RESOLUTION COPPER

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26 February 2020

Via email to: mary.rasmussen@usda.gov

Mary Rasmussen
US Forest Service
Supervisor's Office
2324E McDowell Road
Phoenix, AZ 85006-2496

Subject: Resolution Copper Mining, LLC – Mine Plan of Operations and Land Exchange – Response to Action Item GS-4 (Geology, Subsidence, Seismicity)

Dear Ms. Rasmussen,

Enclosed for your review and consideration, please find the following response to GS-4:

Provide input on alleged missed faults (lineament analysis) and whether they were incorporated into subsidence modeling.

Should you have any questions or require further information please do not hesitate to contact me.

Sincerely,

Vicky Peacey

Vicky Peacey
Senior Manager, Permitting and Approvals; Resolution Copper Company, as Manager of Resolution Copper Mining LLC

Response to Action Item GS-4 (Geology, Subsidence, Seismicity)

The figure below (Figure 7b) is from page 11 of the report titled "Evaluation of Predictions of Land Subsidence due to Panel Caving at the Resolution Copper Mine, Arizona" by Dr. Emerman, dated March 17, 2019. The Figure shows two colored lines as discussed in Dr. Emerman's report:

- Blue line - The West Boundary fault per Resolution Copper's (RC) 2016 geologic model.
- Purple line - A lineament interpreted by Dr. Emerman from Google Earth imagery that is alleged to be a fault not recognized by RC, and allegedly not included in subsidence modeling completed by Itasca for the Draft Environmental Impact Statement (DEIS).

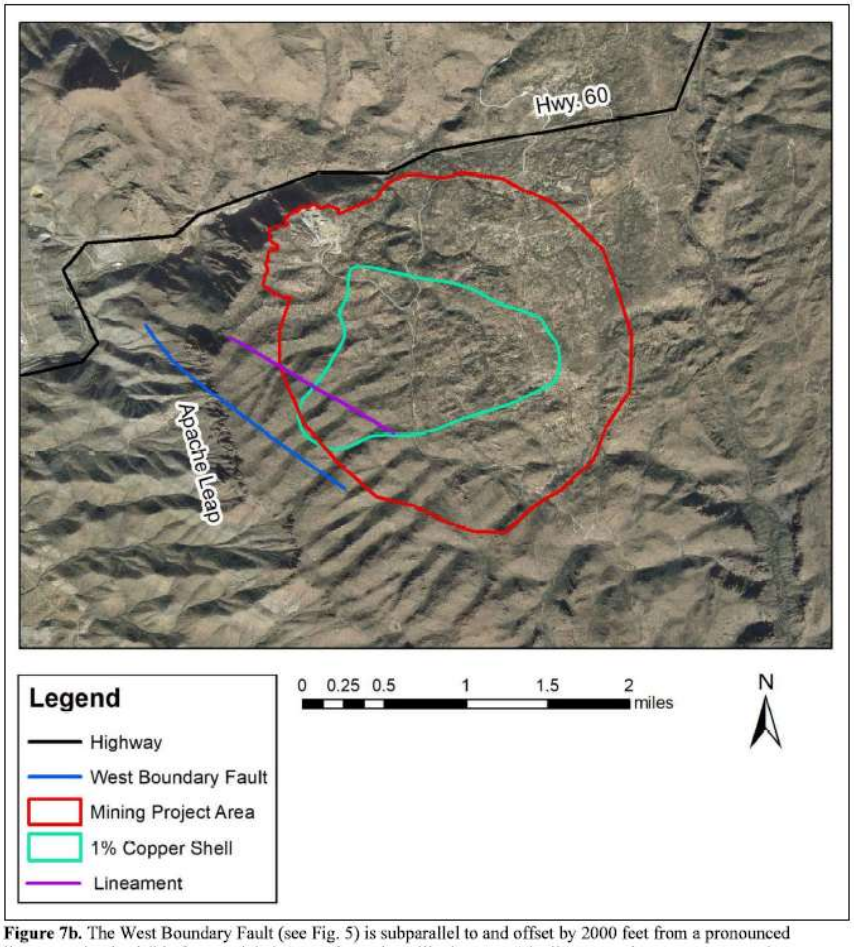
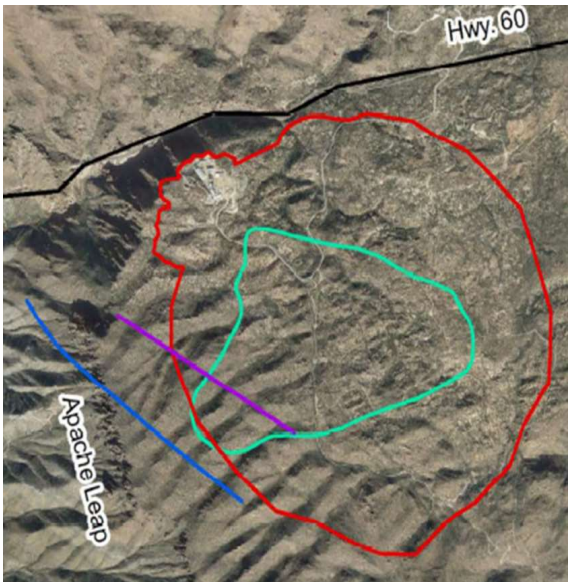
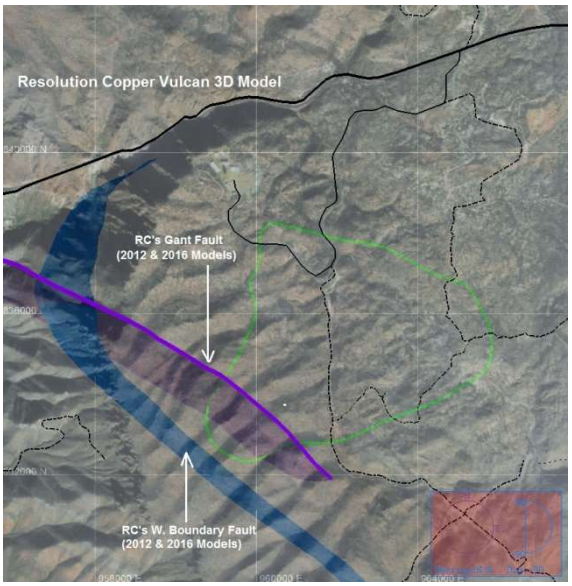


Figure 7b. The West Boundary Fault (see Fig. 5) is subparallel to and offset by 2000 feet from a pronounced lineament that is visible from aerial photography and satellite imagery. The lineament does not correspond to any other mapped fault that was used in the subsidence modeling (see Fig. 5), which suggests that not all geological faults have been correctly mapped. The faults and other zones of weakness that connect Apache Leap with the mining area are the most important in predicting the impact of the subsidence caused by panel caving on Apache Leap. The lineament without the trace on top can be seen in Fig. 7a. Outlines of the mining project area and the footprint of the 1% Cu shell are from Fig. 6. Google Earth imagery is from December 6, 2014.

Dr. Emerman's Figure 7b is shown again in a zoomed view below (left) with RC's geologic model view on the right, superimposed with 3D model wireframes for Gant West and West Boundary faults.





Dr. Emerman's purple lineament (at left) corresponds almost exactly with RC's actual Gant West modeled fault wireframe (purple at right). There is very minor difference in Dr. Emerman's position of the West Boundary fault (blue in both figures) compared to RC's position. This is because RC's version is an actual 3D wireframe shown in its full extent, whereas Dr. Emerman's version is a 2D line/trace.

Below are Figures 6, 7 and 8 taken from Itasca's subsidence model report (*Assessment of Surface Subsidence Associated with Caving Resolution Copper Mine Plan of Operations*) dated July 17, 2017 and completed in support of the DEIS using RC's 2016 geologic model. All figures show the presence of both W. Boundary and Gant faults incorporated as inputs to the subsidence model. Figure 6 has been adapted with text noting the West Boundary and Gant Faults.

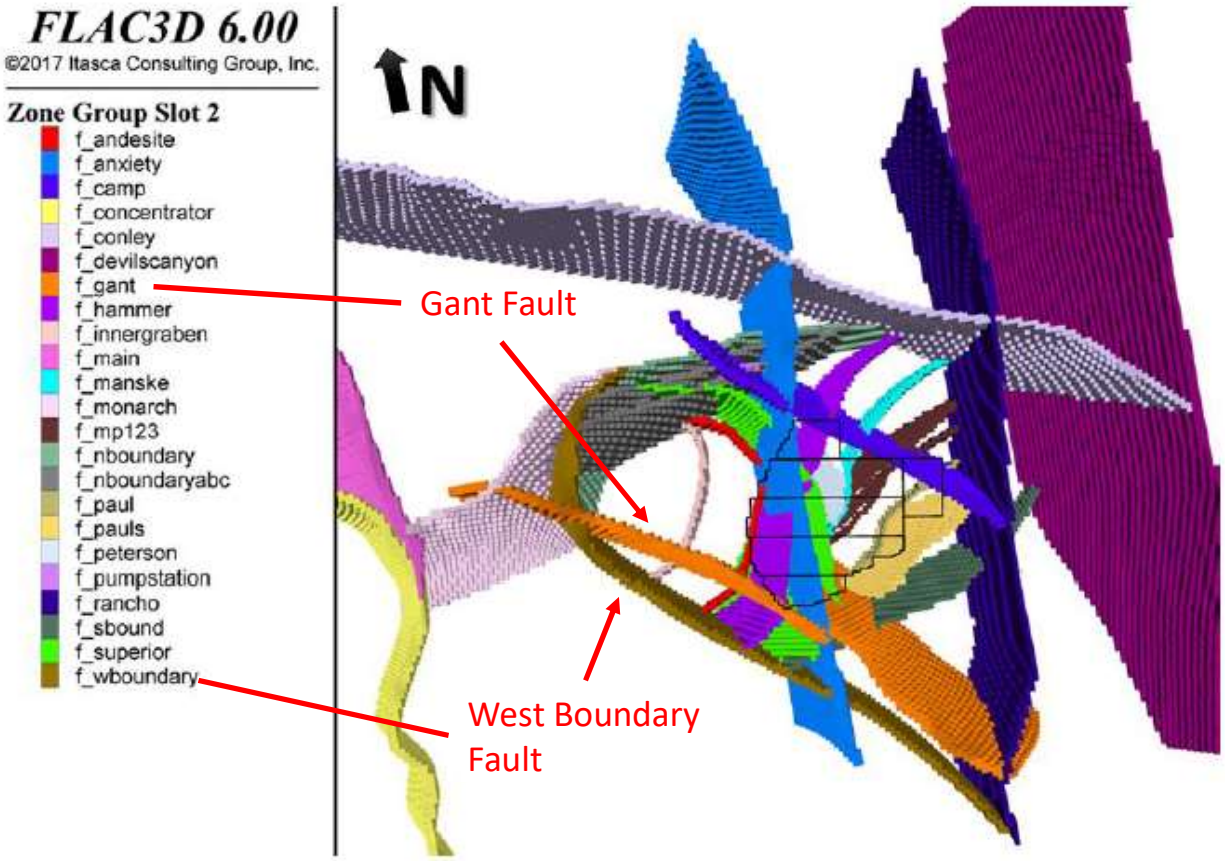


Figure 6 *FLAC3D implicit representation of the faults in the region of the Resolution Mine footprint.*

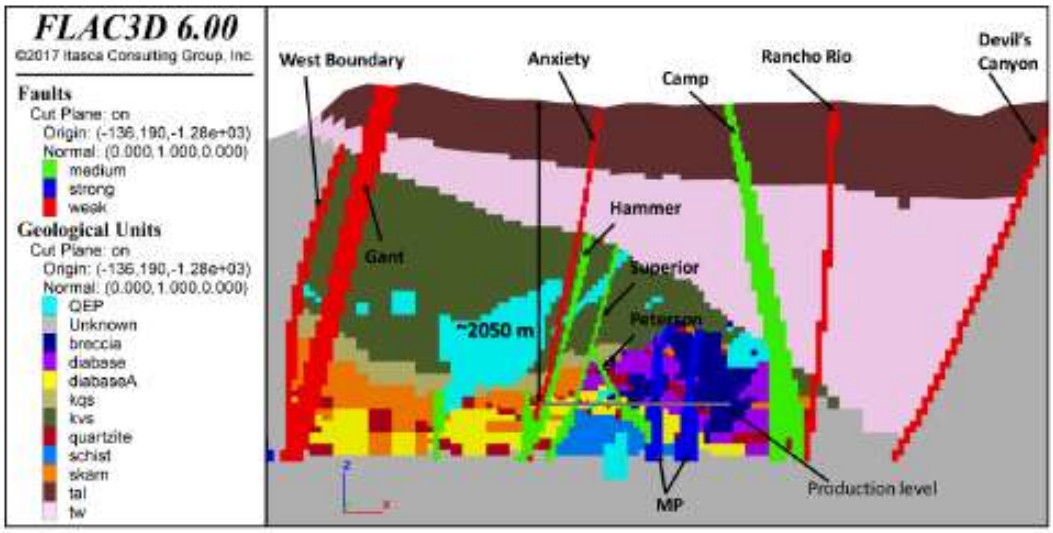


Figure 7 *Spatial distribution of lithology on an east-west cross-section looking north. The intersected faults are colored based on their qualitative ranking (medium, strong, and weak).*

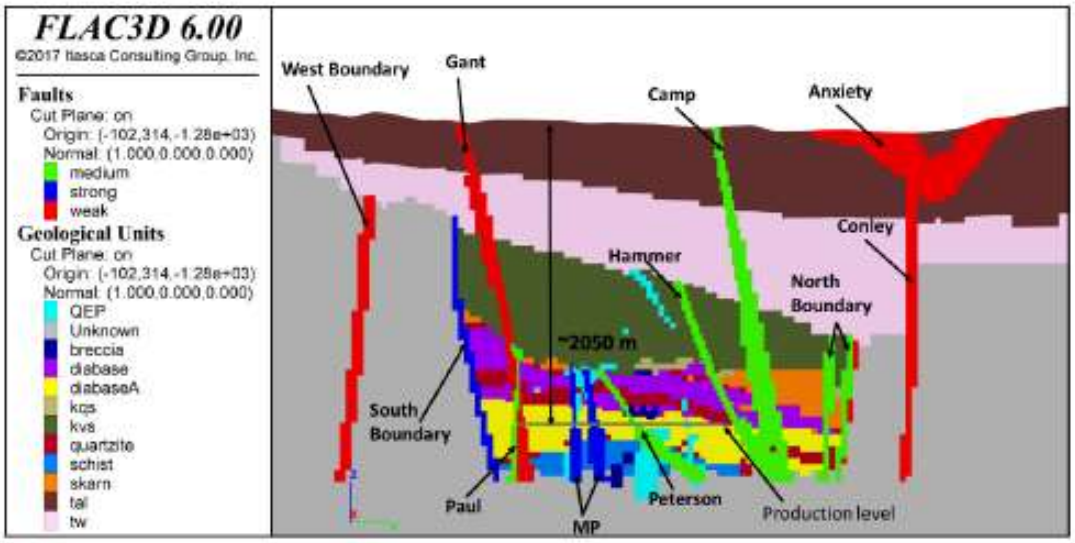


Figure 8 *Spatial distribution of lithology on north-south cross-section looking west. The intersected faults are colored based on their qualitative ranking (medium, strong, and weak).*