



## PROJECT MEMORANDUM

Date: January 27, 2016 SA Project No: 15-183

From: David B. Simon

To: Ms. Dana Shuler  
Weber County Engineering Department  
2380 Washington Blvd., Ste. 240  
Ogden, Utah 84401-1473

Subject: Trench Review Memorandum  
KEO Homestead Subdivision  
Approximately 5600 East Highway 39  
SWC Section 14, T6N, R1E  
Huntsville, Utah (21.3 acres)

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On January 26, 2016, on behalf of Weber County, Simon Associates, LLC (SA) and Taylor Geotechnical (TG) performed a geologic and geotechnical field review at the above referenced property.

A scoping meeting was held on December 8, 2015, at the Weber County municipal building. The SA memorandum for the scoping meeting is attached (SA, 2015). The purpose of the scoping meeting was to discuss:

1. Geologic and geotechnical engineering issues associated with development of the subject property, and;
2. Geotechnical engineer/geologist's proposed scope of work.

As discussed at the scoping meeting, the subject property is located in a mapped landslide (King and others, 2008). The field review was conducted to observe exposures in two trenches excavated by GSH. The purpose of the GSH trenches was to:

1. Evaluate whether or not the property is underlain by landslide deposits via evaluation subsurface geologic units and soils, and;

2. To obtain soil samples for determining geotechnical engineering parameters.

Present during the site visit were:

1. Andy Harris, GSH
2. Greg Schlenker, GCS Geoscience
3. David Simon, SA
4. Alan Taylor, TG

The trenches were about 5 feet deep and trench walls and not been cleaned for the trench review (see Figures 1, 2, and 3). It is a long established standard-of-practice that the engineering geologist cleans debris and backhoe smear off one or both of the trench walls prior to logging the trench (McCalpin 2009; Salt Lake County, 2002; Draper City, 2007; Morgan County, 2010).

In addition to a modern pedogenic soil (A horizon), one geologic unit appeared to be exposed in the trench, which consisted of a mottled dark reddish brown, dark gray, and black weathered volcanic ash with about 10% sub-angular to angular clasts up to 3± inches in longest dimension and with inclusions of very dark grayish black silt clay. The clasts consisted of volcanic ash, quartzite, and dacite (?).

SA and TG were not able to adequately evaluate the nature of the deposits exposed in the trenches (i.e., whether or not the deposits were landslide deposits, as mapped by King and others, 2008) due to:

1. The relatively shallow depth of the trenches, and;
2. Trench walls had not been cleaned.

SA and TG suggested deepening trenches and cleaning debris and backhoe smear off one or both of the trench walls prior to:

1. Logging the trench, and;
2. Scheduling a second field review.

This constitutes our understanding of the discussions that took place during the above referenced field review. If written comments are not received from those on the distribution within five working days of receipt, the content of this memorandum will be considered correct.

Comments presented herein are provided to aid Weber County in reducing risks from geologic hazards and to protect public health, safety, and welfare. All services performed by SA for this project are provided for the exclusive use and benefit of Weber County; no other person or entity may, or is entitled to use or rely upon any of the information presented herein. This memorandum was reviewed by TG.

Should you have any questions, please feel free to contact the undersigned. The opportunity to be of service to Weber County is appreciated.

**SA**



David B. Simon, P.G.  
Principal Geologist

DBS/AOT

dist: 1/Addressee  
1/Andy Harris (GSH)  
1/Greg Schlenker (GSC),

encl: SA Memorandum - Scoping Meeting on December 8, 2015  
Site photographs

## References Cited

- Draper City, 2007, Appendix B, Minimum standards for surface fault rupture hazard studies, Chapter 9-19 Geologic hazard ordinance of Title 9 Land Use and Development Code for Draper City, adopted December 30, 2003, per Ordinance No. 547; amended December 11, 2007 per Ordinance No. 796.  
<http://ut-drapercity.civicplus.com/documentcenter/view/379>
- King, J.K., Yonkee, W.A., and Coogan, J.C., 2008, Interim geologic map of the Snow Basin and part of the Huntsville quadrangle, Davis, Morgan, and Weber Counties, Utah: Utah Geological Survey Open-File Report 536, scale 1:24,000.  
<http://ugspub.nr.utah.gov/publications/geologicmaps/7-5quadrangles/ofr-536.pdf>
- McCalpin, J.P., editor, 2009, Paleoseismology (second edition)—International Geophysics Series Vol. 95: Burlington, Mass., Academic Press (Elsevier), variously paginated.
- Morgan County, 2010, Morgan County geologic hazard ordinance, adopted June 1, 2010: Chapter 8-51 of the Morgan County Municipal Code.  
<http://www.morgan-county.net/Portals/0/Documents/85I%20Appendix.pdf>
- SA Memorandum - Scoping Meeting on December 8, 2015, KEO Homestead Subdivision, SWC Section 24, Township 6N, Range 1E, Parcel No: 20-015-0010, Huntsville, Utah, Utah (SA project no: 15-183), dated December 14, 2015: prepared for Ms. Dana Shuler, P.E., Weber County Engineering Division, 2380 Washington Blvd., Suite 240, Ogden, UT 84401 (attached).
- Salt Lake County, 2002, Minimum standards for surface fault rupture hazard studies, Appendix A, Geologic hazards ordinance, Chapter 19.75 of the Salt Lake County zoning code of ordinances, adopted July 2002: Salt Lake County Planning and Development Services Division, 2001 South State Street, Suite N3700, Salt Lake City, Utah, 84190-4200, 9p.  
<http://slco.org/pwpds/zoning/html/geologicHazards.html>



Trench 1, view to north



Trench 1, view of north wall

## SITE PHOTOGRAPHS



**KEO Homestead Subdivision**  
Approximately 5600 East Highway 39  
Huntsville, Utah

Project No.

15-183

Figure

1

Approved: \_\_\_\_\_ by: \_\_\_\_\_

Approved: \_\_\_\_\_ by: \_\_\_\_\_



Trench 1, representative rock clasts



Trench 1, view of north wall

## SITE PHOTOGRAPHS



**KEO Homestead Subdivision**  
Approximately 5600 East Highway 39  
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15-183

Figure

2

Approved: \_\_\_\_\_ by: \_\_\_\_\_



Trench 2, view to south



Trench 2, view of north wall

## SITE PHOTOGRAPHS

**SA**

**KEO Homestead Subdivision**  
Approximately 5600 East Highway 39  
Huntsville, Utah

Project No.

15-183

Figure

**3**



## PROJECT MEMORANDUM

Date: December 14, 2015 SA Project No: 15-183

From: David B. Simon

To: Dana Shuler, P.E.  
Weber County Engineering Division  
2380 Washington Blvd., Suite 240  
Ogden, UT 84401

Subject: December 8, 2015, Scoping Meeting  
KEO Homestead Subdivision  
SWC Section 24, Township 6N, Range 1E  
Parcel No: 20-015-0010  
Huntsville, Utah

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On December 8, 2015, a scoping meeting was held at the Weber County municipal building to discuss:

1. Geologic and geotechnical engineering issues associated with development of the subject property, and;
2. Geotechnical engineer/geologist's proposed scope of work.

Present at the meeting were:

1. Dana Shuler, Weber County Engineering Division.
2. Alan Taylor (TG), Weber County consulting geotechnical engineer.
3. Andy Hubbert, Great Basin Engineering (project civil engineer).
4. Andrew Harris, GSH (project geotechnical engineer).
5. Greg Schlenker, GCS (project geologist)
6. David Simon (SA), Weber County consulting geologist (attended via telephone conference).



Prior to the scoping meeting:

1. GSH submitted the following work plan:

GSH Work Plan, Geological Study, Proposed Single-Lot KEO Homestead Subdivision, Approximately 5600 East Highway 39 (Part of Section 14, Township 6 North, Range 1 East, Salt Lake base and meridian) Weber County, Utah (GSH Job No. 1675-02N-15), dated December 2, 2015: prepared for Mr. David Orchard, 2248 Oneida Street, Salt Lake City, Utah 84109.

2. Great Basin submitted a Preliminary Site Plan, which indicated the building area is located in the northeast part of the parcel with a  $1.5\pm$  acre area for a residential structure and a  $0.30\pm$  acre area for a detached garage.

## **Discussions**

1. The December 2, 2015, GSH work plan indicated:
  - a. Proposed improvements are to include; a residence and a detached garage, with both structures to be supported by independent septic/drain field systems, a well with a 100-foot protection radius, to be located between the residence and the garage, and a paved turn-around area for vehicle access at the northeast part of the site.
  - b. Proposed subsurface investigation will consist of four test pits as shown on the attached GSH Figure 2, Proposed Work Plan.
  - c. The proposed development areas are underlain by landslide and alluvial deposits (see attached GSH Figure 2).
2. Mr. Simon noted:
  - a. The critical geologic issue to development is the mapped landslide deposits.
  - b. The investigation should be focused on determining whether or not there are landslide deposits within the proposed development area.

- c. Test pits may not be of sufficient length to adequately determine whether or not there are landslide deposits within the proposed development area. Many times bedrock blocks are carried downslope within a landslide and will appear to be in-place bedrock in a test pit.
  - d. GSH may want to consider excavating a few trenches, of appropriate length, to provide adequate, continuous subsurface exposures for geologic evaluation. However, GSH should propose a scope of work that they are comfortable with. Weber County is not directing the Consultant's scope of work.
  - e. Perhaps it may be beneficial to evaluate LiDAR imagery prior to proposing a subsurface exploration program. Should LiDAR imagery clearly indicate the site is underlain by landslide deposits, trenches may not be necessary and the Consultant may want to focus on evaluating landslide mitigation, which generally requires drilling. Should LiDAR imagery be inconclusive, then trenching is certainly warranted.
  - f. Landslide deposits could be a fatal flaw in development should mitigation be logistically and economically prohibitive.
3. Andrew Harris (GSH) indicated:
- a. GSH previously completed a geotechnical study for the site and will provide the study on Miradi.
  - b. Test pits were located to provide subsurface data for proposed slope stability cross section A-A', shown on the attached GSH Figure 2, Proposed Work Plan.

Mr. Simon noted that designing a program of subsurface exploration to yield data for a cross section may be premature considering the site is mapped as being underlain by landslide deposits; determining whether or not there are landslide deposits within the proposed development area should be the first task.

4. Mr. Schlenker proposed possible trench locations near TP-1 and TP-3 on the attached GSH Figure 2, Proposed Work Plan. Mr. Simon thought those were appropriate locations, but suggested again that GSH may want to review LiDAR imagery prior to submitting a modified subsurface exploration program.
5. Messieurs. Harris and Schlenker indicated GSH was going to review LiDAR imagery and submit a modified subsurface exploration program.
6. Mr. Taylor noted:
  - a. The slope cross section depicted on the proposed work plan is not perpendicular to slope. Slope stability cross sections should be perpendicular to slope.
  - b. Slope analyses should:
    - i. Consider saturation from septic fields.
    - ii. Address on-site and off-site properties influences by proposed construction.
    - iii. Use residual shear strengths if the geologic study determines the site is on a landslide.
    - iv. Use peak shear strengths where appropriate.
  - c. GSH should:
    - i. Submit calculations that substantiate geotechnical recommendations in regards to foundation bearing capacity, foundation settlement analysis, and lateral loading for active and at-rest conditions.
    - ii. Address perimeter foundation drain recommendations for basement portions of structures.

- iii. Consider different slope cross sections for the slope stability analysis as they relate to the home and detached garage (the two structures will be about 100 feet apart).
- iv. Submit a revised scope of work to Weber County for review prior to commencement of field work.
- g. GSH may include items from their previous geotechnical report for the property as appropriate; GSH may provide the new study as an addendum to the previous GSH geotechnical report.

### **Closure**

Comments presented herein are provided to aid Weber County in reducing risks from geologic and geotechnical hazards and to protect public health, safety, and welfare. All services performed by SA for this project are provided for the exclusive use and benefit of Weber County; no other person or entity may, or is entitled to use or rely upon any of the information presented herein.

This constitutes our understanding of the discussions that took place during the above referenced meeting. If written comments are not received within five working days, the above will be assumed correct. Should you have any questions, please feel free to contact the undersigned. The opportunity to be of service to Weber County is appreciated.

**SA**



David B. Simon, P.G.  
Principal Geologist

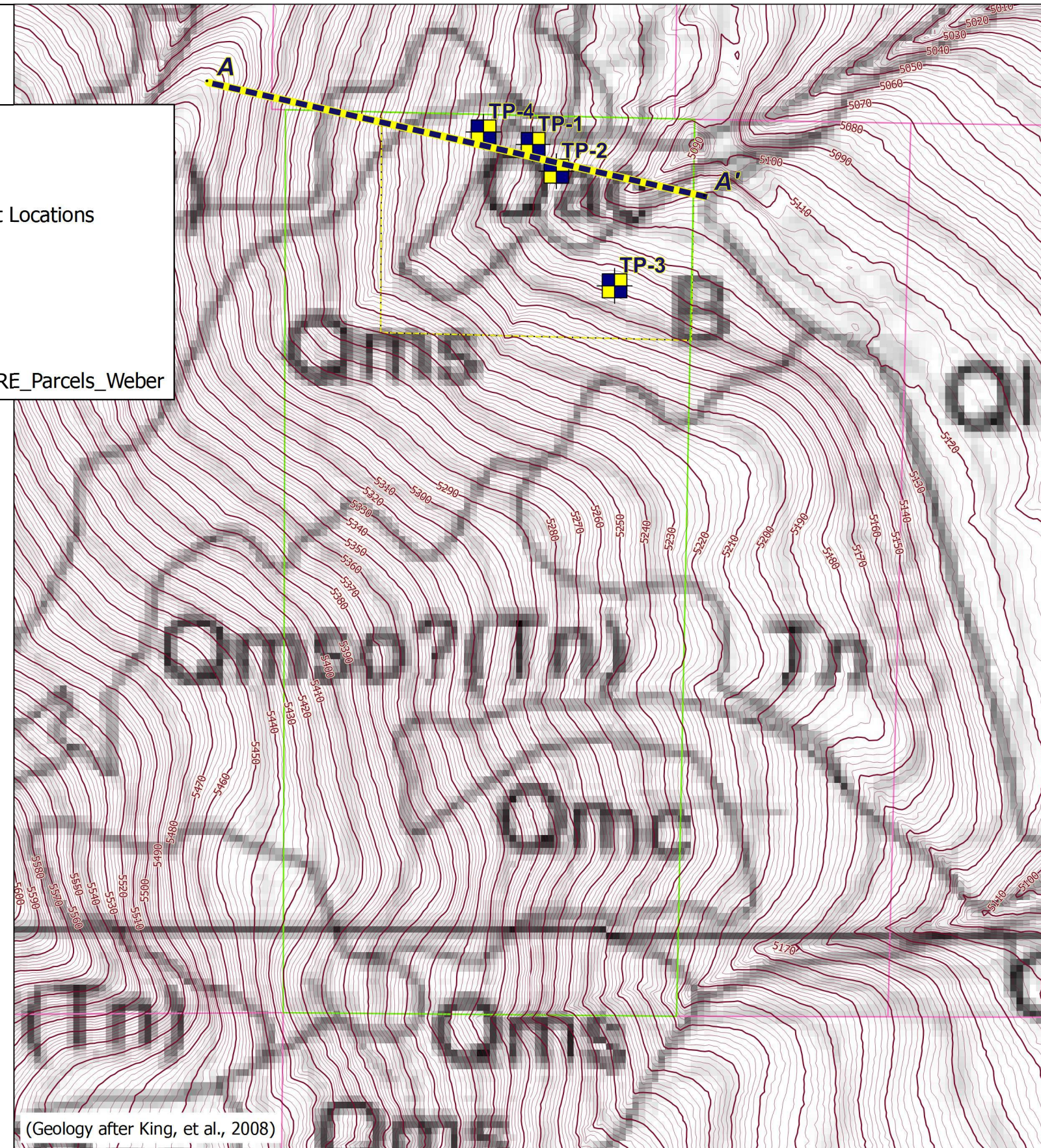
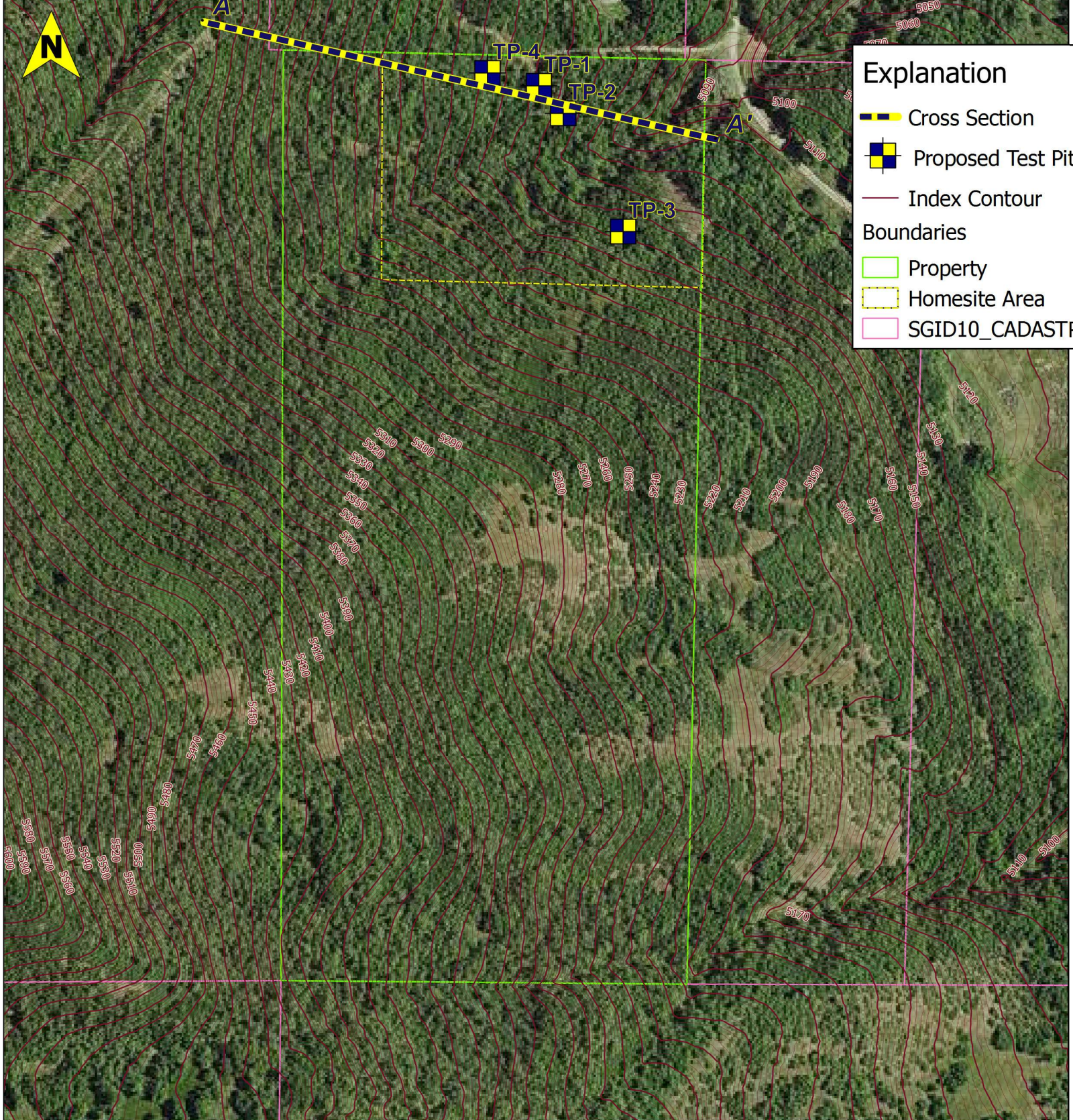
**Taylor Geotechnical**



Alanson O. Taylor, P.E.  
Principal

Dist: 1/address  
1/meeting attendees

Encl: GSH Figure 2, Proposed Work Plan



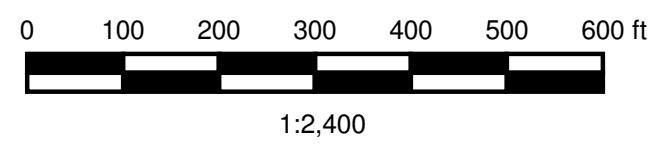
**Explanation**

- Cross Section
- Proposed Test Pit Locations
- Index Contour

**Boundaries**

- Property
- Homesite Area
- SGID10\_CADASTRE\_Parcels\_Weber

Base: 2014 1.0m Color NAIP Orthoimagery,  
from Utah AGRC; <http://gis.utah.gov/>  
Elevation: 2006 2.0m Geoprocessed LiDAR from Utah AGRC;  
<http://gis.utah.gov/>  
Geology: King, J.K., Yankee, W.A., and Coogan, J.C., 2008, Interim  
geologic map of the Snow Basin and part of the Huntsville  
quadrangle, Davis, Morgan, and Weber Counties, Utah: Utah  
Geological Survey Open-File Report 536, scale 1:24,000



**FIGURE 2**  
**PROPOSED**  
**WORK PLAN**