

EP-24-0070 Crystal Park Site S-145 Site Plan – Barile Residence

SW¼ Section 18, T14S, R67W, 6th Meridian

38.8296, -104.9385

The referral documents included the Site Plan (LGA Studios, 1/29/2024), Geologic Hazard Study (Rocky Mountain Group (RMG), 5/3/2024), and Soils Report (A Better Soil Solution, 9/4/2023) for the proposed residence at 348 Spruce Road.

The site does not contain steep slopes, rockfall hazards, or mapped landslides, nor is it exposed to any geologic hazards that preclude the proposed residential structure. Based on the site plan showing existing grades, 12 to 24 percent slopes are descending towards the site from northwest to southeast, and 1041 hazard mapping describes these slopes as stable.

The site is underlain at variable depths by relatively loose material (commonly known as “Grus” or “Colluvium”) weathered from the underlying Pikes Peak Granite. Pikes Peak Granite is typically not problematic from a geotechnical or foundation performance perspective. However, the rock is fractured and weathered, sometimes extensively. Both of these rock quality characteristics can impact slope stability and erosion potential. Additionally, Grus is weaker than the bedrock and can be highly variable in depth and highly susceptible to erosion.

RMG’s characteristics of the geologic hazards and constraints, and A Better Soil Solutions’s recommendations are valid. Provided RMG’s and A Better Soil Solution’s recommendations are strictly adhered to, **CGS has no objection to the site plan approval**. CGS offers the following comments and recommendations during the planning and development of this site.

1. As previously stated, the bedrock at the site is the Pikes Peak Granite, forming outcrops upslope of the project site. The existing rock outcrops should be examined and monitored before and during construction. Any loose rocks should be removed during construction.
2. CGS agrees with RMG that (p. 6) “The structural design of the residence should consider its placement on the hillside and the additional surface pressures that could be generated by downslope creep and by retaining upslope materials,” and with their recommendation, “the foundation be designed with additional rigidity to help reduce the effect of potential lateral movement of subsurface soils.”
3. CGS recommends that all planned cuts exceeding *four feet* in height be evaluated for slope stability using proposed slope geometry and considering all foundation and proposed cuts that will affect the slope. The geotechnical engineer should be provided with the construction plans and grading information to verify the proposed slopes.
4. Retaining walls, building foundations, and upslope foundation walls that will function as retaining walls must be designed by a qualified geotechnical, structural, or civil engineer and include adequate behind-wall drainage.
5. The site plan indicates a leach field (septic location) is planned north of the proposed residence. Engineered septic systems are commonly used in the Crystal Park area due to the steep slopes and geology.

6. RMG states (p. 7), “care should be taken (both during construction and in the final grading of the lot) in redirecting surface drainage (and any resulting debris) around the structure.” Site drainage should be designed and constructed to prevent concentrated flows from being developed within the site. It is imperative that water is allowed to drain quickly and NOT pond anywhere within or near developed areas. CGS agrees with RMG that “The new drainage flow path should maintain a minimum 10-foot separation from the structure.” Proper maintenance and erosion protection of the slope face within the subject property is critical to the long-term structural integrity of the proposed structure.

Submitted 6/19/2024 by Amy Crandall, Engineering Geologist, Colorado Geological Survey (303-384-2632 or acrandall@mines.edu)

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