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Debris Flow Hazard Study
Micron Project
Approximately 500 West and State Road 92
Lehi, Utah

GeoStrata Job No. 589-100
October 11, 2021

Prepared for:

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TABLE OF CONTENTS

APPENDICES

1.0 EXECUTIVE SUMMARY

The purpose of our geologic hazards investigation is to assess the 664-acres subject parcel located at approximately 500 West and State Route 92 in Lehi, Utah for geologic hazards that may impact the cost and feasibility of the proposed construction. GeoStrata conducted a preliminary geologic hazard investigation that included a review of published literature and geologic maps, stereographic aerial photograph interpretation, a review of lidar data, and a reconnaissance level field investigation. Based on the results of our preliminary geologic hazards investigation, we assessed that the geologic hazards which posed a potential risk to the subject property are surface fault rupture hazards and debris flow/alluvial fan flooding hazards. GeoStrata planned and conducted a surface fault rupture hazard investigation and a debris flow/alluvial fan flooding hazard investigation for the 664-acres subject parcel. This report was prepared to present our final debris flow/alluvial fan flooding hazard investigation we conducted for the 664-acres subject parcel. A separate report was prepared to present the final surface fault rupture hazard investigation we conducted for the 664-acres subject parcel. The work performed for this report was performed in accordance with our proposal, dated April 20, 2021.

The subject site is located in Utah County along the south facing slopes of the Traverse Mountains. Much of the property is located on gently to moderately sloping hillsides with existing residential subdivisions to the east and west and an undeveloped and steep native hillside to the north. The Micron restricted open space area is centrally located with respect to the proposed planned development. Information concerning this project was provided by the Client. It is our understanding that proposed development will consist of development ranging from single family lots to townhomes and include some mixed-use retail and office buildings as well as churches and public schools. The total overall area to be developed is 664 acres according to the concept plan.

Portions of the subject site are underlain by Holocene age alluvial fan deposits. As such, this report will assess the alluvial fan flooding and debris flow hazard within the subject site. special study area associated with this drainage is warranted within the subject property. Due to the size of the Maple Hollow drainage basin, it is the opinion of GeoStrata that stream flooding hazard associated with this drainage could potentially impact the subject site. As such, GeoStrata will assess the stream flooding hazard associated with Maple Hollow. The other drainage channels north of the subject site trend into the subject property and generally terminate on Holocene age alluvial fans located within the subject property where debris flow hazard special study areas associated with these drainages have been mapped. These other drainage channels will be assessed for debris flow hazards.

Modern (upper Holocene) alluvial fan deposits are mapped at the mouth of the drainages within the subject site and were assessed as part of this study. A large alluvial fan deposit is mapped as emanating from Drainage 6 (D6) and extending from the foothills to Timpanogos Highway, and described by Beik (2005) as Holocene to upper Pleistocene in age. Based on our review of the soils encountered in the test pits located on this large alluvial fan deposit, it is our opinion that the area of the alluvial fan deposit extending from MW-TP-15 to Timpanogos Highway is an older, Pleistocene, alluvial fan deposit and comprised of alluvial fan flooding deposits interfingered with Lake Bonneville deposits. Debris flow deposits were encountered near the mouth of D6 in DS-TP-06. Based on our field investigation, it is our opinion that the types of alluvial fan deposits emanating from the drainages are predominantly alluvial fan flooding deposits consisting of silt, clay, sand and gravel up to 6 inches in diameter.

The geometry of the channels within the drainages were observed to vary from V-shaped to broad. No water was observed to be flowing in any of the drainages at the time of our site visit in the beginning of July 2021. Based on our subsurface investigation as part of this study and our geotechnical study compiled in a separate report for the subject site, the types of alluvial fan deposits emanating from the drainages are assessed to be water dominated or alluvial fan flooding deposits that are generally 4 to 6 inches thick per event. Based on our review of published geologic maps, our aerial photograph interpretation, our review of hillshade imagery derived from 0.5-meter lidar, and our field observations, the alluvial fan flooding hazard is considered low to moderate. Our assessment of this hazard and calculated debris flow volumes are addressed in more detail in Section 6.1.1 of this report.

Stream flooding hazard was also assessed as part of this investigation. Due to the size of the Maple Hollow drainage basin, it is the opinion of GeoStrata that stream flooding hazard associated with this drainage could potentially impact the subject site. Based on our field and office investigation, it is the opinion of GeoStrata that the stream flooding hazard within the defined channel is considered high. GeoStrata recommends that no development or grading within the drainage channel should be planned, unless properly designed by the civil engineer. All planned roadways that cross the Maple Hollow drainage channel should be designed with culverts sufficiently sized to allow for peak flows within the channel to pass through the culvert and remain confined within the drainage channel.

NOTICE: The scope of services provided within this report are limited to the assessment of the subsurface conditions for the proposed development. This executive summary is not intended to replace the report of which it is part and should not be used separately from the report. The executive summary is provided solely for purposes of overview. The executive summary omits a number of details, any one of which could be crucial to the proper application of this report.

2.0 INTRODUCTION

2.1 PURPOSE AND SCOPE OF WORK

The purpose of our geologic hazards investigation is to assess the 664-acres subject parcel located at approximately 500 West and State Route 92 in Lehi, Utah for geologic hazards that may impact the cost and feasibility of the proposed construction. GeoStrata conducted a preliminary geologic hazard investigation that included a review of published literature and geologic maps, stereographic aerial photograph interpretation, a review of lidar data, and a reconnaissance level field investigation. Based on the results of our preliminary geologic hazards investigation, we assessed that the geologic hazards which posed a potential risk to the subject property are surface fault rupture hazards and debris flow/alluvial fan flooding hazards. GeoStrata planned and conducted a surface fault rupture hazard investigation and a debris flow/alluvial fan flooding hazard investigation for the 664-acres subject parcel. This report was prepared to present our final debris flow/alluvial fan flooding hazard investigation we conducted for the 664-acres subject parcel. A separate report was prepared to present the final surface fault rupture hazard investigation we conducted for the 664-acres subject parcel. The work performed for this report was performed in accordance with our proposal, dated April 20, 2021. Our scope of services for this final debris flow hazard investigation included the following:

- Review of available references and maps of the area.
- Stereographic aerial photograph interpretation of aerial photographs covering the site area.
- Review of Digital Elevation Models obtained from the State of Utah AGRC.
- Geologic reconnaissance and field review of geologic mapping of the site by an engineering geologist to observe and document pertinent surface features indicative of surface fault rupture and debris flow hazards.
- Subsurface investigation.
- Logs of the exploratory trenches.
- Preparation of this report.

The recommendations contained in this report are subject to the limitations presented in the Limitations segment of this report.

2.2 PROJECT DESCRIPTION

The subject site is located in Utah County along the south facing slopes of the Traverse Mountains. Much of the property is located on gently to moderately sloping hillsides with existing residential subdivisions to the east and west and an undeveloped and steep native hillside to the north. The Micron restricted open space area is centrally located with respect to the proposed planned development (see Plate A-1 *Site Vicinity Map*, Plate A-2 *Topographic Map*). Information concerning this project was provided by the Client. It is our understanding that proposed development will consist of development ranging from single family lots to townhomes and include some mixed-use retail and office buildings as well as churches and public schools. The total overall area to be developed is 664 acres according to the concept plan.

Portions of the subject site are underlain by Holocene age alluvial fan deposits as shown on Plate A-3 *Geologic Hazards Special Study Map.* As such, this report will assess the alluvial fan flooding and debris flow hazard within the subject site. It should be noted that the debris flow hazard special study zones were delineated by Draper City. After review of the areas identified as debris flow hazards and the most recent geologic map that covers the subject site, no Holocene age alluvial fan deposit is mapped at the mouth of Maple Hollow which is the large drainage located in the western portion of the subject site. Based on the current standards of care for assessing debris flow hazards and since the subject site is no longer located within Draper City, it is the opinion of GeoStrata that no debris flow hazard special study area associated with this drainage is warranted within the subject property. Furthermore, the drainage channel is a deeply incised well defined drainage channel that trends across the subject property and extends farther south into the valley where it terminates into the Dry Creek drainage channel. However, due to the size of the Maple Hollow drainage basin, it is the opinion of GeoStrata that stream flooding hazard associated with this drainage could potentially impact the subject site. As such, GeoStrata will assess the stream flooding hazard associated with Maple Hollow. The other drainage channels north of the subject site trend into the subject property and generally terminate on Holocene age alluvial fans located within the subject property where debris flow hazard special study areas associated with these drainages have been mapped on Plate A-3 *Geologic Hazards Special Study Map*. These other drainage channels will be assessed for debris flow hazards.

3.0 METHODS OF STUDY

3.1 OFFICE INVESTIGATION

As part of our office investigation, GeoStrata reviewed pertinent literature and maps listed in the references section of this report, which provide background information on the local geologic history of the area and the locations of suspected or known geologic hazards (Beik, 2005; Constenius and others, 2011; Black and others, 2003). A stereographic aerial photograph interpretation was performed for the subject site using a set of stereo aerial photographs obtained from the UGS as shown in Table 1.

Source	Photo Number	Date	Scale
ASCS	AAL_4-33	September 21, 1937	1:20,000
ASCS	AAL_4-34	September 21, 1937	1:20,000

Table 1: Aerial Stereosets.

GeoStrata also conducted a review of 2013-2014 0.5-meter lidar provided by the State of Utah AGRC to assess the subject site for visible lineations or other geologic hazards related geomorphology. The digital elevation models were used to create hillshade imagery that could be reviewed for assessment of geomorphic features related to geologic hazards (Plate A-4 *Hillshade Map*).

3.2 FIELD INVESTIGATION

An engineering geologist investigated the geologic conditions within the general site area. A field geologic reconnaissance was conducted to observe existing geologic conditions and to assess existing geomorphology for surficial evidence of geologic hazards. We used our field observations to assess the observations made during our office research and to observe any evidence of geologic hazards that were not evident in our office research, but which could be observed in the field.

To assess the subject site for the potential of alluvial fan flooding and debris flows impacting the subject site, GeoStrata assessed the geometry and characteristics of the drainages that are identified as a source for active alluvial fan deposits. GeoStrata also collected cross sectional data of the unnamed drainages to further assess the potential storage volume within the drainages. In addition to the above, GeoStrata reviewed the test pits and trenches excavated into the mapped alluvial fan deposits as part of our geotechnical investigation and surface fault rupture special study of the subject site. This information will be used to classify the types of debris flow deposits emanating from the drainages north and upslope of the subject site.

4.0 GEOLOGIC CONDITIONS

4.1 REGIONAL GEOLOGIC SETTING

The site is located in Lehi, Utah at an elevation ranging from approximately 4,830 to 5,300 feet above mean sea level. The subject site is located within the southern foothills of the Traverse Mountains, a structural salient denoting the boundary between Salt Lake Valley and Utah Valley and the southern terminus of the Salt Lake City Segment and the northern terminus of the Provo Segment of the Wasatch Fault Zone. Tertiary volcanic rocks and Tertiary alluvial fan deposits dominate the East Traverse Mountains and late Paleozoic shallow marine bedrock constitutes the west Traverse Mountains. The Utah Valley is a northwest trending deep, lacustrine sediment-filled structural basin of Cenozoic age bounded on the northeast and southwest by two normal faults that dip towards the center of the valley. Utah Valley is a fault graben flanked by two uplifted blocks, the Wasatch Range to the east and the Lake Mountains to the west. The Wasatch Range is the easternmost expression of pronounced Basin and Range extension in north-central Utah (Stokes, 1986).

The near-surface geology of the Utah Valley is dominated by sediments, which were deposited within the last 30,000 years by Lake Bonneville (Scott and others, 1983; Hintze, 1993; Machette, 1992; Constenius and others, 2011). The lacustrine sediments near the mountain front consist mostly of gravel and sand. As the lake receded, streams began to incise large deltas formed at the mouths of major canyons along the Wasatch Range, and the eroded material was deposited in shallow lakes and marshes in the basin and in a series of recessional deltas and alluvial fans. Sediments toward the center of the valley are predominately deep-water deposits of clay, silt, and fine sand. However, these deep-water deposits are in places covered by a thin post-Bonneville alluvial cover. Most surficial deposits along the Wasatch fault zone were deposited during the final cycle of the Bonneville Lake Cycle between approximately 32 to 10 ka (thousands of years ago) and in the Holocene (< 10 ka).

4.2 REPORTED SITE GEOLOGY

The surficial deposits overlying the subject site, as reported on available geologic maps, are shown on Plate A-5 *Site Vicinity Geologic Map* (Beik, 2005) and Plate A-6 *Site Vicinity 30x60 Geologic Map* (Constenius and others, 2011). As shown on Plate A-6 and Plate A-7, Beik (2005) and Constenius and others (2011) delineates the surficial deposits within the subject site as Holocene to upper Pleistocene age alluvial-fan deposits (Qaf_1, Qafy) emanating from and sourced by the drainages north of the subject site. These deposits typically occur at drainage mouths. In addition to the above sources, the alluvial fan deposits are also sourced by streams locally incising Lake Bonneville deposits where deposits typically form a coalesced apron at the base of the Wasatch Range. These alluvial fan deposits likely overlying Lake Bonneville lacustrine silt, sand and gravel deposits (Qlsb, Qlgb) that are mapped south and away from the mountain front. The surficial deposits are likely overlying Tertiary alluvial fan deposits (Taf) and Tertiary age volcanic rocks of the east Traverse Mountains (Tv).

4.3 SITE SPECIFIC GEOMORPHOLOGY

GeoStrata reviewed 1937 aerial stereosets, and hillshade imagery derived from 2013-2014 0.5-meter lidar provided by the State of Utah AGRC, to assess the subject site for visible lineations or other geologic hazards related geomorphology. As illustrated on Plate A-4, surface expressions related to Lake Bonneville and surface fault ruptures were identified during our review of hillshade imagery.

4.4 TECTONIC SETTING AND SEISMICITY

The west dipping Provo segment of the WFZ is mapped as trending north-south along the western toe of the Wasatch Mountains east of the subject site. Several fault splays associated with the northern terminus of the Provo segment of the WFZ are mapped trending generally northeast-southwest and generally east-west just north of the subject site. One of these fault splays trends generally northeast-southwest through a portion of the subject site (Plate A-3). The Provo segment of the WFZ trends N14°W and extends approximately 59 km from the Payson Salient where the Nephi segment begins to the Traverse Mountains where the Salt Lake City segment begins. Paleoseismic trenching investigations conducted on the Provo segment indicate that 10 large surface-faulting earthquakes occurred since 13,040 cal BP, which yields a preferred average mid to late Holocene recurrence interval of 1,400 years (Olig and others, 2011). The most recent paleoseismic event occurred approximately 500 ± 150 cal B.P. and produced a displacement of 4.7 ± 0.5 meters.

Analysis of the ground shaking hazard along the Wasatch Front suggests that the Wasatch Fault Zone is the single greatest contributor to the seismic hazard in the Salt Lake City region and surrounding areas. The Provo segment shows evidence of Holocene movement and is therefore considered active.

5.0 GENERALIZED SITE CONDITIONS

5.1 SURFACE CONDITIONS

The project site is located at approximately 500 West and State Route 92 in Lehi, Utah at an elevation between approximately 4,830 to 5,300 feet above sea level (see Plate A-1; Plate A-2). The subject site is currently an undeveloped 664-acre parcel within relatively established residential neighborhoods to the south, east and west and an undeveloped and steep native hillside to the north. The Micron restricted open space area is centrally located with respect to the proposed planned development. The site and much of the surrounding area are gently to moderately sloping generally to the south toward the valley and consist primarily of native grasses and sagebrush with the higher elevations and drainages covered by mature scrub oak.

5.2 FIELD RECONNAISANCE

Field investigations and observations used to assess the debris flow potential, probability and magnitude can be categorized into two areas of study (Giraud, 2005):

1. Channel Investigation – Studies of debris flows indicate that the majority of material/debris transported onto the alluvial fan comes from existing deposits within the defined drainage channel. The unit volume technique is commonly used to assign applicable debris yield rates (unit volume along distinct reaches of the channel) in order to approximate the potential debris volume.

2. Alluvial Fan Investigation – the thickness of debris deposits measured on the alluvial fan contribute to an understanding of past debris flow magnitude and potential run-out distance.

GeoStrata completed a site reconnaissance of the drainages on July 1, 2021. The site reconnaissance included observations of the surficial deposits in the drainages and collection of cross-sections from each drainage. Along with GeoStrata's field observations, geologic mapping of the site (Plate A-6 *Site Vicinity Geologic Map*; Plate A-7 *Site Vicinity 30'x60' Geologic Map*) was reviewed by GeoStrata as part of this investigation. The drainage basins for each drainage and some profile cross section locations delineated from 2013-2014 0.5-meter lidar are shown on Plate A-8 *Debris Flow Assessment Map*. Cross sections from Drainage 7 through 11 were collected in the field at the time of our site visit and compared to those delineated in the office. Cross sections from Drainage 1 through 6, 12 and 13 were delineated in the office. It was our objective to produce cross sections that would be representative of the various geometries that exist in the main channel of each drainage.

There are several drainages within the site ranging from small to moderate in size. A total of thirteen drainage basins were assessed as part of this study (Plate A-8 *Debris Flow Assessment Map*), which includes one major drainage basin known as Dry Creek Canyon (D6) and twelve minor drainage basins. Evidence observed within the drainages suggests that surface water is present in the channels during periods of high runoff, however, no water was observed in any of the drainages at the time of our site reconnaissance and therefore these drainages are considered ephemeral stream drainages. No loose sediment or bedrock was observed in any of the drainage channels. The cross-sectional geometry of the channels within each drainage is variable and ranged from a narrow channel bottom to a shallow and broad channel bottom. Drainages 4, 7, 10, 11 and 12 are predominantly vegetated with native grasses while Drainages 1, 2, 3, 5, 8, 9 and 13 were vegetated with scrub oak and native grasses. Brief descriptions of each drainage and their estimated stored debris yield rates can be found on Table 6 of Section 6.3 *Alluvial Fan Flooding* of this report.

5.3 SUBSURFACE CONDITIONS

The subsurface soil conditions were explored during the geotechnical engineering studies completed for the subject property and during a surface fault rupture hazard assessment completed for the subject property. As part of these studies, two trenches and 28 test pits were excavated across the subject property in the area of the alluvial fan flooding/debris flow hazard special study area (Plate A-5 *Exploration Location Map*). Subsurface soil conditions and soil stratigraphy were logged at the time the test pits and trenches were excavated. The following is a description as observed during our field investigation of the test pits and trench excavations located on mapped alluvial fan deposits.

5.3.1 Trench 3 Description

Trench 3 was approximately 400 feet long, oriented generally northwest-southeast (N27°W) and located west of Trench 2A and Trench 2B and along the eastern edge of an abandoned gravel pit (Plate A-5). Trench 3 was excavated with a trackhoe to depths between approximately 5 and 5 ½ feet below the existing site grade as it existed at the time of our investigation. A hand log of Trench 3 is presented on Plates B-1 through B-10.

The soils exposed in Trench 3 have been separated into 9 stratigraphic units and labeled from oldest to youngest as Unit 1 through Unit 9 on the geologic log of Trench 3. The oldest sediment observed at the bottom of Trench 3 was designated as Unit 1 and the youngest sediment observed at the top of Trench 3 was designated as Unit 9.

Unit 1 was observed to be similar to Unit 2 in Trench 2B and consist of lacustrine silt and sand related to Lake Bonneville. Unit 1 was observed to be slightly cemented, light red-brown, matrix supported and massive to crudely bedded, with calcium carbonate deposits throughout. Unit 1 was observed in the southernmost end of Trench 3 beginning at approximately 389 feet down trench.

Unit 2 was observed to be similar to Unit 1 in Trench 2B, Unit 4 within Trench 1A, Unit 2 in Trench 1B and Unit 1 in Trenches 1C through 1F and consist of lacustrine sand and gravel related to Lake Bonneville. Unit 2 was observed to be comprise of a clast supported and crudely bedded to bedded light brown fine to coarse gravel and fine to coarse sand. Clasts were observed to be subrounded to well-rounded and comprised of quartzite with trace amounts of andesite.

Unit 3 was observed to overlie Unit 2 and was observed between approximately 200 and 353 feet down trench and to consist of a colluvium and/or alluvium deposit comprised of clay to silt with gravel. Unit 3 was observed to be matrix supported and massive. Clasts were observed to be approximately 1 to 3 inches in diameter and subangular to subrounded.

Unit 4 was observed in the northern end of Trench 3 and to consist of a series of alluvial fan deposits sourced by the drainages located north and upslope from Trench 3. Unit 4 was comprised of a red-brown silt with gravel that was observed to be matrix supported and massive with several small 3- to 5-inch-thick stream lenses that were clast supported and bedded. Clasts within Unit 4 were observed to be predominantly 1 to 3 inches in diameter with occasional gravel 4 to 5 inches in diameter and subrounded to subangular. Unit 4 was observed in Trench 3 between 0 and approximately 99 feet down trench.

Unit 5 was observed to consist of undocumented fill comprised of a gray silt with fine sand. Remnants of Unit 5 were also observed within Unit 6.

Unit 6 through Unit 9 were observed to consist of undocumented fill soils as part of the old gravel pit operations within the subject site. These units were observed to consist of sand, silt and varying amounts of gravel that were observed to be subrounded to subangular and approximately 1 to 4 inches in diameter.

5.3.2 Trench 6 Description

Trench 6 was approximately 74 feet long, oriented generally northwest-southeast (N40°W) and located east of Trench 3 and west of Trench 2B (Plate A-5). Trench 6 was excavated with a trackhoe to depths between approximately 5 and 12 feet below the existing site grade as it existed at the time of our investigation. A hand log of Trench 6 is presented on Plates B-11 through B-12.

The soils exposed in Trench 6 have been separated into 2 stratigraphic units and labeled from oldest to youngest as Unit 1 through Unit 2 on the geologic log of Trench 6. The oldest sediment observed at the bottom of Trench 6 was designated as Unit 1 and the youngest sediment observed at the top of Trench 6 was designated as Unit 2.

Unit 1 was observed to consist of a series of water dominated alluvial fan flooding deposits comprised of a clast supported and crudely bedded coarse gravel with trace amounts of cobbles. The thickness of the alluvial fan flooding deposits ranged from ½ to 1 ½ feet thick.

Unit 2 was observed to overlie Unit 1 and to consist of organic rich topsoil.

5.3.3 Test Pit Descriptions

Four geotechnical investigations were performed within the proposed Micron Project: Draper Single Family Site, High Density and Commercial, Highland Emerald Single Family and Lehi Single Family. Three of the geotechnical investigations included test pits located on mapped alluvial fan deposits. The soils encountered in the test pits during our field investigation are illustrated on Plates B-13 through B-37. Photos of the test pits excavated as part of the geotechnical investigation for the Draper Single Family Site are included on Plates B-38 to B-43. Below is a table that includes a list of test pits located on mapped alluvial fan deposits and a brief description of the alluvial fan flooding or debris flow deposits encountered if applicable.

Draper Single Family (DS)	High Density and Commercial (MW)	Lehi Single Family Homes (ME)
DS-TP-02	MW-TP-15	ME-TP-28
DS-TP-03	MW-TP-16	ME-TP-31
DS-TP-05	MW-TP-22	
DS-TP-06	MW-TP-23	
DS-TP-07	MW-TP-29	
DS-TP-08	MW-TP-30	
DS-TP-10	MW-TP-33	
DS-TP-11	MW-TP-34	
	MW-TP-37	
	MW-TP-38	
	MW-TP-44	
	MW-TP-45	
	MW-TP-46	
	MW-TP-52	
	MW-TP-53	
	MW-TP-54	

DS-TP-02

The location of DS-TP-02 is near the lateral margin of the alluvial fan deposit mapped at the mouth of Drainage 6 (D6). Based on the type of soils and bedding observed in DS-TP-02, these soils appeared to be related to Lake Bonneville and not alluvial fan deposits.

DS-TP-03

The location of DS-TP03 is east of DS-TP-02 and on the alluvial fan deposit mapped at the mouth of D6. Based on our observations, a series of 8- to 10-inch-thick alluvial fan flooding deposits were encountered in DS-TP-03 as illustrated on Plate B-38.

DS-TP-05

Test pit DS-TP-05 is located west of the mouth of D6. Based on our observations, the Clayey GRAVEL (GC) observed in DS-TP-05 appear to be related to alluvial fan deposits. Cobbles greater than 4 inches in diameter were observed in this test pit.

DS-TP-06

Test pit DS-TP-06 is located at the mouth of D6. The soils encountered in this test pit were classified as Clayey GRAVEL (GC) with sand, Well Graded GRAVEL (GW) with clay and sand and Poorly Graded GRAVEL (GM) with clay and sand. A layer of cobbles over 8 inches and boulders over 12 inches in diameter were encountered between a depth of 3 and 6 feet as shown in Plate B-40. Based on our field observations and the location of DS-TP-05, a series of alluvial fan flooding and debris flow deposits were encountered in DS-TP-05 and are sources by D6.

DS-TP-07

Test pit DS-TP-07 is located east of D6 and at the mouth of Drainage 7 (D7). The soils encountered in this test pit were observed to be a Clayey Gravel (GC) with sand. Blocks of calcium carbonate cemented sand and rounded pea size gravel were encountered between 6 and 8 feet in depth (Plate B-41). Based on our field investigation, it is our opinion that the soils encountered in DS-TP-07 are alluvial fan flooding and Lake Bonneville deposits.

DS-TP-08

Test pit DS-TP-08 is located on the apex of the alluvial fan deposit emanating from Drainage 8 (D8). A Silty Clayey SAND (SC-SM) was encountered between a depth of 1 and 6 feet. Based on our field investigation, it is our opinion that the deposits observed between 1 and 6 feet in depth are alluvial fan flooding deposits. Between 6 and 9 feet in depth a 3-foot-thick layer of Clayey GRAVEL (GC) with sand and cobbles 6 inches and greater in diameter was encountered and observed to be similar to the cobble unit overlying Lake Bonneville deposits observed in Trench 1 as part of our Surface Fault Rupture Special Study. Based on our field investigations, it is our opinion that the 3-foot-thick layer of Clayey GRAVEL (GC) with sand and cobbles is related to Lake Bonneville. A bedded Poorly Graded GRAVEL (GP) with sand and a Clayey Sand (SC) were encountered between a depth of 9 and 11 feet and a depth of 11 and 13.5 feet, respectively (Plate B-42). Based on our field observations, it is our opinion that these are also Lake Bonneville deposits.

DS-TP-10

Test pit DS-TP-10 is located on the alluvial fan emanating from Drainage 1 (D1). A Silty Gravel (GM) with sand and a Silty, Clayey GRAVEL (GC-GM) with sand were encountered in DS-TP-10. Based on our field investigation and the location of the test pit, it is our opinion that the soils encountered in DS-TP-10 are alluvial fan flooding deposits.

DS-TP-11

Test pit DS-TP-11 is located at the mouth of Drainage 9 (D9). The soils encountered in DS-TP-11 was a Clayey GRAVEL (GC) with sand. Based on our field investigation, the soils encountered in DS-TP-11 are alluvial fan flooding deposits.

MW-TP-15 through MW-TP-54

Test pits MW-TP-15 through MW-TP-54 are located on the alluvial fan deposit emanating from D6. This alluvial fan deposit is mapped as stretching from the foothills to Timpanogos Highway and is identified by Beik (2005) as younger undifferentiated alluvial fan deposit with an age ranging from Holocene to upper Pleistocene. Our geotechnical reports previously identify that the soils encountered in MW-TP-15, 16, 22, 23, 29, 30, 33, 34, 37, 38, 44, 45, 46, 52, 53 and 54 are alluvial fan deposits. However, based on further review, the Silty SAND (SM) with gravel encountered in MW-TP-15 the Poorly Graded GRAVEL (GP) with silt and sand and subrounded gravel encountered in MW-TP-16 and the Lean CLAY (CL) encountered in MW-TP-30, it is our opinion that the near surface soils from MW-TP-15 to the southern extent of the alluvial fan deposit are Pleistocene alluvial fan flooding deposits interfingered with Lake Bonneville deposits.

ME-TP-28

Test pit ME-TP-28 is located on the lateral margin of the alluvial fan deposit emanating from Drainage 13 (D13). Based on the Silty SAND (SM) with subrounded gravel encountered in ME-TP-28, it is our opinion that these deposits are related to Lake Bonneville.

ME-TP-31

Test pit ME-TP-31 is located on the lateral margin of Drainage 12 (D12). Based on the size of the drainage, the Silty GRAVEL (GM) encountered in and the location of the test pit, it is our opinion that the soil encountered in ME-TP-31 are alluvial fan flooding and reworked Lake Bonneville deposits.

6.0 GEOLOGIC HAZARDS ANALYSIS AND RECOMMENDATIONS

6.1 ALLUVIAL FAN FLOODING

Alluvial fan flooding is a hazard that may exist in areas containing Holocene alluvial fan deposits. This type of flooding typically occurs as stream flows, hyperconcentrated flows or debris flows consisting of a mixture of water, soil, organic material, and rock debris with variations in sediment-water concentrations are transported by fast-moving water flows. Stream flows contain approximately less than 20% sediment by volume and involve sediment transport by entrained and suspended sediment load (Bowman and Lund, 2016). Unconfined stream flows are referred to as sheetfloods which are spread over and occur in the distal areas of the alluvial fan or within unchanneled, broad, relatively flat-bottomed portions of drainages. Hyperconcentrated flows are alluvial fan flows with approximately between 20 to 60% sediment by volume whereas debris flows contain approximately 60% to 85% sediment by volume.

Alluvial fan flooding can be a hazard on or below alluvial fans or in stream channels above alluvial fans. Precipitation (rainfall and snowmelt) is generally viewed as an alluvial fan flood “trigger”, but this represents only one of the many factors that contribute to alluvial fan flooding hazard. Vegetation, root depth, soil gradation, antecedent moisture conditions, and long-term climatic cycles all contribute to the generation of debris and initiation of alluvial fan flooding. Events of relatively short duration, such as a fire, can significantly alter a basin’s absorption of stormwater and snowmelt runoff and natural resistance to sediment mobilization for an extended period of time. These factors are difficult to quantify or predict and vary not only between different watersheds, but also within each sub-area of a drainage basin. In general, there are two methods by which alluvial fan flooding can be mobilized: 1) when shallow landslides from channel side-slopes are conveyed in existing channels when mixed with water and 2) channel scour where debris is initially mobilized by moving water in a channel and then the mobilized debris continues to assemble and transport downstream sediments.

Based on review of published geologic maps, our stereographic aerial photograph interpretation, our review of the hillshade imagery derived from the 0.5-meter lidar elevation data (2013-2014), and our field observations, modern (upper Holocene) alluvial fan deposits are mapped at the mouth of the drainages which were assessed as part of this study (Plate A-5 *Site Vicinity Geologic Map*; Plate A-6 *Site Vicinity 30x60 Geologic Map*).

A large alluvial fan deposit is mapped as emanating from Drainage 6 (D6) and extending from the foothills to Timpanogos Highway, and described by Beik (2005) as Holocene to upper Pleistocene in age. Based on our review of the soils encountered in the test pits located on this large alluvial fan deposit, it is our opinion that the area of the alluvial fan deposit extending from MW-TP-15 to Timpanogos Highway is an older, Pleistocene, alluvial fan deposit and comprised of alluvial fan flooding deposits interfingered with Lake Bonneville deposits. Debris flow deposits were encountered near the mouth of D6 in DS-TP-06. Based on our field investigation, it is our opinion that the types of alluvial fan deposits emanating from the drainages are predominantly alluvial fan flooding deposits consisting of silt, clay, sand and gravel up to 6 inches in diameter.

The geometry of the channels within the drainages were observed to vary from V-shaped to broad. No water was observed to be flowing in any of the drainages at the time of our site visit in the beginning of July 2021. Based on our subsurface investigation as part of this study and our geotechnical study compiled in a separate report for the subject site, the types of alluvial fan deposits emanating from the drainages are assessed to be water dominated or alluvial fan flooding deposits that are generally 4 to 6 inches thick per event. Based on our review of published geologic maps, our aerial photograph interpretation, our review of hillshade imagery derived from 0.5-meter lidar, and our field observations, the alluvial fan flooding hazard is considered low to moderate. Our assessment of this hazard is addressed in subsequent paragraphs.

6.1.1 Estimates of Debris Volume

The prediction of total debris volumes is complex and dependent on several factors which include but are not limited to precipitation and vegetation as previously mentioned. While methods of initiation differ, our observations of the drainage basins and channels lead us to assume that under existing conditions the majority of debris currently available for transport in the drainages would be mobilized from existing deposits within their developed channels beds.

There are several methods available for predicting peak discharge rates and total debris flow volumes associated with debris flows. The methods used in our analysis for this investigation are discussed below. Results of each of the methods of analysis are presented below. As previously mentioned, the deposits observed in the test pits excavated at the mouth of the drainages were observed to range from stream flooding deposits (less than 20% sediment by volume) with some debris flow deposits (60% to 85% sediment by volume). Based on our field observations, the total debris flow volumes presented in the *Unit Volume Analysis* and *Debris Flow Bulking with Hydrology for Dry Creek Canyon Analysis* were calculated by assuming flows with sediment loads of 50% which mobilize all of the estimated available sediment within the stream channels.

<u>*Unit-Volume Analysis*</u>

The unit-volume analysis method involves measuring and estimating the stored erodible sediment in the channel. Cross-sections are taken at various points along a channel and the geometry of the channel is used to estimate the sediment stored in the bottom of the channel (Giraud, 2005). Estimating channel sediment volume available for bulking is critical because study of historical debris flows indicates that 80% to 90% of the debris flow volume comes from bulking of sediment from the bottom of the channel (Bowman and Lund, 2016).

The streambed cross sections used in our analysis were collected in the field and from 2013-2014 0.5-m lidar. Estimates for debris yield at each of these cross sections was calculated as volume per linear foot of channel and this yield was then extrapolated beyond the investigation locations along the length of the channel in order to approximate the potential total debris yield for the unnamed drainages as presented in Table 3 below. The total debris flow volumes presented below were calculated by assuming flows with sediment loads of 50% which mobilize all of the estimated available sediment within the stream channels. The accuracy of these volumes could be improved by using design level flood flow rates and total volumes for each of the drainages from a hydrologic study report in conjunction with the estimated total volumes of erodible sediment, as well as by excavating test pits within the channels to observe the depth of stored sediment at various points. Below is a table summarizing our results:

Drainage	Cross Section	Erodible Cross-Sectional Area (ft^2)	Reach of Cross Section (ft)	Erodible Sediment (ft^3)	Erodible Sediment (ac-ft)	Total Volume of Erodible Sediment		Total Debris Flow Volume
						V (ft^3)	V (ac-ft)	V (ac-ft)
1	A	30	424	12559	0.29	187596	4.31	8.61
	B	30	386	11647	0.27			
	C	21	383	8020	0.18			
	D	39	541	21267	0.49			
	E	0	677	0	0.00			
	F	0	533	0	0.00			
	G	14	513	7033	0.16			
	H	7	675	4633	0.11			
	I	18	352	6333	0.15			
	J	0	546	0	0.00			
	K	27	577	15326	0.35			
	L	22	391	8557	0.20			
	M	16	199	3224	0.07			
	N	35	565	19839	0.46			
	O	0	393	0	0.00			
	P	8	392	2953	0.07			
	Q	16	650	10660	0.24			
	R	24	557	13514	0.31			
	S	24	865	20549	0.47			
	T	32	675	21483	0.49			
	U	0	703	0	0.00			
2	A	19	286	5486	0.13	10863	0.25	0.50
	B	8	263	2114	0.05			
	C	12	263	3263	0.07			
3	A	13	324	4060	0.09	31846	0.73	1.46
	B	2	300	623	0.01			
	C	27	317	8692	0.20			
	D	10	376	3852	0.09			
	E	21	686	14618	0.34			
4	A	32	186	6016	0.14	19931	0.46	0.92
	B	30	457	13915	0.32			

Table 3: Drainage Characteristics and Volume of Sediment in Stream Channel

Drainage	Cross Section	Erodible Cross Sectional Area (ft^2)	Reach of Cross Section (ft)	Erodible Sediment (ft^3)	Erodible Sediment (ac-ft)	Total Volume of Erodible Sediment		Total Debris Flow Volume
						V (ft^3)	V (ac-ft)	V (ac-ft)
5	A	34	218	7318	0.17	32555	0.75	1.49
	B	0	187	0	0.00			
	C	36	248	9018	0.21			
	D	30	548	16219	0.37			
6	A	0	764	0	0.00	153307	3.52	7.04
	B	0	591	0	0.00			
	C	0	581	0	0.00			
	D	0	352	0	0.00			
	E	0	478	0	0.00			
	F	0	558	0	0.00			
	G	0	597	0	0.00			
	H	0	400	0	0.00			
	I	8	480	3606	0.08			
	J	9	557	4756	0.11			
	K	26	708	18585	0.43			
	L	24	632	14988	0.34			
	M	29	570	16358	0.38			
	N	52	563	29386	0.67			
	O	40	1221	48284	1.11			
	P	8	481	3646	0.08			
	Q	0	329	0	0.00			
	R	6	418	2452	0.06			
	S	9	428	3777	0.09			
	T	9	793	7469	0.17			
7	A	80	208	16571	0.38	16571	0.38	0.76
8	A	4	250	917	0.02	2709	0.06	0.12
	B	3	672	1792	0.04			
9	A	3	540	1620	0.04	1620	0.04	0.07
10	A	7	356	2492	0.06	2492	0.06	0.11
11	A	7	249	1660	0.04	5117	0.12	0.23
	B	10	279	2790	0.06			
	C	2	286	667	0.02			
12	A	11	426	4637	0.11	8064	0.19	0.37
	B	7	503	3427	0.08			
13	A	9	344	3089	0.07	3089	0.07	0.14

Table 3: Drainage Characteristics and Volume of Sediment in Stream Channel Continued

Post-fire Condition Assessment

The Western U.S. regression model was also used to estimate fire-related debris flow volumes (Gartner and others, 2008; Giraud and Castleton, 2009; Cannon and others 2010). The model estimates debris flow volumes as:

$$\ln V = 7.2 + 0.6(\ln A) + 0.7(B)^{1/2} + 0.2(T)^{1/2} + 0.3$$

where:

V = volume (cubic meters)
A = basin area with slopes greater than or equal to 30% (square kilometers)
B = basin area burned at moderate and high severity (square kilometers)
T = total storm rainfall (millimeters)

Based on elevation data derived from 2013-2014 0.5-m lidar, the percent of slopes greater than or equal to 30% to total acres for each basin ranged from 19% to 84% (Table 4: Basin Characteristics and Plate A-8 Debris Flow Assessment Map). None of the basins as part of this assessment were burned at the time of our study. This analysis assumes that 100% of each basin was burned at moderate and high severity.

Basin	D1	D2	D3	D4	D5	D5	D6	D7	D8	D9	D10	D11	D12	D13
Slopes ≥ 30%	76%	65%	69%	35%	47%	84%	84%	29%	34%	48%	59%	28%	32%	19%

Table 4: Basin Characteristics

Cannon and others (2010) recommend evaluation of debris flow events in response to low recurrence (<2-10 years), low-duration (<1 hr) rainstorms. Total storm rainfall was taken from the NOAA Atlas 14, Volume 1, Version 5 Alpine Station Point Precipitation Frequency Estimates for rainstorm events with 60-minute durations with a recurrence interval of 2, 5, 10, and 100 years. Below is a summary of our results for each basin.

Basin D1

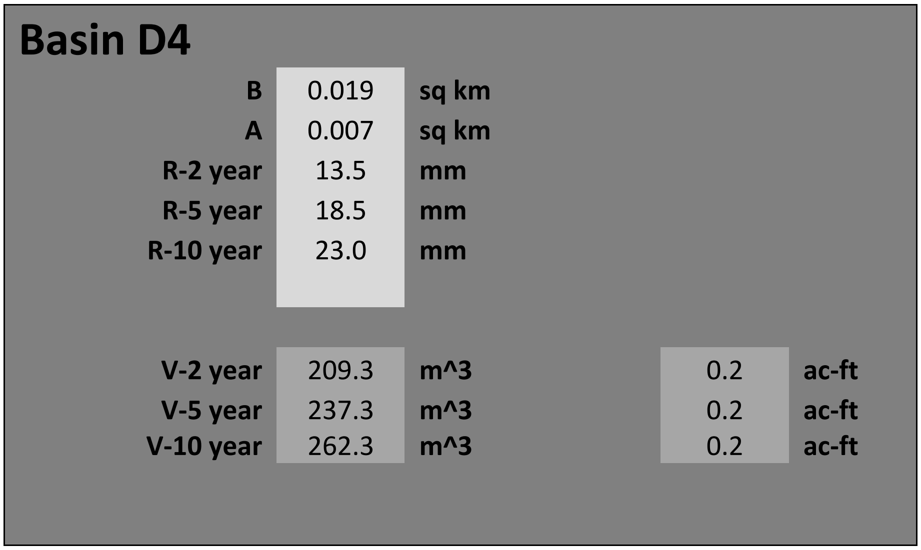
B	0.849	**sq km**		
A	0.644	**sq km**		
R-2 year	13.5	**mm**		
R-5 year	18.5	**mm**		
R-10 year	23.0	**mm**		
V-2 year	5513.0	**m^3**	4.5	**ac-ft**
V-5 year	6251.0	**m^3**	5.1	**ac-ft**
V-10 year	6908.3	**m^3**	5.6	**ac-ft**

Basin D2

B	0.055	**sq km**		
A	0.036	**sq km**		
R-2 year	13.5	**mm**		
R-5 year	18.5	**mm**		
R-10 year	23.0	**mm**		
V-2 year	604.5	**m^3**	0.5	**ac-ft**
V-5 year	685.4	**m^3**	0.6	**ac-ft**
V-10 year	757.5	**m^3**	0.6	**ac-ft**

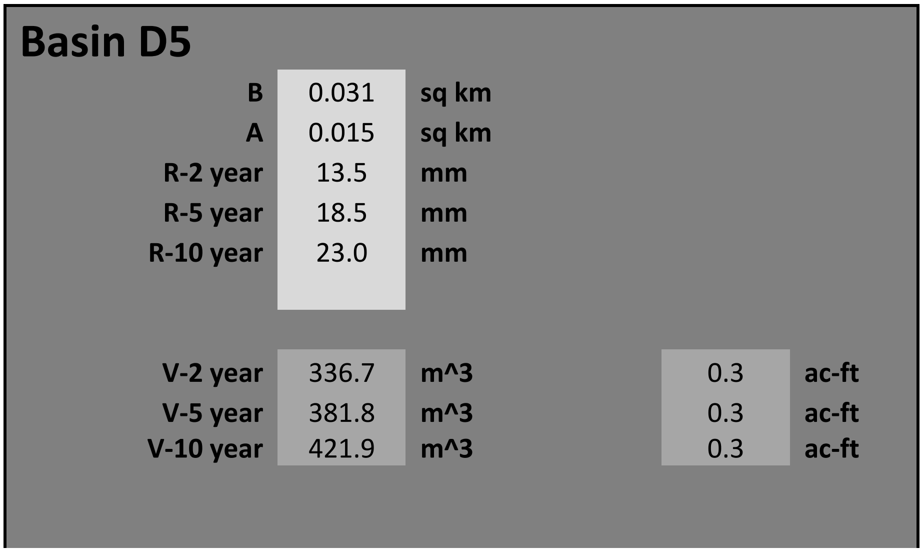
Basin D3

B	0.105	**sq km**		
A	0.072	**sq km**		
R-2 year	13.5	**mm**		
R-5 year	18.5	**mm**		
R-10 year	23.0	**mm**		
V-2 year	977.9	**m^3**	0.8	**ac-ft**
V-5 year	1108.8	**m^3**	0.9	**ac-ft**
V-10 year	1225.4	**m^3**	1.0	**ac-ft**



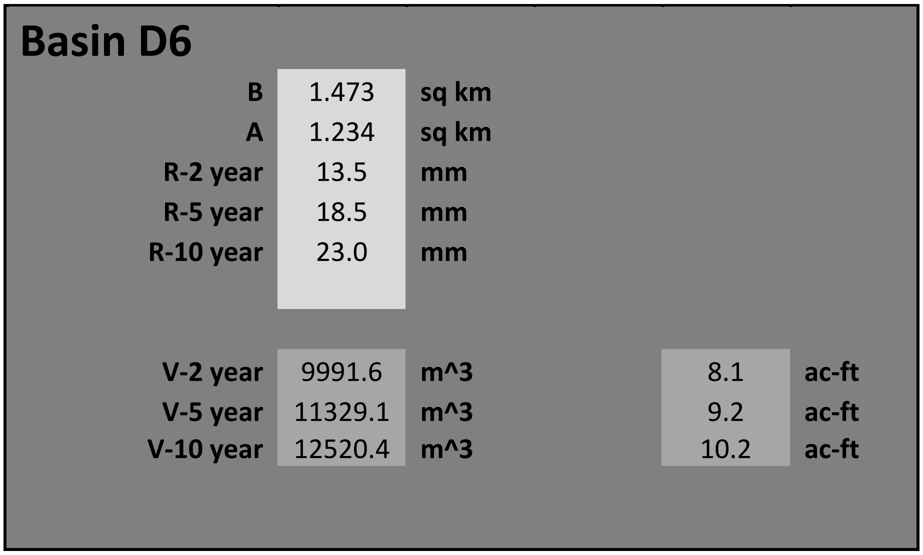
Basin D4

B	0.019	**sq km**		
A	0.007	**sq km**		
R-2 year	13.5	**mm**		
R-5 year	18.5	**mm**		
R-10 year	23.0	**mm**		
V-2 year	209.3	**m^3**	0.2	**ac-ft**
V-5 year	237.3	**m^3**	0.2	**ac-ft**
V-10 year	262.3	**m^3**	0.2	**ac-ft**



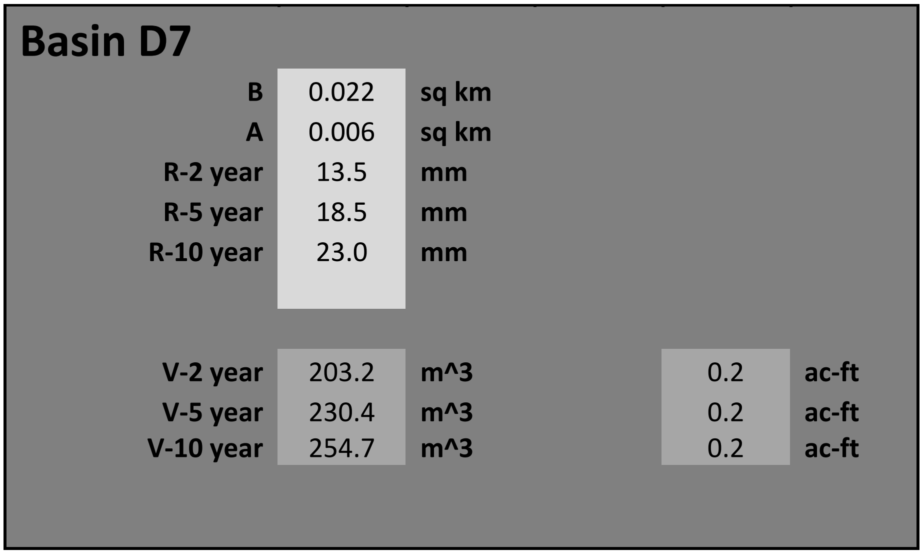
Basin D5

B	0.031	**sq km**		
A	0.015	**sq km**		
R-2 year	13.5	**mm**		
R-5 year	18.5	**mm**		
R-10 year	23.0	**mm**		
V-2 year	336.7	**m^3**	0.3	**ac-ft**
V-5 year	381.8	**m^3**	0.3	**ac-ft**
V-10 year	421.9	**m^3**	0.3	**ac-ft**



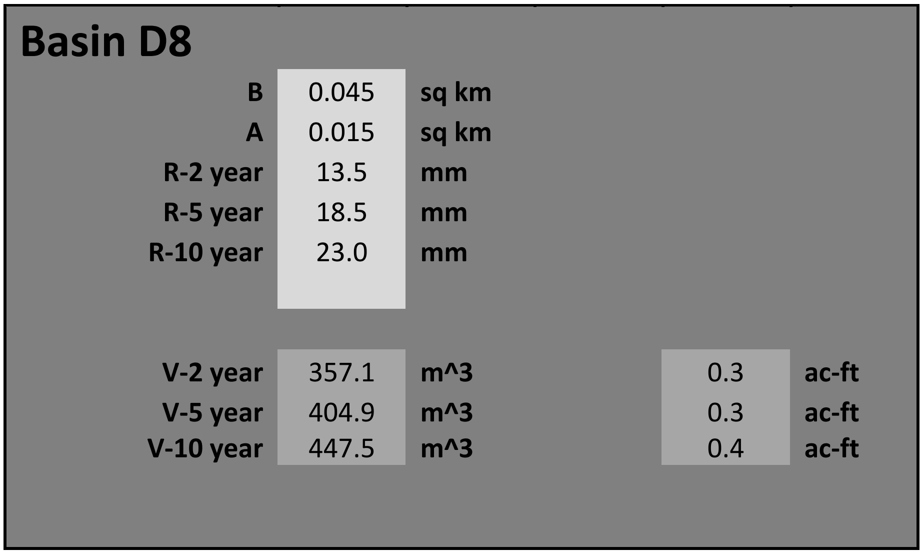
Basin D6

B	1.473	**sq km**		
A	1.234	**sq km**		
R-2 year	13.5	**mm**		
R-5 year	18.5	**mm**		
R-10 year	23.0	**mm**		
V-2 year	9991.6	**m^3**	8.1	**ac-ft**
V-5 year	11329.1	**m^3**	9.2	**ac-ft**
V-10 year	12520.4	**m^3**	10.2	**ac-ft**



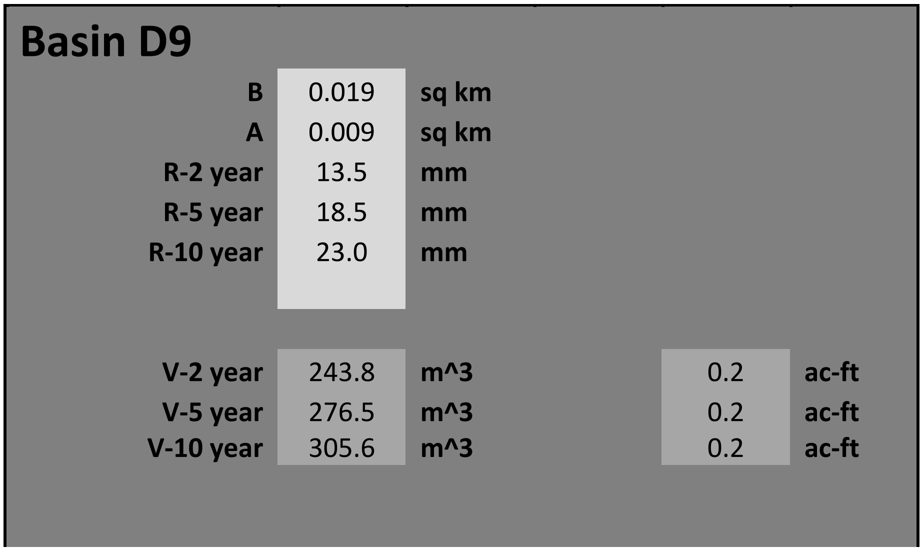
Basin D7

B	0.022	sq km		
A	0.006	sq km		
R-2 year	13.5	mm		
R-5 year	18.5	mm		
R-10 year	23.0	mm		
V-2 year	203.2	m^3	0.2	ac-ft
V-5 year	230.4	m^3	0.2	ac-ft
V-10 year	254.7	m^3	0.2	ac-ft



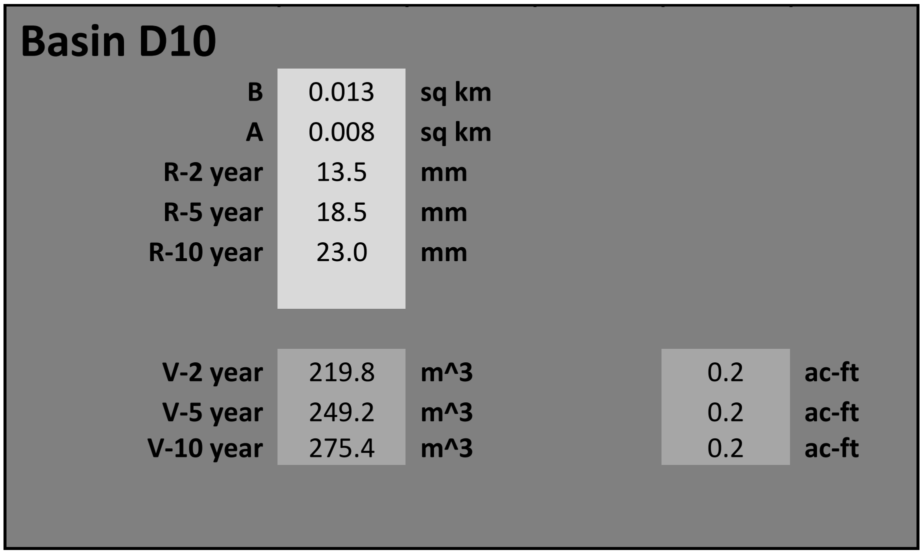
Basin D8

B	0.045	sq km		
A	0.015	sq km		
R-2 year	13.5	mm		
R-5 year	18.5	mm		
R-10 year	23.0	mm		
V-2 year	357.1	m^3	0.3	ac-ft
V-5 year	404.9	m^3	0.3	ac-ft
V-10 year	447.5	m^3	0.4	ac-ft



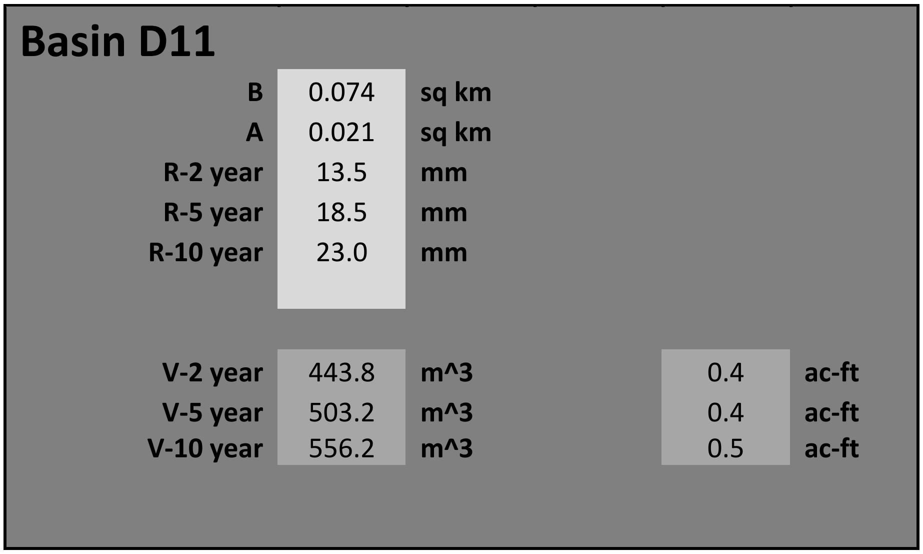
Basin D9

B	0.019	sq km		
A	0.009	sq km		
R-2 year	13.5	mm		
R-5 year	18.5	mm		
R-10 year	23.0	mm		
V-2 year	243.8	m^3	0.2	ac-ft
V-5 year	276.5	m^3	0.2	ac-ft
V-10 year	305.6	m^3	0.2	ac-ft



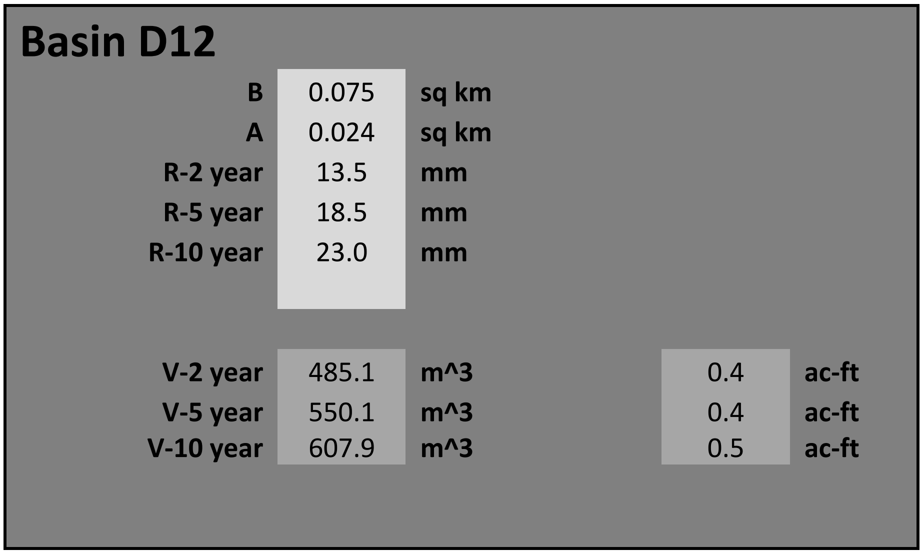
Basin D10

B	0.013	**sq km**		
A	0.008	**sq km**		
R-2 year	13.5	**mm**		
R-5 year	18.5	**mm**		
R-10 year	23.0	**mm**		
V-2 year	219.8	**m^3**	0.2	**ac-ft**
V-5 year	249.2	**m^3**	0.2	**ac-ft**
V-10 year	275.4	**m^3**	0.2	**ac-ft**



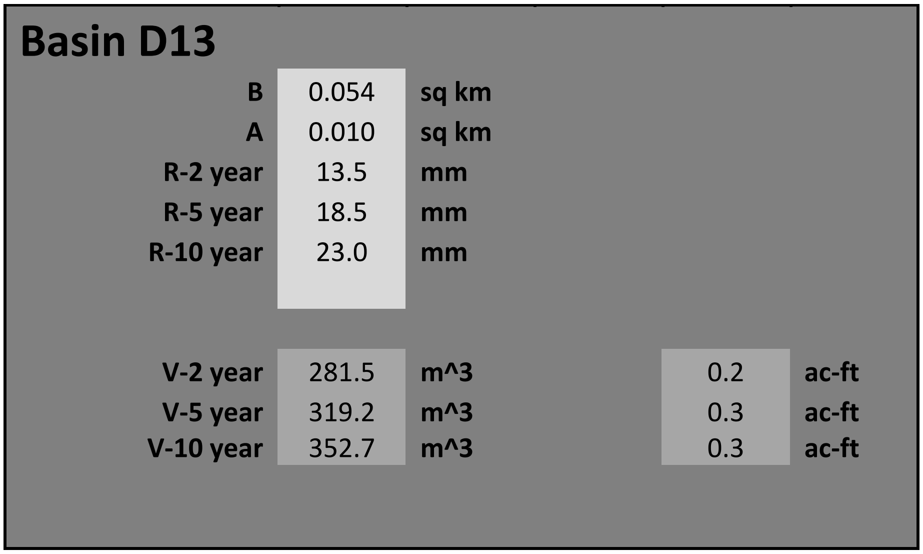
Basin D11

B	0.074	**sq km**		
A	0.021	**sq km**		
R-2 year	13.5	**mm**		
R-5 year	18.5	**mm**		
R-10 year	23.0	**mm**		
V-2 year	443.8	**m^3**	0.4	**ac-ft**
V-5 year	503.2	**m^3**	0.4	**ac-ft**
V-10 year	556.2	**m^3**	0.5	**ac-ft**



Basin D12

B	0.075	**sq km**		
A	0.024	**sq km**		
R-2 year	13.5	**mm**		
R-5 year	18.5	**mm**		
R-10 year	23.0	**mm**		
V-2 year	485.1	**m^3**	0.4	**ac-ft**
V-5 year	550.1	**m^3**	0.4	**ac-ft**
V-10 year	607.9	**m^3**	0.5	**ac-ft**



Basin D13

B	0.054	**sq km**		
A	0.010	**sq km**		
R-2 year	13.5	**mm**		
R-5 year	18.5	**mm**		
R-10 year	23.0	**mm**		
V-2 year	281.5	**m^3**	0.2	**ac-ft**
V-5 year	319.2	**m^3**	0.3	**ac-ft**
V-10 year	352.7	**m^3**	0.3	**ac-ft**

Utilizing this method, we estimate the total volume of a potential post fire debris flow to be relatively consistent with the volume of total debris flow volume that we assessed using the unit volume analysis (Table 5. Debris Flow Volume Comparison).

Basin	**D1**	**D2**	**D3**	**D4**	**D5**	**D6**	**D7**	**D8**
Volume Analysis (ac-ft)	8.6	0.5	1.5	0.9	1.5	7.0	0.8	0.1
***Post Fire Volume (ac-ft)**	5.6	0.6	1.0	0.2	0.3	10.2	0.2	0.4
Basin	**D9**	**D10**	**D11**	**D12**	**D13**			
Volume Analysis (ac-ft)	0.1	0.1	0.2	0.4	0.1			
***Post Fire Volume (ac-ft)**	0.2	0.2	0.5	0.5	0.3			

***Volume from 10 year storm**

Table 5: Debris Flow Volume Comparison

Debris Flow Bulking with Hydrology for Dry Creek Canyon (D6)

Analysis of the hydrology of the unnamed drainage was performed by KK&L, LLC to provide peak flow and total volume of rainfall runoff in order to calculate potential peak and total volume debris flow rates (Appendix C). Stream flow is considered to be a debris flow when the concentration by volume of sediment is greater than 60% (Bowman and Lund, 2016). In order to calculate debris flow volumes, we assumed a 50% bulking rate, meaning that of the total rainstorm runoff from a 100-year storm, a volume of sediment equal to the volume of water may be mobilized; therefore, the debris flow volume would equal to 2 times the volume of water. The table below presents stormwater and debris flow volumes and peak flow rates considering a 100-year storm with a duration of 24 hours.

Total Volume of Water from 100-year storm (ac-ft)	10.9
Total Volume of Debris Flow from 100-year storm (ac-ft)*	21.8
Peak Flow Rate of Stormwater from 100-year storm (cfs)	73.4
Peak Flow Rate of Debris Flow from 100-year storm (cfs)	146.7

*debris flow volume equals volume of water and sediment combined

Table 6: Debris Flow Volumes from Bulking

The total volume of sediment calculated using this method far exceeds the estimated erodible sediment stored within the channel as calculated using the Unit Volume Analysis method as described previously; therefore, it is our opinion that there is a low probability that volumes of debris flow as high as these will occur. However, from this we can conclude that most of the available erodible sediment stored in the channel may be mobilized in a 100-year rainstorm event.

6.2 STREAM FLOODING

Stream flooding can be caused by precipitation, snowmelt or a combination of both. Throughout most of Utah floods are most common in spring during the snowmelt. High flows in drainages can last for a few hours to several weeks. Factors that affect the potential for flooding at a site include surface water drainage patterns and hydrology, site grading and drainage design, and seasonal runoff.

Due to the size of the Maple Hollow drainage basin, it is the opinion of GeoStrata that stream flooding hazard associated with this drainage could potentially impact the subject site. Based on our field and office investigation, it is the opinion of GeoStrata that the stream flooding hazard within the defined channel is considered high. GeoStrata recommends that no development or grading within the drainage channel should be planned, unless properly designed by the civil engineer. All planned roadways that cross the Maple Hollow drainage channel should be designed with culverts sufficiently sized to allow for peak flows within the channel to pass through the culvert and remain confined within the drainage channel.

7.0 CLOSURE

7.1 LIMITATIONS

The conclusions and recommendations contained in this report, which include professional opinions and judgments, are based on the information available to us at the time of our evaluation, the results of our field observations and our understanding of the proposed site development. If any conditions are encountered at this site that are different from those described in this report, our firm should be immediately notified so that we may make any necessary revisions to recommendations contained in this report. In addition, if the scope of the proposed development changes from that described in this report, our firm should also be notified.

All services were completed in accordance with the current standard of care and generally accepted standard of practice at the time and in the place our services were completed. No other warranty, expressed or implied, is made. Development of property in the immediate vicinity of geologic hazards involves a certain level of inherent risk. It is impossible to predict where geologic hazards will occur. New geologic hazards may develop and existing geologic hazards may expand beyond their current limits.

All services were performed for the exclusive use and benefit of the above addressee. No other person is entitled to rely on GeoStrata's services or use the information contained in this letter without the express written consent of GeoStrata. We are not responsible for the technical interpretations by others of the information described or documented in this report. The use of information contained in this report for bidding purposes should be done at the Contractor's option and risk.

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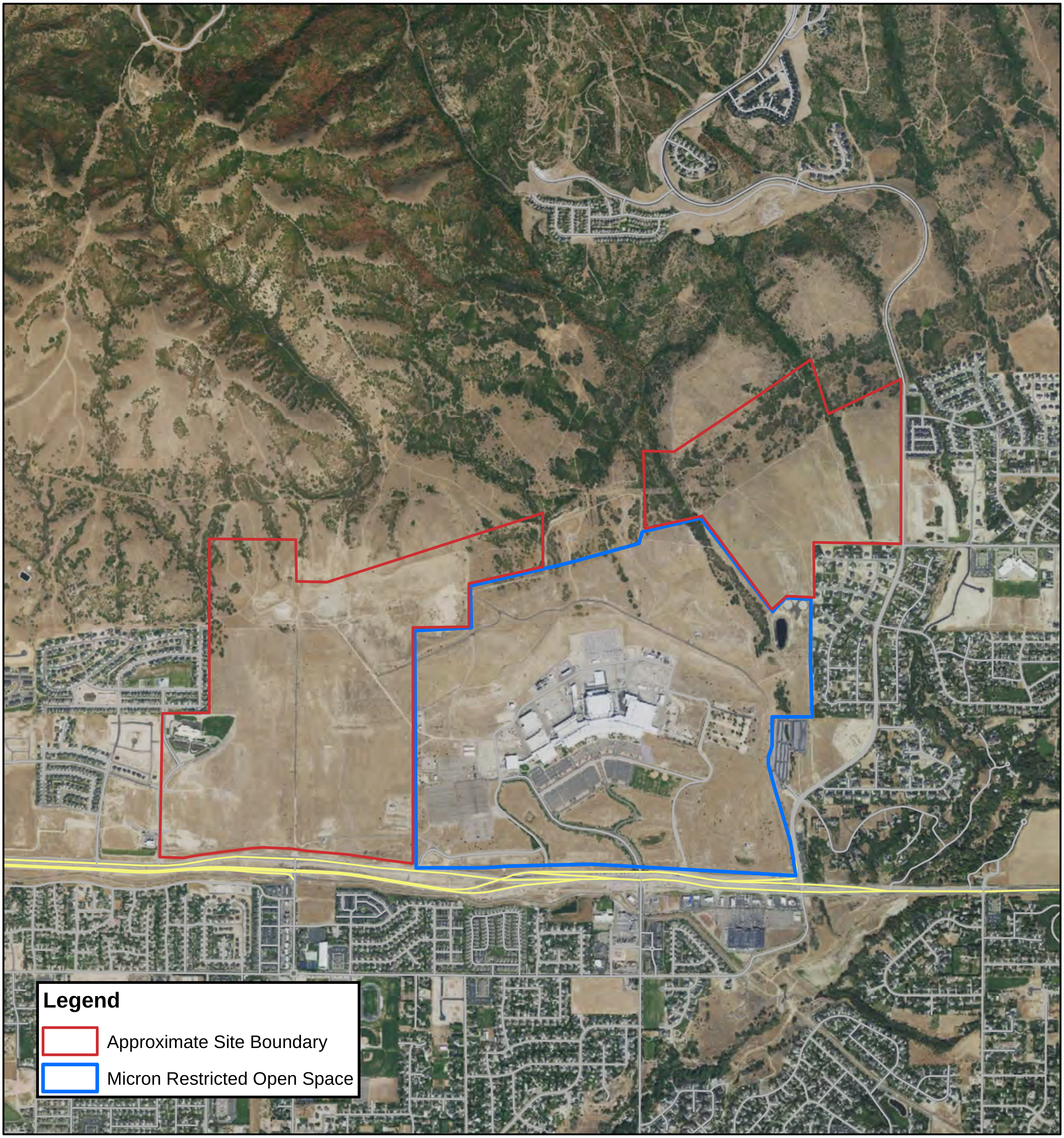
Appendix A



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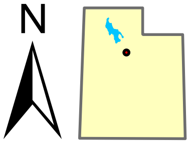
Basemap:
2012 12.5 cm HRO aerial imagery provided by the
State of Utah AGRC

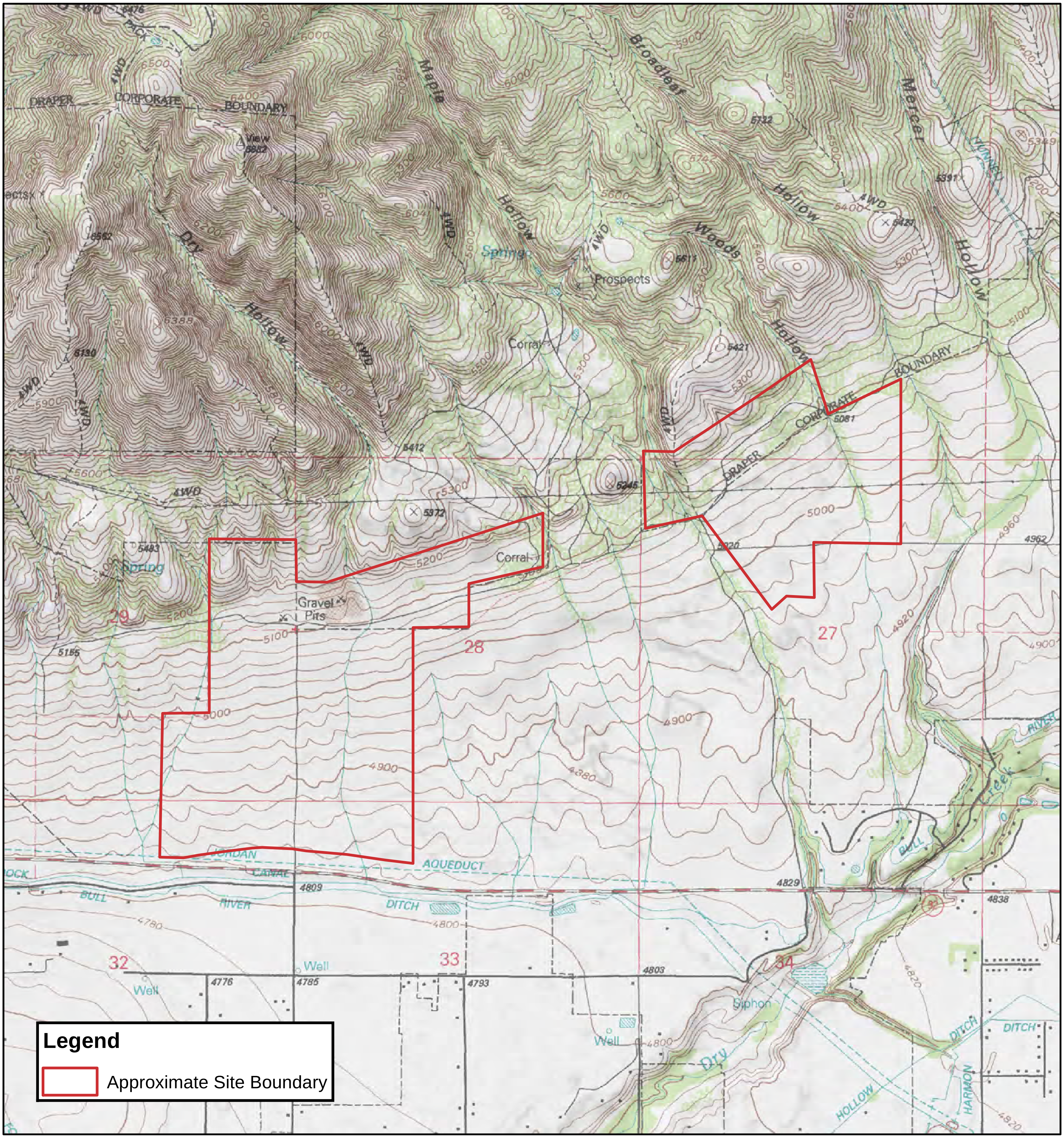


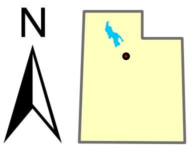
GeoStrata

Debris Flow Hazard Study
DR Horton
Micron Project
Lehi, Utah
Project Number: 589-100

Site Vicinity Map

Plate
A-1





0 650 1,300 2,600 3,900 5,200 Feet

1:24,000

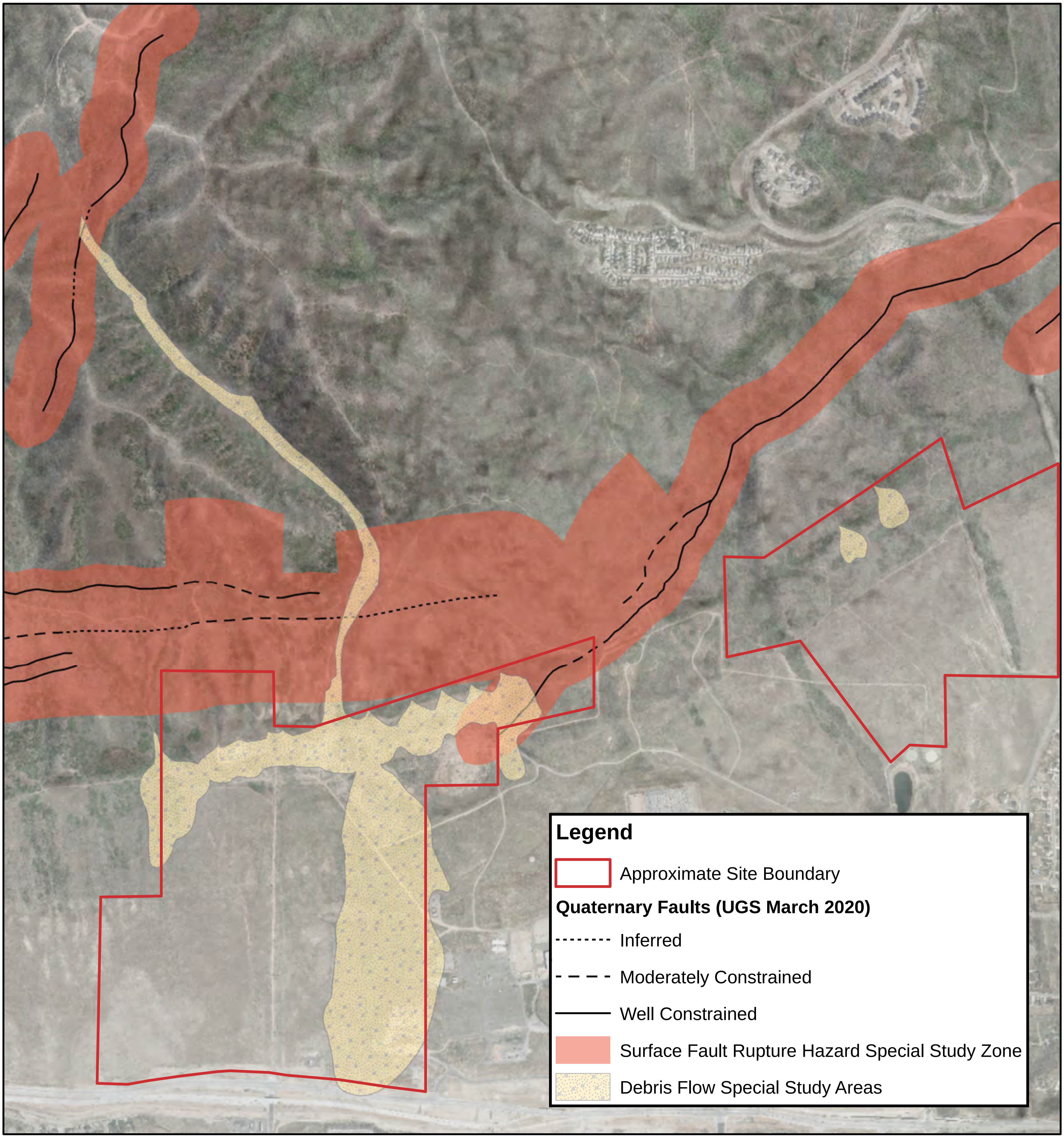
Basemap:
Lehi Quadrangl, Utah, 7.5-Minute Series (Topographic), USGS, 1994 and hillshades derived from DEMs provided by the State of Utah AGRC.

GeoStrata

Debris Flow Hazard Study
DR Horton
Micron Project
Lehi, Utah
Project Number: 589-100

Topographic Map

Plate A-2

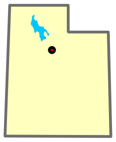


Feet
0 500 1,000 2,000 3,000 4,000

1:18,510

Basemap:
Lehi Quadrangl, Utah, 7.5-Minute Series (Topographic), USGS, 1994 and hillshades derived from DEMs provided by the State of Utah AGRC.

N

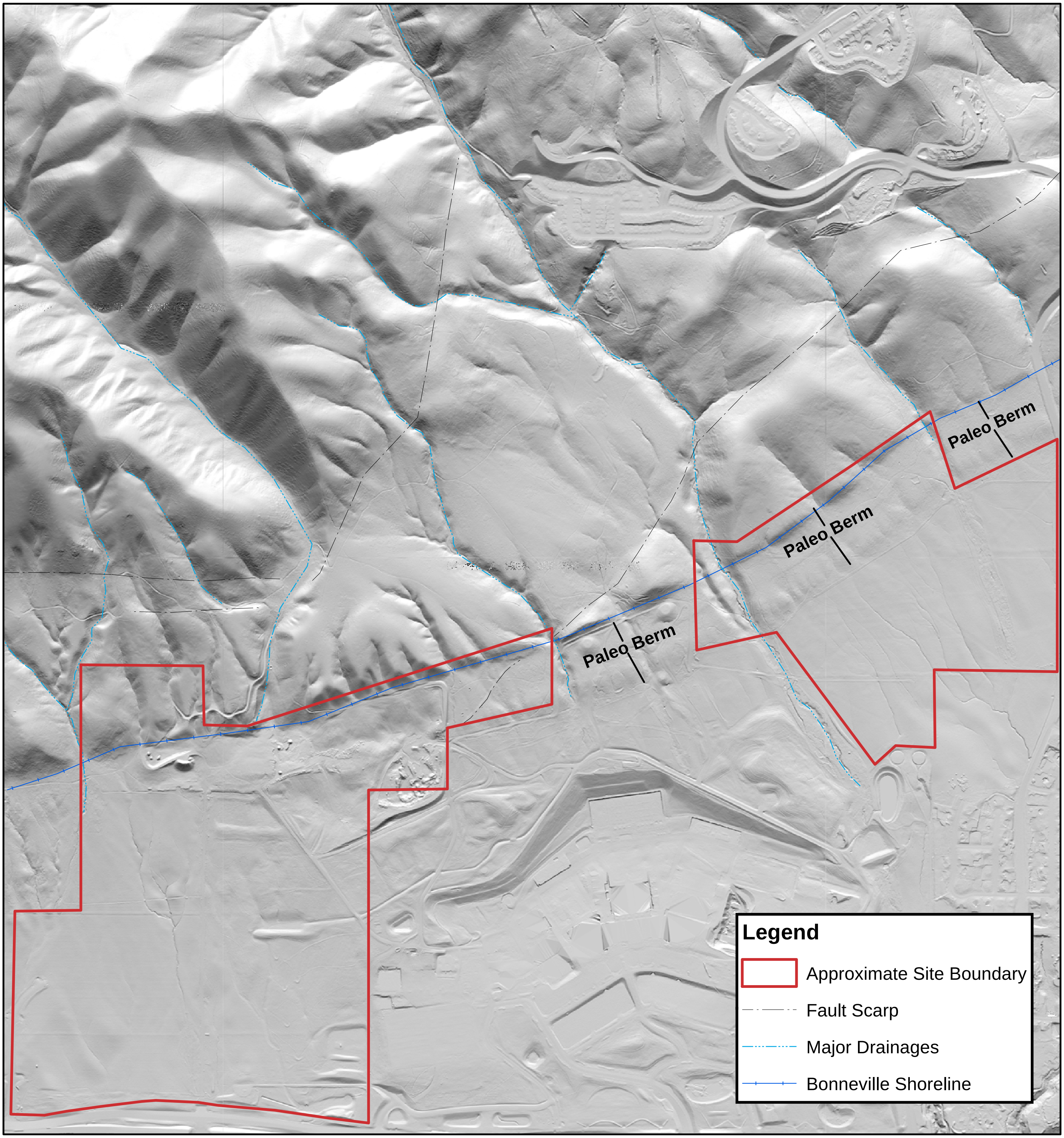


GeoStrata

Debris Flow Hazard Study
DR Horton
Micron Project
Lehi, Utah
Project Number: 589-100

Geologic Hazards Special Study Map

Plate A-3



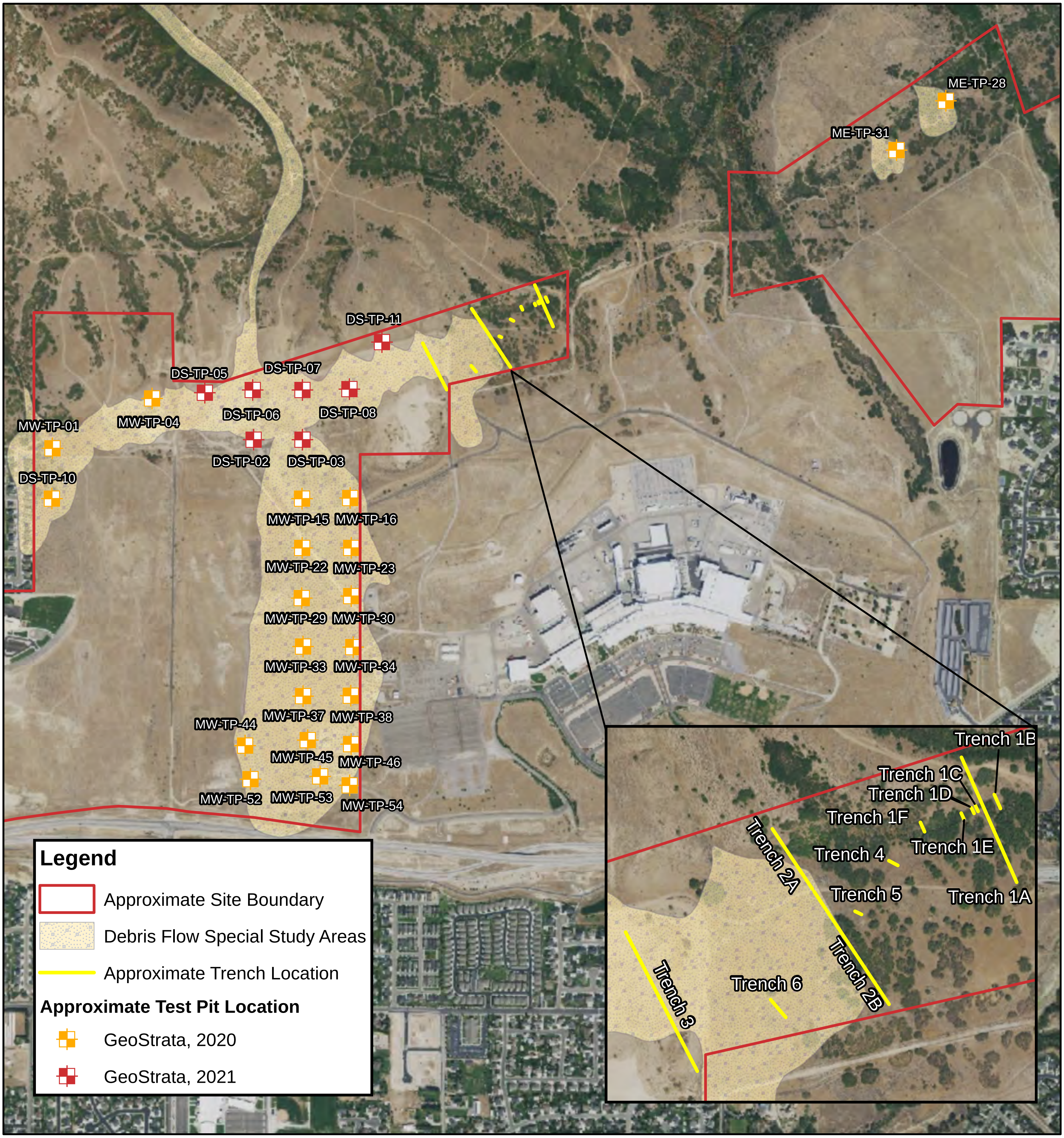
Basemap:
Hillshades derived from 2013-2014 0.5m lidar provided by the State of Utah AGRC.

GeoStrata

Debris Flow Hazard Study
DR Horton
Micron Project
Lehi, Utah
Project Number: 589-100

Hillshade Map

Plate
A-3

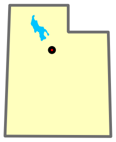


0 405 810 1,620 2,430 3,240 Feet

1:15,000

Basemap:
2018 1m NAIP aerial imagery provided by the
State of Utah AGRC.

N

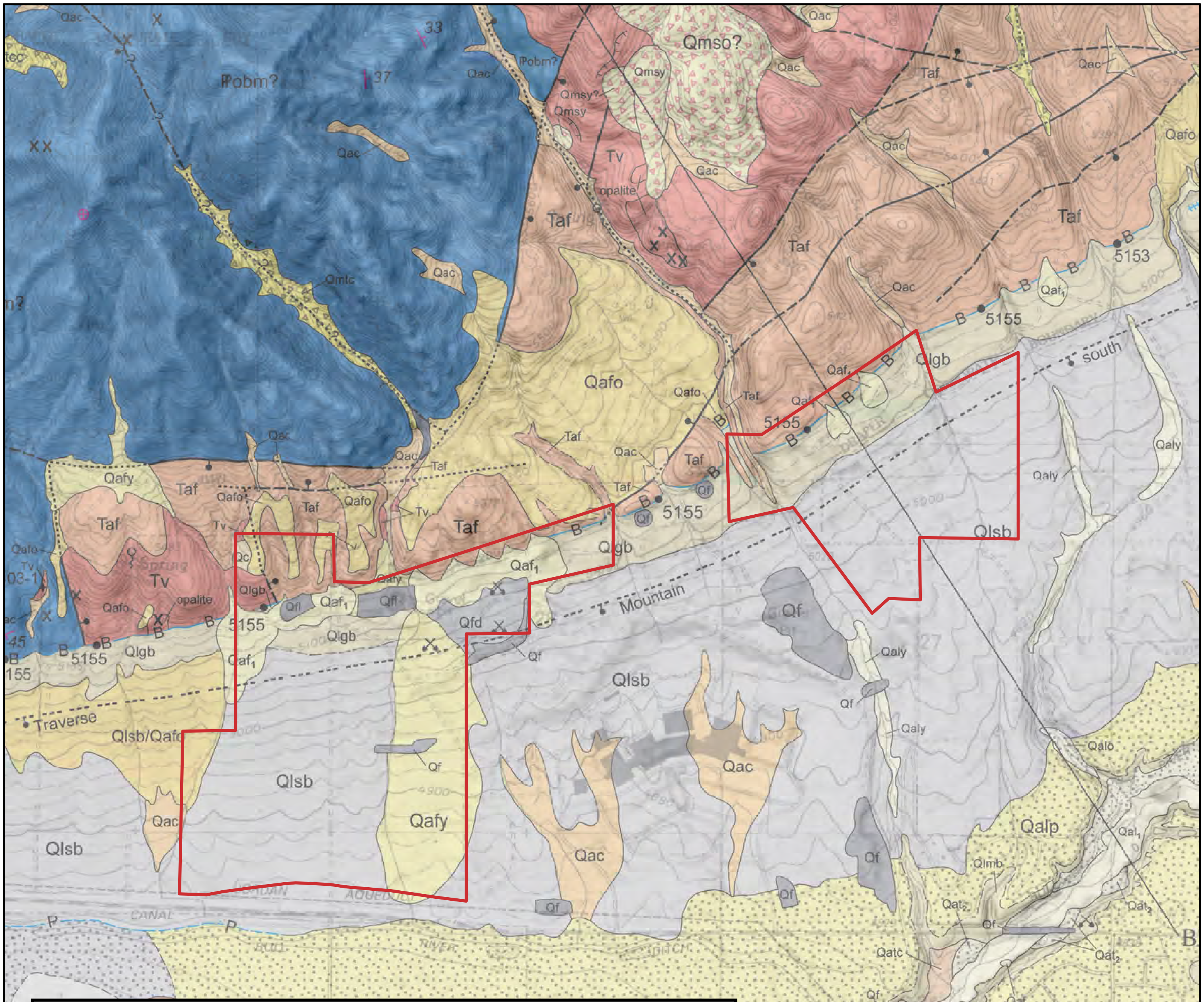


GeoStrata

Debris Flow Hazard Study
DR Horton
Micron Project
Lehi, Utah
Project Number: 589-100

Exploration Location Map

Plate A-5



Legend

▭ Approximate Site Boundary

Qaf1- Modern alluvial- fan deposit (Holocene)
Qafy - Younger undifferentiated alluvial-fan deposit (Holocene to Upper Pleistocene)
Qafo - Older alluvial-fan deposits (Upper Pleistocene)
Qf/Qfd - Artificial fill/Disturbed land (Historical)
Qlgb - Lacustrine gravel and sand (Upper Pleistocene)
Qlsp - Lacustrine sand and silt (Upper Pleistocene)
Taf - Alluvial-fan deposits (Miocene [?] to Oligocene [?])

Feet
0 650 1,300 2,600 3,900 5,200

1:24,000

Basemap:
Geologic Map of the Lehi Quadrangle and Part of the Timpanogos Cave Quadrangle, Salt Lake and Utah Counties, Utah, Beik, 2005.
Hillshades derived from DEMs provided by the State of Utah AGRC.

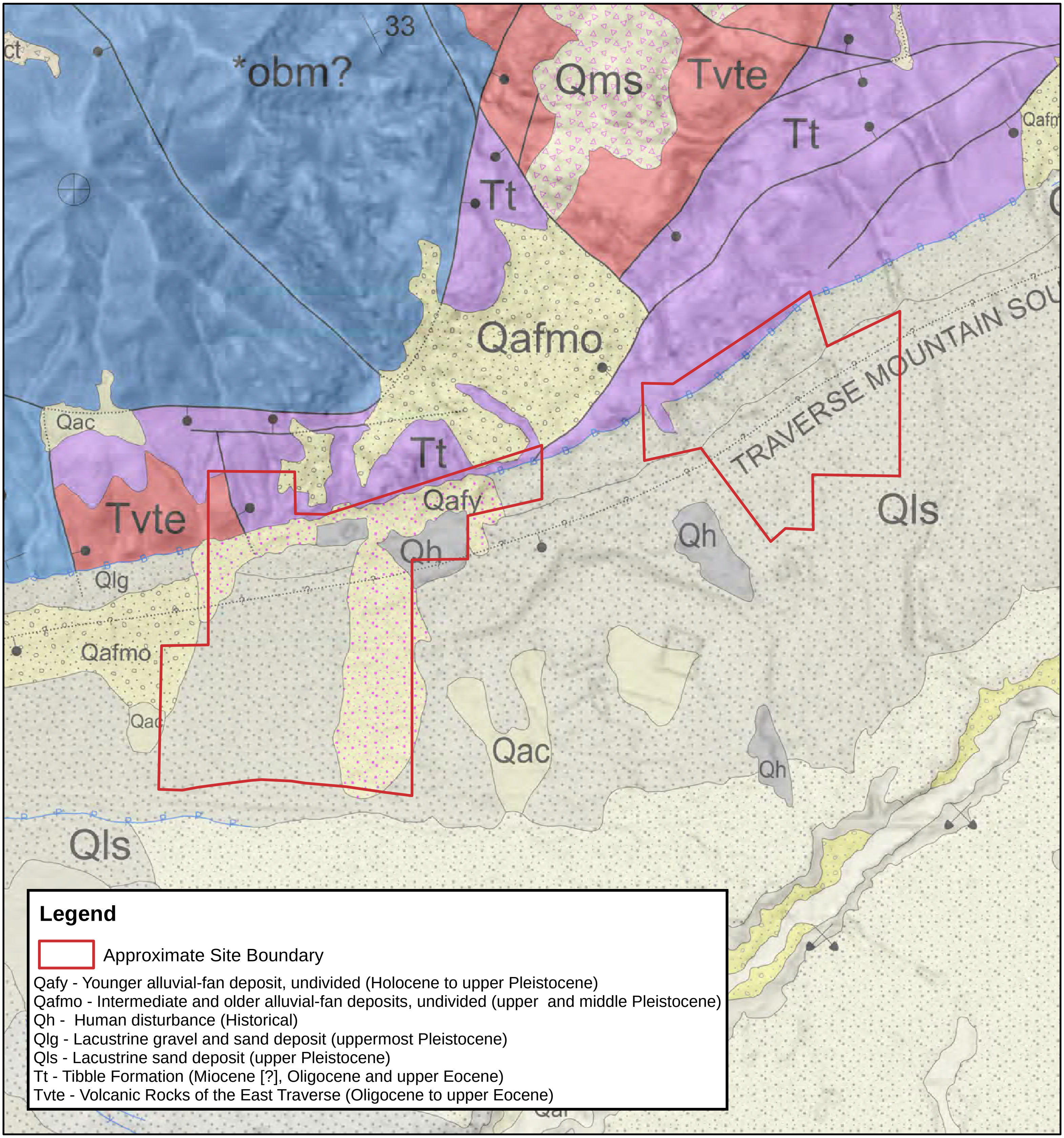
N

GeoStrata

Debris Flow Hazard Study
DR Horton
Micron Project
Lehi, Utah
Project Number: 589-100

Site Vicinity Geologic Map

Plate A-6



Legend

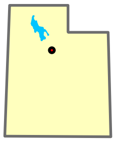
🟥 Approximate Site Boundary

Qafy - Younger alluvial-fan deposit, undivided (Holocene to upper Pleistocene)
Qafmo - Intermediate and older alluvial-fan deposits, undivided (upper and middle Pleistocene)
Qh - Human disturbance (Historical)
Qlg - Lacustrine gravel and sand deposit (uppermost Pleistocene)
Qls - Lacustrine sand deposit (upper Pleistocene)
Tt - Tibble Formation (Miocene [?], Oligocene and upper Eocene)
Tvte - Volcanic Rocks of the East Traverse (Oligocene to upper Eocene)

Feet
0 650 1,300 2,600 3,900 5,200

1:24,000
Basemap:
Interim Geologic Map of the Provo 30' X 60' Quadrangle, Utah, Wasatch and Salt Lake Counties, Utah, Constenius and others, 2011. Hillshades derived from DEMs provided by the State of Utah AGRC.

N

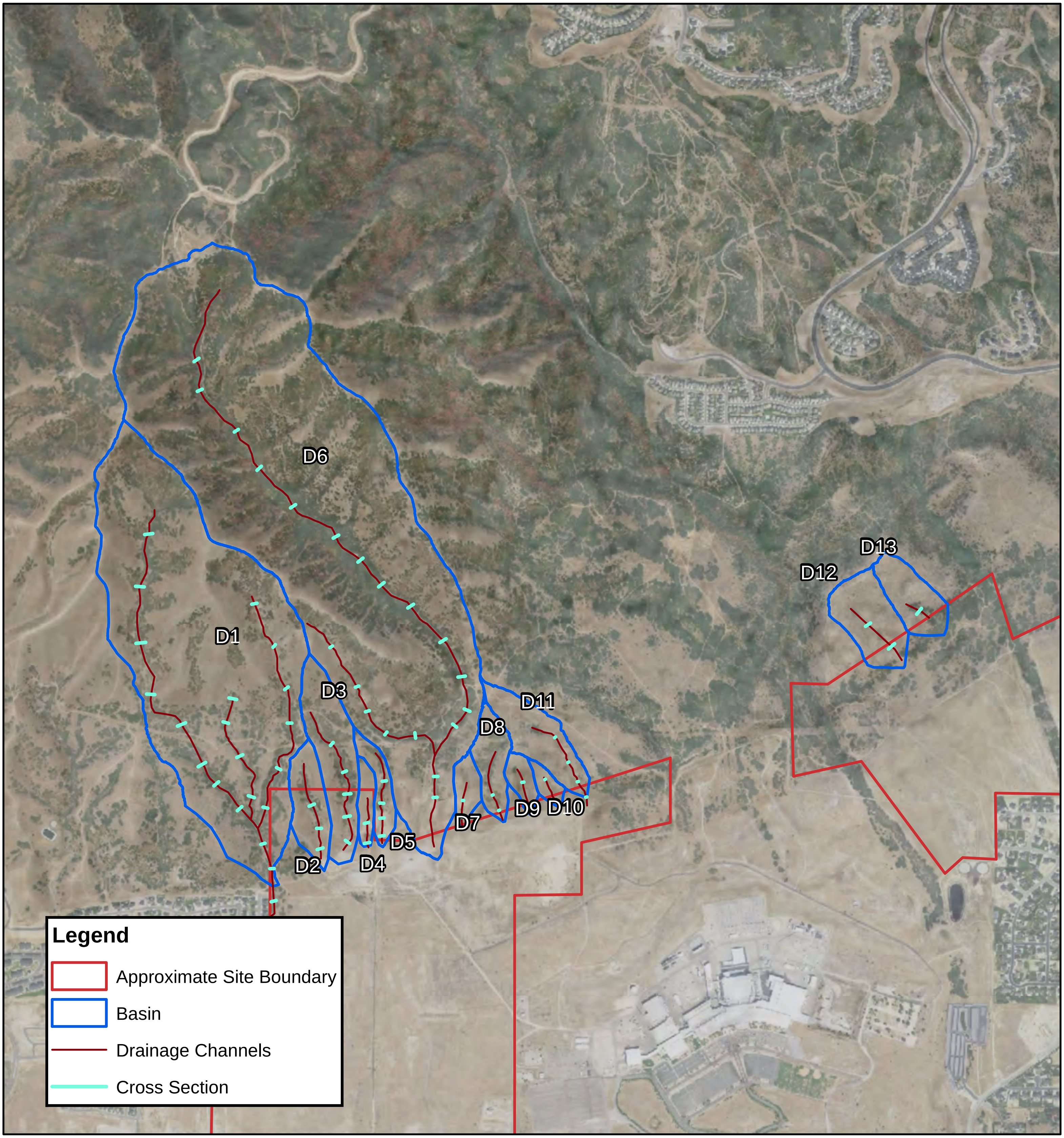


GeoStrata

Debris Flow Hazard Study
DR Horton
Micron Project
Lehi, Utah
Project Number: 589-100

Site Vicinity 30x60 Geologic Map

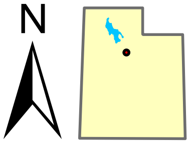
Plate A-7



0 500 1,000 2,000 3,000 4,000 Feet

1:20,000

Basemap:
2012 12.5 cm HRO aerial imagery and hillshades derived from
DEMs provided by the State of Utah AGRC



GeoStrata

Debris Flow Hazard Study
DR Horton
Micron Project
Lehi, Utah
Project Number: 589-100

Debris Flow Assessment Map

Plate
A-8

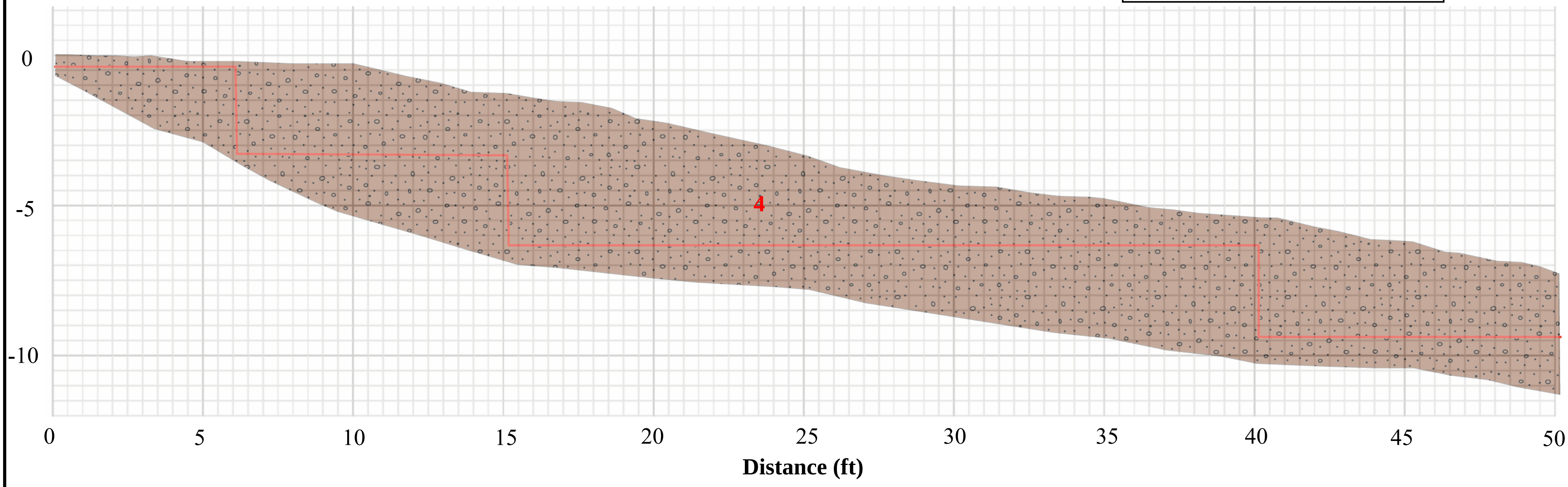
Appendix B

North

TRENCH 3 EAST WALL

South

Trench Orientation: N27°W
Scale
1 inch = 5 feet
Horizontal Scale = Vertical Scale



LEGEND

▨ ***Unit 4 – Alluvial Fan Deposits:*** Matrix supported and massive red-brown silt with gravel. Subangular to subrounded clasts ranging from 1 to 3 inches in diameter, occasional 4 to 5 inches in diameter. Contains several clast supported, and bedded stream gravel lenses.

— Stringline

logged by S. Agopian

Plate
B-1

Debris Flow Hazard Study
DR Horton
Micron Property Development
Lehi, Utah
Project Number: 589-100

Trench 3 Log
0 to 50 feet

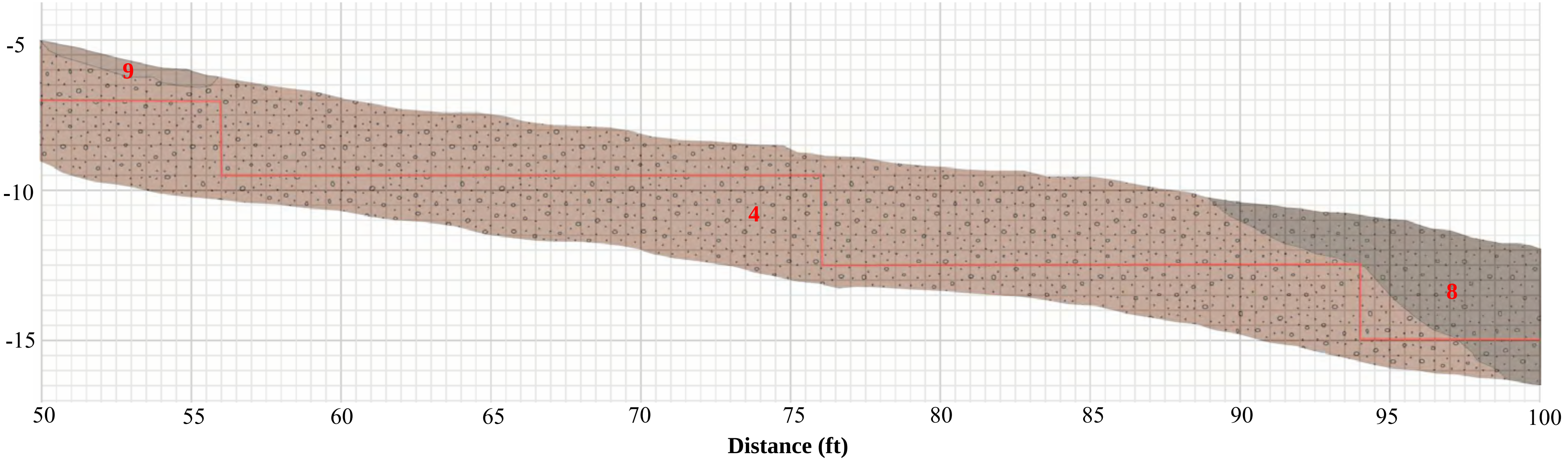
GeoStrata

TRENCH 3 EAST WALL

North

South

Trench Orientation: N27°W
Scale
1 inch = 5 feet
Horizontal Scale = Vertical Scale



LEGEND

▨ ***Unit 4 – Alluvial Fan Deposits (Qaf$_1$):*** Matrix supported and massive red-brown silt with gravel. Subangular to subrounded clasts ranging from 1 to 3 inches in diameter, occasional 4 to 5 inches in diameter. Contains several clast supported, and bedded stream gravel lenses.

▨ ***Unit 5, 6, 7, 8, 9- FILL***

— Stringline

logged by S. Agopian

Plate
B-2

Debris Flow Hazard Study
DR Horton
Micron Property Development
Lehi, Utah
Project Number: 589-100

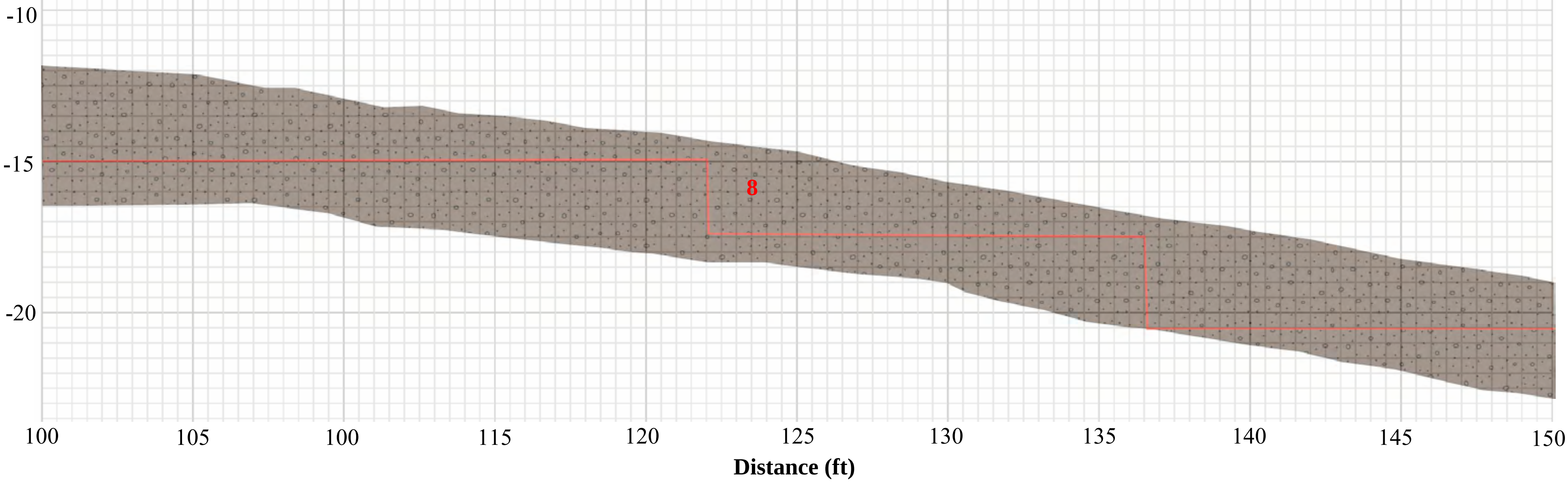
Trench 3 Log
50 to 100 feet

GeoStrata

TRENCH 3 EAST WALL

North **South**

Trench Orientation: N27°W
Scale
1 inch = 5 feet
Horizontal Scale = Vertical Scale



LEGEND

▨ ***Unit 5, 6, 7, 8, 9- FILL***

— Stringline

logged by S. Agopian

Plate
B-3

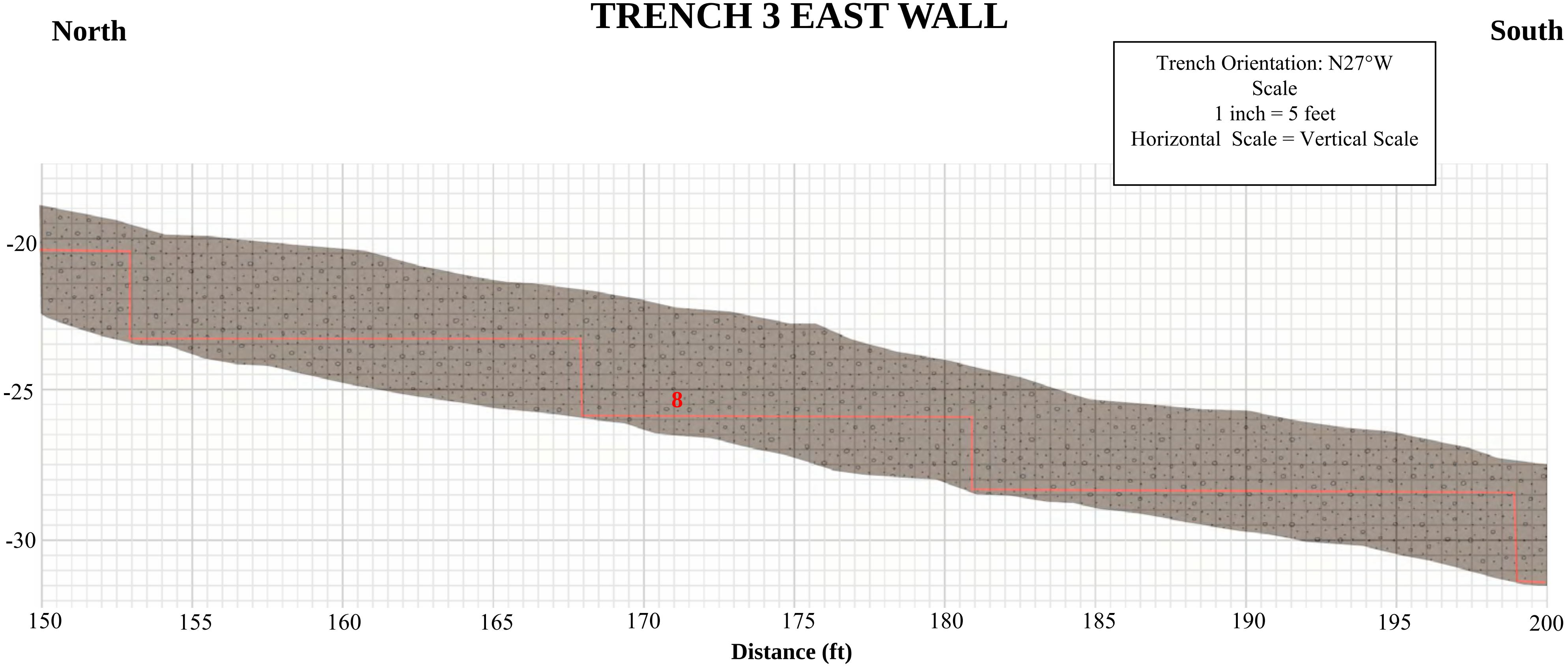
Debris Flow Hazard Study
DR Horton
Micron Property Development
Lehi, Utah
Project Number: 589-100

Trench 3 Log
100 to 150 feet

GeoStrata

TRENCH 3 EAST WALL

Trench Orientation: N27°W
Scale
1 inch = 5 feet
Horizontal Scale = Vertical Scale



LEGEND

▨ ***Unit 5, 6, 7, 8, 9- FILL***

— Stringline

logged by S. Agopian

Plate B-4

Debris Flow Hazard Study
DR Horton
Micron Property Development
Lehi, Utah
Project Number: 589-100

Trench 3 Log
150 to 200 feet

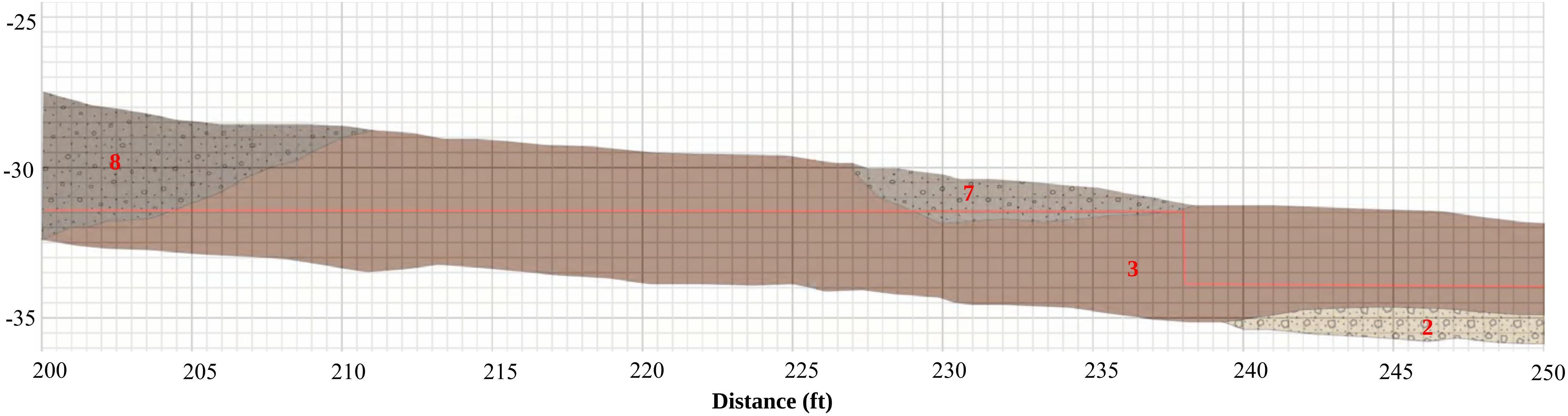
GeoStrata

TRENCH 3 EAST WALL

North

South

Trench Orientation: N27°W
Scale
1 inch = 5 feet
Horizontal Scale = Vertical Scale



LEGEND

▨ ***Unit 2 - Lake Bonneville Sand and Gravel (Pleistocene):*** Clast supported, crudely bedded to bedded light brown fine gravel to coarse gravel and fine to coarse sand. Clasts were well rounded to subrounded and comprised of quartzite with trace amounts of andesite.

■ ***Unit 3 – Colluvium and/or Alluvium:*** Matrix supported and massive red-brown clay to silt with gravel. Subangular to subrounded clasts ranging from 1 to 3 inches in diameter. Calcium carbonate stringers between approximately 327 feet and 354 feet down trench.

▨ ***Unit 5, 6, 7, 8, 9- FILL***

— Stringline

logged by S. Agopian

Plate
B-5

Debris Flow Hazard Study
DR Horton
Micron Property Development
Lehi, Utah
Project Number: 589-100

Trench 3 Log
200 to 250 feet

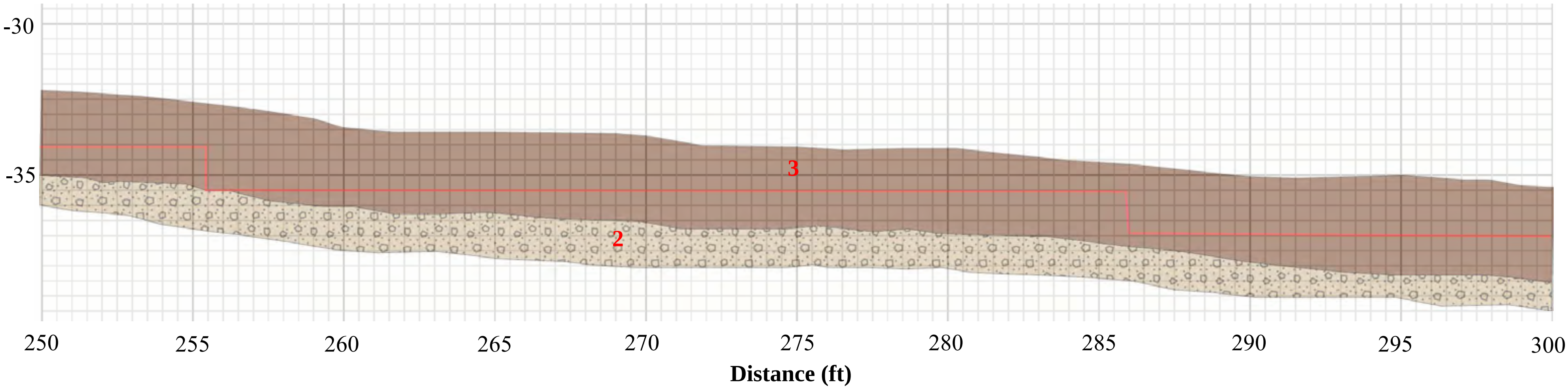
GeoStrata

TRENCH 3 EAST WALL

North

South

Trench Orientation: N27°W
Scale
1 inch = 5 feet
Horizontal Scale = Vertical Scale



LEGEND

▨ ***Unit 2 - Lake Bonneville Sand and Gravel (Pleistocene):*** Clast supported, crudely bedded to bedded light brown fine gravel to coarse gravel and fine to coarse sand. Clasts were well rounded to subrounded and comprised of quartzite with trace amounts of andesite.

🟫 ***Unit 3 – Colluvium and/or Alluvium:*** Matrix supported and massive red-brown clay to silt with gravel. Subangular to subrounded clasts ranging from 1 to 3 inches in diameter. Calcium carbonate stringers between approximately 327 feet and 354 feet down trench.

— Stringline

logged by S. Agopian

Plate
B-6

Debris Flow Hazard Study
DR Horton
Micron Property Development
Lehi, Utah
Project Number: 589-100

Trench 3 Log
250 to 300 feet

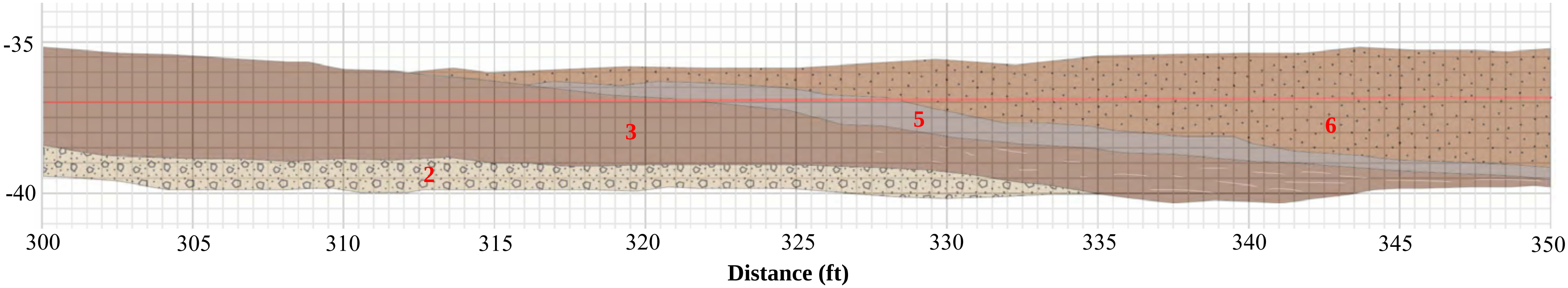
GeoStrata

TRENCH 3 EAST WALL

North

South

Trench Orientation: N27°W
Scale
1 inch = 5 feet
Horizontal Scale = Vertical Scale



LEGEND

▨ ***Unit 2 - Lake Bonneville Sand and Gravel (Pleistocene):*** Clast supported, crudely bedded to bedded light brown fine gravel to coarse gravel and fine to coarse sand. Clasts were well rounded to subrounded and comprised of quartzite with trace amounts of andesite.

▨ ***Unit 3 – Colluvium and/or Alluvium:*** Matrix supported and massive red-brown clay to silt with gravel. Subangular to subrounded clasts ranging from 1 to 3 inches in diameter. Calcium carbonate stringers between approximately 327 feet and 354 feet down trench.

▨ ***Unit 5, 6, 7, 8, 9- FILL***

— Stringline

logged by S. Agopian

Plate
B-7

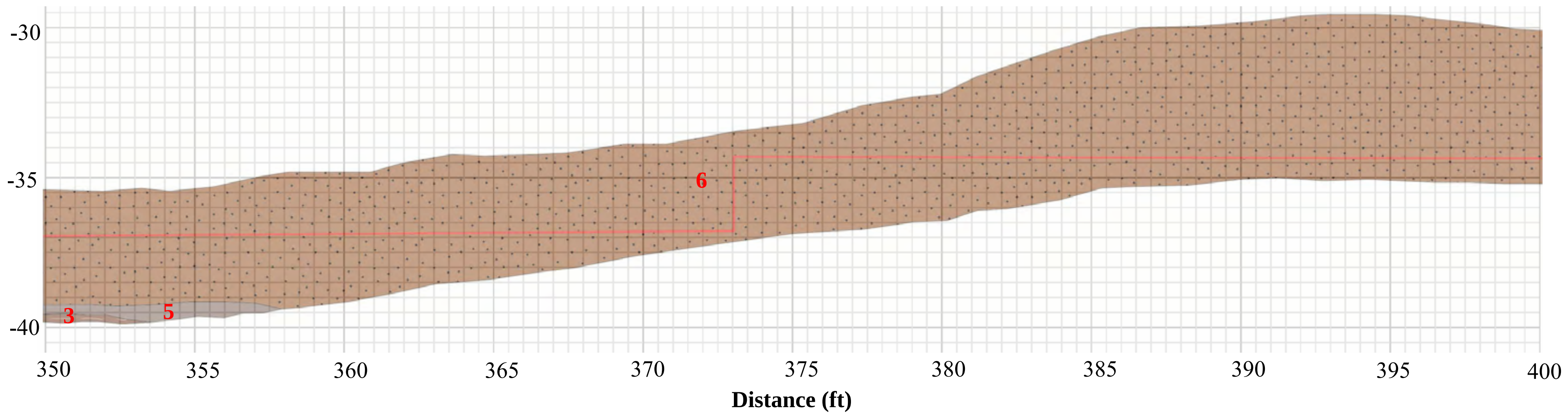
Debris Flow Hazard Study
DR Horton
Micron Property Development
Lehi, Utah
Project Number: 589-100

Trench 3 Log
300 to 350 feet

TRENCH 3 EAST WALL

North **South**

Trench Orientation: N27°W
Scale
1 inch = 5 feet
Horizontal Scale = Vertical Scale



LEGEND

▨ ***Unit 3 – Colluvium and/or Alluvium:*** Matrix supported and massive red-brown clay to silt with gravel. Subangular to subrounded clasts ranging from 1 to 3 inches in diameter. Calcium carbonate stringers between approximately 327 feet and 354 feet down trench.

▨ ***Unit 5, 6, 7, 8, 9- FILL***

— Stringline

logged by S. Agopian

Plate
B-8

Debris Flow Hazard Study
DR Horton
Micron Property Development
Lehi, Utah
Project Number: 589-100

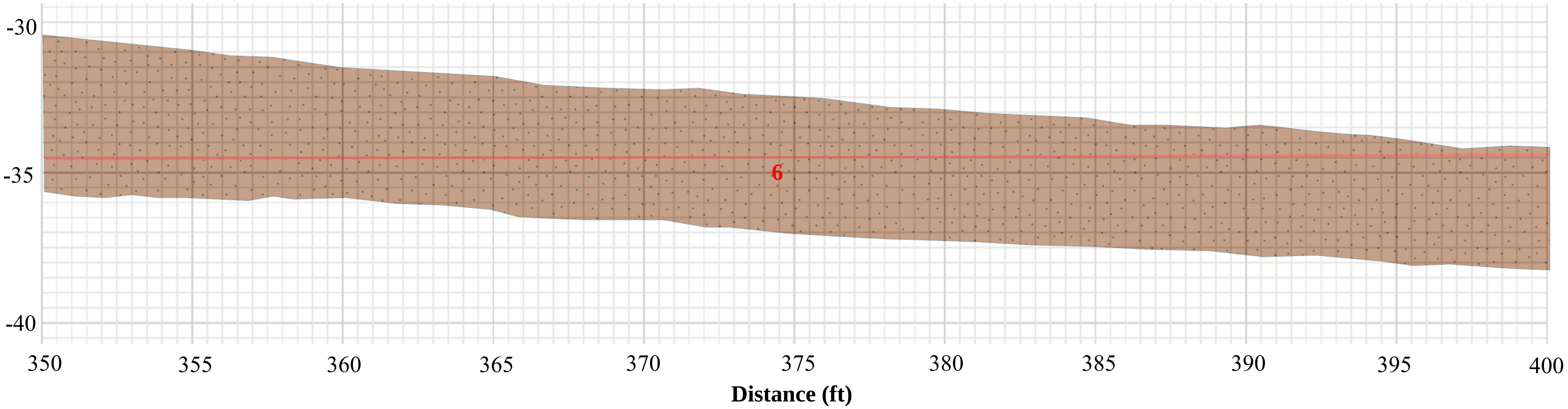
Trench 3 Log
350 to 400 feet

TRENCH 3 EAST WALL

North

South

Trench Orientation: N27°W
Scale
1 inch = 5 feet
Horizontal Scale = Vertical Scale



LEGEND

▨ *Unit 5, 6, 7, 8, 9- FILL*

Stringline
logged by S. Agopian

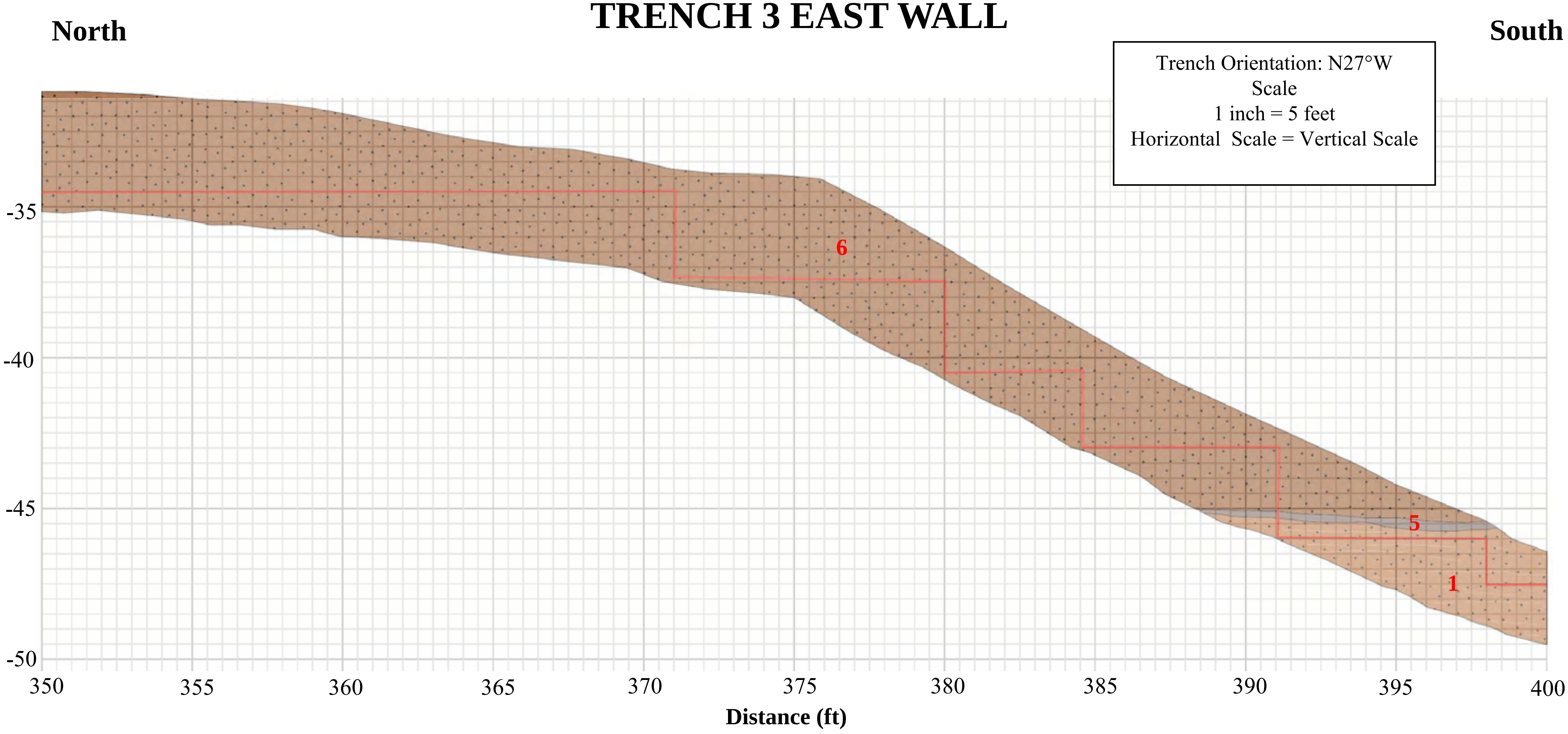
Plate
B-9

Debris Flow Hazard Study
DR Horton
Micron Property Development
Lehi, Utah
Project Number: 589-100

Trench 3 Log
350 to 400 feet

GeoStrata

TRENCH 3 EAST WALL



Trench Orientation: N27°W
Scale
1 inch = 5 feet
Horizontal Scale = Vertical Scale

LEGEND

▨ ***Unit 1 – Lake Bonneville Silt and Sand (Qlsp, upper Pleistocene):*** Matrix supported, massive to crudely bedded light red-brown silt and fine sand with calcium carbonate staining, slightly cemented.

▨ ***Unit 5, 6, 7, 8, 9- FILL***

— Stringline

logged by S. Agopian

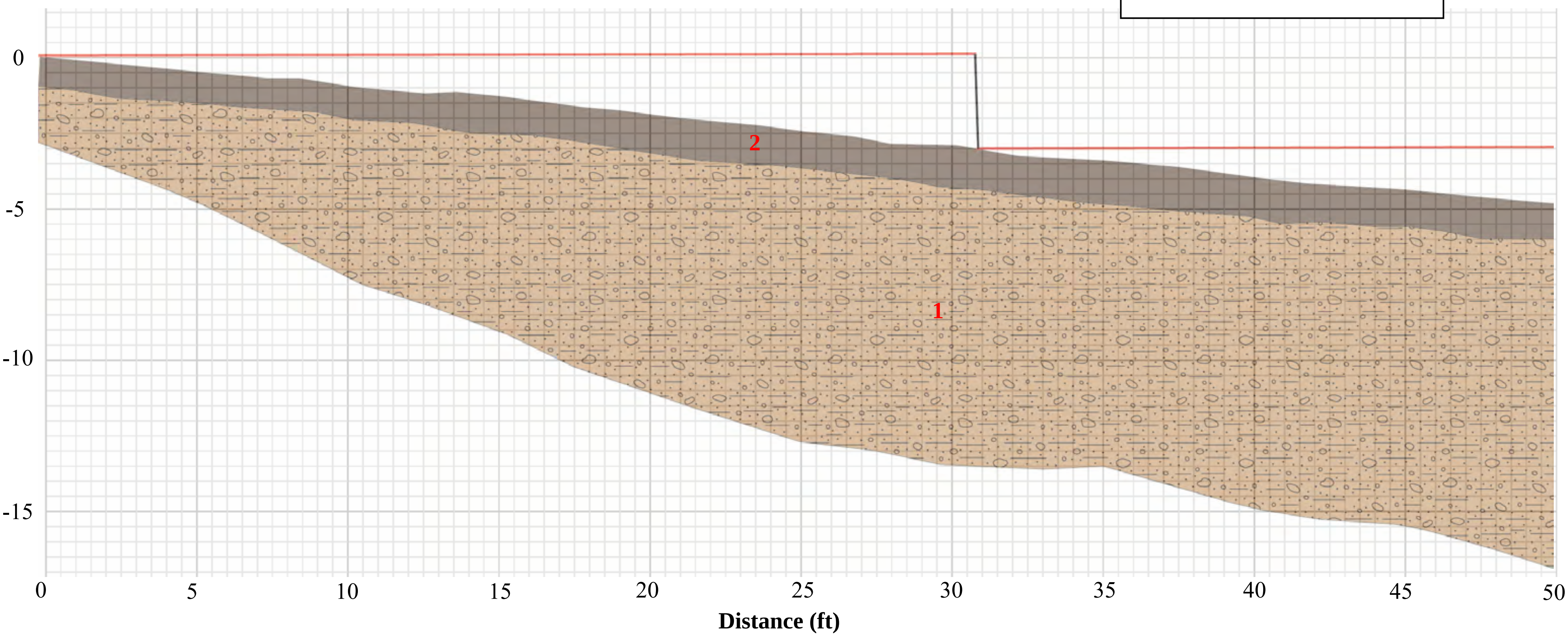
Plate B-10

Debris Flow Hazard Study
DR Horton
Micron Property Development
Lehi, Utah
Project Number: 589-100

Trench 3 Log
350 to 400 feet

GeoStrata

TRENCH 6 EAST WALL



LEGEND

▨ ***Unit 1 - Alluvial Fan Deposit (Holocene to upper Pleistocene):*** Clast supported and crudely bedded grey-brown coarse gravel and with trace amounts of cobbles. Clasts were observed to be subrounded to subangular. This unit was observed to consist of a series of water dominated alluvial fan flooding deposits. Several stream channel deposits were also observed within this unit.

■ ***Unit 2 - TOPSOIL***

— Stringline

logged by S. Agopian

Plate
B-11

Debris Flow Hazard Study
DR Horton
Micron Property Development
Lehi, Utah
Project Number: 589-100

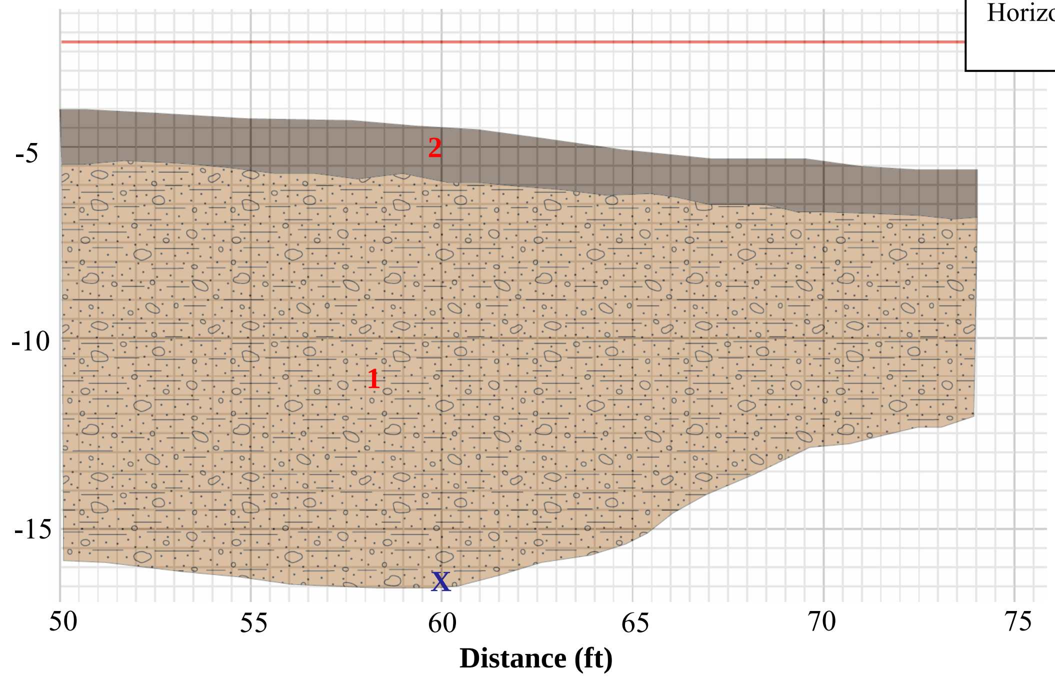
Trench 6 Log
0 to 50 feet

GeoStrata

TRENCH 6 EAST WALL

North **South**

Trench Orientation: N40°W
Scale
1 inch = 5 feet
Horizontal Scale = Vertical Scale



LEGEND

▨ ***Unit 1 - Alluvial Fan Deposit (Holocene to upper Pleistocene):*** Clast supported and crudely bedded grey-brown coarse gravel and with trace amounts of cobbles. Clasts were observed to be subrounded to subangular. This unit was observed to consist of a series of water dominated alluvial fan flooding deposits. Several stream channel deposits were also observed within this unit.

■ ***Unit 2 - TOPSOIL***

X – Radiocarbon Sample

— Stringline

logged by S. Agopian

Plate B-12

Debris Flow Hazard Study
DR Horton
Micron Property Development
Lehi, Utah
Project Number: 589-100

Trench 6 Log
50 to 74 feet

GeoStrata

DATE		
STARTED:	5/11/21	
COMPLETED:	5/11/21	
BACKFILLED:	5/11/21	

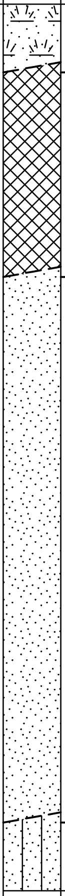
DR Horton
Micron Additon
Lehi, Utah
Project Number 589-100

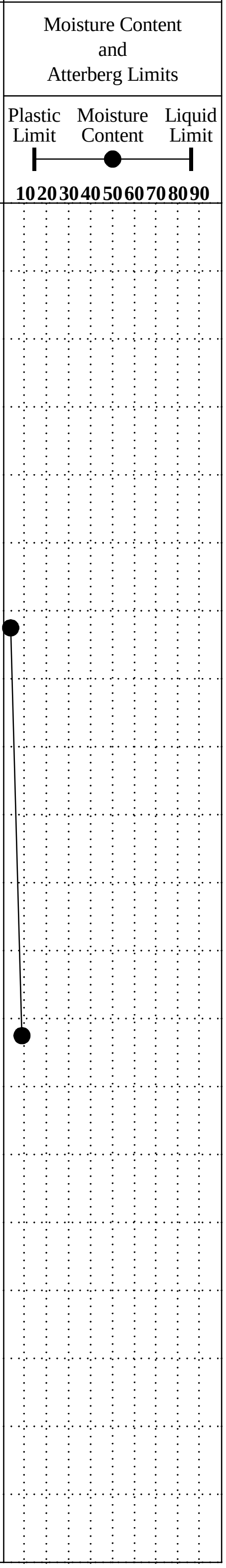
GeoStrata Rep: N. F.
Rig Type: Hitachi EX-200

TEST PIT NO:
DS-TP-02
Sheet 1 of 1

LOCATION
NORTHING 4,477,281.70 EASTING 428,174.30 ELEVATION 5,114-ft

DEPTH FEET	SAMPLES	UNIFIED SOIL CLASSIFICATION	MATERIAL DESCRIPTION	Dry Density(pcf)	Moisture Content %	Percent minus 200	Liquid Limit	Plasticity Index
0			TOP SOIL; loose, slightly moist, light brown, organics from dried vegetation of grass and sage brush					
	◫	SC	UNDOCUMENTED FILL; Clayey SAND with gravel - dense, moist, dark brown, maximum gravel size 2", fill is possibly comprised of re-used grubbed soil material					
5	◫	SP	Poorly Graded SAND with gravel - loose, moist, light brown, medium to coarse grain sized sand with silty clumps having iron staining interbedded through out layer		3.2	3.7		
10	◫	SM	Silty SAND with gravel, medium dense, moist, light brown, medium to coarse grain sized sand with silty clumps having iron staining interbedded through out layer		8.4	14.6		
			Bottom of Test Pit @ 13 Feet					





DEPTH: METERS 0, 1, 2, 3, 4, 5, 6; FEET 0, 5, 10, 15

SAMPLE TYPE
◫ - GRAB SAMPLE
▱ - 2.5" O.D. THIN-WALLED HAND SAMPLER

WATER LEVEL
▼- MEASURED
▽- ESTIMATED

NOTES:

DATE	STARTED:	5/11/21
	COMPLETED:	5/11/21
	BACKFILLED:	5/11/21

DR Horton
Micron Additon
Lehi, Utah
Project Number 589-100

GeoStrata Rep: N. F.
Rig Type: Hitachi EX-200

TEST PIT NO:
DS-TP-03
Sheet 1 of 1

LOCATION
NORTHING 4,477,276.70 EASTING 428,310.30 ELEVATION 5,096-ft

Moisture Content and Atterberg Limits: Plastic Limit ├ Moisture Content ● Liquid Limit ┤ (10 20 30 40 50 60 70 80 90)

DEPTH METERS	DEPTH FEET	SAMPLES	WATER LEVEL	UNIFIED SOIL CLASSIFICATION	MATERIAL DESCRIPTION	Dry Density(pcf)	Moisture Content %	Percent minus 200	Liquid Limit	Plasticity Index
0	0				TOP SOIL; Sitly SAND with gravel - slightly moist, brown, organics from dried vegetation and sage brush					
				SP	Poorly Graded SAND with gravel - dense, moist, light brown, coarse grain sized sand					
1		▯		GP-GM	Poorly Graded GRAVEL with silt and sand - dense, moist, light brown, gravel shape ranges from subangular to angular with maximum partical size ranging to 2", coarse grain sized sand		4.7	10.9	NP	NP
3	10			SC	Clayey SAND - medium dense, moist, light brown, fine to medium grain sized sand with clay that is low in plasticity					
4		▯			Bottom of Test Pit @ 13 Feet					
5	15									
6										

GeoStrata

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SAMPLE TYPE
▯ - GRAB SAMPLE
▨ - 2.5" O.D. THIN-WALLED HAND SAMPLER

WATER LEVEL
▼- MEASURED
▽- ESTIMATED

NOTES:

Plate
B - 14

DATE	STARTED:	5/11/21
	COMPLETED:	5/11/21
	BACKFILLED:	5/11/21

DR Horton
Micron Additon
Lehi, Utah
Project Number 589-100

GeoStrata Rep: N. F.
Rig Type: Hitachi EX-200

TEST PIT NO:
DS-TP-05
Sheet 1 of 1

LOCATION
NORTHING 4,477,403.00 EASTING 428,018.40 ELEVATION 5,149-ft

DEPTH: METERS 0–6; FEET 0, 5, 10, 15

SAMPLES | WATER LEVEL | GRAPHICAL LOG | UNIFIED SOIL CLASSIFICATION

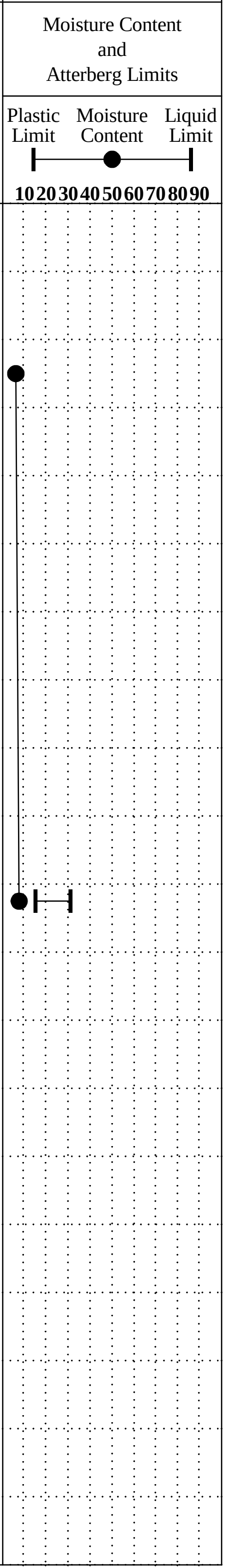
MATERIAL DESCRIPTION

TOP SOIL; Silty SAND with gravel - slightly moist, brown, organics from vegetation from dried grass and sage brush

GC — Clayey GRAVEL with sand - medium dense, moist, brown to reddish brown, gravel shape ranges from subrounded to subangular, cobbles greater than 4" observed

Bottom of Test Pit @ 12 Feet

Dry Density(pcf)	Moisture Content %	Percent minus 200	Liquid Limit	Plasticity Index
	6.0	13.1		
	7.5	29.2	31	16



GeoStrata

SAMPLE TYPE
- ▯ - GRAB SAMPLE
- ▧ - 2.5" O.D. THIN-WALLED HAND SAMPLER

WATER LEVEL
- ▼ - MEASURED
- ▽ - ESTIMATED

NOTES:

Plate

B - 15

DATE	
STARTED:	5/11/21
COMPLETED:	5/11/21
BACKFILLED:	5/11/21

DR Horton
Micron Additon
Lehi, Utah
Project Number 589-100

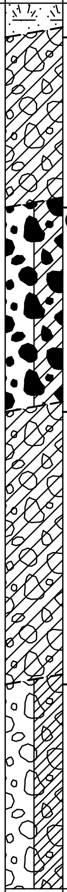
GeoStrata Rep: N. F.
Rig Type: Hitachi EX-200

TEST PIT NO:
DS-TP-06
Sheet 1 of 1

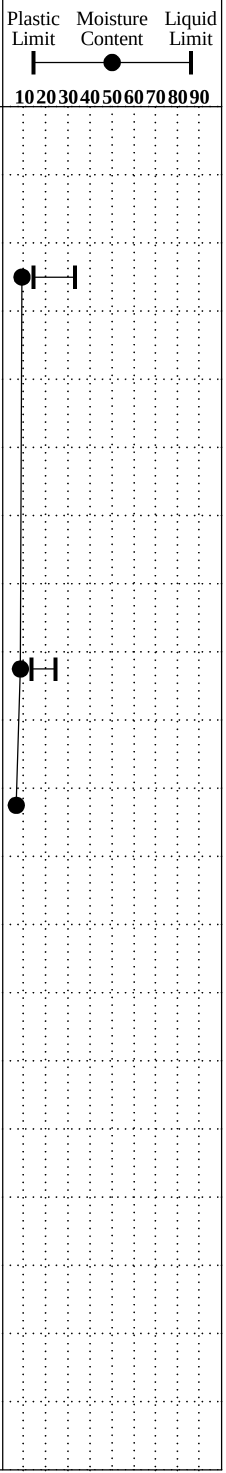
LOCATION
NORTHING 4,477,422.00 EASTING 428,171.30 ELEVATION 5,127-ft

DEPTH: METERS 0, 1, 2, 3, 4, 5, 6; FEET 0, 5, 10, 15

UNIFIED SOIL CLASSIFICATION	MATERIAL DESCRIPTION	Dry Density(pcf)	Moisture Content %	Percent minus 200	Liquid Limit	Plasticity Index
	TOP SOIL; Silty SAND with gravel - slightly moist, brown, organics from vegetation of grass and sage brush					
GC	Clayey GRAVEL with sand - medium dense, moist, brown		8.8	18.8	33	19
GW-GC	Well Graded GRAVEL with clay and sand - very dense, moist, brown, gravel shape ranges from subrounded to angular, cobbles over 8" observed, boulders over 12" observed					
GC	Clayey GRAVEL with sand - medium dense, moist, brown, coarse grain sized sand		8.1	14.5	24	11
GP-GC	Poorly Graded GRAVEL with clay and sand - medium dense, moist, brown, coarse grain sized sand		6.2	6.0		
	Bottom of Test Pit @ 13 Feet					



Moisture Content and Atterberg Limits



SAMPLE TYPE
- ▯ - GRAB SAMPLE
- ▨ - 2.5" O.D. THIN-WALLED HAND SAMPLER

WATER LEVEL
- ▼ - MEASURED
- ▽ - ESTIMATED

NOTES:

GeoStrata

Plate

B - 16

Upper few feet looks like fill overlying alluvial fan deposits.

DATE	STARTED:	5/11/21	
	COMPLETED:	5/11/21	
	BACKFILLED:	5/11/21	

DR Horton
Micron Additon
Lehi, Utah
Project Number 589-100

GeoStrata Rep: N. F.
Rig Type: Hitachi EX-200

TEST PIT NO:
DS-TP-07
Sheet 1 of 1

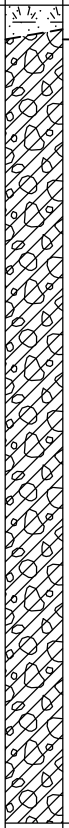
LOCATION
NORTHING 4,477,417.40 EASTING 428,315.90 ELEVATION 5,134-ft

MATERIAL DESCRIPTION

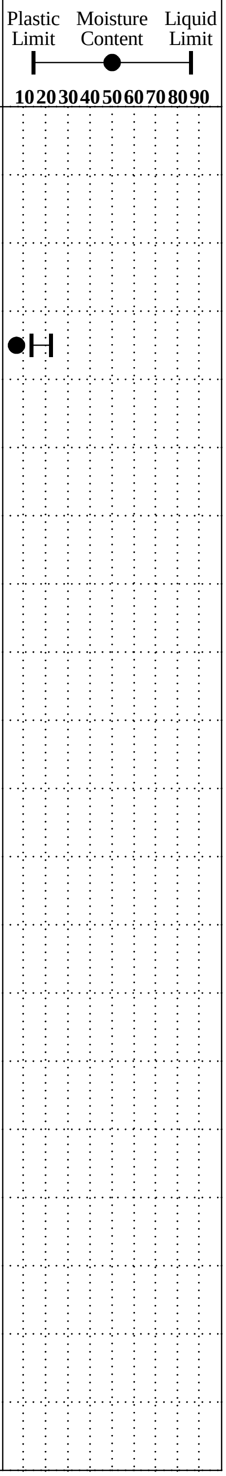
DEPTH (FEET)	UNIFIED SOIL CLASSIFICATION	MATERIAL DESCRIPTION	Dry Density(pcf)	Moisture Content %	Percent minus 200	Liquid Limit	Plasticity Index
0		TOP SOIL; Silty SAND with gravel - slightly moist, brown, organics from vegetation of dried grass and patches of weeds					
	GC	Clayey GRAVEL with sand - medium dense to dense, moist, brown, gravel shape ranges from sub-rounded to angular, gravel size ranges from #4 to +6" cobbles, at depths of 6 to 8 feet observed high concentration of dense +6" sized gravel clumps cemented by calcium carbonate, sand size ranged from fine to coarse grain					
				6.3	13.1	22	9
12		Bottom of Test Pit @ 12 Feet					

DEPTH: METERS 0, 1, 2, 3, 4, 5, 6; FEET 0, 5, 10, 15

SAMPLES | WATER LEVEL | GRAPHICAL LOG



Moisture Content and Atterberg Limits



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SAMPLE TYPE
▯ - GRAB SAMPLE
▨ - 2.5" O.D. THIN-WALLED HAND SAMPLER

WATER LEVEL
▼ - MEASURED
▽ - ESTIMATED

NOTES:

Plate
B - 17

Looks like Lake Bonneville deposits in bottom of test pit.

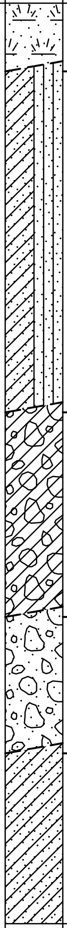
DATE	
STARTED:	5/11/21
COMPLETED:	5/11/21
BACKFILLED:	5/11/21

DR Horton
Micron Additon
Lehi, Utah
Project Number 589-100

GeoStrata Rep: N. F.
Rig Type: Hitachi EX-200

TEST PIT NO:
DS-TP-08
Sheet 1 of 1

LOCATION
NORTHING 4,477,425.40 EASTING 428,454.00 ELEVATION 5,136-ft



UNIFIED SOIL CLASSIFICATION	MATERIAL DESCRIPTION	Dry Density(pcf)	Moisture Content %	Percent minus 200	Liquid Limit	Plasticity Index
	TOP SOIL; Silty SAND with gravel - slightly moist, brown, organics from vegetation of dried grass and patches of weeds					
SC-SM	Silty, Clayey SAND - loose, moist, brown, fine grain sized sand					
GC	Clayey GRAVEL with sand - dense, moist, brown, gravel shape ranges from sub-rounded to angular, gravel size ranges from #4 to +6" cobbles					
GP	Poorly Graded GRAVEL with sand - loose, moist, brown, coarse grain sized sand		5.8	1.6		
SC	Clayey SAND - medium dense, moist, brown, coarse grain sized sand					
	Bottom of Test Pit @ 13.5 Feet					

DEPTH: METERS 0, 1, 2, 3, 4, 5, 6; FEET 0, 5, 10, 15

SAMPLES · WATER LEVEL · GRAPHICAL LOG

Moisture Content and Atterberg Limits
Plastic Limit — Moisture Content ● — Liquid Limit
10 20 30 40 50 60 70 80 90

SAMPLE TYPE
▯ - GRAB SAMPLE
▨ - 2.5" O.D. THIN-WALLED HAND SAMPLER

WATER LEVEL
▼- MEASURED
▽- ESTIMATED

NOTES:

Plate
B - 18

GeoStrata

Alluvial Fan Deposits

DATE
STARTED: 5/11/21
COMPLETED: 5/11/21
BACKFILLED: 5/11/21

DR Horton
Micron Additon
Lehi, Utah
Project Number 589-100

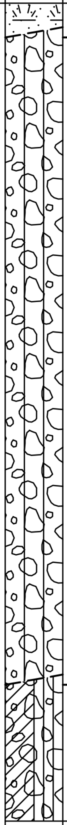
GeoStrata Rep: N. F.
Rig Type: Hitachi EX-200

TEST PIT NO:
DS-TP-10
Sheet 1 of 1

LOCATION
NORTHING 4,477,498.40 EASTING 428,370.40 ELEVATION 5,183-ft

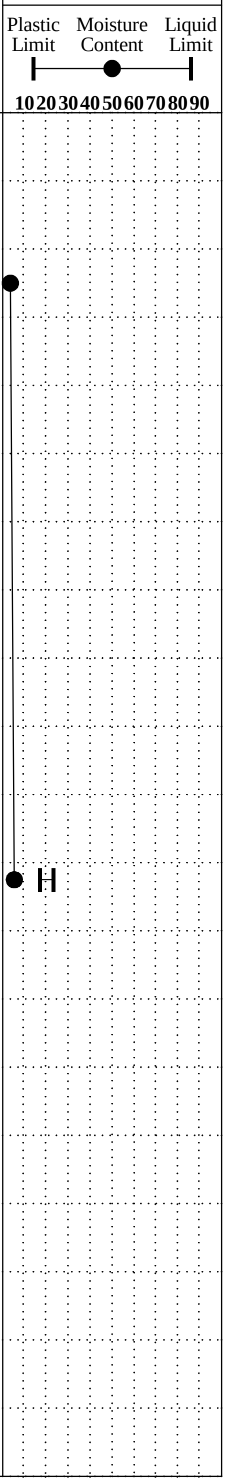
DEPTH: METERS 0–6; FEET 0, 5, 10, 15

SAMPLES | WATER LEVEL | GRAPHICAL LOG



UNIFIED SOIL CLASSIFICATION	MATERIAL DESCRIPTION	Dry Density(pcf)	Moisture Content %	Percent minus 200	Liquid Limit	Plasticity Index
	TOP SOIL; Silty GRAVEL with sand - slightly moist, brown, organcis from vegetation of dried grass and sage brush					
GM	Silty GRAVEL with sand - dense, moist, brown, gravel shape ranges from sub-rounded to angular, gravel size ranges from #4 to +2" cobbles					
			3.5	17.0		
GC-GM	Silty, Clayey GRAVEL with sand - medium dense, moist, brown, coarse grain sized sand with sub-rounded to sub-angular gravel					
			5.3	23.1	23	6
	Bottom of Test Pit @ 12 Feet					

Moisture Content and Atterberg Limits



GeoStrata

SAMPLE TYPE
- ▯ - GRAB SAMPLE
- ▨ - 2.5" O.D. THIN-WALLED HAND SAMPLER

WATER LEVEL
- ▼ - MEASURED
- ▽ - ESTIMATED

NOTES:

Plate
B - 19

DATE	
STARTED:	5/11/21
COMPLETED:	5/11/21
BACKFILLED:	5/11/21

DR Horton
Micron Additon
Lehi, Utah
Project Number 589-100

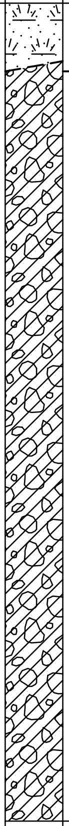
GeoStrata Rep: N. F.
Rig Type: Hitachi EX-200

TEST PIT NO:
DS-TP-11
Sheet 1 of 1

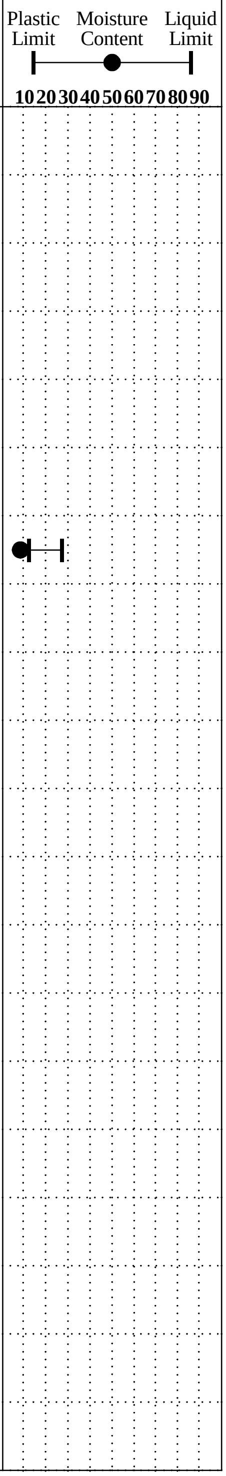
LOCATION
NORTHING 4,477,543.40 EASTING 428,514.80 ELEVATION 5,182-ft

DEPTH (METERS)	DEPTH (FEET)	SAMPLES	WATER LEVEL	UNIFIED SOIL CLASSIFICATION	MATERIAL DESCRIPTION	Dry Density(pcf)	Moisture Content %	Percent minus 200	Liquid Limit	Plasticity Index
0	0				TOP SOIL; Clayey SAND with gravel, slightly moist, brown, organcis from vegetation from dried grass and sage brush					
				GC	Clayey GRAVEL with sand - medium dense, moist, brown, gravel shape ranges from sub-rounded to angular, gravel size is predominately fine gravel (#4 to 3/4) though +3" cobbles were observed, fine to coarse grain sized sand					
1		▯								
2	5	▯					8.1	14.9	27	15
3	10									
					Bottom of Test Pit @ 12 Feet					
4										
5	15									
6										

GRAPHICAL LOG



Moisture Content and Atterberg Limits



SAMPLE TYPE
- ▯ - GRAB SAMPLE
- ▧ - 2.5" O.D. THIN-WALLED HAND SAMPLER

WATER LEVEL
- ▼- MEASURED
- ▽- ESTIMATED

NOTES:

Plate
B - 20

DATE STARTED:	12/2/20
COMPLETED:	12/2/20
BACKFILLED:	12/2/20

D.R. Horton
Micron Property
Lehi, Utah

Project Number 589-100

GeoStrata Rep: B.J.

Rig Type: Trackhoe

TEST PIT NO:

MW-TP-15

Sheet 1 of 1

LOCATION

NORTHING 4,477,102.00 EASTING 4,477,102.00 ELEVATION 5,046-ft

DEPTH METERS	DEPTH FEET	SAMPLES	WATER LEVEL	UNIFIED SOIL CLASSIFICATION	MATERIAL DESCRIPTION	Dry Density(pcf)	Moisture Content %	Percent minus 200	Liquid Limit	Plasticity Index
0	0				TOPSOIL - Sandy SILT with gravel - dark brown, moist, organics throughout					
				SM	Silty SAND with gravel - medium dense, moist, light brown					
				SM	Silty SAND - dense, moist, light brown					
		▯								
					Bottom of Test Pit @ 12 Feet					

Moisture Content and Atterberg Limits

Plastic Limit — Moisture Content ● — Liquid Limit

10 20 30 40 50 60 70 80 90

SAMPLE TYPE

▯ - GRAB SAMPLE

▨ - 2.5" O.D. THIN-WALLED HAND SAMPLER

WATER LEVEL

▼- MEASURED

▽- ESTIMATED

NOTES:

Plate

B - 21

DATE	
STARTED:	12/2/20
COMPLETED:	12/2/20
BACKFILLED:	12/2/20

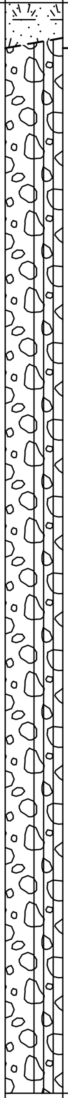
D.R. Horton
Micron Property
Lehi, Utah
Project Number 589-100

GeoStrata Rep: B.J.
Rig Type: Trackhoe

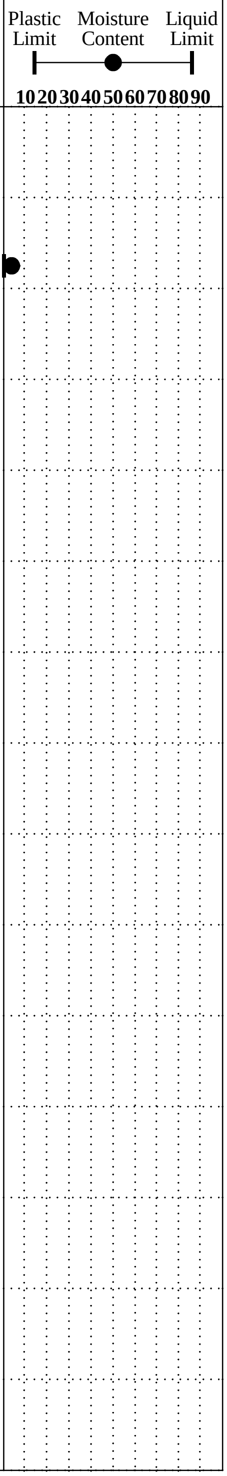
TEST PIT NO:
MW-TP-16
Sheet 1 of 1

LOCATION
NORTHING 4,477,097.00 EASTING 4,477,097.00 ELEVATION 5,040-ft

DEPTH METERS	DEPTH FEET	SAMPLES	WATER LEVEL	GRAPHICAL LOG	UNIFIED SOIL CLASSIFICATION	MATERIAL DESCRIPTION	Dry Density(pcf)	Moisture Content %	Percent minus 200	Liquid Limit	Plasticity Index
0	0					TOPSOIL - Sandy SILT with gravel - dark brown, moist, organics throughout					
					GP-GM	Poorly Graded GRAVEL with silt and sand - medium dense, moist, brown, subrounded gravel up to 3 inches in diameter					
		◫						3.6	7.0	NP	NP
1											
	5										
2											
3	10										
						Bottom of Test Pit @ 12 Feet					
4											



Moisture Content and Atterberg Limits



SAMPLE TYPE
◫ - GRAB SAMPLE
▨ - 2.5" O.D. THIN-WALLED HAND SAMPLER

WATER LEVEL
▼ - MEASURED
▽ - ESTIMATED

NOTES:

Plate
B - 22

DATE	
STARTED:	12/2/20
COMPLETED:	12/2/20
BACKFILLED:	12/2/20

D.R. Horton
Micron Property
Lehi, Utah

Project Number 589-100

GeoStrata Rep: B.J.

Rig Type: Trackhoe

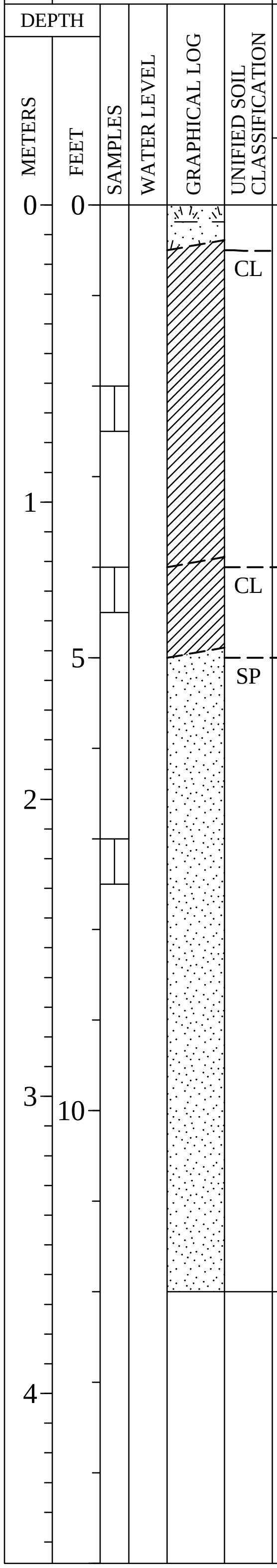
TEST PIT NO:

MW-TP-22

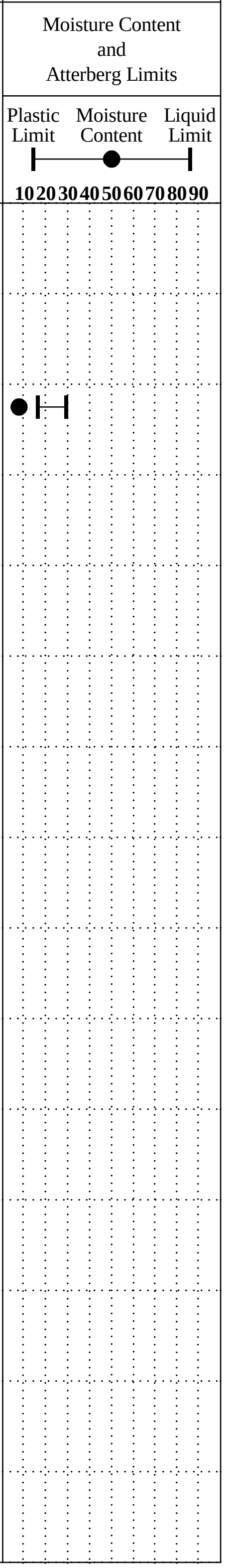
Sheet 1 of 1

LOCATION

NORTHING 4,476,953.00 EASTING 4,476,953.00 ELEVATION 5,009-ft



UNIFIED SOIL CLASSIFICATION	MATERIAL DESCRIPTION	Dry Density(pcf)	Moisture Content %	Percent minus 200	Liquid Limit	Plasticity Index
	TOPSOIL - Silty SAND with gravel - dark brown, moist, organics throughout					
CL	Sandy Lean CLAY - stiff, moist, tan		7.5	65.5	29	13
CL	Lean CLAY with sand and gravel - stiff to hard, moist, dark brown					
SP	Poorly Graded SAND with gravel - dense, moist, tan, gravels, cobbles and boulders up to 12 inches in diameter					
	Bottom of Test Pit @ 12 Feet					



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SAMPLE TYPE
- ▯ - GRAB SAMPLE
- ▨ - 2.5" O.D. THIN-WALLED HAND SAMPLER

WATER LEVEL
- ▼ - MEASURED
- ▽ - ESTIMATED

NOTES:

Plate

B - 23

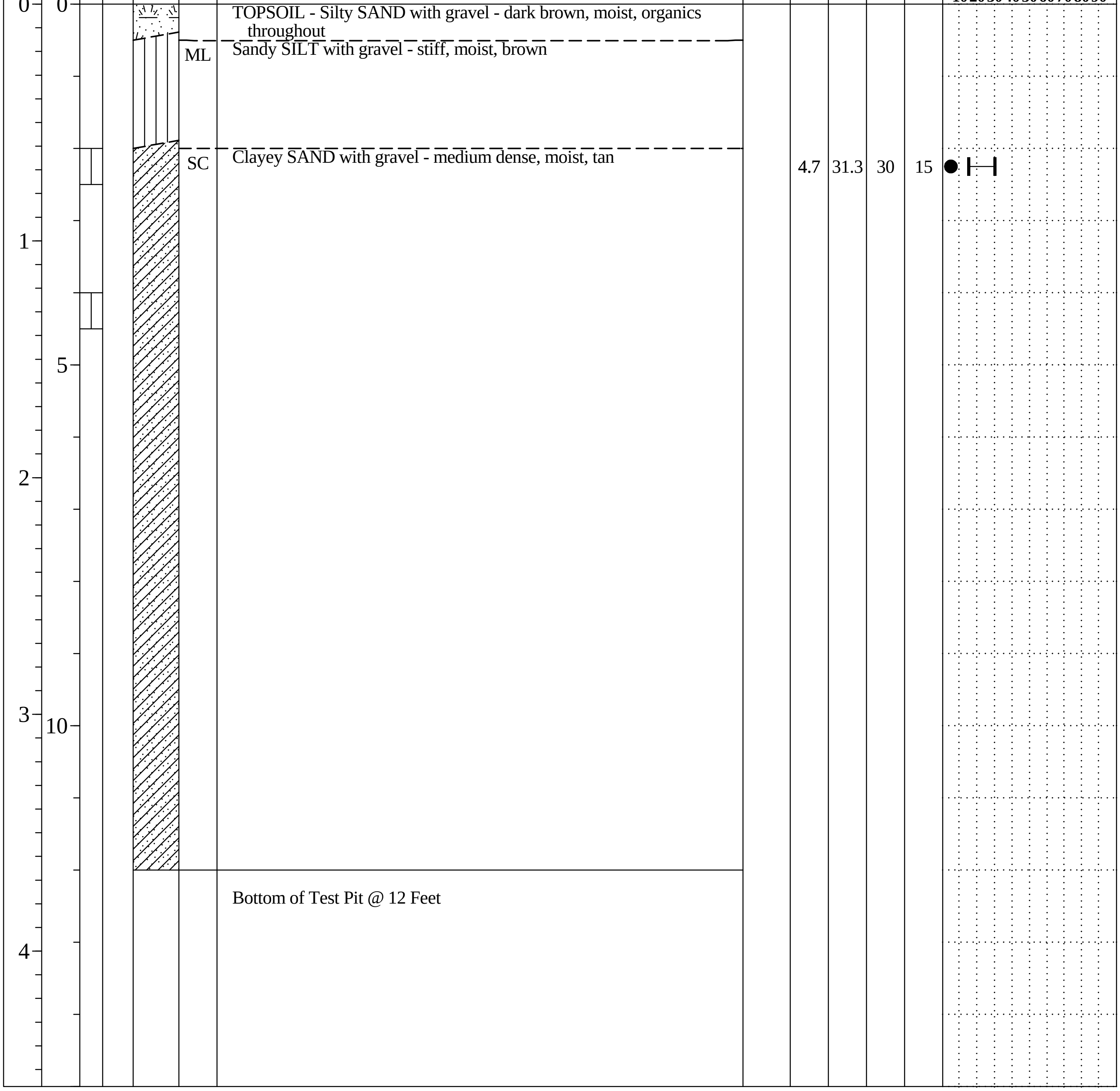
DATE	
STARTED:	12/3/20
COMPLETED:	12/3/20
BACKFILLED:	12/3/20

D.R. Horton
Micron Property
Lehi, Utah
Project Number 589-100

GeoStrata Rep: B.J.
Rig Type: Trackhoe

TEST PIT NO:
MW-TP-29
Sheet 1 of 1

LOCATION
NORTHING 4,476,807.40 EASTING 4,476,807.40 ELEVATION 4,961-ft



DEPTH	USCS	MATERIAL DESCRIPTION	Dry Density(pcf)	Moisture Content %	Percent minus 200	Liquid Limit	Plasticity Index
0		TOPSOIL - Silty SAND with gravel - dark brown, moist, organics throughout					
	ML	Sandy SILT with gravel - stiff, moist, brown					
	SC	Clayey SAND with gravel - medium dense, moist, tan		4.7	31.3	30	15
		Bottom of Test Pit @ 12 Feet					

Moisture Content and Atterberg Limits

GeoStrata

SAMPLE TYPE
- ▯ - GRAB SAMPLE
- ▨ - 2.5" O.D. THIN-WALLED HAND SAMPLER

WATER LEVEL
- ▼ - MEASURED
- ▽ - ESTIMATED

NOTES:

Plate
B - 24

DATE	
STARTED:	12/3/20
COMPLETED:	12/3/20
BACKFILLED:	12/3/20

D.R. Horton
Micron Property
Lehi, Utah
Project Number 589-100

GeoStrata Rep: B.J.
Rig Type: Trackhoe

TEST PIT NO:
MW-TP-30
Sheet 1 of 1

LOCATION
NORTHING 4,476,814.60 EASTING 4,476,814.60 ELEVATION 4,963-ft

DEPTH METERS	DEPTH FEET	SAMPLES	WATER LEVEL	GRAPHICAL LOG	UNIFIED SOIL CLASSIFICATION	MATERIAL DESCRIPTION	Dry Density(pcf)	Moisture Content %	Percent minus 200	Liquid Limit	Plasticity Index	Moisture Content and Atterberg Limits (Plastic Limit – Moisture Content – Liquid Limit; 10 20 30 40 50 60 70 80 90)
0	0					TOPSOIL - Silty SAND with gravel - dark brown, moist, organics throughout						
					ML	Sandy SILT with gravel - stiff, moist, dark brown						
					CL	Lean CLAY - stiff, moist. dark brown						
1												
							126.6	14.2	92.5	35	15	● 14.2 ├─┤ 35
	5					- some white mottling						
2												
						- some iron staining						
3	10					Bottom of Test Pit @ 10 Feet						
4												

GeoStrata

SAMPLE TYPE
- ▯ - GRAB SAMPLE
- ▨ - 2.5" O.D. THIN-WALLED HAND SAMPLER

WATER LEVEL
- ▼ - MEASURED
- ▽ - ESTIMATED

NOTES:

Plate
B - 25

DATE		
STARTED:	12/3/20	
COMPLETED:	12/3/20	
BACKFILLED:	12/3/20	

D.R. Horton
Micron Property
Lehi, Utah
Project Number 589-100

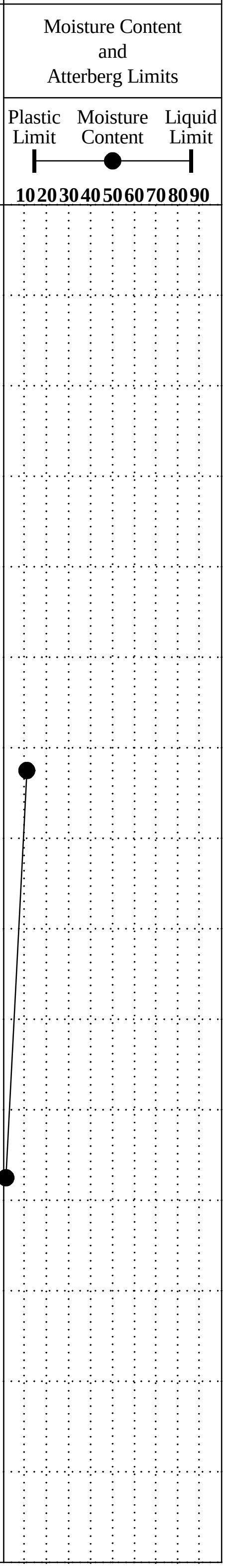
GeoStrata Rep: B.J.
Rig Type: Trackhoe

TEST PIT NO:
MW-TP-33
Sheet 1 of 1

LOCATION
NORTHING 4,476,667.00 EASTING 4,476,667.00 ELEVATION 4,923-ft

DEPTH (FEET)	UNIFIED SOIL CLASSIFICATION	MATERIAL DESCRIPTION	Dry Density(pcf)	Moisture Content %	Percent minus 200	Liquid Limit	Plasticity Index
0		TOPSOIL - Silty SAND with gravel - dark brown, moist, organics throughout					
	CL	Lean CLAY with sand - stiff, moist, light brown					
			90.0	10.6	86.7		
10	GP-GM	Poorly Graded GRAVEL with silt and sand - medium dense, moist, tan					
				1.0	2.0		
		Bottom of Test Pit @ 12 Feet					

METERS: 0, 1, 2, 3, 4
FEET: 0, 5, 10



SAMPLE TYPE
- [] - GRAB SAMPLE
- ▨ - 2.5" O.D. THIN-WALLED HAND SAMPLER

WATER LEVEL
- ▼ - MEASURED
- ▽ - ESTIMATED

NOTES:

Plate
B - 26

DATE	
STARTED:	12/3/20
COMPLETED:	12/3/20
BACKFILLED:	12/3/20

D.R. Horton
Micron Property
Lehi, Utah
Project Number 589-100

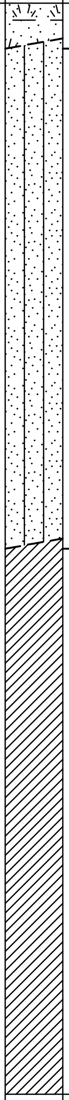
GeoStrata Rep: B.J.
Rig Type: Trackhoe

TEST PIT NO:
MW-TP-34
Sheet 1 of 1

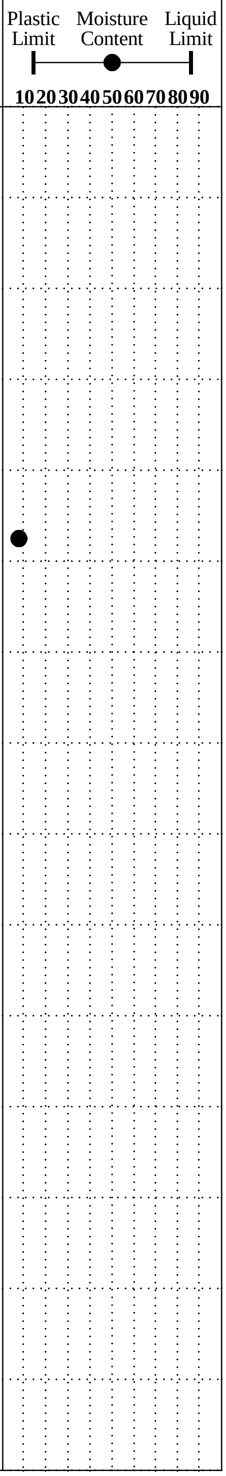
LOCATION
NORTHING 4,476,662.00 EASTING 4,476,662.00 ELEVATION 4,928-ft

DEPTH METERS	DEPTH FEET	SAMPLES	WATER LEVEL	UNIFIED SOIL CLASSIFICATION	MATERIAL DESCRIPTION	Dry Density(pcf)	Moisture Content %	Percent minus 200	Liquid Limit	Plasticity Index
0	0				TOPSOIL - Lean CLAY with sand and gravel - dark brown, moist, organics throughout					
				SM	Silty SAND - dense, moist, brown					
1		▯					7.4			
	5									
2				CL	Lean CLAY with sand - stiff, moist, tan, sand was observed to be fine-grained, some iron staining					
3	10									
					Bottom of Test Pit @ 12 Feet					
4										

GRAPHICAL LOG



Moisture Content and Atterberg Limits



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SAMPLE TYPE
▯ - GRAB SAMPLE
▨ - 2.5" O.D. THIN-WALLED HAND SAMPLER

WATER LEVEL
▼- MEASURED
▽- ESTIMATED

NOTES:

Plate
B - 27

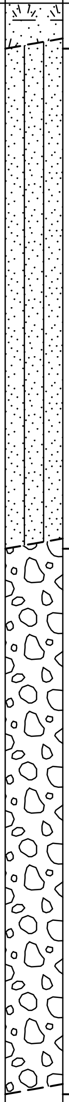
DATE		D.R. Horton Micron Property Lehi, Utah	GeoStrata Rep: B.J.	TEST PIT NO:
STARTED:	12/3/20			**MW-TP-37**
COMPLETED:	12/3/20		Rig Type: Trackhoe	
BACKFILLED:	12/3/20	Project Number 589-100		Sheet 1 of 1

LOCATION

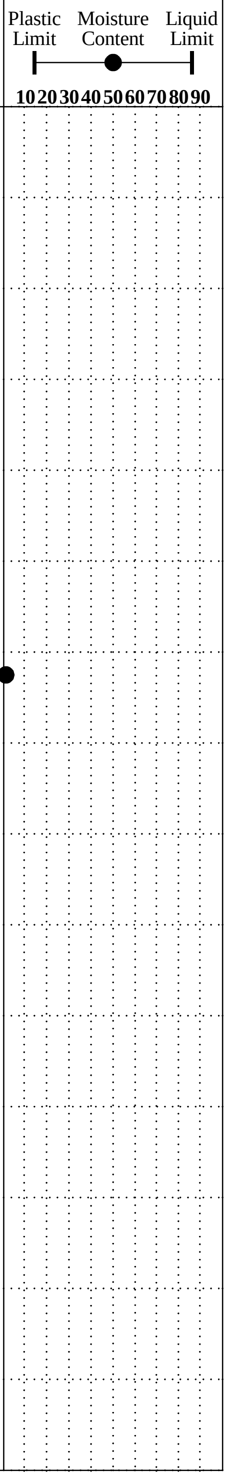
NORTHING 4,476,523.00 EASTING 4,476,523.00 ELEVATION 4,892-ft

DEPTH METERS	DEPTH FEET	SAMPLES	WATER LEVEL	UNIFIED SOIL CLASSIFICATION	MATERIAL DESCRIPTION	Dry Density(pcf)	Moisture Content %	Percent minus 200	Liquid Limit	Plasticity Index
0	0				TOPSOIL - Sandy SILT with gravel - dark brown, moist, organics throughout					
				SM	Silty SAND with gravel - medium dense, moist, dark brown					
		◫								
1					-tan					
	5	◫								
		◫		GP	Poorly Graded GRAVEL with sand - medium dense, moist, tan		1.0	1.4		
2										
3	10									
					-becomes more sandy, smaller gravel up to 1/2 inches					
					Bottom of Test Pit @ 12 Feet					
4										

GRAPHICAL LOG



Moisture Content and Atterberg Limits



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SAMPLE TYPE
◫ - GRAB SAMPLE
▱ - 2.5" O.D. THIN-WALLED HAND SAMPLER

WATER LEVEL
▼- MEASURED
▽- ESTIMATED

NOTES:

Plate

B - 28

DATE		
	STARTED:	12/3/20
	COMPLETED:	12/3/20
	BACKFILLED:	12/3/20

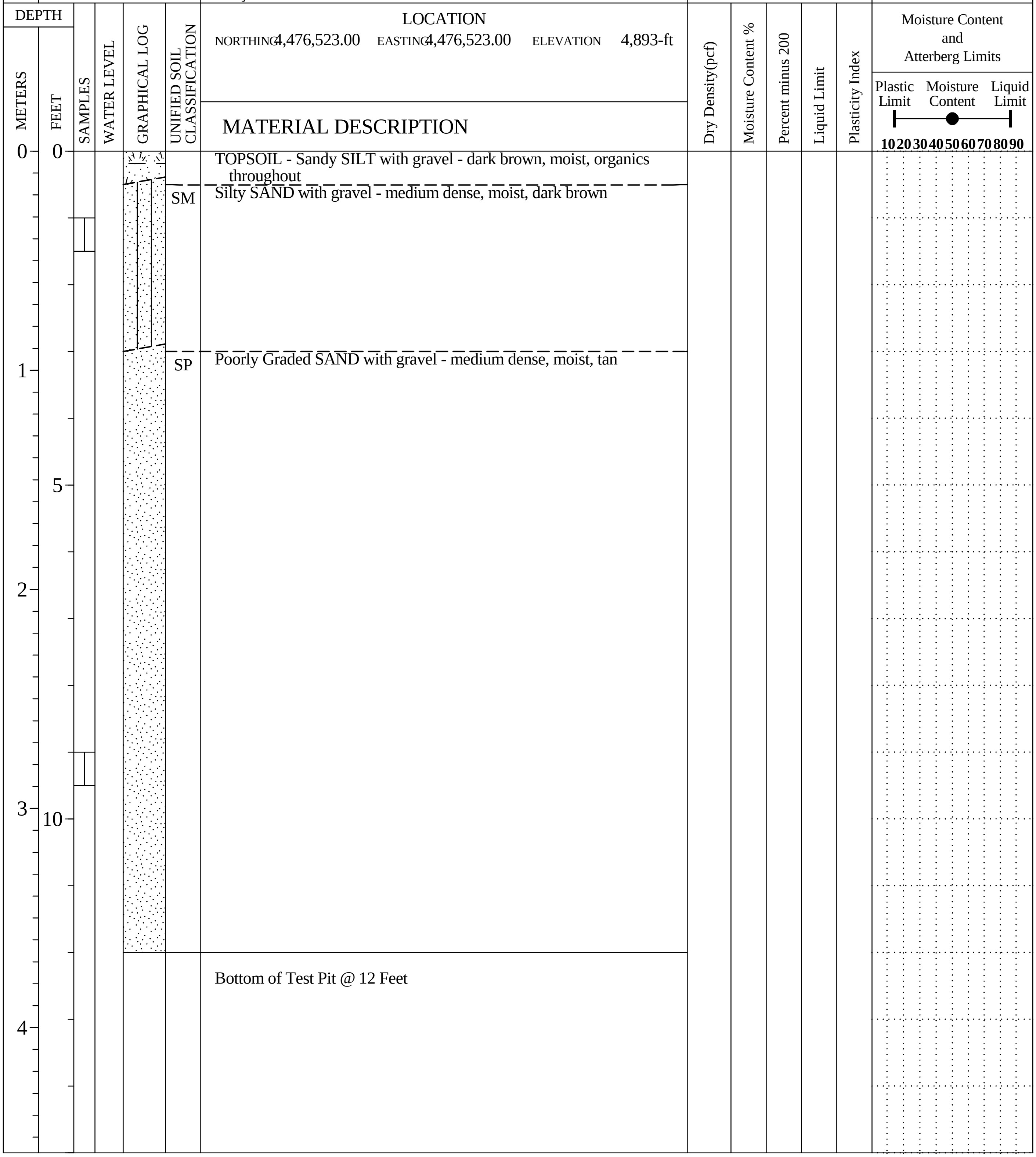
D.R. Horton
Micron Property
Lehi, Utah
Project Number 589-100

GeoStrata Rep: B.J.
Rig Type: Trackhoe

TEST PIT NO:
MW-TP-38
Sheet 1 of 1

LOCATION
NORTHING 4,476,523.00 EASTING 4,476,523.00 ELEVATION 4,893-ft

MATERIAL DESCRIPTION



TOPSOIL - Sandy SILT with gravel - dark brown, moist, organics throughout

SM Silty SAND with gravel - medium dense, moist, dark brown

SP Poorly Graded SAND with gravel - medium dense, moist, tan

Bottom of Test Pit @ 12 Feet

SAMPLE TYPE
- ▯ - GRAB SAMPLE
- ▨ - 2.5" O.D. THIN-WALLED HAND SAMPLER

WATER LEVEL
- ▼ - MEASURED
- ▽ - ESTIMATED

NOTES:

Plate

B - 29

DATE	
STARTED:	12/4/20
COMPLETED:	12/4/20
BACKFILLED:	12/4/20

D.R. Horton
Micron Property
Lehi, Utah
Project Number 589-100

GeoStrata Rep: B.J.
Rig Type: Trackhoe

TEST PIT NO:
MW-TP-44
Sheet 1 of 1

LOCATION
NORTHING 4,476,377.00 EASTING 4,476,377.00 ELEVATION 4,866-ft

DEPTH METERS	DEPTH FEET	SAMPLES	WATER LEVEL	UNIFIED SOIL CLASSIFICATION	MATERIAL DESCRIPTION	Dry Density(pcf)	Moisture Content %	Percent minus 200	Liquid Limit	Plasticity Index
0	0				TOPSOIL - Sandy SILT with gravel - dark brown, moist, organics throughout					
		▯		ML	Sandy SILT - stiff, moist, dark brown, pinholes throughout					
1				SM	Silty SAND - medium dense, moist, light tan, pinholes throughout					
	5									
2		▯								
3	10									
					Bottom of Test Pit @ 12 Feet					
4										

Moisture Content and Atterberg Limits
Plastic Limit — Moisture Content — Liquid Limit
10 20 30 40 50 60 70 80 90

SAMPLE TYPE
▯ - GRAB SAMPLE
▨ - 2.5" O.D. THIN-WALLED HAND SAMPLER

WATER LEVEL
▼ - MEASURED
▽ - ESTIMATED

NOTES:

Plate
B - 30

DATE	
STARTED:	12/4/20
COMPLETED:	12/4/20
BACKFILLED:	12/4/20

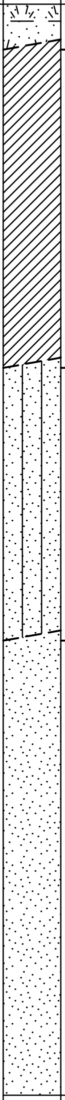
D.R. Horton
Micron Property
Lehi, Utah
Project Number 589-100

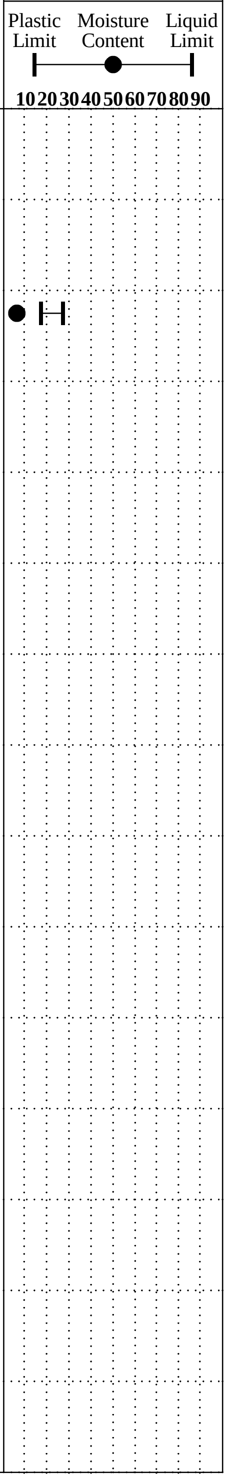
GeoStrata Rep: B.J.
Rig Type: Trackhoe

TEST PIT NO:
MW-TP-45
Sheet 1 of 1

LOCATION
NORTHING 4,476,386.00 EASTING 4,476,386.00 ELEVATION 4,865-ft

DEPTH (FEET)	SAMPLES	UNIFIED SOIL CLASSIFICATION	MATERIAL DESCRIPTION	Dry Density(pcf)	Moisture Content %	Percent minus 200	Liquid Limit	Plasticity Index
0			TOPSOIL - Sandy SILT with gravel - dark brown, moist, organics throughout					
		CL	Sandy Lean CLAY - stiff, moist, brown					
	▯				6.0	68.6	27	10
	▯	SM	Silty SAND with gravel - medium dense, moist, dark brown					
5								
	▯	SP	Poorly Graded SAND with gravel - medium dense, moist, tan, subrounded gravel					
10								
			Bottom of Test Pit @ 12 Feet					





Depth scale: METERS 0, 1, 2, 3, 4; FEET 0, 5, 10

SAMPLE TYPE
▯ - GRAB SAMPLE
▨ - 2.5" O.D. THIN-WALLED HAND SAMPLER

WATER LEVEL
▼ - MEASURED
▽ - ESTIMATED

NOTES:

GeoStrata

Plate
B - 31

DATE		
STARTED:	12/4/20	
COMPLETED:	12/4/20	
BACKFILLED:	12/4/20	

D.R. Horton
Micron Property
Lehi, Utah
Project Number 589-100

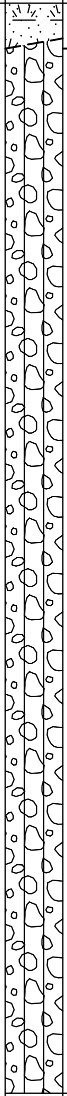
GeoStrata Rep: B.J.
Rig Type: Trackhoe

TEST PIT NO:
MW-TP-46
Sheet 1 of 1

LOCATION
NORTHING 4,476,379.00 EASTING 4,476,379.00 ELEVATION 4,860-ft

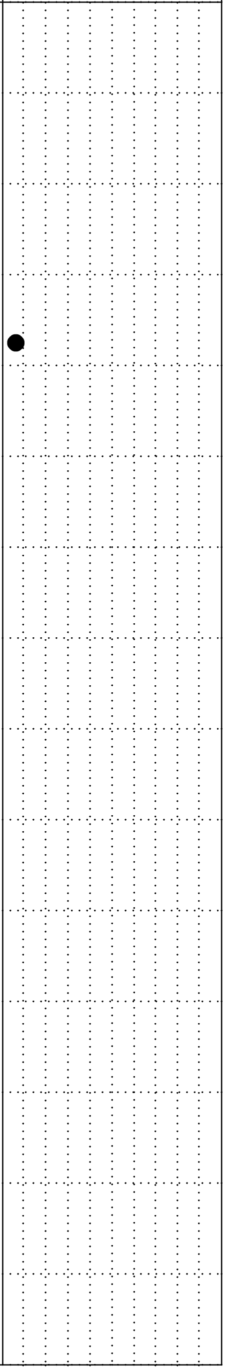
DEPTH METERS	DEPTH FEET	SAMPLES	WATER LEVEL	UNIFIED SOIL CLASSIFICATION	MATERIAL DESCRIPTION	Dry Density(pcf)	Moisture Content %	Percent minus 200	Liquid Limit	Plasticity Index
0	0				TOPSOIL - Sandy SILT with gravel - dark brown, moist, organics throughout					
				GM	Silty GRAVEL with sand - very dense, moist, dark brown					
		▯								
1		▯					6.0	40.9		
	5									
2										
3	10									
					Bottom of Test Pit @ 12 Feet					
4										

GRAPHICAL LOG



Moisture Content and Atterberg Limits

Plastic Limit — Moisture Content — Liquid Limit



GeoStrata

SAMPLE TYPE
▯ - GRAB SAMPLE
▨ - 2.5" O.D. THIN-WALLED HAND SAMPLER

WATER LEVEL
▼- MEASURED
▽- ESTIMATED

NOTES:

Plate

B - 32

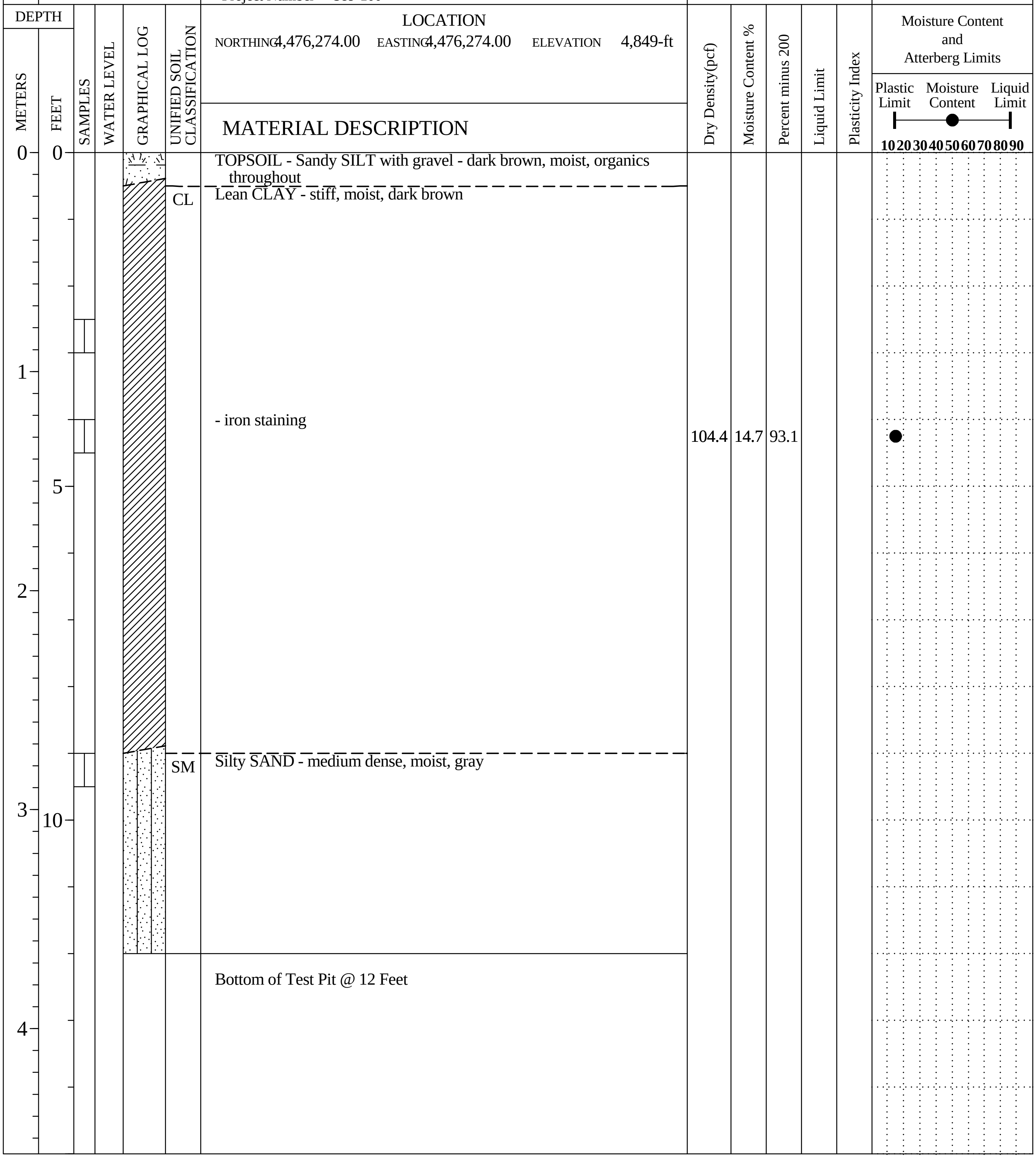
DATE		
STARTED:	12/4/20	
COMPLETED:	12/4/20	
BACKFILLED:	12/4/20	

D.R. Horton
Micron Property
Lehi, Utah
Project Number 589-100

GeoStrata Rep: B.J.
Rig Type: Trackhoe

TEST PIT NO:
MW-TP-52
Sheet 1 of 1

LOCATION
NORTHING 4,476,274.00 EASTING 4,476,274.00 ELEVATION 4,849-ft



UNIFIED SOIL CLASSIFICATION	MATERIAL DESCRIPTION	Dry Density(pcf)	Moisture Content %	Percent minus 200	Liquid Limit	Plasticity Index
	TOPSOIL - Sandy SILT with gravel - dark brown, moist, organics throughout					
CL	Lean CLAY - stiff, moist, dark brown					
	- iron staining	104.4	14.7	93.1		
SM	Silty SAND - medium dense, moist, gray					
	Bottom of Test Pit @ 12 Feet					

SAMPLE TYPE
- ▯ - GRAB SAMPLE
- ▨ - 2.5" O.D. THIN-WALLED HAND SAMPLER

WATER LEVEL
- ▼ - MEASURED
- ▽ - ESTIMATED

NOTES:

Plate
B - 33

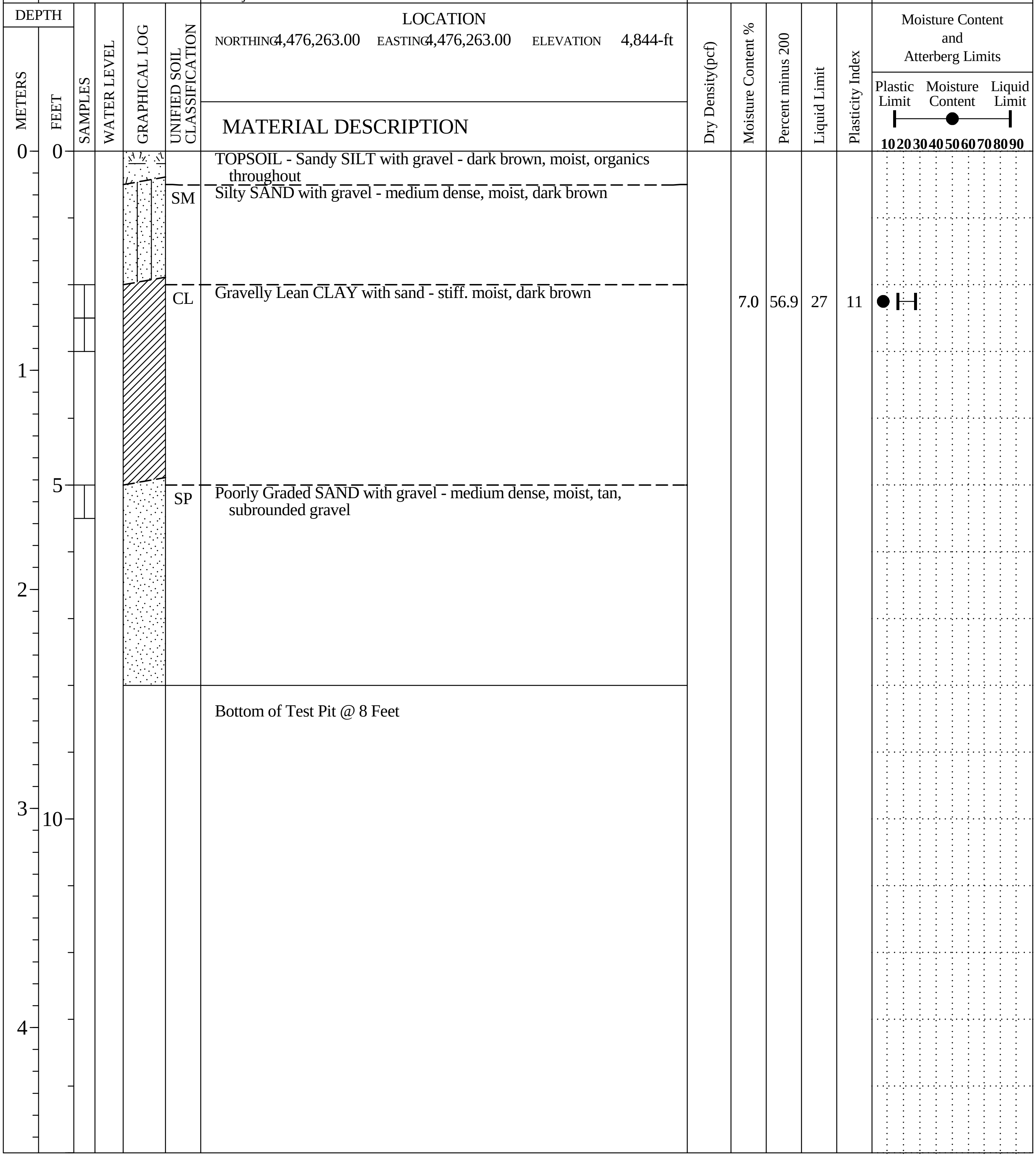
DATE	
STARTED:	12/4/20
COMPLETED:	12/4/20
BACKFILLED:	12/4/20

D.R. Horton
Micron Property
Lehi, Utah
Project Number 589-100

GeoStrata Rep: B.J.
Rig Type: Trackhoe

TEST PIT NO:
MW-TP-53
Sheet 1 of 1

LOCATION
NORTHING 4,476,263.00 EASTING 4,476,263.00 ELEVATION 4,844-ft



UNIFIED SOIL CLASSIFICATION	MATERIAL DESCRIPTION	Dry Density(pcf)	Moisture Content %	Percent minus 200	Liquid Limit	Plasticity Index
	TOPSOIL - Sandy SILT with gravel - dark brown, moist, organics throughout					
SM	Silty SAND with gravel - medium dense, moist, dark brown					
CL	Gravelly Lean CLAY with sand - stiff. moist, dark brown		7.0	56.9	27	11
SP	Poorly Graded SAND with gravel - medium dense, moist, tan, subrounded gravel					
	Bottom of Test Pit @ 8 Feet					

SAMPLE TYPE
▯ - GRAB SAMPLE
▧ - 2.5" O.D. THIN-WALLED HAND SAMPLER

WATER LEVEL
▼- MEASURED
▽- ESTIMATED

NOTES:

Plate
B - 34

DATE		
STARTED:	12/3/20	
COMPLETED:	12/4/20	
BACKFILLED:	12/4/20	

D.R. Horton
Micron Property
Lehi, Utah
Project Number 589-100

GeoStrata Rep: B.J.
Rig Type: Trackhoe

TEST PIT NO:
MW-TP-54
Sheet 1 of 1

LOCATION
NORTHING 4,476,268.00 EASTING 4,476,268.00 ELEVATION 4,852-ft

DEPTH METERS	DEPTH FEET	SAMPLES	WATER LEVEL	GRAPHICAL LOG	UNIFIED SOIL CLASSIFICATION	MATERIAL DESCRIPTION	Dry Density(pcf)	Moisture Content %	Percent minus 200	Liquid Limit	Plasticity Index	Moisture Content and Atterberg Limits (Plastic Limit, Moisture Content, Liquid Limit) 10 20 30 40 50 60 70 80 90
0	0					TOPSOIL - Sandy SILT with gravel - dark brown, moist, organics throughout						
					CL	Lean CLAY - stiff, moist, light brown						
		◫										
1												
	5											
2												
		◫					86.7	13.6	88.6			●
3	10											
						Bottom of Test Pit @ 12 Feet						
4												

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SAMPLE TYPE
◫ - GRAB SAMPLE
▱ - 2.5" O.D. THIN-WALLED HAND SAMPLER

WATER LEVEL
▼- MEASURED
▽- ESTIMATED

NOTES:

Plate
B - 35

DATE		
STARTED:	12/3/20	
COMPLETED:	12/3/20	
BACKFILLED:	12/3/20	

D.R. Horton
Micron Property
Lehi, Utah
Project Number 589-100

GeoStrata Rep: A. Peay
Rig Type: Kamatsu 200 Trackhoe

TEST PIT NO:
ME-TP-28
Sheet 1 of 1

LOCATION
NORTHING 4,478,254.00 EASTING 4,478,254.00 ELEVATION 5,138-ft

DEPTH METERS	DEPTH FEET	SAMPLES	WATER LEVEL	GRAPHICAL LOG	UNIFIED SOIL CLASSIFICATION	MATERIAL DESCRIPTION	Dry Density(pcf)	Moisture Content %	Percent minus 200	Liquid Limit	Plasticity Index	Moisture Content and Atterberg Limits
0	0					TOPSOIL; Lean CLAY - moist, brown, organics throughout						
					SM	Silty SAND with gravel - dense, moist, light brown, subrounded cobbles up to 7 inches in diameter						
1												
	5											
		▯										
2												
3	10					Bottom of Test Pit @ 10 Feet						
4												

Plastic Limit ├── Moisture Content ● ──┤ Liquid Limit
10 20 30 40 50 60 70 80 90

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SAMPLE TYPE
▯ - GRAB SAMPLE
▱ - 2.5" O.D. THIN-WALLED HAND SAMPLER

WATER LEVEL
▼- MEASURED
▽- ESTIMATED

NOTES:

Plate
B - 36

2020 LOG OF TEST PIT - PLATE (B) 2020 GINT UPDATE TEMPLATE.GPJ GEOSTRATA.GDT 1/26/21

DATE	
STARTED:	12/4/20
COMPLETED:	12/4/20
BACKFILLED:	12/4/20

D.R. Horton
Micron Property
Lehi, Utah
Project Number 589-100

GeoStrata Rep: J.M.
Rig Type: Kamatsu 200 Trackhoe

TEST PIT NO:
ME-TP-31
Sheet 1 of 1

LOCATION
NORTHING 4,478,121.00 EASTING 4,478,121.00 ELEVATION 5,135-ft

DEPTH FEET	SAMPLES	WATER LEVEL	UNIFIED SOIL CLASSIFICATION	MATERIAL DESCRIPTION	Dry Density(pcf)	Moisture Content %	Percent minus 200	Liquid Limit	Plasticity Index
0				TOPSOIL - Silty SAND with gravel - dark brown, moist, organics throughout					
1.5			ML	Sandy SILT - stiff, moist, tan, minor cementation					
2			GM	Silty GRAVEL - dense, moist, reddish brown, subangular cobbles and boulders up to 30 inches in diameter					
4	▯								
11				Bottom of Test Pit @ 11 Feet					

Moisture Content and Atterberg Limits
Plastic Limit ├──●──┤ Liquid Limit
Moisture Content
10 20 30 40 50 60 70 80 90

DEPTH: METERS 0, 1, 2, 3, 4; FEET 0, 5, 10

SAMPLE TYPE
▯ - GRAB SAMPLE
▨ - 2.5" O.D. THIN-WALLED HAND SAMPLER

WATER LEVEL
▼ - MEASURED
▽ - ESTIMATED

NOTES:

GeoStrata

Plate
B - 37

Plate
B-38

Debris Flow Hazard Study
DR Horton
Micron Project
Lehi, Utah Project Number: 589-100

Test Pit 3 at 13' and Stockpile from Test Pit 3

GeoStrata

Plate B-39

Debris Flow Hazard Study
DR Horton
Micron Project
Lehi, Utah Project Number: 589-100

Test Pit 5 at 12’ and Stockpile from Test Pit 5

GeoStrata

Plate
B-40

Debris Flow Hazard Study
DR Horton
Micron Project
Lehi, Utah Project Number: 589-100

Test Pit 6 at 9’ and Stockpile from Test Pit 6

GeoStrata

Plate
B-41

Debris Flow Hazard Study
DR Horton
Micron Project
Lehi, Utah Project Number: 589-100

Test Pit 7 at 12' and Stockpile from Test Pit 7

GeoStrata

Plate B-42

Debris Flow Hazard Study
DR Horton
Micron Project
Lehi, Utah Project Number: 589-100

Test Pit 8 at 10’ and Stockpile from Test Pit 8

GeoStrata

Plate
B-43

Debris Flow Hazard Study
DR Horton
Micron Project
Lehi, Utah Project Number: 589-100

Test Pit 11 at 12’ and Stockpile from Test Pit 11

GeoStrata