

Science Central Geotechnical Site Investigation Problem Statement

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Science Central is requesting our senior design group to perform a geotechnical site investigation on a section of land to the east of the main building. The majority of this space is currently unused except for a garden area located near the south section of the plot. Previously, the considered area was a cooling reservoir for the plant, which was filled in later around 2009 according to historic aerial imagery of the area taken from available Allen County GIS. Science Central is seeking further information on the buildability of the site for future development. Preliminary concepts for the use of this space include a gravel parking lot, pavilion, and/or a single-story classroom.

The design for the pavilion, gravel parking lot, and/or classroom had a specified boundary behind Science Central, as shown in Figure 1. The green area patch behind Science Central has a boundary within the fence limit. There was an existing pipe as well as a beehive. These boundaries are crucial for determining the drill spots to perform soil analysis.

The feasibility of any proposed construction will depend on the subsurface conditions at the project site. Variations in soil stratigraphy, soil type, moisture conditions, groundwater, and relevant engineering properties may affect the suitability of different portions of the site for the proposed development. The preliminary investigation will evaluate the subsurface conditions at the selected boring locations. The findings from the six boring locations will be used to identify potential geotechnical considerations associated with the proposed site.

There are a variety of limitations and constraints unique to this project for Science Central. Our prior knowledge of the soil is limited to the majority of the area to be filled in with undocumented fill from an unknown location. Our data will also be constrained to the six boring locations we have chosen to remove and inspect. However, utility clearance must be obtained prior to the beginning of any subsurface work performed. All drilling/sampling site locations must be cleared for any utilities that may be underneath the surface of each drilling/sampling site location. The drill will bore only 10 feet instead of 25 feet. Because of this limitation, this will be a preliminary geotechnical assessment instead of a complete foundation design recommendation.

The project deliverables will include a geotechnical desktop study, documentation and laboratory characterization of soils obtained from the six boring locations, a preliminary assessment of subsurface conditions, and recommendations regarding the feasibility and potential layout of the proposed site uses. Available geological and geotechnical information, including USGS and other relevant published data, will be compared with the conditions observed during the field investigation. The findings, limitations, and recommendations will be presented in a final technical report. A conceptual CAD layout showing potential site uses will also be developed, and the overall findings and recommendations will be summarized in a final

presentation to Science Central. Where the available data are insufficient to support a recommendation, additional investigation or analysis will be identified as a recommended next step.



Figure 1. An image of the green patch, marked off by the yellow border, for a proposed pavilion and parking lot.