

Review Comments by the Colorado Geological Survey – 5/6/2024

CGS Unique No.: EP-24-0047_2 Retreat at Prairie Ridge Preliminary Plan Phase 1 (AKA Jaynes)

Location: Portions of SW ¼ Section 28 and NW ¼ Section 33, T12S, R65W, 6th P.M.

Lat/Long: 38.9736, -104.6738

EP File Number: SP239, 217 SF lots and 6 rural residential lots on 108.89 acres for future residential development

The available referral documents include a Soil and Geology Study and Wastewater Study, Jaynes Property – Preliminary Plan (Entech Engineering, Job No. 212381, Revised April 2, 2024), Preliminary Plan (Classic Consulting, April 1, 2024), Letter of Intent (N.E.S., Inc., April 2024), and other documents. CGS provided comments on January 25, 2024, some of which are repeated herein.

1. Entech states (page 13), “Cuts of up to 30 feet are anticipated in the north central portion of the site.” Groundwater was encountered at 6 to 28 feet below grade during drilling, and Entech observed areas of ponded water in some locations. Also, bedrock was encountered in the test borings at depths of 1 to 9 feet. These conditions will significantly affect the excavation/grading operations at this site. The shallow groundwater conditions likely preclude the construction of below-grade levels for this development.
2. Test Boring 4, P2, P3, and P4 show groundwater at depths of 6.5 to 11.5 feet below grade. These areas are depicted as TKd (Dawson Formation) in Figure 8 of Entech’s report and Sheet 28 of the preliminary plan. These areas also contain potentially seasonally shallow groundwater (psw) or seasonally wet area (sw) and should be updated.
3. CGS appreciates Entech's installation of monitoring wells within the site. Groundwater depths between 6.5 to 30 feet were recorded in August and October 2023 and February 2024. It is crucial that these groundwater elevations continue to be measured during Spring/Summer/Fall 2024 and after early grading operations. This is necessary to determine the extent of shallow groundwater impacts on the overall development, as mandated by code.
4. We agree with Entech (page 11 of their report) that “Foundations should be a minimum of 3 feet above the lowest foundation/building grade and the maximum anticipated groundwater level.” If the minimum separation cannot be achieved (as determined from the continued groundwater monitoring/observation program) and mitigation measures are not possible (such as raising site grades well above maximum groundwater elevations based on a minimum yearlong monitoring program), then **NO basements** or other below-grade spaces (crawlspaces, walkouts, etc.) should be permitted within Prairie Ridge Filing No. 1. **CGS recommends that the preliminary plans include a statement indicating “no basements or other below-grade spaces allowed” or mitigation measures, such as raising the site grades be incorporated.**
5. Note 14 of the preliminary plan states, “In areas of shallow groundwater: Due to shallow groundwater in the area, all foundations shall incorporate an underground drainage system.” Plans regarding an underground drainage system have not been provided. It has been our experience that these systems have issues due to individual connections and lack of a gravity discharge to a daylight outfall. An underdrain system should be allowed **ONLY** if it can gravity discharge to a daylight outfall. Additionally, as stated previously, significant cuts are planned. CGS recommends that the underdrain system be designed during the preliminary plan stage. Individual foundation perimeter drains are intended to handle small amounts of intermittent, perched water, and **CANNOT** be used to mitigate persistent shallow groundwater conditions.
6. Two drainages exist within the project area that are designated as existing non-jurisdictional wetlands per the National Wetlands Inventory (U.S. Fish and Wildlife Service, National Standards and Support Team, wetlands_team@fws.gov) and the drainage report. **CGS recommends that the existing channel alignments be further evaluated** to determine the effect of these systems (i.e., groundwater conditions, differential settlement, etc.) on future development. Since water will tend to convert back to its natural pathway, drain systems may be necessary within these areas, i.e., piped, burrito drain, etc. Per the letter of intent (page 10), “Absorption fields must also be located a minimum of 50 feet from any drainages, floodplains or ponded areas and 25 feet from dry gulches.”