

COLORADO GEOLOGICAL SURVEY

1801 19th Street
Golden, Colorado 80401



Karen Berry
State Geologist

September 18, 2017

Chris Neubecker
Planning Manager
Community Development Department
75 South Frontage Road
Vail, CO 81657

Location:
S1/2 SE1/4 Sec. 2,
T5S, R80W of the 6th PM
39.6455, -106.3054

Subject: East Vail Rezoning Rock Fall Study Review
Eagle, CO; CGS Unique No. EA-18-0002

Dear Mr. Neubecker:

At your request, the Colorado Geological Survey (CGS) has reviewed geologic hazards for an approximately 23.3 acre parcel immediately north of the East Vail I-70 interchange. CGS understands that the applicant is requesting rezoning of the property, which is currently zoned as Two-Family Residential (R), into approximately 5.4 acres of Housing Zone District (H) in the western portion and approximately 17.9 acres of Natural Area Preservation District (NAP) in the eastern portion. For this review, CGS performed an independent desktop geologic hazard evaluation and reviewed the “East Vail Workforce Housing Parcel Rezoning Request” (Mauriello Planning Group, August 17, 2017) and “Rockfall Hazard Study, East Vail Parcel” (Cesare, Inc., June 19, 2017). CGS agrees with Cesare that rockfall, debris flow, avalanche, and an existing landslide are potential hazards to development on the subject property. In general, CGS strongly recommends avoiding residential development in high hazard areas as avoidance is the only way to ensure complete protection. However, based on the available information, CGS agrees that properly engineered, constructed, and maintained mitigation could reduce exposure of future structures in the proposed Housing Zone District (H) to the hazards described in the Cesare report. If the Town decides to approve the proposed rezoning, CGS recommends requiring additional hazard studies and completion of mitigation designs prior to plat approval. CGS has the following additional comments.

1) Rockfall Mitigation

CGS agrees that Cesare’s conceptual recommendations for rockfall catchment are appropriate for a project at the rezoning phase. If the Town approves rezoning, CGS recommends that the Town require completion of rockfall mitigation design including: calculations of anticipated impact forces and heights at the barrier, potential for any rocks to overtop the barrier, proposed barrier location on the property, barrier structural/geotechnical design criteria, and barrier inspection, maintenance, and repair manual prior to final plat approval to ensure that the proposed mitigation will provide adequate protection and can be maintained to ensure future performance. CGS requests to review any such additional hazard analysis and/or design report.

2) Existing Landslide

Any future site development must avoid cutting or re-grading near the toe or loading the middle or upper surfaces of this landslide to avoid reactivating the slide. Stability of old landslides involves extremely complex interactions and even with these precautions, there is no guarantee that the landslide will not reactivate or enlarge in the future. CGS agrees that the currently-proposed Natural Area Preservation District zoning of the

eastern portion of the site is prudent to avoid any future construction on or beneath the existing landslide.

3) Debris Flow Hazards

Based on our desktop review, CGS agrees with Cesare that the western portion of the site is exposed to potential debris flows, especially beneath the incised drainages. If the Town approves rezoning, CGS recommends that the Town require completion of a debris-flow hazard analysis and design of any necessary mitigation (including preparation of an inspection, maintenance, and repair manual) prior to final plat approval to ensure that the proposed mitigation will provide adequate protection and can be maintained to ensure future performance. CGS requests to review any such hazard analysis and/or design report.

4) Avalanche Hazard

If the Town approves rezoning, CGS recommends that the Town require completion of an avalanche hazard analysis and design of any necessary mitigation prior to final plat approval to ensure that the proposed mitigation will provide adequate protection and can be maintained to ensure future performance. CGS recommends that any such hazard analysis and/or design report be reviewed by the Colorado Avalanche Information Center.

5) Potentially Unstable Slopes

Based on our desktop review and the information presented in the Cesare report, the western portion of the site is underlain by potentially unstable slopes. If the Town approves rezoning, CGS recommends that the Town require an evaluation of slope stability for any proposed cuts, fills, and structural foundations, including those associated with proposed geologic-hazard mitigation structures prior to final plat approval. The evaluation should be performed by a licensed geotechnical engineer or qualified engineering geologist with experience evaluating slope stability and designing slope stabilization structures. The evaluation report should recommend any necessary construction precautions, foundation loading considerations, and/or required slope-stabilization measures.

Thank you for the opportunity to review and comment on this project. If you have questions, please contact me by phone at 303-384-2632 or e-mail kemccoy@mines.edu.

Sincerely,



Kevin McCoy
Engineering Geologist