AGEC
Applied GeoTech

April 15, 2016

Big Canyon Homes
1925 SW Hoytsville Road
Wanship, Utah 84017

Attention: Paul Berman
EMAIL: paul@bigcanyonhomesinc.com

Subject: Geologic Hazard Evaluation
Proposed Davis Residence
3507 Red Hawk Circle
Eden, Utah
Project No. 1160291

Gentlemen:

Applied Geotechnical Engineering Consultants, Inc. (AGEC) was requested to perform a geologic hazards evaluation for the proposed Davis residence to be constructed at 3507 Red Hawk Circle in Eden, Utah.

1.0 PURPOSE AND SCOPE OF INVESTIGATION

This study was performed to identify potential geologic hazards that may affect the proposed residence to be constructed on the lot. The study includes a review of aerial photographs, geologic literature and Lidar data for the area and site reconnaissance. The study was performed in general accordance with our proposal dated April 8, 2016.

2.0 SITE CONDITIONS

At the time of our site visit on April 13, 2016, there were no permanent structures or pavement on the site. The site consists of an undeveloped residential lot.

The ground surface at the site slopes gently down toward the west with a slope of approximately 8 horizontal to 1 vertical and flatter. The topography at the site is presented on Figure 2.

Vegetation at the site consists of grass, weeds and brush.

The east side of the property is bordered by Red Hawk Circle, which is a two-lane, asphalt-paved road in good condition. The south edge of the property is bordered by Porcupine Ridge

Drive, a two-lane, asphalt-paved road in good condition. There are undeveloped residential lots to the north and west of the property.

3.0 PROPOSED CONSTRUCTION

We understand that a single-family residential house is planned to be constructed at the approximate location indicated on Figure 2. We anticipate the residence will be a one to two-story, wood-frame structure with a basement.

4.0 GEOLOGIC SETTING

Aerial photographs used in the geologic review were downloaded from the Utah Geological Survey website and have Photograph Nos. ELK-2-205 and 206 with a date of June 26, 1963 and Photograph Nos. AAJ-2B-46 and 47 with a date of August 10, 1946. The Lidar data was obtained from the Utah Geological Survey. Geologic maps reviewed for the study are Sorensen and Crittenden (1979), Coogan and King (2000), Elliott and Harty (2010), King and others (2014) and the Utah Fault and Fold database available at the Utah Geological Survey website.

The geology map for the area from King and others (2014) is presented on Figure 1. The geologic unit mapped for the area of the proposed residence consists of older alluvial-fan deposits and the southwest corner is mapped to consist of gravel or potentially old landslide deposits. The geologic map by Sorensen and Crittenden (1969) shows the site to be underlain by colluvium and slope wash with a Holocene age. This map shows a fault just north of the site. The Coogan and King (2000) geologic map shows the area underlain by alluvium and colluvium of Quaternary age. This unit is described to contain mass movement deposits. The map shows a fault down to the southwest approximately 1,500 feet to the northeast of the site. The Elliott and Harty (2010) landslide map shows the site and surrounding areas as landslide deposits. The King and others (2014) geologic map, which is a map in progress and currently has no legend, shows the site to be underlain as Qaf3?, which would be older alluvial-fan deposits of Quaternary age, for the area proposed for the building and most of the site. The approximate southwest one-third of the property is mapped as Qmso? (QTg?) with a note stating, "like Tcg" (see attached figure). The mapping would suggest that the southwest portion of the property is underlain by potential landslide deposits. The map shows a fault approximately 1,760 feet to the northeast of the site and several lineations in the area with the closest located approximately 185 feet to the south. The map shows potential back-tilt features approximately 210 feet to the southwest of the property. We anticipate that King and others (2014) considered some of the back-tilt features and the lineations potentially related to faulting in the area.

5.0 GEOLOGIC HAZARDS

Geologic hazards considered for this study are surface fault rupture, seismicity, landslide liquefaction, debris flow, rockfall and avalanche.

5.1 SURFACE-FAULT-RUPTURE AND SEISMICITY

Faults and potential fault related lineations and back-tilt features have been mapped in the area. The Utah Geological Survey Fault and Fold database does not show faults in this area to be active. Thus, a fault study would not be needed at the site. The closest fault to the site considered active is the Wasatch fault located approximately 6½ miles to the west (Black and others, 2003). There are no active faults mapped to extend through the site.

The property is located in the Intermountain seismic zone, which consists of an area of relatively high historical seismic activity. The largest seismic ground shaking is expected to originate from the Wasatch fault zone. The Wasatch fault zone is considered capable of producing earthquakes on the order of 7 to 7.5 magnitude and can result in significant seismic ground shaking at this property. Mapping by the U.S. Geological Survey indicates that a peak ground acceleration of 0.39g would have a 2 percent probability of being exceeded in a 50-year time period (IBC, 2012).

5.2 LANDSLIDE

Most geologic maps for the site do not show landslide deposits on the property. However, the geologic map in progress by King and others (2014) shows the southwest portion of the property to be potentially underlain by old landslide deposits. No geomorphic features consistent with landslides were found for the site based on review of aerial photographs and Lidar data. The ground surface in this area is sufficiently flat such that in our professional opinion, landslide is not a hazard at the site.

5.3 LIQUEFACTION

The subsurface soil at the site is expected to consist of sand and gravel overlying bedrock with a depth to groundwater greater than 50 feet. It is our professional opinion that liquefaction is not a hazard at the site.

5.4 DEBRIS FLOW

The site is sufficiently distant from debris flow sources such that debris flow is not a hazard at this site.

5.5 ROCKFALL

There are no sources of rock and no slopes of sufficient gradient to result in rockfall events on this property.

5.6 AVALANCHE

The site is not located in a known avalanche hazard zone. There are no potential sources for avalanche near the site.

6.0 CONCLUSION

The site is suitable for the proposed residence at the location shown on Figure 2 from a geologic hazard perspective. Seismic ground shaking is the primary geologic hazard to consider in development of the site. This hazard is mitigated through structural design of the building to lower the risk to human life and damage to property to an acceptable level as set forth in the International Building Code. There is no evidence that landslide, surface-fault-rupture, liquefaction, debris-flow, rockfall and avalanche will affect the proposed residence.

7.0 LIMITATIONS

This report has been prepared in accordance with generally accepted geologic engineering practices in the area for the use of the client. The findings and conclusions included in this report are based on conditions observed at the time of our site visit, review of geologic literature, aerial photographs, Lidar data and our experience in the area. Variations in the geologic conditions may not become evident until additional exploration or excavation is conducted. If geologic conditions are found to be significantly different from those described above, we should be notified to reevaluate the recommendations given.

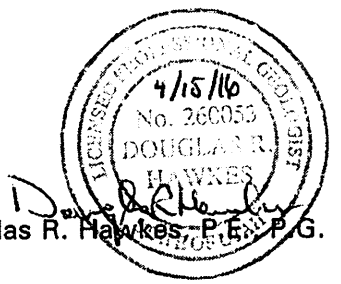
8.0 PREPARER QUALIFICATIONS

The geologist/engineer who prepared this report is a licensed geologist and engineer in the State of Utah and meets the minimum requirements of the Weber County geologic hazards ordinance for performing this study.

If you have questions or if we can be of further service, please call.

Sincerely,

APPLIED GEOTECHNICAL ENGINEERING CONSULTANTS, INC.



Douglas R. Hawkes, P.E., P.G.

Reviewed by JEN, P.E.
DRH/rs
Enclosures

References:

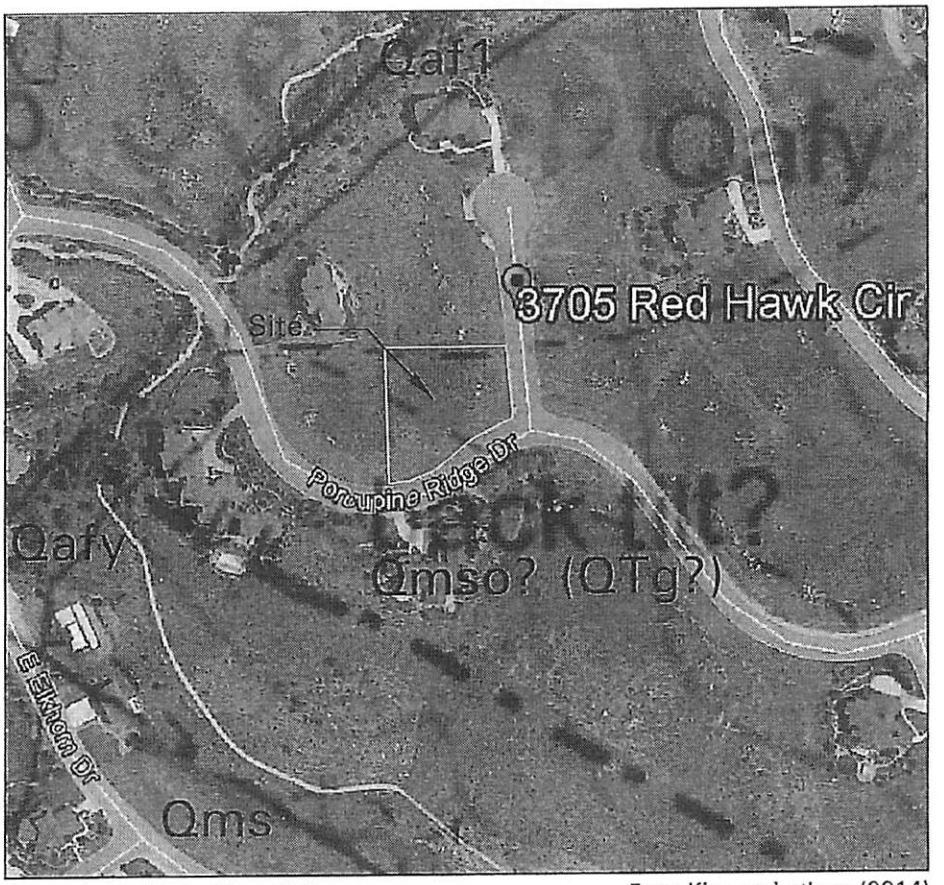
Coogan, J.C. and King, J.K.,2000; Progress report geologic map of the Ogden 30' X 60' quadrangle, Utah and Wyoming, Utah Geological Survey Open-file Map 380.

Elliott, A.H. and Harty, K.M., 2010; Landslide maps of Utah, Ogden 30' X 60' quadrangle, Utah Geological Survey Map 246DM, Plate 6.

King, J.K., McDonald, G.N. and Coogan, J.C., 2014; Progress report geologic map of the Huntsville quadrangle, Weber and Cache Counties, Utah, Utah Geological Survey map in progress.

Sorensen, M.L. and Crittenden, M.D.,Jr., 1979; Geologic map of the Huntsville quadrangle, Weber and Cache Counties, Utah, US Geological Survey Map GQ-1503.

Utah Geological Survey, 2016; Utah fault and fold database accessed on March 18, 2016 at geology.utah.gov/resources/data-databases/qfaults/.



Approximate Scale 1" = 255'

From King and others (2014)

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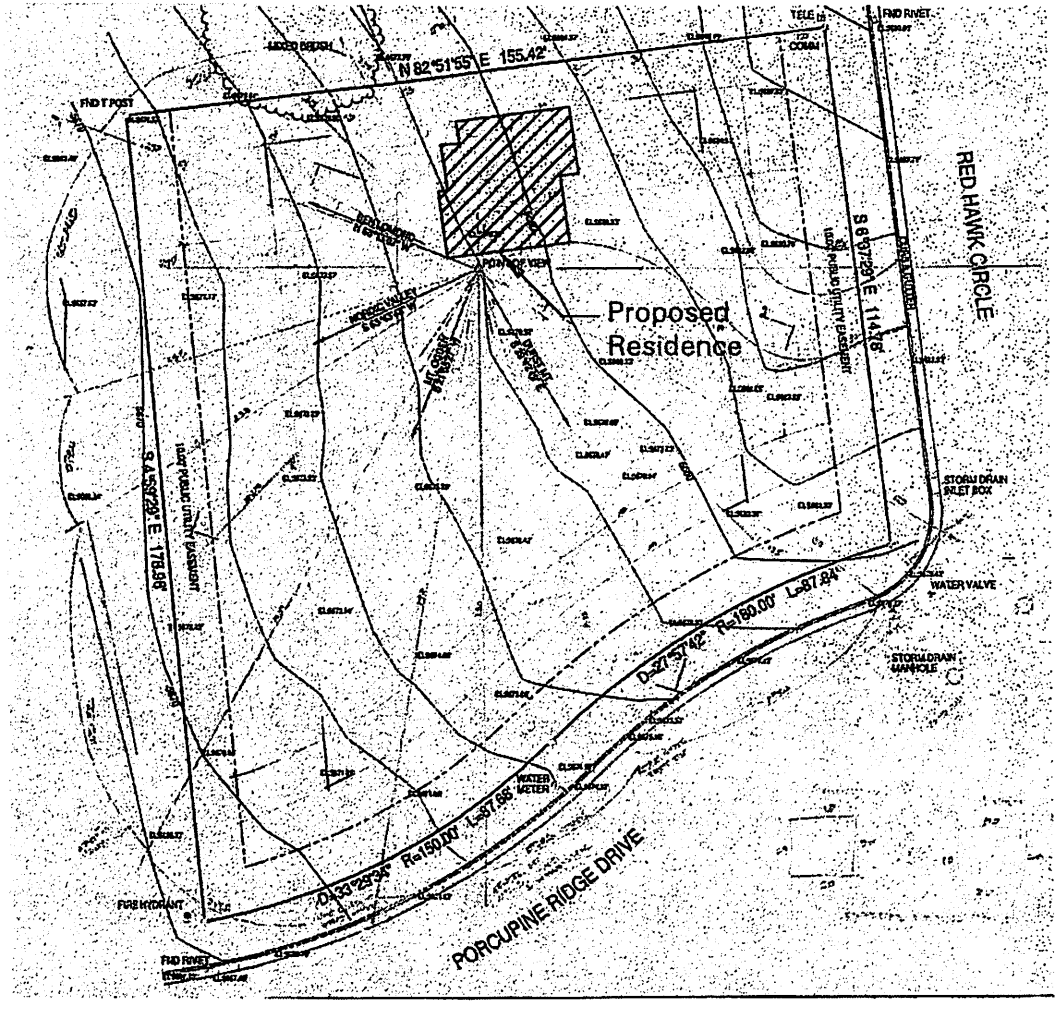
DESCRIPTION OF GEOLOGIC UNITS AND SYMBOLS

Qaf1	-	Most-recent alluvial-fan deposits
Qaf3?	-	Older alluvial-fan deposits
Qafy	-	Young alluvial-fan deposits
Qmso? (QTg?)	-	Potential old landslide deposits or gravel deposits
———		Contact between units, dashed where approximate
—||—		Back tilt feature
—·—·—·—		Lineation

PROPOSED DAVIS RESIDENCE
3507 RED HAWK CIRCLE
EDEN, UTAH

1160291	AGEC	Geologic Map	Figure 1



N

0 40 80 feet

Approximate Scale

PROPOSED DAVIS RESIDENCE
3507 RED HAWK CIRCLE
EDEN, UTAH

1160291	AGEC	Site Map	Figure 2