

COLORADO GEOLOGICAL SURVEY

1801 Moly Road
Golden, Colorado 80401



Matthew L. Morgan
State Geologist and
Director

December 10, 2024

Danny Klibaner
Elbert County
Community Development Services
Danny.Klibaner@elbertcounty-co.gov

Location:
SE Section 16,
T7S, R64W, 6th P.M.
39.4392, -104.5682

Subject: Phantom Creek Ranch Final Plat
39010 County Road 21, Elizabeth, Elbert County, CO; CGS Unique No. EB-23-0006

Dear Danny:

The Colorado Geological Survey has reviewed the Phantom Creek Ranch Final Plat referral. The applicant proposes 7 lots of 10+ acres on 72 acres of land located at the southwest corner of the property at 39622 County Road 21.

The site is outside the FEMA floodplain and is not exposed to any geologic hazards that would preclude the proposed development. According to the National Wetland Inventory, Phantom Creek traverses the site and is designated as a riverine habitat and freshwater emergent wetland. Potential geotechnical constraints associated with the site include shallow groundwater and wet, low-density, low-strength soils. **CGS has no objection to the approval of the final plat, but we offer advisory comments regarding the proposed development.**

The site is mapped as alluvium two and artificial fill, underlain by the Dawson Arkose (Morgan, M. L., 2014, Geologic Map of the Cabin Gulch Quadrangle, Elbert County, Colorado, OF-14-01). Alluvium consists of silt, sand, gravel, minor clay, and sparse boulders in stream terrace deposits with occasional flooding. Clay minerals and clayey pockets within the surficial soils may exhibit structurally damaging volume changes (shrink-swell) in response to changes in water content. These soils are underlain by sandstone and claystone of the Dawson Formation at an unknown depth. If claystone layers capable of producing high swell pressures are present within a few feet of foundation-bearing elevations, they can cause structural damage if not properly characterized and mitigated.

Lot-specific geotechnical investigations consisting of drilling, sampling, lab testing, and analysis are recommended at building permit to: determine the thickness and extent to which the soils are subject to collapse under loading and/or wetting; determine the thickness and extent of expansive soils and bedrock; characterize soil and bedrock engineering properties such as density, strength, water content, swell/consolidation potential, and bearing capacity; determine depths to groundwater, bedrock, and any impermeable layers that might lead to the development of a perched water condition; verify the feasibility of full-depth basements, if planned; and provide earthwork, foundation, floor system, subsurface drainage, and pavement recommendations for design purposes. CGS recommends a non-buildable setback from the crest of all slopes (steeper than 25 degrees) associated with Phantom Creek and the disturbed areas (Lot 7) to reduce risks associated with flooding, erosion, and local slope failures.

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 e-mail acrandall@mines.edu.

Sincerely, 

Amy Crandall, P.E.
Engineering Geologist