

EP-24-0010 Owl Marketplace Filing 1
NE¼ SE¼ Section 1, T13S, R65W, 6th Meridian
39.9459, -104.6082
File Number: VR2321
Final plat to create one residential lot into five (5) commercial lots.

With this referral, we received a request to provide Review Comments (Email dated January 8, 2024); Construction Drawings (Drexel, Barrell & CO., January 3, 2024); Final Drainage Report (Drexel, Barrell & CO., January 2024); Final Plat (Drexel, Barrell & CO., May 30 and October 20, 2023); and other documents. The Soils and Geology Study (Entech Engineering, Inc., June 22, 2023) was previously reviewed; no update to this report was provided.

Our previous comments and recommendations dated 11/21/2023 remain valid and are generally repeated herein.

1. Entech's Figure 6 shows geologic hazards and constraints within certain areas of the property. However, only Tbs (Black Squirrel Formation) is shown in the eastern portion of the lots. Based on our review of Entech's boring logs, seasonal shallow water and expansive soils should also be included in this area. The legend should be updated to include missing symbols (sw, fp, and w) and the correct description of Tbs (Black Squirrel, not Pierre Shale). Additionally, a geologic hazard note has been added to the final plat, however, a generic response without reference to Entech's geology study was provided. CGS recommends that Figure 6 be updated and a note added to the final plat listing the geologic hazards and constraints, along with mitigation measures.
2. Groundwater was encountered in Entech's borings at depths of 10 to 16.5 feet during drilling operations and at depths of 2.5 and 6.25 feet when measured following drilling. Due to the shallow groundwater conditions at this site, **no basements should be allowed.**
3. CGS agrees with Entech (page 6): "Fluctuation in groundwater conditions may occur due to variations in rainfall and other factors not readily apparent at this time," and with their recommendation (page 8), "**A minimum separation of 3 feet between foundation components and groundwater levels are recommended.**" Site grades may require filling to accommodate this recommendation. CGS recommends that TB-1 and TB-4 continue to be monitored/measured through Winter/Spring 2024.
4. Currently, the geologic hazard note on the final plat states, "Due to high groundwater in the area, all foundations shall incorporate an underground drainage system." An underdrain system should be allowed ONLY if it can gravity discharge to a daylight outfall. **CGS recommends that the plans show the underground drainage system.** Individual foundation perimeter drains are intended to handle small amounts of intermittent, perched water and may NOT be used to mitigate persistent shallow groundwater conditions.
5. The FEMA floodplain (Zone A) is associated with a large majority of the site. Based on the referral documents, a 10' x 6' box culvert will be installed to reroute the drainage around the northern and western sides of the site. Even so, any setbacks from the approximate FEMA floodplain should be included in the final plat.
6. The building envelopes and their location in relation to the existing drainage were not provided in the plans. Entech states (page 9), "*it is anticipated that the shallow water areas will be mitigated with site grading and the installation of the box culvert, however, additional site investigation should be conducted following the installation of the box culvert and prior to construction on the new lots.*" CGS has concerns with future improvements constructed over the existing drainage, even following grading operations, as this natural drainage can be an area where water will continue to migrate. CGS recommends that if lots are planned (or allowed) within/near the existing drainage (after rerouting and site grading occurs), these areas be further evaluated during site-specific geotechnical investigations to determine the impact (i.e., groundwater conditions, differential settlement, etc.) on future development. It would be prudent to install a drain system within the existing drainage prior to grading operations.
7. Note 28 of the Construction Drawings references a report prepared by Ground Engineering. This note should be updated to Entech's soil and geology report for this site.

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