AGEC
Applied GeoTech

GEOTECHNICAL INVESTIGATION

PROPOSED CRIMSON RIDGE - PHASES 2 & 3

5129 EAST WHISPERING PINES LANE

EDEN, UTAH

PREPARED FOR:

B & H INVESTMENT PROPERTIES, LLC
110 WEST JENNINGS LANE
CENTERVILLE, UTAH 84014

ATTENTION: KEVIN DEPPE

PROJECT NO. 1200541 **SEPTEMBER 15, 2020**

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EXECUTIVE SUMMARY

1. Up to approximately 2 feet of topsoil was encountered in the test pits. The soil encountered below the topsoil consists of clay, sand and gravel. The sand and gravel generally extends the full depth investigated. Clay extends the full depth of Test Pit TP-4. Bedrock was encountered below the gravel in Test Pit TP-3 at a depth of approximately 5 feet and below the topsoil in Test Pit TP-7.

2. No subsurface water was encountered in the test pits at the time of excavation to the maximum depth investigated, approximately 11 feet. Subsurface water could occur in a perched condition during the spring and early summer as snow melt occurs.

3. Practical excavation equipment refusal was encountered in cobbles, boulders or bedrock in Test Pits TP-1, TP-3, TP-7, TP-9 and TP-10 at depths ranging from approximately 5 to 9½ feet below the existing ground surface. Difficult excavation should be expected in areas of cobbles, boulders and bedrock and in confined excavations such as for utility trenches.

4. The proposed residences may be supported on spread footings bearing on the undisturbed, natural soil or bedrock, or on compacted structural fill extending down to the undisturbed, natural soil or bedrock. If a footing would bear partially on bedrock and partially on compacted structural fill or natural soil, the footing should be extended down to bear entirely on bedrock or at least 2 feet of structural fill provided below the entire footing.

5. Spread footings bearing on the undisturbed, natural soil may be designed using an allowable net bearing pressure of 2,000 pounds per square foot (psf). Spread footings bearing on at least 2 feet of compacted structural fill or on at least 2 feet of undisturbed, natural gravel may be designed using an allowable net bearing pressure of 3,000 psf. Footings bearing entirely on bedrock may be designed using an allowable net bearing pressure of 4,000 psf.

6. The clay, clayey sand and possibly claystone bedrock can result in construction access difficulties during times when they are very moist to wet such as in the winter or spring or at times of prolonged rainfall. Placement of 1 to 2 feet of granular fill or excavation down to granular soil will generally improve site conditions for construction in areas where the subgrade consists of very moist to wet clay, clayey sand or possible claystone bedrock.

7. Modifications to the existing slopes steeper than about 3 horizontal to 1 vertical such as placing fill along or above the slope or excavation near the toe of the slope may adversely affect the stability of the slope. Site grading

Executive Summary (continued)

plans for individual building lots in areas where slopes are steeper than 3 horizontal to 1 vertical should be reviewed for by us prior to construction.

8. Based on our experience in the area, perched water conditions may develop during the wet times of the year. We recommend that subsurface drains be provided around the below-grade-floor portions of the residences.

9. Due to the variable subsurface conditions encountered across the site, consideration should be given to conducting site specific geotechnical studies for individual building lots in areas where slopes are steeper than 3 horizontal to 1 vertical.

10. Geotechnical information related to site grading, foundations, subgrade preparation, pavement design and materials is included in the report.

SCOPE

This report presents the results of a geotechnical investigation for the proposed Crimson Ridge Phases 2 and 3, a residential development to be located at approximately 5129 East Whispering Pines Lane in Eden, Utah. The report presents the subsurface conditions encountered, laboratory test results and recommendations for the proposed construction. The study was conducted in general accordance with our proposal dated July 22, 2020.

Field exploration was conducted to obtain information on the subsurface conditions. Samples obtained from the field investigation were tested in the laboratory to determine physical and engineering characteristics of the on-site soil. Information obtained from the field and laboratory investigations was used to define conditions at the site for our engineering analysis and to develop recommendations for the proposed foundations and pavement.

This report has been prepared to summarize the data obtained during the study and to present our conclusions and recommendations based on the proposed construction and the subsurface conditions encountered. Design parameters and a discussion of geotechnical engineering considerations related to construction are included in the report.

PREVIOUS STUDIES

Western Geologic & Environmental, LLC previously conducted a geologic hazards evaluation of the site and presented their findings and recommendations in a report dated May 15, 2020. The geology map in the report shows landslide deposits in some areas of the western portion of the site.

We understand that a geotechnical study was conducted by others for this site but the information from the study was not provided for our review.

SITE CONDITIONS

The site consists primarily of undeveloped land. There are no permanent structures or pavements on the site. There are unpaved trails and access roads in the eastern portion of the site. There is a drainage that extends generally east/west through the northern portion of the property. Most of the drainage was dry at the time of our field study. There was some water in the western portion of the drainage.

The general slope of the ground is down to the east and down toward the drainage. There are moderately steep slopes generally on the order of 2 horizontal to 1 vertical along the west side of the property and along the drainage. Slope are generally flatter on the order of 4 horizontal to 1 vertical and flatter in the rest of the property.

Vegetation in the western two-thirds of the site consists of relatively dense coverage of grass, brush and trees. There are only a few number of trees in the eastern one-third.

The site is bounded on the south by Crimson Ridge Phase 1 which contains several residences and roads. State Road 158 extends along the east side of the site. There are several residences and out-buildings north of east end of the site. Undeveloped land similar to the project site extends north of the west end of the site. Steep, undeveloped mountainside is west of the site.

FIELD STUDY

Ten test pits were excavated at the approximate locations indicated on Figure 1 as part of this investigation. The test pits were excavated on August 5 and 10, 2020 using a Kobelco 75 Series tracked excavator. The test pits were logged and soil samples obtained by an engineer from AGEC.

The test pits were backfilled without significant compaction. The backfill in the test pits should be removed and properly compacted where it will support proposed buildings, floor slabs or pavement.

SUBSURFACE CONDITIONS

Up to approximately 2 feet of topsoil was encountered in the test pits. The soil encountered below the topsoil consists of clay, sand and gravel. The sand and gravel generally extends the full depth investigated. Clay extends the full depth of Test Pit TP-4. Bedrock was encountered below the gravel in Test Pit TP-3 at a depth of approximately 5 feet and below the topsoil in Test Pit TP-7.

A description of the various soil and bedrock encountered in the test pits follows:

Topsoil - The topsoil consists of sandy lean clay with occasional gravel. The topsoil is slightly moist to moist, brown to dark brown and contains root and organics.

Lean Clay - The clay has medium to high plasticity and contains small to moderate amounts of sand, occasional gravel and cobbles up to approximately ½ foot in size. It is stiff to very stiff, moist to very moist and brown to dark brown to gray.

Clayey Sand with Gravel - The sand is medium dense to dense, slightly moist to moist, occasionally mottled and brown to dark brown.

Laboratory tests conducted on a sample of sandy fat clay indicate that it has a natural moisture content of 15 percent and a natural dry density of 103 pounds per cubic foot (pcf).

Results of a direct shear test conducted on a remolded sample of the clay after removal of particles larger than the No. 10 Sieve are presented on Figure 5.

Silty Sand - The silty sand contains occasional clay clods. It is medium dense, moist and gray.

Silty Gravel with Sand - The gravel contains small to moderate amounts of silt. The gravel contains cobbles up to approximately 8 inches in size. It is dense to very dense, slightly moist and brown.

Clayey Gravel with Sand - The gravel contains small to moderate amounts of clay, cobbles and boulders up to approximately 2 feet in size. It is medium dense to dense, slightly moist to moist and brown to dark brown.

Bedrock - The bedrock consists of tufaceous claystone, which is hard, slightly moist and light gray.

A summary of the laboratory test results is presented on Table I and included on the logs of the test pits, Figures 2 and 3.

SUBSURFACE WATER

No subsurface water was encountered in the test pits at the time of excavation to the maximum depth investigated, approximately 11 feet. Subsurface water could occur in a perched condition during the spring and early summer as snow melt occurs.

PROPOSED CONSTRUCTION

We understand that the site is planned for single-family residential development. We anticipate that residences will consist of one to three-story, wood-frame structures with the potential for basements. We have assumed that building loads will consist of wall loads up to 3 kips per foot and column loads up to 50 kips based on typical residential construction

in the area. Site grading plans for individual building lots were not provided at the time of our investigation. Due to the variable subsurface conditions encountered across the site, consideration should be given to conducting site specific geotechnical studies for individual building lots within the development.

Paved roads are planned to extend through the proposed development. We have assumed traffic consisting of 1,000 light passenger vehicles and two light delivery trucks per day, and three garbage trucks per week.

Preliminary site grading plans provided indicate there may be cuts up to approximately 10 feet and fills up to approximately 15 feet for roads.

If the proposed construction, building loads or anticipated traffic is significantly different from what is described above, we should be notified so that we can reevaluate the recommendations given.

RECOMMENDATIONS

Based on the subsurface conditions encountered, laboratory test results, our understanding of the proposed construction and our experience in the area, the following recommendations are given:

A. Site Grading

We anticipate site grading plans for individual lots will be developed later. Grading should be planned to minimize the change in grade. Site grading plans for individual building lots in areas where slopes are steeper than 3 horizontal to 1 vertical should be reviewed by us for consistency with recommendations presented in this report prior to construction and to determine if additional exploration and stability analysis is needed.

1. Excavation

Practical excavation equipment refusal was encountered in cobbles, boulders or bedrock in Test Pits TP-1, TP-3, TP-7, TP-9 and TP-10 at depths ranging from approximately 5 to 9½ feet below the existing ground surface. Difficult excavation should be expected in areas of cobbles, boulders and bedrock. Jackhammering, light blasting or other rock excavation methods may be needed, particularly for confined excavations such as for utilities.

Consideration should be given to using excavation equipment with a flat cutting edge when excavating for building foundations in clay to minimize disturbance of the bearing soil.

2. Temporary Cut and Fill Slopes

We anticipate temporary unretained excavation slopes in the soil can generally be constructed at 1 horizontal to 1 vertical or flatter. Though flatter slopes may be needed in the sand and gravel that does not have much clay and where water is encountered. Steeper excavation slopes may be considered in the bedrock. It is the responsibility of the contractor to provide appropriate slopes to assure safe working conditions and stability of adjacent areas. Additional evaluation of excavation slopes by a qualified engineer may be required during the construction process.

3. Permanent Cut and Fill Slopes

Permanent unretained cut and fill slopes up to approximately 25 feet in height may be constructed at 3 horizontal to 1 vertical or flatter. Permanent unretained cut and fill slopes up to approximately 10 feet in height may be constructed at 2½ horizontal to 1 vertical or flatter. Steeper slopes may be considered and should be evaluated on an individual basis. Flatter slopes may be needed where water or other adverse conditions are encountered.

Fill placed on slopes steeper than 5 horizontal to 1 vertical should be keyed into the slope with a key for every 4 feet of vertical rise. Prior to placement of fill, the subgrade should be prepared by removing unsuitable fill, topsoil, organics, debris and other deleterious material.

Modifications to the existing slopes steeper than about 3 horizontal to 1 vertical such as placing fill along or above the slope or excavation near the toe of the slope may adversely affect the stability of the slope.

Slopes should be protected from erosion by revegetation or other methods.

4. Pavement Subgrade Preparation

Prior to placing site grading fill or base course, organics, topsoil, unsuitable fill, and other deleterious material should be removed.

The subgrade should be scarified to a depth of approximately 8 inches, the moisture adjusted to within 2 percent of the optimum moisture content and the subgrade compacted to at least 90 percent of the maximum dry density as determined by ASTM D-1557. The subgrade should then be proof-rolled to identify soft areas. Soft areas should be removed and replaced with properly compacted granular fill containing less than 15 percent passing the No. 200 sieve. If road grading occurs when the subgrade consists of very moist to wet clay, the subgrade should not be scarified and re-compacted or proof-rolled, but cut to undisturbed natural soil below the fill and topsoil and a sufficient thickness of granular fill placed to provide construction equipment access.

The clay, clayey sand and possibly claystone bedrock can result in construction difficulties during times when they are very moist to wet such as during the winter or spring or at times of prolonged rainfall. Placement of 1 to 2 feet of granular fill or excavation down to granular soil will generally

improve site conditions for construction equipment access in areas where the subgrade consists of very moist to wet clay, clayey sand or possibly claystone bedrock.

5. Materials

Materials used as fill for the project are anticipated to consist of imported structural fill, low permeable structural fill and on-site soil. Recommendations for these materials are shown below.

a. Imported Structural Fill

Listed below are materials recommended for imported structural fill in areas of non-moisture-sensitive soil and in areas where the moisture-sensitive soil has been removed or mitigated.

Fill Location	Recommendation
Below Footings	Non-expansive granular soil Passing No. 200 Sieve < 35% Liquid Limit < 30% Maximum size 4 inches
Below Floor Slabs (Upper 4 inches)	Sand and/or Gravel Passing No. 200 Sieve < 5% Maximum size 2 inches
Below Floor Slabs (Deeper than 4 inches)	Non-expansive granular soil Passing No. 200 Sieve < 50% Liquid Limit < 30% Maximum size 6 inches

b. On-Site Soil

The granular soil with low fines content meeting the material recommendation for imported structural fill may be reused as fill below structures and site grading fill. The clay, clayey sand and possibly some of the clayey gravel and the claystone bedrock are not recommended for use as structural fill below the proposed buildings,

but may be considered for use as utility trench backfill and grading fill below proposed pavements and landscape areas.

Depending on the moisture content of the soil and bedrock at the time of construction, the soil and bedrock may require wetting or drying prior to use as fill. Drying of the soil and bedrock may not be practical during cold or wet times of the year.

6. Compaction

Compaction of materials placed at the site should equal or exceed the minimum densities as indicated below when compared to the maximum dry density as determined by ASTM D 1557.

Fill To Support	Compaction
Foundations	≥ 95%
Concrete Flatwork	≥ 90%
Pavement	
Base Course	≥ 95%
Fill Placed Below Base Course	≥ 90%
Landscaping	≥ 85%
Retaining Wall Backfill	85 - 90%

To facilitate the compaction process, the fill should be compacted at a moisture content within 2 percent of the optimum moisture content.

Fill and pavement materials placed for the project should be frequently tested for compaction.

7. Drainage

The ground surface surrounding the proposed structures should be sloped away from the buildings in all directions with a slope of at least 6 inches in

10 feet for a distance of at least 10 feet away from the structure. Roof downspouts should discharge beyond the limits of backfill.

The collection and diversion of drainage away from the pavement surface is important to the satisfactory performance of the pavement section. Proper drainage should be provided.

B. Foundations

1. Bearing Material

With the proposed construction and the subsurface conditions encountered, the proposed residences may be supported on spread footings bearing on the undisturbed, natural soil, bedrock or on compacted structural fill extending down to the undisturbed, natural soil or bedrock. Structural fill placed below foundations should extend out away from the edge of footings a distance at least equal to the depth of fill placed beneath footings.

If a footing would bear partially on bedrock and partially on compacted structural fill or natural soil, the footing should be extended down to bear entirely on bedrock or at least 2 feet of structural fill be provided below the entire footing.

Topsoil, unsuitable fill, debris and other deleterious material should be removed from below proposed foundation areas.

2. Bearing Pressure

Spread footings bearing on the undisturbed, natural soil may be designed using an allowable net bearing pressure of 2,000 pounds per square foot (psf). Spread footings bearing on at least 2 feet of compacted structural fill or on at least 2 feet of undisturbed, natural gravel may be designed using an allowable net bearing pressure of 3,000 psf. Footings bearing entirely on

bedrock may be designed using an allowable net bearing pressure of 4,000 psf.

Footings should have a width of at least 1½ feet and a depth of embedment of at least 1 foot.

3. Temporary Loading Conditions

The allowable bearing pressure may be increased by one-half for temporary loading conditions such as wind or seismic loads.

4. Settlement

We estimate that total and differential settlement due to the proposed structures will be on the order of ¾ and ½ inch, respectively, for footings designed and constructed as indicated above.

Care will be required not to disturb the natural soil at the base of foundation excavations in order to maintain settlement within tolerable limits.

5. Frost Depth

Exterior footings and footings beneath unheated areas should be placed at least 40 inches below grade for frost protection.

6. Foundation Base

The base of foundation excavations should be cleared of loose or deleterious material prior to fill or concrete placement.

7. Construction Observation

A representative of the geotechnical engineer should observe foundation excavations and subgrade areas prior to placement of structural fill or concrete. This is particularly important in areas where moisture-sensitive soils were encountered.

C. Concrete Slab-on-Grade

1. Slab Support

Concrete slabs may be supported on the undisturbed, natural soil/bedrock or on compacted structural fill extending down to the undisturbed, natural soil or bedrock.

Topsoil, organics, unsuitable fill and other deleterious material should be removed from below proposed slab areas.

2. Underslab Sand and/or Gravel

A 4-inch layer of free-draining sand and/or gravel (less than 5 percent passing the No. 200 sieve) should be placed below the floor slab for ease of construction and to promote even curing of the floor slab concrete.

3. Vapor Barrier

A vapor barrier should be placed under the concrete floor if the floor will receive an impermeable floor covering. The barrier will reduce the amount of water vapor passing from below the slab to the floor covering.

D. Lateral Earth Pressures

1. Lateral Resistance for Footings

Lateral resistance for spread footings placed on the natural soil or on compacted structural fill is controlled by sliding resistance between the footing and the foundation soils. A coefficient of friction of 0.35 may be used in design for ultimate lateral resistance for footings. Passive resistance of the undisturbed natural soil or compacted structural fill adjacent the footings may also be considered for sliding resistance.

2. Foundation Walls and Retaining Structures

The following equivalent fluid weights are given for design of subgrade walls and retaining structures. The active condition is where the wall moves away from the soil. The passive condition is where the wall moves into the soil and the at-rest condition is where the wall does not move. The values listed assume a horizontal surface adjacent each side of the wall.

Soil Type	Active	At-Rest	Passive
Sand and Gravel	40 pcf	55 pcf	300 pcf
Clay and Silt	50 pcf	65 pcf	250 pcf

3. Seismic Conditions

Under seismic conditions, the equivalent fluid weight should be increased by 31 pcf for active and 16 pcf at-rest conditions and decreased by 31 pcf for passive conditions. This assumes a peak ground acceleration of 0.51g which represents a 2 percent probability of exceedance in a 50-year period (ICC, 2017).

4. Safety Factors

The values recommended above for active and passive pressures assume mobilization of the soil to achieve the assumed soil strength. Conventional safety factors used for structural analysis for such items as overturning and sliding resistance should be used in design.

E. Seismicity, Faulting and Liquefaction

1. Seismicity

Listed below is a summary of the site parameters that may be used with the 2018 International Building Code.

Description	Value [1]
Site Class	Default D [2]
S_s - MCE_R ground motion (period = 0.2s)	0.95g
S_1 - MCE_R ground motion (period = 1.0s)	0.34g
F_a - Site amplification factor at 0.2s	1.2
F_v - Site amplification factor at 1.0s	1.96 [3]
PGA - MCE_G peak ground acceleration	0.42g
PGA_M - Site modified peak ground acceleration	0.51g

[1] Values obtained from information provided by the Applied Technology Council at https://hazards.atcouncil.org

[2] Site Class Default D was selected based on the subsurface conditions encountered at the site and the lack of deeper subsurface information.

[3] F_v was obtained using straight-line interpolation of the information presented in Table 11.4-2 of ASCE 7-16.

2. Faulting

There are no mapped active faults extending through the subject property. The closest mapped fault, which is considered active, is the Wasatch fault located approximately 5½ miles west of the site (Utah Geological Survey 2020).

3. Liquefaction

The area proposed for construction is mapped as having a "very low" potential for liquefaction (Anderson and others, 1994).

Based on the subsurface conditions encountered to the depth investigated, and our understanding of geologic conditions in the area, it is our professional opinion that liquefaction is not a hazard at the site.

F. Water Soluble Sulfates

We do not anticipate there is high sulfate content in the soil and bedrock at the site based on our experience at the site and in the area, with similar soil and bedrock. Sulfate resistant cement is not needed for concrete placed in contact with the natural soil and bedrock. Other conditions may dictate the type of cement to be used for the project.

G. Subsurface Drains

Based on our experience in the area, perched water conditions may develop during the wet times of the year. We recommend that subsurface drains be provided around the below-grade floor portions of the residences. The subsurface drain system should consist of at least the following items.

1. The subsurface drain system should consist of a perforated pipe installed in a gravel filled trench around the perimeter of the subgrade floor portion of the structure. A geosynthetic drain could be used as an alternative. The drain should extend up the foundation walls high enough (to within approximately 3 feet of the ground surface) to intercept potential subsurface water.

2. At least 6 inches of free-draining gravel should be placed below the floor slab of the structure. The gravel should connect the perimeter drainage pipe.

3. The flow line of the pipe should be placed at least 14 inches below the finished floor level and should slope to a sump or outlet where water can be removed by pumping or by gravity flow.

4. If placing the gravel and drain pipe requires excavation below the bearing level of the footing, the excavation for the drain pipe and gravel should have a

slope no steeper than 1:1 (horizontal to vertical) so as not to disturb the soil below the residence.

5. A filter fabric should be placed between the natural soil and the drain gravel. This will help reduce the potential for fine grained material filling in the void spaces of the gravel.

6. Consideration may be given to installing cleanouts to allow access into the perimeter drain should cleaning of the pipe be required in the future.

H. Pavement

Based on the subsurface conditions encountered, laboratory test results and the assumed traffic as indicated in the Proposed Construction section of the report, the following pavement support recommendations are given:

1. Subgrade Support

   The near-surface soil consists of areas of clay and silt and areas of sand and gravel. California Bearing Ratio (CBR) values of 3 and 15 percent were used in the analysis, which assume clay and granular subgrades, respectively.

2. Pavement Thickness

   Based on the subsoil conditions, assumed traffic as described in the Proposed Construction section of the report, a design life of 20 years for flexible pavement and 30 years for rigid pavement and methods presented by AASHTO, a flexible pavement section consisting of 3 inches of asphaltic concrete overlying 8 inches of high quality base course is calculated. Alternatively, a rigid pavement section consisting of 5 inches of Portland cement concrete may be used.

The base course thickness may be reduced to 6 inches in areas where the subgrade consists of at least 6 inches of granular soil with a CBR of at least 15, in areas where at least 6 inches of granular borrow is placed to facilitate construction, and in areas of no truck or bus traffic.

Granular borrow may be needed to facilitate pavement construction in areas of very moist to wet clayey subgrade as discussed in the Pavement Subgrade Preparation section.

3. Pavement Materials and Construction

a. Flexible Pavement (Asphaltic Concrete)

Pavement materials should meet the specifications for the applicable jurisdiction. The use of other materials may result in the need for different pavement material thicknesses.

b. Rigid Pavement (Portland Cement Concrete)

The pavement thickness assumes that the pavement will have aggregate interlock joints and that a concrete shoulder or curb will be provided.

Pavement materials should meet the specifications for the applicable jurisdiction. The pavement thickness indicated above assumes that the concrete will have a 28-day compressive strength of 5,000 pounds per square inch. Concrete should be air entrained with approximately 6 percent air. Maximum allowable slump will depend on the method of placement but should not exceed 4 inches.

4. Jointing

Joints for concrete pavement should be laid out in a square or rectangular pattern. Joint spacings should not exceed 30 times the thickness of the slab. The joint spacings indicated should accommodate the contraction of the

concrete and under these conditions steel reinforcing will not be required. The depth of joints should be approximately one-fourth of the slab thickness.

I. Additional Services

It is important that we be involved during design and construction of the proposed development. There are several items where we can provide value, help the design of geotechnical aspects of the project be more efficient and help reduce the risk to the design team and owner.

We recommend that at least the following additional services be provided:

1. Due to the variable subsurface conditions encountered across the site, consideration should be given to conducting site specific geotechnical studies for individual building lots in areas where slopes are steeper than 3 horizontal to 1 vertical.

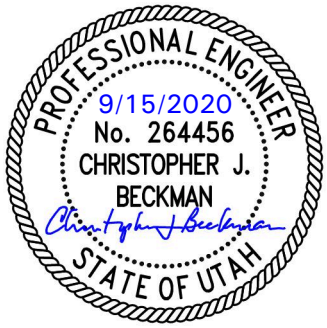
2. Observe foundation excavations prior to structural fill or concrete placement.

3. Review construction plans for the project to determine whether recommendations in this report have been incorporated into the design.

LIMITATIONS

This report has been prepared in accordance with generally accepted soil and foundation engineering practices in the area for the use of the client for design purposes. The conclusions and recommendations included within the report are based on the information obtained from the test pits excavated, the data obtained from laboratory testing and our experience in the area. Variations in the subsurface conditions may not become evident until additional exploration or excavation is conducted. If the subsurface conditions or groundwater level is found to be significantly different from what is described above, we should be notified to reevaluate our recommendations.

APPLIED GEOTECHNICAL ENGINEERING CONSULTANTS, INC.



Christopher J. Beckman, P.E.

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

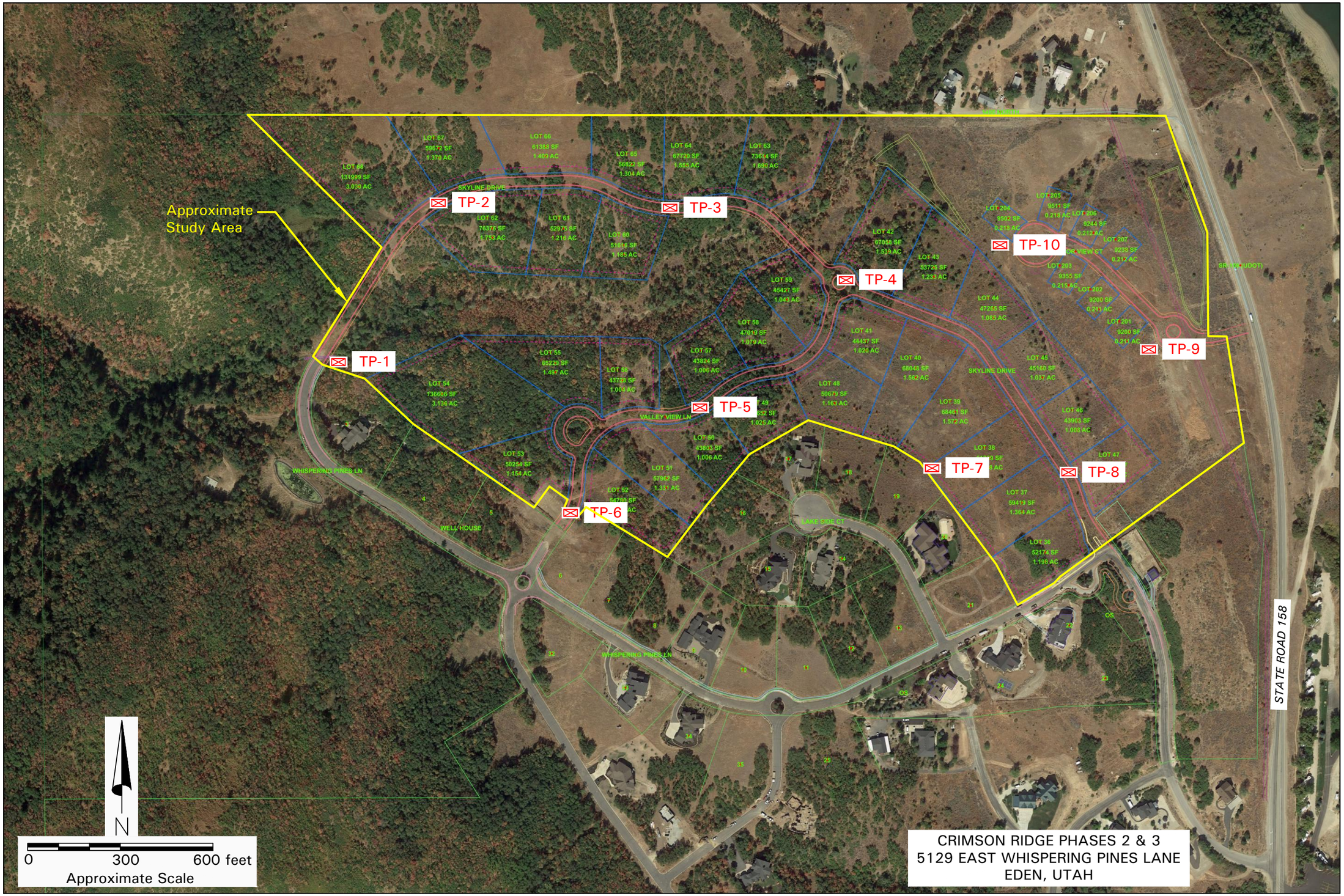
CJB/rs

REFERENCES

Anderson, L., Bay, J., Keaton, J.R., 1987; "Liquefaction Potential map for Weber County, Utah", Utah Geological Survey Contract Report 14-08-0001-22015.

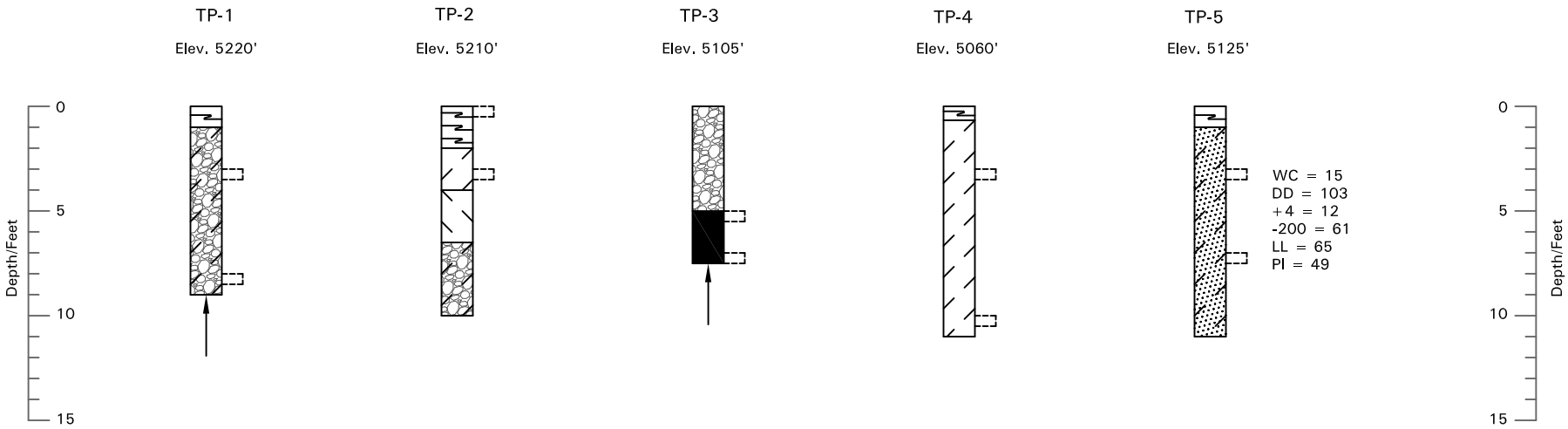
International Code Council, 2017; 2018 International Building Code, Falls Church, Virginia.

Utah Geological Survey, 2020; Utah Quaternary Fault and Fold Database, http://geology.utah.gov/resources/data-databases/qfaults/ accessed August 18, 2020.



CRIMSON RIDGE PHASES 2 & 3
5129 EAST WHISPERING PINES LANE
EDEN, UTAH

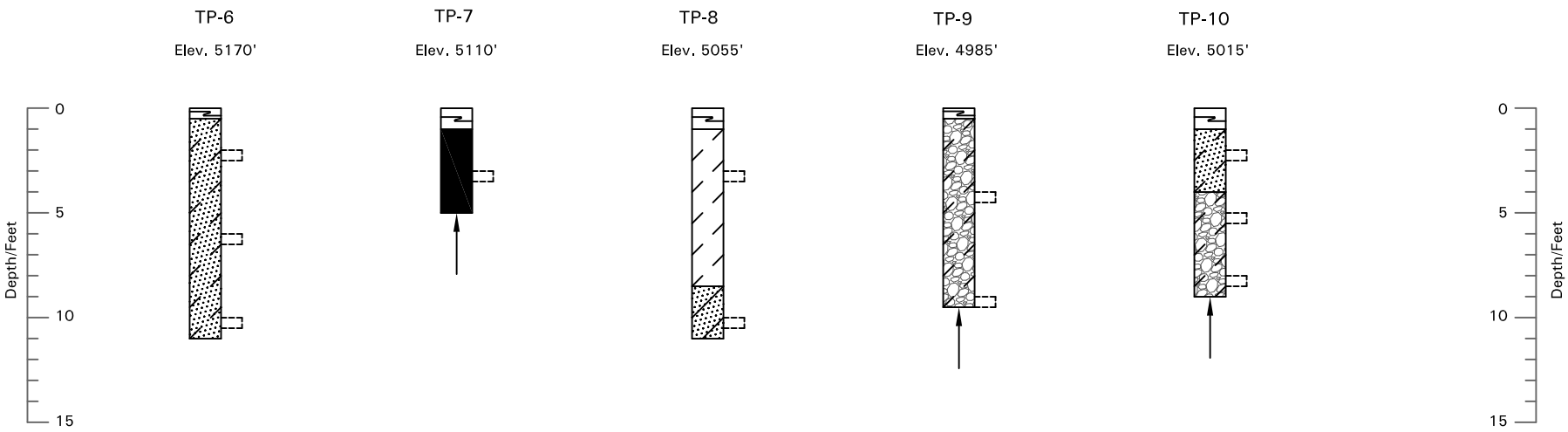
1200541	AGEC	Test Pit Locations	Figure 1



Approximate Vertical Scale 1" = 8'

See Figure 4 for Legend and Notes

1200541	AGEC	Test Pit Logs	Figure 2



Approximate Vertical Scale 1" = 8'

See Figure 4 for Legend and Notes

1200541	AGEC	Test Pit Logs	Figure 3

LEGEND:

Topsoil; sandy lean clay, occasional gravel, roots and organics, slightly moist to moist, brown to dark brown.

Lean Clay (CL); medium to high plasticity, small to moderate amounts of sand, occasional gravel and cobbles up to approximately ½ foot in size, stiff to very stiff, moist to very moist, brown to dark brown to gray.

Clayey Sand with gravel (SC); medium dense to dense, slightly moist to moist, occasionally mottled, brown to dark brown.

Silty Sand (SM); occasional clay clods, medium dense, moist, gray.

Silty Gravel with Sand (GM); small to moderate amounts of silt, occasional cobbles up to approximately 8 inches in size, dense to very dense, slightly moist, brown.

Clayey Gravel with Sand (GC); small to moderate amounts of clay, cobbles, boulders up to approximately 2 feet in size, medium dense to dense, slightly moist to moist, brown to dark brown.

Claystone Bedrock; hard, slightly moist, light gray.

Indicates disturbed sample taken.

Indicates practical excavation refusal.

NOTES:

1. The test pits were excavated on August 5 and 10, 2020 with a Kobelco 75 Series mini tracked excavator.
2. Locations of the test pits were measured approximately by pacing from features shown on the site plan provided.
3. Elevations of the test pits were determined by interpolating between contours shown on the site plan provided.
4. The test pit locations and elevations should be considered accurate only to the degree implied by the method used.
5. The lines between materials shown on the logs represent the approximate boundaries between material types and the transitions may be gradual.
6. No free water was encountered in the test pits at the time of excavation.
7. WC = Water Content (%);
   DD = Dry Density (pcf);
   +4 = Percent Retained on the No. 4 Sieve;
   -200 = Percent Passing the No. 200 Sieve;
   LL = Liquid Limit (%);
   PI = Plasticity Index (%).

APPLIED GEOTECHNICAL ENGINEERING CONSULTANTS, INC.

TABLE I
SUMMARY OF LABORATORY TEST RESULTS

PROJECT NUMBER: 1200541

SAMPLE LOCATION		NATURAL MOISTURE CONTENT (%)	NATURAL DRY DENSITY (PCF)	GRADATION			ATTERBERG LIMITS		UNCONFINED COMPRESSIVE STRENGTH (PSF)	WATER SOLUBLE SULFATE (%)	SAMPLE CLASSIFICATION
TEST PIT	DEPTH (FEET)			GRAVEL (%)	SAND (%)	SILT/ CLAY (%)	LIQUID LIMIT (%)	PLASTICITY INDEX			
TP-5	3	15	103	12	27	61	65	49			Sandy Fat Clay (CH)