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April 19, 2016

Andrew M. Harris, PE
Senior Geotechnical Engineer
GSH Geotechnical, Inc.
1596 West 2650 South, Suite 107
Ogden, Utah 84401

WORK PLAN Geologic Hazards Evaluation
Lot 44 Big Sky Estates Phase I
4075 Bluebell Drive
Liberty, Weber County, Utah

Dear Mr. Harris:

Western GeoLogic is pleased to present this work plan for a geologic hazards evaluation at the subject site pursuant to Weber County approval. The site is on generally west-facing slopes in northwestern Ogden Valley about 5 miles northwest of Huntsville, Utah, in the SW $\frac{1}{4}$ Section 33, Township 7 North, Range 1 East (Figure 1 – Project Location). Elevation of the site ranges is about 5,525 to 5,615 feet above sea level. It is our understanding that intended use for the site is for development of a single-family residence.

SCOPE AND PURPOSE

The site is located on the northwestern margin of Ogden Valley, a sediment-filled intermontane valley within the Wasatch Range, a major north-south trending mountain range marking the eastern boundary of the Basin and Range physiographic province. Surficial geology of the site is shown on unpublished Utah Geological Survey mapping (Figure 2). This unpublished mapping indicates the majority of the site in bedrock of the Tertiary-age Norwood Formation (unit Tn), with a small area of mixed colluvium and mass movement deposits in the southeast site corner (unit Qmc, Figure 2).

To evaluate the potential risk from geologic hazards such as landslides to the Project, Western GeoLogic proposes to: (1) conduct a reconnaissance to inspect the geomorphology and surficial deposits at the site; (2) examine three walk-out trench exposures to verify subsurface conditions (Figure 3), and review the GSH log for one upslope boring (as discussed below); (3) review historic aerial photographs and LIDAR imagery to look for evidence of potential geologic hazards; (4) compile and review readily available geologic information pertaining to the site; (5) assess relative risk from geologic hazards that may be present; and (6) prepare a letter report

providing our findings and recommendations. The purpose of our investigation will be to: (1) provide geologic information and assessment of geologic conditions at the site; (2) identify potential geologic hazards that may be present and qualitatively assess their risk to the intended site use; and (3) provide site- and hazard-specific risk-reduction recommendations, such as may be needed based on our findings. Locations of the walk-in test pits may vary slightly based on site observations, subsurface conditions encountered, and/or access restrictions.

A concurrent geotechnical study will also be provided for the site by GSH. Field investigation for this study will include drilling, logging, and sampling of one soil boring up to about 60 feet deep (or to auger refusal), as well as the logging and sampling of the walk-in test pits completed for the geologic study. The boring and test pit locations are shown on Figure 3. Samples gathered from the geotechnical study will be tested to evaluate various strength and engineering properties; testing may include but is not limited to: moisture content, density, gradation, Atterberg limits, consolidation, unconfined compressive strength, direct shear, and vane shear. The information gathered from the geotechnical investigation and lab testing will be utilized to provide engineering evaluations and design recommendations with regard to foundations, earthwork, slope stability, and geoseismic setting. GSH's findings and recommendations will be provided in a subsequent report.

DELIVERABLE

We will present our findings and recommendations in a letter report prepared by a Utah-registered Professional Geologist with engineering-geology expertise, following applicable Weber County Code, and in accordance with current generally accepted professional engineering geologic principles and practice in Utah. The report will include, at a minimum, the following:

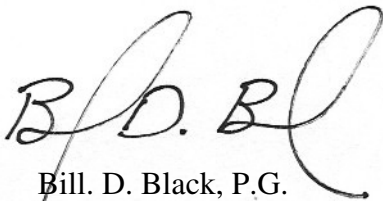
1. A Vicinity Map showing the location of the property.
2. A Geologic Map showing the surficial geology of the property and surrounding area.
3. An Air Photo and/or LIDAR image showing the site and nearby surficial geologic hazards.
4. Hand-drawn field logs of the trenches. The trenches will also be photographed at five-foot intervals to document the exposures. Unaltered photos labeled by trench and distance will be provided as requested.
5. A description of potential geologic hazards at the site and their related risk, including:
 - Landslides;
 - Debris Flows;
 - Rockfalls;
 - Surface Fault Rupture;

- Soil Liquefaction;
- Shallow Groundwater;
- Earthquake Ground Shaking; and
- Volcanic Hazards

6. Recommendations for development as may be required based on our findings.

We trust you will find this work plan acceptable and look forward to working with you on this project. Feel free to contact me if you have any questions regarding the proposed scope of work.

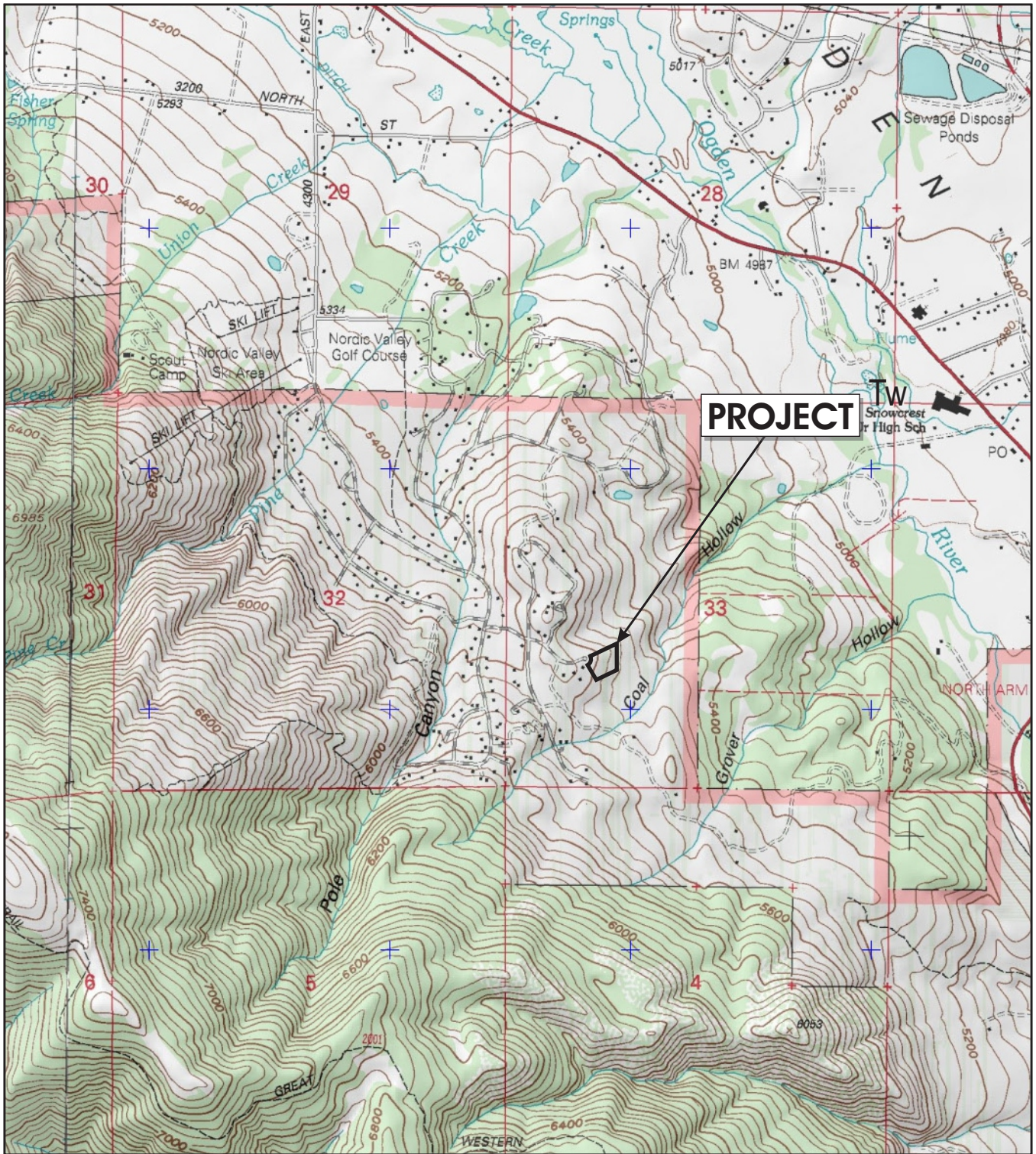
Sincerely,
Western GeoLogic, LLC

A handwritten signature in black ink, appearing to read "B.D. Black". The signature is fluid and cursive, with the first letters of each name being capitalized and prominent.

Bill. D. Black, P.G.
Senior Engineering Geologist

D:\Users\Bill\Desktop\Liberty, UT - Big Sky Estates No. 1 Lot 44 Hazards Eval - Young, Carson - Job\Work Plan\Work Plan - Big Sky Estates Lot 44.docx

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Source: U.S. Geological Survey 7.5 Minute Series Topographic Maps, Utah - Huntsville, 1998;
 Project location SW1/4, Section 33, T7N, R1E (SLBM); about 5,525 to 5,615 feet elevation (ASL).



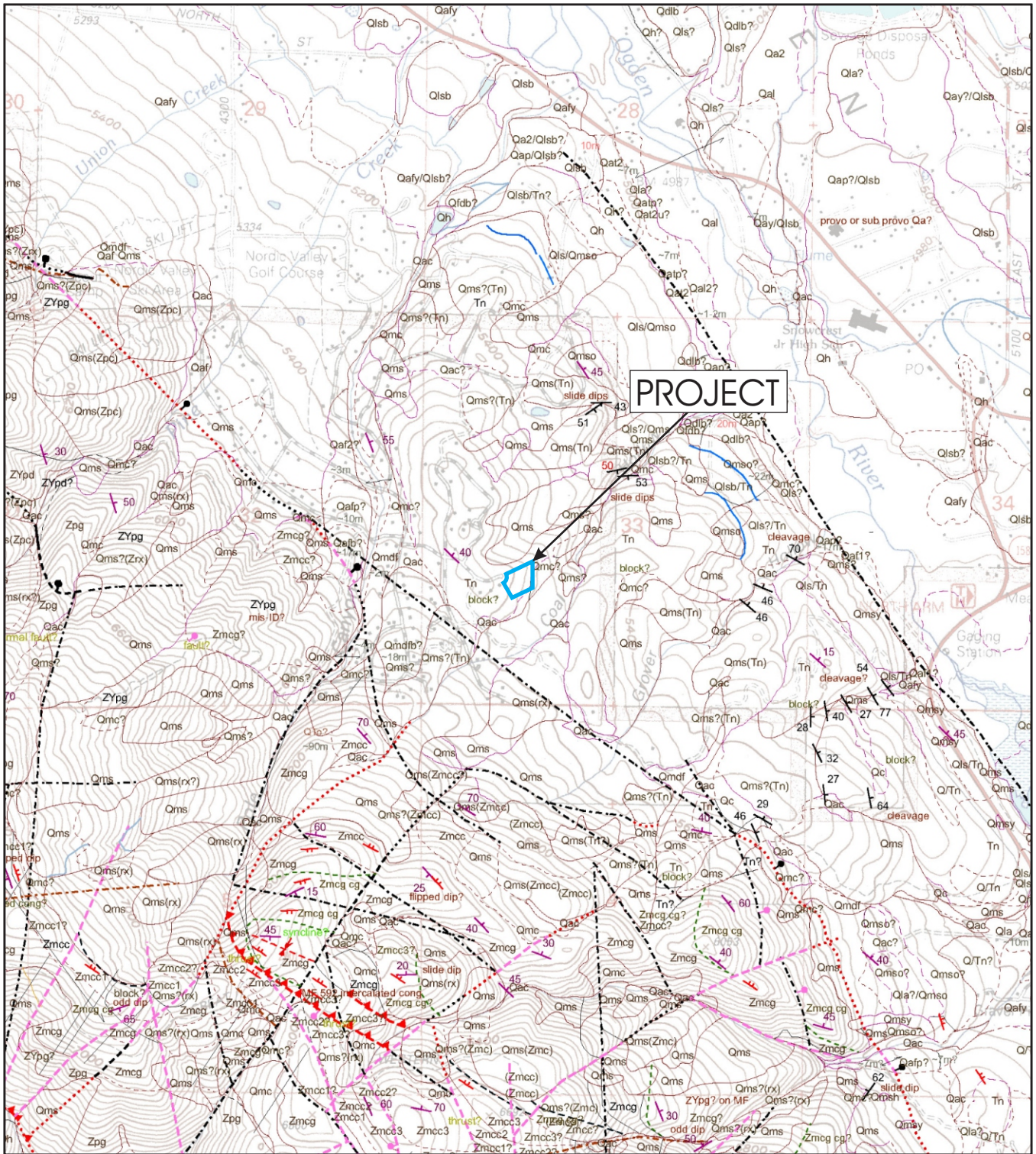
Scale 1:24,000
 (1 inch = 2000 feet)

LOCATION MAP

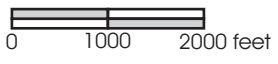
GEOLOGIC HAZARDS EVALUATION

Lot 44 Big Sky Estates No. 1
 4075 Bluebell Drive
 Liberty, Weber County, Utah

WORK PLAN FIGURE 1



Source: 2014 unpublished Utah Geological Survey mapping; unit Tn at site is Norwood Formation bedrock, unit Qmc is mixed colluvium and mass-movement deposits.



Scale 1:24,000
(1 inch = 2000 feet)

GEOLOGIC MAP

GEOLOGIC HAZARDS EVALUATION

Lot 44 Big Sky Estates No. 1
4075 Bluebell Drive
Liberty, Weber County, Utah

WORK PLAN FIGURE 2



Scale 1:1,200
(1 inch = 100 feet)

EXPLORATION PLAN

GEOLOGIC HAZARDS EVALUATION

Lot 44 Big Sky Estates No. 1
4075 Bluebell Drive
Liberty, Weber County, Utah

WORK PLAN FIGURE 3