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# Technical Report
# On the
# West Geraldton Gold Project

## Thunder Bay Mining District
## Northwestern Ontario, Canada

## Cells

## 621060, 621059, 621062, 310439, 141145, 255766, 303595, 207214, and 201125

**Prepared for:**

**Mike Goodman and Alex Pleson**

**Prepared by:**
**Alexander J. R. Pleson**
**P. Geo**
**April 26th 2022**

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# 1.0 SUMMARY

The West Geraldton Gold Project (WGGP), or “the project”, represents a significant mining land package in the heart of the Beardmore-Geraldton gold camp. The property was acquired on April 7th 2016 by Michael Goodman of Beardmore, ON and Alex Pleson “the author” of Nipigon, ON. The area consists of 70 mining cell units in Errington Township representing ~1450 hectares of land. We. The project has seen a vast amount of exploration for gold since initial documentation in 1936. A significant amount of prospecting, drilling, and geophysics has been completed since then. However, there is a great lack of data compilation and detailed ground work that exists. The current claim holders intend to fill the gaps and develop the project in the shadows of the potential gold project 14km to the east owned jointly by Centerra Gold and Premier Gold Mines Ltd.

The project described in this report includes an initial attempt to file in some gaps of geological and geophysical knowledge of the northern portion of the portage shear zone which is the main geological interest of the project. The claims holders hired Ted Cox of Beardmore, ON to help complete a VLF EM-16 survey to identify any possible targets for further exploration during the field season.

# 2.0 INTRODUCTION

This report covers the results of a geophysical survey, VLF EM-16, which took place from April 15th to April 22nd 2022 on the project. Ted Cox, Michael Goodman, and the author were present on the property during the time of the survey. The geophysics technician (Ted Cox) used a Geonic's model EM16 (serial# 3353) to perform the survey which requires a helper to record the position and readings, performed by Mike Goodman. The complete specifications are available in Appendix D. The geophysics report is listed in Appendix C.

# 3.0 PROPERTY DESCRIPTION AND LOCATION

The WG Project is located 275 kilometers northeast of Thunder Bay, Ontario, and approximately 7 kilometers west from the town of Geraldton, Ontario (Figure 1). It is located in Errington Township, in Thunder Bay North Mining Division (NTS 42E11NE).
The Kenwell Siding Road bisects the western part of the property and offers direct and excellent road access from the Trans-Canada Highway 11 for 3.2 kilometers. Access can also be obtained by boat from a crude boat landing on Magnet Creek alongside the Trans-Canada Highway 11. Point of access by boat on Magnet Lake in the southern part of the property is by way walking east on the southern claim boundary where a cut baseline exists. This provides quick access to the most parts of the property.

**Table 1: Claim Data**

| Township | Claim ID | Due Date | Work Required | Units |
|---|---|---|---|---|
| ERRINGTON | 568184 | 2022-01-04 | $400 | 1 |
| LINDSLEY | 539034 | 2022-01-11 | $800 | 2 |
| ERRINGTON | 514883 | 2022-04-12 | $400 | 1 |
| ERRINGTON | 514882 | 2022-04-12 | $400 | 1 |
| ERRINGTON | 514881 | 2022-04-12 | $400 | 1 |
| ERRINGTON | 329734 | 2022-04-26 | $400 | 1 |
| ERRINGTON | 243534 | 2022-04-26 | $200 | 1 |
| ERRINGTON | 184286 | 2022-04-26 | $200 | 1 |
| ERRINGTON | 176924 | 2022-04-26 | $400 | 1 |
| ERRINGTON | 120274 | 2022-04-26 | $200 | 1 |
| ERRINGTON | 339588 | 2022-04-26 | $200 | 1 |
| ERRINGTON | 317468 | 2022-04-26 | $200 | 1 |
| ERRINGTON | 299302 | 2022-04-26 | $400 | 1 |
| ERRINGTON | 280603 | 2022-04-26 | $200 | 1 |
| ERRINGTON | 232604 | 2022-04-26 | $200 | 1 |
| ERRINGTON | 184784 | 2022-04-26 | $200 | 1 |
| ERRINGTON | 178004 | 2022-04-26 | $200 | 1 |
| ERRINGTON | 120788 | 2022-04-26 | $400 | 1 |
| ERRINGTON | 549472 | 2022-05-08 | $400 | 1 |
| ERRINGTON | 595714 | 2022-06-15 | $1,200 | 3 |
| ERRINGTON | 332297 | 2022-08-12 | $400 | 1 |
| ERRINGTON | 311666 | 2022-08-12 | $400 | 1 |
| ERRINGTON | 267748 | 2022-08-12 | $200 | 1 |
| ERRINGTON | 215458 | 2022-08-12 | $400 | 1 |
| ERRINGTON | 181513 | 2022-08-12 | $400 | 1 |
| ERRINGTON | 147254 | 2022-08-12 | $200 | 1 |
| ERRINGTON | 130683 | 2022-08-12 | $400 | 1 |
| ERRINGTON | 114175 | 2022-08-12 | $400 | 1 |
| ERRINGTON | 343154 | 2022-08-12 | $200 | 1 |
| ERRINGTON | 311666 | 2022-08-12 | $400 | 1 |
| ERRINGTON | 267750 | 2022-08-12 | $400 | 1 |
| ERRINGTON | 267749 | 2022-08-12 | $400 | 1 |
| ERRINGTON | 267748 | 2022-08-12 | $200 | 1 |
| ERRINGTON | 237621 | 2022-08-12 | $400 | 1 |
| ERRINGTON | 237620 | 2022-08-12 | $400 | 1 |
| ERRINGTON | 201126 | 2022-08-12 | $200 | 1 |
| ERRINGTON | 188949 | 2022-08-12 | $200 | 1 |
| ERRINGTON | 181514 | 2022-08-12 | $200 | 1 |
| ERRINGTON | 181513 | 2022-08-12 | $400 | 1 |
| ERRINGTON | 142386 | 2022-08-12 | $200 | 1 |
| ERRINGTON,LINDSLEY | 343155 | 2022-08-12 | $400 | 1 |
| ERRINGTON,LINDSLEY | 255766 | 2022-08-12 | $400 | 1 |
| ERRINGTON,LINDSLEY | 201125 | 2022-08-12 | $400 | 1 |
| ERRINGTON,LINDSLEY | 136327 | 2022-08-12 | $200 | 1 |
| LINDSLEY | 310439 | 2022-08-12 | $200 | 1 |
| LINDSLEY | 303596 | 2022-08-12 | $400 | 1 |
| LINDSLEY | 303595 | 2022-08-12 | $200 | 1 |
| LINDSLEY | 207215 | 2022-08-12 | $200 | 1 |
| LINDSLEY | 207214 | 2022-08-12 | $400 | 1 |
| LINDSLEY | 141147 | 2022-08-12 | $200 | 1 |
| LINDSLEY | 141146 | 2022-08-12 | $200 | 1 |
| LINDSLEY | 141145 | 2022-08-12 | $400 | 1 |
| LINDSLEY | 303596 | 2022-08-12 | $400 | 1 |
| LINDSLEY | 207214 | 2022-08-12 | $400 | 1 |
| LINDSLEY | 141146 | 2022-08-12 | $200 | 1 |
| LINDSLEY | 141145 | 2022-08-12 | $400 | 1 |
| ERRINGTON | 184097 | 2022-08-14 | $400 | 1 |
| ERRINGTON | 177315 | 2022-08-14 | $400 | 1 |
| ERRINGTON | 177314 | 2022-08-14 | $400 | 1 |
| ERRINGTON | 288596 | 2022-11-09 | $200 | 1 |
| ERRINGTON | 230008 | 2022-11-09 | $200 | 1 |
| ERRINGTON | 230007 | 2022-11-09 | $400 | 1 |
| ERRINGTON | 163241 | 2022-11-09 | $400 | 1 |
| LINDSLEY | 654901 | 2023-05-04 | $1,600 | 4 |
| | | | $22,800 | 70 |

**Figure 1: Property Location Map**

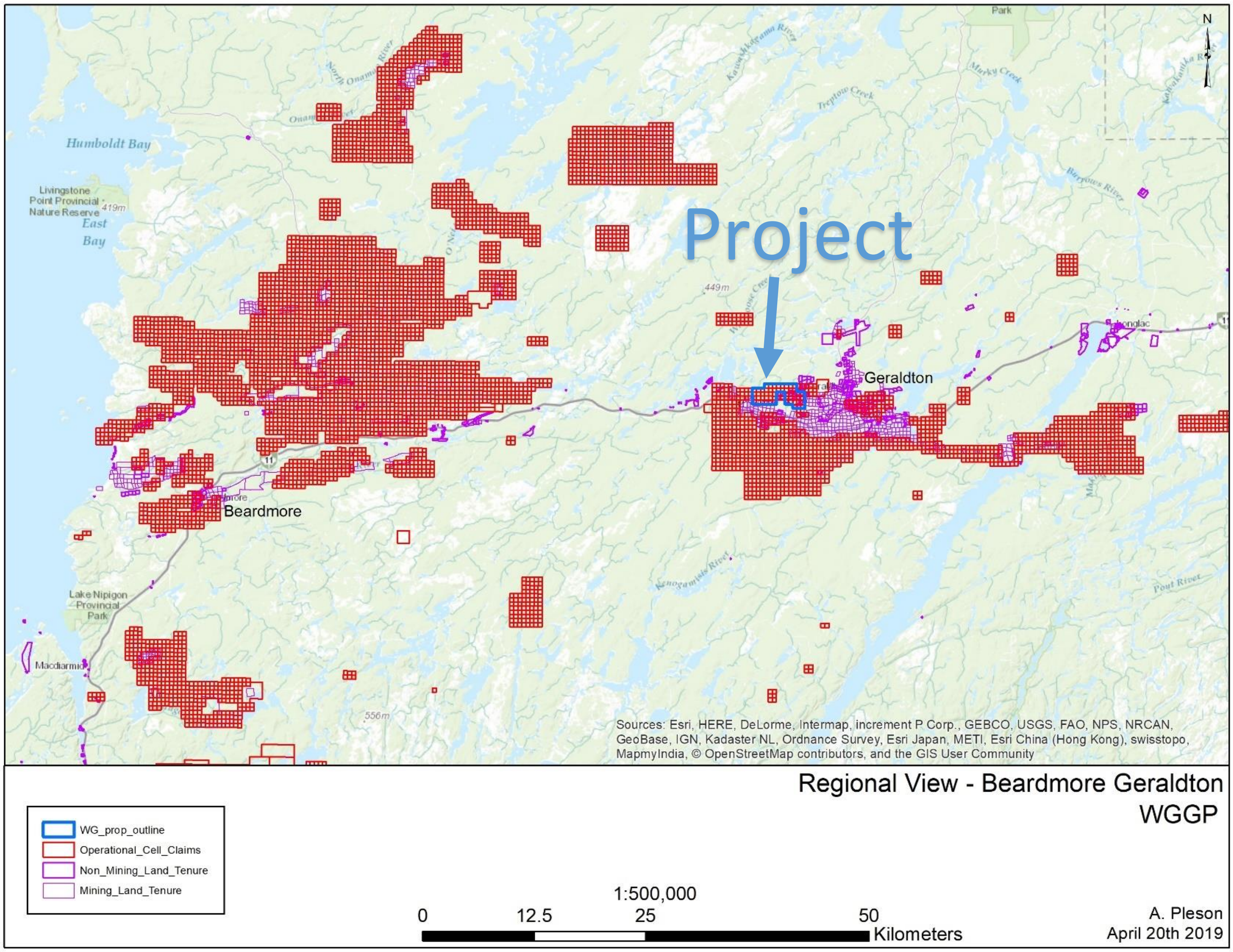
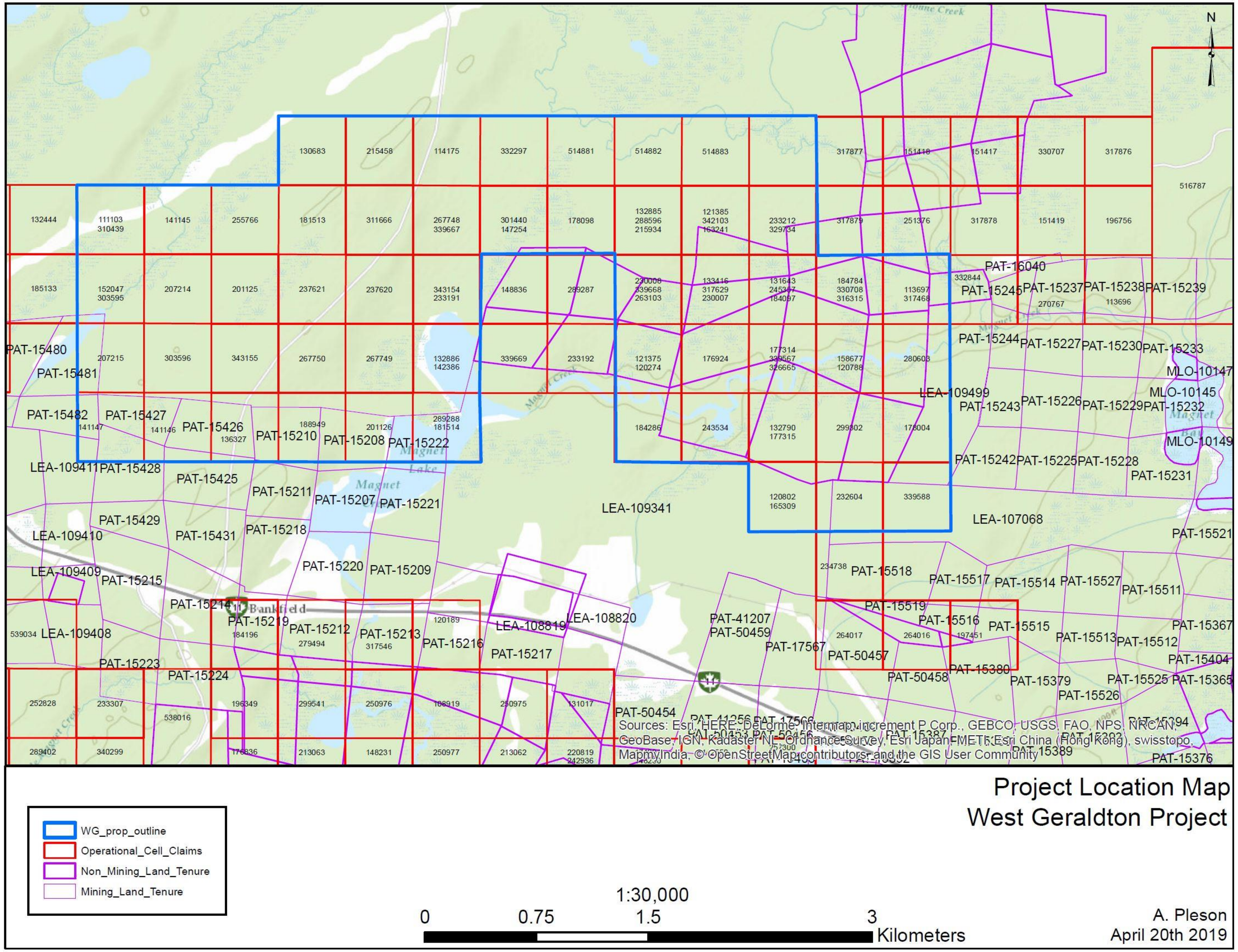


**Figure 2: Mineral Claim Map**



# 4.0 ACCESS, CLIMATE, PHYSIOGRAPHY, LOCAL RESOURCES, AND INFRASTRUCTURE

The WG Project is located 275 kilometers northeast of Thunder Bay, Ontario, and approximately 7 kilometers west from the town of Geraldton, Ontario (Figure 1). It is located in Errington Township, in Thunder Bay North Mining Division (NTS 42E11NE). The Kenwell Siding Road bisects the western part of the property and offers direct and excellent road access from the Trans-Canada Highway 11 for 3.2 kilometers. Access can also be obtained by boat from a crude boat landing on Magnet Creek alongside the Trans-Canada Highway 11. Point of access by boat on Magnet Lake in the southern part of the property is by way walking east on the southern claim boundary where a cut baseline exists. This provides quick access to the most parts of the property.

The towns of Beardmore and Geraldton is the closest community, located approximately 70 km west and 14km east, respectively, of the project. Beardmore is part of Greenstone, an amalgamated town encompassing Nakina, Geraldton, Longlac, Beardmore, Caramat, Jellicoe, Macdiarmid and Orient Bay. The population of Greenstone is 4,906 people (Statistics Canada, www.statcan.gc.ca) and the population of Beardmore is approximately 150 people (http://www.highway11.ca/ThunderBay/06Beardmore). Beardmore has limited accommodation and restaurants.

The town of Thunder Bay, located about 275 kilometers from the Property, is the largest city in Northwestern Ontario, serving as a regional commercial Centre. The town is a major source of workforce, contracting services, and transportation for the forestry, pulp and paper and mining industry. Thunder Bay is a transportation hub for Canada, as the TransCanada highways 11 and 17 link eastern and western Canada. It is close to the Canada-U.S. border and highway 61 links Thunder Bay with Minnesota, United States. Thunder Bay has an international airport with daily flights to Toronto, Ontario and Winnipeg, Manitoba, and the United States.

The city of Thunder Bay has most of the required supplies for exploration work including drilling and geophysical survey companies, grocery stores, hardware stores, exploration equipment supply stores, restaurants, hotels, and a hospital. The population of the city of Thunder Bay was 109,140 people in 2006 (Statistics Canada, www.statcan.gc.ca). Many junior exploration and mining companies are based in Thunder Bay, and thus the city is a source of skilled mining labour.

The height of land ranges from 335 m and 370 meters above sea level. Inferred thickness of overburden varies from bedrock exposure to 21.9 meters as evidenced in the surface trenching program and overburden depths in both the historical and Prodigy’s drilling programs. The overburden cover consists of unconsolidated glacial gravelly, silty sand diamicton with thin sand and gravel areas in higher relief areas, and thick organic matter and clay in poorly drained lower relief areas. There are prominent northwest-southeast trending sandy eskers in the north part of Errington Township. For the most part, the relief on the property is gentle. The lower relief areas are occupied by extensive clay-rich swamp and muskeg with poor drainage. An extensive swamp is located west of the 2010 WG drill program, where drainage from Magnet Lake is reflected by a north trending super-saturated swamp. This sparsely vegetated swamp measures 4.5 km by 0.5 km and is poorly drained. The meandering Magnet Creek closely marks the south claim of West Geraldton draining from Barton Bay on Kenogamisis Lake westward to Magnet Lake. For the most part, the property is characterized by less than <1% outcrop cover rock exposure and low-lying outcrop is generally undulating with the glacial cover. Vegetation consists of small black spruce balsam, cedar, and tamarack in the swampy areas with the higher relief areas being a mixture of spruce, poplar, with birch and jack pine being more prominent in the sandy knolls. The topography and vegetation in the area of the drilling is reflected by higher ground with open black spruce. The overburden is characterized by clay in the relatively low-lying area of the trenched area with silty-clay, silty-sand, and gravel in the western part of the trench area.

http://www.thunderbay.ca/Doing_Business/About_Thunder_Bay.htm)

# 5.0 HISTORY

Although there are many indications of historical exploration work in the West Geraldton Project area, the earliest known exploration work was carried out between 1936 and 1937, with the most recent being in 1996-97. Exploration work conducted by Portage Long Lac GML (1936-37), New Bidlamaque Mines (1962), and Tenango Exploration (1994) covered the Portage East target area.

Portage Long Lac Gold Mines (1936-37) conducted the original exploration on the claim group, and was limited to trenching and test pits in the early stages of exploration, as a result of thick overburden.

Pye (1951) reported that an aggregate footage of 20,595 feet (6227 meters) in 34 diamond drill holes was drilled. A broad east-west shear was intersected over a strike length of 1.8 kilometers (5900 feet), with gold values over 1.1 kilometer (3600 feet) and widths up to 152 meters. Visible gold was noted in two of the drill holes. This shear has been interpreted as part of the Portage Shear. Highlights of the drilling includes hole 25 which intersected 9.96 g/t Au over 2.04 meters and hole 30, which intersected 11.13 g/t Au over 1.52 meters (Pye – 1951). It has been reported that the best zone for continuous gold intersections covered a strike length of 152 meters (500 ft), averaging 8.21 g/t Au over 1.22 meters (0.24 opt Au over 4 feet). The outbreak of World War II forced the suspension of operations and no further work was carried out until 1962. The historical drilling is located within the Portage East target area.

In 1962, New Bidlamaque Mines Ltd optioned the property from the patented owners and carried out a 610 meter (2000 feet) diamond drill program with no documentation and results being available.

In 1994, Tenango Explorations Inc. carried out IP/magnetic surveys and recommended data compilation and interpretation. There is some correlation between IP chargeability/magnetic features and gold mineralization intersected in the historical drill holes.

The more recent exploration over West Geraldton was conducted in 1996-97 by Cyprus Canada Inc. Their exploration was carried out west of the Portage East target. Surface exploration consisted of line-cutting, VLF-EM/magnetic and IP ground geophysical surveys, and prospecting and mapping in 1996. This was followed up by a four drill-hole drill program totaling 853 meters. No significant gold values were intersected.

The Ontario Geological Survey commissioned an Aerodat Survey in 1988 as part of a regional survey that covered the Tashota-Geraldton-Long Lac areas.
No further work was carried out until the patents lapsed, then re-staked in 2007, and worked by Kodiak Exploration Ltd. in 2008. This work concluded that the drill program

was successful in establishing and outlining gold values within the Bonanza Zone trench area. Gold mineralized structures are coincidental to IP chargeability zones, and are spatially associated with magnetic anomalies. It appears that this widespread gold mineralization is part of a regional system that trends for approximately 30 kilometers, and hosts the Little Long Lac Mine (0.6 Moz Au). The Portage East target area is within 5 kilometers west-northwest from the Little Long Lac Mine in Geraldton, along the Portage Shear. Host rock, geometry, and structure along the Portage Shear at Portage East is analogous to greenstone hosted, shear zone related quart-carbonate gold deposits, particularly in the Timmins and Kirkland Lake Gold Camps. Faults and fractures along the Portage Shear provide pathways for auriferous hydrothermal fluid movement. The presence of ferruginous metasediments and iron formation in the Portage East target provide the chemical trap for gold to precipitate in the formation of pyrite. The complex intrusive phases of the feldspar porphyry and diorite bodies provided the heat to the hydrothermal system, with the altered porphyries providing gold mineralization.

A summary of work is presented in Table 2 prior to Kodiak Exploration (*after Roach, 2011*).

**Table 2: Historic Exploration Summary (Roach 2011)**

| Company | Year | Description of Historical Exploration Work on West Geraldton |
|---|---|---|
| Cyprus Canada Inc. | 1997 | 853 meters of diamond drilling in 4 drill holes – No significant gold results returned |
| Cyprus Canada Inc. | 1996 | Line-Cutting, VLF-EM/magnetic surveys, IP survey, prospecting and mapping |
| Tenango Explorations Inc. | 1994 | IP and magnetic survey – line km unknown |
| New Bidlamaque Mines Ltd | 1962 | 2000 ft (610 meters) of diamond drilling – results unknown |
| Portage Long Lac Gold Mines | 1936-37 | Prospecting, blasting & trenching, and 20,595 ft (6227 meters) of diamond drilling in 34 diamond drill holes – highlights include Hole 25 which intersected 9.96 g/t Au over 2.04 meters and Hole 30, which intersected 11.13 g/t Au over 1.52 meters |

# 6.0 GEOLOGICAL SETTING AND MINERALIZATION

### 6.1 Regional Geology

The supracrustal rocks underlying the WG Property are characteristic of the southfacing northern volcanic sub-belt (Figure 4). This part of the sub-belt is dominated by clastic metasediments with underlying iron-rich tholeiitic basalts and hyabyssal gabbro sub-volcanic equivalents to the north. There are inter-formational chemical metasedimentary horizons (banded iron formation and cherty exhalative) within the clastic metasediments and mafic metavolcanics. Due to the lack of outcrop, it is difficult to ascertain the dominance of clastic metasediments and mafic metavolcanics. Clastic metasediments are generally thickly bedded to finely laminated greywacke with arkose and argillite with banded iron formation (BIF). A reworked fragmental unit has been identified from Prodigy Gold Inc drilling and generally lies at the contact between the clastic metasediments to the south and mafic metavolcanics to the north. Clastic metasediments also occur as inter-formational units within the mafic metavolcanics. Although the oxide facies BIF are dominant, lean silicate, carbonate, and sulphide facies iron formation occur. Basaltic rocks are generally extrusive in nature forming massive flows, with local pillows and amygdaloidal features. Mix of clastic and chemical metasediments and volcaniclastics occur as thin inter-formational horizons. There are quartz (QP) to quartz-feldspar porphyry (QFP) sill and dyke-like bodies, but the extent is not truly known. The rocks underlying the property have undergone regional lower greenschist metamorphism.

The WG Property is situated on the Portage Shear, which trends in an east-west direction for approximately 30 km. The Little Long Lac Mine (920,745 tons milled @ 0.34 opt Au for 605,499 oz of gold) is located on the intersection of the Portage Shear and the Little Long Lac Fault. Pye (1951) has described the Portage Shear as a strong zone of shear within brecciated mafic metavolcanics and clastic and chemical metasediments that is over 152 meters (500 ft) wide that has been traced over a strike length of 1829 meters (6000 ft). These structural features have been recognized on the WG Property in the mafic metavolcanics, clastic/chemical metasediments, and QP/QFP bodies.

**Figure 3: Regional Geology *after Roach 2011***

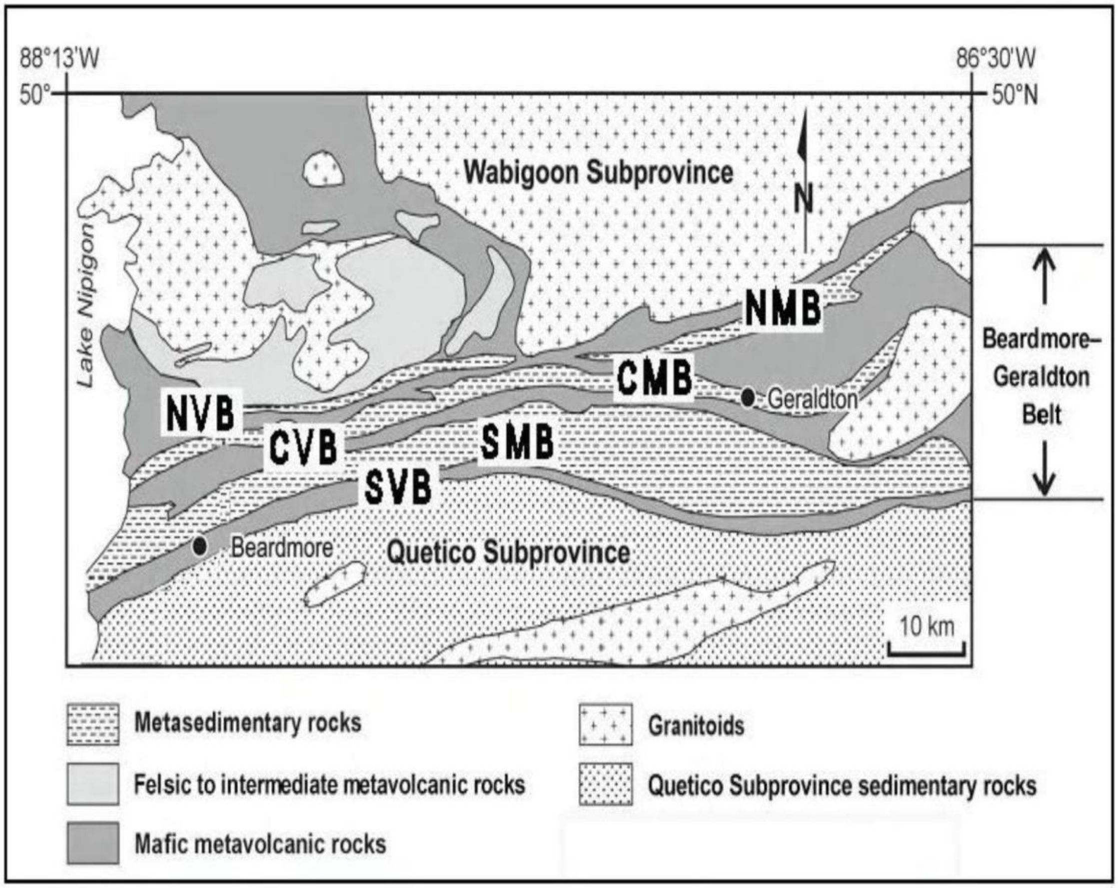


**Table 3: Historic Gold Production in the Beardmore-Geraldton Belt summarized by *Roach 2011***

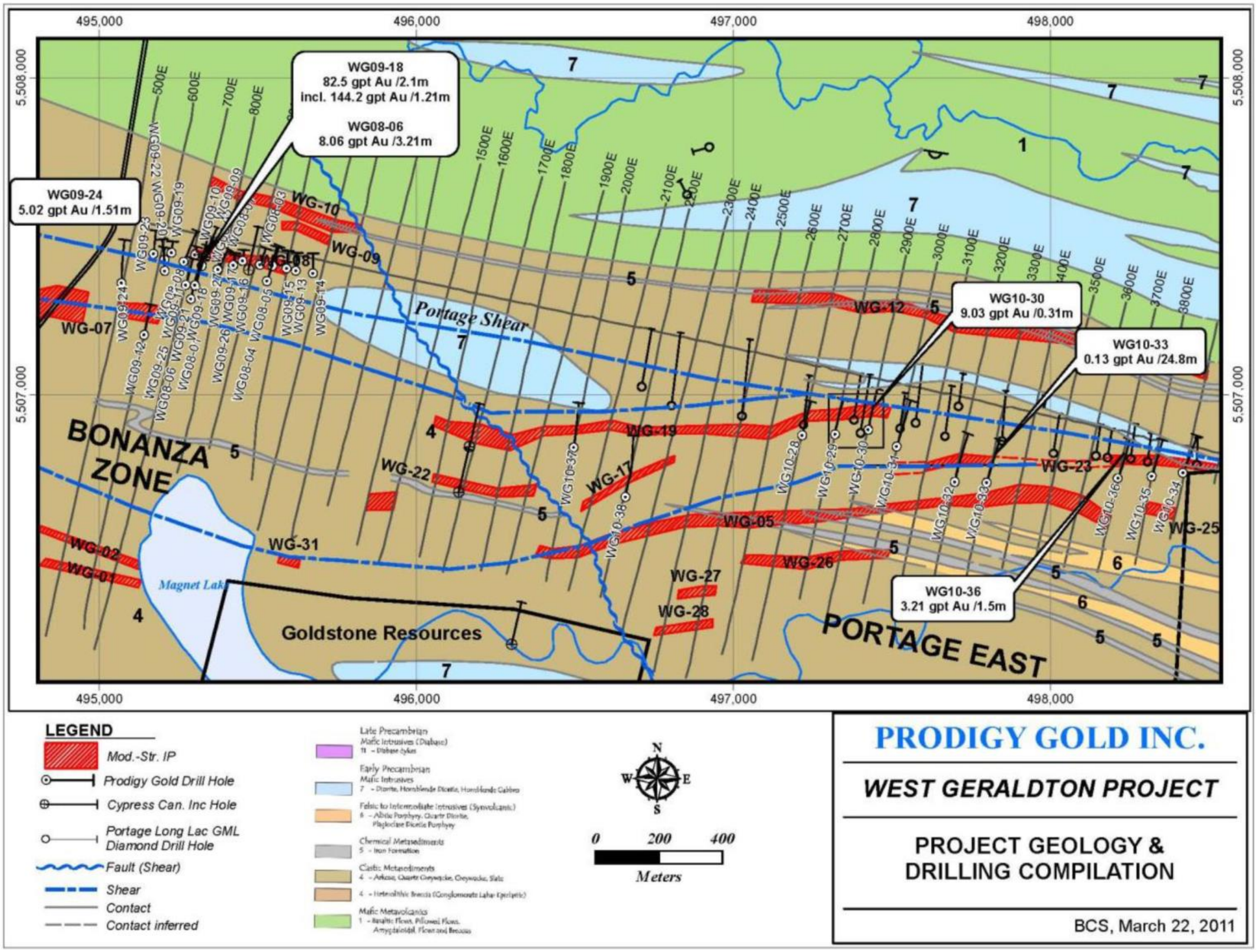
| *Mine* | *Production (yrs)* | *Ore Milled (tons)* | *Gold Produced (oz)* | *Average Grade (oz/t)* | *Silver Produced (oz)* |
|---|---|---|---|---|---|
| Bankfield | 10 | 231,009 | 66,417 | 0.29 | 7,590 |
| Brengold | 2 | 46 | 134 | 2.91 | |
| Crooked Green Creek | 5 | 1,455 | 471 | | |
| Hard Rock | 14 | 1,458,375 | 269,081 | 0.18 | 9,009 |
| Jellicoe | 3 | 10,620 | 4,238 | 0.4 | 145 |
| Leitch | 33 | 920,745 | 847,690 | 0.92 | 31,802 |
| Little Long Lac | 22 | 1,780,516 | 605,499 | 0.34 | 52,750 |
| MacLeod-Cockshutt | 31 | 10,337,229 | 1,475,728 | 0.14 | 101,388 |
| Magnet Consolidated | 13 | 359,912 | 152,089 | 0.42 | 16,879 |
| Maloney Sturgeon | 1 | 1 | 73 | 73 | 16 |
| Maylac | 2 | 1,518 | 792 | 0.52 | 46 |
| Mosher-Long Lac | 5 | 2,710,657 | 330,265 | 0.12 | 34,604 |
| Northern Empire | 9 | 425,866 | 149,493 | 0.35 | 19,803 |
| Orphan (Dik-Dik) | 2 | 3,525 | 2,460 | 0.70 | 1,558 |
| Sand River | 6 | 157,870 | 50,065 | 0.32 | 3,628 |
| Sturgeon River | 7 | 141,123 | 73,438 | 0.51 | 5,922 |
| Talmora-Long Lac | 2 | 6,634 | 1,417 | 0.21 | 36 |
| Tashota-Nipigon | 12 | 51,200 | 12,356 | 0.24 | 14,527 |
| Theresa | 6 | 26,120 | 4,785 | 0.18 | 202 |
| Tombill | 6 | 190,622 | 69,120 | 0.36 | 8,595 |

## 6.2 Property Geology

The supracrustal rocks underlying the WG Property are characteristic of the southfacing northern volcanic sub-belt (Figure 4). This part of the sub-belt is dominated by clastic metasediments with underlying iron-rich tholeiitic basalts and hyabyssal gabbro sub-volcanic equivalents to the north. There are inter-formational chemical metasedimentary horizons (banded iron formation and cherty exhalative) within the clastic metasediments and mafic metavolcanics. Due to the lack of outcrop, it is difficult to ascertain the dominance of clastic metasediments and mafic metavolcanics. Clastic metasediments are generally thickly bedded to finely laminated greywacke with arkose and argillite with banded iron formation (BIF). A reworked fragmental unit has been identified from Prodigy Gold Inc drilling and generally lies at the contact between the clastic metasediments to the south and mafic metavolcanics to the north. Clastic metasediments also occur as inter-formational units within the mafic metavolcanics. Although the oxide facies BIF are dominant, lean silicate, carbonate, and sulphide facies iron formation occur. Basaltic rocks are generally extrusive in nature forming massive flows, with local pillows and amygdaloidal features. Mix of clastic and chemical metasediments and volcaniclastics occur as thin inter-formational horizons. There are quartz (QP) to quartz-feldspar porphyry (QFP) sill and dyke-like bodies, but the extent is not truly known. The rocks underlying the property have undergone regional lower greenschist metamorphism.

The WG Property is situated on the Portage Shear, which trends in an east-west direction for approximately 30 km. The Little Long Lac Mine (920,745 tons milled @ 0.34 opt Au for 605,499 oz of gold) is located on the intersection of the Portage Shear and the Little Long Lac Fault. Pye (1951) has described the Portage Shear as a strong zone of shear within brecciated mafic metavolcanics and clastic and chemical metasediments that is over 152 meters (500 ft) wide that has been traced over a strike length of 1829 meters (6000 ft). These structural features have been recognized on the WG Property in the mafic metavolcanics, clastic/chemical metasediments, and QP/QFP bodies.

**Figure 4: Local Geology *after Roach 2011***



# 7.0 EXPLORATION WORK

The claim holders and Ted Cox spent 8 days on the project surveying 16 lines, each consisting of 53 stations each at 25m intervals. The total survey line kilometers is 20.8 km and data was recording for all 848 stations with no omissions. The area has been recently logged and the road was plowed by the timber company. This provided excellent access conditions and the recent melt produced a solid crust on the snow making conditions perfect for snowshoeing as there is still 3 ft of snow in the bush. No exploration permit was required for the survey. Mike Goodman and Ted Cox used a Geonics EM16 VLF handheld unit (serial# 3353) using Cutler, Maine, U.S.A @ 24.0 kHz. Flagged line spacing was 50m and stations were every 25m on the line. The survey was strategically designed to maximize the perpendicularity of the instrument to the predicted axis of unconformity. A total of 20.8Km were surveyed. The baseline ran west to east at the northern portion of the lines. A detailed data review and map of the line data is listed in Appendix D and final map in Figure 5.

**Figure 5: VLF Survey Grid**

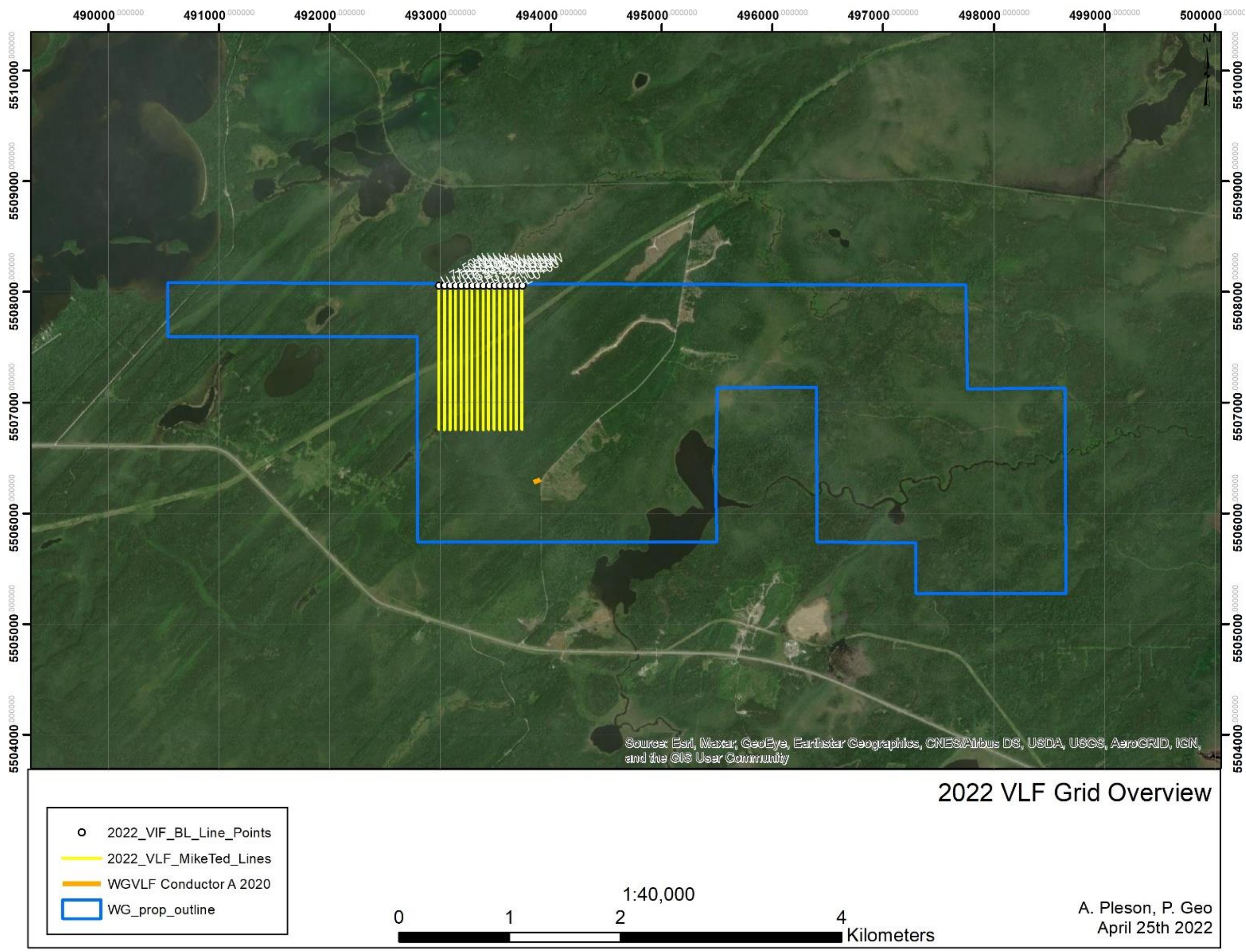


**Figure 6: VLF Final Map Overview**

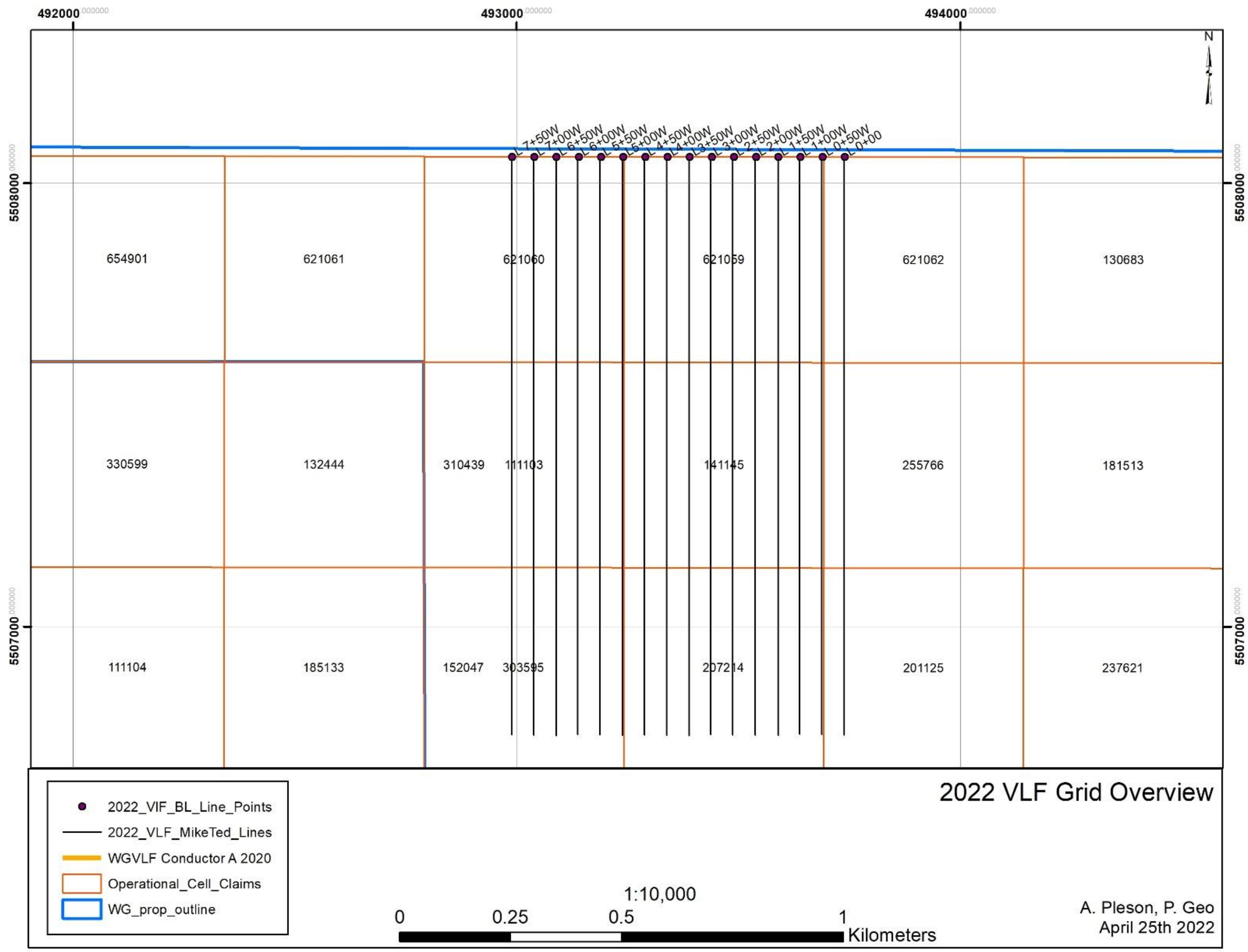
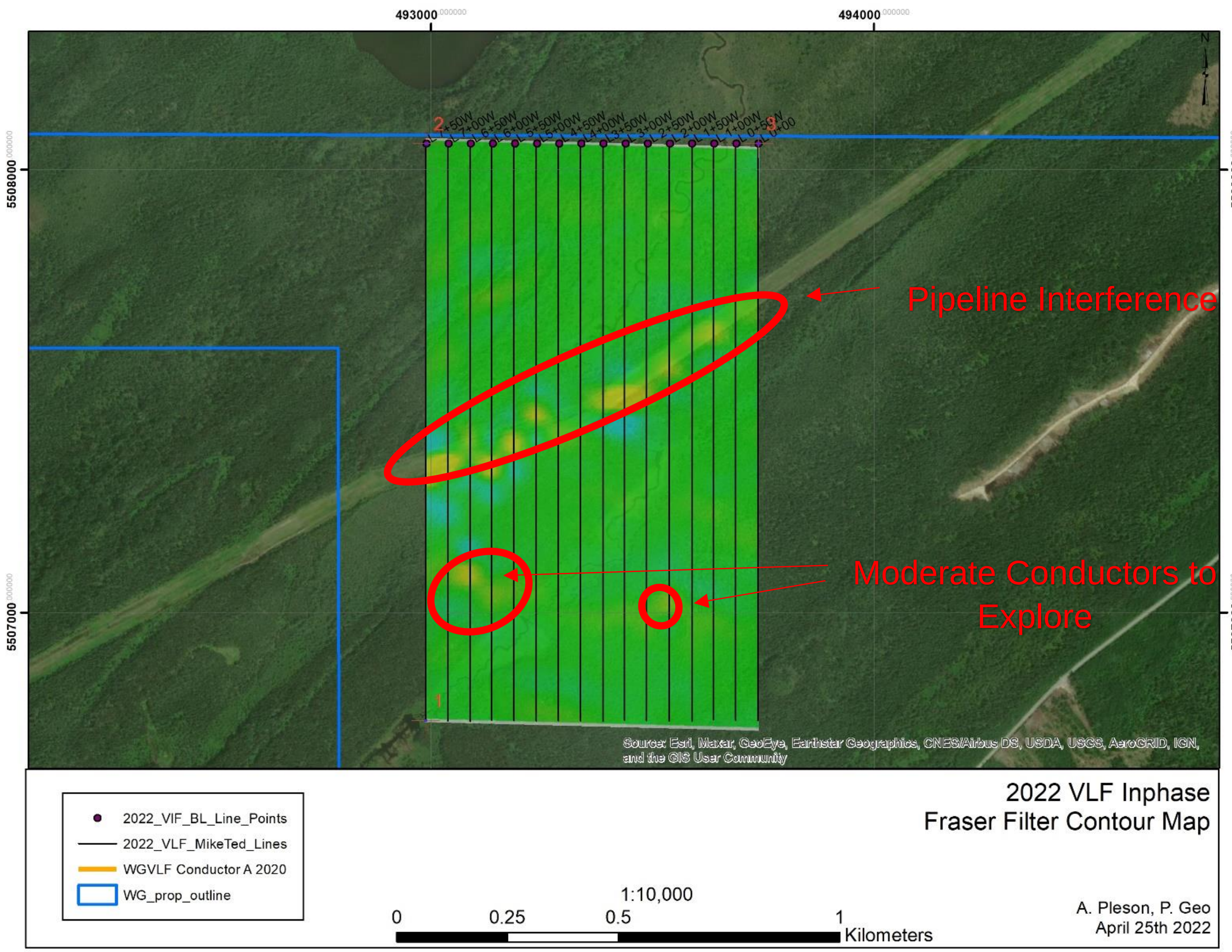


**Figure 6b: VLF Final Map Detailed**



# 8.0 EXPLORATION RESULTS AND RECOMMENDATIONS

The VLF survey performed by Ted Cox and Mike Goodman has identified two ~75m long conductors which warrant further work. The conductors appear to be in relatively flat jack pine forests and not in the low land swamps to the west. Follow-up prospecting and/or trenching would be highly recommended on these conductors due to its proximity to the Portage Shear. The Trans Canada Pipeline Corridor created significant interference with the survey in the area outlined in Figure 6b. Overall, the author recommends the following actions be taken to advance the project:

- Apply for exploration permit(s) for follow up work
- Surface trenching on the two conductors
- Prospect for outcrops near or along strike of the identified conductors
- Continue with expanding the VLF surveys along trend towards conductors identified this spring towards the east
- Perform VLF survey near historic showings both to the east and west of the current project location
- Soil sampling (SGH or MMI) as outcrop is very minimal in this area based on historic work
- Data compilation of historic work, especially the data from Kodiak Exploration’s 2009 drilling campaign

# 9.0 REFERENCES

Roach, S., 2011, 2009 Drilling Report, Kodiak Exploration Ltd., Assessment File# 20000007678

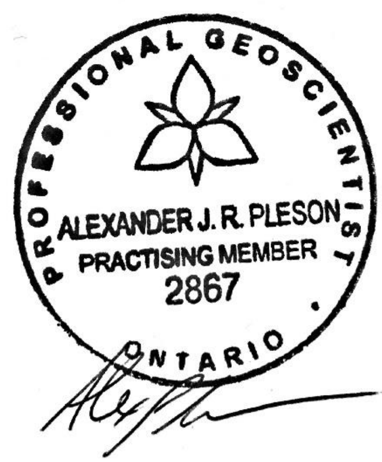
## 10.0 CERTIFICATE OF AUTHOR

I, Alexander Pleson, P.Geo., as an author of this report regarding the exploration project in the Thunder Bay Mining District, Northwestern Ontario, Canada; do hereby certify that:

1. I am a consulting geologist at Pleson Geoscience of Nipigon, ON, CA P0T 2J0
2. I have B.Sc. degree in Geology from Lakehead University.
3. I am registered as a Professional Geologist in Ontario (License #: 2867).
4. I have been practicing as a professional since 2017, and have 13 years of experience in mineral exploration.
5. The exploration work was carried out under my supervision and I was on site through the duration of the project.
6. I retain 50% ownership in the project

Dated: April 25th, 2022

Signed and Sealed:



# APPENDIX A

# LIST OF PERSONNEL WORKED ON EXPLORATION WORK

# List of Personnel / Contractors Involved on the Project

1. **Alexander Pleson, P.Geo., - Geologist of Nipigon, ON (Claim Holder)**
2. **Mike Goodman – Prospector of Beardmore, Ontario (Claim Holder)**
3. **Ted Cox – Geophysicist of Beardmore, Ontario (Contractor)**

# APPENDIX B

# STATEMENT OF EXPENDITURES

| | |
|---|---|
| VLF Operator | Ted Cox |
| Assistant/Recorder/Flagger | Michael Goodman |
| Survey Duration | April 15th to April 22nd 2022 |
| Data Entry | April 24th 2022 |
| Processing and Entry | April 25th 2022 |
| Interpretation and Report | April 26th 2022 |
| Total Lines Surveyed | 16 lines at 1300m each (20.8 km) |
| Total Stations | 53 stations per line (848 stations) |
| Station Spacing | 25m |
| Line Spacing | 50m |
| Survey Direction | All readings taken facing north |

# APPENDIX C

# VLF Report

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| Sta# | L 7+50W In Phase | L 7+50W Quad | L 7+00W In Phase | L 7+00W Quad | L 6+50W In Phase | L 6+50W Quad | L 6+00W In Phase | L 6+00W Quad | L 5+50W In Phase | L 5+50W Quad |
|---|---|---|---|---|---|---|---|---|---|---|
| 00 | 0 | -1 | +1 | -2 | +3 | -2 | 0 | -4 | 0 | -1 |
| 25 | 0 | -1 | 0 | -4 | +2 | -1 | 0 | -2 | -2 | 0 |
| 50 | 0 | -3 | 0 | -2 | 0 | -1 | +1 | -1 | 0 | 0 |
| 75 | +1 | -1 | +1 | -2 | +1 | -1 | +3 | -1 | -1 | -1 |
| 1+00S | +2 | -4 | +2 | -3 | +3 | -2 | +1 | 0 | 0 | -2 |
| 25 | +1 | -4 | 0 | +5 | +2 | -2 | 0 | +3 | 0 | +1 |
| 50 | 0 | -3 | 0 | +2 | 0 | 0 | +1 | 0 | 0 | 0 |
| 75 | 0 | -1 | +2 | -1 | +2 | +1 | +2 | -1 | +1 | +2 |
| 2+00S | +2 | -3 | +1 | -1 | +2 | 0 | +3 | +2 | +1 | +1 |
| 25 | +2 | -1 | 0 | -2 | +5 | 0 | +5 | 0 | +3 | +1 |
| 50 | +1 | 0 | +1 | -1 | +10 | -1 | +7 | 0 | +2 | +1 |
| 75 | +1 | -2 | +3 | -3 | +7 | 0 | +2 | -1 | +1 | 0 |
| 3+00S | +4 | -2 | +7 | -3 | +1 | +1 | -1 | +7 | -2 | 0 |
| 25 | +6 | 0 | +10 | -2 | 0 | +7 | -4 | +5 | -4 | +2 |
| 50 | +8 | 0 | +9 | -2 | -4 | +6 | -5 | +4 | +4 | +3 |
| 75 | +8 | -1 | +5 | 0 | +1 | +2 | +8 | -2 | +6 | +2 |
| 4+00S | +6 | 0 | +1 | -2 | +5 | -1 | +7 | -1 | +2 | -3 |
| 25 | +1 | -1 | 0 | -2 | +5 | -1 | +3 | -2 | 0 | -1 |
| 50 | 0 | -2 | 0 | -2 | +3 | -2 | 0 | -2 | 0 | -1 |
| 75 | +1 | -2 | +2 | -1 | 0 | -1 | +2 | -2 | +1 | -1 |
| 5+00 | 0 | -4 | +6 | -6 | +2 | -2 | 0 | +1 | 0 | 0 |
| 25 | +1 | -4 | +11 | -3 | 0 | -2 | 0 | -1 | +1 | +1 |
| 50 | +8 | -1 | +7 | -1 | +2 | -1 | +2 | -1 | 0 | -1 |
| 75 | +6 | -1 | +3 | -1 | +1 | -0 | 0 | +1 | +2 | +5 |
| 6+00S | +5 | -2 | 0 | +2 | 0 | +1 | +2 | -1 | +1 | +4 |
| 25 | +1 | -1 | 0 | -3 | 0 | -1 | -2 | +8 | -3 | +8 |
| 50 | -0 | +1 | -4 | +9 | -4 | +8 | -10 | +20 | -20 | +24 |
| 75 | -6 | +6 | -2 | +11 | -8 | +12 | -24 | +24 | +10 | +26 |
| 7+00S | -38 | +15 | -40 | +32 | 20 | +20 | +4 | -2 | +36 | +14 |
| 25 | -32 | +30 | +19 | -12 | 6 | +6 | +35 | -18 | +6 | -20 |
| 50 | +22 | -10 | +39 | -21 | 30 | -4 | +6 | -14 | +2 | -14 |
| 75 | +36 | -20 | +8 | -8 | +4 | -14 | +3 | -9 | 0 | -10 |
| 8+00S | +12 | -10 | +3 | -2 | +2 | -8 | +2 | -3 | 0 | -4 |
| 25 | +8 | -4 | 0 | -1 | +2 | -4 | +2 | -1 | 0 | -2 |
| 50 | +2 | 0 | -2 | +1 | +1 | -1 | +3 | -1 | 0 | -1 |

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| Sta# | Line 7+50W | | L7+00W | | L6+50W | | L6+00W | | L5+50W | |
|---|---|---|---|---|---|---|---|---|---|---|
| | InPhase | Quad | InPhase | Quad | InPhase | Quad | InPhase | Quad | InPhase | Quad |
| 8+75s | 0 | +8 | -1 | +10 | 0 | +7 | 0 | +6 | 0 | +5 |
| 9+00s | -3 | +6 | -4 | +11 | -2 | +8 | 0 | +7 | -1 | +5 |
| 25 | -1 | +4 | -2 | +7 | -1 | +7 | 0 | +7 | -2 | +8 |
| 50 | 0 | +1 | +5 | -1 | 0 | -5 | -10 | +8 | -7 | +10 |
| 75 | +10 | -1 | +9 | -4 | +11 | -2 | -7 | +9 | 0 | +11 |
| 10+00s | +9 | -4 | +9 | -3 | +8 | -3 | +3 | -4 | +4 | -2 |
| 25 | +4 | -6 | +5 | -9 | +6 | -6 | +10 | -4 | +8 | -2 |
| 50 | +5 | -6 | -5 | 0 | +2 | -4 | +10 | -7 | +4 | -5 |
| 75 | +4 | -1 | 0 | -1 | 0 | -2 | +4 | -5 | +3 | -5 |
| 11+00s | 0 | -1 | -2 | +2 | 0 | -1 | +1 | -1 | +1 | -1 |
| 25 | 0 | +1 | +1 | -1 | +2 | -1 | 0 | +3 | 0 | +1 |
| 50 | +4 | +3 | +5 | -1 | +3 | -2 | 0 | -1 | 0 | 0 |
| 75 | +1 | +4 | +2 | 0 | +1 | 0 | -2 | +1 | -1 | +1 |
| 12+00s | 0 | +2 | +1 | 0 | 0 | 0 | -1 | +5 | -4 | +3 |
| 25 | 0 | +4 | 0 | +2 | 0 | +2 | 0 | +5 | -1 | +3 |
| 50 | -1 | +2 | 0 | +4 | 0 | +2 | 0 | +3 | 0 | -1 |
| 75 | -2 | +3 | -3 | +3 | -2 | +3 | -1 | +2 | 0 | -2 |
| 13+00s | -3 | +3 | -2 | +4 | -3 | +3 | -3 | +4 | +1 | -7 |

ALL FACING NORTH

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| LINE 5W L5W STA | L5W DIP | L5W QUAD | L450 W DIP | L450 W QUAD | L400 W DIP | L400 W QUAD | L350 W ∡ | L350 W QUAD | L300 W ∡ | L300 W QUAD | 250 W ∡ | 250 W QUAD | L200 W ∡ | L200 W QUAD | L150 W ∡ | L150 W QUAD | L100 W ∡ | L100 W QUAD |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 0 | -11 | 0 | 0 | -1 | 0 | 0 | -1 | -2 | +2 | 0 | +1 | +1 | -1 | -2 | 0 | 0 | -6 |
| S 25 | 0 | 0 | -1 | 0 | -2 | -1 | -1 | +1 | -6 | +7 | -2 | +1 | -3 | +2 | 0 | +1 | 0 | -4 |
| S 50 | -2 | -2 | -1 | +1 | -4 | +4 | -1 | +1 | 0 | -1 | -1 | +4 | -3 | +3 | 0 | +1 | 0 | +2 |
| S 75 | 0 | -2 | 0 | +4 | 0 | +2 | 0 | +4 | -5 | +7 | -2 | +2 | -2 | +4 | -1 | +4 | 0 | +6 |
| 100 | +1 | 0 | -4 | 0 | -3 | 0 | -2 | 0 | -3 | +1 | -4 | +1 | -4 | +2 | 0 | +4 | +4 | +6 |
| | 0 | 0 | -2 | +1 | -4 | +3 | -2 | +1 | +1 | 0 | -2 | +10 | -4 | +11 | +5 | +6 | 0 | +10 |
| | +2 | +1 | 0 | +2 | -1 | +2 | 0 | +1 | 0 | +5 | -2 | +4 | -4 | +7 | 0 | +10 | 0 | +12 |
| | +3 | +2 | +1 | +1 | 0 | +2 | -1 | +3 | +6 | 0 | 0 | +6 | -2 | +5 | 0 | +10 | -2 | +10 |
| 200 | +4 | 0 | +4 | 0 | +5 | +4 | +4 | +2 | +4 | +4 | +2 | +5 | +5 | +5 | +1 | +8 | -2 | +12 |
| | +2 | -1 | +4 | 0 | +4 | +1 | +3 | +2 | -2 | +2 | +2 | 0 | +4 | +3 | +1 | +12 | 0 | +10 |
| | 0 | +4 | +2 | +3 | +4 | 0 | +1 | 0 | +2 | 0 | +5 | +1 | +5 | 0 | 0 | +8 | 0 | +8 |
| | -2 | +2 | +2 | 0 | +2 | +2 | +2 | +1 | +2 | 0 | +3 | 0 | +5 | +2 | 0 | +2 | +2 | +8 |
| 300 | -1 | +2 | +1 | +1 | +3 | 0 | +2 | +1 | +3 | +2 | +6 | +4 | +6 | +5 | +3 | +5 | 0 | +8 |
| | 0 | -2 | +1 | 0 | +3 | +1 | +3 | 0 | +2 | 0 | +6 | +2 | +7 | +4 | +4 | +5 | 0 | +8 |
| | +1 | -2 | 0 | 0 | +1 | 0 | +1 | 0 | +5 | -1 | +2 | +8 | +1 | +9 | 0 | +6 | 0 | +14 |
| | +4 | -1 | +1 | -1 | +1 | +3 | +4 | +1 | -1 | +3 | +1 | +8 | -1 | +8 | -1 | +4 | -5 | +20 |
| 400 | +2 | 0 | +2 | -1 | 0 | -1 | +1 | 0 | +2 | 0 | -2 | +6 | -4 | +12 | -6 | +12 | -20 | +34 |
| | +1 | 0 | +2 | -3 | +4 | +5 | +2 | +1 | +5 | 0 | -2 | +10 | -1 | +13 | -8 | +4 | 0 | +6 |
| | 0 | +1 | +2 | 0 | +2 | +5 | +4 | +1 | +5 | +8 | -6 | +12 | -7 | +17 | +4 | +2 | +18 | -14 |
| | -2 | +2 | -1 | +2 | 0 | +4 | +1 | +7 | +2 | +8 | -7 | +18 | -15 | +23 | +10 | -10 | +8 | -18 |
| 500 | 0 | 0 | 0 | +4 | 0 | +8 | 0 | +8 | 0 | +7 | -10 | +1 | -1 | 0 | 0 | -14 | 0 | -10 |
| | +2 | +4 | 0 | +4 | 0 | +12 | -6 | +12 | -5 | +5 | -4 | +10 | -12 | +5 | +4 | -12 | +4 | -6 |
| | +2 | +4 | -4 | +8 | -2 | -16 | -10 | -8 | -25 | +25 | -8 | -22 | +29 | -26 | +1 | -8 | 0 | -4 |
| | 0 | +6 | -2 | -10 | -5 | +24 | -8 | -16 | +20 | -10 | +24 | -12 | +7 | -12 | 0 | -10 | 0 | -8 |
| 600 | -2 | +20 | -12 | +12 | +2 | 0 | +30 | -14 | +50 | -9 | +12 | -10 | +6 | -12 | -2 | -10 | 0 | -6 |
| | -10 | +26 | -14 | +8 | -10 | +4 | +4 | -20 | +11 | -22 | +10 | -8 | +5 | -6 | -1 | -4 | 0 | -2 |
| | -25 | +30 | -10 | -8 | -2 | -24 | +1 | -14 | +4 | -18 | +8 | -3 | +5 | -2 | 0 | -2 | 0 | -4 |
| | +30 | -30 | +5 | -24 | 0 | -16 | +1 | -10 | +1 | -7 | +4 | -1 | +3 | -1 | 0 | -1 | 0 | -4 |
| 700 | +5 | +20 | 0 | -18 | 0 | -14 | +4 | -4 | 0 | -6 | +1 | -2 | +1 | -1 | -1 | -2 | +2 | -4 |
| | 0 | -12 | 0 | -14 | 0 | -10 | +1 | -2 | +5 | -3 | +1 | -1 | +2 | -2 | -1 | -8 | 0 | -6 |
| | 0 | -8 | -1 | -14 | -5 | -20 | +2 | -2 | +2 | -5 | +4 | -4 | +4 | -5 | 0 | -2 | -5 | -4 |
| | 0 | +6 | 0 | -2 | 0 | -4 | +4 | -4 | +1 | -6 | +2 | -4 | +2 | -6 | +1 | -4 | -2 | 0 |
| 800 | 0 | -2 | 0 | -4 | 0 | -2 | +6 | -1 | +8 | -3 | +4 | -2 | +2 | -4 | +4 | -2 | +5 | -2 |
| 25 | 0 | 0 | 0 | -2 | 0 | -4 | +4 | -4 | +8 | -8 | +4 | -1 | +4 | -3 | +6 | -1 | +2 | 0 |
| 50 | 0 | 0 | 0 | -1 | 0 | -2 | +2 | -1 | +6 | -3 | +5 | -2 | +7 | -3 | +6 | +3 | +5 | +2 |

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| ST | Line 5W % | Qua | -50 % | Qua | Line 4W % | Qua | 350W % | Qua | 300W % | Qua | 250W % | Qua | 200W % | Qua | 150W % | Qua | 100W % | Qua |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 925 | 0 | +1 | 0 | +3 | +5 | +2 | +5 | -1 | -3 | -2 | +4 | -2 | +5 | -1 | +4 | -1 | +5 | +2 |
| 950 | -2 | +10 | -1 | +7 | -2 | +2 | +4 | 0 | 0 | 0 | +4 | 0 | +5 | 0 | +3 | 0 | 0 | +4 |
| | -2 | +2 | -1 | +8 | 0 | +8 | 0 | +4 | 0 | -1 | 0 | 0 | +2 | +5 | +2 | +5 | +2 | +4 |
| | -5 | +1 | 0 | +6 | 0 | +2 | -1 | +2 | -1 | +6 | -2 | +7 | -1 | +9 | 0 | +7 | 0 | +8 |
| | 0 | +1 | 0 | +15 | -2 | +2 | -1 | +10 | -2 | +6 | -4 | +7 | -7 | +9 | -6 | +10 | -2 | +12 |
| 1000 | +6 | 0 | -2 | +2 | 5 | +12 | 5 | +12 | -3 | +8 | -7 | +10 | -10 | +10 | -9 | +9 | -8 | +14 |
| | +6 | -5 | -1 | +6 | -6 | +8 | -4 | +4 | -1 | +5 | -3 | +5 | -3 | +6 | -7 | +7 | -8 | +10 |
| | +5 | -5 | +3 | 0 | 0 | +1 | 0 | +3 | 0 | -1 | +1 | -1 | +1 | -1 | -1 | +1 | 0 | +6 |
| | +2 | -5 | +1 | 0 | 0 | 0 | +4 | 0 | +7 | -3 | +8 | -2 | +3 | -1 | 0 | +3 | 0 | +1 |
| 1100 | 0 | -2 | 0 | -1 | 0 | 0 | -1 | 0 | -1 | 0 | +7 | 0 | +5 | 0 | +4 | 0 | 0 | +2 |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | +4 | -1 | +5 | 0 | +6 | 0 | +6 | 0 | 0 | +2 |
| | 0 | 0 | 0 | +1 | 0 | 0 | 0 | -1 | +2 | -2 | +3 | -2 | +4 | -1 | +5 | -1 | 0 | 0 |
| | +2 | +2 | -2 | +1 | -2 | 0 | +1 | -1 | -2 | -2 | +4 | -2 | +5 | -1 | +5 | 0 | 0 | 0 |
| 1200 | -10 | +4 | -6 | 0 | -5 | 0 | -2 | 0 | + | -1 | -1 | -1 | +1 | -2 | 0 | 0 | 0 | 0 |
| | -5 | +2 | -7 | 0 | -12 | 0 | -4 | -3 | 2 | 0 | +1 | 0 | 0 | 0 | +1 | 0 | +1 | -1 |
| | 0 | -2 | 0 | -4 | -5 | -8 | -3 | -4 | -2 | -1 | 0 | -3 | -2 | -4 | -1 | -1 | -1 | -2 |
| | 0 | -6 | -2 | -6 | -5 | -10 | -3 | -4 | -4 | -1 | -2 | -1 | -1 | -3 | -2 | -2 | -2 | -1 |
| 1300 | +2 | -12 | +1 | -8 | 0 | -10 | 0 | -8 | -4 | -1 | -4 | -5 | 0 | -7 | -1 | -2 | -1 | -1 |

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| Sta | LINE 50 W In Phase | Quad | BLO In Phase | Quad | In Phase | Quad | In Phase | Quad | In Phase | Quad |
|---|---|---|---|---|---|---|---|---|---|---|
| 00 | -2 | -4 | 0 | -6 | | | | | | |
| 25 | 0 | -4 | 0 | -10 | | | | | | |
| 50 | 0 | -8 | -2 | -4 | | | | | | |
| 75 | -1 | -4 | -8 | -2 | | | | | | |
| 1+00S | -4 | -4 | -8 | 0 | | | | | | |
| 25 | -4 | 0 | -10 | +4 | | | | | | |
| 50 | -1 | +4 | -5 | +8 | | | | | | |
| 75 | -3 | +6 | -8 | +10 | | | | | | |
| 2+00S | -1 | +12 | 0 | +10 | | | | | | |
| 25 | 0 | +10 | 0 | +10 | | | | | | |
| 50 | -2 | +8 | 0 | +10 | | | | | | |
| 75 | 0 | +12 | 0 | +16 | | | | | | |
| 3+00S | 0 | +18 | +2 | +20 | | | | | | |
| 25 | -2 | +25 | -5 | +30 | | | | | | |
| 50 | -6 | +12 | -8 | +8 | | | | | | |
| 75 | +1 | -1 | 0 | 0 | | | | | | |
| 4+00S | +6 | -22 | +5 | -24 | | | | | | |
| 25 | +4 | -18 | +8 | -18 | | | | | | |
| 50 | +4 | -12 | +2 | -10 | | | | | | |
| 75 | +3 | -8 | 0 | -4 | | | | | | |
| 5+00 | -0 | -4 | 0 | -2 | | | | | | |
| 25 | 0 | 0 | 0 | +2 | | | | | | |
| 50 | +2 | +1 | 0 | 0 | | | | | | |
| 75 | 0 | 0 | -2 | 0 | | | | | | |
| 6+00S | -1 | -1 | -5 | -4 | | | | | | |
| 25 | -1 | -2 | -2 | -4 | | | | | | |
| 50 | 0 | -4 | 0 | -6 | | | | | | |
| 75 | 0 | -8 | 0 | -6 | | | | | | |
| 7+00S | -1 | -4 | 0 | -4 | | | | | | |
| 25 | 0 | -4 | -2 | -4 | | | | | | |
| 50 | -2 | -4 | -5 | -2 | | | | | | |
| 75 | -4 | -1 | 0 | -2 | | | | | | |
| 8+00S | 0 | -2 | -5 | -2 | | | | | | |
| 25 | -2 | 0 | 0 | -2 | | | | | | |
| 50 | 0 | 0 | 0 | -2 | | | | | | |

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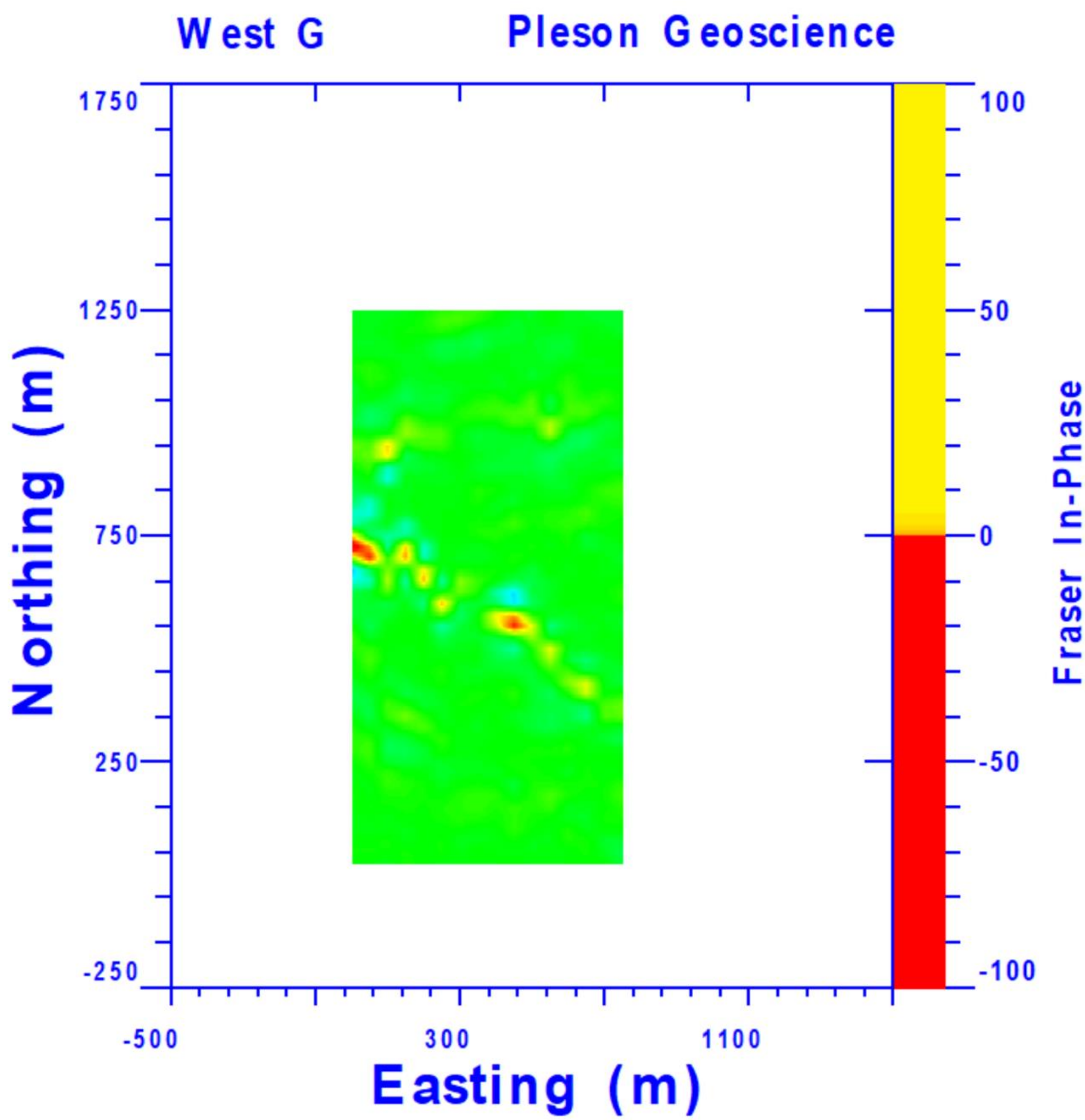
| | L 0+50W | | L 0+00 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Stn | In Phase | Quad | In Phase | Quad | In Phase | Quad | In Phase | Quad | In Phase | Quad |
| 8+75S | +5 | +1 | +5 | 0 | | | | | | |
| 9+00S | +4 | 0 | +8 | -2 | | | | | | |
| 25 | +3 | +3 | +5 | +2 | | | | | | |
| 50 | +2 | +4 | 0 | +4 | | | | | | |
| 75 | 0 | +4 | +2 | -8 | | | | | | |
| 10+00S | 0 | +6 | 0 | +10 | | | | | | |
| 25 | -6 | +10 | -2 | +10 | | | | | | |
| 50 | -4 | +12 | 0 | +8 | | | | | | |
| 75 | 0 | +3 | 0 | +4 | | | | | | |
| 11+00S | 0 | +3 | 0 | +4 | | | | | | |
| 25 | 0 | +1 | 0 | 0 | | | | | | |
| 50 | 0 | +1 | 0 | 0 | | | | | | |
| 75 | 0 | 0 | 0 | -2 | | | | | | |
| 12+00S | 0 | 0 | 0 | 0 | | | | | | |
| 25 | 0 | 0 | 0 | 0 | | | | | | |
| 50 | 0 | -1 | +2 | -1 | | | | | | |
| 75 | -2 | -3 | -1 | -2 | | | | | | |
| 13+00S | -4 | -3 | -3 | -3 | | | | | | |
| | -5 | -3 | -6 | -2 | | | | | | |


West G
Pleson Geoscience
1750
1250
750
250
-250
Northing (m)
-500
300
1100
Easting (m)
100
50
0
-50
-100
Fraser In-Phase

# APPENDIX D

## Instrument Specifications

# EM16/16R Specifications

| | |
|---|---|
| **MEASURED QUANTITIES** | EM16: In-phase and Quadrature components of the secondary VLF field, as percentages of the primary field<br>EM16R: Apparent resistivity in ohm-metres, and phase angle between Ex and Hy |
| **PRIMARY FIELD SOURCE** | VLF broadcast stations |
| **SENSOR** | EM16: Ferrite-core coil<br>EM16R: Stainless-steel electrodes, separated by 10 m; sensor impedance is 100 MΩ in parallel with 0.5 pf |
| **OPERATING FREQUENCY** | 15 to 28 kHz, depending on VLF broadcasting station |
| **MEASUREMENT RANGES** | EM16: In-phase: ±150 %: Quadrature: ±40 %<br>EM16R: 300, 3000, 30000 Ω-m, Phase: 0-90° |
| **POWER SOURCE** | EM16 or EM16/16R: 9 V battery |
| **OPERATING TEMPERATURE** | -30° C to +50° C |
| **DIMENSIONS** | EM16 or EM16/16R: 53 x 30 x 22 cm |
| **WEIGHT** | EM16: Instrument: 1.8 kg; Shipping: 6.2 kg<br>EM16R: Instrument: 1.5 kg; Shipping: 6 kg |

The primary objectives of the survey were to map and characterize geological features that predominantly control the mineralized zones. The VLF survey data was compiled to measure the primary and secondary EM fields which subsequently could be interpreted to show apparent conductivity variations in bedrock geology to delineate well-mineralized structural features. The VLF transmitter located at Cutler, Maine (NAA) operating at a frequency of 24.0 kHz provided the primary electromagnetic field. This report describes the survey results and discusses data interpretation.

The EM field radiated from a VLF transmitter station over a uniform or horizontally layered earth model consists of a Vertical Electrical field component (Ey) and a Horizontal Magnetic field component (Hx), each perpendicular to the direction of the propagation. Herein, that part of the vertical field which is in-phase with the horizontal magnetic field is called the In-phase (Real Component); that part which is out of phase with the horizontal magnetic field is called the out-of-phase (quadrature Component). They are normally expressed as Tilt (Dip) Angle and Ellipticity respectively and measured as percentage (%). Processing of the VLF data included:

- Polarity reversal of alternating quadrature-phase measurements based on traverse direction.
- Correction/Removal of erroneous data points.
- Grid leveling for filtering line-by-line variations.

The in-phase component of the VLF responses was processed and interpreted with a Fraser Gradients and Karous-Hjelt (K-H) filtering approaches. The results reveal the locations of high VLF responses, which may indicate that VLF anomalies are due to conductive zones located along the profiles.

The qualitative analysis of the data along VLF traverses was carried out using Fraser Gradient method and Karous-Hjelt current density procedure developed by Karous and Hjelt (1983). The plot of filtered in-phase VLF data in terms of distance shows positive Fraser and Karous-Hjelt anomalies along the profiles, which is an indication of the probable conductive zones along each of the profiles. Geosoft Oasis montaj and a freely available KHFFILT tool (Pirttijärvi, 2004) were used to perform Karous-Hjelt and Fraser filtering on VLF data. In the following sections, these methods are briefly discussed, and the in-phase component of VLF data (for all the profiles) is interpreted and presented in gridded format.

***Fraser Gradient Filter***

Fraser Filtering, which was suggested by Fraser (1969), is a simple filtering technique that transforms crossovers into peaks, removes regional gradients and intensifies anomalies from near surface. In this report the Fraser filter has been applied to the in-phase (real) component of the VLF data. The Fraser filter shifts the data by 90 degrees and transforms the anomaly such that those parts with the maximum slope appear with the maximum positive/negative amplitude.