

Based on the investigation results, we conclude the following:

1. Long-term groundwater pumping in excess of recharge (groundwater mining) is the cause of the land subsidence and earth fissures in Cedar Valley.
2. The maximum amount of land subsidence and earth fissure formation in Cedar Valley coincide with areas of significant groundwater-level decline and the presence of compressible fine-grained sediment in the subsurface.
3. If groundwater levels in Cedar Valley continue to decline at a rate of approximately 2 feet per year, average basin-wide subsidence will likely continue at a rate of 0.02 to 1.2 inches per year.
4. Continued subsidence will likely cause new fissures to form in the future.
5. The inventory of earth fissures in Cedar Valley is likely incomplete because fissures lacking offset or not enlarged by erosion typically exist as hairline cracks that are rarely visible on aerial photographs and are difficult to identify in the field.
6. Currently unrecognized or new earth fissures may damage existing and future infrastructure in Cedar Valley.
7. Continued southward growth of either the Enoch-graben-west or -east fissures may eventually impact fully developed neighborhoods in Enoch City.
8. Earth fissures could provide a direct path for contaminated surface water to reach the Cedar Valley aquifer, a principal source of potable water in Cedar Valley.
9. Managing basin-fill aquifers as a renewable resource and managing the hazards presented by land subsidence and earth-fissure formation require that subsiding areas and rates of subsidence within those areas (likely variable) be defined (technologies such as InSAR, LiDAR, and high-precision GPS/GNSS surveying are well suited to this task).
10. Site-specific hazard investigations are required for new development, and in some instances for existing development, in areas known or suspected to be subsiding. Recommended guidelines for conducting such investigations are included in appendix H of this report.