

SURFACE GEOLOGIC HAZARD STUDY

**PROPERTY LOCATION
LOT 65R
15163 EAST MILL ROAD
HUNTSVILLE, UTAH**

PREPARED FOR:

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**184 KAY CIRCLE
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Jeffery and Barbara Turner:

Re: Report
Surface Geologic Hazard Study
Property Location at
15163 East Mill Road, Lot 65
Huntsville, Utah 84317

1. INTRODUCTION

1.1 GENERAL

Presented in this report are the results of a surface reconnaissance study which included the determination of potential geologic hazards present or adjacent to the property. The geologic hazards included landslides, active faults, debris flows, and flooding. The location of the site with respect to major topographic features and general conditions, as of 1998, is shown on Figure 1, Vicinity Map. A more detailed layout of the site showing property boundaries is shown on Figure 2, Site Plan.

1.2 OBJECTIVES AND SCOPE

The objectives and scope of this study were planned during telephone discussions and email between Mr. Jeff Turner and C. Charles Payton of Payton Geological Services, LLC

The objectives of this study were to:

1. Determine if there are any active landslides or other geologic hazards on the site.
2. Determine if active faults exist within the site area.
3. Determine the general soil conditions present on the site.

In accomplishing these objectives the scope included the following:

1. An initial review of geologic and topographic maps of the site area.
2. A field program consisting of a general reconnaissance of the site.
3. Preparation of this summary report.

2. SITE DESCRIPTION

This report presents the results of a surface geologic hazard study for the planned cabin to be constructed on Lot 65. The approximate elevation of the cabin site on the property is 6,278 feet above sea level. The property consists of a northwest facing slope which ranges in elevation from approximately 6,220 feet on Mill Road to approximately 6,400 feet at the southeast property line. The size of the property is approximately 1.96 acres.

Vegetation varies from scrub oak trees to large aspen trees with the open areas covered with smaller scrubs, weeds, and grass.

3. GEOLOGIC AND SEISMOTECTONIC SETTING

The property is located within the eastern portion of Weber County, Utah. It is east of the eastern foothills of the Wasatch Range and Ogden Valley and in the western foothills of the Monte Cristo Range. Causey Dam and Reservoir are located on the South Fork of the Ogden River which is just to the north of the property site (Figure 1). The Wasatch Range is the eastern side of the Basin and Range Province which extends westward to the Sierra Mountains in California. Lot 65 is approximately 20 miles east of Huntsville, Utah.

Based upon the United States Geologic Survey map of the Causey Quadrangle Lot 65 on a northwest facing slope within an area which has been mapped as part of the main body of the Wasatch and Evanston Formations (Tkwe) as shown on Figure 3. These formations may be up to 3,000 feet thick and are mainly reddish-brown poorly sorted sandstone and conglomerate containing scattered beds of reddish-brown sandy siltstone. Where the sandstone and conglomerate beds are exposed at the surface with have a gentle dip to the west. The dip slope of the sedimentary beds ranges from 4 to 7 degrees. Most of the conglomerate is composed of rounded tan, purple, and a few green quartzite pebbles, cobbles, and boulders (Mullens, 1969).

The surface soils on Lot 65 have been formed by the weathering and erosion of these bedrock formations. The soil is composed of reddish-brown silt, clay, and sand with scattered rounded hard gravel, cobbles, and boulders exposed on the ground surface. The boulders are more than 1.0 foot in diameter. These soils are very similar to the soils in the areas mapped as Conglomerate (Qf) as shown on Figure 3. Again the surface soils are formed mainly by the weathering and erosion of the Wasatch and Evanston Formations.

The property site is located approximately 20.0 miles east of the Weber segment of the Wasatch Fault Zone. The active Wasatch Fault is considered to be made up of several segments, each segment acting relatively independently (Machette and Others, 1987). The Weber segment is one of the longest and most active segments within the Wasatch Fault Zone. The segments extends from north of Ogden to the north end of Salt Lake City, Utah. Nelson and others (2006) report four surface rupturing seismic events since the middle Holocene (about 5,000 years ago) with the most recent event being about 500 years ago with a surface rupture of 1.6 feet. The Weber Segment of the Wasatch Fault may be capable of producing earthquakes with a magnitude as large as 7.5 (Ms). Vertical displacements of 3 to 15 feet have been considered possible during a major earthquake on the Weber segment of the Wasatch Fault (Hecker, 1993).

No faults have been mapped on or adjacent to Lot 65. And no evidence of surface displacement was noted on or adjacent to the property site.

4. FIELD INVESTIGATION

The field investigation was conducted on November 16, 2018 and consisted of a reconnaissance of the property and surrounding area. The property has a northwest facing slope with an average slope angle of approximately 21 degrees. This slope is covered primarily with scrub oak trees and aspen trees with smaller shrubs, weeds and grass throughout the more open areas between the trees. Some small exposures of soil were observed and the soil was composed of fine to medium grained brown to dark gray sand, silt, and clay with scattered very hard rounded gravel, pebbles, and boulders. No outcrops of the sandstone and conglomerate bedrock was noted within the Lot 65 area.

At the cabin site, where a level excavation has been made, there is a cut slope at the southeast side of the cabin site which is approximately 12 feet high. This cut slope is slowly slumping onto the level area.

5. CONCLUSIONS AND RECOMMENDATIONS

Based on field observations and reviews of available geologic literature there is no evidence of any active landslide movement on the property. Geologic hazards considered during this study also included slope stability, alluvial fan flooding/debris flow, stream flooding, rock fall, and fault rupture during earthquakes along the Wasatch Fault Zone. A slope stability analysis was not performed during this geologic hazard assessment. The geologic hazards which were considered likely to not effect the property are alluvial fan flooding or debris flow, stream flooding, and rock fall. However, during a major earthquake on the Wasatch Fault located west of the property it is possible that minor ground shaking could be felt.

It is concluded, based upon this geologic hazards study, that the entire property has the potential of a slope stability hazard should a slope steeper than the natural tree covered slope be required for development. In the case of further development a slope stability analysis would be recommended. The cut slope present on the southeastern side of the proposed cabin site needs to be stabilized. A retaining wall needs to be designed and constructed there prior to further development of the site.

6. LIMITATIONS

The analysis and report findings are based upon published geologic maps and reports, a reconnaissance of the property. The conclusions are based on currently accepted geologic interpretation of this information. The surface reconnaissance does not necessarily reflect geologic conditions at a greater depth. During construction of the foundation for the cabin planned for the property the geologic conditions at depth could be observed. It is therefore recommended that a geologic review be made of the excavations to be certain that geologic features observed are not detrimental to cabin construction.

No attempt has been made to predict earthquake ground motions or to determine the magnitude of earthquakes associated with the Wasatch Fault Zone located west of the project area.

I appreciate the opportunity to be of service in relation to potential geologic hazards that may effect the further development of the property. Should you have any questions regarding this report or wish to discuss additional services, please do not hesitate to contact me at your convenience. My cell phone number is (801) 631-1613. Also you may reach me by email at c2payton.egs@gmail.com.

Respectfully submitted,



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Enclosures: Figure 1, Vicinity Plan
 Figure 2, Site Plan
 Figure 3, Geologic Map

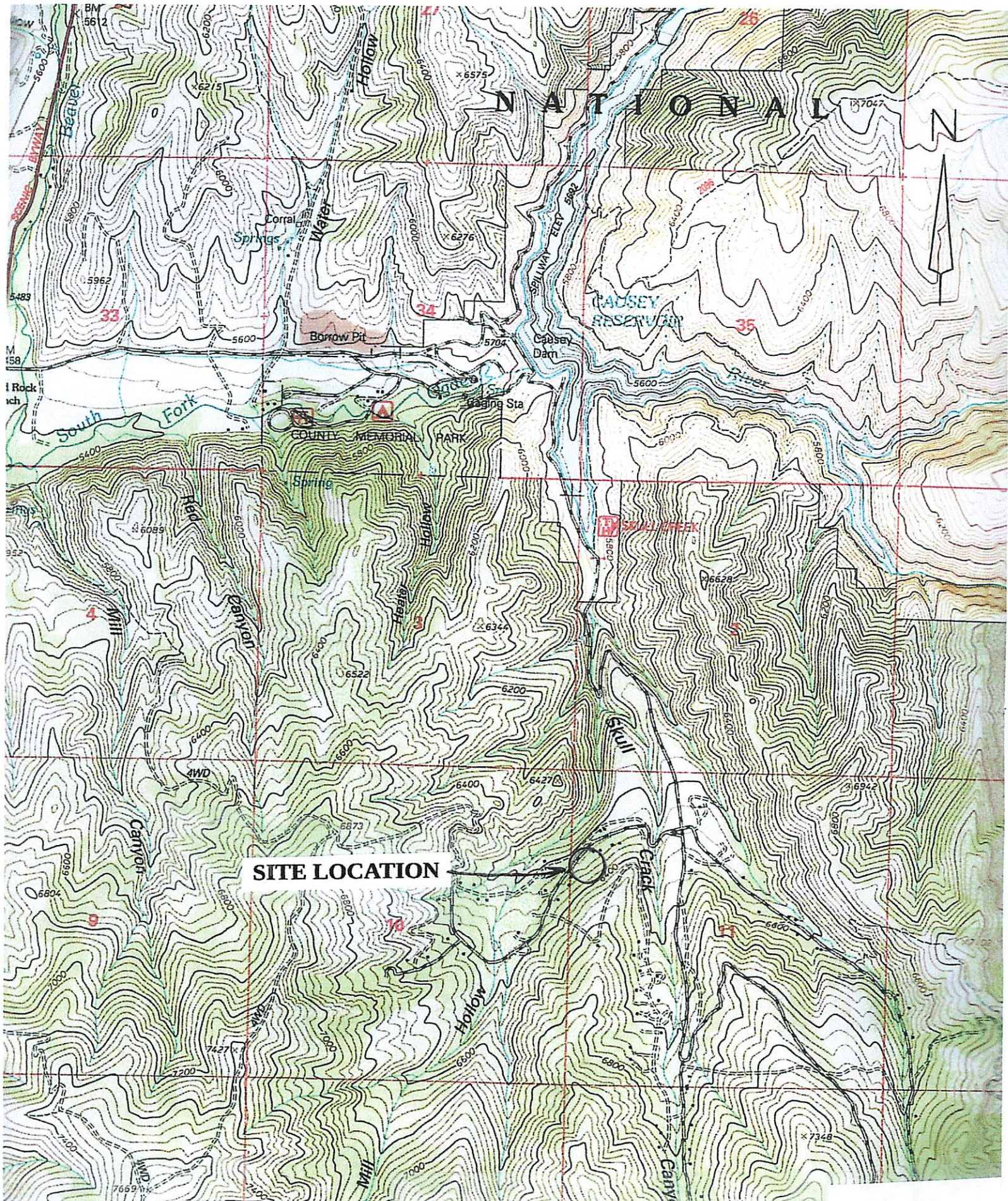
REFERENCES CITED

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Machette, M.N., Personius, S.F. and Nelson, A.R., 1987: Quaternary geology along the Wasatch Fault Zone; segmentation, recent investigations and preliminary conclusions; U.S. Geological Survey open file report 87-585 p. B-1 –B-124.

Mullens, F.E., 1969: Geologic Map of the Causey Dam Quadrangle, Weber County, Utah: United States Geological Survey, Map GQ-790.

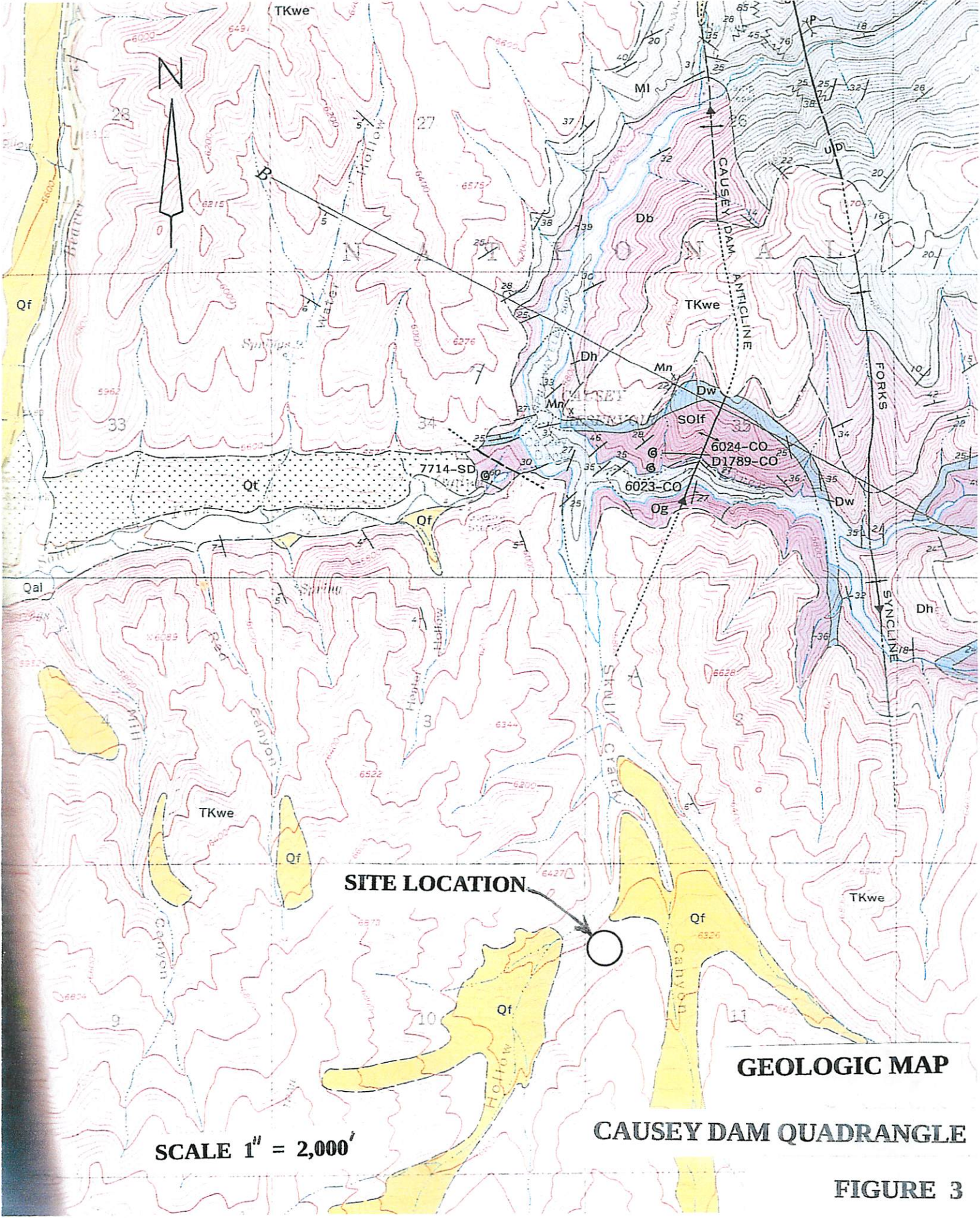
Nelson, A.R., Lowe, M., Personius, S.F., Bradley, L., Forman, S.L., Izlask, R., and Garr, J., 2006: Holocene earthquake history of the northern Weber segment of the Wasatch Fault Zone, Utah, Paleoseismology of Utah, Volume 13: Utah Geological Survey Miscellaneous Publication 05-8, 39p.



SCALE 1" = 2,000'

VICINITY PLAN

FIGURE 1



GEOLOGIC MAP

CAUSEY DAM QUADRANGLE

SCALE 1" = 2,000'

FIGURE 3