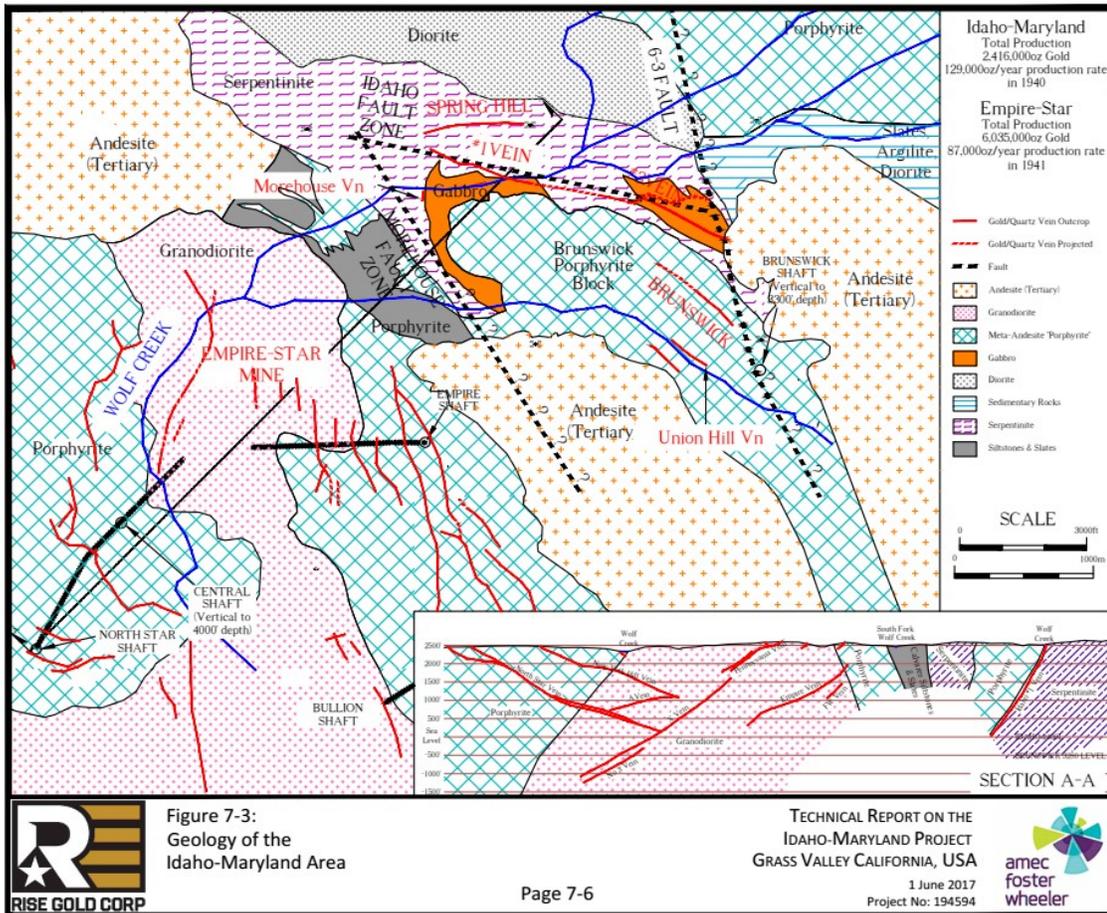




PO Box 972, Cedar Ridge, CA 95924-0972
 www.cea-nc.org / email: info@cea-nc.org

IM Mine Potential Seismic Hazard March 20 , 2022

The mine project is targeting potential ore bodies that are more or less bounded by the Morehouse fault, the 6-3 fault (Weimar), and the Idaho fault. Within this zone are also numerous lesser faults, which are not shown in this image from pg 7-6, [I-M Tech Report](#). For reference, note that Wolf Creek, South Fork Wolf Creek, and the Brunswick Shaft near the corner of Brunswick Rd. and East Bennett Rd. are shown below.

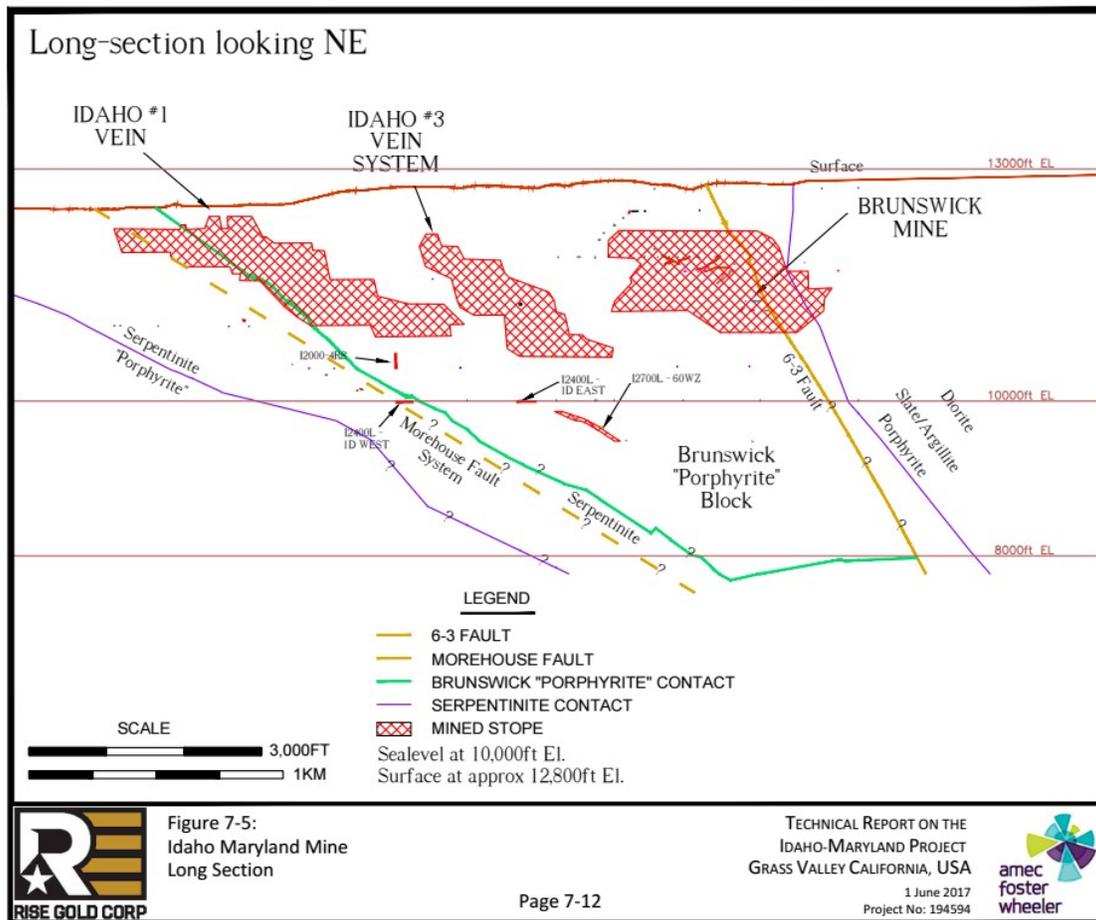


As reported in “DEIR appendix H.2_Brunswick Fault Zone MP.pdf” prepared by NV5 dated Jan 16, 2020, the faults in this area are designated as being in a Type C fault zone, with low seismicity and a low rate of recurrence. The report concludes that: “Fault rupture through the site, therefore, is not considered likely.” (DEIR H.2, p5)

However, no specific seismic study for the mine project was produced, and no further analysis was provided justifying the determination or assessing the potential of impacts from the proposed mining activities on seismicity or hazard risks.

Of note, mining may cause changes to the geologic fault zone stresses in the area. These changes may include localized significant decreases of total stable rock masses, degradation of load bearing capacity, reduced resistance to shear, and in some cases increased mass loading on or near fault lines.

For example, significant increases of localized bedrock loads will result from the disposal of mine waste. According to the plans, dewatering the flooded mine will initially offload about 3.4 million tons of water. Mining for the first 11 years will offload approximately 4 million tons. The surface at the Centennial site will receive about 1.6 million tons from this process, and the southeast portion of the Brunswick site will receive about 2.2 million tons or surface loading. Then, for about 65 years, another 24 million tons will be removed from the mine to be deposited elsewhere. In all, over 30 million tons will be removed from the subterranean mining area.



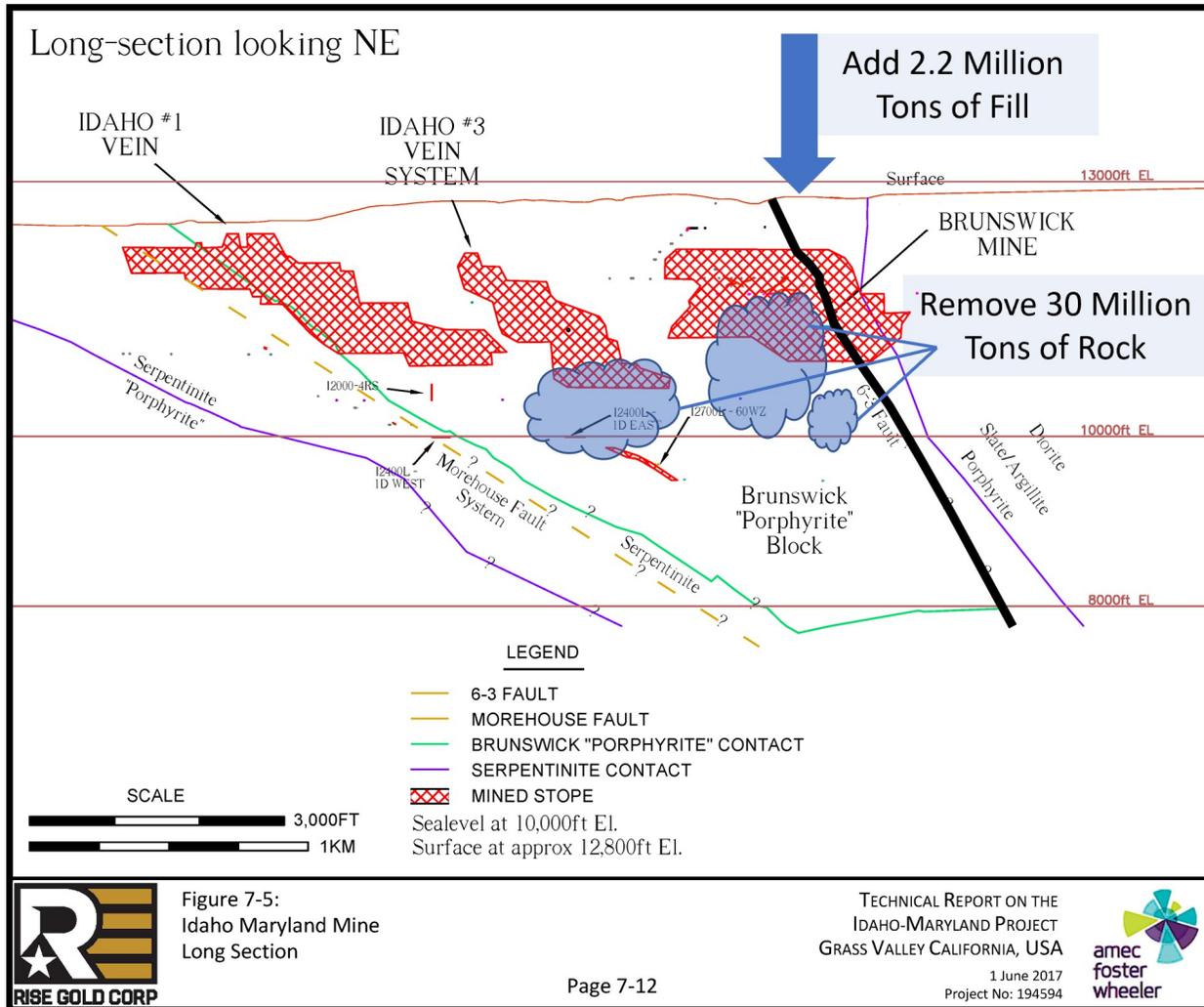
Particularly noteworthy is the potential for seismic activity on the 6-3 fault in the region of the proposed Brunswick mine waste surface dumping site. The 2.2 million ton mine waste pile loads up the reverse thrust block side of the fault that is over the nearby planned mining operations.

The above cross section diagram (Page 7-12, [I-M Tech Report](#)) shows the 6-3 Fault as a steep yellow line running at a 65 degree slope through the historic Brunswick Mine. Rise Gold has indicated that much of the mining will take place in the “Brunswick Block” located almost entirely to the east (left) of the 6-3 Fault. Using the information provided in the DEIR “Fault Zone MP” (Appendix F.2 p7) the 6-3 Fault is indicated by the red line overlaid on Sheet 1 of the DEIR Project Description, shown here. Notice the location of the mine waste pile, the flat-topped area to the right of the fault line and below (south) of the processing facilities, identified by the circled 8 on Sheet 1.



Throughout the 80 years of mining operations, expansion of mine works by tunneling and stoping will reduce the competency of the surrounding rock structure, vibrations from blasting will take place daily, and finally, at the end of mine operations, the mine will reflow, leading to a potential increase in the seismic activity due to the re-introduction of hydrostatic pressures.

This diagram shows the previous figure 7-5 cross section modified to show the approximate location of the 2.2 million tons of added fill on the right (east) side of the fault. The dewatering and removal of waste rock and ore will be mostly on the left (West) side of the fault.



A geological study of the seismic risks, including the risks from the proposed dewatering, mining, and mine waste dumping should be conducted and included in the DEIR addressing the following:

- How will the mining activities impact the seismicity of the area?
- Will the integrity of near surface historical and proposed mine works be impacted by loading?
- All buildings within the fault zones of the faults should be mapped in relation to the faults.
- An evaluation of the lesser faults as identified in the I-M Tech Report should be conducted.

/// calcs ///

[engineered fill: 1000 tons/day 20tons/truck x 50 trucks/day

5 years at centennial = 365,000tons x 5 = 1,825,000 tons or 1.8 million tons

6 years at brunswick = 365000 x 6 = 2,190,000 or 2.2 million tons

65 more years or 65 x 365,000 tons = 23,725,000, or 24 million tons.

Dewatering 2500 acre feet minewater. 2500Acft x43,560 cf/acft x 62.41 lbs/cf = 6,796,449,000 lbs = 3398224.5tons or 3.4 million tons]