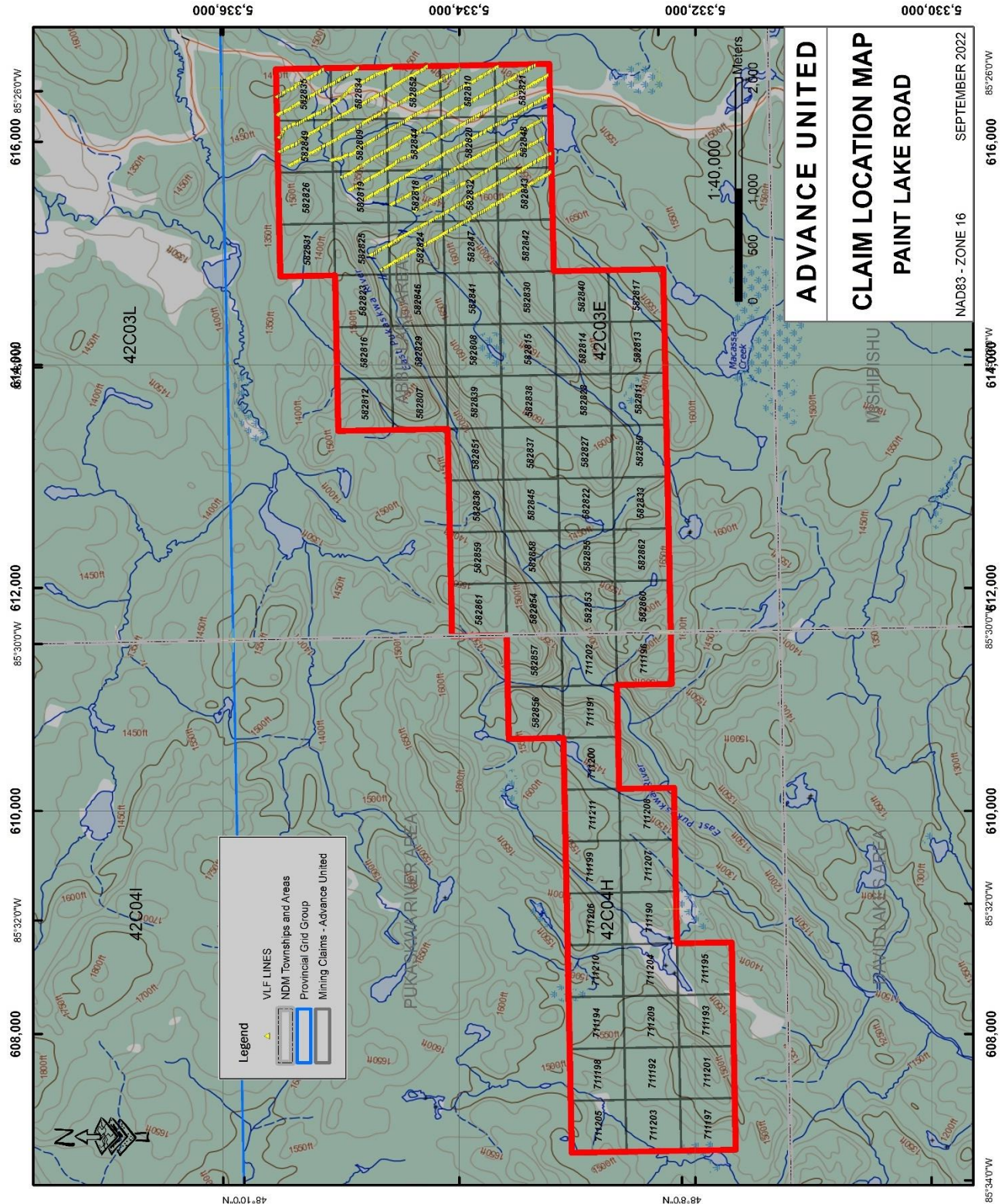


# Mining Claims Relevant to VLF Grids

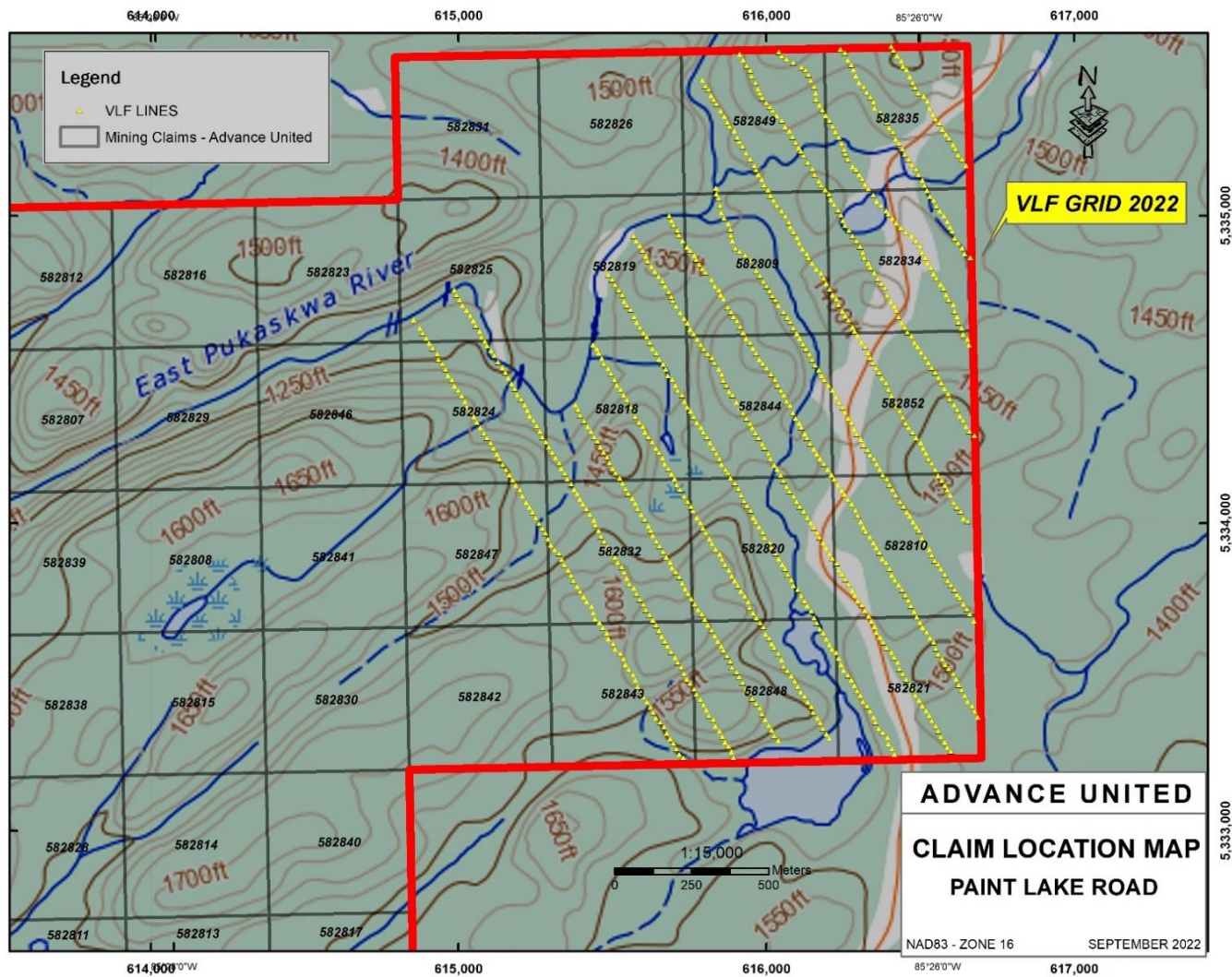
## Identification

The VLF Geophysical Survey was completed over 17 mining claims presently held by Advance United Holdings Inc. (Talisker Gold).

Map 3 Advance United's Mining Claims showing VLF Grid Area



## Map 4 Relevant Mining Claims with VLF Grid Lines & Stations



**Table 1 VLF Relevant Claims with VLF Data Allocation**

Total Number of VLF Lines	Total Amount of VLF (Km)	Claim Numbers	Allocation of VLF on Claims (Km)
13	19.14	582835	1.26
		582834	1.56
		582852	1.32
		582810	1.50
		582821	1.30
		582849	1.22
		582809	1.28
		582844	1.58
		582820	1.36
		582848	1.32
		582819	0.70
		582818	1.18
		582832	1.40
582843	0.78		
582825	0.28		
582824	0.92		
582847	0.18		



## Property Access

The Property is located in the Abbie Lake Area / Pukaskwa River Area Townships, northwest of Wawa, Ontario.

To Access VLF grids:

- Take the Paint Lake Road at Highway 17 junction for 42 Km
- VLF line 00 crosses the Paint Lake Road at Km 42
- The VLF grid line crosses the Paint Lake Road between kilometer 41 and 44

## Topography and Vegetation Cover

The property consists of typical Algoma area topography and Boreal Forest vegetation comprising of tree covered hills with shallow overburden and streams with beaver dams creating ponds. Maximum elevation on the Paint Lake Property is approximately 450m with anomalous hills and gullies running in an east west direction.

## History of the Property

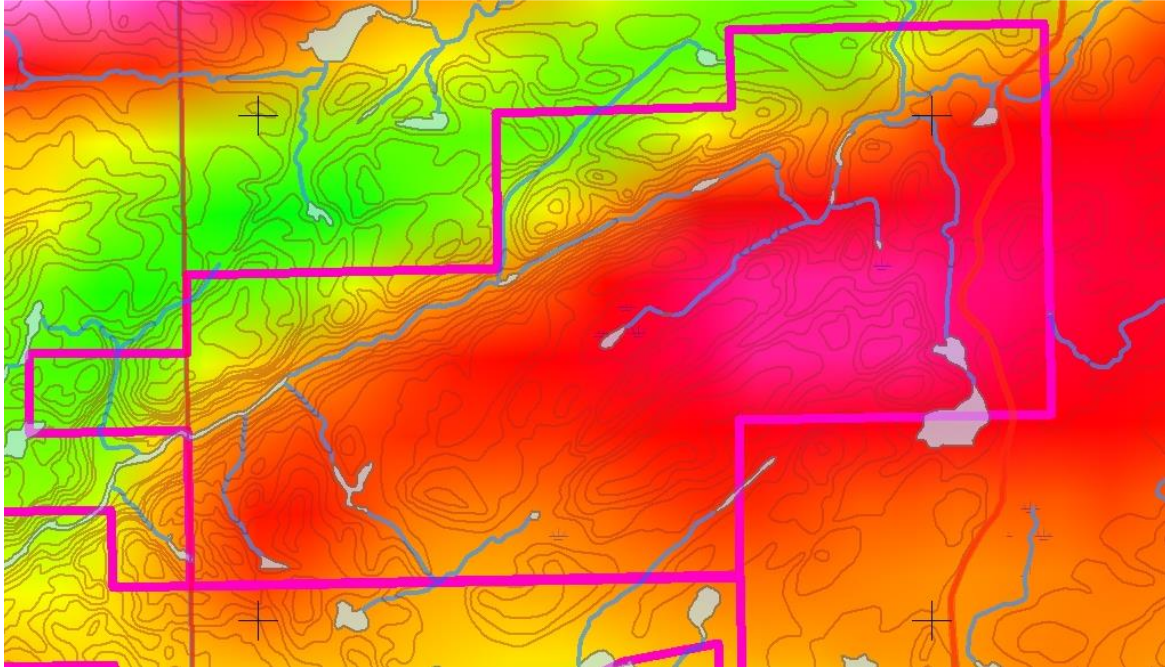
While Many programs have been completed in the area and some have overlapped the present property, however the history of exploration on the property is scarce.

Many Airborne VLF-EM, Magnetic Response and EM surveys have been flown in the region. The most pertinent is an airborne VLF and Magnetic survey flown for Daiwan Engineering by Terraquest in 1989 (*AFRI Report number 42C83NW0S44*). The survey covered part of the northern portion of the present claims. The results were interpreted to show a series of weak EM anomalies and a strong difference in magnetic response between the southern and central parts of the grid. The strong linear parallel to the East Pukaskwa River was also outlined. The total area covered by the present survey does not appear to have been covered.

The government “super grid” resolution for the area over the claims does not have high enough resolution to aid in detailed Interpretation.

Geological mapping of the area has been in stages. Government geological mapping is available at 1:15,840; 1:63,360 and 1:250,000 scales. For the purposes of this review *OGS Map 2666* will serve as a base.

## Map 5 Total Field Magnetic Response of the Paint Lake Road JV Property Area



### Notes:

- The eastern part of the present property overlies approximately the highlighted area.
- The sharp contrast between the magnetic response in the southern (higher response) and northern (lower response) parts of the Property related to a major shear zone which may be shown by the linear river feature.

### Showings & Sampling

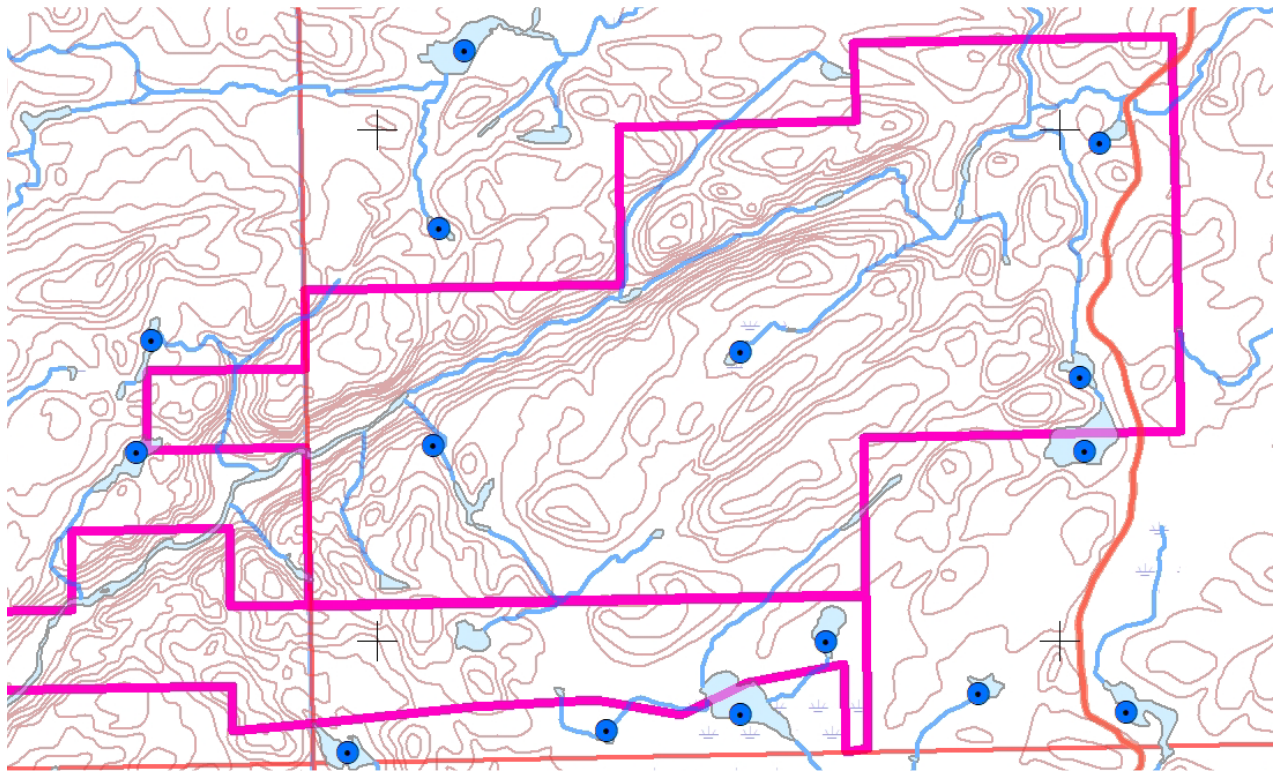
The Ontario Mineral Inventory Database does not locate any mineral showings within the boundary of the Paint Lake Road property.

A grab sample that returned 0.549 g/t is reported in *Assessment Report 42C04SE8748 pg. 11*. This showing is situated to the southwest of the claims.

There are a series of soil sampling anomalies also to the southwest of the claim group; one of these samples returned a value of 0.023 oz. per ton gold (0.7887 grams gold per tonne).

Miscellaneous Data Release 060 is a stream sediment survey. No anomalous samples sites are situated within the claim group boundary where at least 6 locations were sampled.

**Map 6 Location of Stream Sediment Samples in the Paint Lake Road JV Property Area**



## **Geology and Mineralization**

### **General Geology in the Area of the Paint Lake Road JV Property**

The Paint Lake Road Property lies in the Mishibishu Belt of the Wawa Greenstone belt. The area is typified by belts of volcanic and sedimentary rocks with intervening Granitic and gneissic belts typical of the Archean Superior Province.

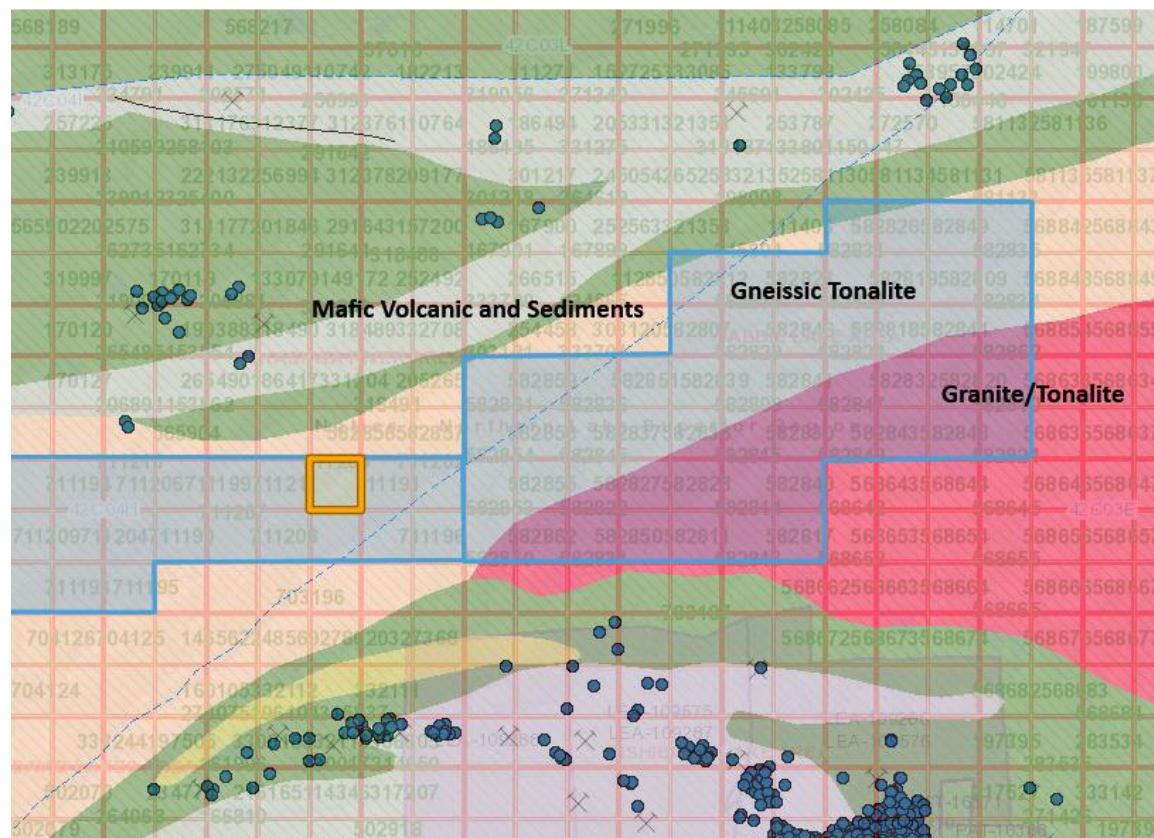
The following is a simplistic presentation of the geology underlying the Paint Lake Road property claims.

Metamorphosed Archean age Supracrustal rocks and Proterozoic intrusive rocks form the bedrock beneath the Paint Lake claims. The claim group appears to be underlain by granite and Gneissic Tonalite. The stratigraphy of the region surrounding the property taken from *Map 2666* and shown in *Map 7* can be summarized as:

- Granite and Tonalite. in the south (Unit 13)
- Gneissic Tonalite in the central part (Unit 9)
- A thin band of Mafic volcanics (Unit 2) followed by arkose and conglomerate (Unit 5) in the north.

## Map 7 General Geology in the area of Paint Lake Road JV Property

(Modified from Map 2666 and MLAS) Note location of Nearby Drill Holes. Property boundary in blue



## Work Completed

### Personnel

The VLF EM-16 and GPS field navigator responsible for the collection of all raw data was Shaun Parent and Guillaume-Olivier Porier. Processing, Modelling and Interpretation of data was conducted by Shaun Parent and Sandra Slater.

### Dates of Work:

Fieldwork was completed over 8 days on September 7, 8, 9, 10, 11, 13, 14 & 15, 2022 using a VLF EM-16 Unit and a handheld Garmin GPS-60C.

### Work Description

Overall, the VLF survey consisted of collecting 19.14 km of ground VLF data over 13 grid lines. All data was assembled, processed and modelled. (Table 1)

## VLF Grid Layout

The VLF survey lines were chosen to cover the eastern portion of the Paint Lake Road JV

13 VLF Lines (00 to 18.5W) were spaced 150 meters apart.

Each VLF station where a reading was taken was located based on the distance from the start of the survey line at 0+00 at the southeast end of the grid.

2 VLF transmitters were read at 20-meter stations using a Geonics VLF- Em-16 Unit and a handheld GPS unit to record X-Y-Z points.

## Fieldwork / Data Collection

The VLF EM-16 survey consisted of running 13 VLF traverse Lines. A total of 19.14 km of VLF surveying was completed.

## Ground Conditions

During the survey, ground conditions were dry with moderate to thin overburden. There were no cultural features and there is a gravel road on the east side.

There were some rocky outcrops, black spruce forest with sphagnum moss with alders in lowland near small creeks.

## Parameters of VLF Survey

**Equipment Used:** VLF EM-16 unit and a handheld Garmin 60-CSX PS

**VLF Transmitters Used:**      NAA: 24.0 kHz. Cutler, Maine (East)  
   NLK: 24.8 kHz Seattle, Washington (West)

**Datum:** Data was collected using UTM NAD 83 / Zone 16

**VLF survey direction:** Readings were taken while facing 330 Degrees northwest

**Parameters of Measurement:** In-phase and Quad-phase components of a vertical magnetic field is measured as a percentage of horizontal primary fields. (Tangent of tilt angle and ellipticity). VLF transmitter NAA (East), NLK (West) The transmitters are chosen so that the direction to the transmitting station is as close to the orientation of the bedrock strike.

## Data Collection Process

Field data was collected as follows on each surveyed line.

- Each station UTM was saved onto the Handheld Garmin 60CSX GPS Unit (including any local features such as power lines, fences and geological structures)
- VLF readings for each station were recorded on the GPS as In-Phase and Quadrature, corresponding to the line number and station number.
- All data collected was downloaded onto a computer

## Calibration and Quality Control Methods

- There is no calibration for the VLF EM-16 unit.
- Quality control is maintained by mapping any features encountered during the survey that may interfere with transmitter readings (as noted in the data collection process above) Any pertinent features are detailed on the individual data line when processed and taken into consideration when the geophysical interpretation is completed.
- Garmin and VLF data was reviewed and data integrity was confirmed. Corrections were made to raw data, if identified

## Data Processing, Modelling & Interpretation

Software Used: VLF2Dmf developed by EMTOMO

VLF2Dmf is a program for 2D inversion of VLF-EM data (multifrequency) based on the finite element (FE) method ([https://en.wikipedia.org/wiki/Finite\\_element\\_method](https://en.wikipedia.org/wiki/Finite_element_method))

The inversion subroutines are based on the Occam's method.

(<https://www.britannica.com/topic/essentialism-philosophy>)

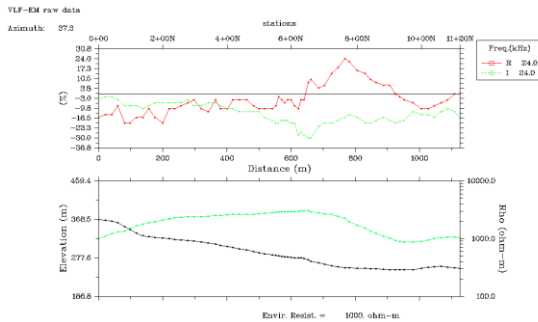
- Data was assembled and formatted for processing.
- Profiles & inversion models were produced for each individual line of data (as per Profile & Model examples below)
- Individual survey line filter and inversion results were merged together and Contoured Plan Maps were produced.
- A review and interpretation of results was completed and an Interpretation Report was done.

## Profiles & Model Examples

The following Profiles and Models are examples only of what was completed using VLF survey results. These results were used in the interpretation process.

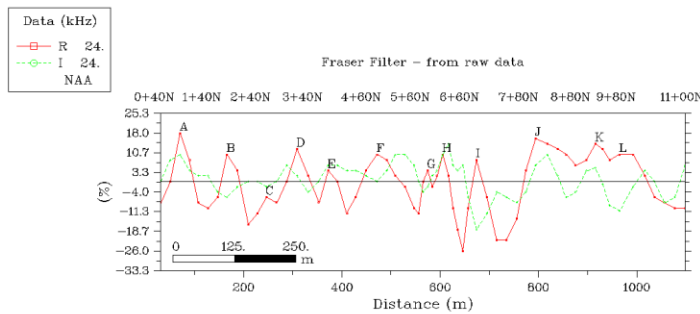
### Raw VLF Profile

The Raw data collected in the field is plotted, showing In-Phase inflections and cross overs as plus to minus, while Quadrature responses are negative to positive.



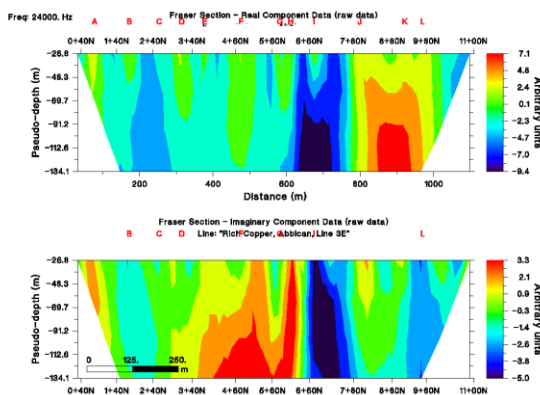
### Fraser Filter Profile

The data processing technique commonly referred to as the Fraser Filter was applied to the raw data. (Fraser, D.C., 1969. Contouring of VLF-EM data). Geophysics, 34 958-967) This filter transforms In-Phase crossovers and inflections into positive peaks, while Quadrature responses are negative to positive giving a negative peak anomaly when the Fraser Filter is applied. Fraser Filter positive value data from each line was combined to produce a Plan Map. (Pages 16 & 17)



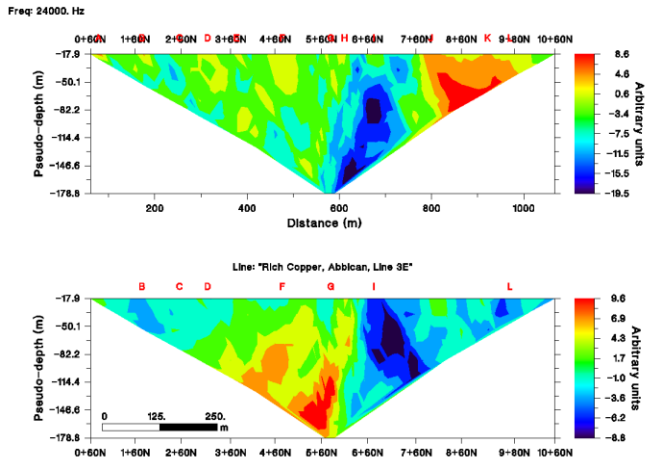
### Fraser Filtered Sections

Fraser filtered data is profiled as contoured results on the line profiles, showing the intensity of the response.



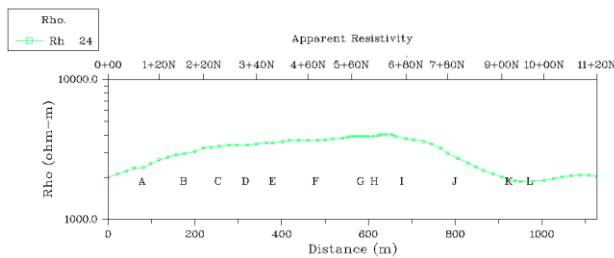
## VLF K-H Profiles

Raw Data was run through the Karous-Hjelt (K-H) filter. (Karous, Hjelt 1983)  
 The filter is applied to obtain a section of current density. The higher values are generally associated with conductive structures.



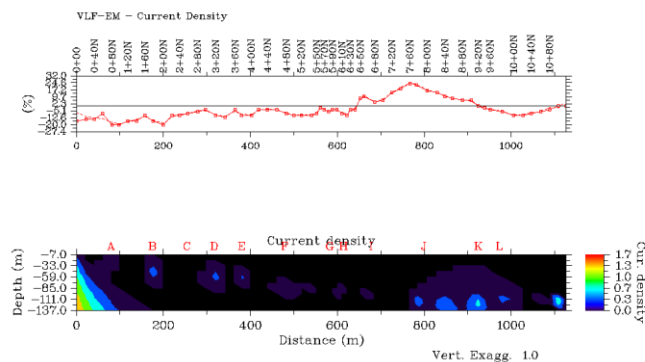
## VLF Resistivity Profile: @ 2000 Ohm

The apparent resistivity was calculated. The resistivity can be calculated if the mean environmental resistivity is known at the beginning of the VLF profile. A mean resistivity of 2000 ohm's and 4000 ohm's was used for all lines.



## VLF JY Section Model:

A 2D inversion that looks for the best distribution of the density of current (JY). The output is the apparent current density with positive values associated with conductors and negative values associated to resistive units.



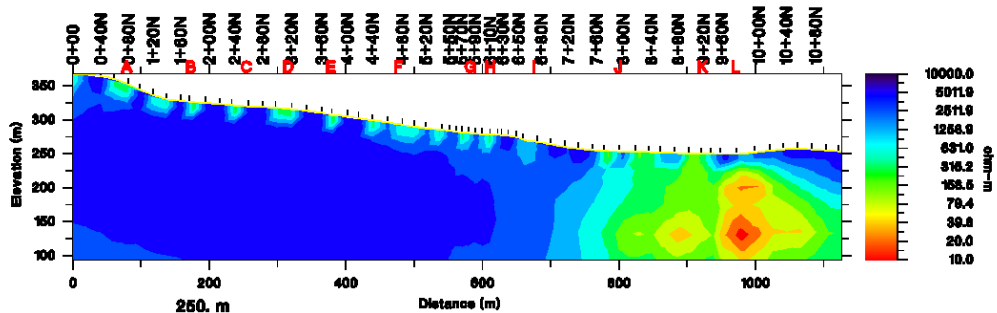


## VLF 2D Inversion Resistivity Model @ 2000 Ohm

A resistivity of 2000 Ohm's and 4000 Ohm's was used to build initial models used in the inversion to obtain a realistic cross section of the line surveyed. Models show conductive and resistive zones at various depths. Conductive zones at surface show little depth extent and have a horizontal display.

The maximum depth slice with a bedrock resistivity of 2000 Ohms is:

- 144 meters for transmitter NAA (24.0 KHz.)
- 142 meters for transmitter NLK (24.8 KHz.)



Transmitter: NAA

Vertical Exaggeration: 1.0

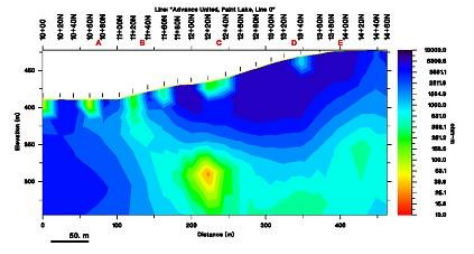
# Discussion of Interpretation Results

A total ground VLF Survey consisting of 19.14 Km over 13 Lines (0-18W) was surveyed and modelled.

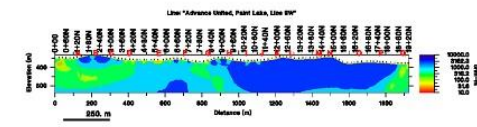
Figure 1 Line Models @ 2000 Ohm

Note: All resistivity models have a vertical exaggeration of 1

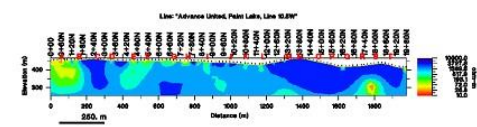
Line 0



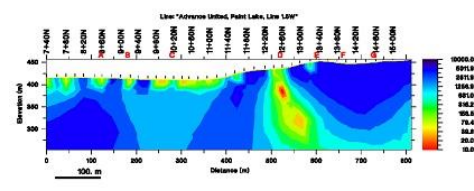
Line 9W



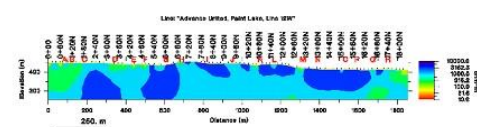
Line 10.5W



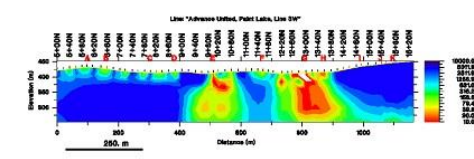
Line 1.5W



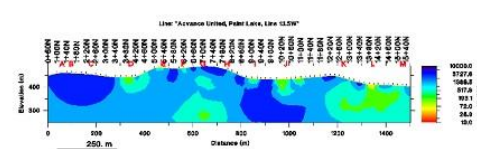
Line 12W



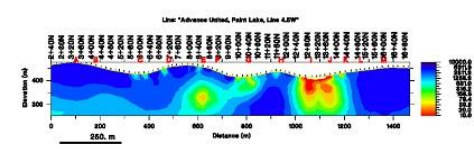
Line 3W



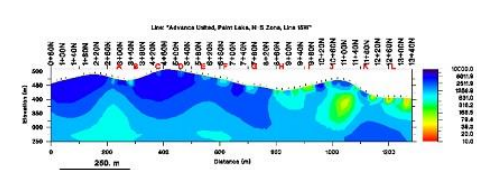
Line 13.5W



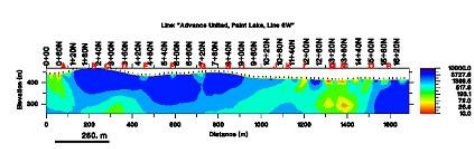
Line 4.5W



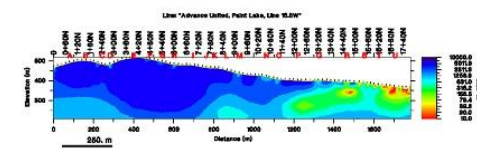
Line 15W



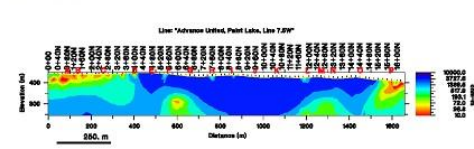
Line 6W



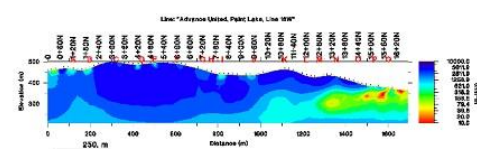
LINE 16.5W



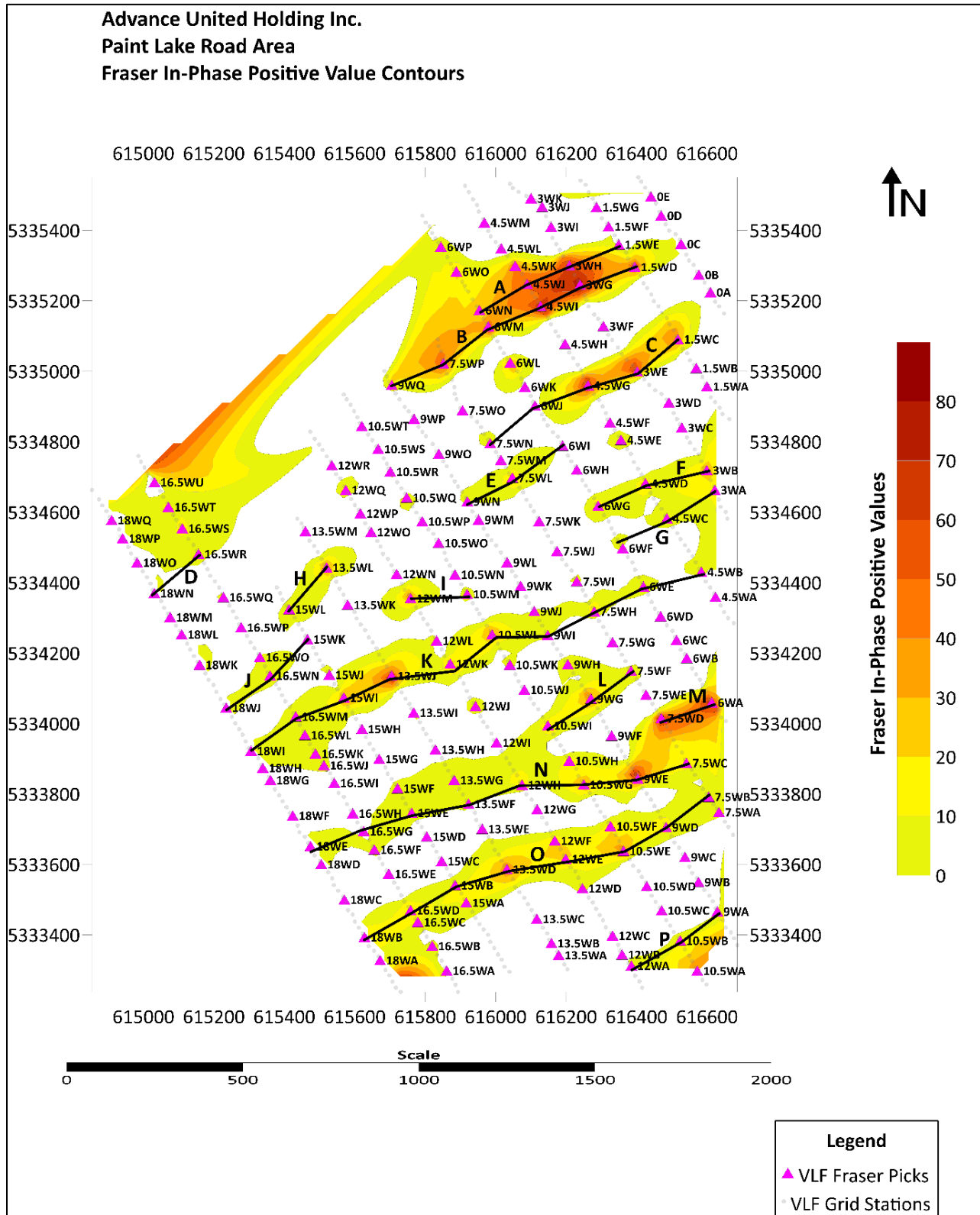
Line 7.5W



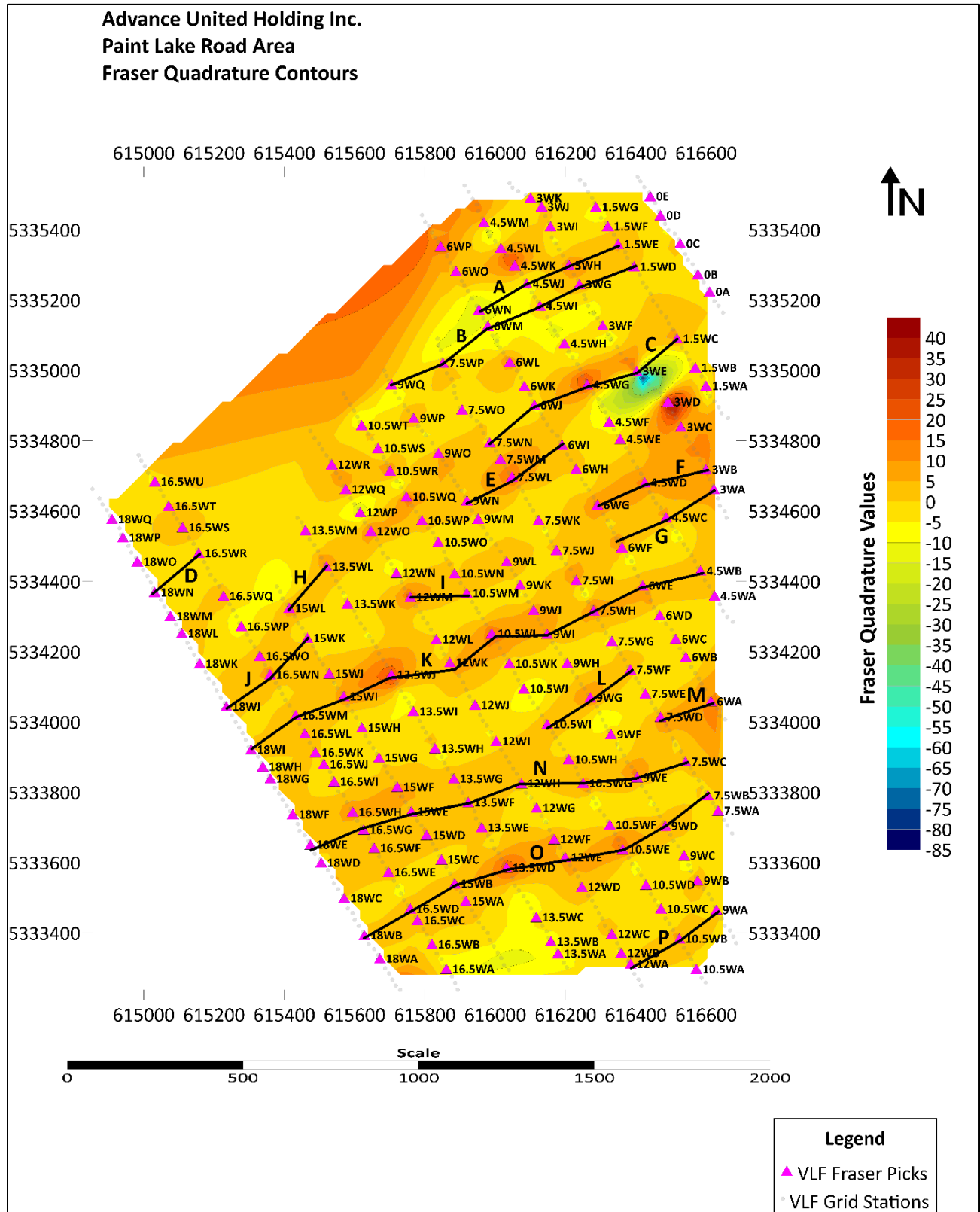
Line 18W



Map 8 NAA Fraser In-Phase Positive Value Contours



# Map 9 NAA Fraser Filter Quadrature Contours



## NAA VLF Anomaly Picks & Trends

A total of 186 VLF picks were identified over the survey grid.

16 VLF Trends containing 67 VLF Picks were identified. Of those 67 picks, 54 are recommended for ground follow-up/prospecting. (Red lettering)

Trends are signified by Line number followed by Pick letter and separated by a dash (-) as in the following example:

Trend A: 1.5WE-3WH-4.5WJ-6WN

(Line 1.5 West Pick E to Line 3 West Pick H to Line 4.5 West Pick J to Line 6 West Pick N)

**Table 2 VLF Trends with Picks**

A	1.5WE-3WH-4.5WJ-6WN
B	1.5WD-3WG-4.5WI-6WM-7.5WP-9WQ
C	1.5WC-3WE-4.5WG-6WJ-7.5WN
D	16.5WR-18WN
E	6WI-7.5WL-9WN
F	3WB-4.5WD-6WG
G	3WA-4.5WC-6WF
H	13.5WL-15WL
I	10.5WM-12WM
J	15WK-16.5WN-18WJ
K	4.5WB-6WE-7.5WH-9WI-10.5WL-12WK-13.5WJ-15WI-16.5WM-18WI
L	7.5WF-9WG-10.5WI
M	6WA-7.5WD
N	7.5WC-9WE-10.5WG-12WH-13.5WF-15WE-16WG-18WE
O	7.5WB-9WD-10.5WE-12WE-13.5WD-15WB-16.5WD-18WB
P	9WA-10.5WB-12WA

## Conclusions

The Ground VLF Survey Interpretation was successful in Identifying:

- Several long VLF Trends (K, N, O) that run across most of the VLF grid
- Several short strike length VLF Trends A, B, C, D, F, G, H, I, J, L, M
- Trends A and B have strong responses between lines and may indicate a wide zone.
- Trend M which is similar to Trends A and B with a strong response
- Trends L and M may be related to the Long Trend N
- There is a good correlation between Fraser In-Phase Picks and Trends with Quadrature values on Trends C, E, F, H, I, J, K, L, M, N, O

## Recommendations

- Ground proofing/prospecting and sampling of VLF Picks and Trends indicated in Table 2, prioritizing those in red
- Run 75-meter spaced VLF lines within the present 150-meter spaced VLF grid to obtain more detail of the VLF Trends
- Expand the VLF Grid to the west from Line 18W with 100-meter spaced lines
- Expand the VLF Grid to the north on lines 7.5W to 15W up to the claim boundary
- Place VLF Picks and Trends on Airborne EM and Magnetic maps in order to orientate the VLF Field work
- Shorter VLF Trends D, E, F, G, H, I, J should also be followed-up
- Run depth slice plan maps of KH Values in order to filter out surficial responses, but also to determine plunge and dip of conductive trends
- Use an MPP Probe in the field and on all samples to determine the conductivity and magnetic susceptibility of samples and how this relates to VLF Picks
- Project the VLF Picks and Trends onto a Google map image. This will identify if trends are following geological lineaments

## Anticipated Costs for Further Work

A budget for the above is estimated to cost \$60,000. (Table 4)

**Table 4 Estimated Budget Costs for Future Work**

<b>Proposed Follow-up Work Paint Lake Road JV</b>				
Type	Units	Number	Cost	Total
VLF-EM	Km	16	\$2,500	\$40,000
Mapping/ Prospecting	Days	10	\$1,000	\$10,000
Sampling	Samples	50	\$35	\$1,750
Reporting/ Interpretation	Days	5	\$500	\$2,500
Supervision	Percent	10%		\$5,425
TOTAL				\$59,675

## List of References

Baker, H.A., and J.O. Myers, 1979, VLF-EM model studies and some simple quantitative applications to field results: *Geoexploration* 17, 55-63

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Sayden, A.S, Boniwell, J.B; 1989: VLF Electromagnetic Method, *Canadian Institute of Mining and Metalurgy, Special Volume 41*, 111-125 of VLF-EM Data

Monteiro Santos, F.A / EMTOMO LDA: 2017 VLF2D-V1.6 A program for 2D inversion of VLF EM data

Metrics Consulting, Dublin Ireland. Very Low Frequency Electro-Magnetic "VLF-EM" Method (Appendix 2)

Daiwan Engineering (AFRI Report number 42C83NW0S44)

Ontario Geological Services Map 2666

Ontario Assessment Report 42C04SE8748 pg. 11.

Finite element method [https://en.wikipedia.org/wiki/Finite\\_element\\_method](https://en.wikipedia.org/wiki/Finite_element_method)

Occam's method <https://www.britannica.com/topic/essentialism-philosophy>



## Certificate of Qualifications

I, Shaun Parent, P. Geo. residing at 282 B Whispering Pines Road, Batchawana Bay, Ontario do certify that:

I am a consulting Geoscientist with Superior Exploration, Adventure & Climbing Co. Ltd.

I graduated with a Geological Technician Diploma from Sir Sandford Fleming College in 1986.

I graduated with a BSc. from the University of Toronto in 1986.

I am a member in good standing with the Association of Professional Geoscientists of Ontario #1955 and a member of the Prospectors and Developers Association of Canada.

I have been employed continuously as a Geoscientist for the past 29 years since my graduation from university.

Dated this 28<sup>th</sup> day of September 2022



Shaun Parent, Diploma-Geo, BSc. P. Geo

# Appendix A

List of the Paint Lake Road JV Mining Claims

Held by Talisker Gold Corp. (subsidiary of Advance United Holdings Inc.)

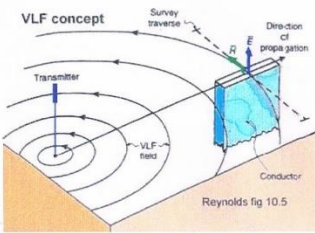
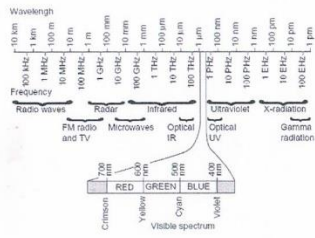
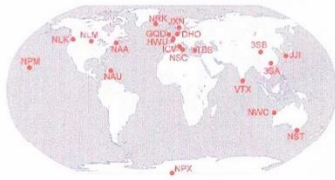


# Appendix B

Very Low Frequency Electro-Magnetic Method

# Appendix 2 Very Low Frequency Electro-Magnetic "VLF-EM" Method

## Very Low Frequency Electro-Magnetic "VLF-EM" Method



Compiled By:  
Metrics Consulting- Dublin, Ireland

