

# COLORADO GEOLOGICAL SURVEY

1801 Moly Road  
Golden, Colorado 80401



Karen Berry  
State Geologist

February 17, 2021

Madison Harris  
Town of Minturn  
Planner1@minturn.org

**Location:**  
SE¼ NE¼ Section 35  
T5S, R81W of the 6<sup>th</sup> P.M.  
39.5765, -106.4148

**Subject: Belden Place Planned Unit Development**  
**Town of Minturn, Eagle County, CO; CGS Unique No. EA-21-0010**

Dear Ms. Harris:

Colorado Geological Survey has reviewed the Belden Place Planned Unit Development (PUD) referral. I understand the applicant proposes a 27-lot residential development of up to 42 dwelling units within 2.7 acres in Minturn. The site is adjacent to 1251 Main Street and bordered by Highway 24 on the north. With this referral, CGS received a request for review (Email dated February 1, 2021); Civil Plans (Timberline Engineering, January 15, 2021); Final Plat (Slagle Survey Services, January 18, 2021); Subsoil Study for Foundation Design (Kumar & Associates, Inc. (Kumar), September 18, 2019); Transportation Impact Study (TIS) (McDowell Engineering, LLC, October 28, 2020); Environmental Impact Report (Wynn Ecological Consulting, LLC, November 10, 2020); Drainage Report (Timberline Engineering, November 9, 2020); and other documents. The Kumar report references the Minor's Base Camp Subdivision, which (as noted on page 4 of the TIS report) was the previously planned development.

The site does not contain steep slopes or flood hazards, and landslides are not mapped within the project site. According to Eagle County 1041 geologic hazard mapping, the project site is "stable," and the existing slopes to the south of the site are "gentle to moderate." Kumar's report contains a valid description of subsurface conditions and soil engineering properties and makes appropriate recommendations for addressing the site's geotechnical constraints. However, CGS has the following comments.

**Below-grade level and shallow groundwater.** As noted on page 3 of Kumar's report, "Although free water was not encountered during our exploration, it has been our experience in mountainous areas that local perched groundwater can develop during times of heavy precipitation or seasonal runoff." As indicated on page 7 of the Drainage Report and sheet C.110 of the Civil Plans, the current PUD design includes a below-grade parking area at the south end of the site underneath the proposed triplexes. In a general statement within their report, Kumar recommends (page 6) that "below-grade construction, such as retaining walls, crawlspace and basement areas, be protected from wetting and hydrostatic pressure buildup by an underdrain system." CGS agrees with Kumar and **recommends that the town require groundwater monitoring/observation.** The piezometers should be monitored weekly during and shortly after the snowmelt period and immediately after any storms. A qualified hydrogeologist should review the groundwater information to determine post-storm groundwater levels, estimate groundwater flows, and design surface and subsurface drainage.

**Undocumented fill.** As noted on page 2, Kumar encountered approximately 1 to 5½ feet of undocumented sand and gravel fill materials in the borings. CGS agrees with Kumar on page 3 of their report, "The undocumented sand and gravel fill is unsuitable for shallow foundation support in its current condition" and "All existing foundations, slabs-on-grade, asphalt debris and undocumented fill should be removed from the proposed building footprint prior to construction." CGS also agrees with Kumar's recommendation (page 6), "All undocumented fill underlying proposed slabs-on-grade should be removed and replaced with structure fill..."

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The project team should incorporate Kumar's recommendations regarding the design recommendations (pages 3 through 6), underdrain system (page 6), site grading (page 7), and surface drainage (page 7) in project planning and design. As noted on page 9 of Kumar's report, "we should provide continued consultation and field services during construction to review and monitor the implementation of our recommendations, and to verify that the recommendations have been appropriately interpreted." **CGS agrees with Kumar and recommends that Kumar review the currently proposed PUD and provide documentation confirming the validity of, or modifying their recommendations, specifically regarding the underground parking structure.**

Thank you for the opportunity to review and comment on this project. If you have questions or require further review, please call me at 303-384-2632 or email [acrandall@mines.edu](mailto:acrandall@mines.edu).

Sincerely,

A handwritten signature in black ink that reads "Amy Crandall". The signature is written in a cursive, flowing style.

Amy Crandall, P.E.  
Engineering Geologist