BIG SKY GEOPHYSICS

Interpretation Report: Brewer Mine, South Carolina
Dipole-Dipole Resistivity/IP, Gravity, and Magnetic Surveys

July 25, 2020

Palmetto Mining Corporation
Attn: Layton Croft
P.O. Box 627
Carrboro, NC 27510

Dear Layton Croft,

The following is an interpretation of the geophysical data we collected earlier this summer. A description of those surveys is included in the report dated July 17th. I attempted to incorporate as much geological information as I could as well as the regional magnetic and gravity data. I would need additional time to scan and register some of the geologic maps, which I did not want to take. I understand the need to summarize these data as soon as possible to help direct the drilling program. The regional magnetic data were not very useful, but there is an interesting trend to the gravity data to the south. I plotted major features of the resistivity/IP onto a plan map so the interpretation of the IP data could be incorporated with the gravity and magnetic data.

Resistivity/IP Interpretation

Figure 1 shows the interpretation overlay on a plan map of the topography data derived from the Space Shuttle Radar Topography (SRTM) data set. An overlay of the pit location is also included for orientation. The IP station locations for the four lines are shown in green with station numbers indicated. Interpreted fault locations are shown in black (derived from magnetic data) and in magenta (derived from gravity data). I attempted to incorporate as much of the IP profile information into the plan map as possible for interpretation purposes. These features are shown by blue (conductors), red (resistors), yellow (IP anomalies), and magenta (possible fault locations). I drew blue lines where ever there was a resistivity of less than 1000 Ω-m at the surface. For lines 1000, 2000 and 3000 there are conductive zones in the near surface off of the Brewer hill. For line 4000, there is a near surface conductive zone near the pit. I drew red lines where ever there are resistive zones in excess of 5000 Ω-m, regardless of depth. I also drew yellow lines wherever there were chargeability anomalies in excess of 40 mV/V, regardless of depth. There are no anomalies on L2000 that meets this criterion. Finally, I drew short horizontal magenta dashes where possible faults were indicated based upon the resistivity and chargeability data. If a possible dip direction was indicated to the south or to the north, I added chevrons (^) to indicate direction.

The modeled sections for the IP lines are shown in Figures 6-9. *Note, all of these images have vertical exaggeration and should not be used for planning angle holes. Note, the color scale for each line is unique and you need to look at the legend bars to compare values directly between lines. Note, Lines 1000, 2000 and 3000 were surveyed from south to north while Line 4000 was surveyed from north to south.* I have added lines to the cross sections (in black) to indicate possible fault locations and relative dip. Most of the faults seem to be steep with few exceptions. Lines 1000, 2000 and 3000 show near surface conductive zones that extend down 50-75 meters on average. These zones exist almost exclusively in the valley bottoms below Brewer hill. It is possible these zones are caused by additional overburden, or by saprolite. I am inclined to believe the higher resistivities on Brewer hill are caused by the quartizite cap at the surface. The exception to this occurs on Line 4000 in the vicinity of the pit. I think this anomaly is caused by alteration/oxidation associated with the mineralization. The near surface anomaly on Line 4000 between stations 400 and 800 is the strongest near surface conductor present (approximately 100 Ω-m). Note, from station 800 to 1075 there is a near surface resistor and then a more conductive zone begins again to the south. This second conductive zone may indicate more oxidation at the surface.

I mapped the strongest resistors hoping they would map out an intrusive at depth. I could not see a pattern that extended across the lines to indicate one body. It is possible the alteration is too intense to define the intrusive by the resistivity method, or at least measured to this depth. The strongest resistor is directly underneath the pit. No other bodies are as resistive as this unit.

I also marked very strong IP responses in yellow (in excess of 40 mV/V). Normally, any chargeability anomaly in excess of 20 mV/V with respect to the background is considered very significant. No anomalies occur on L2000. All other line anomalies end to the north at the fault marked "I". There are only limited IP anomalies in the vicinity of the pit on L4000, but there are extremely strong IP anomalies on L1000. This suggests the oxidation does not extend very far to the west, but sulfides do exist. Strong IP anomalies continue at depth to the south on L1000. Oxidized mineralization does not generate and IP response, only sulfides with free electrons on their surface can create an IP anomaly.

I have also marked possible faults/contacts on the IP sections based upon contrasts in the resistivity and IP responses (figs. 6-9). Most of these anomalies agree fairly well with the interpreted location of faults based up the magnetic interpretation, but the comparison is not exact. In the plan map, these locations are indicated by horizontal magenta bars and chevrons indicating dip direction.

Magnetic Interpretation

I used the calculated vertical gradient (CVG) filtered reduced to pole magnetic data to determine possible fault locations (fig. 2). These features are drawn in black. Fault locations were marked based upon the data. A few lines were altered to better conform to the gravity or IP data. The historically defined ore body itself doesn't seem to have any signature, but there is a gradient from south to north. The strong magnetic responses at the northern end of the grid are caused by the Pageland Pluton. The geologic information suggests faulting and fracturing are common in the mine area. Consequently I have marked a large number of possible faults. The geologic information suggest the two major trends should be northeast and northwest, but based upon the magnetic data, I think the main trends for faulting are north-south and east-southeast.

Faults **I** and **III** are part of this east-southeast trend. While fault **I** does not have a strong magnetic expression, it seems to be an important bounding fault for mineralization. The very conductive zone over the pit ends at this contact and no strong IP anomalies occur north of it. I have marked fault **II** as a short east-west fault. Based upon the magnetic data, it may continue to the northwest, but the expression wasn't strong enough for me to mark it. The fault does seem to be bounding the near surface conductor associated with the pit. Fault **IV** has the strongest magnetic expression and seems to be associated with the Fork Creek valley. "Fault" **V** may not be a fault at all, and instead just a dike. It is also north-south trending like fault **IV**. There aren't many data points to constrain it, but it does seem like fault **V** marks a contact in the gravity data. Gravity values to the west of **V** are lower than to the east. The east-northeast trending magenta fault is inferred from the gravity data, but also has a slight magnetic expression.

The reduced to pole magnetic image (fig. 3) clearly shows the Pageland Pluton to the north. Brewer hill itself doesn't seem to have any magnetic signature.

Gravity Interpretation

The gravity data (fig. 4) show most of Brewer hill is a gravity high, but the western and northern margins of the hill are not. Also, this gravity high seems to extend to the east below the town of Jefferson. The gravity high below Brewer hill is part of a gravity high nose shown in the satellite data (fig. 5). It is possible fault **V** bounds this high to the west, but it doesn't really look like fault **IV** bounds it to the east. There is a relative gravity low over the pit and three relative gravity lows on L1000. These may reflect alteration associated with mineralized zones. On the southern end of the hill, there is a stronger and larger gravity low on L1000 that is associated with strong IP responses at depth. This gravity low is bounded by east-northeast trending faults. South of this anomaly, the gravity response becomes much stronger.

Summary

The pit area itself is strongly conductive and underlain by a strong resistor which also has a good IP response. The conductive zone is probably caused by the oxidation and has no IP response. To the south and to the west of the pit very strong IP responses are observed on L1000 and L4000. These probably represent the best targets for finding mineralized sulfides. These IP anomalies roughly agree with relative gravity lows within the broad gravity high.

I am most struck by how the strong IP anomalies continue to the south on L1000 at depth. I would first test the targets to the south and west of the pit, but then I would move to the south. Also the IP responses directly under the pit are good, but not as strong as the IP anomalies to the west and south. The most intense IP anomaly (approximately 250 mV/V) occurs below station 2900 on L1000. This anomaly is on trend with the end of the pit and fault **II**.

I am struck by a possible north-south trend to the data. It seems like the IP responses generally occur in relative gravity lows within a broader gravity high. This gravity high may represent an intrusive which has brought the mineralization to the surface. The oxide mineralization occurs at the northern end of this intrusive, but potential sulfide mineralization occurs under the oxide cap and to the south.

If you have any questions or comments, don’t hesitate to contact me.

Sincerely,

Clark Jorgensen

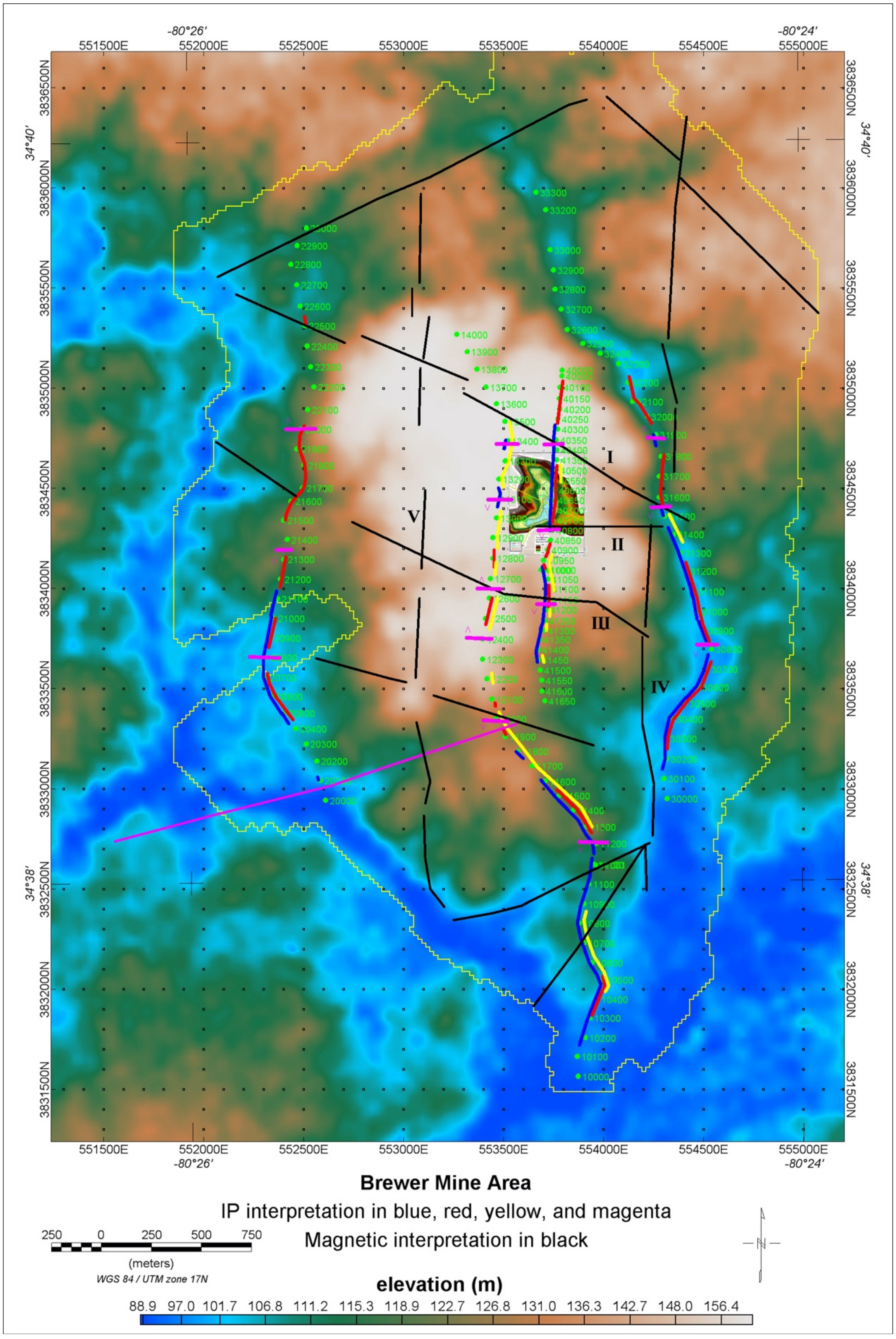

Figure 1: Topographic base map derived from SRTM data with the location of the pit superimposed. IP station locations (green), IP interpretation (blue, red, yellow, and magneta) magnetic faults (black), and gravity faults (magenta), outline of magnetic survey (yellow) are also indicated.

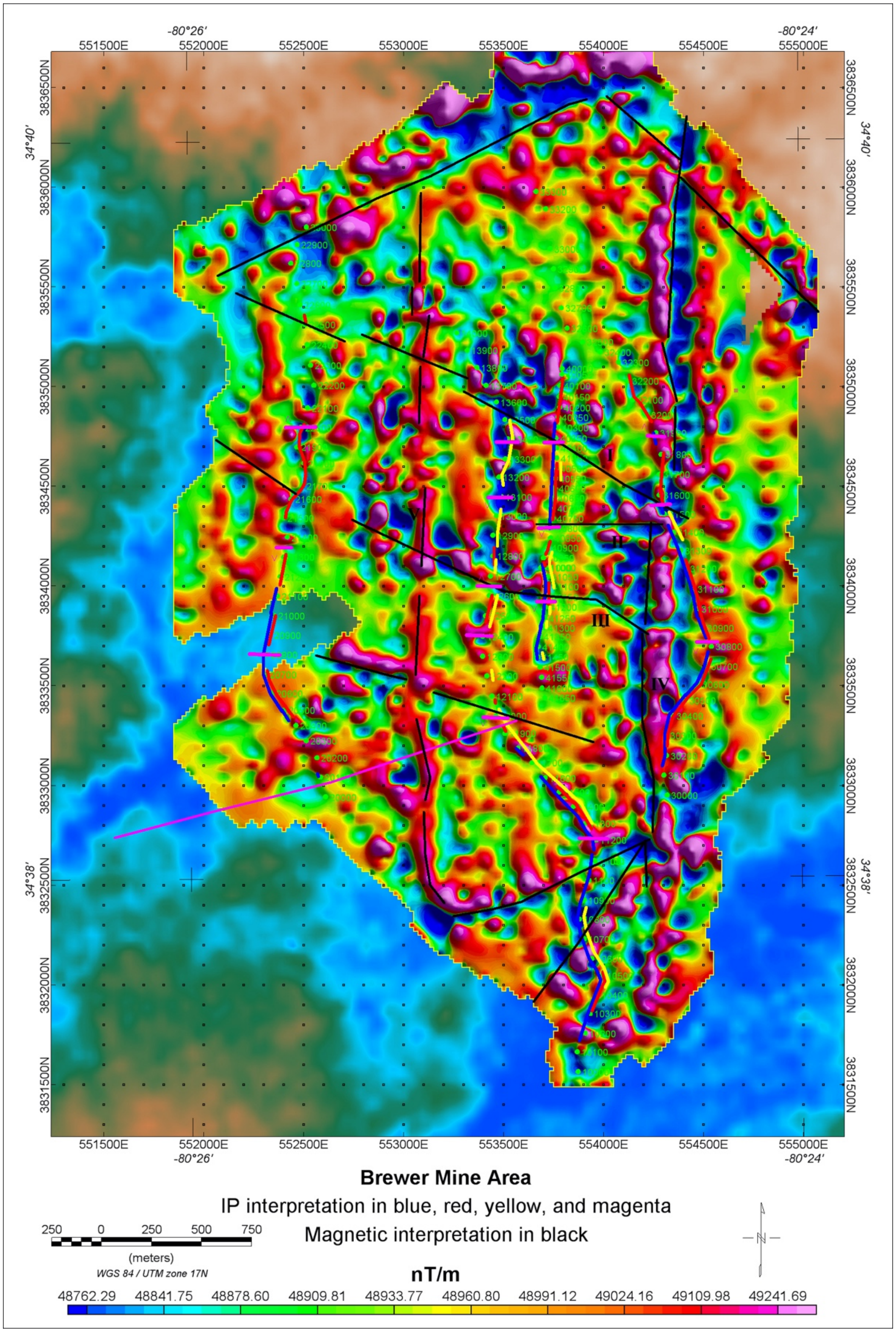

Figure 2: Shaded relief map of the Calculated Vertical Gradient of the Reduced to Pole magnetic data. The same interpreted features are superimposed on the image.

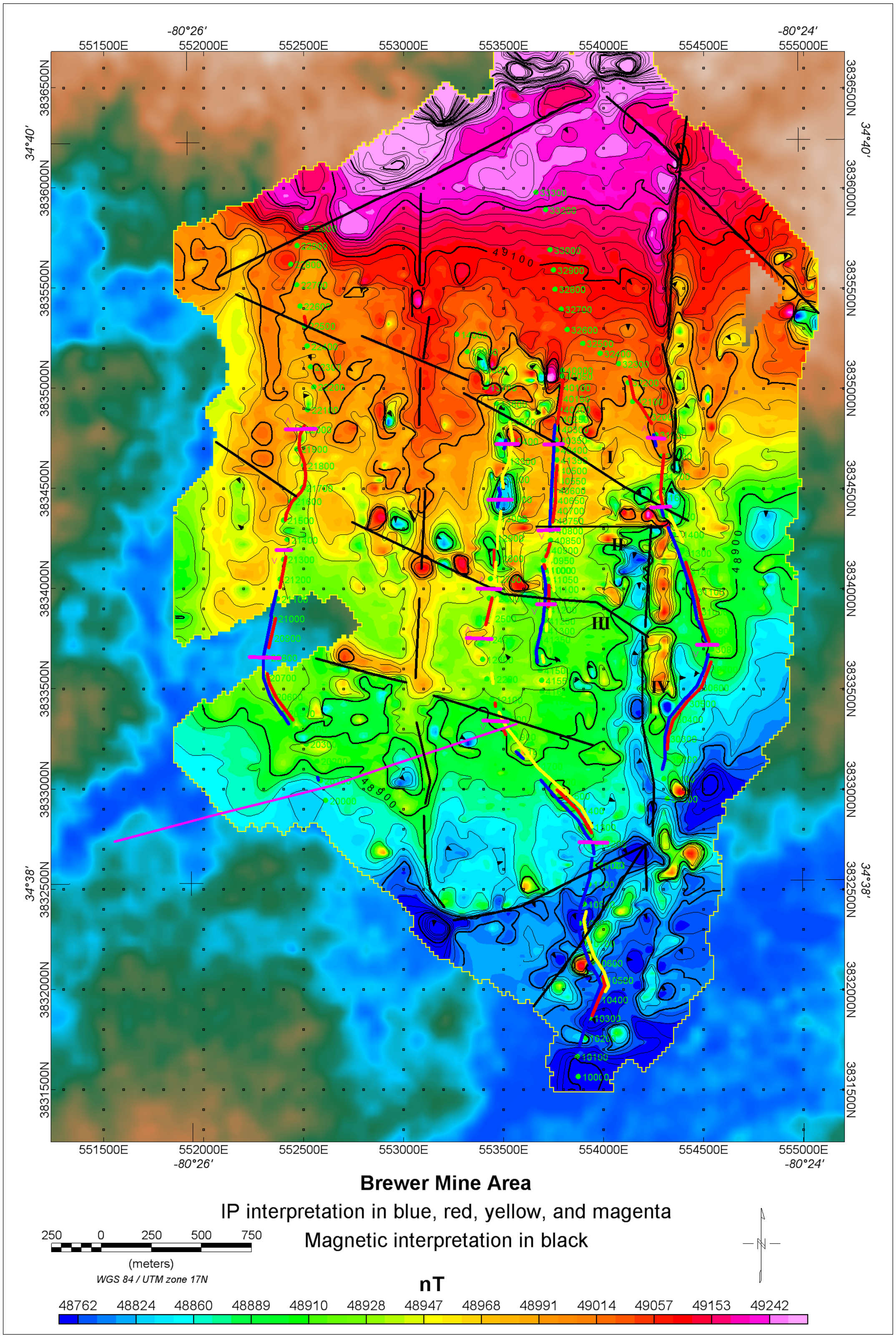

Figure 3: Reduced to Pole magnetic data with the same interpreted features superimposed.

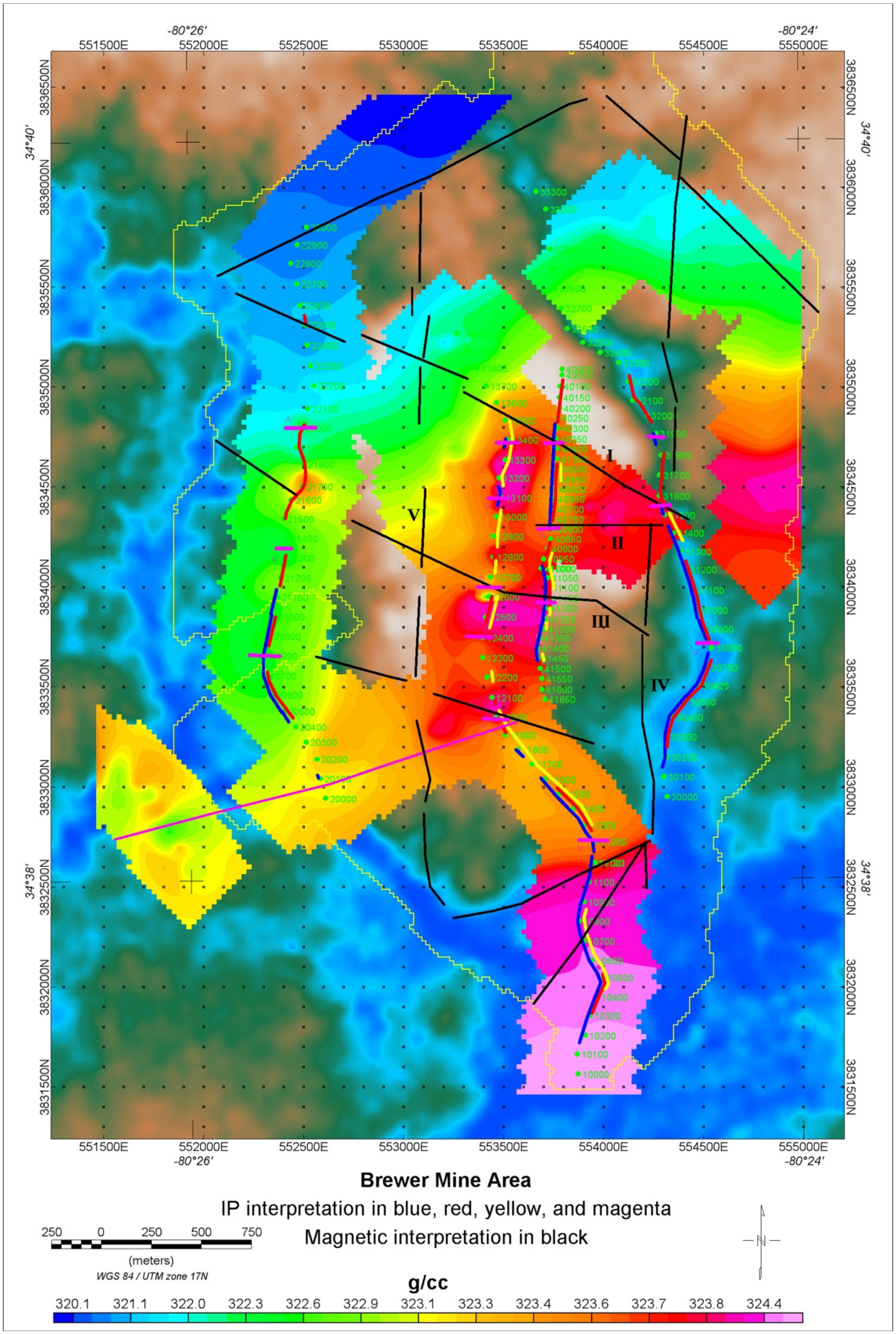

Figure 4: Simple Bouguer gravity data (reduction density 2.67 g/cm^3) with the same interpreted features superimposed.

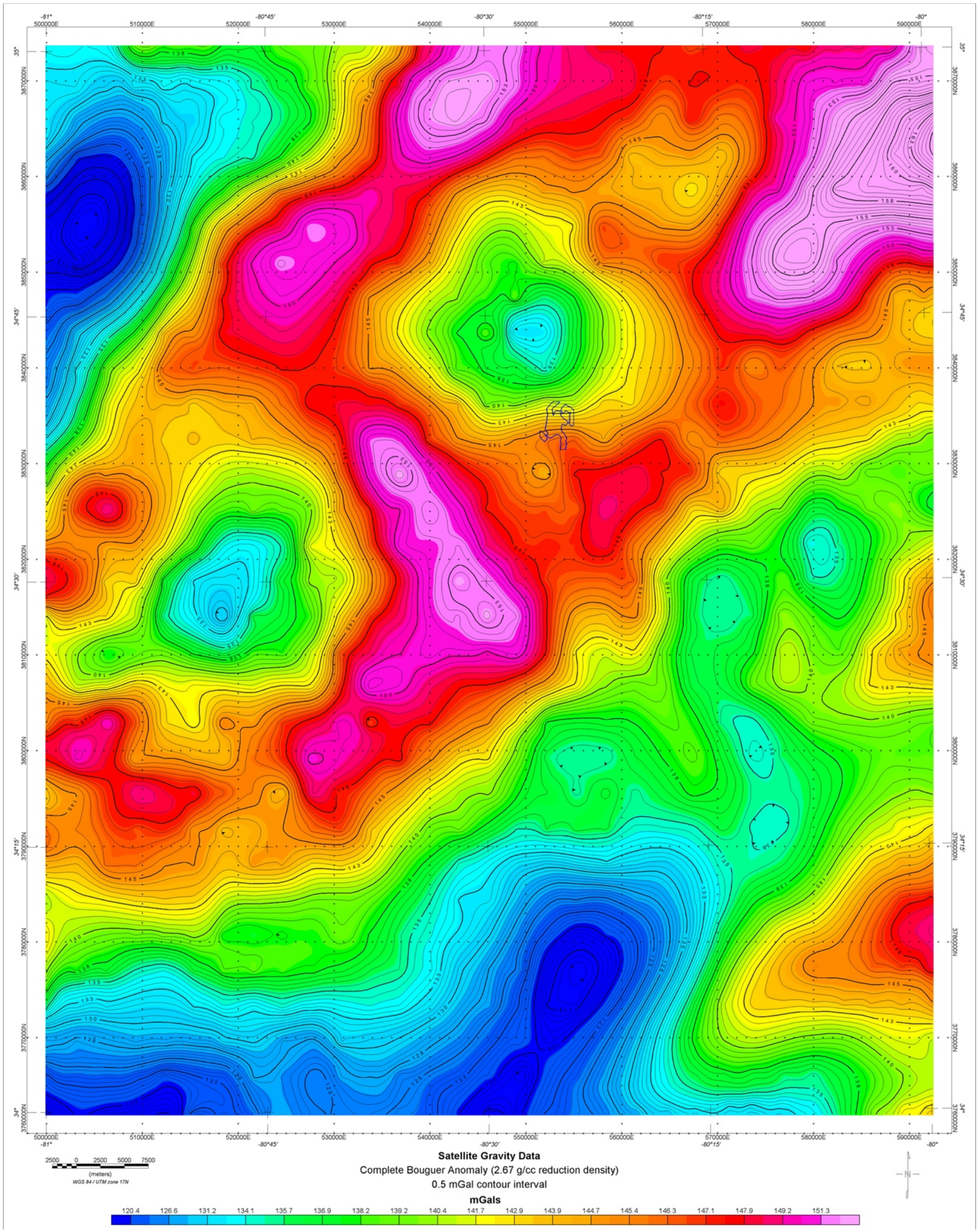

Figure 5: Satellite gravity data (complete Bougeur anomaly, 2.67 g/cm^3 reduction density) with the outline of the Brewer gravity survey superimposed (blue). Notice the Brewer survey area is at the end of a nose of a gravity high. The regional gravity data show a line of circular anomalies along a northeast trend suggesting two folding events superimposed upon each other present in this region.

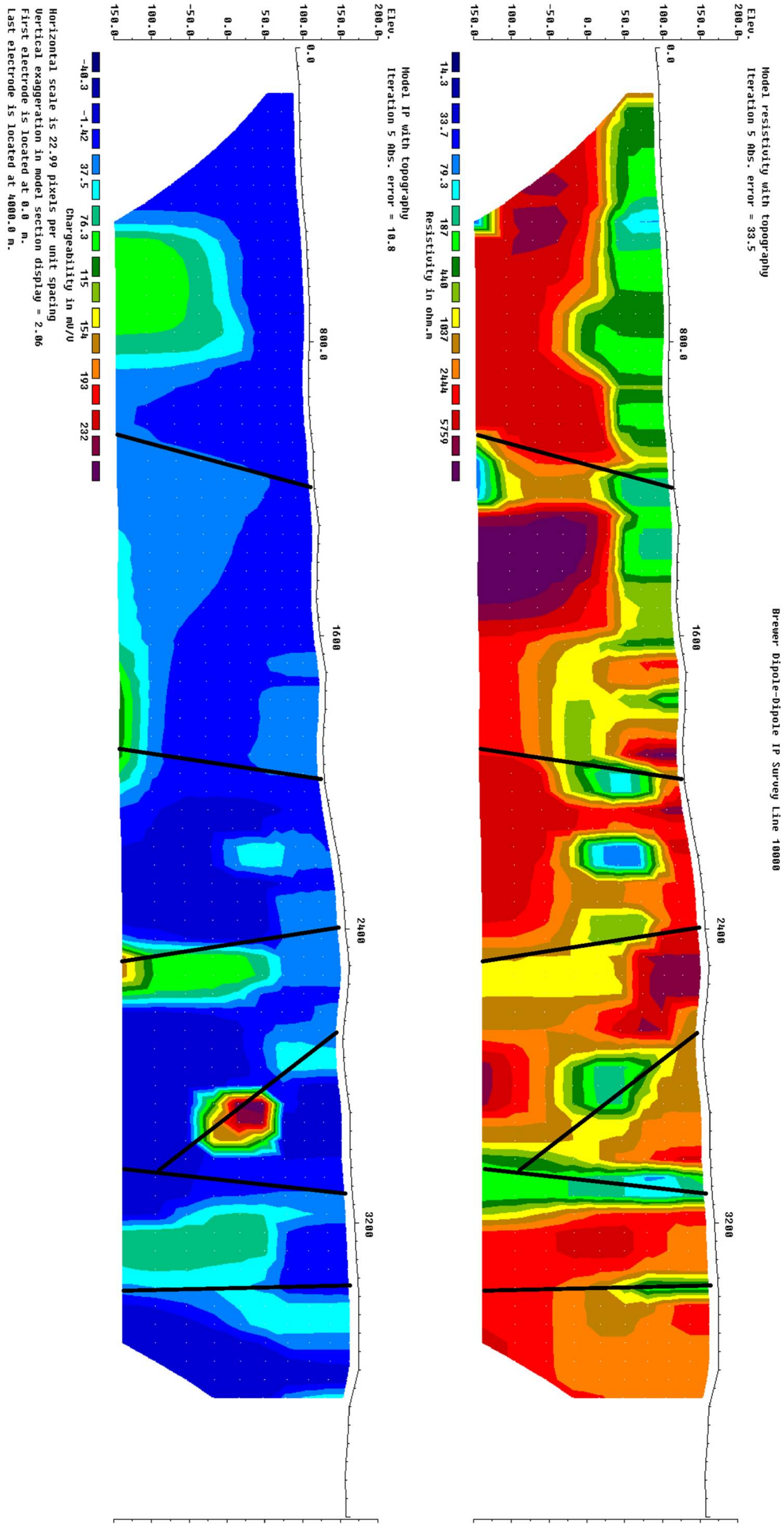

Figure 6: Modeled resistivity and chargeability for L1000 with interpreted fault locations (black).

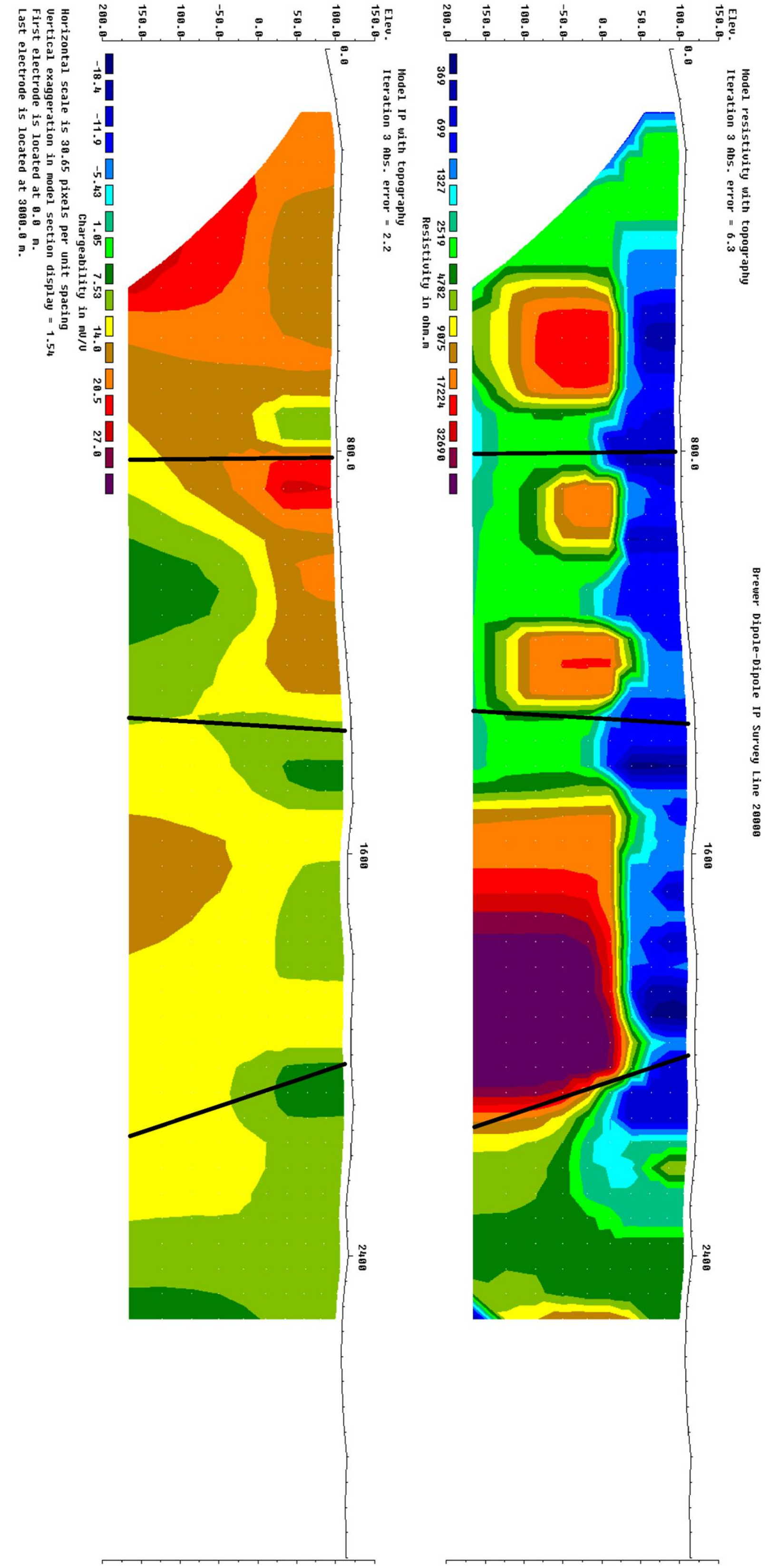

Figure 7: Modeled resistivity and chargeability for L2000 with interpreted fault locations (black).

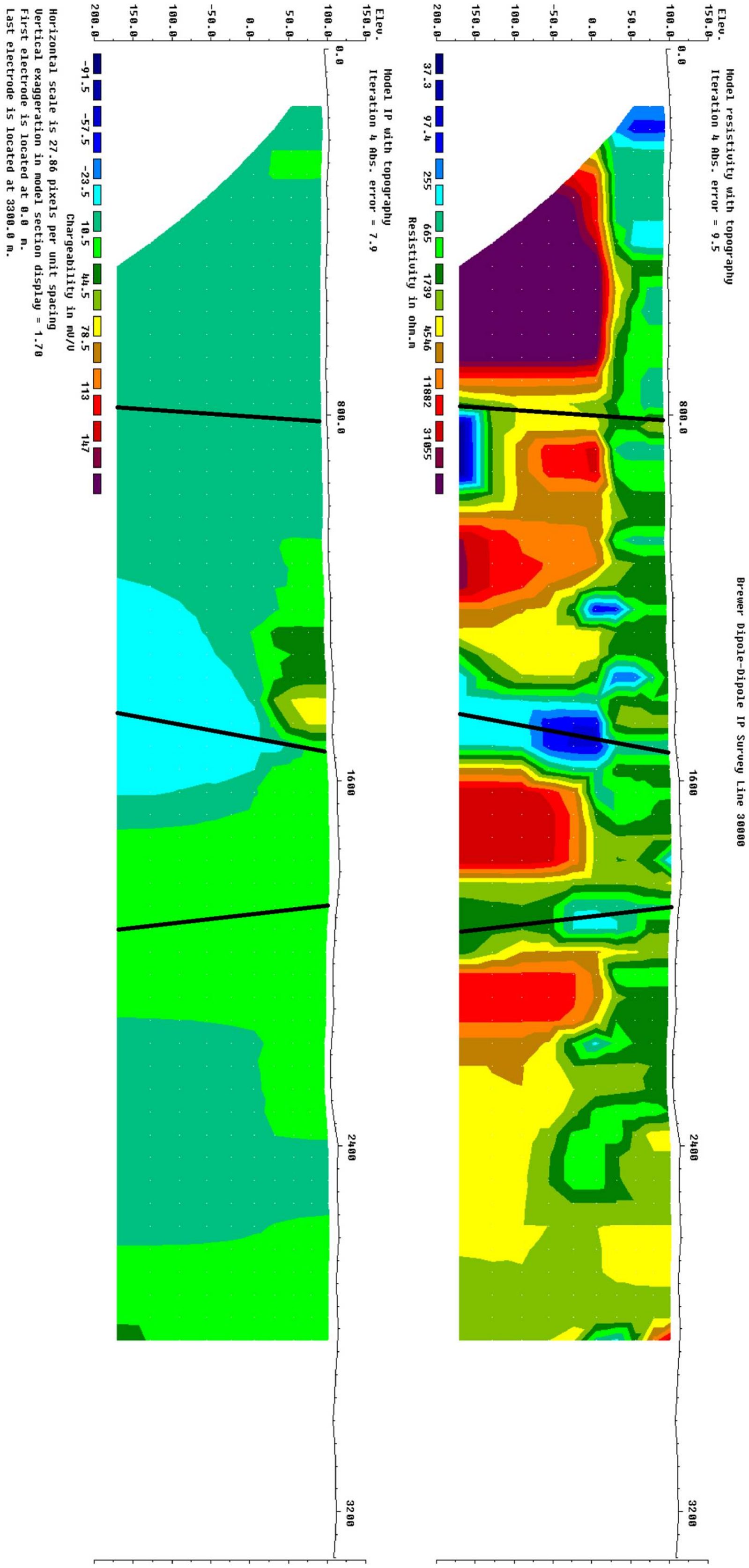

Figure 8: Modeled resistivity and chargeability for L3000 with interpreted fault locations (black).

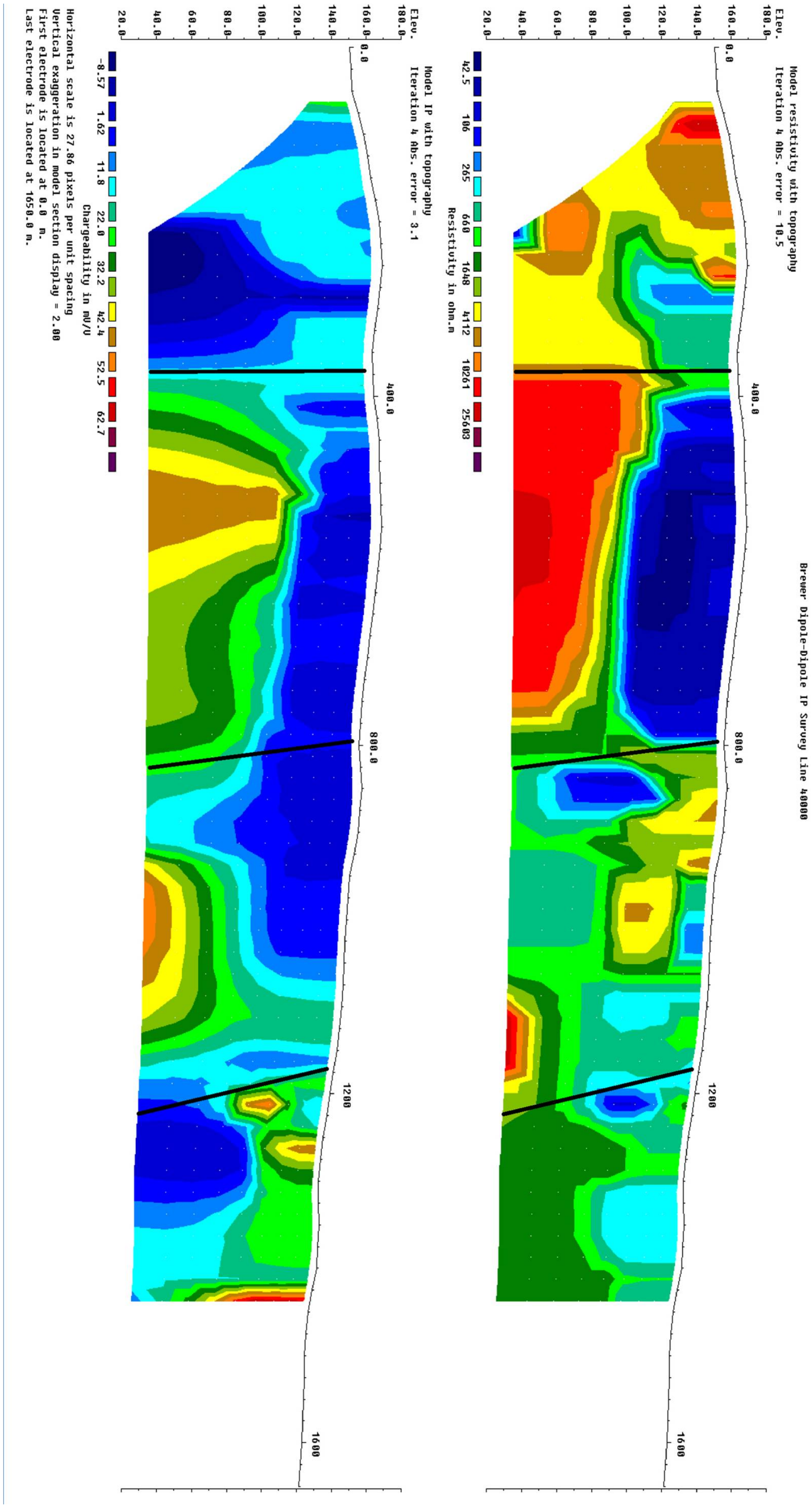

Figure 9: Modeled resistivity and chargeability for L4000 with interpreted fault locations (black).