



**Proposal for  
Geotechnical  
Investigation  
/Geological  
Assessment**

Highlands at  
Wolf Creek  
Lot 127,  
Weber  
County, Utah



February 22, 2016

Big Canyon Homes  
Attn: Paul Berman

Proposal for Geotechnical Investigation/Geological Assessment  
Highlands at Wolf Creek Phase 8 Lot 127  
3563 East Pineview Court  
Weber County, Utah

## INTRODUCTION

### PROJECT DESCRIPTION

GeoStrata is pleased to present our proposal for a geotechnical investigation for Lot 127 of the Highlands at Wolf Creek Phase 8 subdivision located at 3563 East Pineview Court in Weber County, Utah. Based on information provided by you we understand that the development is to consist of a single family residence. The residence is to be one to two stories in height with a basement. We anticipate footing loads on the order of 3 to 4 kips per lineal foot. The subject lot is mapped as being underlain by Holocene colluvium and slope wash on the 7 1/2 minute "Geologic Map of the Huntsville Quadrangle, Weber and Cache Counties, Utah" (Sorensen and Crittenden, 1979), by Quaternary alluvium and colluvium which includes stream and fan alluvium, and, locally, mass-movement deposits on the "Progress Report: Geologic Map of the Ogden 30' x 60' Quadrangle, Utah and Wyoming" (Coogan and King, February 2001) and by landslide and/or landslide undifferentiated from talus, colluvium, rock-fall, glacial, and soil creep deposits which may include deep or shallow landslides mapped with talus, colluvium, rock-fall, glacial, and soil creep deposits on the "Landslide Maps of Utah Ogden 30' x 60' Quadrangle (Elliott and Harty, 2010). In addition, a slope approximately 40 feet high is located below the lot. Our investigation for the lot will be used to provide geotechnical design parameters for construction of the building, perform a qualitative assessment of the geology and the potential for geologic hazards, including landslides, at the subject lot, and to assess the stability of slope located below the lot.

## SCOPE OF WORK

### LITERATURE, PHOTOGRAPH AND MAP SEARCH AND REVIEW

GeoStrata proposes to make a search of all published geologic maps and reports that pertain to the geologic conditions pertinent to the project site. Stereo aerial photographs and LIDAR data will be reviewed to observe the geologic conditions within the site to look for evidence of geologic hazards not currently included on the available maps. All data collected will be incorporated into a GIS file for use in preparing a site specific geologic map and geologic hazards overlay zones map if required.

### FIELD RECONNAISSANCE

Following our literature review, GeoStrata will perform a geologic field reconnaissance of the site and perform geologic mapping. We will create a site specific geologic map that will include geologic hazards across the site. The

geologic map will be used to determine what geologic hazards studies will be necessary in any given portion of the site being considered for development.

## FIELD INVESTIGATION

Based on our understanding of the project we propose to excavate 2 test pits on the lot. The test pits will extend to depths of approximately 10 to 15 feet. If bedding or other horizontal layering is identified in the test pits which would be of use in our assessment of geologic hazards at the subject lot then one of the test pits will be extended to a trench approximately 150 feet long and 6 to 8 feet in depth. Subgrade samples of the native soils will be retrieved from the test pit sidewalls and returned to our laboratory for testing. In addition to the test pits we propose to complete one borehole on the lot to a depth of approximately 50 feet below existing site grade. Disturbed subgrade samples of the native soils will be retrieved from the borehole through use of a standard split spoon sampler as well as a modified California sampler, whereas relatively “undisturbed” samples will be retrieved using Shelby Tubes if possible. All samples will be returned to our laboratory for geotechnical testing. All geotechnical and geologic fieldwork will be performed by a member of our technical staff and under the direct supervision of a professional geotechnical engineer and geologist.

## LABORATORY TESTING

Appropriate laboratory tests will be performed on soil samples obtained from the field investigation described above. Specific laboratory tests will be dependent on actual site conditions encountered; however, tests currently envisioned are summarized below:

- Moisture-density tests
- Gradation analysis
- Atterberg Limits
- Soil strength tests
- Consolidation tests

## REPORT AND RECOMMENDATIONS

The results of our geotechnical investigation/geological assessment, laboratory testing, and engineering analyses will be presented in a final geotechnical report. This report will include, at a minimum, the following:

- a. A general Plot Plan and Vicinity map showing the location of site investigations
- b. Logs of exploratory test holes
- c. A description of the geology observed at the site
- d. A detailed description of surface and subsurface conditions encountered
- e. A discussion of geological hazards identified on or near the lot
- f. A summary of laboratory test data
- g. The location of Holocene age faults near the proposed site
- h. Earthwork and site preparation recommendations including excavation requirements, fill placement criteria and compaction criteria
- i. Foundation recommendations and design parameters
- j. Discussions of site-specific soil and/or groundwater conditions that may impact proposed construction and recommendations for mitigation
- k. Lateral earth pressures for design of subgrade walls
- l. Slope stability assessment

- m. Recommendations for moisture protection and surface drainage

## CONDITIONS, SCHEDULE AND FEES

GeoStrata proposes to undertake the above scope of work on a Time and Materials basis in accordance with the attached “Schedule of Fees” and “General Conditions” as presented on Attachments 1 and 2. Based on the scope of work outlined in the preceding, our fee to perform this work is **Eight Thousand Nine Hundred Dollars (\$8,900)**. This proposal includes investigative procedures that are intended to obtain the data needed to adequately evaluate the subsurface soils at the site. The Lump Sum cost of our field investigation includes the vehicles and logging equipment necessary to complete our field investigation.

The above fee is based on the following assumptions:

1. The Client, as appropriate, will assist GeoStrata in identifying investigation locations such that the locations are free and clear of all known or existing utilities and underground structures.
2. Free and clear access will be provided to all exploration locations.
3. The Client will not hold GeoStrata responsible for damage such as rutting or other incidental damage incurred to the ground provided employees of GeoStrata are not negligent in their efforts to perform the scope of work outlined.
4. The Client will provide appropriate excavation equipment to dig the test pits/trench to the proposed depths at no cost to GeoStrata.

GeoStrata can proceed immediately upon receiving authorization to proceed. The proposed field program will require approximately one to two days to complete. Laboratory testing will commence immediately upon the return of the samples from the field. We anticipate laboratory testing will take approximately one week to complete. Our engineering evaluations will initiate as laboratory data is obtained from the laboratory allowing us to deliver our completed report within approximately 4 weeks from initiation of field activities.

If you wish us to proceed with the proposed services, please indicate so by signing the Authorization to Proceed and Acceptance of Terms and Conditions on the attached form.

We appreciate the opportunity to provide you with our services and look forward to discussing the project with you in more detail. If you have any questions regarding the proposed scope of work or any other aspects of our proposal please call.

Respectfully Submitted,

**GeoStrata**



Senior Geotechnical Engineer

Attachments:

1. Schedule of Fees – 2015
2. General Conditions Form B10

# SCHEDULE OF FEES

## GeoStrata 2015

The compensation to GeoStrata for our professional services is based upon and measured by the following elements:

### PERSONNEL

Principals .....	\$160.00 per hour
Senior Consultant .....	\$170.00 per hour
Senior Engineers/Geologists.....	\$130.00 per hour
Project Engineers/Geologists.....	\$ 110.00 per hour
Staff Engineers/Geologists .....	\$ 90.00 per hour
Assistant professionals .....	\$ 65.00 per hour
Senior Field/Laboratory Technicians.....	\$ 45.00 per hour
Junior Field/Laboratory Technicians .....	\$ 42.00 per hour
GIS/AutoCAD Operator .....	\$ 75.00 per hour
Word Processing and Clerical .....	\$ 50.00 per hour

### EQUIPMENT

Soil Sampling Equipment .....	\$5.00 per hour
Soil Sample Containers .....	\$15.00 per sample
Tieback/Soil nail testing equipment .....	\$100.00 per day
Inclinometer Measurements.....	\$200.00 per day
Sealed Single Ring Infiltrometer (SSRI) Equipment.....	\$50.00 per day per ring
Company Vehicle (4-wheel drive).....	\$50.00 per day
Mileage.....	\$1.00 per mile
GIS/Auto CAD 7 Terrain Modeling software .....	\$30.00 per hour
Truck mounted Drill Rig .....	Cost plus 15%
Track hoe .....	Cost plus 15%
Rubber Tired Backhoe.....	Cost plus 15%

### MISCELLANEOUS EXPENSES

In-House printing.....	\$0.10 per page
Fax In/Out.....	No Charge
Sub-contracted work, and other costs incurred with outside services or equipment .....	Cost plus 15%

## GENERAL CONDITIONS-FORM B10

### 1.0 BILLING

- 1.1 Invoices will be issued every four weeks, payable upon receipt, unless otherwise agreed. Until such time that payment for services provided by GeoStrata is made in full, all reports and work products related to the unpaid services remain the sole possession of GeoStrata.
- 1.2 Interest of 1 ½ % per month (but not exceeding the maximum rate allowable by law) will be payable on any amounts not paid within 30 days, payment thereafter to be applied first to accrued interest and then to the principal unpaid amount. Any attorneys fees or other costs incurred in collecting any delinquent amount shall be paid by the Client.
- 1.3 In the event that the Client requests termination of the work prior to completion of a report, GeoStrata, reserves the right to complete such analyses and records as are necessary to place its files in order and, where considered by it necessary to protect its professional reputation, to complete a report on the work performed to date. A termination charge to cover the cost thereof in an amount not to exceed 30% of all charges incurred up to the date of the stoppage of the work may, at the discretion of GeoStrata, be made.

### 2.0 WARRANTY AND LIABILITY

- 2.1 GeoStrata, warrants that its services are performed, within the limits prescribed by its Clients, in a manner consistent with that level of care and skill ordinarily exercised by members of the same professions currently practicing in the same locality under similar conditions. No other warranty or representation, either expressed or implied, is included in its proposals, contracts or reports.
- 2.2 GeoStrata, has neither created nor contributed to the existence of any hazardous, radioactive, toxic or otherwise dangerous substance or condition at the site, and its compensation hereunder is in no way commensurate with the potential risk of injury or loss that may be caused by exposure to such substances or conditions. Accordingly, notwithstanding any other provision herein, the liability of GeoStrata, its employees, subcontractors and agents for any injury or loss arising from any such pre-existing or client generated dangerous substance or condition at or near the project site, shall not exceed \$1,000.
- 2.3 GeoStrata, its employees, subcontractors and agents shall not be liable for indirect or consequential damages, including without limitation loss of use and loss of profits.
- 2.4 In recognition of the relative risks and benefits of the project to both the Client and GeoStrata, the risks have been allocated such that the Client agrees, to the extent permitted by law, that in addition to the limitations provided in 2.2 and 2.3, and notwithstanding any other provision herein, the liability of GeoStrata, its employees, subcontractors and agents shall be limited to injury or loss to the extent caused by the negligence of GeoStrata, its subcontractors and/or agents hereunder, and the liability of GeoStrata, for injury or loss arising from (1) professional errors or omissions and/or (2) environmental impairment or pollution and/or (3) radiation, nuclear reaction, or radioactive substances or conditions shall not exceed \$10,000. Such claims and causes include, but are not limited to negligence, professional errors or omissions, strict liability, breach of contract or warranty.
- 2.5 The General Liability of GeoStrata, its employees, subcontractors and agents for any other claim(s) of any kind shall not exceed \$10,000 or our total fees whichever is less. Increased liability limits may be negotiated upon the Clients written request, prior to commencement of services, and agreement to pay an additional fee.
- 2.6 The Client agrees to indemnify and hold harmless GeoStrata, its employees, subcontractors and agents against and from any claim, liability, attorneys fees or other defense costs incurred because of (i) injury or loss caused by the actions or omissions of the Client, its employees or its other agents, contractors or subcontractors, or (ii) any third party claim arising from the performance of services hereunder by GeoStrata, its agents or subcontractors, to the extent the liability and costs exceed the relevant amount of GeoStrata 's liability specified in sections 2.2-2.6 above and does not result solely from the negligence or willful misconduct of GeoStrata, its agents or subcontractors.
- 2.7 In the event the Client makes a claim against GeoStrata, at law or otherwise, for any alleged error, omission or other act arising out of the performance of its professional services, and to the extent the Client fails to prove such claim, then the Client shall pay all costs, including attorneys fees, incurred by GeoStrata, in defending itself against the claim.
- 2.8 Notice *Lis pendens* – in order to secure payment, GeoStrata may file a notice of *Lis pendens* or in the event of delinquent payment perfect a lien on the property for which their services are performed.

### AUTHORIZATION TO PROCEED AND ACCEPTANCE OF GENERAL CONDITIONS

The undersigned, as an authorized representative of **Big Canyon Homes** agrees to the scope of work and general conditions offered, and authorizes GeoStrata, to proceed with the **Geotechnical Investigation for Lot 127 Highlands at Wolf Creek Phase 8, Weber County, Utah.**

\_\_\_\_\_  
Authorized Signature

\_\_\_\_\_  
GeoStrata, Representative

\_\_\_\_\_  
Printed Name, Title

\_\_\_\_\_  
Printed Name, Title

\_\_\_\_\_  
Date

\_\_\_\_\_  
Date