

Architectural
Structural
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Materials Testing
Forensic
Civil/Planning

Job No. 180213

June 29, 2023

Robert Williams
16975 Falcon Highway
Peyton, CO 80831

Re: Response to CGS Comments
16975 Falcon Highway
El Paso County, Colorado

Dear Client:

RMG – Rocky Mountain Group (RMG) prepared the *Soils and Geology Study* (RMG Job No. 180213, last dated June 28, 2023) for the proposed development comprising 7 single-family residential lots located approximately 2 miles east of the intersection of Curtis Road and Falcon Highway. The report was reportedly reviewed by personnel of the Colorado Geological Survey (CGS). The CGS comments (dated January 19, 2020) were reviewed on EDARP.

The purpose of this letter is to provide RMG's response to the CGS comments. For clarity and ease of review we have included the CGS comments below followed by our response to that comment.

CGS Comment:

The Preliminary Plan (Kimley Horn, printed 12.21.21) includes a good note about potential geologic impacts on development. It would be prudent for the county to require an additional note on the plan that basements or crawlspaces are not allowed without data demonstrating adequate separation (approximately 3-5 feet) can be maintained from fluctuating groundwater levels. An unconfined aquifer was encountered in the subsurface investigation. RMG's report has gathered data at a specific time (in this case March, considered a seasonally low point in groundwater levels). This data is a "snapshot" of groundwater depth. No data is presented on the extent of groundwater fluctuation either seasonally or from year to year. Basements should not be allowed without groundwater monitoring throughout a 12-month period that clearly indicates adequate separation (approximately 3-5 feet) can be maintained from fluctuating groundwater levels. Impacts to the measured fluctuating groundwater levels from variations in yearly precipitation rates must be included in this analysis. Prior to approval of basement or other habitable below-grade construction site-specific investigations must provide data on the fluctuation of groundwater and how the variation of yearly precipitation rates may impact this fluctuation. All RMG's recommendations, and specifically ones concerning drains, should be strictly adhered to.

RMG Response:

RMG has reviewed the groundwater data from our previous borings, the relative elevations of the proposed building locations, and the recommendations presented in the CGS Comment above.

Crawlspace Feasibility:

We disagree with a requirement for crawlspace feasibility. Mitigation of groundwater is most readily accomplished by avoidance. A minimum 3-foot separation is generally recommended between the bottom of the foundation components/floor slabs and the estimated seasonal high-water table levels. However, if the recommended separation cannot be readily achieved, the groundwater conditions can be mitigated by implementing appropriate planning, engineering, and local construction practices. It is our opinion that crawlspace construction is feasible on all proposed lots provided that suitable mitigation measures are implemented, including (but not limited to) careful selection of the location and elevation of the proposed structures, installation of additional drainage systems and/or ground stabilization measures, etc.

Basement Feasibility:

Based on our review, we concur that the feasibility of basement construction should be evaluated on some of the included lots. Our recommendations are as follows:

Proposed Lots 1, 5, and 6:

If basements are proposed on lots 1, 5, and/or 6, basement construction should be restricted on lots 1, 5, and 6 *except* where one of the following conditions apply:

- A year-long groundwater monitoring study is undertaken, and the results indicate that groundwater is sufficiently deep to allow basement construction;
- The proposed construction will result in at least 15 feet of separation between the proposed ground surface and the groundwater elevation. Where groundwater encroaches shallower than 15 feet, the ground surface may be modified (raised) to increase the separation to meet these criteria.

If groundwater is encountered at the time of the site-specific subsurface soil investigations within 4 to 6 feet of the proposed basement slab elevation, an underslab drain should be considered in addition to the perimeter drain. It must be understood that subsurface drains are designed to intercept some types of subsurface moisture and not others. Therefore, the drain(s) could operate properly and not mitigate all moisture problems relating to foundation performance or moisture intrusion into the basement area.

Proposed Lots 2, 4, and 7:

Based on the currently proposed building locations on lots 2, 4, and 7, it is our opinion that the proposed structures will have adequate separation from groundwater. We do not recommend that a basement feasibility study be required on lots 2, 4, or 7 provided that the

future structures are located in the eastern 1/2 of lots 2 and 4 or the eastern 2/3 of lot 7. If basement construction is proposed on the western portions of these three lots in the future, we recommend that those structures be subject to the same feasibility evaluations as recommended above for lots 1, 5, and 6.

Proposed Lot 3:

New construction is not currently proposed on lot 3. If basement construction is proposed on lot 3 in the future, we recommend that those structures be subject to the same feasibility evaluations as recommended above for lots 1, 5, and 6.

I hope this provides the information you have requested. Should you have questions, please feel free to contact our office.

Cordially,

RMG – Rocky Mountain Group



Kelli Zigler
Project Geologist

Reviewed by,

RMG – Rocky Mountain Group

Tony Munger, P.E.
Sr. Geotechnical Project Manager

