LUMOS & ASSOCIATES

Carson City • Fallon • Lake Tahoe • Reno

www.LumosInc.com

Reno
9222 Prototype Drive
Reno, Nevada
775.827.6111

ASCENTÉ

Geotechnical Review
November 7, 2017

Geotechnical Issues:

1. **Faulting:** Two faults were verified during our field investigation. Refer to Plates 2.1, 2.3 and Appendix I. 50 foot offsets are recommended for both of these faults (Fault Trench 1 and 5 and RS Line 5).
2. **Rippability:** One location indicated the site rock would not be rippable with a Cat D10 Dozer. Refer to Plate 2.2 and Appendix K (RS Line 3). Trenching will also be affected.
3. **Clays:** Clays were encountered in one exploration location (TP-9 from 2'-5'). Refer to Appendix A. Typical three (3) foot and one (1) foot over-excavations are recommended for foundations and roadway subgrades, if encountered.
4. **Low "R" Values:** Pavement design was based on "R"-value of 18. With a result 3" of AC on 8" of Aggregate Base. The minimum required for local roads is 3" of AC over 6" of Aggregate Base. This assumes an R-value of 30. Refer to Appendix G for Calculation.
5. **Rock Quality:** One core sample was tested for Abrasion (42% Loss) and specific gravity/absorption (2.236/5.5%). These results do not meet requirements for Rip Rap or Class C drain rock. Refer to Plate F-3.
6. **Fill Depths:** Fills of up to 25 to 30 feet are anticipated. To mitigate the potential settlement associated with fills of this height, we recommend an elevated compaction (97%), a relatively low bearing capacity (1,500 psf), and "Benching"/"Keying" of fills. Additionally, relatively tight specifications for particle size (12" max for common fill and 8" max for structural fill), and lift thicknesses are recommended 18" max for common fill and 12" max for structural fill. Refer to the General Site Grading Section of the report.

GEOTECHNICAL INVESTIGATION REPORT

for

ASCENTÉ

Washoe County, Nevada

Prepared for:

NNV1, LLC
6151 Lakeside Drive, Suite 1000
Reno, NV 89511

Prepared by:

LUMOS & ASSOCIATES, INC.
800 E. College Parkway
Carson City, Nevada 89706
Tel: (775) 883-7077
Fax: (775) 883-7114

November, 2017

JN: 9019.004

GEOTECHNICAL INVESTIGATION REPORT

ASCENTÉ
Washoe County, Nevada

TABLE OF CONTENTS

GEOTECHNICAL INVESTIGATION REPORT
for
ASCENTÉ
Washoe County, Nevada

INTRODUCTION

This report presents the results of Lumos & Associates, Inc.'s Geotechnical Investigation for the proposed construction of the Ascenté Subdivision in Washoe County, Nevada. A vicinity map is included as Plate 1 and a site plan is included as Plate 2.

It is our understanding that the project will consist of new single family residences with a one or two story wood framed structure supported by conventional spread footings, associated curb and gutter/sidewalks, residential roadways, retaining walls, and landscaped areas. Structural loads for the buildings are assumed to be two (2) to three (3) kips per lineal foot and 15 to 20 kips for isolated column loads. It is our understanding that the site will be constructed within 30 feet of existing elevations. Therefore, cut and fill depths were assumed to be approximately the same.

The purpose of our investigation was to characterize the site geology and soil conditions, describe the native soils and determine their engineering properties as they relate to the proposed construction. The investigation was also intended to identify possible adverse geologic, soil, and/or water table conditions. However, this study did not include an environmental assessment or an evaluation for soil and/or groundwater contamination at the site.

This report concludes with recommendations for site grading, foundations, footing area preparation, slope stability, utility installation, asphalt concrete, and Portland cement concrete. In addition, information such as logs of all exploratory test pits, borings/corings, fault trenches, refraction seismic investigation, laboratory test data,

allowable soil bearing capacities, estimated total and differential settlements based on static loads, lateral earth pressures, and International Building Code (IBC) seismic site class designation are provided in this report.

The recommendations contained herein have been prepared based on our understanding of the proposed construction, as outlined above. Re-evaluation of the recommendations presented in this report should be conducted after the final site grading and construction plans are completed, if there are any variations from the assumptions described herein.

It is possible that subsurface discontinuities may exist between and beyond exploration points. Such discontinuities are beyond the evaluation of the Engineer at this time. No guarantee of the consistency of site geology and sub-surface conditions is implied or intended.

GEOLOGIC SETTING

The proposed project is located in the southern foothills of the Truckee Meadows, a broad basin bounded on the west by the tall granite peaks of the Sierra Nevada Mountains, and on the east by the lower volcanic peaks of the Virginia Range. Younger volcanic rocks confine the valley on the north and south. Faults separate the valley from the surrounding mountains, which is typical of the Basin and Range geomorphic province. Sediments have filled the valley from a number of tributaries and ancestral lakes during the Quaternary period (2 million years to the present). The dominant sediment source has been, and continues to be, the Truckee River and its ancestral counterparts. Stream deposits were particularly voluminous during the past 2 million years after glacial periods. Since the end of the last glacial periods, some 10,000 years ago, arid erosional forces combined with faulting have been the predominant processes to shape the region. These processes have created large alluvial fans that surround the Truckee Meadows basin.

The surface geology of the project area has been mapped by Tabor and Ellen, (1975). The mapping indicates that multiple deposits underlie the site:

1. Qfb - alluvial fans that are pebbly to bouldery sand in steep-sided fans.
2. Qgo2 - partly sorted sand, silt, and boulders deposited by glacial outwash streams with granitic boulders partly to thoroughly rotten where buried.
3. Qsh/Qsg - Steamboat Hills Rhyolite and associated deposits that are white, glassy to strongly devitrified biotite rhyolite in pumiceous dome and overlying rubble (Qsh) or coarse-grained angular granule conglomerate of rhyolite pumice and metamorphic rock (Qsg).
4. Tkf - Kate Peak Formation that is hornblende-pyroxene andesite flows with minor breccia.

SEISMIC CONSIDERATIONS

Washoe County, similar to many areas in Nevada, is located near active faults that are capable of producing significant earthquakes. This area can be described as an area that may experience major damage due to earthquakes having intensities of VII or more when evaluated using the Modified Mercalli Intensity Scale of 1931 (Plate 3).

The Washoe County area is located within the Sierra Nevada-Great Basin seismic belt and several major earthquakes with magnitudes greater than 6.0 (Plate 4) have occurred historically within several miles of the site.

According to the Washoe City Folio Geologic Map by Tabor and Ellen, (1975) (Plate 5), there are mapped faults surrounding the property. There are potentially active faults mapped just west of the site. However, according to this map, no active faults are shown to cross this site. Fred Saunders, consulting geologist, was employed by Lumos to perform a field geological survey of the site, specifically as it was related to faulting. Mr. Saunders mapped potential faults within the site, and are noted in Appendix I. The potential faults within the site were then investigated. Lumos utilized an excavator and cut approximate 60-100 foot long trenches perpendicular to and bisecting the potential faults mapped by Mr. Saunders. Fault trench 1 did not intersect the fault. The trench extended east to well outside of the area to be developed on the site. Evidence of a potential fault was observed in the far eastern end of the trench. Therefore, a fifty foot offset is recommended from this mapped fault. Fault trenches 2, 3, and 4 were designed to intercept the mapped fault along the western edge of the property. Our observations indicate that this mapped fault does not enter the Ascenté Site. A Refraction Seismic Line (RS Line 4) was also performed in this area by Gasch Geophysical Services, Inc. These results indicate a "possible fault zone". However, according to Fred Saunders, his interpretation of the data does not indicate that this is a possible fault zone. His review of this data is also included in Appendix I. Fault trench 5, based on information provided by Mr. Saunders, intersected a fault. Structures should not be built within 50 feet either side of this fault. A Refraction Seismic line (RS Line 5) performed in this area affirms this finding.

Liquefaction is the phenomena where loose saturated granular soils lose their shear strength when subjected to cyclic loading, and become unstable. Large earthquakes as described above may provide that type of cyclic loading. Loose sands and silty sands under saturated conditions are the most susceptible to this phenomenon. These soils conditions and characteristics were not encountered during our field investigation. Therefore, the potential for liquefaction on site is considered very low.

2012/15 IBC Design: The mapped maximum considered earthquake spectral response acceleration at short periods (S_S) is 2.322g corresponding to a 0.2 second spectral response acceleration at five percent (5%) of critical damping and for a Site Class B (IBC 1613.3.1(1)). The mapped maximum considered earthquake spectral response acceleration at a 1-second period (S_1) is 0.813g corresponding to a 1.0 second spectral response acceleration at five percent (5%) of critical damping and for a Site Class B (IBC 1613.3.1 (2)). According to section 1613.3.2, when the soil properties are not known in sufficient detail to a depth of 100 feet, site Class D shall be assumed. Therefore, the spectral response accelerations must be adjusted for Site Class effects. The site coefficient for spectral response accelerations adjustment at short periods (F_a) is 1.0 (IBC Table 1613.3.3(1)). The site class effect for spectral response accelerations adjustment at 1-second periods (F_v) is 1.5 (IBC Table 1613.3.3(2)). The maximum considered earthquake spectral response acceleration parameter for short periods (S_{MS}) is 2.322g and for 1-second periods (S_{M1}) is 1.219g. This corresponds to design spectral response acceleration parameters of 1.548g for short periods (S_{DS}) and of 0.813g for 1-second periods (S_{D1}).

It is emphasized that the above values are the minimum requirements intended to maintain public safety during strong ground shaking. These minimum requirements are meant to safeguard against loss of life and major structural failures. However, they are not intended to prevent damage or insure the functionality of the structure during and/or after a large seismic event.

In conclusion, seismic concerns for this site are not unlike other sites in the Reno area. Due to the proximity of the site to a number of faults that are considered active, as noted above, strong seismic shaking should be anticipated during the life of the proposed structure.

SITE CONDITIONS AND FIELD EXPLORATION

At the time of our investigation the site is undeveloped with the exception of a minimally maintained access road to an existing water tank. Additionally, there are numerous dirt roads throughout the site. The site was vegetated with large sagebrush and grasses. The site generally sloped downwards from east to west and north to south.

The current field investigation included a site reconnaissance and subsurface exploration. During the site reconnaissance, surface conditions were noted and the locations of exploratory borings, test pits, fault trenches, core holes, Refraction Seismic lines, and infiltration tests were determined using survey techniques.

Eight (8) exploratory borings were drilled utilizing hollow-stem auger or flight auger drilling methods throughout the site to a maximum depth of forty-one and one-half (41.5) feet below-existing-grade (b.e.g.), five (5) exploratory borings were drilled utilizing a combination of hollow-stem auger and core hole drilling methods to a maximum depth of forty (40) feet b.e.g., twenty (20) exploratory test pits were excavated to a maximum depth of thirteen (13) feet b.e.g., five (5) fault trenches were excavated on the site to maximum depth of eight (8) feet b.e.g., seven (7) Refraction Seismic lines were completed, and three (3) infiltration tests were also performed on the site. The locations of the exploratory borings, test pits, fault trenches, core holes, Refraction Seismic lines, and infiltration tests within the site are shown on Plates 2.1 through 2.3. The subsurface soils were continuously logged and visually classified in the field by our Geotechnician in accordance with the Unified Soil Classification System (USCS). Representative soil/bedrock samples were collected at each soil strata change in the test pits and fault trenches, at five (5) foot intervals within the exploratory borings, and at five (5) foot intervals (or where the core barrel jammed) within the core holes. The samples were subsequently transported to our Carson City and Reno geotechnical laboratories for testing and additional analysis.

The subsurface soils encountered consisted generally of silty and clayey sands and gravels to the depth explored. A fat clay was encountered in test pit 9 from two (2) feet to five (5) feet. Groundwater was not encountered at the time of our investigation. However, seasonal fluctuations in the groundwater table should be anticipated.

Additionally, three areas have been mapped as containing a "saturated water regime". These areas are mapped and labeled PEMB in Attachment/Figure 5 of 9 from the report prepared by geosUAS Inc. Refer to Appendix L.

FIELD AND LABORATORY TEST DATA

Laboratory tests performed on representative samples included sieve analysis (including fines), Atterberg limits, expansion index, proctor, direct shear, R-value, soluble sulfate, pH, and resistivity. Additionally, an abrasion test and a specific gravity/absorption test was performed on a core sample. Much of this data is displayed on the "logs" to facilitate correlation. Field descriptions presented on the logs have been modified, where appropriate, to reflect laboratory test results. The logs of the fault trenches are included in Appendix A Sierra Village as Plates A-1 through A-3 and Appendix A Donner Village as Plates A-4 and A-5. A key to the fault trench logs is included as Plate A-6. The logs of the test pits are included in Appendix B Sierra as Plates B-10 through B-14, B-19, B-20, Appendix B Tioga Village as Plates B-8, B-9, B-17, and B-18, and Appendix A Donner Village as Plates B-1 through B-7, B-15, and B-16. A key to the test pit logs is included as Plate B-21. The logs of the borings/corings are included in Appendix C Sierra Village as Plates C-1 and C-2, Appendix C Tioga Village as Plates C-6 through C-13, and Appendix C Donner Village as Plates C-3 through C-5. A key to the boring/coring logs is included as Plate C-14. Additionally, three (3) infiltration tests were performed on site and the results can be seen in Appendix J of this report. All the field investigation locations are shown on Plates 2.1 through 2.3.

Individual laboratory test results for the fault trench samples are presented in Appendix D as Plates D-1 through D-3, test results for the test pit samples are presented in Appendix E as Plates E-1 through E-6, and test results for the boring/coring samples are presented in Appendix F as Plates F-1 through F-3. Laboratory testing was performed per ASTM standards, except when test procedures are briefly described and no ASTM standard is specifically referenced in the report. Atterberg limits were determined using the dry method of preparation.

Analytical Testing: Silver State Analytical Laboratories, Reno, Nevada, conducted this testing. The testing included soluble sulfates. Test results are included (on Silver State letterhead) in Plates E-6. The results indicate no special type of cement is necessary for concrete in direct contact with site soils, however, Type II cement should be utilized. The results also indicate the site soils are corrosive toward metal, therefore, corrosion protective measures should be implemented.

The results of the Refraction Seismic Investigation are included in Appendix K of this report. The results indicate, at the locations investigated, that the site rock materials will be "rippable" based on the Cat D10R Rippability Performance Chart, with the following exception: At the southwest end of RS Line 3. This area is proposed for a cut of 20-25 feet below ground surface. Based on the data, the material is "rippable" to a depth of approximately 10-15 feet below the existing ground surface at this location.

The abrasion and specific gravity/absorption test results indicate the site bedrock does not meet the SSPWC requirements for Class C backfill or Rip Rap.

The soil/bedrock samples obtained during this investigation will be held in our laboratory for 30 days from the date of this report. The samples may be retained longer at an additional cost to the client or obtained from this office upon request.

DISCUSSION AND RECOMMENDATIONS

General

From a Geotechnical viewpoint, the site is considered suitable for the proposed improvements when prepared as recommended, here in. The following recommendations are based upon the construction and our understanding and assumptions of the proposed improvements, as outlined in the introduction of this report, and based on our findings during the field exploration phase of this project. If changes in the construction project are proposed, they should be presented to Lumos & Associates, Inc. Geotechnical Department, so that the recommendations provided herein can be reviewed and modified as necessary. As a minimum, final construction drawings should be submitted to the Lumos Geotechnical Department for review prior to actual construction and verification that our recommendations have been implemented.

General Site Grading

All soils with organics, clays, and any loose or otherwise disturbed or unstable native soils within the proposed improvement areas should be removed. Organic material encountered during excavations, should be stockpiled in a designated area on site or "screened" for later use on slopes for landscaping. Clays, if encountered, may be incorporated into deeper fill sections.

All unsuitable materials such as vegetation, etc, currently on-site should be removed before grading begins. Clearing and grubbing is expected to require six (6) inches to one (1) foot of removal. The onsite clays (CH soils) are unsuitable to provide direct structural support due to their volume change potential and low R-value. The clays may be used as common fill. Common fill is defined as fill outside of structural fill zones. Structural fill zones are located within one (1) foot of pavement and/or hardscape improvements subgrade and within three (3) feet of foundations. Clays were encountered in test pit 9. However, clay could be encountered elsewhere within the site.

Due to the volume change potential and/or relative weak nature of the on-site clays (CH), if encountered, we recommend a minimum of one (1) foot of separation between exterior concrete improvements and asphalt pavement sections and the clays. Removals shall extend horizontally beyond the edge of exterior concrete improvements and asphalt pavement section a minimum of one (1) foot. We recommend potholing be done during construction to insure these minimum separation requirements are met. Additionally, we recommend three (3) feet of separation between building foundations and the clays. Removals shall extend a minimum of three (3) feet outside of the foundation envelope.

Exposed excavation surfaces to support any of the proposed improvements should be observed and approved by a Lumos representative. Upon re-compaction and prior to placing any base, the re-compacted surface should be proof-rolled to identify any possible yielding surfaces. Proof-rolling should be conducted with a heavy rubber-tire loader with a fully loaded bucket, or a fully loaded water truck, and observed and approved by a Lumos representative.

Unstable conditions due to yielding and/or pumping soils may be encountered on site. However, the exposed soils may yield or pump under heavy equipment loads or where vibratory equipment draws up water. If yielding or pumping conditions are encountered, the soils should be scarified in place, allowed to dry as necessary and re-compacted, where applicable. Alternatively, the unsuitable or saturated soil should be removed, the exposed surface leveled and compacted/tamped as much as practical without causing further pumping, and covered (including the sides) with geotextile stabilizing fabric (Mirafi HP370 or other equivalent). The fabric should then be covered with at least 12 inches of 4 to 8 inch **angular rock fill** with enough fines to fill the inter-rock pore spaces. Placement should be by end dumping. No traffic or other action should be allowed over the fabric, which may cause it to deflect/deform prior to cobble placement. Test sections should be used to determine the minimum thickness and/or number of layers required for stabilization.

Stabilization should be evaluated by proof-rolling standards commensurate with the equipment used, and approved by a Lumos representative. The placement of the stabilizing rock-fill may require additional over-excavation to maintain appropriate

grading elevations. A filter fabric (Mirafi 180N or equal) should also be placed over the cobble rock fill to prevent piping of fines from covering soils into the stabilizing rock matrix.

All fill soils shall not contain more than two percent (2%) of organics nor contain any roots larger than one (1) inch in diameter.

Common fill shall be defined as fill not within one (1) foot of finished subgrade elevation for pavements and/or hardscape improvements and not within three (3) feet of bottom of footing elevation. Common fill may consist of site clays and gravels, provided 12 inch and larger particles are removed. The common fill shall be placed in 18 inch maximum loose lifts, moisture conditioned to at within two percent (2%) of optimum moisture content and compacted to at least ninety-seven percent (97%) of the ASTM D1557 standard. Structural fill shall be defined as fill soils within one (1) foot of finished subgrade elevation for pavements and/or hardscape improvements and within three (3) feet of bottom of footing elevation. Properly compacted **structural fill** soils to be used on site should consist of non-expansive materials (LL less than 38 and/or a PI less than 13 and/or Expansion Index less than 20), should be free of contaminants, or natural rock larger than eight (8) inches in largest dimension. All structural fill soils shall also be non-corrosive and have a water soluble sulfate content of less than 0.1% and a minimum "R"-Value of 30. Structural fill soils shall also meet the following gradation requirements (Table 1):

TABLE 1
STRUCTURAL FILL GRADATION

Sieve Size	% Passing
8"	100
¾"	70-100
#40	15-60
#200	10-30

Structural fill soils that do not meet the above requirements may be approved at the discretion of the Geotechnical Engineer. It is anticipated site sands and gravels will be suitable for reuse as structural fill, provided oversize (+8") particles are removed.

Import structural fill soils if needed for this project and should be tested and approved prior to being placed or delivered on-site (**seven day advanced notice**).

Prior to placement of common and/or structural fill, the site subgrade shall be scarified to a depth of 12 inches, moisture conditioned to within two percent (2%) of optimum moisture content and recompacted to a minimum of ninety-seven percent (97%) relative compaction as determined by the ASTM D1557 Standard.

Structural fill should be placed only on compacted sub-grade or on compacted fill in loose lifts not exceeding 12 inches, moisture conditioned to within two percent (2%) of optimum moisture, and compacted to at least ninety-seven percent (97%) relative compaction as determined by the ASTM D1557 Standard. Differential fill across any individual house pad shall not exceed five (5) feet.

We are anticipating that many on-site materials encountered during mass grading (including after screening the oversized material) will have greater than 30%, by weight, particles larger than ¾". Therefore, these materials will be considered rock fill. Rock fill placement shall be continuously observed by Lumos Geotechnical personnel. Rock fill shall be placed in a manner that there is no occurrence of nesting of the larger particle size material. Lift thickness, moisture conditioning and proof rolling shall be completed to the satisfaction of the Geotechnical Engineer. Rock fill shall not be placed within three (3) feet laterally from and below bottom of footings, nor one (1) foot laterally from and below bottom of concrete improvements and asphalt paving.

Due to oversize materials, soils classifications, and low RQD of bedrock encountered, we estimate a shrinkage factor of 13% to 17% may be encountered during mass grading of the site materials.

Due to the relatively steep terrain of the site, Lumos is recommending that all fill placed be "benched" and "keyed" into existing slopes steeper than 5:1 (H:V). This will require the contractor to cut into the native ground or "bench" the fill a horizontal distance of at least one equipment width for every lift of fill placed. The benches shall be negatively graded into the slope a minimum of five percent (5%). Refer to Appendix M.

Additionally, the fill area adjacent to the toe of an existing slope shall be "keyed" in. This key will be a minimum of eight (8) feet wide and two (2) feet deep. Construction of the keys, benches, and fills should be continuously observed by Lumos Geotechnical personnel.

Fill material should not be placed, spread or compacted while the ground is frozen or during unfavorable weather conditions. When site grading is interrupted by heavy rain or snow, grading or filling operations should not resume until a Lumos representative approves the moisture content and density conditions of the subgrade or previously placed fill.

Landscape areas should be cleared of all objectionable material. In cut areas, no other work is necessary except grading to proper elevation. In landscape areas, fill should be placed in loose lifts not exceeding eight inches, moisture conditioned to within two percent (2%) of optimum moisture content and compacted to at least ninety-seven percent (97%) relative compaction (ASTM D1557) to prevent erosion.

Water should not be allowed to pond on pavements or adjacent to structures, and measures should be taken to reduce surface water infiltration into the subgrade soils. A representative of Lumos should be present during site grading operations to ensure any unforeseen or concealed conditions within the site are identified and properly mitigated, and to test and observe earthwork construction. This testing and observation is an integral part of our service as acceptance of earthwork construction and is dependent upon compaction and stability of the subgrade soils. The soils engineer may reject any material that does not meet engineering characteristics, compaction, and stability requirements. Further, recommendations of this report are based upon the assumption that earthwork construction will conform to recommendations set forth in this section of the report.

FOUNDATION DESIGN CRITERIA

Conventional spread footings founded on suitable subgrade and/or a minimum of 36 inches of structural fill (moisture conditioned and compacted as previously discussed in this report) may be used to support the proposed structures within the project site.

Spread footings: Footings should have a minimum embedment of 24 inches below lowest adjacent grade for frost protection. Footings founded on suitable subgrade and/or structural fill may be designed for a net allowable bearing pressure of 1,500 pounds-per-square-foot (psf).

If fill is placed to bring building pads to grade, no footings should be founded within a distance of at least one third of the total height of fill (H/3) placed from the face of the slope or equal to the depth of compacted fill below the bottom of footing, whichever is greater. Refer to Appendix N. In drainage areas, no footings should be located or founded above a 1:1 (horizontal:vertical) plane drawn up from the toe of slopes, outside edge of drainage conduits or drainage ditches, to avoid loss of bearing strength of supporting soils. No drainage or water diverting conduits other than associated utilities should be allowed underneath building footprints.

Footing Settlements: The maximum anticipated settlements, caused by static loading, for continuous or isolated spread footings, bearing on suitable subgrade and/or structural fill, and designed for a 1,500 psf bearing pressure is estimated at one (1) inch or less. Differential settlements are generally expected to be half of the total settlements. Settlements in granular soils are primarily expected to occur shortly after dead and sustained live loads are applied. Settlements in fine grained soils will occur over a much longer period of time.

Lateral Loading: Resistance to lateral loads can be provided by friction acting at the base of foundations and by lateral earth resistance. A coefficient of friction of 0.40 may be assumed at the base of spread footings supported by suitable subgrade and/or structural fill. An allowable passive earth resistance of 250 psf per foot of depth starting six (6)

inches below lowest adjacent grade may be used for the sides of spread footings poured against suitable subgrade and/or structural fill. Passive resistance should not exceed 1,500 psf. The at-rest lateral earth pressure can be calculated utilizing an equivalent fluid pressure of 65 pounds-per-cubic-foot (pcf).

Dynamic Factors: Vertical and lateral bearing values indicated above are for total dead-load and frequently applied live loads. If normal code requirements are applied for design, the above vertical bearing values may be increased by thirty-three percent (33%) for short duration loading due to wind or seismic forces. The additional Dynamic Lateral earth pressure can be calculated utilizing the following equation.

Dynamic Lateral Force = $30H^2$

H = height of wall

This force should be assumed to act at a height of 0.6H above the bottom of the wall.

RETAINING WALLS

Retaining structures over three (3) feet in height, if used, will require local code compliance and shall be engineered based on parameters described in this section of the report. Retaining structures should be designed to resist the appropriate lateral earth pressures. Cantilevered walls, which are able to deflect at least 0.01 radians, can be designed using an equivalent fluid (backfill) unit weight of 45 pounds-per-cubic-foot (pcf). However, if the wall is fixed against rotation, the wall should be designed using an equivalent fluid (backfill) unit weight of 65 pcf. These design parameters are based upon the assumption that walls retain only level backfill and no hydrostatic pressures will be present. Any other surcharge pressures should be added to the above recommended lateral earth pressures. Retaining walls should be backfilled with free draining granular material that extends vertically to the bottom of the stem and laterally at least six (6) inches beyond the face of the stem (wall) and wrapped with a Mirafi 140 N or equivalent non-woven filter fabric. Weep holes should be provided on the walls at regular intervals, or a slotted drainpipe placed at the bottom of the wall (bottom of granular material) to relieve any possible build-up of hydrostatic pressure. Backfill material within two (2) feet of the wall should be compacted with hand-held equipment. The backfill material shall be moisture conditioned to within two percent (2%) of optimum moisture content and compacted to at least ninety-two percent (92%) relative compaction per the ASTM D1557 standard.

CONCRETE SLAB DESIGN

Interior concrete slabs should be underlain with at least six (6) inches of Type 2, Class B Aggregate Base, compacted to a minimum of ninety-five percent (95%), and supported on suitable subgrade and/or structural fill. A vapor barrier should be provided for all interior concrete slabs where floor moisture is undesirable. The vapor barrier should be a synthetic plastic sheeting at least ten (10) mils thick and meets the requirements of ASTM E1745 for Class A vapor retarder materials. The vapor retarder shall be installed per the manufactures recommendations.

Slab thickness design should be based on a Modulus of Subgrade Reaction equal two hundred (200) pounds-per-cubic-inch (pci) for construction on suitable subgrade and/or structural fill. Reinforcement of concrete slabs should be as specified by the Project Structural Engineer.

Exterior concrete slabs on grade for vehicular traffic and driveways should be underlain with at least six (6) inches of Type 2, Class B aggregate base. All subgrade, common fill, and structural fill shall be prepared and placed as described in the "General Site Grading" section of this report, while the aggregate base material shall be compacted to at least ninety-five percent (95%) of the ASTM D1557 standard.

ASPHALT CONCRETE PAVEMENT DESIGN

Suitable subgrade and/or structural fill in areas to be paved shall be moisture conditioned to within two percent (2%) of optimum moisture, and compacted to at least ninety-seven percent (97%) of the ASTM D1557 standard. If native clayey (CH) (and/or low "R"-value) soils are encountered they shall be overexcavated to a depth of at least one (1) foot below finished subgrade elevation. The soils exposed by overexcavation shall be scarified to a depth of at least 12 inches, moisture conditioned to within two percent (2%) of optimum moisture, and compacted to at least ninety-seven percent (97%). One (1) foot of structural fill shall then be placed, moisture conditioned to with two percent (2%) of optimum moisture and compacted to at least ninety-seven percent (97%). An alternative to overexcavation and replacement may be to lime treat the clay soils and/or the low "R"-value soils. Clayey soils are known for low "R" values including clayey sands (SC) and clayey gravels (GC). Aggregate base should consist of Type 2, Class B material and meet the requirements of the Standard Specifications for Public Works Construction (SPPWC) and be compacted to a minimum of ninety-five percent (95%). The minimum pavement structural sections for this project were based on a TI = 5 (residential roadways), and are provided in Table 2.

TABLE 2
RECOMMENDED ASPHALT PAVEMENT SECTION

Pavement Design	Minimum Asphalt Pavement Thickness	Minimum Aggregate Base Thickness	Minimum Structural Fill Thickness (if CH and/or Low R-Value Soils Encountered)
T.I. = 5	**3"**	**8"**	**12"**

Calculations included in Appendix C.

In all areas of the project, asphalt concrete should be a 50 blow Marshall mix with PG64-28NV, and target 4% air voids. Type 2 asphalt aggregate per the "Orange Book" standards shall be utilized. Asphalt concrete, in any case, should be compacted to between ninety-two percent **(92%)** and ninety-seven percent **(97%)** of the Rice theoretical maximum density. A mix design shall be submitted to the Geotechnical Engineer for review and approval a minimum of **seven (7) days prior to paving**.

A chip seal is recommended, to increase surface friction on Ascenté Crest Trail, and other roads with a grade steeper than 8%. The chip seal shall meet the requirements of the SSPWC for a Type 2 chip seal. Additionally, the chip seal should be redone on a regular maintenance schedule, for example on an every five (5) year basis or sooner as needed.

CORROSION AND CHEMICAL ATTACK

On-site soils have a negligible water soluble sulfate content of less than 0.10% (<0.01% actual). No specific type of cement is required for concrete in direct contact with on-site soils, as required by the International Building Code. However, Type II cement (meeting ASTM C150) is recommended for concrete in direct contact with on-site soils.

All exterior concrete should have between 4.5 and 7.5 percent entrained air, a maximum water-cement ratio of 0.45, and comply with all other ACI recommendations for concrete placed in areas subject to freezing. A minimum compression strength of 4,000 psi is recommended for all external concrete. All interior concrete should also be placed pursuant to ACI recommendations.

Native soils have a pH ranging from 6.64 to 6.79 and a resistivity ranging from 3,150 to 8,410 ohm-cm under saturated conditions. This indicates a corrosive potential for ferrous metals in contact with these soils. Corrosion mitigation measures, such as protective coatings, wrappings, and cathodic protection are therefore recommended. If protective coatings are used, the type and quantity will depend on the kind of steel and specific construction application. Steel and wire concrete reinforcement cover of at least three (3) inches where cast against soil, unformed, is recommended.

SLOPE STABILITY AND EROSION CONTROL

The results of our exploration and testing confirm that 2:1 (Horizontal: Vertical) maximum slopes will be stable for on-site materials both in cut and fill. All slopes shall incorporate a brow ditch to direct surface drainage away from the slope face. Slopes steeper than 2:1 will require stabilization, such as retaining walls.

The potential for dust generation is high at this project. Dust control will be mandatory on this project in order to comply with air quality standards. The contractor shall be responsible for submitting a dust control plan and securing any required permits.

Stabilization of all slopes and areas disturbed by construction will be required to prevent erosion and to control dust. Stabilization may consist of rip-rap, revegetation, or dust pallative, depending on the inclination of the slope.

In order to minimize storm water discharge from this site, best management practices should be implemented.

UTILITY EXCAVATIONS

On-site soils are anticipated to be excavatable with conventional construction equipment. The on-site bedrock encountered in RS Line 3 was very hard and slightly altered/weathered. Special excavation techniques may be required in these types of materials. Compliance with OSHA regulations should be enforced for Type B soils. Excavated soils may be suitable for backfill of utility trenches (if particles larger than four (4) inches are removed). Trench backfill shall meet the requirements of Class E backfill in the SSPWC. On-site soils encountered during our field exploration do not meet the minimum requirements for bedding sand and should be imported, where required. Bedding sand and trench backfill shall be moisture conditioned to within two percent (2%) of optimum and compacted to a minimum of **ninety-two percent (92%)** of the ASTM D1557 standard.

MOISTURE PROTECTION, EROSION AND DRAINAGE

The finish surfaces around all structures should slope away from the foundations and toward appropriate drop inlets or other surface drainage devices. It is recommended that within ten (10) feet of any structure a minimum slope of five percent (5%) be used for soil subgrade and a minimum of one percent (1%) be used for pavement. These grades should be maintained for the life of the structures.

If saturated soils are encountered at or near the building sites (such as near the PEMB mapped sites), foundation drains should be utilized to insure foundation supporting soils do not become saturated. These drains should be designed by a civil engineer, if needed.

Landscaping and downspouts should be planned to prevent discharge adjacent to buildings. Instead, water flow should be conveyed and re-routed to discharge areas away from any improvements.

Three infiltration tests were performed across the site. The locations of the tests can be seen in Plates 2.1-2.3. The results of the tests are included in Appendix J.

CONSTRUCTION SPECIFICATIONS

All work shall be governed by the Standard Specifications and Standard Details for Public Works Construction (SSPWC), as distributed by the Washoe County, except as modified herein.

LIMITATIONS

This report has been prepared in accordance with the currently accepted engineering practices in Northern Nevada and Northern California. The analysis and recommendations in this report are based upon exploration performed at the locations shown on the site plan, the proposed improvements as described in the Introduction section of this report and upon the property in its condition as of the date of this report. Lumos makes no guarantee as to the continuity of conditions as subsurface variations may occur between or beyond exploration points and over time. Any subsurface variations encountered during construction should be immediately reported to Lumos so that, if necessary, Lumos' recommendations may be modified.

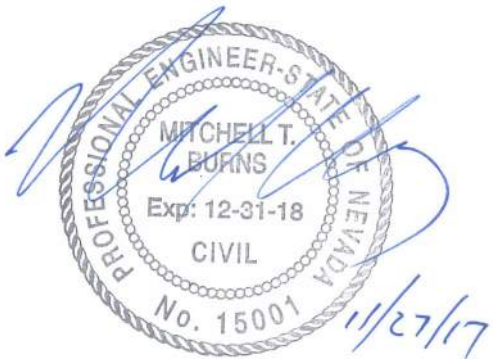
This report has been prepared for and provided directly to NNV1 Partners, LLC ("The Client"), and any and all use of this report is expressly limited to the exclusive use of the Client. The Client is responsible for determining who, if anyone, shall be provided this report, including any designers and subcontractors whose work is related to this project. Should the Client decide to provide this report to any other individual or entity, Lumos shall not be held liable for any use by those individuals or entities to whom this report is provided. The Client agrees to indemnify, defend and hold harmless Lumos, its agents and employees from any claims resulting from unauthorized users.

If this report is utilized in the preparation of an Engineer's Estimate of Probable Construction Costs, then the preparer of the estimate acknowledges that the report recommendations are based on the subsurface conditions found at the specific locations investigated on site; that subsurface conditions may vary outside these locations; and that no guaranty or warranty, express or implied, is made that the conditions encountered are representative of the entire site. The preparer of the estimate agrees

to indemnify, defend and hold harmless Lumos & Associates, its agents and employees from any and all claims, causes of action or liability arising from any claims resulting from the use of the report in the preparation of an Engineer's Cost Estimate.

This report is not intended for, nor should be utilized for, bidding purposes. If it is utilized for bidding purposes, Client acknowledges that the report recommendations are based on the subsurface conditions found at the specific locations investigated on site; that subsurface conditions may vary outside these locations; and that no guaranty or warranty, express or implied, is made that the conditions encountered are representative of the entire site. The Client agrees to indemnify, defend and hold harmless Lumos & Associates, Inc., its agents and employees from any and all claims, causes or action or liability arising from any claims resulting from the use of the report for bidding purposes.

As explained above, subsurface variations may exist and as such, beyond the express findings located in this report, no warranties express, or implied, are made by this report. No affirmation of fact, including but not limited to statements regarding suitability for use of performance shall be deemed to be a warranty or guaranty for any purpose.



Bert Sexton, E.I.
Geotechnician
Lumos & Associates, Inc.

Mitch Burns, P.E.
Materials Engineering Manager
Lumos & Associates, Inc.

References

American Society for Testing and Materials (ASTM), 2012, Annual Book of ASTM Standards, West Conshohocken

International Code Council, 2012 International Building Code, County Club Hills, IL

Naval Facilities Engineering Command, 1986, Design Manual 7.01

Naval Facilities Engineering Command, 1986, Design Manual 7.02

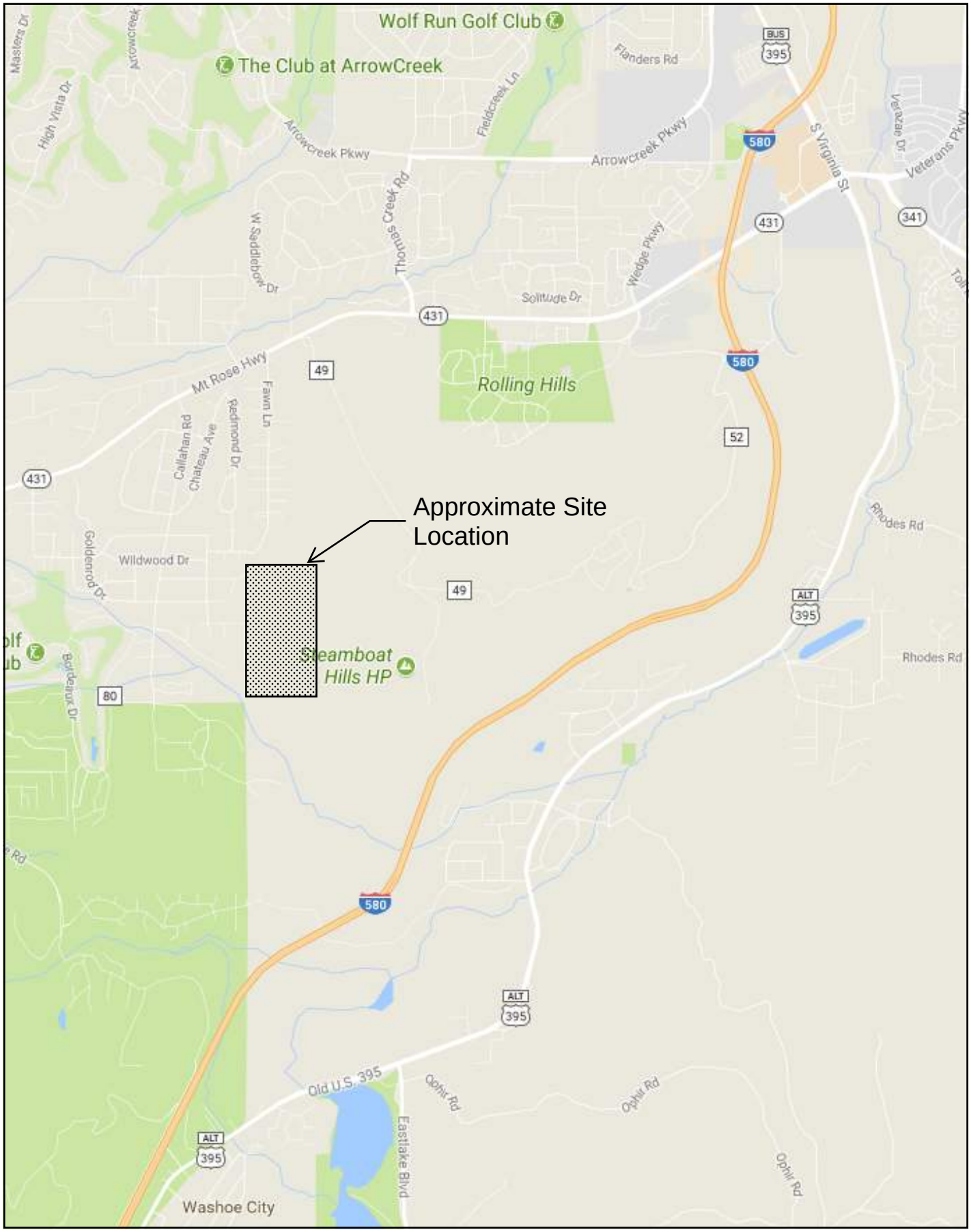
Occupational Safety and Health Administration (OSHA), 1995, Occupational Safety and Health Standards for the Construction Industry, Commerce Clearing House, Inc.

Tabor, R. W., Ellen, S., 1975, Washoe City Folio Geologic Map, Nevada Bureau of Mines and Geology, Reno, Nevada

Tabor, R. W., Ellen, S., and Clark, M. M., 1978, Washoe City Folio Geologic Hazards Map, Nevada Bureau of Mines and Geology, Reno, Nevada

USGS 2012/15 Website, www.eqdesign.cr.usgs.gov

Washoe County, 2016, Standard Specifications for Public Works Construction, "Orange Book", City of Reno, NV



Lumos and Associates

800 E. College Parkway
Carson City, NV 89706
(775) 883-7077
Fax: (775) 883-7114
bsexton@lumosinc.com

Ascenté Geotechnical Investigation

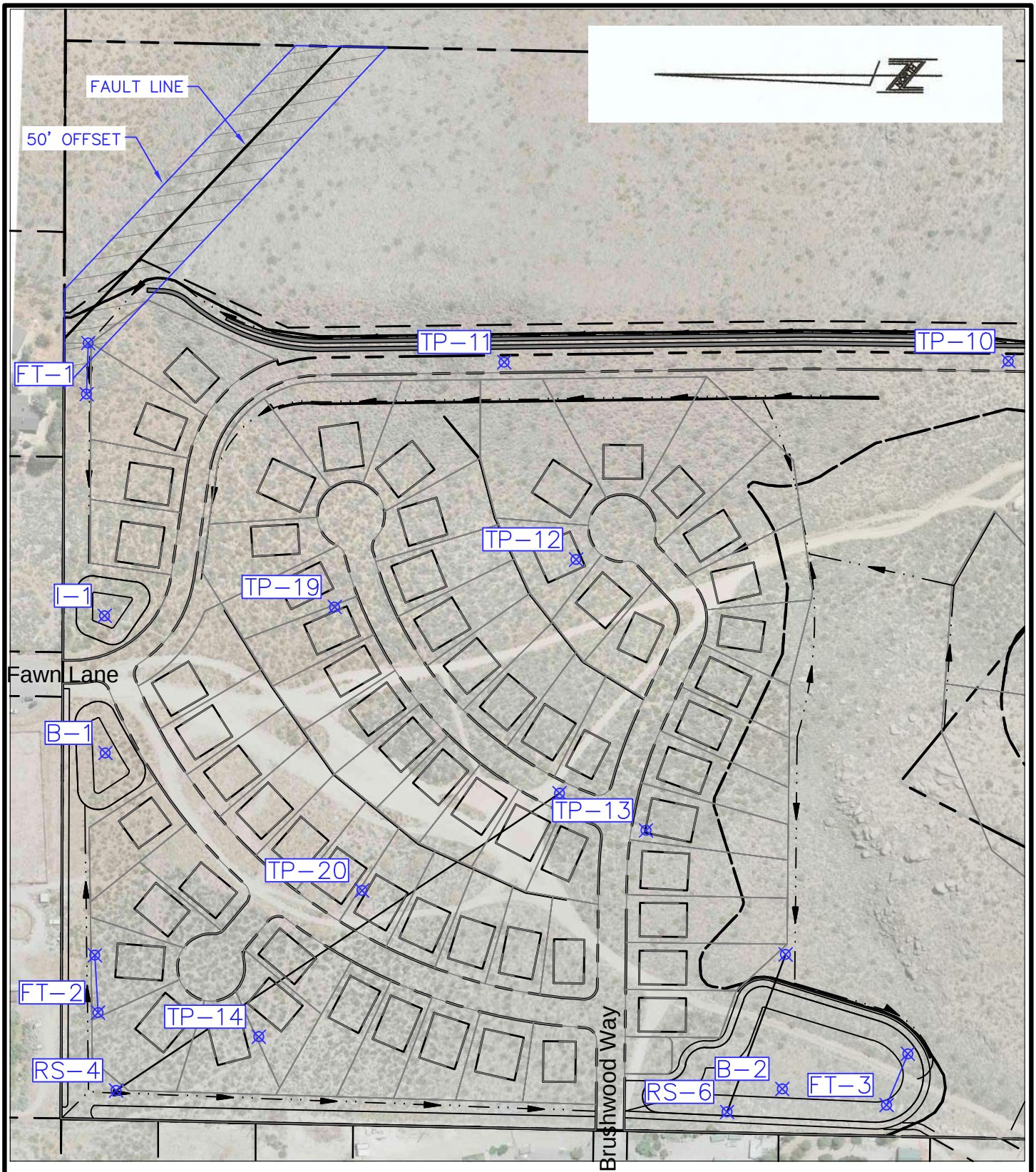
VICINITY MAP

Job Number: 9019.004

Date: Nov. 2017

PLATE

1



Lumos and Associates
800 E. College Parkway
Carson City, NV 89706
(775) 883-7077
Fax: (775) 883-7114
bsexton@lumosinc.com

Ascenté Geotechnical Investigation

SITE MAP

Job Number: 9019.004

Date: Nov. 2017

PLATE

2.1

Lumos and Associates

800 E. College Parkway
Carson City, NV 89706
(775) 883-7077
Fax: (775) 883-7114
bsexton@lumosinc.com

Ascenté Geotechnical Investigation

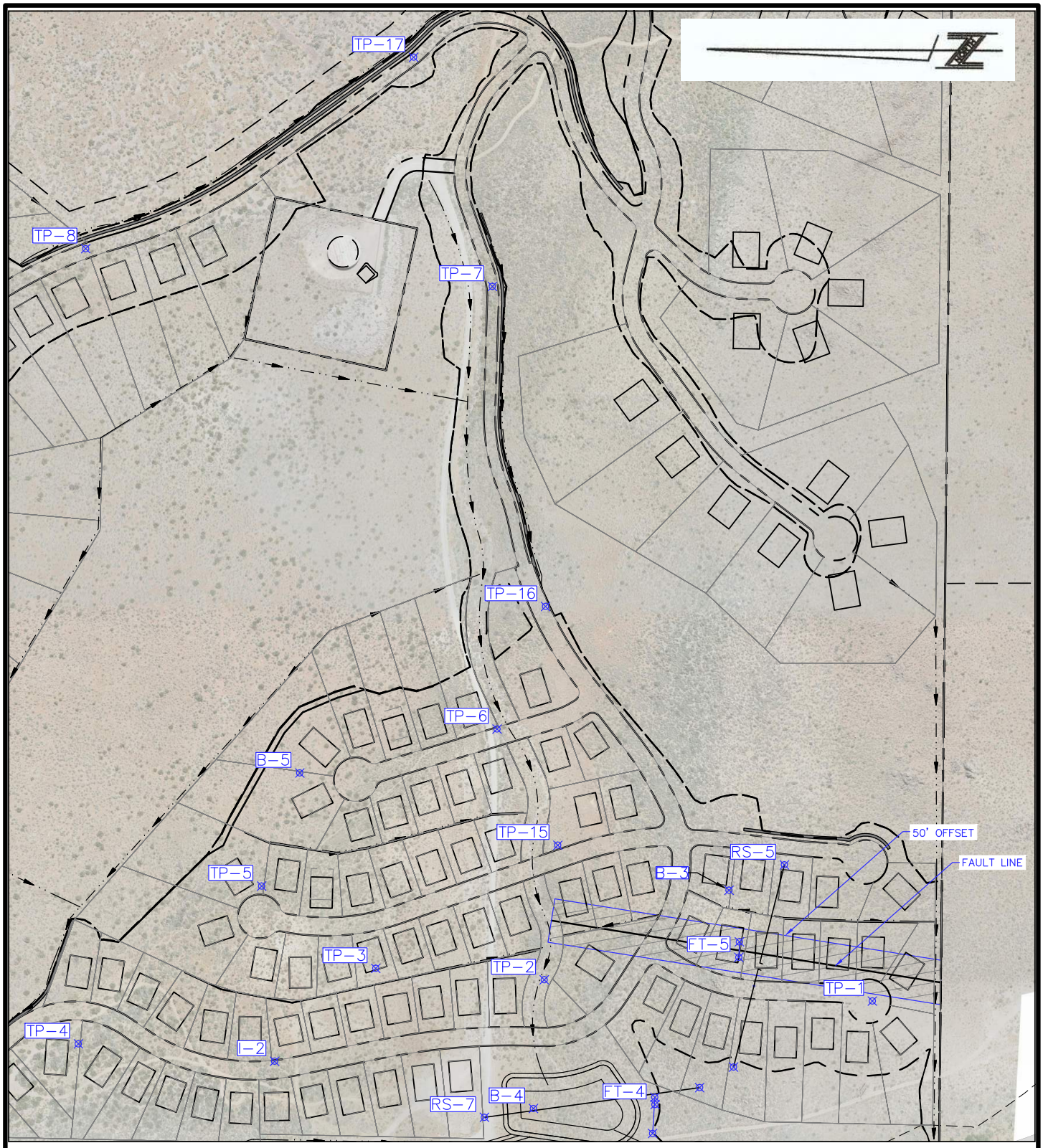
SITE MAP

Job Number: 9019.004

Date: Nov. 2017

PLATE

2.2



Lumos and Associates

800 E. College Parkway
Carson City, NV 89706
(775) 883-7077
Fax: (775) 883-7114
bsexton@lumosinc.com

Ascenté Geotechnical Investigation

SITE MAP

Job Number: 9019.004

Date: Nov. 2017

PLATE

2.3

MODIFIED MERCALLI INTENSITY SCALE

INTENSITY	EFFECTS
I	Not felt except by a very few under especially favorable circumstances.
II	Felt only by a few persons at rest, especially on upper floors of buildings. Delicately suspended objects may swing.
III	Felt quite noticeable indoors, especially on upper floors of buildings, but many people do not recognize it as an earthquake. Standing motor cars may rock slightly. Vibration like passing of truck. Duration estimated.
IV	During the day felt indoors by many, outdoors by few. At night some awaken. Dishes, windows, doors disturbed; walls make cracking sound. Sensation like heavy truck striking building; standing motor cars rock noticeably.
V	Felt by nearly everyone; many awakened. Some dishes, windows, etc., broken; a few instances of cracked plaster; unstable objects overturned. Disturbance of trees, poles, and other tall objects sometimes noticed. Pendulum clocks may stop.
VI	Felt by all; many frightened and run outdoors. Some heavy furniture moved; a few instances of fallen plaster or damaged chimneys. Damage slight.
VII	Everybody runs outdoors. Damage negligible in buildings of good design and construction; slight to moderate in well- built ordinary structures; considerable in poorly built or badly designed structures; some chimneys broken. Noticed by persons driving motor cars.
VIII	Damage slight in specially designed structures; considerable in ordinary substantial buildings with partial collapse; great in poorly built structures. Panel walls thrown out of frame structures. Fall of chimneys, factory stacks, columns, monuments, walls. Heavy furniture overturned. Sand and mud ejected in small amounts. Changes in well water. Disturbs persons driving motor cars.
IX	Damage considerable in specially designed structures; well-designed frame structures thrown out of plumb; great in substantial buildings, with partial collapse. Buildings shifted off foundations. Ground cracked conspicuously. Underground pipes broken.
X	Some well-built wooden structures destroyed; most masonry and frame structures with foundations destroyed; ground badly cracked. Rails bent. Landslides considerable from river banks and steep slopes. Shifted sand and mud. Water splashed (sloped) over banks.
XI	Few, if any (masonry) structures remain standing. Bridges destroyed. Broad fissures in ground. Underground pipe lines completely out of service. Earth slumps and land slips in soft ground. Rails bent greatly.
XII	Damage total. Waves seen on ground surfaces. Lines of sight and level distorted. Objects thrown upward into the air.

From Wood and Newman, 1931, by U.S. Geological Survey, 1974, Earthquake Information Bulletin, v. 6, no. 5, p. 28

Richter Magnitude	Intensity (maximum expected Modified Mercalli)
3.0 - 3.9	II - III
4.0 - 4.9	IV - V
5.0 - 5.9	VI - VII
6.0 - 6.9	VII - VIII
7.0 - 7.9	IX - X
8.0 - 8.9	XI - XII

LUMOS & ASSOCIATES

Lumos and Associates

800 E. College Parkway
Carson City, NV 89706
(775) 883-7077
Fax: (775) 883-7114
bsexton@lumosinc.com

Ascenté Geotechnical Investigation

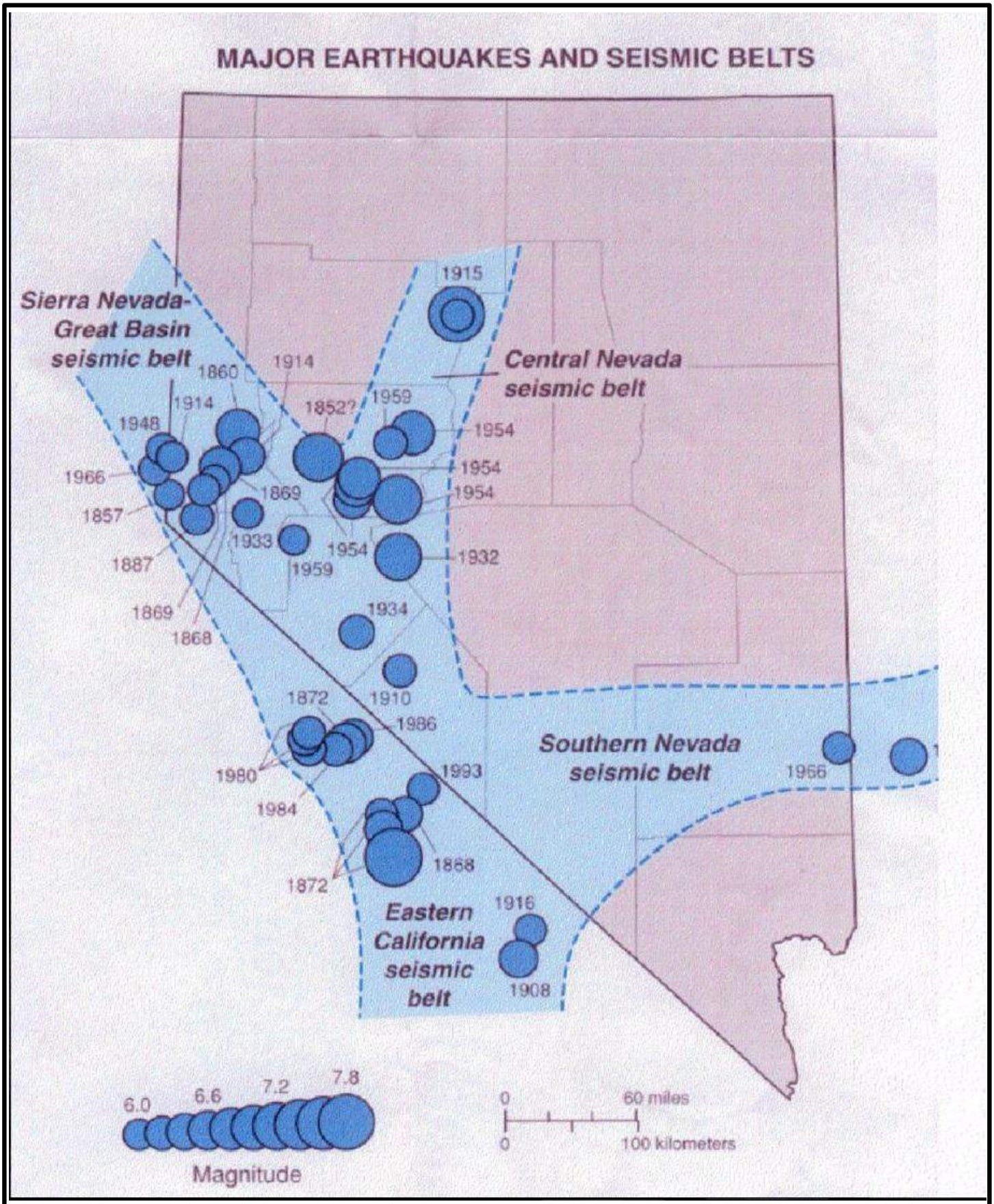
MODIFIED MERCALLI

Job Number: 9019.004

Date: Nov. 2017

PLATE

3



Lumos and Associates
800 E. College Parkway
Carson City, NV 89706
(775) 883-7077
Fax: (775) 883-7114
bsexton@lumosinc.com

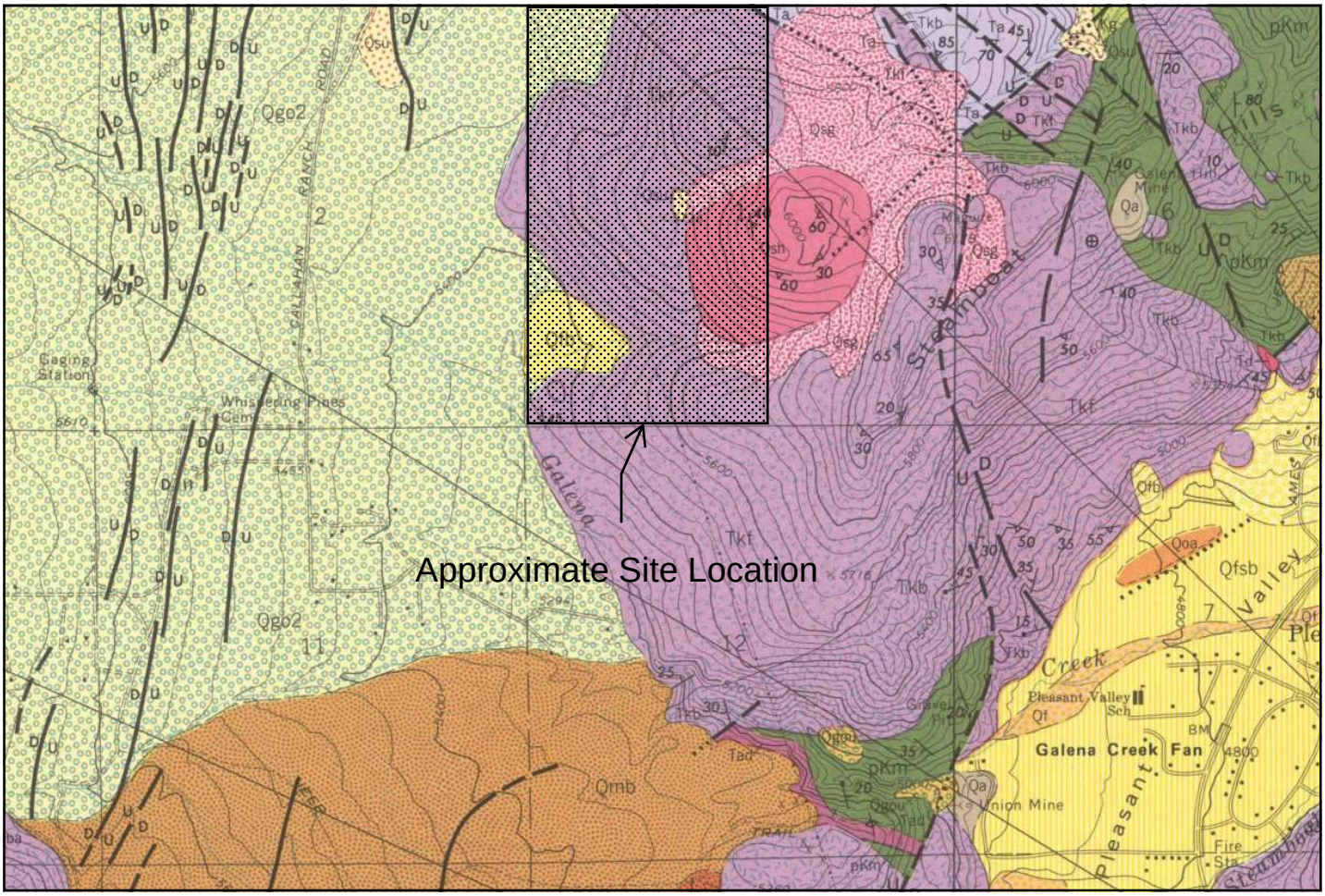
Ascenté Geotechnical Investigation

MAJOR EARTHQUAKES/ SIESMIC BELTS

Job Number: 9019.004 Date: Nov. 2017

PLATE

4



Qa **Artificial fill.**

Qf **Flood deposits.** Silt, sand, gravel, and boulders deposited by floods. Includes some recent alluvium.

Qdd **Deltaic deposits.** Very fine- to very coarse-grained, well-bedded sand.

Qyl **Young landslide deposits.** Unsorted fine to coarse debris derived from fresh scars on nearby slopes. Little eroded.

Qld **Lake deposits.** Well-bedded silt and sand. Includes some wave-cut benches on other units.

Qws **Windblown sand.** Gray to white, loose, medium- to coarse-grained, relatively well-sorted quartz-feldspar sand. Angular- to well-rounded.

Qwd **Dunes.**

Qsu **Sand, undifferentiated.** Windblown sand, alluvial outwash, and slope wash. Shown as pattern over other units where only ¼ to 1 meter thick.

Qfg **Alluvial fans. Qfg:** fine to coarse, moderately bedded, angular, granodioritic sand. **Qfs:** very fine- to coarse-grained

Qfs quartz-feldspar sand. Grains partially rounded. **Qfsb:** silt,

Qfsb sand, and pebbly to bouldery sand. Well-bedded in Pleasant

* **Qfb** Valley. **Qfb:** pebbly to bouldery sand in steep-sided fans.

Qt **Talus.** Accumulations of angular blocks of rock.

Qba **Basin alluvium and slope deposits. Qba:** mostly water-lain

Qs silt, sand, gravel, and boulders. Slightly- to well-sorted and bedded in local basins. **Qs:** mostly unsorted and slightly bedded debris.

DEBRIS FLOWS OF SLIDE MOUNTAIN

Qsd9 **Debris flow 9.** Unsorted angular granodioritic debris forming small ridges and pronounced lobes in or near bottoms of present valleys.

Qsd2-8 **Debris flows 2 through 8.** Angular blocks of fresh granodiorite in poorly sorted, angular silty sand. Locally altered.

Qsdc **Debris flow: coarse deposits.** Large angular granodiorite blocks up to 3 meters in width; little or no sand between blocks.

Qsd1 **Debris flow 1. Qsd1:** partially rotten granodiorite blocks in

Qsdb angular, gray to orange silty sand. **Qsdb:** shattered granodiorite in slide block outlined by short dashes.

Qsdu **Debris flows, undivided.**

GLACIAL DEPOSITS

Qgm4 **Glacial moraine 4.** Mostly sharp-crested moraine ridges of unsorted, fresh angular blocks in silt and sand.

Qgo4 **Glacial outwash 4.** Partly sorted sand, silt, and boulders deposited by glacial outwash stream.

Qgm3 **Glacial moraine 3.** Similar to Qgm2, but in separate ridge.

Qgm2 **Glacial moraine 2.** Similar to Qgm4, but moraine crests more rounded and granitic boulders partly to thoroughly rotten where buried.

* **Qgo2** **Glacial outwash 2.** Similar to Qgo4, except granitic boulders partly to thoroughly rotten where buried.

Qgm1 **Glacial moraine 1.** Similar to Qgm2, except partly to highly eroded, moraine crests very subdued, and all granitic clasts thoroughly rotten.

Qgmu **Glacial moraine, undifferentiated.**

Qgou **Glacial outwash, undifferentiated.**

Qows **Old windblown sand.** Fine- to medium-grained, brown to orange, well-sorted and well-rounded frosted sand with scattered wind-faceted pebbles.

Qod **Old sand dunes (?)** Dark-brown to gray, fine- to coarse-grained, partly rounded sand in dune-like mounds.

Qst **Siliceous sinter and travertine.** Encrustations deposited by old hot springs. Coats and replaces units pKm and Qol on Steamboat Hills. Age uncertain.

Qol **Old landslide deposits.** Unsorted coarse to fine debris derived from nearby slopes. Features subdued by erosion.

Qgl **Glacial outwash and/or landslide deposits.** Poorly sorted sand, silt, and bouldery gravel.

Qogb **Unbedded pebbly sand.** In bar-like ridge. Age uncertain.

Qoa **Old alluvium.** Mostly gray-green to orange sand, gravel, and boulders. Many clasts clay coated. Poorly- to well-bedded. Granodiorite boulders rotten. Hill cappings on east margin of area are mostly well-rounded lag boulders of partially weathered granodiorite and other rocks.

Qold **Old lake deposits.** Fine to coarse sand and silt in thin beds. Locally diatomaceous.

Qmb **Deposits of the Mount Rose fan. Qmb:** gray to brown silt,

Qms sand, gravel, and large boulders. Weakly stratified. All granitic boulders and some volcanic rocks rotten. **Qms:** intertonguing sand and silt facies.

BEDROCK UNITS

* **Qsh** **Steamboat Hills Rhyolite and associated deposits. Qsh:** white,

* **Qsg** glassy to strongly devitrified biotite rhyolite in pumiceous dome and overlying rubble. Pleistocene age based on K-Ar determination of sanidine at 1.2±1 m.y. (M. L. Silberman, 1974, written commun.). **Qsg:** coarse-grained angular granule conglomerate of rhyolite pumice and metamorphic rock.

Tb **Basalt.** Black to red olivine basalt. Highly fractured, dense to scoriaceous.

* **Tkf** **Kate Peak Formation. Tkf:** hornblende-pyroxene andesite

Tkb flows with minor breccia. **Tkb:** andesite breccia with minor

Tkd flows. **Tkd:** glassy, flow-layered pyroxene andesite of prob-

Tki able dome origin. **Tki:** intrusive masses, mostly dikes. **Tku:**

Tku interbedded flows and breccia, undivided.

Ta **Alta Formation. Ta:** flows, tuffs, and breccia of dacite to

Tad hornblende andesite composition. Generally partially altered to sericite, calcite, chlorite, and clay minerals. Includes black sodic trachyte on north side of Steamboat Hills. **Tad:** white to gray altered hornblende andesite dikes.

Th **Hartford Hill Formation.** Purple rhyolite. Highly altered to sericite, chlorite, and clay minerals.

Td **Hornblende dacite porphyry dikes.** Gray to black dikes that intrude units Kg near Franktown Creek and Tkb on southeast side of Steamboat Hills.

Kg **Hornblende-biotite granodiorite.** Gray, yellow-gray to pink, and white. Locally includes considerable aplite and pegmatite. Triangle pattern denotes highly fractured, chalky rock, locally strongly sheared and altered to sericite, chlorite, epidote, and zeolites. Short dashes indicate trend of hornblende lineation.

pKm **Metamorphic rocks. pKm:** gray and gray-green metagray-

pKmb wacke and graywacke conglomerate, metatuff, and breccia. Green to black slate, phyllite, and rare gray marble. Within 60 meters of granodiorite contact, rocks are thermally metamorphosed to black hornfels, schist, and granofels. Crosses indicate bleached areas resulting from intense hydrothermal alteration. **pKmb:** local exposures of metavolcanic breccia.

* = Site Soils/Bedrock

Lumos and Associates

800 E. College Parkway
Carson City, NV 89706
(775) 883-7077
Fax: (775) 883-7114
bsexton@lumosinc.com

Ascenté Geotechnical Investigation

GEOLOGIC MAP

Job Number: 9019.004

Date: Nov. 2017

PLATE

5

APPENDIX A

LUMOS & ASSOCIATES

SIERRA VILLAGE

LUMOS
& ASSOCIATES

TEST PIT No. FT-1

Logged By:	**B. Sexton**	Total Depth:	**8 feet**
Date Logged:	**9-19-2017**	Water Depth:	**No groundwater encountered**
Drill Type:	**Caterpillar 329 Excavator**	Ground Elev.:	**5477.5 feet ±**

Percolation Test | Split Spoon | Ziplock Sample | California Sampler | Bulk Sample | Static Water Table

Depth in Feet	Graphic Log	Sample Type	SOIL DESCRIPTION	Natural Moisture Content, %	Moisture Content, %	Dry Density, pcf	Liquid Limit, %	Plasticity Index, %	Gravel, % (3" - #4 Sieve)	Sand, % (#4 - #200 Sieve)	Fines, % (< #200 Sieve)	R-Value	Expansion Index
0			**Brown Silty SAND (SM),** Dry to Slightly Moist, Medium Dense, with Roots to 3'.										
3		B		5.5			NP	NP	8.4	73.0	18.6		
8.0													

Test pit terminated at 8 feet.
Test Pits backfilled without compaction verification

LUMOS_TP_FULL_PAGE 9019.004 - FAULT TRENCH.GPJ US_LAB.GDT 11/22/17

LUMOS & ASSOCIATES

Lumos and Associates
800 E. College Parkway
Carson City, NV 89706
(775) 883-7077
Fax: (775) 883-7114
mburns@lumosinc.com

Ascenté Geotechnical Investigation

LOG OF EXPLORATORY TEST PIT

Job Number: 9019.004 Date: November 2017

PLATE A-1

TEST PIT No. FT-2

Logged By:	**B. Sexton**	Total Depth:	**8 feet**
Date Logged:	**9-19-2017**	Water Depth:	**No groundwater encountered**
Drill Type:	**Caterpillar 329 Excavator**	Ground Elev.:	**5469.52 feet ±**

Percolation Test | Split Spoon | Ziplock Sample | California Sampler | Bulk Sample | Static Water Table

Depth in Feet	Graphic Log	Sample Type	SOIL DESCRIPTION	Natural Moisture Content, %	Moisture Content, %	Dry Density, pcf	Liquid Limit, %	Plasticity Index, %	Gravel, % (3" - #4 Sieve)	Sand, % (#4 - #200 Sieve)	Fines, % (< #200 Sieve)	R-Value	Expansion Index
1		B	**Brown Silty SAND (SM),** Dry to Slightly Moist, Medium Dense. Estimated 15% Unclassifiable Sub-Angular Cobbles and Boulders to 3' in Diameter and 85% Classifiable Material of Which had and Estimated 10% Coarse to Fine Gravel, 70% Coarse to Fine Sand, and 20% Non-Plastic Silt.										
2			2.0										
3			**Light Brown Silty (SM),** Slightly Moist, Dense, Moderately Cemented.										
4													
5													
6		B		4.9			NP	NP	5.3	72.9	21.7		
7													
8			8.0										

Test pit terminated at 8 feet.
Test Pits backfilled without compaction verification

Lumos and Associates
800 E. College Parkway
Carson City, NV 89706
(775) 883-7077
Fax: (775) 883-7114
mburns@lumosinc.com

Ascenté Geotechnical Investigation

LOG OF EXPLORATORY TEST PIT

Job Number: 9019.004 Date: November 2017

PLATE A-2

TEST PIT No. FT-3

Logged By:	**B. Sexton**	Total Depth:	**9 feet**
Date Logged:	**9-19-2017**	Water Depth:	**No groundwater encountered**
Drill Type:	**Caterpillar 329 Excavator**	Ground Elev.:	**5447.47 feet ±**

Percolation Test | Split Spoon | Ziplock Sample | California Sampler | Bulk Sample | Static Water Table

Depth in Feet	Graphic Log	Sample Type	SOIL DESCRIPTION	Natural Moisture Content, %	Moisture Content, %	Dry Density, pcf	Liquid Limit, %	Plasticity Index, %	Gravel, % (3" - #4 Sieve)	Sand, % (#4 - #200 Sieve)	Fines, % (< #200 Sieve)	R-Value	Expansion Index
1			**Brown Silty SAND (SM),** Dry to Slightly Moist, Medium Dense. Estimated 15% Unclassifiable Sub-Angular Cobbles and Boulders to 2' in Diameter and 85% Classifiable Material of Which had and Estimated 10% Coarse to Fine Gravel, 70% Coarse to Fine Sand, and 20% Non-Plastic Silt. There were Surface Boulders that Measured at Least 4' in Diameter.										
2			2.0										
3		B	**Brown Silty SAND with Gravel (SM),** Slightly Moist, Medium Dense. Estimated 15% Unclassifiable Sub-Angular Cobbles and Boulders to 18" in Diameter and 85% Classifiable Material of Which had and Estimated 10% Coarse to Fine Gravel, 70% Coarse to Fine Sand, and 20% Non-Plastic Silt.	4.1			NP	NP	21.0	61.5	14.2		
4													
5													
6													
7			7.0										
8		B	**Light to Medium Brown Silty SAND (SM),** Slightly Moist, Medium Dense.										
9			9.0										

Test pit terminated at 9 feet.
Test Pits backfilled without compaction verification

LUMOS_TP_FULL_PAGE 9019.004 - FAULT TRENCH.GPJ US_LAB.GDT 11/22/17

LUMOS & ASSOCIATES

Lumos and Associates
800 E. College Parkway
Carson City, NV 89706
(775) 883-7077
Fax: (775) 883-7114
mburns@lumosinc.com

Ascenté Geotechnical Investigation

LOG OF EXPLORATORY TEST PIT

Job Number: 9019.004 Date: November 2017

PLATE

A-3

DONNER VILLAGE

LUMOS
& ASSOCIATES

TEST PIT No. FT-4

Logged By:	**B. Sexton**	Total Depth:	**7 feet**
Date Logged:	**9-20-2017**	Water Depth:	**No groundwater encountered**
Drill Type:	**Caterpillar 329 Excavator**	Ground Elev.:	**5366.62 feet ±**

Percolation Test | Split Spoon | Ziplock Sample | California Sampler | Bulk Sample | Static Water Table

Depth in Feet	Graphic Log	Sample Type	SOIL DESCRIPTION	Natural Moisture Content, %	Moisture Content, %	Dry Density, pcf	Liquid Limit, %	Plasticity Index, %	Gravel, % (3" - #4 Sieve)	Sand, % (#4 - #200 Sieve)	Fines, % (< #200 Sieve)	R-Value	Expansion Index
1		B	**Brown Clayey GRAVEL with Sand (GC),** Slightly Moist, Dense. Estimated 15% Unclassifiable Sub-Angular Cobbles and Boulders to 2' in Diameter in the Trench and 85% Classifiable Material.	12.2			32	13	43.6	37.8	16.4		
2													
3													
4													
5													
6													
7			7.0										

Test pit terminated at 7 feet.
Test Pits backfilled without compaction verification

Lumos and Associates
800 E. College Parkway
Carson City, NV 89706
(775) 883-7077
Fax: (775) 883-7114
mburns@lumosinc.com

Ascenté Geotechnical Investigation

LOG OF EXPLORATORY TEST PIT

Job Number: 9019.004 Date: November 2017

PLATE A-4

TEST PIT No. FT-5

Logged By:	**B. Sexton**	Total Depth:	**8 feet**
Date Logged:	**9-20-2017**	Water Depth:	**No groundwater encountered**
Drill Type:	**Caterpillar 329 Excavator**	Ground Elev.:	**E.G.S. feet ±**

Percolation Test | Split Spoon | Ziplock Sample | California Sampler | Bulk Sample | Static Water Table

Depth in Feet	Graphic Log	Sample Type	SOIL DESCRIPTION	Natural Moisture Content, %	Moisture Content, %	Dry Density, pcf	Liquid Limit, %	Plasticity Index, %	Gravel, % (3" - #4 Sieve)	Sand, % (#4 - #200 Sieve)	Fines, % (< #200 Sieve)	R-Value	Expansion Index
0			**Brown Silty SAND (SM),** Dry, Medium Dense, Roots to 3'. Estimated 10% Coarse to Fine Gravel, 70% Coarse to Fine Sand, and 20% Slightly-Plastic Silt.										
1.0													
1			**Brown Clayey SAND (SC),** Slightly Moist, Medium Dense, Roots to 3'. Estimated 10% Coarse to Fine Gravel, 70% Coarse to Fine Sand, and 20% Clay.										
2													
3													
4													
5		B											
6													
7													
8.0													
8			Test pit terminated at 8 feet. Test Pits backfilled without compaction verification										

LUMOS_TP_FULL_PAGE 9019.004 - FAULT TRENCH.GPJ US_LAB.GDT 11/22/17

LUMOS & ASSOCIATES

Lumos and Associates

800 E. College Parkway
Carson City, NV 89706
(775) 883-7077
Fax: (775) 883-7114
mburns@lumosinc.com

Ascenté Geotechnical Investigation

LOG OF EXPLORATORY TEST PIT

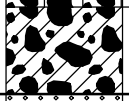
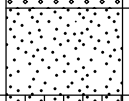
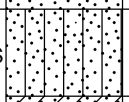
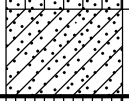
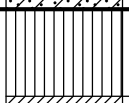
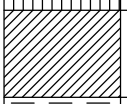
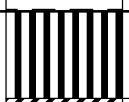
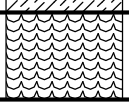
Job Number: 9019.004

Date: November 2017

PLATE

A-5

SOIL CLASSIFICATION CHART

MAJOR DIVISIONS			SYMBOLS		TYPICAL DESCRIPTIONS
			GRAPH	LETTER	
COARSE GRAINED SOILS	GRAVEL AND GRAVELLY SOILS	CLEAN GRAVELS (LITTLE OR NO FINES)		GW	WELL-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
				GP	POORLY-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
	MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)		GM	SILTY GRAVELS, GRAVEL - SAND - SILT MIXTURES
				GC	CLAYEY GRAVELS, GRAVEL - SAND - CLAY MIXTURES
MORE THAN 50% OF MATERIAL IS LARGER THAN NO. 200 SIEVE SIZE	SAND AND SANDY SOILS	CLEAN SANDS (LITTLE OR NO FINES)		SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
				SP	POORLY-GRADED SANDS, GRAVELLY SAND, LITTLE OR NO FINES
	MORE THAN 50% OF COARSE FRACTION PASSING ON NO. 4 SIEVE	SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)		SM	SILTY SANDS, SAND - SILT MIXTURES
				SC	CLAYEY SANDS, SAND - CLAY MIXTURES
FINE GRAINED SOILS	SILTS AND CLAYS	LIQUID LIMIT LESS THAN 50		ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
MORE THAN 50% OF MATERIAL IS SMALLER THAN NO. 200 SIEVE SIZE	SILTS AND CLAYS	LIQUID LIMIT GREATER THAN 50		MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILTY SOILS
				CH	INORGANIC CLAYS OF HIGH PLASTICITY
				OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS				PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

NOTE: DUAL SYMBOLS ARE USED TO INDICATE BORDERLINE SOIL CLASSIFICATIONS

Other Tests

AN	ANALYTICAL TEST (pH, Soluble Sulfate, and Resistivity)
C	CONSOLIDATION TEST
DS	DIRECT SHEAR TEST
MD	MOISTURE DENSITY CURVE

LUMOS & ASSOCIATES

Lumos and Associates

800 E. College Parkway
Carson City, NV 89706
(775) 883-7077
Fax: (775) 883-7114
mburns@lumosinc.com

Ascenté Geotechnical Investigation

LEGEND

Job Number: 9019.004

Date: November 2017

PLATE

A-6

APPENDIX B

LUMOS & ASSOCIATES

SIERRA VILLAGE

LUMOS
& ASSOCIATES

TEST PIT No. TP-10

Logged By:	**B. Sexton**	Total Depth:	**12 feet**
Date Logged:	**9-21-2017**	Water Depth:	**No groundwater encountered**
Drill Type:	**Caterpillar 329 Excavator**	Ground Elev.:	**5578.83 feet ±**

Percolation Test | Split Spoon | Ziplock Sample | California Sampler | Bulk Sample | Static Water Table

Depth in Feet	Graphic Log	Sample Type	SOIL DESCRIPTION	Natural Moisture Content, %	Moisture Content, %	Dry Density, pcf	Liquid Limit, %	Plasticity Index, %	Gravel, % (3" - #4 Sieve)	Sand, % (#4 - #200 Sieve)	Fines, % (< #200 Sieve)	R-Value	Expansion Index
1			**Brown Silty SAND (SM),** Dry, Medium Dense, with Roots to 1.5' Below Existing Grade. Estimated 10% Medium to Fine Gravel, 60% Coarse to Fine Sand, and 30% Slightly Plastic Silt/Clay.										
1.5													
2			**Light to Medium Brown Silty GRAVEL with Sand (GM),** Slightly Moist, Dense, Moderately Cemented.										
3		B		10.3			NP	NP	47.9	39.3	12.8		
4													
5													
6													
6.0													
7			**Brown Clayey SAND (SC),** Slightly Moist, Medium Dense, Not Cemented. Estimated 40% Coarse to Fine Gravel, 40% Coarse to Fine Sand, and 20% Clay.										
8													
9													
10		B											
11													
12													
12.0													

Test pit terminated at 12 feet.
Test Pits backfilled without compaction verification

LUMOS_TP_FULL_PAGE 9019.004 - TEST PITS.GPJ US_LAB.GDT 11/22/17

LUMOS & ASSOCIATES

Lumos and Associates
800 E. College Parkway
Carson City, NV 89706
(775) 883-7077
Fax: (775) 883-7114
mburns@lumosinc.com

Ascenté Geotechnical Investigation

LOG OF EXPLORATORY TEST PIT

Job Number: 9019.004 Date: November 2017

PLATE B-10

TEST PIT No. TP-11

Logged By:	**B. Sexton**	Total Depth:	**6 feet**
Date Logged:	**9-21-2017**	Water Depth:	**No groundwater encountered**
Drill Type:	**Caterpillar 329 Excavator**	Ground Elev.:	**5518.69 feet ±**

Percolation Test | Split Spoon | Ziplock Sample | California Sampler | Bulk Sample | Static Water Table

Depth in Feet	Graphic Log	Sample Type	SOIL DESCRIPTION	Natural Moisture Content, %	Moisture Content, %	Dry Density, pcf	Liquid Limit, %	Plasticity Index, %	Gravel, % (3" - #4 Sieve)	Sand, % (#4 - #200 Sieve)	Fines, % (< #200 Sieve)	R-Value	Expansion Index
1			**Light to Medium Brown Silty GRAVEL with Sand (GM),** Slightly Moist, Dense, with Roots to 1.5' Below Ground Surface. Estimated 70% Unclassifiable Sub-Angular to Angular Cobbles and Boulders to at Least 48" in Diameter and 30% Classifiable Material of Which had an Estimated 45% Coarse to Fine Gravel, 40% Coarse to Fine Sand, and 15% Non-Plastic Silt.										
2													
3													
4			4.0										
5		B	**Light to Medium Brown Clayey Sand (SC),** Slightly Moist, Dense. Estimated 70% Unclassifiable Sub-Angular to Angular Cobbles and Boulders to at Least 48" in Diameter and 30% Classifiable Material.	7.3			24	9	7.5	66.6	25.9		0
6			6.0										

Test pit terminated at 6 feet.
Test Pits backfilled without compaction verification

Lumos and Associates
800 E. College Parkway
Carson City, NV 89706
(775) 883-7077
Fax: (775) 883-7114
mburns@lumosinc.com

Ascenté Geotechnical Investigation

LOG OF EXPLORATORY TEST PIT

Job Number: 9019.004 Date: November 2017

PLATE B-11

TEST PIT No. TP-12

Logged By:	**B. Sexton**	Total Depth:	**12 feet**
Date Logged:	**9-21-2017**	Water Depth:	**No groundwater encountered**
Drill Type:	**Caterpillar 329 Excavator**	Ground Elev.:	**5464.32 feet ±**

Percolation Test | Split Spoon | Ziplock Sample | California Sampler | Bulk Sample | Static Water Table

Depth in Feet	Graphic Log	Sample Type	SOIL DESCRIPTION	Natural Moisture Content, %	Moisture Content, %	Dry Density, pcf	Liquid Limit, %	Plasticity Index, %	Gravel, % (3" - #4 Sieve)	Sand, % (#4 - #200 Sieve)	Fines, % (< #200 Sieve)	R-Value	Expansion Index
1			**Brown Silty SAND (SM),** Dry, Medium Dense, with Roots to 1.5' Below Existing Grade. Estimated 10% Medium to Fine Gravel, 60% Coarse to Fine Sand, and 30% Slightly Plastic Silt/Clay.										
2			1.5 **Light to Medium Brown Clayey SAND (SC),** Slightly Moist, Dense, and Moderately Cemented. Estimated 10% Medium to Fine Gravel, 60% Coarse to Fine Sand, and 30% Clay.										
3													
4													
5		B											
6													
7													
8													
9													
10													
11													
12			12.0										

Test pit terminated at 12 feet.
Test Pits backfilled without compaction verification

LUMOS & ASSOCIATES
Lumos and Associates
800 E. College Parkway
Carson City, NV 89706
(775) 883-7077
Fax: (775) 883-7114
mburns@lumosinc.com

Ascenté Geotechnical Investigation

LOG OF EXPLORATORY TEST PIT

Job Number: 9019.004 Date: November 2017

PLATE B-12

TEST PIT No. TP-13

Logged By:	**B. Sexton**	Total Depth:	**13 feet**
Date Logged:	**9-21-2017**	Water Depth:	**No groundwater encountered**
Drill Type:	**Caterpillar 329 Excavator**	Ground Elev.:	**5463.4 feet ±**

Percolation Test | Split Spoon | Ziplock Sample | California Sampler | Bulk Sample | Static Water Table

Depth in Feet	Graphic Log	Sample Type	SOIL DESCRIPTION	Natural Moisture Content, %	Moisture Content, %	Dry Density, pcf	Liquid Limit, %	Plasticity Index, %	Gravel, % (3" - #4 Sieve)	Sand, % (#4 - #200 Sieve)	Fines, % (< #200 Sieve)	R-Value	Expansion Index
1			**Brown Silty SAND (SM),** Dry, Medium Dense, with Roots to 2' Below Existing Grade. Estimated 10% Medium to Fine Gravel, 60% Coarse to Fine Sand, and 30% Slightly Plastic Silt/Clay.										
2		B											
3													
4													
5													
6			6.0										
7			**Light to Medium Brown Silty GRAVEL with Sand (GM),** Dry to Slightly Moist, Medium Dense. Estimated 20% Unclassifiable Sub-Angular Cobbles and Boulders to 24" in Diameter and 80% Classifiable Material of Which had an Estimated 45% Coarse to Fine Gravel, 40% Coarse to Fine Sand, and 15% Non-Plastic Silt.										
8													
9			9.0										
10			**Pinkish Brown Silty SAND (SM),** Slightly Moist, Medium Dense. Estimated 10% Medium to Fine Gravel, 60% Coarse to Fine Sand, and 30% Non-Plastic Silt.										
11		B	During Excavation it was Noted that the "Rock" was Soft and Decomposed Easily.										
12			12.0										
13													

Test pit terminated at 13 feet.
Test Pits backfilled without compaction verification

Lumos and Associates
800 E. College Parkway
Carson City, NV 89706
(775) 883-7077
Fax: (775) 883-7114
mburns@lumosinc.com

Ascenté Geotechnical Investigation

LOG OF EXPLORATORY TEST PIT

Job Number: 9019.004 Date: November 2017

PLATE B-13

TEST PIT No. TP-14

Logged By: **B. Sexton**
Date Logged: **9-21-2017**
Drill Type: **Caterpillar 329 Excavator**

Total Depth: **12 feet**
Water Depth: **No groundwater encountered**
Ground Elev.: **5464.18 feet ±**

Percolation Test | Split Spoon | Ziplock Sample | California Sampler | Bulk Sample | Static Water Table

Depth in Feet	Graphic Log	Sample Type	SOIL DESCRIPTION	Natural Moisture Content, %	Moisture Content, %	Dry Density, pcf	Liquid Limit, %	Plasticity Index, %	Gravel, % (3" - #4 Sieve)	Sand, % (#4 - #200 Sieve)	Fines, % (< #200 Sieve)	R-Value	Expansion Index
1		B	**Brown Silty SAND (SM),** Dry, Medium Dense, with Roots to 1.5' Below Existing Grade.	2.6			NP	NP	7.3	71.4	21.3	40	
2			1.5 **Light to Medium Brown Clayey SAND (SC),** Dry, Dense, Moderately Cemented. Estimated 10% Medium to Fine Gravel, 60% Coarse to Fine Sand, and 30% Clay.										
3		B											
4			4.0 **Light to Medium Brown Clayey SAND (SC),** Dry to Slightly Moist, Medium Dense, Not Cemented. Estimated 20% Unclassifiable Sub-Angular Cobbles and Boulders to 24" in Diameter and 80% Classifiable Material of Which had an Estimated 10% Medium to Fine Gravel, 60% Coarse to Fine Sand, and 30% Clay.										
5		B											
6													
7													
8													
9													
10													
11													
12			12.0										

Test pit terminated at 12 feet.
Test Pits backfilled without compaction verification

Lumos and Associates
800 E. College Parkway
Carson City, NV 89706
(775) 883-7077
Fax: (775) 883-7114
mburns@lumosinc.com

Ascenté Geotechnical Investigation

LOG OF EXPLORATORY TEST PIT

Job Number: 9019.004
Date: November 2017

PLATE
B-14

TEST PIT No. TP-19

Logged By:	**B. Sexton**	Total Depth:	**12 feet**
Date Logged:	**9-22-2017**	Water Depth:	**No groundwater encountered**
Drill Type:	**Caterpillar 329 Excavator**	Ground Elev.:	**5458.79 feet ±**

Percolation Test | Split Spoon | Ziplock Sample | California Sampler | Bulk Sample | Static Water Table

Depth in Feet	Graphic Log	Sample Type	SOIL DESCRIPTION	Natural Moisture Content, %	Moisture Content, %	Dry Density, pcf	Liquid Limit, %	Plasticity Index, %	Gravel, % (3" - #4 Sieve)	Sand, % (#4 - #200 Sieve)	Fines, % (< #200 Sieve)	R-Value	Expansion Index
1			**Brown Silty SAND (SM),** Dry, Medium Dense. Estimated 10% Medium to Fine Gravel, 60% Coarse to Fine Sand, and 30% Slightly Plastic Silt/Clay. 1.0										
2		B	**Medium Brown Clayey SAND (SC),** Dry to Slightly Moist, Dense, Moderately Cemented. Estimated 10% Medium to Fine Gravel, 60% Coarse to Fine Sand, and 30% Clay.										
3													
4													
5													
6													
7													
8													
9			9.5										
10		B	**Light Brown Silty SAND (SM),** Moist, Medium Dense, Not Cemented. Estimated 5% Fine Gravel, 60% Coarse to Fine Sand, and 35% Non-Plastic Silt.										
11													
12			12.0										

Test pit terminated at 12 feet.
Test Pits backfilled without compaction verification

LUMOS_TP_FULL_PAGE 9019.004 - TEST PITS.GPJ US_LAB.GDT 11/22/17

Lumos and Associates
800 E. College Parkway
Carson City, NV 89706
(775) 883-7077
Fax: (775) 883-7114
mburns@lumosinc.com

Ascenté Geotechnical Investigation

LOG OF EXPLORATORY TEST PIT

Job Number: 9019.004 Date: November 2017

PLATE B-19

TEST PIT No. TP-20

Logged By:	**B. Sexton**	Total Depth:	**12 feet**
Date Logged:	**9-22-2017**	Water Depth:	**No groundwater encountered**
Drill Type:	**Caterpillar 329 Excavator**	Ground Elev.:	**5460.25 feet ±**

Percolation Test | Split Spoon | Ziplock Sample | California Sampler | Bulk Sample | Static Water Table

Depth in Feet	Graphic Log	Sample Type	SOIL DESCRIPTION	Natural Moisture Content, %	Moisture Content, %	Dry Density, pcf	Liquid Limit, %	Plasticity Index, %	Gravel, % (3" - #4 Sieve)	Sand, % (#4 - #200 Sieve)	Fines, % (< #200 Sieve)	R-Value	Expansion Index
1			**Brown Silty SAND (SM),** Dry, Medium Dense. Estimated 10% Medium to Fine Gravel, 60% Coarse to Fine Sand, and 30% Slightly Plastic Silt/Clay. 1.0										
2		B	**Medium Brown Clayey SAND (SC),** Dry to Slightly Moist, Dense, Moderately Cemented. Estimated 10% Medium to Fine Gravel, 60% Coarse to Fine Sand, and 30% Clay.										
3													
4													
5													
6													
7													
8			8.0										
9		B	**Light Brown Silty SAND (SM),** Moist, Medium Dense, Not Cemented. Estimated 5% Fine Gravel, 60% Coarse to Fine Sand, and 35% Non-Plastic Silt.										
10													
11													
12			12.0										

Test pit terminated at 12 feet.
Test Pits backfilled without compaction verification

LUMOS_TP_FULL_PAGE 9019.004 - TEST PITS.GPJ US_LAB.GDT 11/22/17

LUMOS & ASSOCIATES

Lumos and Associates
800 E. College Parkway
Carson City, NV 89706
(775) 883-7077
Fax: (775) 883-7114
mburns@lumosinc.com

Ascenté Geotechnical Investigation

LOG OF EXPLORATORY TEST PIT

Job Number: 9019.004 Date: November 2017

PLATE

B-20

TIOGA VILLAGE

LUMOS
& ASSOCIATES

TEST PIT No. TP-08

Logged By: **B. Sexton**
Date Logged: **9-21-2017**
Drill Type: **Caterpillar 329 Excavator**
Total Depth: **10 feet**
Water Depth: **No groundwater encountered**
Ground Elev.: **5682.1 feet ±**

Percolation Test | Split Spoon | Ziplock Sample | California Sampler | Bulk Sample | Static Water Table

Depth in Feet	Graphic Log	Sample Type	SOIL DESCRIPTION	Natural Moisture Content, %	Moisture Content, %	Dry Density, pcf	Liquid Limit, %	Plasticity Index, %	Gravel, % (3" - #4 Sieve)	Sand, % (#4 - #200 Sieve)	Fines, % (< #200 Sieve)	R-Value	Expansion Index
1			**Light to Medium Brown Silty SAND with Gravel (SM),** Dry, Medium Dense to Dense, with Roots to 2' Below Ground Surface. Estimated 20% Unclassifiable Sub-Angular to Angular Cobbles and Boulders to 24" in Diameter and 80% Classifiable Material.										
2			Slightly Moist Below 2'.										
3													
4		B		7.3			NP	NP	24.3	43.4	24.6		0
5													
6													
7			Difficult to Excavate Below 7'.										
8													
9													
10			10.0										

Test pit terminated at 10 feet.
Test Pits backfilled without compaction verification

Lumos and Associates
800 E. College Parkway
Carson City, NV 89706
(775) 883-7077
Fax: (775) 883-7114
mburns@lumosinc.com

Ascenté Geotechnical Investigation

LOG OF EXPLORATORY TEST PIT

Job Number: 9019.004
Date: November 2017

PLATE B-8

TEST PIT No. TP-09

Logged By:	**B. Sexton**	Total Depth:	**12 feet**
Date Logged:	**9-21-2017**	Water Depth:	**No groundwater encountered**
Drill Type:	**Caterpillar 329 Excavator**	Ground Elev.:	**5834.82 feet ±**

Percolation Test | Split Spoon | Ziplock Sample | California Sampler | Bulk Sample | Static Water Table

Depth in Feet	Graphic Log	Sample Type	SOIL DESCRIPTION	Natural Moisture Content, %	Moisture Content, %	Dry Density, pcf	Liquid Limit, %	Plasticity Index, %	Gravel, % (3" - #4 Sieve)	Sand, % (#4 - #200 Sieve)	Fines, % (< #200 Sieve)	R-Value	Expansion Index
1			**Light Brown Clayey SAND (SC),** Dry, Medium Dense, with Roots to 2' Below Ground Surface. Estimated 10% Medium to Fine Gravel, 60% Coarse to Fine Sand, and 30% Clay.										
2			2.0										
3		B	**Brown Sandy Fat CLAY (CH),** Moist, Medium Stiff.	14.9			50	34	2.5	38.7	58.8		20
4													
5			5.0										
6			**Light to Medium Brown Clayey SAND (SC),** Slightly Moist, Medium Dense, with Roots to 2' Below Ground Surface. Estimated 20% Unclassifiable Sub-Angular to Angular Cobbles and Boulders to 24" in Diameter and 80% Classifiable Material of Which had an Estimated 10% Medium to Fine Gravel, 60% Coarse to Fine Sand, and 30% Clay.										
7		B											
8													
9													
10													
11													
12			12.0										

Test pit terminated at 12 feet.
Test Pits backfilled without compaction verification

Lumos and Associates
800 E. College Parkway
Carson City, NV 89706
(775) 883-7077
Fax: (775) 883-7114
mburns@lumosinc.com

Ascenté Geotechnical Investigation

LOG OF EXPLORATORY TEST PIT

Job Number: 9019.004 Date: November 2017

PLATE B-9

TEST PIT No. TP-17

Logged By: **B. Sexton**
Date Logged: **9-21-2017**
Drill Type: **Caterpillar 329 Excavator**

Total Depth: **12 feet**
Water Depth: **No groundwater encountered**
Ground Elev.: **5619.79 feet ±**

Percolation Test | Split Spoon | Ziplock Sample | California Sampler | Bulk Sample | Static Water Table

Depth in Feet	Graphic Log	Sample Type	SOIL DESCRIPTION	Natural Moisture Content, %	Moisture Content, %	Dry Density, pcf	Liquid Limit, %	Plasticity Index, %	Gravel, % (3" - #4 Sieve)	Sand, % (#4 - #200 Sieve)	Fines, % (< #200 Sieve)	R-Value	Expansion Index
1			**Brown Silty SAND (SM),** Dry, Medium Dense. Estimated 10% Medium to Fine Gravel, 60% Coarse to Fine Sand, and 30% Slightly Plastic Silt/Clay.										
2													
3													
4			4.0										
5		B	**Brown Silty SAND with Gravel (SM),** Moist, Medium Dense.	13.2			NP	NP	20.3	53.6	26.0	18	
6													
7													
8													
9													
10													
11													
12			12.0										

Test pit terminated at 12 feet.
Test Pits backfilled without compaction verification

Lumos and Associates
800 E. College Parkway
Carson City, NV 89706
(775) 883-7077
Fax: (775) 883-7114
mburns@lumosinc.com

Ascenté Geotechnical Investigation

LOG OF EXPLORATORY TEST PIT

Job Number: 9019.004
Date: November 2017

PLATE
B-17

TEST PIT No. TP-18

Logged By: **B. Sexton** | Total Depth: **10 feet**
Date Logged: **9-22-2017** | Water Depth: **No groundwater encountered**
Drill Type: **Caterpillar 329 Excavator** | Ground Elev.: **5724.51 feet ±**

Percolation Test | Split Spoon | Ziplock Sample | California Sampler | Bulk Sample | Static Water Table

Depth in Feet	Graphic Log	Sample Type	SOIL DESCRIPTION	Natural Moisture Content, %	Moisture Content, %	Dry Density, pcf	Liquid Limit, %	Plasticity Index, %	Gravel, % (3" - #4 Sieve)	Sand, % (#4 - #200 Sieve)	Fines, % (< #200 Sieve)	R-Value	Expansion Index
0			**Brown Silty SAND (SM),** Dry, Medium Dense, with Roots to 1' Below Existing Grade. Estimated 10% Medium to Fine Gravel, 60% Coarse to Fine Sand, and 30% Slightly Plastic Silt/Clay. 1.0										
1			**Medium to Orange Brown Silty SAND (SM),** Slightly Moist, Dense, Moderately Cemented.										
2		B	Moderately Cemented from 2' to 5'.	5.8			NP	NP	1.3	62.4	36.3		
3													
4													
5			Below 5' Not Cemented and with an Estimated 10% Sub-Angular Cobbles and Boulders to 12" in Diameter.										
6													
7													
8													
9													
10			10.0										

Test pit terminated at 10 feet.
Test Pits backfilled without compaction verification

LUMOS & ASSOCIATES
Lumos and Associates
800 E. College Parkway
Carson City, NV 89706
(775) 883-7077
Fax: (775) 883-7114
mburns@lumosinc.com

Ascenté Geotechnical Investigation

LOG OF EXPLORATORY TEST PIT

Job Number: 9019.004 | Date: November 2017

PLATE B-18

DONNER VILLAGE

LUMOS
& ASSOCIATES

TEST PIT No. TP-01

Logged By:	**B. Sexton**	Total Depth:	**4 feet**
Date Logged:	**9-20-2017**	Water Depth:	**No groundwater encountered**
Drill Type:	**Caterpillar 329 Excavator**	Ground Elev.:	**5378.8 feet ±**

Percolation Test | Split Spoon | Ziplock Sample | California Sampler | Bulk Sample | Static Water Table

Depth in Feet	Graphic Log	Sample Type	SOIL DESCRIPTION	Natural Moisture Content, %	Moisture Content, %	Dry Density, pcf	Liquid Limit, %	Plasticity Index, %	Gravel, % (3" - #4 Sieve)	Sand, % (#4 - #200 Sieve)	Fines, % (< #200 Sieve)	R-Value	Expansion Index
0			Surface has Light Vegetation on it. Directly Below the Surface Cobbles and Boulders were Encountered to a Minimum of 4' in Diameter. Excavator Could Only Get Down to 4' Below Grade Due to the Rock/Bedrock Content.										
1													
2													
3													
4			4.0										

Test pit terminated at 4 feet.
Test Pits backfilled without compaction verification

Lumos and Associates
800 E. College Parkway
Carson City, NV 89706
(775) 883-7077
Fax: (775) 883-7114
mburns@lumosinc.com

Ascenté Geotechnical Investigation

LOG OF EXPLORATORY TEST PIT

Job Number: 9019.004 Date: November 2017

PLATE B-1

TEST PIT No. TP-02

Logged By:	**B. Sexton**	Total Depth:	**12 feet**
Date Logged:	**9-20-2017**	Water Depth:	**No groundwater encountered**
Drill Type:	**Caterpillar 329 Excavator**	Ground Elev.:	**5381.38 feet ±**

Percolation Test | Split Spoon | Ziplock Sample | California Sampler | Bulk Sample | Static Water Table

Depth in Feet	Graphic Log	Sample Type	SOIL DESCRIPTION	Natural Moisture Content, %	Moisture Content, %	Dry Density, pcf	Liquid Limit, %	Plasticity Index, %	Gravel, % (3" - #4 Sieve)	Sand, % (#4 - #200 Sieve)	Fines, % (< #200 Sieve)	R-Value	Expansion Index
1			**Medium Brown Clayey SAND (SC).** Moist, Medium Dense, with Roots to 2' Below Ground Surface. Estimated 10% Unclassifiable Sub-Angular Cobbles and Boulders to 18" in Diameter and 90% Classifiable Material of Which had an Estimated 10% Coarse to Fine Gravel, 60% Coarse to Fine Sand, and 30% Clay.										
2													
3													
4													
5		B											
6													
7													
8													
9													
10			10.0										
10			**Medium Brown Clayey SAND (SC).** Moist, Medium Dense, with No Cobbles and Boulders. Estimated 10% Coarse to Fine Gravel, 60% Coarse to Fine Sand, and 30% Clay.										
11		B											
12			12.0										
			Test pit terminated at 12 feet. Test Pits backfilled without compaction verification										

LUMOS_TP_FULL_PAGE 9019.004 - TEST PITS.GPJ US_LAB.GDT 11/22/17

LUMOS & ASSOCIATES

Lumos and Associates

800 E. College Parkway
Carson City, NV 89706
(775) 883-7077
Fax: (775) 883-7114
mburns@lumosinc.com

Ascenté Geotechnical Investigation

LOG OF EXPLORATORY TEST PIT

Job Number: 9019.004

Date: November 2017

PLATE

B-2

TEST PIT No. TP-03

Logged By:	**B. Sexton**	Total Depth:	**11 feet**
Date Logged:	**9-20-2017**	Water Depth:	**No groundwater encountered**
Drill Type:	**Caterpillar 329 Excavator**	Ground Elev.:	**5391.0 feet ±**

Percolation Test | Split Spoon | Ziplock Sample | California Sampler | Bulk Sample | Static Water Table

Depth in Feet	Graphic Log	Sample Type	SOIL DESCRIPTION	Natural Moisture Content, %	Moisture Content, %	Dry Density, pcf	Liquid Limit, %	Plasticity Index, %	Gravel, % (3" - #4 Sieve)	Sand, % (#4 - #200 Sieve)	Fines, % (< #200 Sieve)	R-Value	Expansion Index
1			**Brown Silty SAND (SM),** Dry, Medium Dense. Estimated 10% Medium to Fine Gravel, 65% Coarse to Fine Sand, and 25% Non-Plastic Silt. 1.0										
2			**Light Orange Brown Silty SAND (SM),** Dry to Slightly Moist, Medium Dense to Dense. Estimated 5% Medium to Fine Gravel, 70% Coarse to Fine Sand, and 25% Slightly Plastic Silt/Clay. A White "Ash" Layer from 2' to 2.5'.										
5		B											
11			11.0										

Test pit terminated at 11 feet.
Test Pits backfilled without compaction verification

Lumos and Associates
800 E. College Parkway
Carson City, NV 89706
(775) 883-7077
Fax: (775) 883-7114
mburns@lumosinc.com

Ascenté Geotechnical Investigation

LOG OF EXPLORATORY TEST PIT

Job Number: 9019.004 Date: November 2017

PLATE B-3

TEST PIT No. TP-04

Logged By: **B. Sexton**
Date Logged: **9-22-2017**
Drill Type: **Caterpillar 329 Excavator**

Total Depth: **12 feet**
Water Depth: **No groundwater encountered**
Ground Elev.: **5401.62 feet ±**

Percolation Test | Split Spoon | Ziplock Sample
California Sampler | Bulk Sample | Static Water Table

Depth in Feet	Graphic Log	Sample Type	SOIL DESCRIPTION	Natural Moisture Content, %	Moisture Content, %	Dry Density, pcf	Liquid Limit, %	Plasticity Index, %	Gravel, % (3" - #4 Sieve)	Sand, % (#4 - #200 Sieve)	Fines, % (< #200 Sieve)	R-Value	Expansion Index
1			**Orange Brown Silty SAND (SM),** Dry, Medium Dense to Dense. Estimated 5% Medium to Fine Gravel, 70% Coarse to Fine Sand, and 25% Slightly Plastic Silt/Clay.										
2		B	Weakly Cemented from 2' to 4'.										
3													
4													
5													
6													
7													
8													
9													
10													
11													
12			12.0										

Test pit terminated at 12 feet.
Test Pits backfilled without compaction verification

LUMOS_TP_FULL_PAGE 9019.004 - TEST PITS.GPJ US_LAB.GDT 11/22/17

Lumos and Associates
800 E. College Parkway
Carson City, NV 89706
(775) 883-7077
Fax: (775) 883-7114
mburns@lumosinc.com

Ascenté Geotechnical Investigation

LOG OF EXPLORATORY TEST PIT

Job Number: 9019.004
Date: November 2017

PLATE
B-4

TEST PIT No. TP-05

Logged By:	**B. Sexton**	Total Depth:	**12 feet**
Date Logged:	**9-22-2017**	Water Depth:	**No groundwater encountered**
Drill Type:	**Caterpillar 329 Excavator**	Ground Elev.:	**5411.27 feet ±**

Percolation Test | Split Spoon | Ziplock Sample | California Sampler | Bulk Sample | Static Water Table

Depth in Feet	Graphic Log	Sample Type	SOIL DESCRIPTION	Natural Moisture Content, %	Moisture Content, %	Dry Density, pcf	Liquid Limit, %	Plasticity Index, %	Gravel, % (3" - #4 Sieve)	Sand, % (#4 - #200 Sieve)	Fines, % (< #200 Sieve)	R-Value	Expansion Index
1			**Medium Brown Silty SAND (SM).** Dry, Medium Dense, with Roots to 2' Below Ground Surface. Estimated 10% Medium to Fine Gravel, 60% Coarse to Fine Sand, and 30% Non-Plastic Silt.										
2			2.0										
3			**Medium Brown Clayey SAND (SC).** Moist, Medium Dense. Estimated 10% Unclassifiable Sub-Angular Cobbles and Boulders to 18" in Diameter and 90% Classifiable Material.										
4		B		13.3			32	9	12.0	56.1	29.7		9
5													
6													
7													
8													
9													
10													
11													
12			12.0										

Test pit terminated at 12 feet.
Test Pits backfilled without compaction verification

LUMOS & ASSOCIATES

Lumos and Associates
800 E. College Parkway
Carson City, NV 89706
(775) 883-7077
Fax: (775) 883-7114
mburns@lumosinc.com

Ascenté Geotechnical Investigation

LOG OF EXPLORATORY TEST PIT

Job Number: 9019.004 Date: November 2017

PLATE

B-5

TEST PIT No. TP-06

Logged By:	**B. Sexton**	Total Depth:	**10 feet**
Date Logged:	**9-22-2017**	Water Depth:	**No groundwater encountered**
Drill Type:	**Caterpillar 329 Excavator**	Ground Elev.:	**5421.63 feet ±**

Percolation Test | Split Spoon | Ziplock Sample | California Sampler | Bulk Sample | Static Water Table

Depth in Feet	Graphic Log	Sample Type	SOIL DESCRIPTION	Natural Moisture Content, %	Moisture Content, %	Dry Density, pcf	Liquid Limit, %	Plasticity Index, %	Gravel, % (3" - #4 Sieve)	Sand, % (#4 - #200 Sieve)	Fines, % (< #200 Sieve)	R-Value	Expansion Index
1		B	**Medium Brown Silty SAND (SM),** Dry, Medium Dense, with Roots to 2' Below Ground Surface.	4.8			NP	NP	4.9	71.3	23.8		7
2													
3			3.5										
4			**Red Brown Silty GRAVEL with Sand (GM),** Dry to Slightly Moist, Dense. Estimated 20% Unclassifiable Sub-Angular Cobbles and Boulders to 18" in Diameter and 80% Classifiable Material of Which had an Estimated 40% Coarse to Fine Sub-Angular Gravel, 40% Coarse to Fine Sand, and 20% Slightly Plastic Silt/Clay.										
5			Due to High Rock Content in Test Pit, Excavation was Difficult.										
6		B											
7													
8													
9													
10			10.0										

Test pit terminated at 10 feet.
Test Pits backfilled without compaction verification

Lumos and Associates
800 E. College Parkway
Carson City, NV 89706
(775) 883-7077
Fax: (775) 883-7114
mburns@lumosinc.com

Ascenté Geotechnical Investigation

LOG OF EXPLORATORY TEST PIT

Job Number: 9019.004 Date: November 2017

PLATE B-6

TEST PIT No. TP-07

Logged By: **B. Sexton**
Date Logged: **9-22-2017**
Drill Type: **Caterpillar 329 Excavator**
Total Depth: **12 feet**
Water Depth: **No groundwater encountered**
Ground Elev.: **5529.16 feet ±**

Percolation Test | Split Spoon | Ziplock Sample | California Sampler | Bulk Sample | Static Water Table

Depth in Feet	Graphic Log	Sample Type	SOIL DESCRIPTION	Natural Moisture Content, %	Moisture Content, %	Dry Density, pcf	Liquid Limit, %	Plasticity Index, %	Gravel, % (3" - #4 Sieve)	Sand, % (#4 - #200 Sieve)	Fines, % (< #200 Sieve)	R-Value	Expansion Index
1			**Light to Medium Brown Silty SAND with Gravel (SM),** Dry, Medium Dense, with Roots to 2' Below Ground Surface. Estimated 20% Unclassifiable Sub-Angular to Angular Cobbles and Boulders to 36" in Diameter and 80% Classifiable Material.										
2		B		6.5			NP	NP	19.7	47.5	26.3		
3													
4													
5			5.0										
6		B	**Light Brown Silty GRAVEL with Sand (GM),** Dry to Slightly Moist, Dense, and Moderately Cemented. Estimated 20% Unclassifiable Sub-Angular Cobbles and Boulders to 24" in Diameter and 80% Classifiable Material of Which had an Estimated 40% Coarse to Fine Sub-Angular Gravel, 40% Coarse to Fine Sand, and 20% Slightly Plastic Silt/Clay.										
7													
8													
9													
10													
11													
12			12.0										

Test pit terminated at 12 feet.
Test Pits backfilled without compaction verification

LUMOS_TP_FULL_PAGE 9019.004 - TEST PITS.GPJ US_LAB.GDT 11/22/17

LUMOS & ASSOCIATES
Lumos and Associates
800 E. College Parkway
Carson City, NV 89706
(775) 883-7077
Fax: (775) 883-7114
mburns@lumosinc.com

Ascenté Geotechnical Investigation

LOG OF EXPLORATORY TEST PIT

Job Number: 9019.004
Date: November 2017

PLATE
B-7

TEST PIT No. TP-15

Logged By:	**B. Sexton**	Total Depth:	**10 feet**
Date Logged:	**9-22-2017**	Water Depth:	**No groundwater encountered**
Drill Type:	**Caterpillar 329 Excavator**	Ground Elev.:	**5399.84 feet ±**

Percolation Test | Split Spoon | Ziplock Sample | California Sampler | Bulk Sample | Static Water Table

Depth in Feet	Graphic Log	Sample Type	SOIL DESCRIPTION	Natural Moisture Content, %	Moisture Content, %	Dry Density, pcf	Liquid Limit, %	Plasticity Index, %	Gravel, % (3" - #4 Sieve)	Sand, % (#4 - #200 Sieve)	Fines, % (< #200 Sieve)	R-Value	Expansion Index
0			**Brown Silty SAND with Gravel (SM).** Dry, Medium Dense. Estimated 10% Unclassifiable Sub-Angular Cobbles and Boulders to 24" in Diameter and 90% Classifiable Material of Which had an Estimated 25% Medium to Fine Gravel, 55% Coarse to Fine Sand, and 20% Slightly Plastic Silt/Clay.										
2.0			**Light to Medium Brown Silty SAND with Gravel (SM).** Dry to Slightly Moist, Medium Dense to Dense. Moderately Cemented from 2' to 4'.										
4		B		9.1			NP	NP	27.2	56.0	16.9		
10.0			Test pit terminated at 10 feet. Test Pits backfilled without compaction verification										

LUMOS_TP_FULL_PAGE 9019.004 - TEST PITS.GPJ US_LAB.GDT 11/22/17

LUMOS & ASSOCIATES

Lumos and Associates

800 E. College Parkway
Carson City, NV 89706
(775) 883-7077
Fax: (775) 883-7114
mburns@lumosinc.com

Ascenté Geotechnical Investigation

LOG OF EXPLORATORY TEST PIT

Job Number: 9019.004

Date: November 2017

PLATE

B-15

TEST PIT No. TP-16

Logged By:	**B. Sexton**	Total Depth:	**8 feet**
Date Logged:	**9-22-2017**	Water Depth:	**No groundwater encountered**
Drill Type:	**Caterpillar 329 Excavator**	Ground Elev.:	**5455.39 feet ±**

Percolation Test | Split Spoon | Ziplock Sample | California Sampler | Bulk Sample | Static Water Table

Depth in Feet	Graphic Log	Sample Type	SOIL DESCRIPTION	Natural Moisture Content, %	Moisture Content, %	Dry Density, pcf	Liquid Limit, %	Plasticity Index, %	Gravel, % (3" - #4 Sieve)	Sand, % (#4 - #200 Sieve)	Fines, % (< #200 Sieve)	R-Value	Expansion Index
0			**Brown Clayey SAND (SC),** Dry, Medium Dense. Estimated 20% Unclassifiable Sub-Angular Cobbles and Boulders to 24" in Diameter and 80% Classifiable Material of Which had an Estimated10% Medium to Fine Gravel, 60% Coarse to Fine Sand, and 30% Slightly Plastic Silt/Clay. Surface Boulders to at Least 48" in Diameter.										
2.5			**Pinkish Brown Clayey SAND (SC),** Slightly Moist, Dense to Very Dense, Moderately to Strongly Cemented.										
3		B		13.2			37	15	9.5	65.3	25.2	7	12
4			Very Difficult Excavation of the Test Pit in this Layer.										
8.0			Test pit terminated at 8 feet. Test Pits backfilled without compaction verification										

LUMOS_TP_FULL_PAGE 9019.004 - TEST PITS.GPJ US_LAB.GDT 11/22/17

Lumos and Associates
800 E. College Parkway
Carson City, NV 89706
(775) 883-7077
Fax: (775) 883-7114
mburns@lumosinc.com

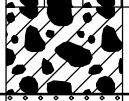
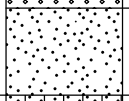
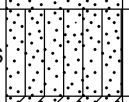
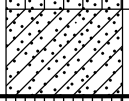
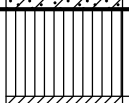
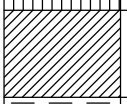
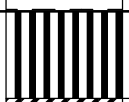
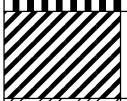
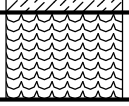
Ascenté Geotechnical Investigation

LOG OF EXPLORATORY TEST PIT

Job Number: 9019.004 Date: November 2017

PLATE B-16

SOIL CLASSIFICATION CHART

MAJOR DIVISIONS			SYMBOLS		TYPICAL DESCRIPTIONS
			GRAPH	LETTER	
COARSE GRAINED SOILS MORE THAN 50% OF MATERIAL IS LARGER THAN NO. 200 SIEVE SIZE	GRAVEL AND GRAVELLY SOILS MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	CLEAN GRAVELS (LITTLE OR NO FINES)		GW	WELL-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
				GP	POORLY-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
		GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)		GM	SILTY GRAVELS, GRAVEL - SAND - SILT MIXTURES
				GC	CLAYEY GRAVELS, GRAVEL - SAND - CLAY MIXTURES
	SAND AND SANDY SOILS MORE THAN 50% OF COARSE FRACTION PASSING ON NO. 4 SIEVE	CLEAN SANDS (LITTLE OR NO FINES)		SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
				SP	POORLY-GRADED SANDS, GRAVELLY SAND, LITTLE OR NO FINES
		SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)		SM	SILTY SANDS, SAND - SILT MIXTURES
				SC	CLAYEY SANDS, SAND - CLAY MIXTURES
FINE GRAINED SOILS MORE THAN 50% OF MATERIAL IS SMALLER THAN NO. 200 SIEVE SIZE	SILTS AND CLAYS	LIQUID LIMIT LESS THAN 50		ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS	LIQUID LIMIT GREATER THAN 50		MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILTY SOILS
				CH	INORGANIC CLAYS OF HIGH PLASTICITY
				OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS				PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

NOTE: DUAL SYMBOLS ARE USED TO INDICATE BORDERLINE SOIL CLASSIFICATIONS

Other Tests

AN	ANALYTICAL TEST (pH, Soluble Sulfate, and Resistivity)
C	CONSOLIDATION TEST
DS	DIRECT SHEAR TEST
MD	MOISTURE DENSITY CURVE

LUMOS & ASSOCIATES

Lumos and Associates

800 E. College Parkway
Carson City, NV 89706
(775) 883-7077
Fax: (775) 883-7114
mburns@lumosinc.com

Ascenté Geotechnical Investigation

LEGEND

Job Number: 9019.004

Date: November 2017

PLATE

B-21

APPENDIX C

LUMOS & ASSOCIATES

SIERRA VILLAGE

LUMOS
& ASSOCIATES

Sheet **1** of **1**

BORING No. B-01

Logged By: **B. Sexton**
Date Logged: **9-27-2017**
Drill Type: **Truck Mounted Jefco Speed Star 55**

Total Depth: **21.5 feet**
Water Depth: **No groundwater encountered**
Ground Elev.: **5463.41 feet ±**

Shelby Tube | Split Spoon | Ziplock Sample | Modified California | Bulk Sample | Static Water Table

Depth in Feet	Graphic Log	Sample Type	SOIL DESCRIPTION	Blows/Foot	Moisture Content, %	Dry Unit Weight, pcf	Liquid Limit, %	Plasticity Index, %	Gravel, % (3" - #4 Sieve)	Sand, % (#4 - #200 Sieve)	Fines, % (< #200 Sieve)	Expansion Index	R-Value
0			**Light to Medium Brown Clayey SAND (SC),** Dry, Very Dense. Estimated 10% Medium to Fine Gravel, 60% Coarse to Fine Sand, and 30% Clay.										
		B											
5				36									
			10.0										
10			**Light to Medium Brown Silty SAND (SM),** Slightly Moist, Dense. Estimated 5% Fine Gravel, 65% Coarse to Fine Sand, and 30% Non-Plastic Silt.	*17									
			Sample had Gravel to 1" in Diameter.										
15				16									
			20.0										
20			**Light Brown Poorly Graded SAND (SP),** Slightly Moist, Medium Dense.	*15			NP	NP	4	91	5		
			21.5										

*Blows/Foot - Modified California Sampler.
Boring terminated at 21.5 feet.
Boring backfilled with grout or excavated soils and tamped at the surface

LUMOS_LOG_ST_BORING_9019.004 - BORINGS.GPJ US_LAB.GDT 11/22/17

Lumos and Associates
800 E. College Parkway
Carson City, NV 89706
(775) 883-7077
Fax: (775) 883-7114
mburns@lumosinc.com

Ascenté Geotechnical Investigation

LOG OF EXPLORATION

Job Number: 9019.004 Date: November 2017

PLATE C-1

Sheet **1** of **1**

BORING No. B-02

Logged By: **B. Sexton**
Date Logged: **9-27-2017**
Drill Type: **Truck Mounted Jefco Speed Star 55**

Total Depth: **21.5 feet**
Water Depth: **No groundwater encountered**
Ground Elev.: **5456.33 feet ±**

Shelby Tube | Split Spoon | Ziplock Sample | Modified California | Bulk Sample (B) | Static Water Table

Depth in Feet	Graphic Log	Sample Type	SOIL DESCRIPTION	Blows/Foot	Moisture Content, %	Dry Unit Weight, pcf	Liquid Limit, %	Plasticity Index, %	Gravel, % (3" - #4 Sieve)	Sand, % (#4 - #200 Sieve)	Fines, % (< #200 Sieve)	Expansion Index	R-Value
0			**Light to Medium Brown Clayey SAND (SC),** Dry, Medium Dense to Dense. Estimated 10% Medium to Fine Gravel, 60% Coarse to Fine Sand, and 30% Clay. An Abundant Amount of Surface Boulders to at Least 48" in Diameter are in and Around this Boring.										
5		B	Up to 1 3/4" Gravel at 5' Found in the Sample.	*12									
10				15									
15			15.0 **Medium Brown Silty SAND (SM),** Moist, Dense. During Drilling the Auger was Drilling Through an Approximate 24" Diameter Boulder from 18' to 20'.	*19			NP	NP	1	69	30		
20			20.0 **Reddish Brown Clayey SAND with Gravel (SC),** Moist, Very Dense. Estimated 30% Coarse to Fine Gravel, 40% Coarse to Fine Sand, and 30% Clay. The Reddish Colored Rock was Highly Weathered.	59									
			21.5										

*Blows/Foot - Modified California Sampler.
Boring terminated at 21.5 feet.
Boring backfilled with grout or excavated soils and tamped at the surface

LUMOS_LOG_ST_BORING_9019.004 - BORINGS.GPJ US_LAB.GDT 11/22/17

LUMOS & ASSOCIATES
Lumos and Associates
800 E. College Parkway
Carson City, NV 89706
(775) 883-7077
Fax: (775) 883-7114
mburns@lumosinc.com

Ascenté Geotechnical Investigation

LOG OF EXPLORATION

Job Number: 9019.004
Date: November 2017

PLATE
C-2

TIOGA VILLAGE

LUMOS
& ASSOCIATES

Sheet **1** of **1**

BORING No. B-06

Logged By: **B. Sexton**
Date Logged: **10-4-2017**
Drill Type: **Track Mounted CME 850**

Total Depth: **41.5 feet**
Water Depth: **No groundwater encountered**
Ground Elev.: **5640.31 feet ±**

Shelby Tube | Split Spoon | Ziplock Sample | Modified California | Bulk Sample | Static Water Table

Depth in Feet	Graphic Log	Sample Type	SOIL DESCRIPTION	Blows/Foot	Moisture Content, %	Dry Unit Weight, pcf	Liquid Limit, %	Plasticity Index, %	Gravel, % (3" - #4 Sieve)	Sand, % (#4 - #200 Sieve)	Fines, % (< #200 Sieve)	Expansion Index	R-Value
0			**Light to Medium Brown Clayey SAND (SC),** Dry to Slightly Moist, Very Dense. Estimated 10% Medium to Fine Gravel, 60% Coarse to Fine Sand, and 30% Clay.										
5		B		48									
10				44									
15			With Gravel at 15'.	100+									
20			Highly Weathered Rock with Quartz in it at 20'.	*100+									
25				*100+									
30				*56									
35			35.0	*36			NP	NP	18	62	20		
			Brown Silty SAND with Gravel (SM), Slightly Moist, Very Dense. 36.3										
			Light to Medium Brown Clayey SAND (SC), Moist, Very Dense. Estimated 10% Medium to Fine Gravel, 60% Coarse to Fine Sand, and 30% Clay. 40.0										
40			41.5	60									
			Reddish Brown Clayey SAND (SC), Dry to Slightly Moist, Very Dense, and Rock is Severely Weathered. Estimated 10% Medium to Fine Gravel, 60% Coarse to Fine Sand, and 30% Clay.										

*Blows/Foot - Modified California Sampler.
Boring terminated at 41.5 feet.
Boring backfilled with grout or excavated soils and tamped at the surface

LUMOS_LOG_ST_BORING 9019.004 - BORINGS.GPJ US_LAB.GDT 11/22/17

Lumos and Associates
800 E. College Parkway
Carson City, NV 89706
(775) 883-7077
Fax: (775) 883-7114
mburns@lumosinc.com

Ascenté Geotechnical Investigation

LOG OF EXPLORATION

Job Number: 9019.004 Date: November 2017

PLATE

C-6

Sheet **1** of **1**

BORING No. B-07

Logged By: **B. Sexton**
Date Logged: **10-5-2017**
Drill Type: **Track Mounted CME 850**

Total Depth: **16 feet**
Water Depth: **No groundwater encountered**
Ground Elev.: **5609.07 feet ±**

Shelby Tube | Split Spoon | Ziplock Sample | California | Bulk Sample | Static Water Table

Depth in Feet	Graphic Log	Sample Type	SOIL DESCRIPTION	Blows/Foot	Moisture Content, %	Dry Unit Weight, pcf	Liquid Limit, %	Plasticity Index, %	Gravel, % (3" - #4 Sieve)	Sand, % (#4 - #200 Sieve)	Fines, % (< #200 Sieve)	Expansion Index	R-Value
		B	**Light Brown Clayey SAND (SC),** Dry, Medium Dense. Estimated 10% Medium to Fine Gravel, 60% Coarse to Fine Sand, and 30% Clay. Rock Encountered at 2', Drilled Approximately 1 Hour and got to 3'. Decided to Switch to Coring. 3.0										
			10" of Recovery, Gray Rock with Both Vertical and Approximate 45° Angle Fractures, 0 RQD = Completely Weathered Rock 5.0										
5			20" of Recovery, Gray Rock with Both Vertical and Approximate 45° Angle Fractures, 0 RQD = Completely Weathered Rock 7.0										
			13" of Recovery, Gray Rock with Both Vertical and Approximate 45° Angle Fractures, 0 RQD = Completely Weathered Rock 10.0										
10			9" of Recovery, Gray Rock with Approximate 45° Angle Fractures, 0 RQD = Completely Weathered Rock 12.0										
			21" of Recovery, Gray Rock with Approximate 45° Angle Fractures, 0 RQD = Completely Weathered Rock 14.0										
			7" of Recovery, Gray Rock with Approximate 45° Angle Fractures, 33% RQD = Weathered Rock 15.0										
15			11" of Recovery, Gray Rock with Approximate 45° Angle Fractures, 0 RQD = Completely Weathered Rock 16.0 Decided to Stop Coring at 16', Due to the Excessive Amount of Trips in and Out for the Highly Fractured Rock.										

*Blows/Foot - Modified California Sampler.
Boring terminated at 16 feet.
Boring backfilled with grout or excavated soils and tamped at the surface

LUMOS_LOG_ST_BORING_9019.004 - BORINGS.GPJ US_LAB.GDT 11/22/17

LUMOS & ASSOCIATES
Lumos and Associates
800 E. College Parkway
Carson City, NV 89706
(775) 883-7077
Fax: (775) 883-7114
mburns@lumosinc.com

Ascenté Geotechnical Investigation

LOG OF EXPLORATION

Job Number: 9019.004
Date: November 2017

PLATE
C-7

Sheet **1** of **1**

BORING No. B-08

Logged By: **B. Sexton**
Date Logged: **10-6-2017**
Drill Type: **Track Mounted CME 850**

Total Depth: **40 feet**
Water Depth: **No groundwater encountered**
Ground Elev.: **5670.42 feet ±**

Shelby Tube | Split Spoon | Ziplock Sample | California | Bulk Sample | Static Water Table

Depth in Feet	Graphic Log	Sample Type	SOIL DESCRIPTION	Blows/Foot	Moisture Content, %	Dry Unit Weight, pcf	Liquid Limit, %	Plasticity Index, %	Gravel, % (3" - #4 Sieve)	Sand, % (#4 - #200 Sieve)	Fines, % (< #200 Sieve)	Expansion Index	R-Value
0		B	**Light Brown Clayey SAND (SC),** Dry, Very Dense. Estimated 10% Medium to Fine Gravel, 60% Coarse to Fine Sand, and 30% Clay.										
			Rock Encountered at 4', Drilled Approximately 1/2 Hour and got to 5'. Decided to Switch to Coring. 5.0	100+									
5			37" of Recovery, Gray Rock with Approximate 45° Angle Fractures and some Small Roots, 29% RQD = Weathered Rock. Additionally, if there was any "soil" left after coring is was Similar to a Clayey SAND (SC). 10.0										
10			20" of Recovery, Gray Rock with Approximate 45° Angle Fractures, 0 RQD = Completely Weathered Rock 15.0										
15			15" of Recovery, Gray Rock with Approximate 45° Angle Fractures, 15% RQD = Completely Weathered Rock 20.0										
20			48" of Recovery, Gray Rock with Approximate 30° Angle Fractures, 53% RQD = Moderately Weathered Rock 25.0										
25			14" of Recovery, Gray Rock with Approximate 45° Angle Fractures, 21% RQD = Completely Weathered Rock 27.0										
			24" of Recovery, Gray Rock with Approximate 45° Angle Fractures, 25% RQD = Completely Weathered Rock 29.0										
30			3" of Recovery, Gray Rock with No Noted Fractures do Small Rock Size, 0 RQD = Completely Weathered Rock 30.0										
			6" of Recovery, Gray Rock with No Noted Fractures do Small Rock Size, 0 RQD = Completely Weathered Rock 32.0										
35			10" of Recovery, Gray Rock with No Noted Fractures do Small Rock Size, 0 RQD = Completely Weathered Rock 34.0										
			23" of Recovery, Gray Rock with both Vertical and Approximate 45° Angle Fractures, 0 RQD = Completely Weathered Rock 40.0										
40													

*Blows/Foot - Modified California Sampler.
Boring terminated at 40 feet.
Boring backfilled with grout or excavated soils and tamped at the surface

LUMOS_LOG_ST_BORING_9019.004 - BORINGS.GPJ US_LAB.GDT 11/22/17

Lumos and Associates
800 E. College Parkway
Carson City, NV 89706
(775) 883-7077
Fax: (775) 883-7114
mburns@lumosinc.com

Ascenté Geotechnical Investigation

LOG OF EXPLORATION

Job Number: 9019.004 Date: November 2017

PLATE

C-8

Sheet **1** of **1**

BORING No. B-09

Logged By: **B. Sexton**
Date Logged: **10-9-2017**
Drill Type: **Track Mounted CME 850**

Total Depth: **30 feet**
Water Depth: **No groundwater encountered**
Ground Elev.: **5728.81 feet ±**

Shelby Tube | Split Spoon | Ziplock Sample | California | Bulk Sample | Static Water Table

Depth in Feet	Graphic Log	Sample Type	SOIL DESCRIPTION	Blows/Foot	Moisture Content, %	Dry Unit Weight, pcf	Liquid Limit, %	Plasticity Index, %	Gravel, % (3" - #4 Sieve)	Sand, % (#4 - #200 Sieve)	Fines, % (< #200 Sieve)	Expansion Index	R-Value
			Light Brown Clayey SAND (SC), Dry, Medium Dense. Estimated 10% Medium to Fine Gravel, 60% Coarse to Fine Sand, and 30% Clay. Rock Encountered at 1.5', Drilled Approximately 40 Minutes and got to 3'. Decided to Switch to Coring.										
			9" of Recovery, Gray Rock with Approximate 45° Angle Fractures, 0 RQD = Completely Weathered Rock										
5			12" of Recovery, Red and Gray Rock with Approximate 45° Angle Fractures, 0 RQD = Completely Weathered Rock										
10			11" of Recovery, Red and Gray Rock with Approximate 45° Angle Fractures, 7% RQD = Completely Weathered Rock. Additionally, the RQD was in the Red Colored Rock.										
15			6" of Recovery, Red and Gray Rock with No Noted Fractures do Small Rock Size, 0 RQD = Completely Weathered Rock										
20			After the 20' Elevation, the Driller Pulled out of the Hole to Check the Bit, it was Worn Out, He Changed it. When the Driller was Tripping Back into the Hole, the Hole had caved in to 10' Below Ground Surface. Therefore, he had to "recore" from 10' to 20'. After Getting Back Down to 20', We Continued Coring to 25'. No Sample was Recovered for this Section.										
25			10" of Recovery, Red and Gray Rock with No Noted Fractures do Small Rock Size, 0 RQD = Completely Weathered Rock "Sandy" Material was within the Barrel Section. This was caused by the mixing of the drilling fluid and the existing material. The driller attempted to "flush out" the sandy material. After 2 times of trying and over and hour to do this, I decided to stop the coring. The Material was too heavy to flush out and cause the coring to not work.										
30													

3.0
5.0
10.0
15.0
20.0
25.0
30.0

*Blows/Foot - Modified California Sampler.
Boring terminated at 30 feet.
Boring backfilled with grout or excavated soils and tamped at the surface

LUMOS_LOG_ST_BORING_9019.004 - BORINGS.GPJ US_LAB.GDT 11/22/17

Lumos and Associates
800 E. College Parkway
Carson City, NV 89706
(775) 883-7077
Fax: (775) 883-7114
mburns@lumosinc.com

Ascenté Geotechnical Investigation

LOG OF EXPLORATION

Job Number: 9019.004
Date: November 2017

PLATE
C-9

Sheet **1** of **1**

BORING No. B-10

Logged By: **B. Sexton**
Date Logged: **10-10-2017**
Drill Type: **Track Mounted CME 850**

Total Depth: **20 feet**
Water Depth: **No groundwater encountered**
Ground Elev.: **5917.57 feet ±**

Shelby Tube | Split Spoon | Ziplock Sample | Modified California | Bulk Sample | Static Water Table

Depth in Feet	Graphic Log	Sample Type	SOIL DESCRIPTION	Blows/Foot	Moisture Content, %	Dry Unit Weight, pcf	Liquid Limit, %	Plasticity Index, %	Gravel, % (3" - #4 Sieve)	Sand, % (#4 - #200 Sieve)	Fines, % (< #200 Sieve)	Expansion Index	R-Value
5		B	**Light Brown Silty SAND (SM),** Dry, Very Dense. Estimated 10% Medium to Fine Gravel, 60% Coarse to Fine Sand, and 30% Non-Plastic Silt.	64									
			7.0										
10		B	**Light to Medium Brown Clayey SAND (SC),** Dry, Medium Dense. Estimated 10% Medium to Fine Gravel, 60% Coarse to Fine Sand, and 30% Clay.	*16									
			11.2										
15			**Whiteish Brown Well-Graded SAND with Silt and Gravel (SW-SM),** Slightly Moist, Medium Dense to Dense.	22			NP	NP	27	63	10		
			19.0										
20			Rock Encountered at 19', Drilled Approximately 20 Minutes and got to 20'. Performed a Split Spoon Sample at 20', with No Recovery.	100+									
			20.5										

*Blows/Foot - Modified California Sampler.
Boring terminated at 20 feet.
Boring backfilled with grout or excavated soils and tamped at the surface

LUMOS_LOG_ST_BORING_9019.004 - BORINGS.GPJ US_LAB.GDT 11/22/17

LUMOS & ASSOCIATES

Lumos and Associates
800 E. College Parkway
Carson City, NV 89706
(775) 883-7077
Fax: (775) 883-7114
mburns@lumosinc.com

Ascenté Geotechnical Investigation

LOG OF EXPLORATION

Job Number: 9019.004
Date: November 2017

PLATE
C-10

Sheet **1** of **1**

BORING No. B-11

Logged By: **B. Sexton**
Date Logged: **10-10-2017**
Drill Type: **Track Mounted CME 850**

Total Depth: **21.5 feet**
Water Depth: **No groundwater encountered**
Ground Elev.: **5739.11 feet ±**

Shelby Tube | Split Spoon | Ziplock Sample | Modified California | Bulk Sample | Static Water Table

Depth in Feet	Graphic Log	Sample Type	SOIL DESCRIPTION	Blows/Foot	Moisture Content, %	Dry Unit Weight, pcf	Liquid Limit, %	Plasticity Index, %	Gravel, % (3" - #4 Sieve)	Sand, % (#4 - #200 Sieve)	Fines, % (< #200 Sieve)	Expansion Index	R-Value
0		B	**Light Brown Clayey SAND (SC),** Dry, Dense. Estimated 10% Medium to Fine Gravel, 60% Coarse to Fine Sand, and 30% Clay.										
5			Color Change to Reddish Brown at 5'.	25									
10			10.0 **Yellowish Brown Silty SAND with Gravel (SM),** Slightly Moist, Very Dense.	69									
15				*42			NP	NP	15	66	19		
20				51									
			21.5										

*Blows/Foot - Modified California Sampler.
Boring terminated at 21.5 feet.
Boring backfilled with grout or excavated soils and tamped at the surface

LUMOS_LOG_ST_BORING_9019.004 - BORINGS.GPJ US_LAB.GDT 11/22/17

Lumos and Associates
800 E. College Parkway
Carson City, NV 89706
(775) 883-7077
Fax: (775) 883-7114
mburns@lumosinc.com

Ascenté Geotechnical Investigation

LOG OF EXPLORATION

Job Number: 9019.004 Date: November 2017

PLATE C-11

Sheet **1** of **1**

BORING No. B-12

Logged By: **B. Sexton**
Date Logged: **10-10-2017**
Drill Type: **Track Mounted CME 850**

Total Depth: **21.5 feet**
Water Depth: **No groundwater encountered**
Ground Elev.: **5731.87 feet ±**

Shelby Tube | Split Spoon | Ziplock Sample | Modified California | Bulk Sample | Static Water Table

Depth in Feet	Graphic Log	Sample Type	SOIL DESCRIPTION	Blows/Foot	Moisture Content, %	Dry Unit Weight, pcf	Liquid Limit, %	Plasticity Index, %	Gravel, % (3" - #4 Sieve)	Sand, % (#4 - #200 Sieve)	Fines, % (< #200 Sieve)	Expansion Index	R-Value
0		B	**Light Brown Clayey SAND (SC),** Dry, Very Dense. Estimated 10% Medium to Fine Gravel, 60% Coarse to Fine Sand, and 30% Clay.										
5				60									
10													
			Light to Medium Brown Clayey SAND with Gravel (SC), Moist, Dense. Estimated 20% Medium to Fine Gravel, 60% Coarse to Fine Sand, and 20% Clay.	18									
15													
			Yellowish Brown Clayey SAND with Gravel (SC), Moist, Very Dense.	*45			27	10	38	40	22		
20													
			Orange Brown Clayey SAND (SC), Moist, Very Dense. Estimated 10% Medium to Fine Gravel, 60% Coarse to Fine Sand, and 30% Clay.	53									
			21.5										

*Blows/Foot - Modified California Sampler.
Boring terminated at 21.5 feet.
Boring backfilled with grout or excavated soils and tamped at the surface

LUMOS_LOG_ST_BORING_9019.004 - BORINGS.GPJ US_LAB.GDT 11/22/17

Lumos and Associates
800 E. College Parkway
Carson City, NV 89706
(775) 883-7077
Fax: (775) 883-7114
mburns@lumosinc.com

Ascenté Geotechnical Investigation

LOG OF EXPLORATION

Job Number: 9019.004
Date: November 2017

PLATE
C-12

Sheet **1** of **1**

BORING No. B-13

Logged By: **B. Sexton**
Date Logged: **10-11-2017**
Drill Type: **Track Mounted CME 850**

Total Depth: **21.5 feet**
Water Depth: **No groundwater encountered**
Ground Elev.: **5750.88 feet ±**

Shelby Tube | Split Spoon | Ziplock Sample | Modified California | Bulk Sample | Static Water Table

Depth in Feet	Graphic Log	Sample Type	SOIL DESCRIPTION	Blows/Foot	Moisture Content, %	Dry Unit Weight, pcf	Liquid Limit, %	Plasticity Index, %	Gravel, % (3" - #4 Sieve)	Sand, % (#4 - #200 Sieve)	Fines, % (< #200 Sieve)	Expansion Index	R-Value
		B	**Light Brown Clayey SAND (SC),** Dry, Very Dense. Estimated 10% Medium to Fine Gravel, 60% Coarse to Fine Sand, and 30% Clay.										
			5.0										
5			**Yellowish Brown Silty SAND with Gravel (SM),** Slightly Moist, Very Dense. Estimated 15% Medium to Fine Gravel, 65% Coarse to Fine Sand, and 20% Non-Plastic Silt.	71									
10			A Reddish Colored Vein in the Sample at 10'.	*52									
15			Color Change to Reddish Brown.	85									
			18.0										
			Rock Encountered at 18', Drilled to 20.5'. Only a small rock was recovered from the sample spoon.										
20		Z	20.5	100+									

*Blows/Foot - Modified California Sampler.
Boring terminated at 21.5 feet.
Boring backfilled with grout or excavated soils and tamped at the surface

LUMOS_LOG_ST_BORING_9019.004 - BORINGS.GPJ US_LAB.GDT 11/22/17

Lumos and Associates
800 E. College Parkway
Carson City, NV 89706
(775) 883-7077
Fax: (775) 883-7114
mburns@lumosinc.com

Ascenté Geotechnical Investigation

LOG OF EXPLORATION

Job Number: 9019.004
Date: November 2017

PLATE
C-13

DONNER VILLAGE

LUMOS
& ASSOCIATES

Sheet **1** of **1**

BORING No. B-03

Logged By: **B. Sexton**
Date Logged: **9-29-2017**
Drill Type: **Truck Mounted Jefco Speed Star 55**

Total Depth: **20 feet**
Water Depth: **No groundwater encountered**
Ground Elev.: **5403.58 feet ±**

Shelby Tube | Split Spoon | Ziplock Sample | Modified California | Bulk Sample | Static Water Table

Depth in Feet	Graphic Log	Sample Type	SOIL DESCRIPTION	Blows/Foot	Moisture Content, %	Dry Unit Weight, pcf	Liquid Limit, %	Plasticity Index, %	Gravel, % (3" - #4 Sieve)	Sand, % (#4 - #200 Sieve)	Fines, % (< #200 Sieve)	Expansion Index	R-Value
0			**Light to Medium Brown Clayey SAND (SC),** Dry, Medium Dense, Except when Cobbles/Boulders are Present, then it is Slow Drilling.										
			Approximate 30" Diameter Boulder from 2.5' to 5'.										
5			Sample Spoon had Mostly Rock in it.	45									
			Minimum 18" Diameter Boulder Encountered from 6.5' to 8', Switch to Coring at 8'.										
			8.0										
			8" of Recovery, Rock was Hard with Near Vertical Fractures, and 0% RDQ = Completely Weathered Rock										
10			10.0										
			44" of Recovery, Rock was Hard with Near Vertical Fractures, 9% RDQ = Completely Weathered Rock										
			15.0										
15			60" of Recovery, Rock was Hard with Approximate 45° Angle Fractures, 7% RQD = Completely Weathered Rock										
			20.0										
20													

*Blows/Foot - Modified California Sampler.
Boring terminated at 20 feet.
Boring backfilled with grout or excavated soils and tamped at the surface

LUMOS_LOG_ST_BORING_9019.004 - BORINGS.GPJ US_LAB.GDT 11/22/17

LUMOS & ASSOCIATES
Lumos and Associates
800 E. College Parkway
Carson City, NV 89706
(775) 883-7077
Fax: (775) 883-7114
mburns@lumosinc.com

Ascenté Geotechnical Investigation

LOG OF EXPLORATION

Job Number: 9019.004
Date: November 2017

PLATE
C-3

Sheet **1** of **1**

BORING No. B-04

Logged By: **B. Sexton**
Date Logged: **10-2-2017**
Drill Type: **Truck Mounted Jefco Speed Star 55**

Total Depth: **41.5 feet**
Water Depth: **No groundwater encountered**
Ground Elev.: **5370.61 feet ±**

Shelby Tube | Split Spoon | Ziplock Sample | Modified California | Bulk Sample | Static Water Table

Depth in Feet	Graphic Log	Sample Type	SOIL DESCRIPTION	Blows/Foot	Moisture Content, %	Dry Unit Weight, pcf	Liquid Limit, %	Plasticity Index, %	Gravel, % (3" - #4 Sieve)	Sand, % (#4 - #200 Sieve)	Fines, % (< #200 Sieve)	Expansion Index	R-Value
0			**Brown Clayey SAND (SC),** Dry, Very Dense. Estimated 10% Medium to Fine Gravel, 60% Coarse to Fine Sand, and 30% Clay.										
5		B	Slightly Moist and Slight Mottling at 5'.	*51									
10			No Mottling at 10'.	37									
				50									
15			Sample Had Gravel at 15'	*100+									
			20.0										
20			**Brown Clayey SAND with Gravel (SC),** Moist, Medium Dense, Slight Mottling. Estimated 20% Coarse to Fine Gravel, 50% Coarse to Fine Sand, and 30% Clay.	*17									
25			Color Change to Reddish Brown at 25'.	16									
			30.0										
30			**Brown Silty SAND with Gravel (SM),** Moist, Very Dense, and Slightly Plastic Fines. The Gravel in the Sample was Severely Weathered	*36			34	10	25	53	22		
35				52									
40			Non-Plastic at 40'.	*42			NP	NP	25	59	15		
			41.5										

*Blows/Foot - Modified California Sampler.
Boring terminated at 41.5 feet.
Boring backfilled with grout or excavated soils and tamped at the surface

LUMOS_LOG_ST_BORING_9019.004 - BORINGS.GPJ US_LAB.GDT 11/22/17

LUMOS & ASSOCIATES
Lumos and Associates
800 E. College Parkway
Carson City, NV 89706
(775) 883-7077
Fax: (775) 883-7114
mburns@lumosinc.com

Ascenté Geotechnical Investigation

LOG OF EXPLORATION

Job Number: 9019.004
Date: November 2017

PLATE
C-4

Sheet **1** of **1**

BORING No. B-05

Logged By: **B. Sexton**
Date Logged: **10-3-2017**
Drill Type: **Truck Mounted Jefco Speed Star 55**

Total Depth: **40 feet**
Water Depth: **No groundwater encountered**
Ground Elev.: **5443.5 feet ±**

Shelby Tube | Split Spoon | Ziplock Sample | California | Bulk Sample | Static Water Table

Depth in Feet	Graphic Log	Sample Type	SOIL DESCRIPTION	Blows/Foot	Moisture Content, %	Dry Unit Weight, pcf	Liquid Limit, %	Plasticity Index, %	Gravel, % (3" - #4 Sieve)	Sand, % (#4 - #200 Sieve)	Fines, % (< #200 Sieve)	Expansion Index	R-Value
0			**Brown to Reddish Brown Clayey SAND (SC),** Dry, Very Dense. Estimated 10% Medium to Fine Gravel, 60% Coarse to Fine Sand, 30% Clay. Encountered Rock at 3', Drilled Until 5', Switch to Coring at 5'.										
5			5.5	100+									
			20" of Recovery, Red Colored Rock with No Noted Fractures do to Small Rock Size, 0 RQD = Completely Weathered Rock										
10			10.0										
			24" of Recovery, Red Colored Rock with Approximate 45° Angle Fractures, 13% RQD = Completely Weathered Rock										
15			15.0										
			27" of Recovery, Red Colored Rock with Approximate 45° Angle Fractures, 0 RQD = Completely Weathered Rock										
			18.0										
			24" of Recovery, Red Colored Rock with Approximate 45° Angle Fractures, 38% RQD = Weathered Rock										
20			20.0										
			20" of Recovery, Red Colored Rock with Approximate 45° Angle Fractures, 0 RQD = Completely Weathered Rock										
			22.5										
			24" of Recovery, Red Colored Rock with Approximate 45° Angle Fractures, 17% RQD = Completely Weathered Rock										
25			25.0										
			33" of Recovery, Red Colored Rock with Approximate 45° Angle Fractures, 8% RQD = Completely Weathered Rock										
			29.0										
			8" of Recovery, Red Colored Rock with No Noted Fractures do Small Rock Size, 0 RQD = Completely Weathered Rock										
30			30.0										
			8" of Recovery, Red Colored Rock with No Noted Fractures do Small Rock Size, 0 RQD = Completely Weathered Rock										
			33.0										
			20" of Recovery, Red Colored Rock with Approximate 45° Angle Fractures, 0 RQD = Completely Weathered Rock										
35			35.0										
			20" of Recovery, Red Colored Rock with Approximate 45° Angle Fractures, 7% RQD = Completely Weathered Rock										
40			40.0										

*Blows/Foot - Modified California Sampler.
Boring terminated at 40 feet.
Boring backfilled with grout or excavated soils and tamped at the surface

LUMOS_LOG_ST_BORING_9019.004 - BORINGS.GPJ US_LAB.GDT 11/22/17

Lumos and Associates
800 E. College Parkway
Carson City, NV 89706
(775) 883-7077
Fax: (775) 883-7114
mburns@lumosinc.com

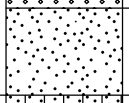
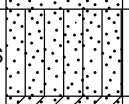
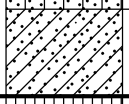
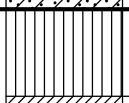
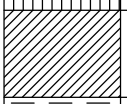
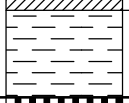
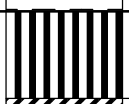
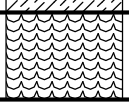
Ascenté Geotechnical Investigation

LOG OF EXPLORATION

Job Number: 9019.004
Date: November 2017

PLATE
C-5

SOIL CLASSIFICATION CHART

MAJOR DIVISIONS			SYMBOLS		TYPICAL DESCRIPTIONS
			GRAPH	LETTER	
COARSE GRAINED SOILS MORE THAN 50% OF MATERIAL IS LARGER THAN NO. 200 SIEVE SIZE	GRAVEL AND GRAVELLY SOILS MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	CLEAN GRAVELS (LITTLE OR NO FINES)		GW	WELL-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
				GP	POORLY-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
		GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)		GM	SILTY GRAVELS, GRAVEL - SAND - SILT MIXTURES
				GC	CLAYEY GRAVELS, GRAVEL - SAND - CLAY MIXTURES
	SAND AND SANDY SOILS MORE THAN 50% OF COARSE FRACTION PASSING ON NO. 4 SIEVE	CLEAN SANDS (LITTLE OR NO FINES)		SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
				SP	POORLY-GRADED SANDS, GRAVELLY SAND, LITTLE OR NO FINES
		SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)		SM	SILTY SANDS, SAND - SILT MIXTURES
				SC	CLAYEY SANDS, SAND - CLAY MIXTURES
FINE GRAINED SOILS MORE THAN 50% OF MATERIAL IS SMALLER THAN NO. 200 SIEVE SIZE	SILTS AND CLAYS	LIQUID LIMIT LESS THAN 50		ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS	LIQUID LIMIT GREATER THAN 50		MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILTY SOILS
				CH	INORGANIC CLAYS OF HIGH PLASTICITY
				OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS				PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

NOTE: DUAL SYMBOLS ARE USED TO INDICATE BORDERLINE SOIL CLASSIFICATIONS

Other Tests

AN	ANALYTICAL TEST (pH, Soluble Sulfate, and Resistivity)
C	CONSOLIDATION TEST
DS	DIRECT SHEAR TEST
MD	MOISTURE DENSITY CURVE

LUMOS & ASSOCIATES

Lumos and Associates

800 E. College Parkway
Carson City, NV 89706
(775) 883-7077
Fax: (775) 883-7114
mburns@lumosinc.com

Ascenté Geotechnical Investigation

LEGEND

Job Number: 9019.004

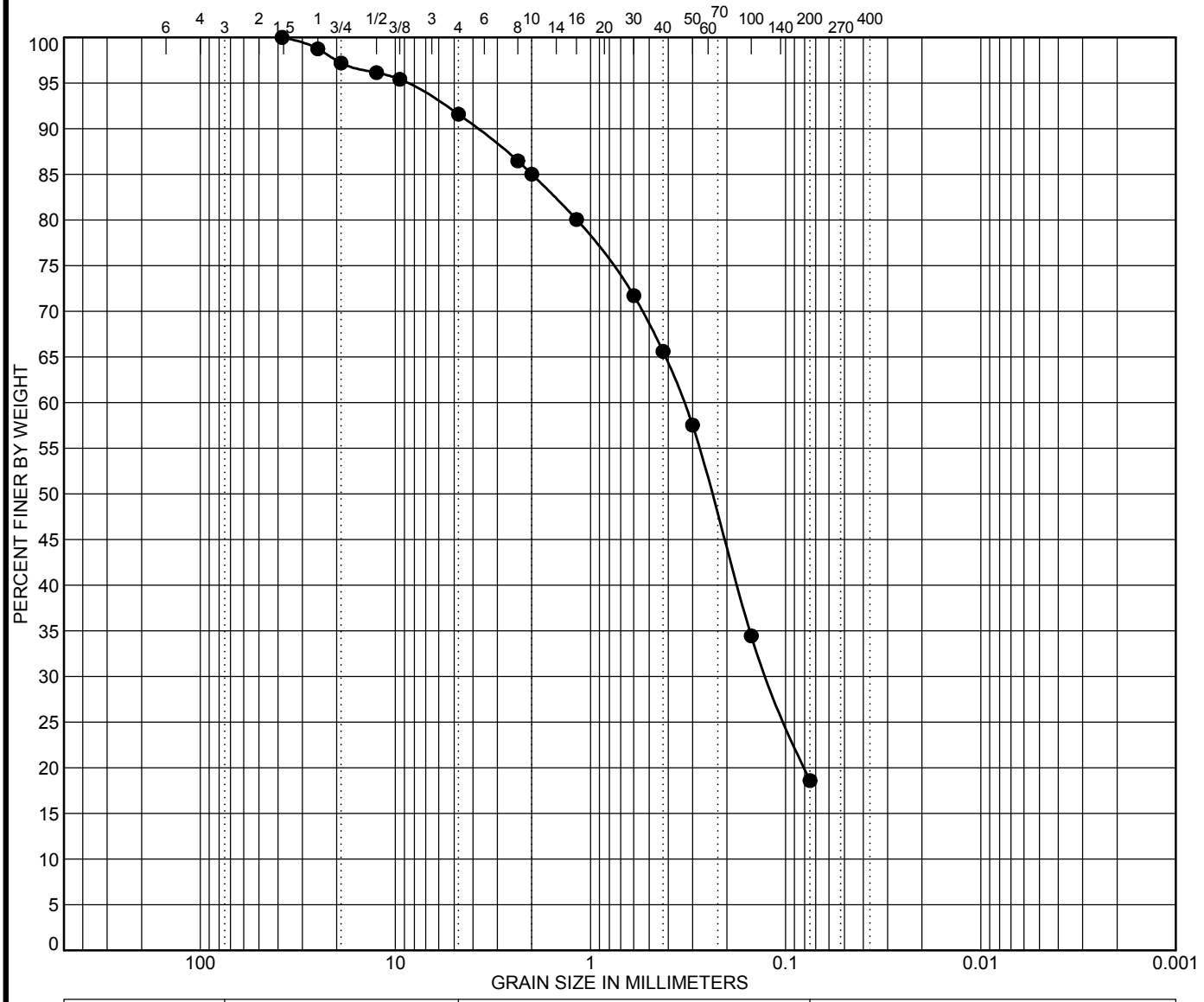
Date: November 2017

PLATE

C-14

APPENDIX D

LUMOS & ASSOCIATES



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification	Date: 9-22-2017						
●	**FT-1**	Classification	LL	PL	PI	Cc	Cu
	Depth: 3	Silty SAND (SM)	NP	NP	NP		
	Sample Location	Fault Trench 1 from 3' - 4'					
	USCS	SM					
	AASHTO						

	Specimen Identification								
●	**FT-1**	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
	Depth: 3	38.1	0.334	0.123		8.4	73.0	18.6	

Natural Moisture	5.5 %		**S.E.**		**Absorption %**	
R-Value			**Durability Index**		**Soundness**	
Perctage of Wear (500 rev)	%		**Specific Gravity**		**Direct Shear**	

LUMOS & ASSOCIATES
Lumos and Associates
800 E. College Parkway
Carson City, NV 89706
(775) 883-7077
Fax: (775) 883-7114
mburns@lumosinc.com

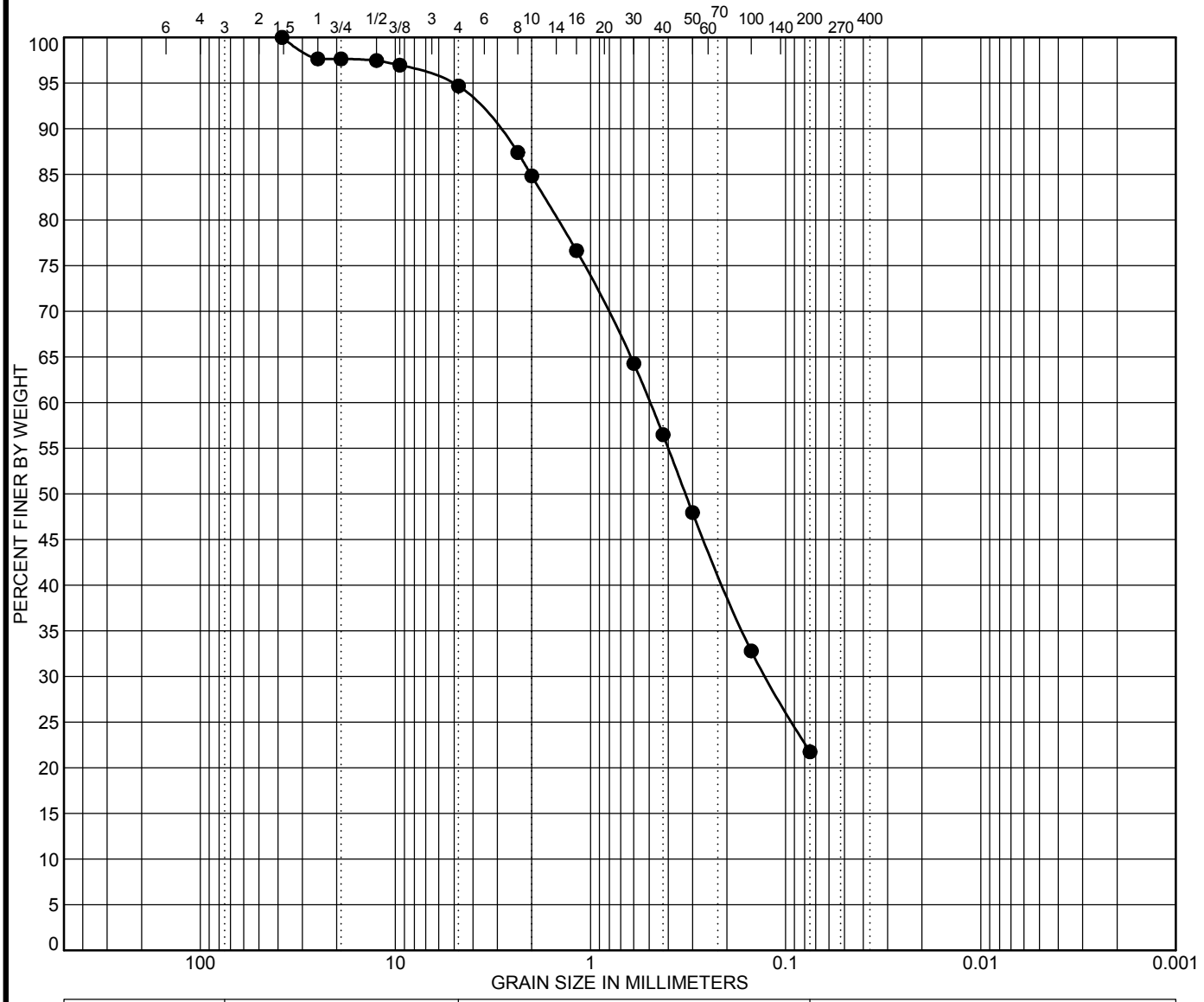
Ascenté Geotechnical Investigation

GRAIN SIZE DISTRIBUTION

Job Number: 9019.004 Date: November 2017

PLATE

D-1.1



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification	Date: 9-22-2017						
●	**FT-2**	Classification	LL	PL	PI	Cc	Cu
	Depth: 6	Silty SAND (SM)	NP	NP	NP		
	Sample Location	Fault Trench 2 from 6' - 7'					
	USCS	SM					
	AASHTO						

	Specimen Identification								
●	**FT-2**	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
	Depth: 6	38.1	0.496	0.126		5.3	72.9	21.7	

Natural Moisture	4.9 %		**S.E.**		**Absorption %**		
R-Value			**Durability Index**		**Soundness**		
Perctage of Wear (500 rev)	%		**Specific Gravity**		**Direct Shear**		

Lumos and Associates
800 E. College Parkway
Carson City, NV 89706
(775) 883-7077
Fax: (775) 883-7114
mburns@lumosinc.com

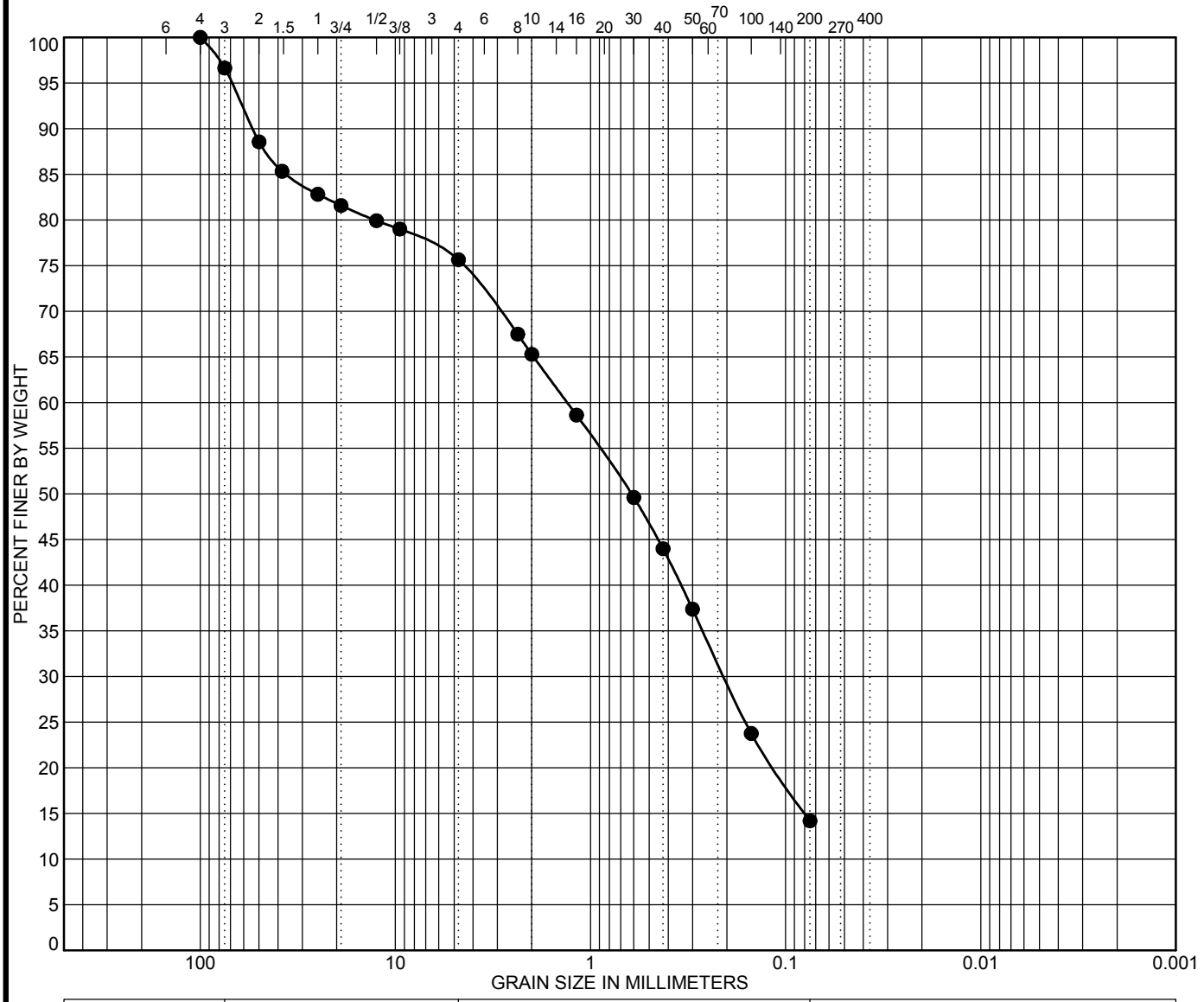
Ascenté Geotechnical Investigation

GRAIN SIZE DISTRIBUTION

Job Number: 9019.004 Date: November 2017

PLATE

D-1.2



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification	Date: 9-22-2017						
● **FT-3**	Classification	LL	PL	PI	Cc	Cu
Depth: 3	Silty SAND with Gravel (SM)	NP	NP	NP		
Sample Location	Fault Trench 3 from 3' - 4'					
USCS	SM					
AASHTO						

Specimen Identification	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● **FT-3**								
Depth: 3	100	1.315	0.206		21.0	61.5	14.2	

Natural Moisture	4.1 %		**S.E.**		**Absorption %**	
R-Value			**Durability Index**		**Soundness**	
Perctage of Wear (500 rev)	%		**Specific Gravity**		**Direct Shear**	

LUMOS & ASSOCIATES
Lumos and Associates
800 E. College Parkway
Carson City, NV 89706
(775) 883-7077
Fax: (775) 883-7114
mburns@lumosinc.com

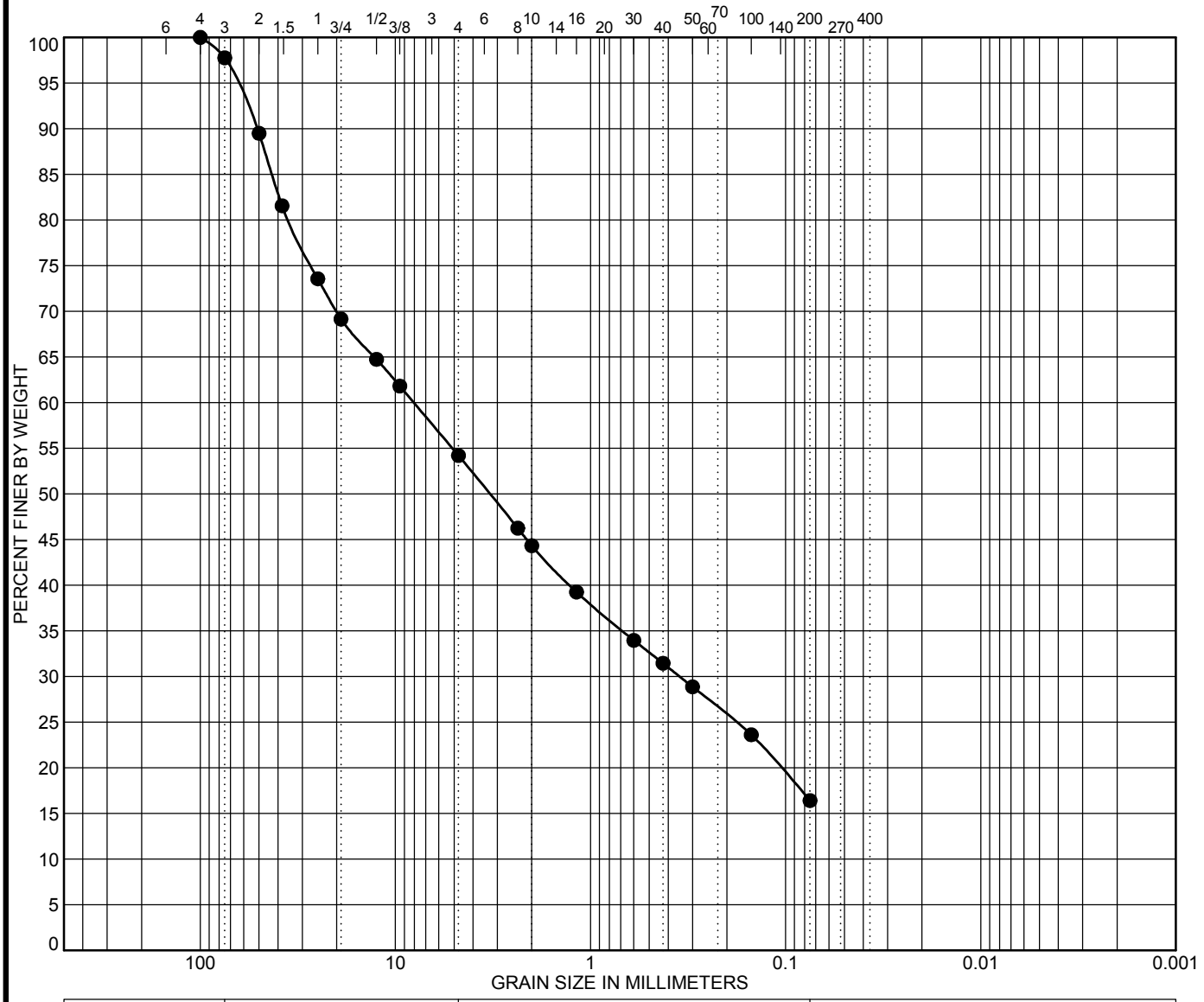
Ascenté Geotechnical Investigation

GRAIN SIZE DISTRIBUTION

Job Number: 9019.004 Date: November 2017

PLATE

D-1.3



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification	Date: 9-22-2017	LL	PL	PI	Cc	Cu
●	**FT-4**	Classification					
	Depth: 0.5	Clayey GRAVEL with Sand (GC)	32	19	13		
	Sample Location	Fault Trench 4 from 0.5' - 1.5'					
	USCS	GC					
	AASHTO						

	Specimen Identification	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	**FT-4**								
	Depth: 0.5	100	8.054	0.35		43.6	37.8	16.4	

	Natural Moisture	12.2 %		**S.E.**		**Absorption %**	
	R-Value			**Durability Index**		**Soundness**	
	Perctage of Wear (500 rev)	%		**Specific Gravity**		**Direct Shear**	

LUMOS & ASSOCIATES
Lumos and Associates
800 E. College Parkway
Carson City, NV 89706
(775) 883-7077
Fax: (775) 883-7114
mburns@lumosinc.com

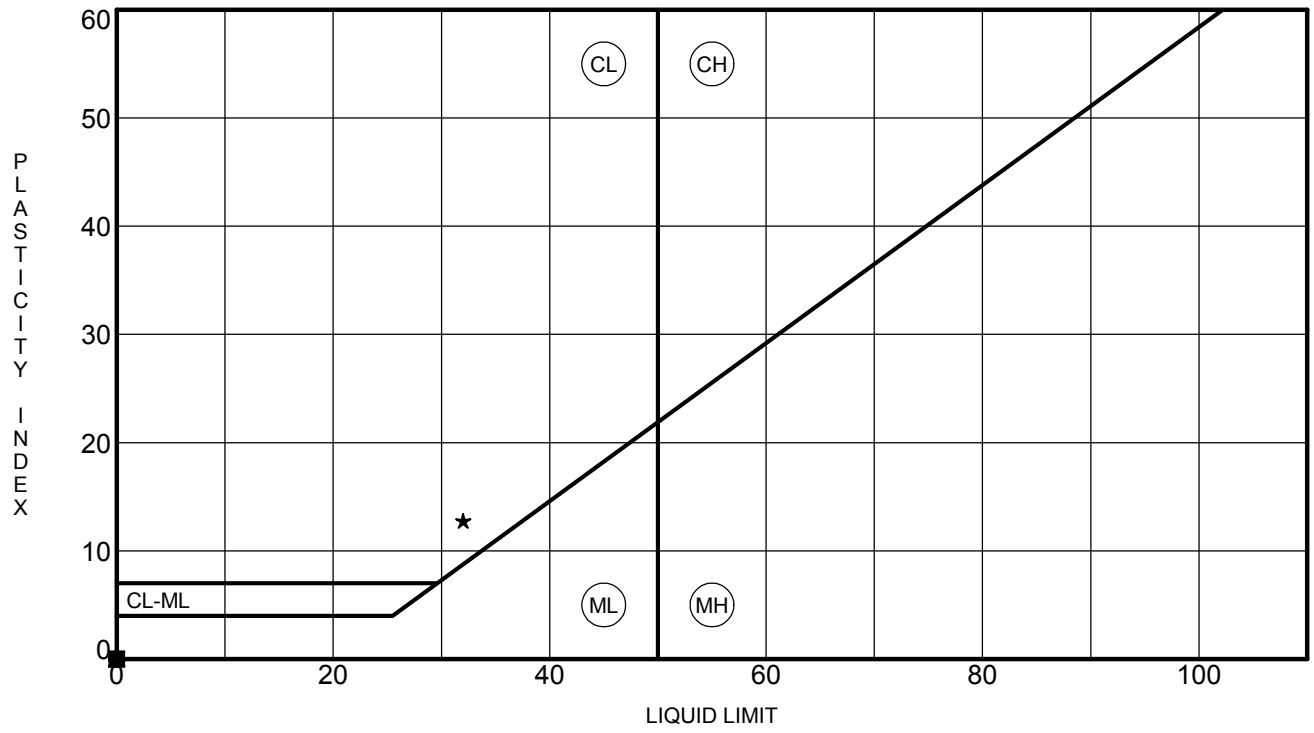
Ascenté Geotechnical Investigation

GRAIN SIZE DISTRIBUTION

Job Number: 9019.004 Date: November 2017

PLATE

D-1.4



	Specimen Identification		LL	PL	PI	Fines	Classification
●	**FT-1**	**3.0**	**NP**	**NP**	**NP**	**19**	Silty SAND (SM)
⊠	**FT-2**	**6.0**	**NP**	**NP**	**NP**	**22**	Silty SAND (SM)
▲	**FT-3**	**3.0**	**NP**	**NP**	**NP**	**14**	Silty SAND with Gravel (SM)
★	**FT-4**	**0.5**	**32**	**19**	**13**	**16**	Clayey GRAVEL with Sand (GC)

Lumos and Associates
800 E. College Parkway
Carson City, NV 89706
(775) 883-7077
Fax: (775) 883-7114
mburns@lumosinc.com

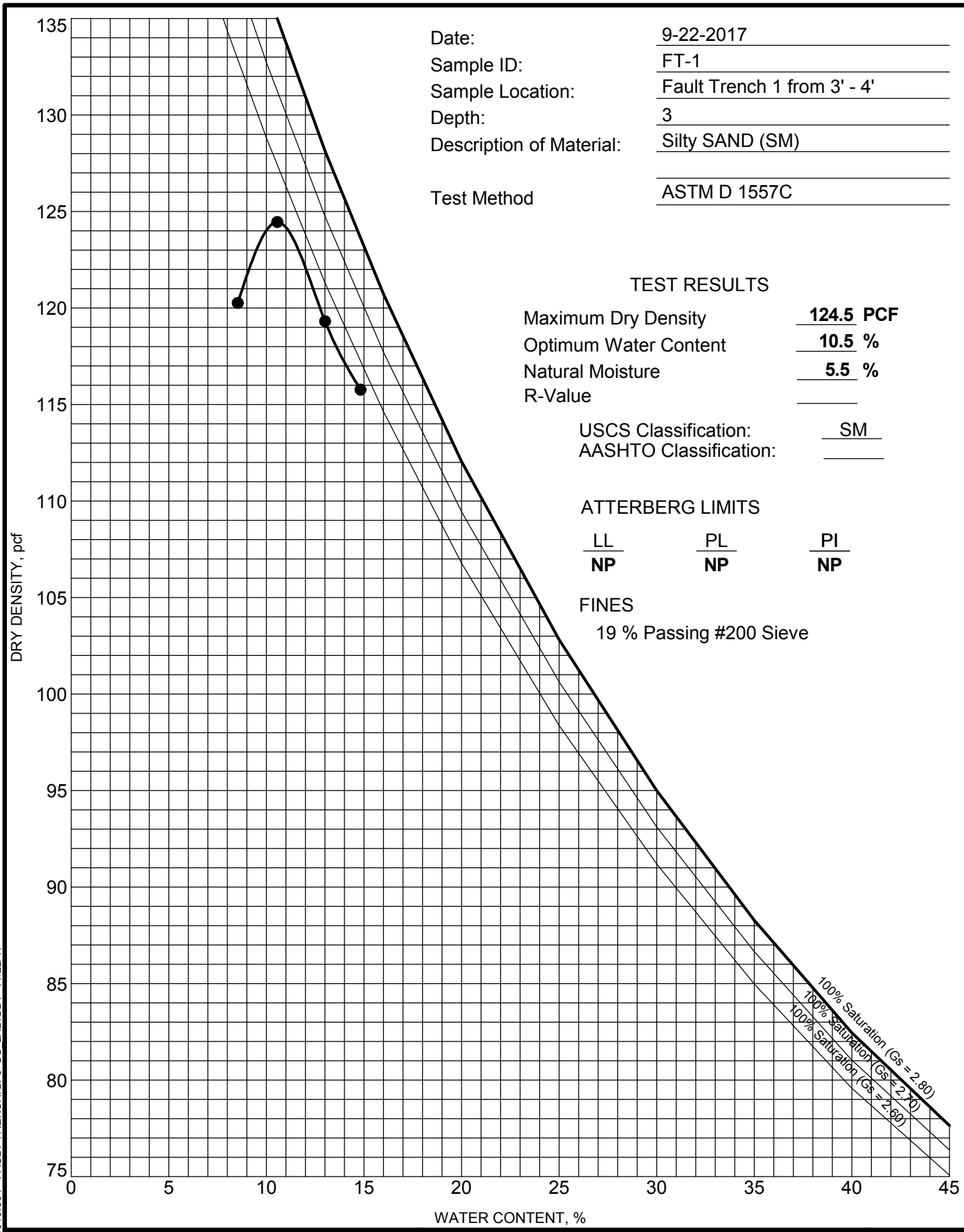
Ascenté Geotechnical Investigation

ATTERBERG LIMITS' RESULTS

Job Number: 9019.004 Date: November 2017

PLATE

D-2



Date: 9-22-2017
Sample ID: FT-1
Sample Location: Fault Trench 1 from 3' - 4'
Depth: 3
Description of Material: Silty SAND (SM)

Test Method: ASTM D 1557C

TEST RESULTS

Maximum Dry Density	**124.5 PCF**
Optimum Water Content	**10.5 %**
Natural Moisture	**5.5 %**
R-Value	

USCS Classification: SM
AASHTO Classification:

ATTERBERG LIMITS

LL	PL	PI
NP	**NP**	**NP**

FINES
19 % Passing #200 Sieve

Lumos and Associates
800 E. College Parkway
Carson City, NV 89706
(775) 883-7077
Fax: (775) 883-7114
mburns@lumosinc.com

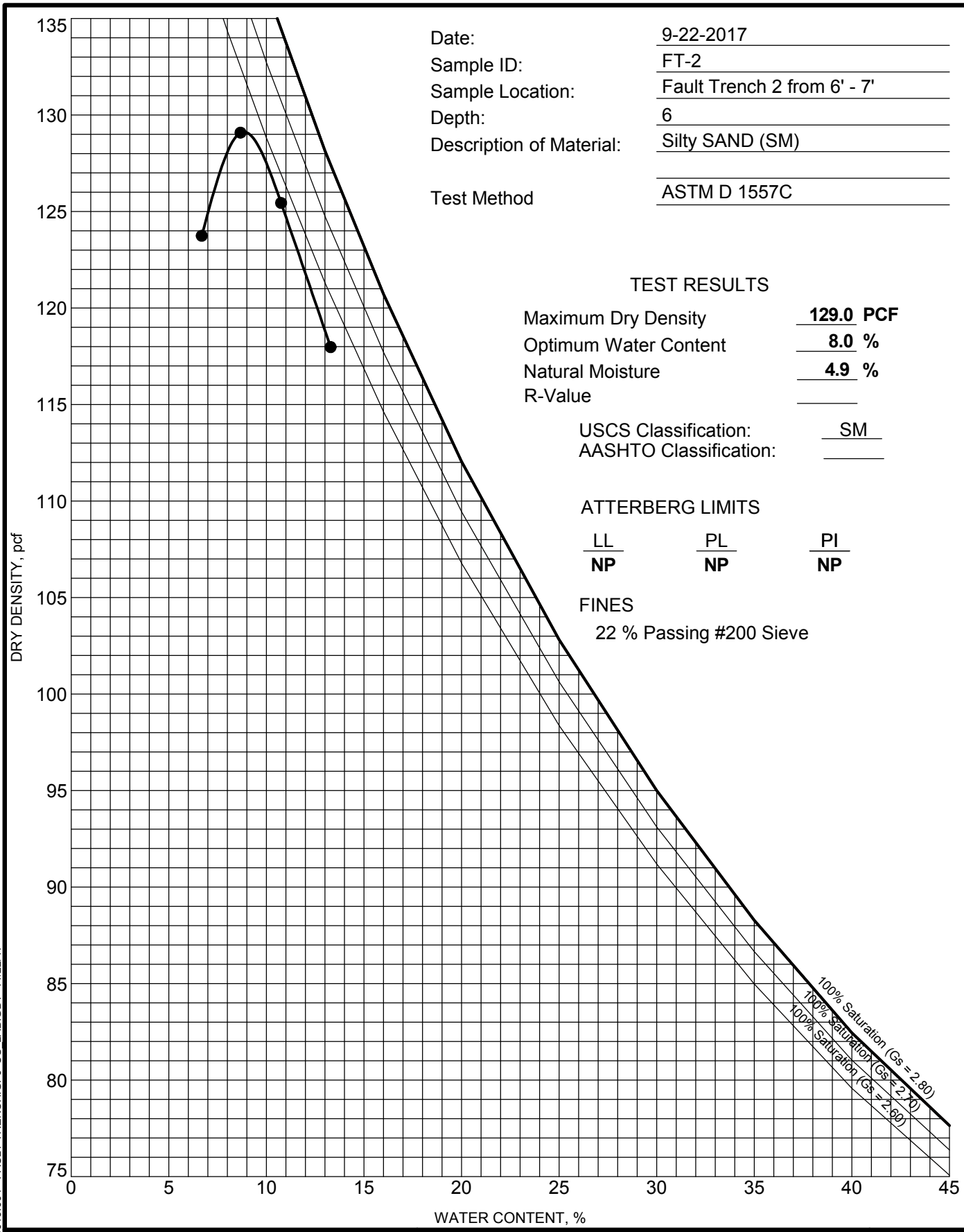
Ascenté Geotechnical Investigation

MOISTURE-DENSITY CURVE

Job Number: 9019.004 Date: November 2017

PLATE

D-3.1



Date: 9-22-2017
Sample ID: FT-2
Sample Location: Fault Trench 2 from 6' - 7'
Depth: 6
Description of Material: Silty SAND (SM)

Test Method: ASTM D 1557C

TEST RESULTS

Maximum Dry Density	**129.0** **PCF**
Optimum Water Content	**8.0** **%**
Natural Moisture	**4.9** **%**
R-Value	

USCS Classification: SM
AASHTO Classification:

ATTERBERG LIMITS

LL	PL	PI
NP	**NP**	**NP**

FINES
22 % Passing #200 Sieve

Lumos and Associates
800 E. College Parkway
Carson City, NV 89706
(775) 883-7077
Fax: (775) 883-7114
mburns@lumosinc.com

Ascenté Geotechnical Investigation

MOISTURE-DENSITY CURVE

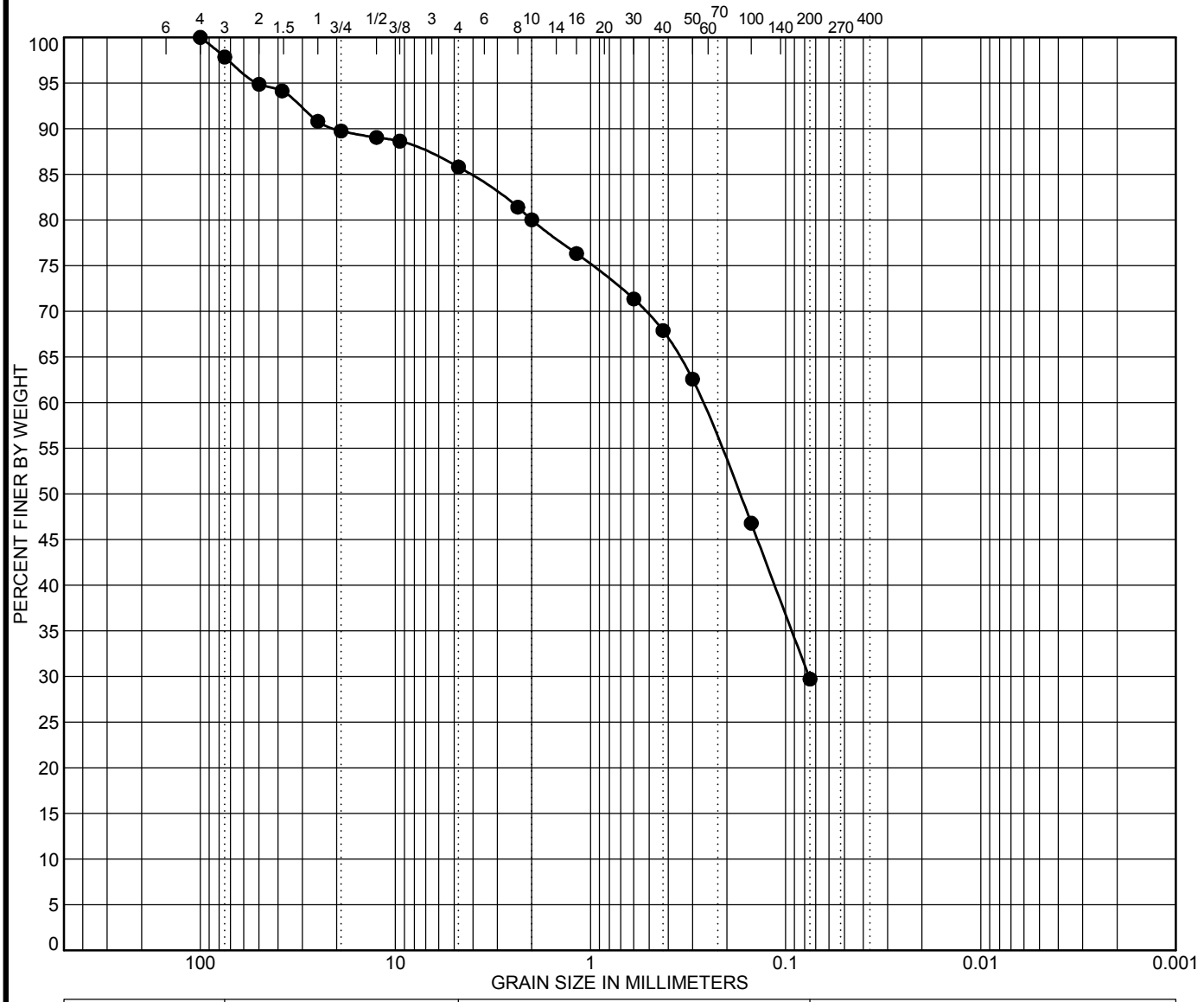
Job Number: 9019.004 Date: November 2017

PLATE

D-3.2

APPENDIX E

LUMOS & ASSOCIATES



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification	Date: 9-27-2017	LL	PL	PI	Cc	Cu
●	**TP-05**	Classification					
	Depth: 4	Clayey SAND (SC)	32	23	9		
	Sample Location	Test Pit 5 from 4' - 5'					
	USCS	SC					
	AASHTO						

	Specimen Identification	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	**TP-05**								
	Depth: 4	100	0.268	0.076		12.0	56.1	29.7	

Natural Moisture	13.3 %		**S.E.**		**Absorption %**		
R-Value			**Durability Index**		**Soundness**		
Perctage of Wear (500 rev)	%		**Specific Gravity**		**Direct Shear**		

LUMOS & ASSOCIATES
Lumos and Associates
800 E. College Parkway
Carson City, NV 89706
(775) 883-7077
Fax: (775) 883-7114
mburns@lumosinc.com

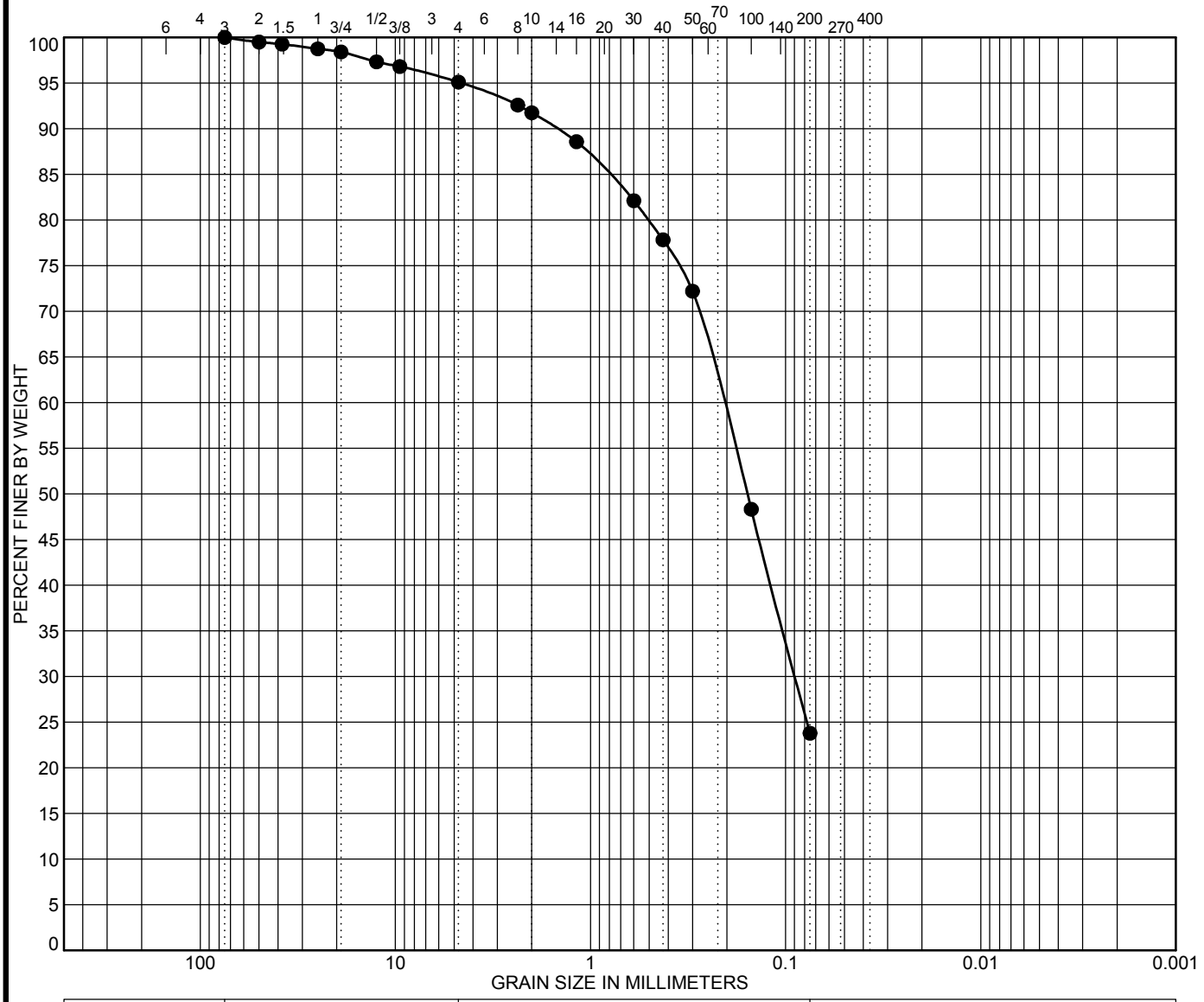
Ascenté Geotechnical Investigation

GRAIN SIZE DISTRIBUTION

Job Number: 9019.004 Date: November 2017

PLATE

E-1.1



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification	Date: 9-26-2017					
●	**TP-06**	Classification	LL	PL	PI	Cc	Cu
	Depth: 1	Silty SAND (SM)	NP	NP	NP		
	Sample Location	Test Pit 6 from 1' - 2'					
	USCS	SM					
	AASHTO						

	Specimen Identification								
●	**TP-06**	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
	Depth: 1	75	0.211	0.089		4.9	71.3	23.8	

Natural Moisture	4.8 %		**S.E.**		**Absorption %**	
R-Value			**Durability Index**		**Soundness**	
Perctage of Wear (500 rev)	%		**Specific Gravity**		**Direct Shear**	31

LUMOS & ASSOCIATES
Lumos and Associates
800 E. College Parkway
Carson City, NV 89706
(775) 883-7077
Fax: (775) 883-7114
mburns@lumosinc.com

Ascenté Geotechnical Investigation

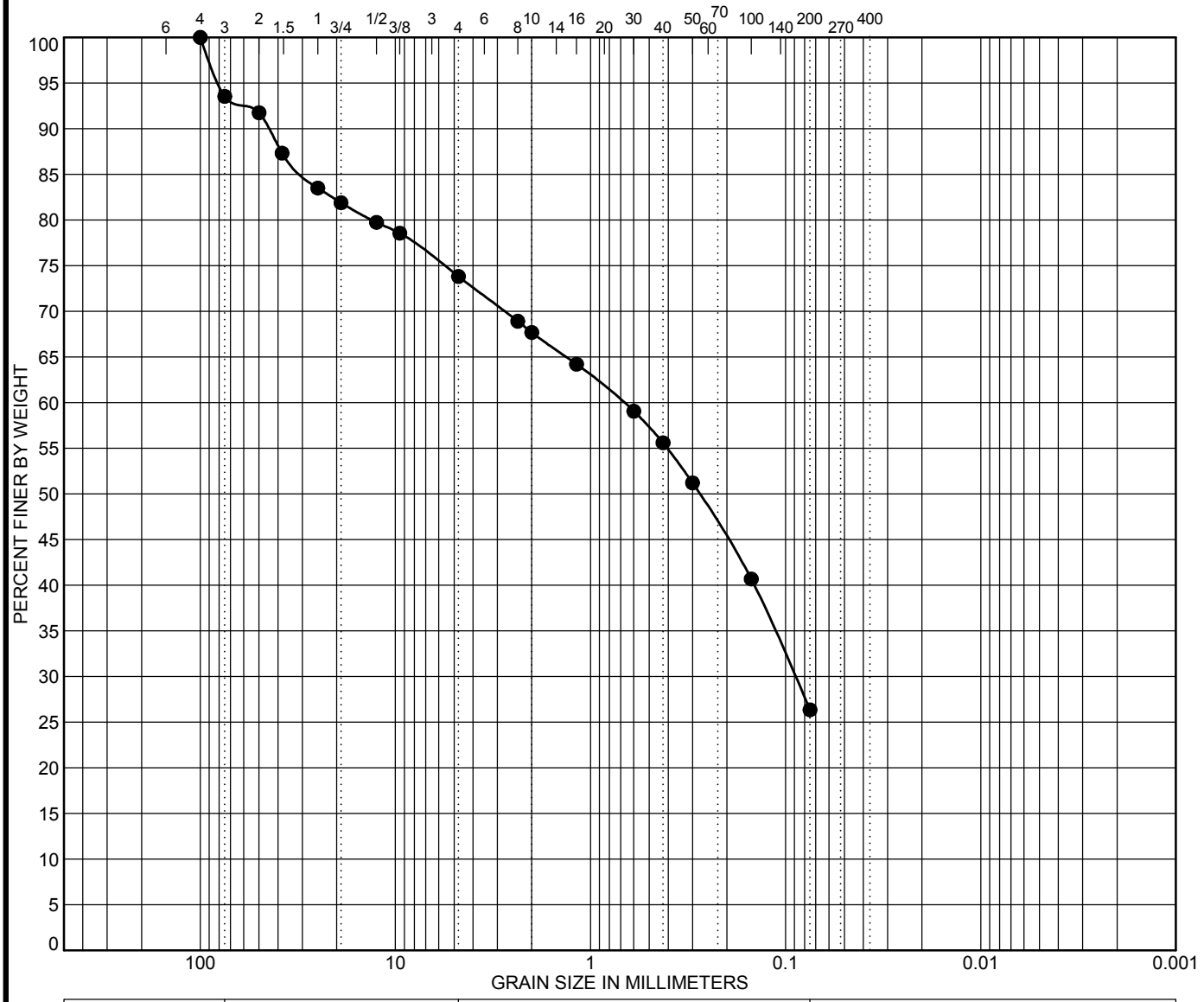
GRAIN SIZE DISTRIBUTION

Job Number: 9019.004 Date: November 2017

PLATE

E-1.2

LUMOS_GRAIN_SIZE_9019.004 - TEST PITS.GPJ US_LAB.GDT 11/22/17



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification	Date: 9-26-2017						
●	**TP-07**	Classification	LL	PL	PI	Cc	Cu	
	Depth: 2	Silty SAND with Gravel (SM)	NP	NP	NP			
	Sample Location	Test Pit 7 from 2' - 3'						
	USCS	SM						
	AASHTO							

	Specimen Identification								
●	**TP-07**	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
	Depth: 2	100	0.679	0.089		19.7	47.5	26.3	

Natural Moisture	6.5 %	**S.E.**		**Absorption %**	
R-Value		**Durability Index**		**Soundness**	
Perctage of Wear (500 rev)	%	**Specific Gravity**		**Direct Shear**	

Lumos and Associates
800 E. College Parkway
Carson City, NV 89706
(775) 883-7077
Fax: (775) 883-7114
mburns@lumosinc.com

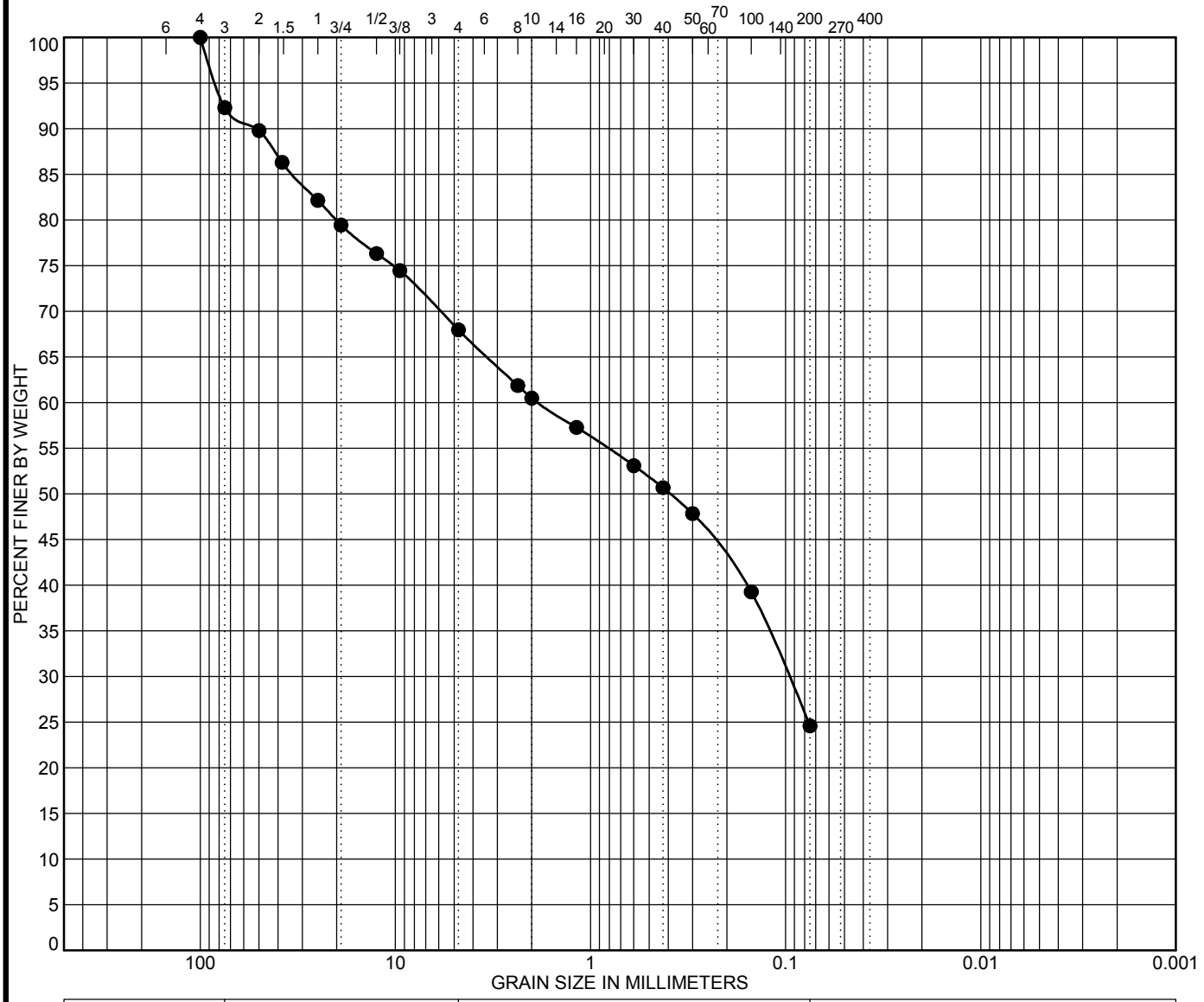
Ascenté Geotechnical Investigation

GRAIN SIZE DISTRIBUTION

Job Number: 9019.004 Date: November 2017

PLATE

E-1.3



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification	Date: 9-26-2017						
●	**TP-08**	Classification	LL	PL	PI	Cc	Cu	
	Depth: 4	Silty SAND with Gravel (SM)	NP	NP	NP			
	Sample Location	Test Pit 8 From 4' - 5'						
	USCS	SM						
	AASHTO							

	Specimen Identification								
●	**TP-08**	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
	Depth: 4	100	1.847	0.097		24.3	43.4	24.6	

Natural Moisture	7.3 %	**S.E.**		**Absorption %**	
R-Value		**Durability Index**		**Soundness**	
Perctage of Wear (500 rev)	%	**Specific Gravity**		**Direct Shear**	

LUMOS & ASSOCIATES
Lumos and Associates
800 E. College Parkway
Carson City, NV 89706
(775) 883-7077
Fax: (775) 883-7114
mburns@lumosinc.com

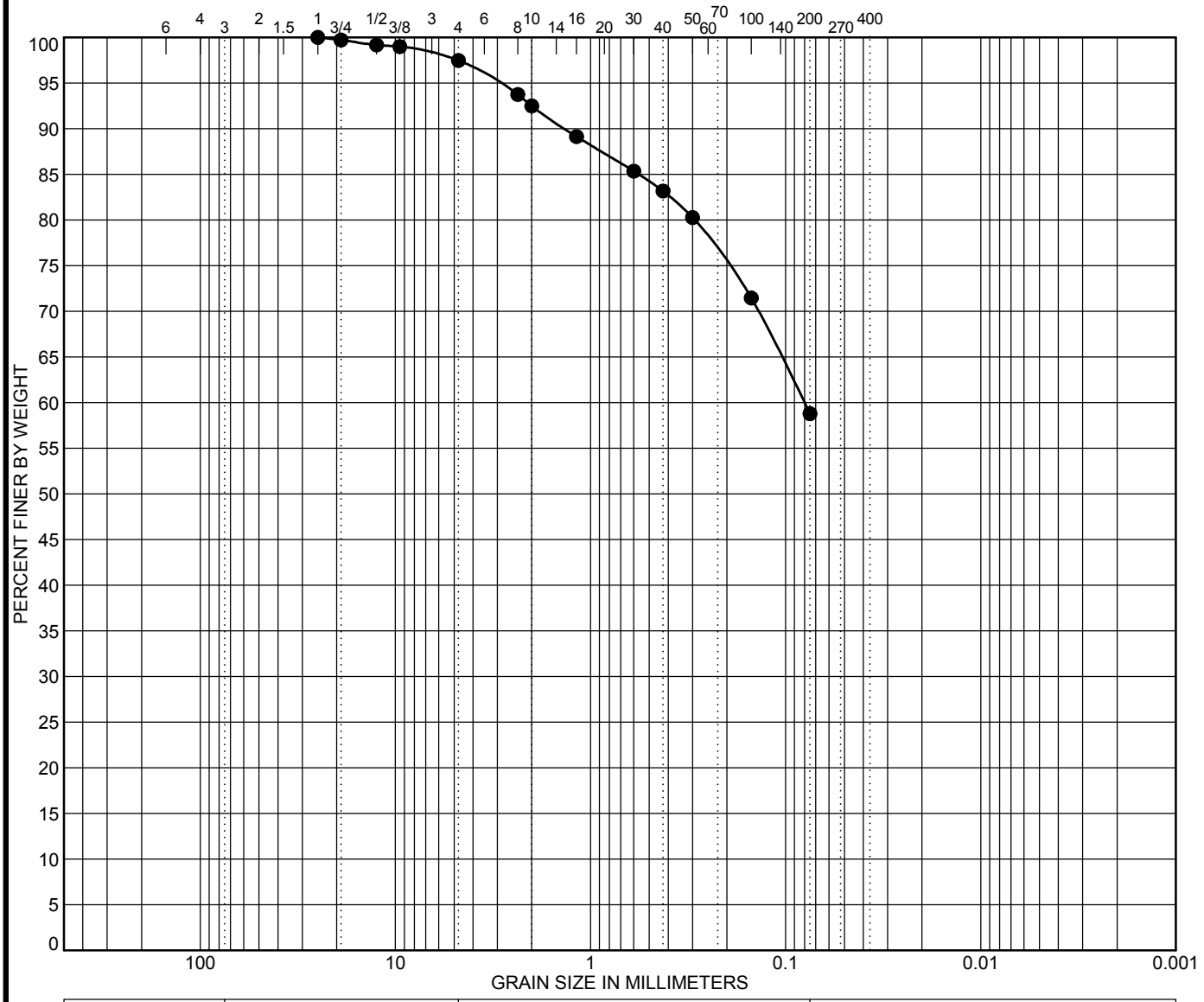
Ascenté Geotechnical Investigation

GRAIN SIZE DISTRIBUTION

Job Number: 9019.004 Date: November 2017

PLATE

E-1.4



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification	Date: 9-26-2017						
●	**TP-09**	Classification	LL	PL	PI	Cc	Cu	
	Depth: 3	Sandy Fat CLAY (CH)	50	16	34			
	Sample Location	Test Pit 9 from 3' - 4'						
	USCS	CH						
	AASHTO							

	Specimen Identification								
●	**TP-09**	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
	Depth: 3	25	0.08			2.5	38.7	58.8	

Natural Moisture	14.9 %		**S.E.**		**Absorption %**	
R-Value			**Durability Index**		**Soundness**	
Perctage of Wear (500 rev)	%		**Specific Gravity**		**Direct Shear**	

LUMOS & ASSOCIATES
Lumos and Associates
800 E. College Parkway
Carson City, NV 89706
(775) 883-7077
Fax: (775) 883-7114
mburns@lumosinc.com

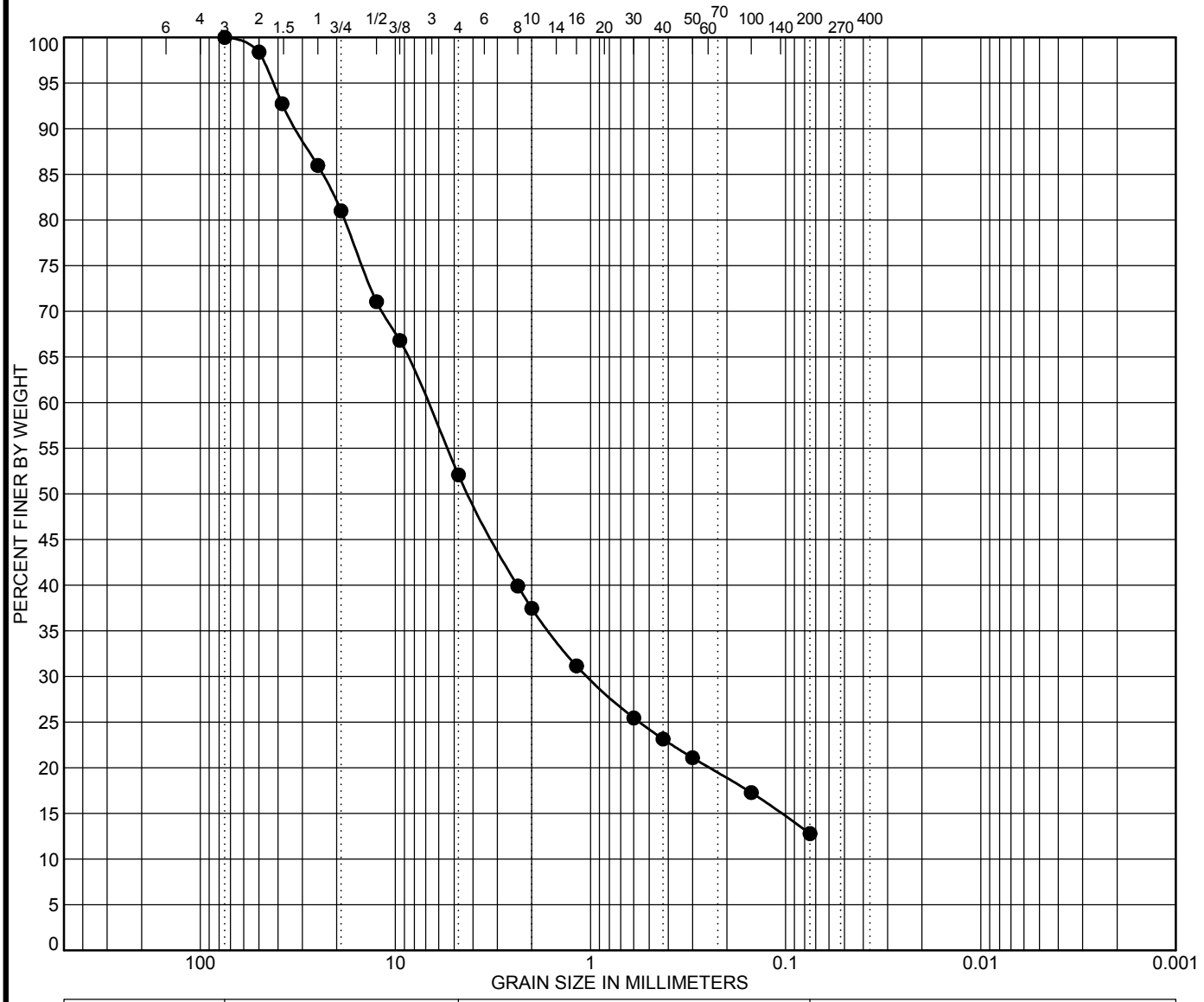
Ascenté Geotechnical Investigation

GRAIN SIZE DISTRIBUTION

Job Number: 9019.004 Date: November 2017

PLATE

E-1.5



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification	Date: 9-26-2017						
●	**TP-10**	Classification	LL	PL	PI	Cc	Cu	
	Depth: 3	Silty GRAVEL with Sand (GM)	NP	NP	NP			
	Sample Location	Test Pit 10 from 2' - 3'						
	USCS	GM						
	AASHTO							

	Specimen Identification								
●	**TP-10**	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
	Depth: 3	75	6.895	1.029		47.9	39.3	12.8	

Natural Moisture	10.3 %		**S.E.**		**Absorption %**	
R-Value			**Durability Index**		**Soundness**	
Perctage of Wear (500 rev)	%		**Specific Gravity**		**Direct Shear**	37

LUMOS & ASSOCIATES
Lumos and Associates
800 E. College Parkway
Carson City, NV 89706
(775) 883-7077
Fax: (775) 883-7114
mburns@lumosinc.com

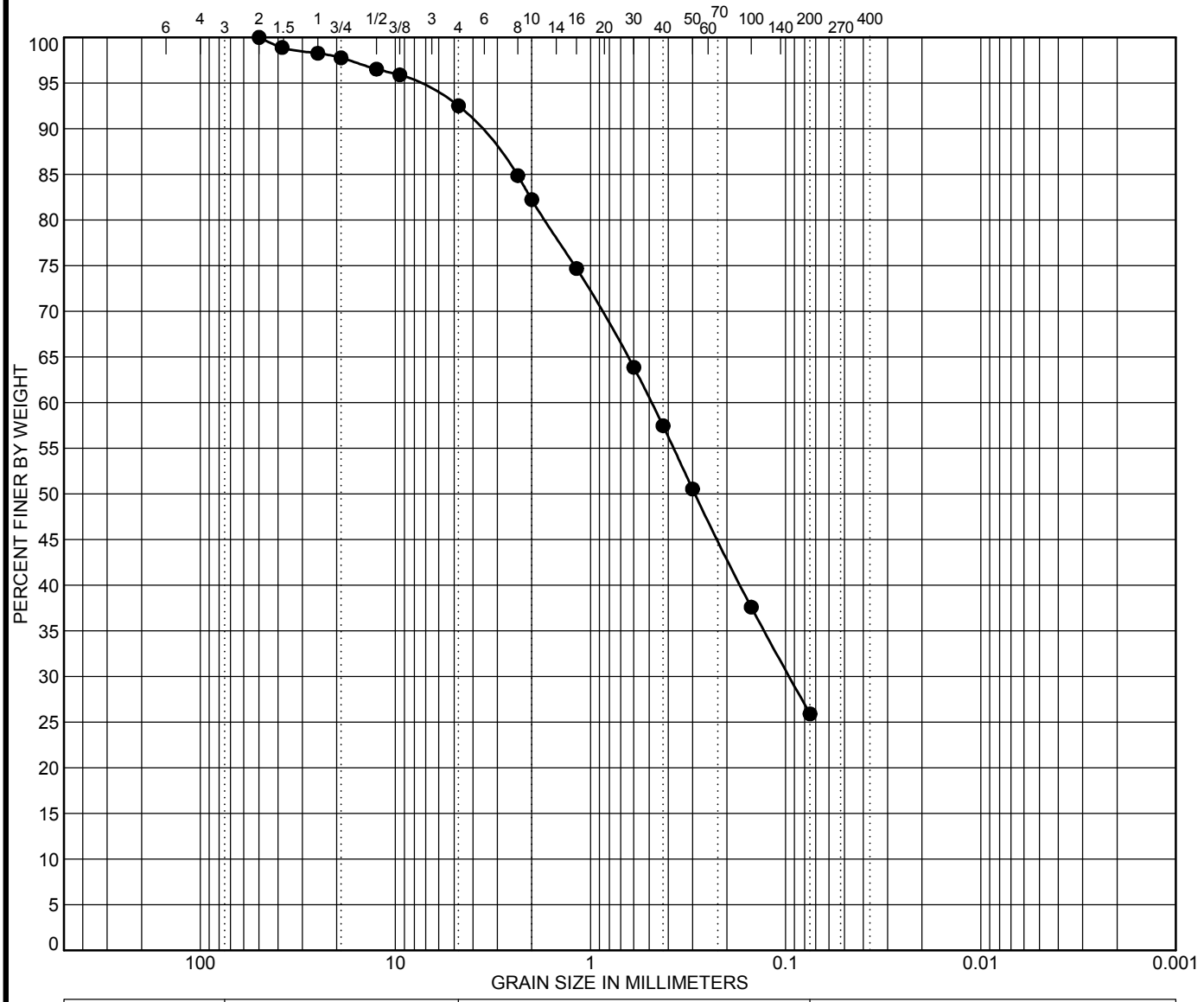
Ascenté Geotechnical Investigation

GRAIN SIZE DISTRIBUTION

Job Number: 9019.004 Date: November 2017

PLATE

E-1.6



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification	Date: 9-26-20147							
●	**TP-11**	Classification			LL	PL	PI	Cc	Cu
	Depth: 4	Clayey SAND (SC)			24	15	9		
	Sample Location	Test Pit 11 from 4' - 5'							
	USCS	SC							
	AASHTO								

	Specimen Identification								
●	**TP-11**	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
	Depth: 4	50	0.487	0.096		7.5	66.6	25.9	

Natural Moisture	7.3 %		**S.E.**		**Absorption %**	
R-Value			**Durability Index**		**Soundness**	
Perctage of Wear (500 rev)	%		**Specific Gravity**		**Direct Shear**	

Lumos and Associates
800 E. College Parkway
Carson City, NV 89706
(775) 883-7077
Fax: (775) 883-7114
mburns@lumosinc.com

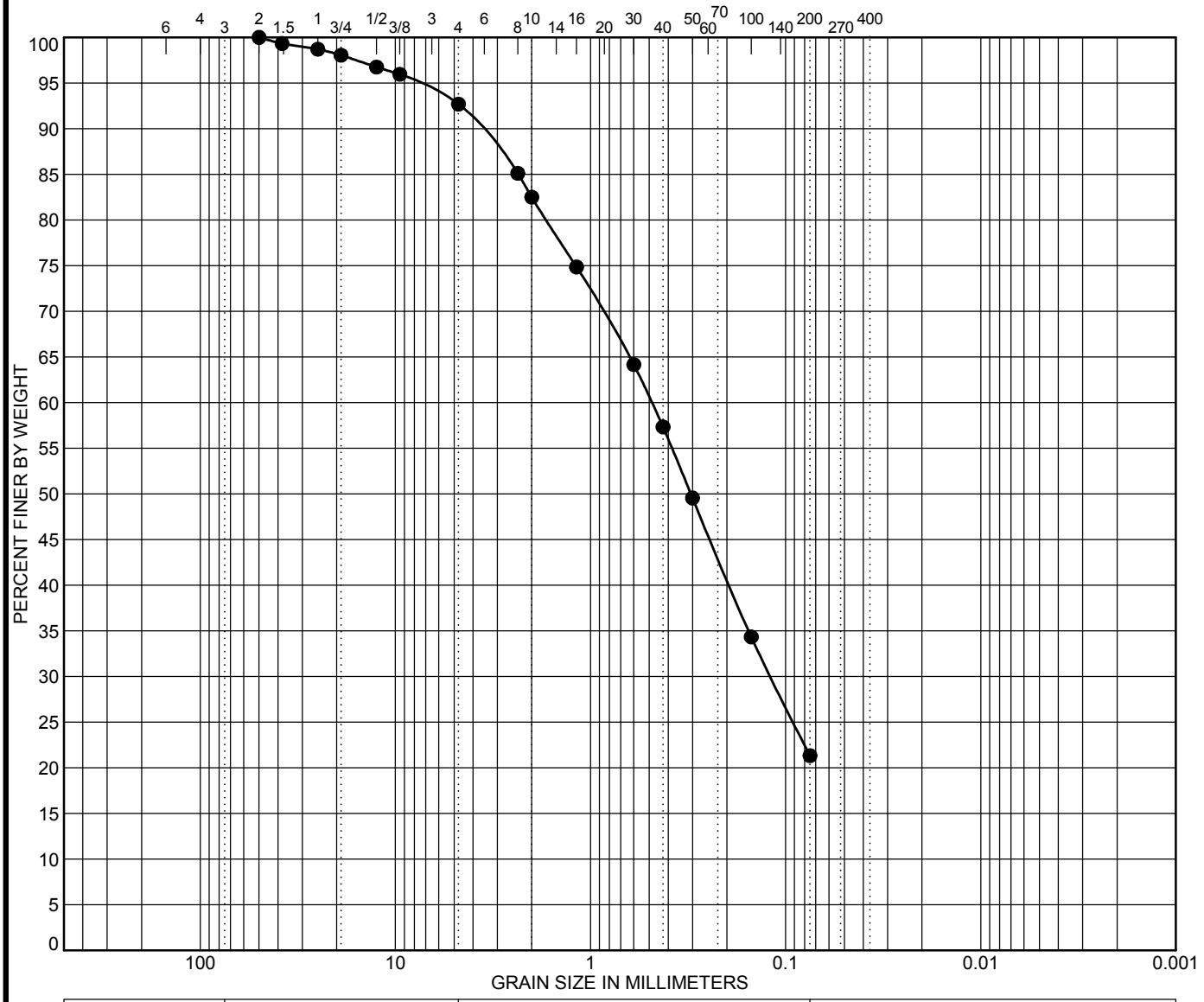
Ascenté Geotechnical Investigation

GRAIN SIZE DISTRIBUTION

Job Number: 9019.004 Date: November 2017

PLATE

E-1.7



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification	Date: 9-26-2017					
●	**TP-14**	Classification	LL	PL	PI	Cc	Cu
	Depth: 0.5	Silty SAND (SM)	NP	NP	NP		
	Sample Location	Test Pit 14 from 0.5' - 1.5'					
	USCS	SM					
	AASHTO						

	Specimen Identification	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	**TP-14**								
	Depth: 0.5	50	0.486	0.119		7.3	71.4	21.3	

	Natural Moisture	2.6 %		**S.E.**		**Absorption %**	
	R-Value	40		**Durability Index**		**Soundness**	
	Perctage of Wear (500 rev)	%		**Specific Gravity**		**Direct Shear**	37

LUMOS & ASSOCIATES
Lumos and Associates
800 E. College Parkway
Carson City, NV 89706
(775) 883-7077
Fax: (775) 883-7114
mburns@lumosinc.com

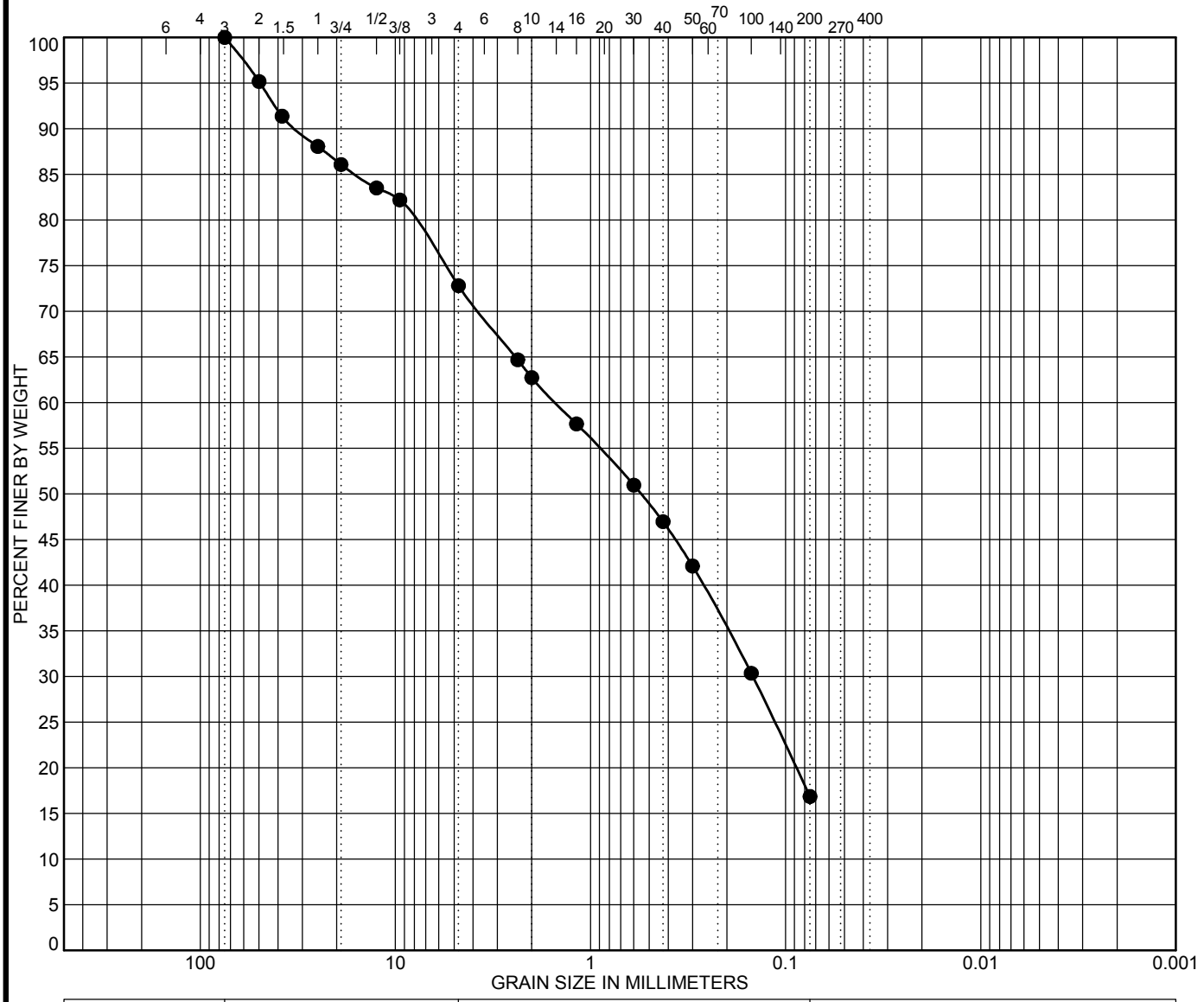
Ascenté Geotechnical Investigation

GRAIN SIZE DISTRIBUTION

Job Number: 9019.004 Date: November 2017

PLATE

E-1.8



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification	Date: 9-26-2017							
●	**TP-15**	Classification		LL	PL	PI	Cc	Cu
	Depth: 4	Silty SAND with Gravel (SM)		NP	NP	NP		
	Sample Location	Test Pit 15 from 4' - 5'						
	USCS	SM						
	AASHTO							

	Specimen Identification								
●	**TP-15**	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
	Depth: 4	75	1.505	0.147		27.2	56.0	16.9	

Natural Moisture	9.1 %	**S.E.**		**Absorption %**	
R-Value		**Durability Index**		**Soundness**	
Perctage of Wear (500 rev)	%	**Specific Gravity**		**Direct Shear**	

LUMOS & ASSOCIATES
Lumos and Associates
800 E. College Parkway
Carson City, NV 89706
(775) 883-7077
Fax: (775) 883-7114
mburns@lumosinc.com

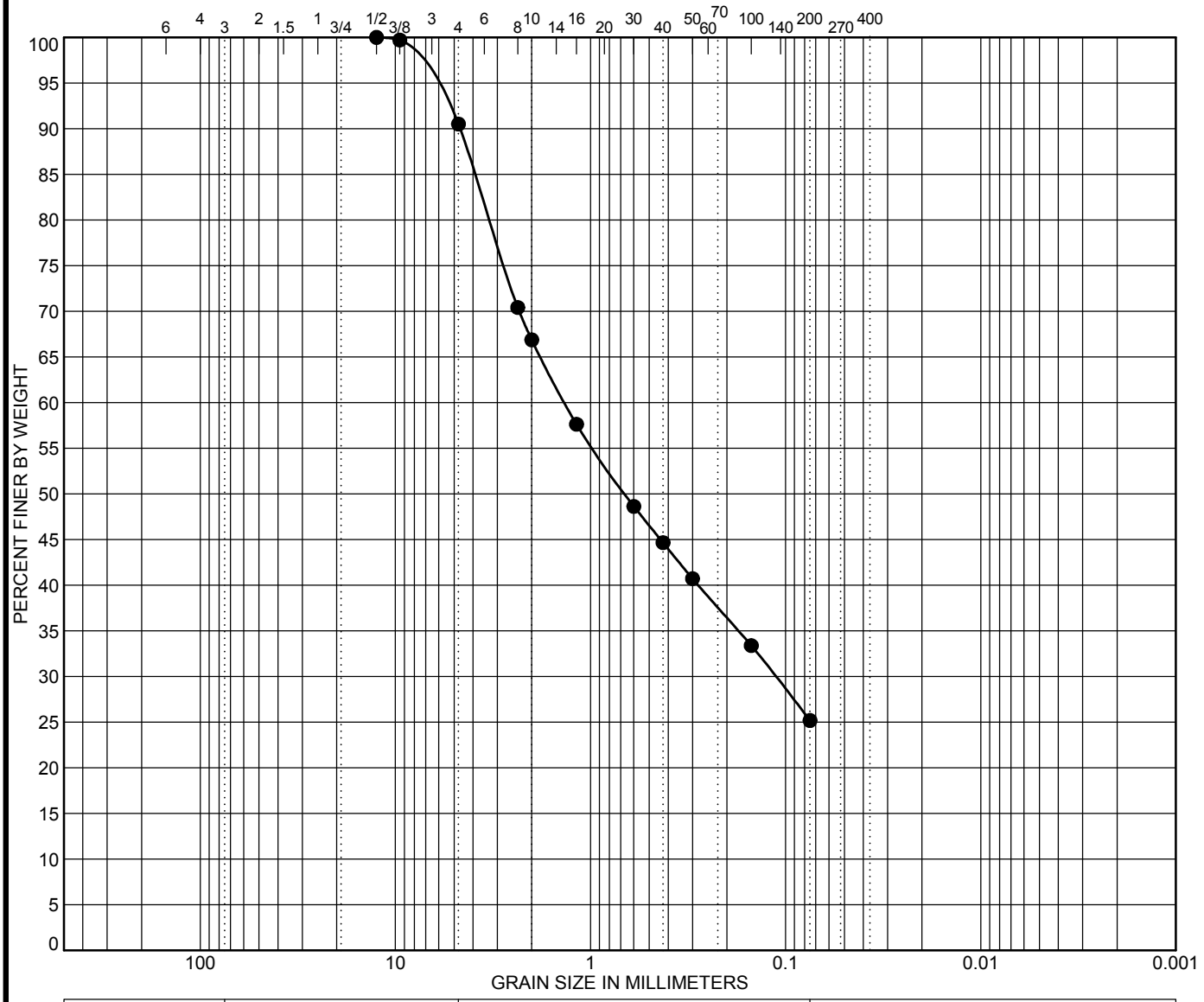
Ascenté Geotechnical Investigation

GRAIN SIZE DISTRIBUTION

Job Number: 9019.004 Date: November 2017

PLATE

E-1.9



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification	Date: 9-26-2017						
●	**TP-16**	Classification	LL	PL	PI	Cc	Cu	
	Depth: 3	Clayey SAND (SC)	37	21	16			
	Sample Location	Test Pit 16 from 3' - 4'						
	USCS	SC						
	AASHTO							

	Specimen Identification								
●	**TP-16**	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
	Depth: 3	12.5	1.351	0.113		9.5	65.3	25.2	

Natural Moisture	13.2 %		**S.E.**		**Absorption %**	
R-Value	7		**Durability Index**		**Soundness**	
Perctage of Wear (500 rev)	%		**Specific Gravity**		**Direct Shear**	

Lumos and Associates
800 E. College Parkway
Carson City, NV 89706
(775) 883-7077
Fax: (775) 883-7114
mburns@lumosinc.com

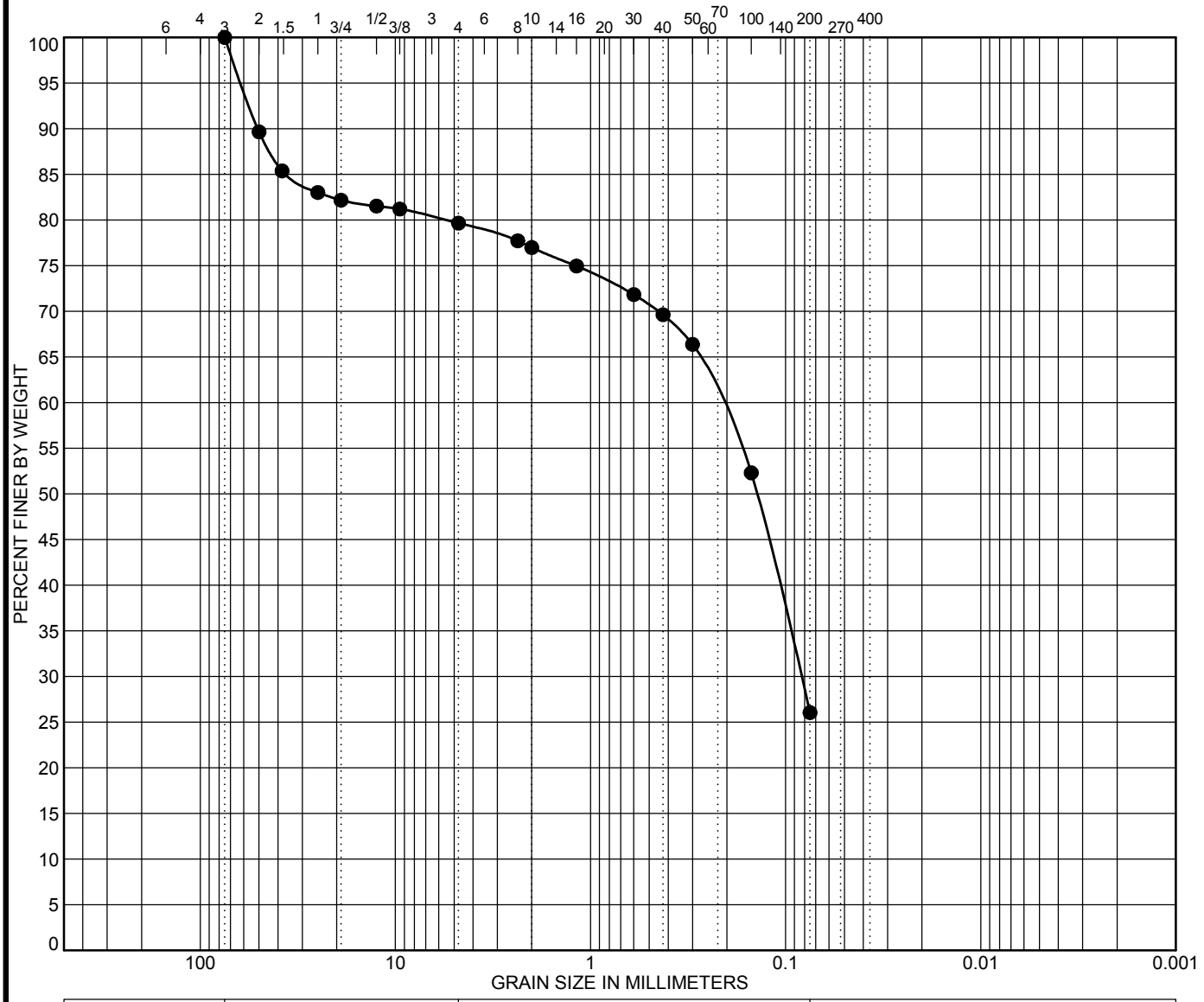
Ascenté Geotechnical Investigation

GRAIN SIZE DISTRIBUTION

Job Number: 9019.004 Date: November 2017

PLATE

E-1.10



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification	Date: 9-26-2017							
●	**TP-17**	Classification		LL	PL	PI	Cc	Cu
	Depth: 5	Silty SAND with Gravel (SM)		NP	NP	NP		
	Sample Location	Test Pit 17 from 5' - 6'						
	USCS	SM						
	AASHTO							

	Specimen Identification	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	**TP-17**								
	Depth: 5	75	0.219	0.083		20.3	53.6	26.0	

Natural Moisture	13.2 %		**S.E.**		**Absorption %**		
R-Value	18		**Durability Index**		**Soundness**		
Perctage of Wear (500 rev)	%		**Specific Gravity**		**Direct Shear**		

LUMOS & ASSOCIATES
Lumos and Associates
800 E. College Parkway
Carson City, NV 89706
(775) 883-7077
Fax: (775) 883-7114
mburns@lumosinc.com

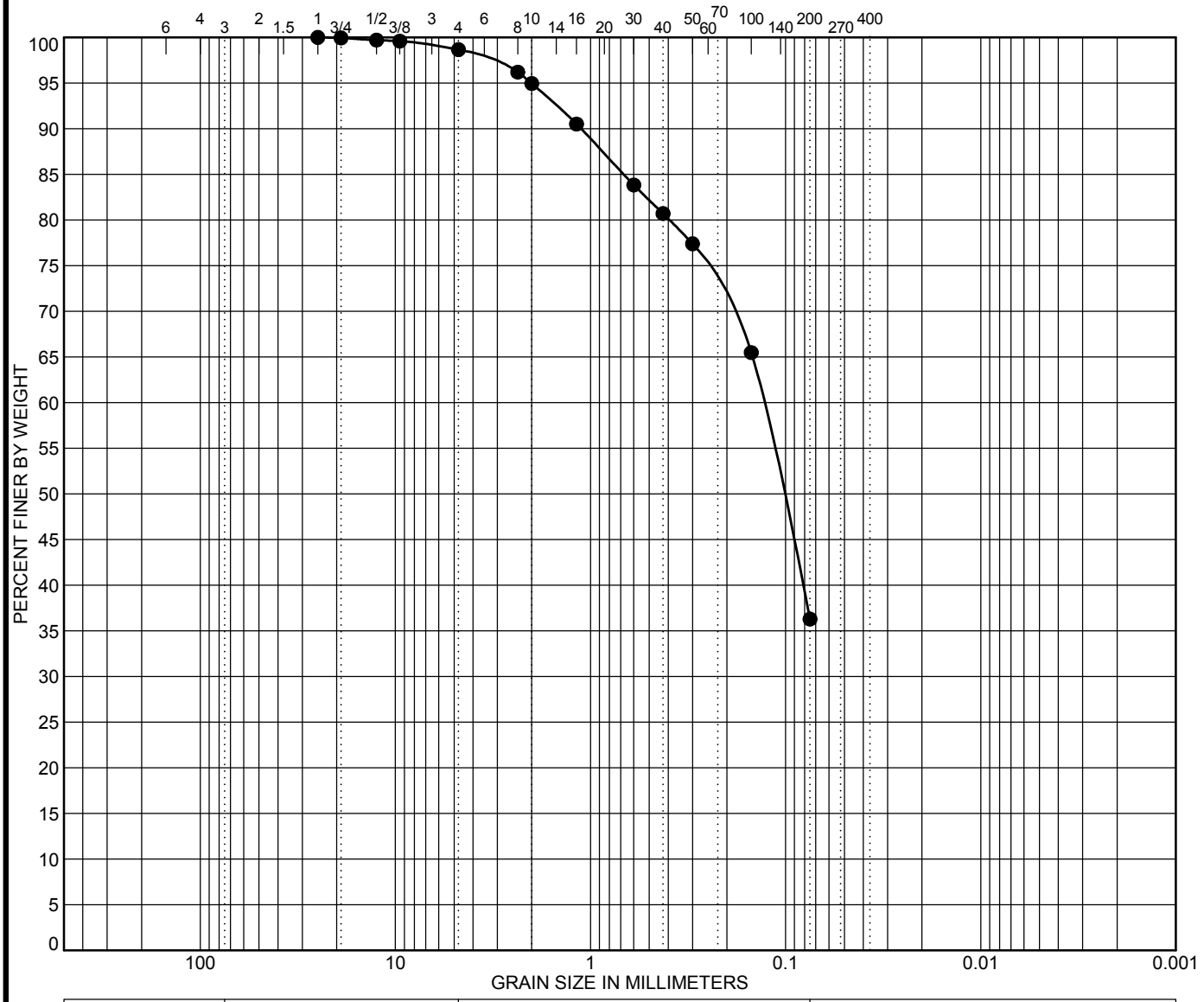
Ascenté Geotechnical Investigation

GRAIN SIZE DISTRIBUTION

Job Number: 9019.004 Date: November 2017

PLATE

E-1.11



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification	Date: 9-26-2017					
●	**TP-18**	Classification	LL	PL	PI	Cc	Cu
	Depth: 2	Silty SAND (SM)	NP	NP	NP		
	Sample Location	Test Pit 18 from 2' - 3'					
	USCS	SM					
	AASHTO						

	Specimen Identification								
●	**TP-18**	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
	Depth: 2	25	0.132			1.3	62.4	36.3	

Natural Moisture	5.8 %		**S.E.**		**Absorption %**	
R-Value			**Durability Index**		**Soundness**	
Perctage of Wear (500 rev)	%		**Specific Gravity**		**Direct Shear**	

LUMOS & ASSOCIATES
Lumos and Associates
800 E. College Parkway
Carson City, NV 89706
(775) 883-7077
Fax: (775) 883-7114
mburns@lumosinc.com

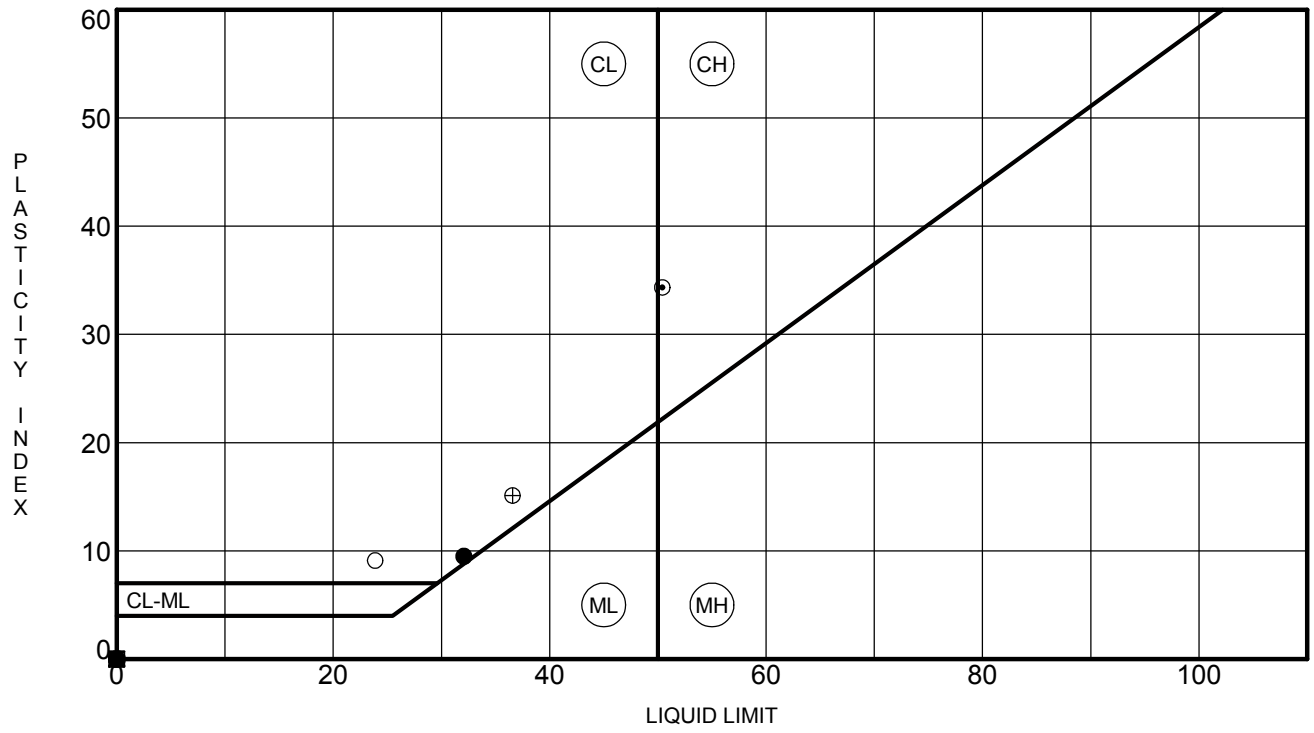
Ascenté Geotechnical Investigation

GRAIN SIZE DISTRIBUTION

Job Number: 9019.004 Date: November 2017

PLATE

E-1.12



Specimen Identification			LL	PL	PI	Fines	Classification
●	**TP-05**	**4.0**	**32**	**23**	**9**	**30**	Clayey SAND (SC)
⊠	**TP-06**	**1.0**	**NP**	**NP**	**NP**	**24**	Silty SAND (SM)
▲	**TP-07**	**2.0**	**NP**	**NP**	**NP**	**26**	Silty SAND with Gravel (SM)
★	**TP-08**	**4.0**	**NP**	**NP**	**NP**	**25**	Silty SAND with Gravel (SM)
⊙	**TP-09**	**3.0**	**50**	**16**	**34**	**59**	Sandy Fat CLAY (CH)
✿	**TP-10**	**3.0**	**NP**	**NP**	**NP**	**13**	Silty GRAVEL with Sand (GM)
○	**TP-11**	**4.0**	**24**	**15**	**9**	**26**	Clayey SAND (SC)
△	**TP-14**	**0.5**	**NP**	**NP**	**NP**	**21**	Silty SAND (SM)
⊗	**TP-15**	**4.0**	**NP**	**NP**	**NP**	**17**	Silty SAND with Gravel (SM)
⊕	**TP-16**	**3.0**	**37**	**21**	**16**	**25**	Clayey SAND (SC)
□	**TP-17**	**5.0**	**NP**	**NP**	**NP**	**26**	Silty SAND with Gravel (SM)
⊛	**TP-18**	**2.0**	**NP**	**NP**	**NP**	**36**	Silty SAND (SM)

LUMOS & ASSOCIATES
Lumos and Associates
800 E. College Parkway
Carson City, NV 89706
(775) 883-7077
Fax: (775) 883-7114
mburns@lumosinc.com

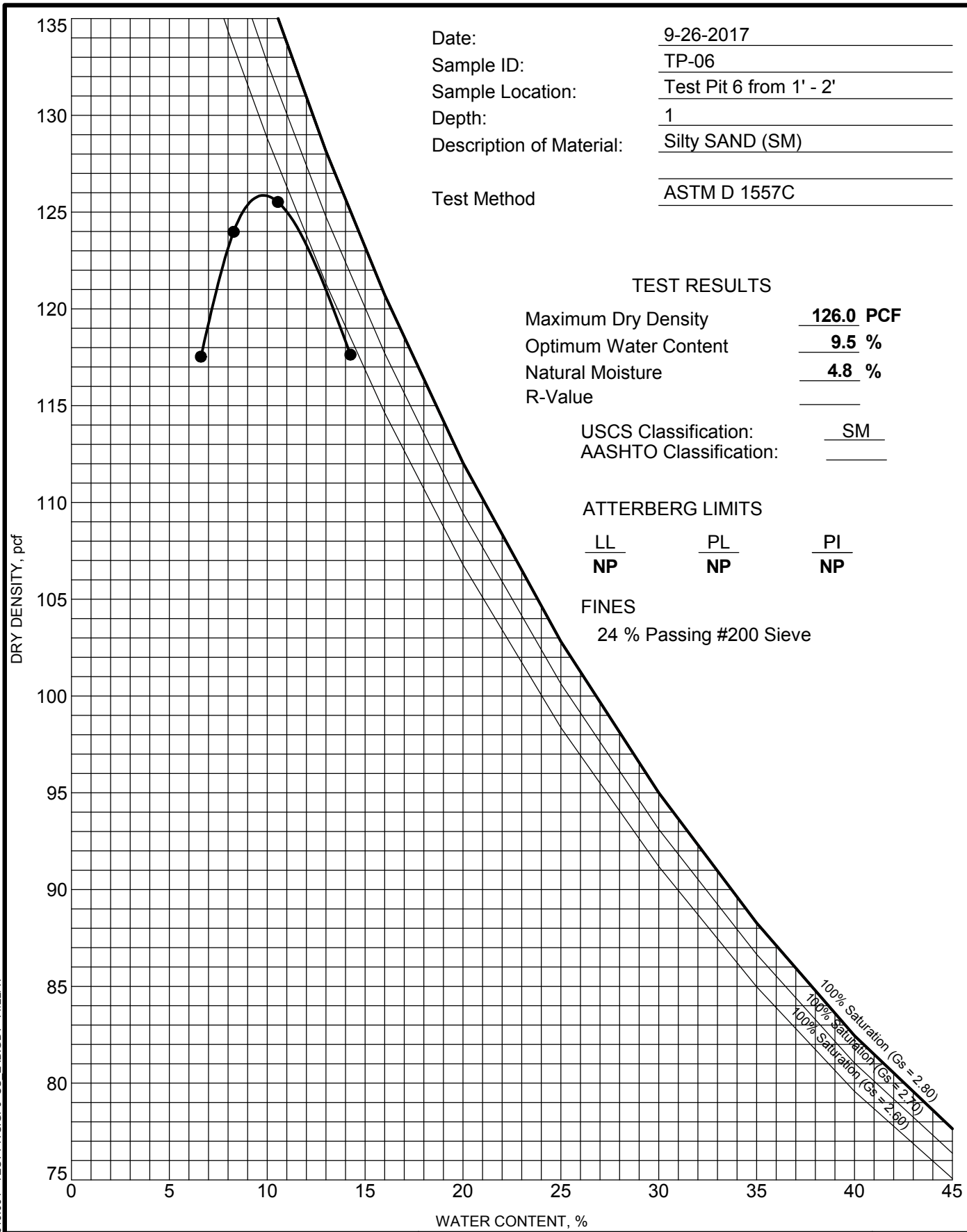
Ascenté Geotechnical Investigation

ATTERBERG LIMITS' RESULTS

Job Number: 9019.004 Date: November 2017

PLATE

E-2



Date: 9-26-2017
Sample ID: TP-06
Sample Location: Test Pit 6 from 1' - 2'
Depth: 1
Description of Material: Silty SAND (SM)

Test Method: ASTM D 1557C

TEST RESULTS

Maximum Dry Density	**126.0 PCF**
Optimum Water Content	**9.5 %**
Natural Moisture	**4.8 %**
R-Value	

USCS Classification: SM
AASHTO Classification:

ATTERBERG LIMITS

LL	PL	PI
NP	**NP**	**NP**

FINES
24 % Passing #200 Sieve

Lumos and Associates
800 E. College Parkway
Carson City, NV 89706
(775) 883-7077
Fax: (775) 883-7114
mburns@lumosinc.com

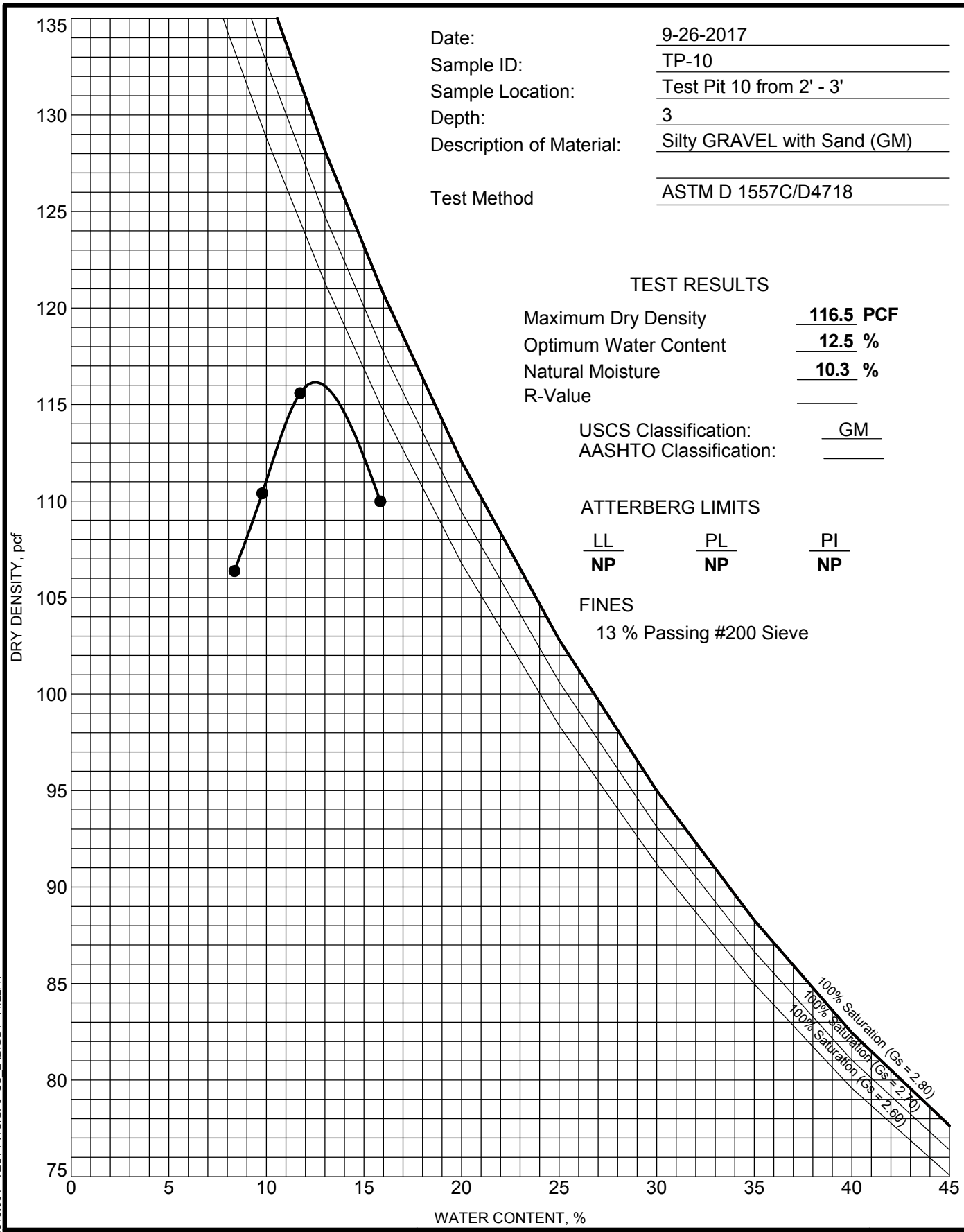
Ascenté Geotechnical Investigation

MOISTURE-DENSITY CURVE

Job Number: 9019.004 Date: November 2017

PLATE

E-3.1



Date: 9-26-2017
Sample ID: TP-10
Sample Location: Test Pit 10 from 2' - 3'
Depth: 3
Description of Material: Silty GRAVEL with Sand (GM)

Test Method: ASTM D 1557C/D4718

TEST RESULTS

Maximum Dry Density	**116.5** **PCF**
Optimum Water Content	**12.5** **%**
Natural Moisture	**10.3** **%**
R-Value	

USCS Classification: GM
AASHTO Classification:

ATTERBERG LIMITS

LL	PL	PI
NP	**NP**	**NP**

FINES
13 % Passing #200 Sieve

Lumos and Associates
800 E. College Parkway
Carson City, NV 89706
(775) 883-7077
Fax: (775) 883-7114
mburns@lumosinc.com

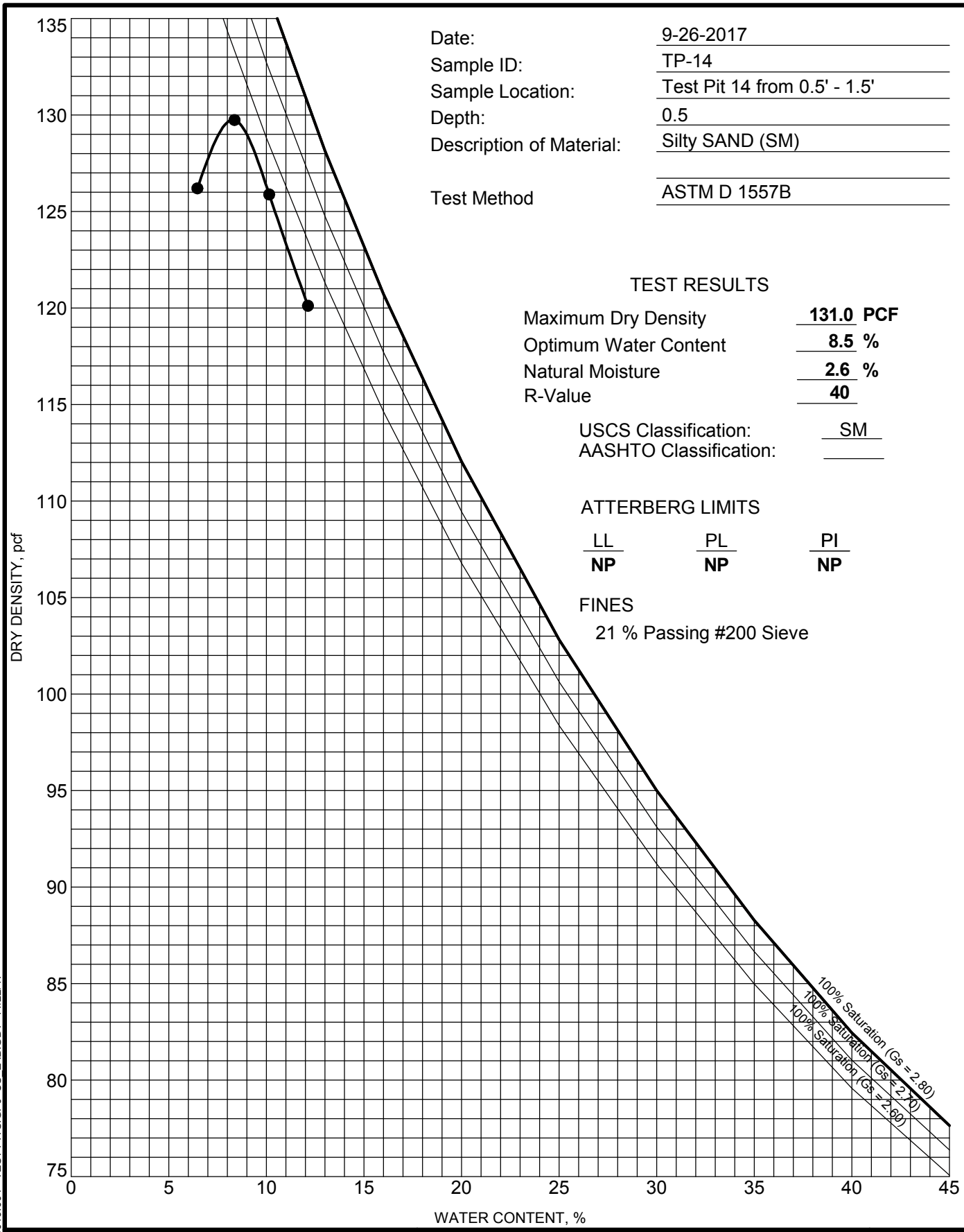
Ascenté Geotechnical Investigation

MOISTURE-DENSITY CURVE

Job Number: 9019.004 Date: November 2017

PLATE

E-3.2



Date: 9-26-2017
Sample ID: TP-14
Sample Location: Test Pit 14 from 0.5' - 1.5'
Depth: 0.5
Description of Material: Silty SAND (SM)

Test Method: ASTM D 1557B

TEST RESULTS

Maximum Dry Density	**131.0**	**PCF**
Optimum Water Content	**8.5**	**%**
Natural Moisture	**2.6**	**%**
R-Value	**40**	

USCS Classification: SM
AASHTO Classification:

ATTERBERG LIMITS

LL	PL	PI
NP	**NP**	**NP**

FINES
21 % Passing #200 Sieve

Lumos and Associates
800 E. College Parkway
Carson City, NV 89706
(775) 883-7077
Fax: (775) 883-7114
mburns@lumosinc.com

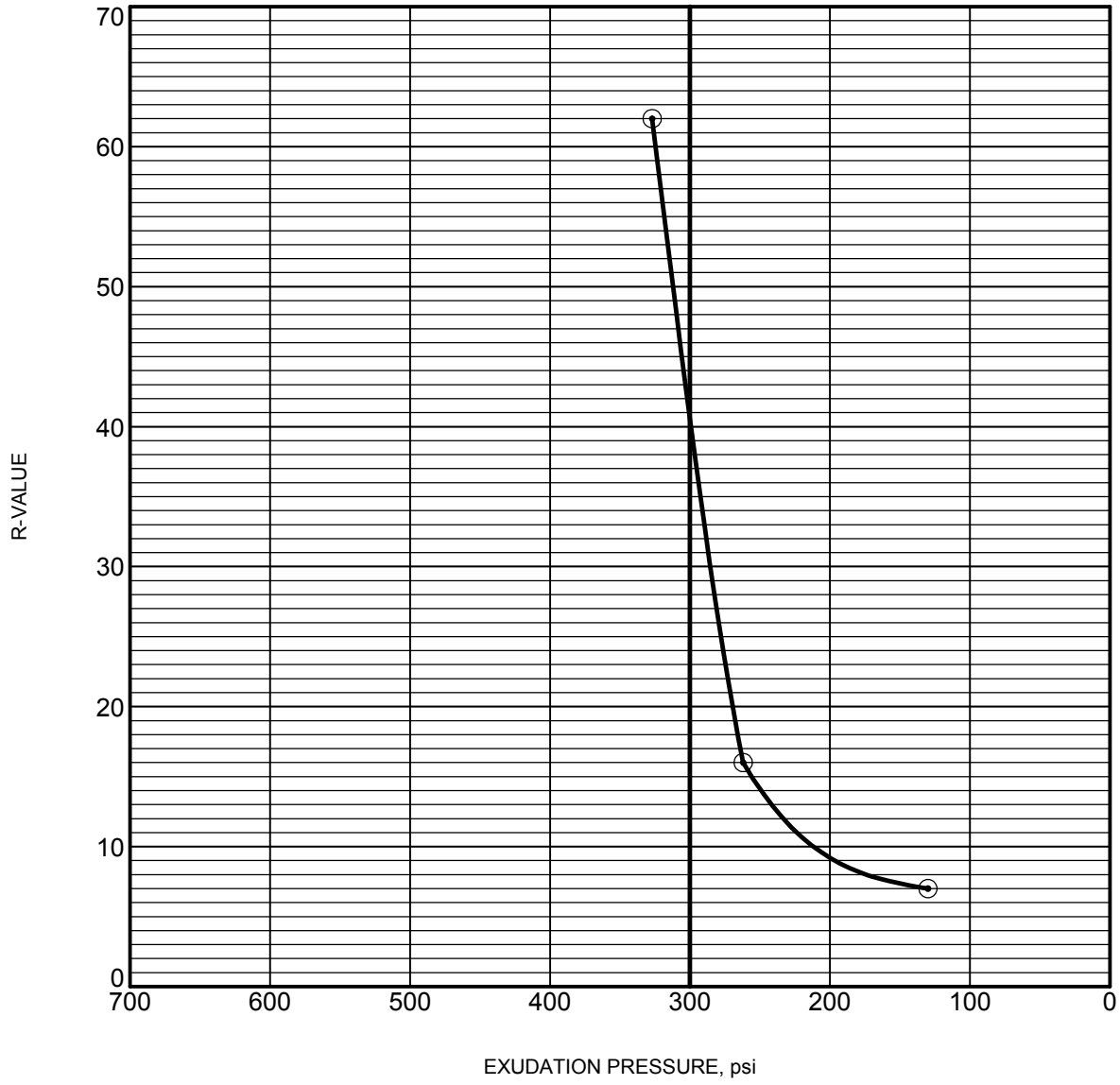
Ascenté Geotechnical Investigation

MOISTURE-DENSITY CURVE

Job Number: 9019.004 Date: November 2017

PLATE

E-3.3



Test Data

Specimen No.	Water Content (%)	Dry Density (pcf)	Expansion (psf)	Exudation (psi)	Test R-Value*
1	**11.4**	**123.3**	**0.0**	**130.0**	**7.0**
2	**10.4**	**125.2**	**0.0**	**262.0**	**16.0**
3	**9.0**	**128.3**	**0.0**	**327.0**	**62.0**

* Reported values have been corrected for sample height, where required.

Test Result

Specimen Identification		Classification	R-Value
TP-14	**0.5**	**Silty SAND (SM)**	**40**

LUMOS & ASSOCIATES

Lumos and Associates
800 E. College Parkway
Carson City, NV 89706
(775) 883-7077
Fax: (775) 883-7114
mburns@lumosinc.com

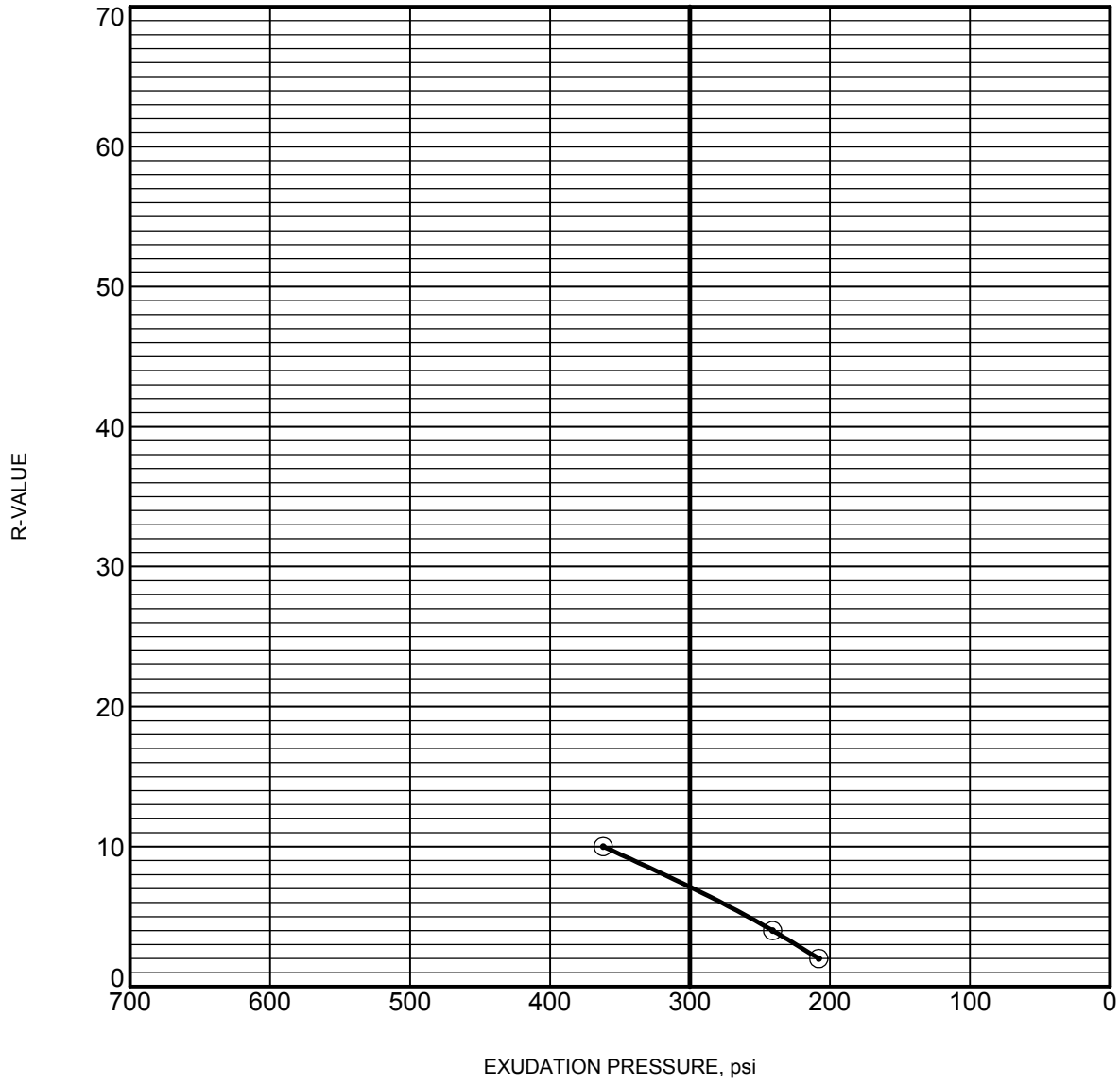
Ascenté Geotechnical Investigation

RESISTANCE VALUE TEST

Job Number: 9019.004 Date: November 2017

PLATE

E-4.1



Test Data

Specimen No.	Water Content (%)	Dry Density (pcf)	Expansion (psf)	Exudation (psi)	Test R-Value*
1	**17.4**	**108.3**	**0.0**	**208.0**	**2.0**
2	**15.9**	**113.0**	**0.0**	**241.0**	**4.0**
3	**14.8**	**112.1**	**0.0**	**362.0**	**10.0**

* Reported values have been corrected for sample height, where required.

Test Result

Specimen Identification		Classification	R-Value
TP-16	**3.0**	**Clayey SAND (SC)**	**7**

Lumos and Associates
800 E. College Parkway
Carson City, NV 89706
(775) 883-7077
Fax: (775) 883-7114
mburns@lumosinc.com

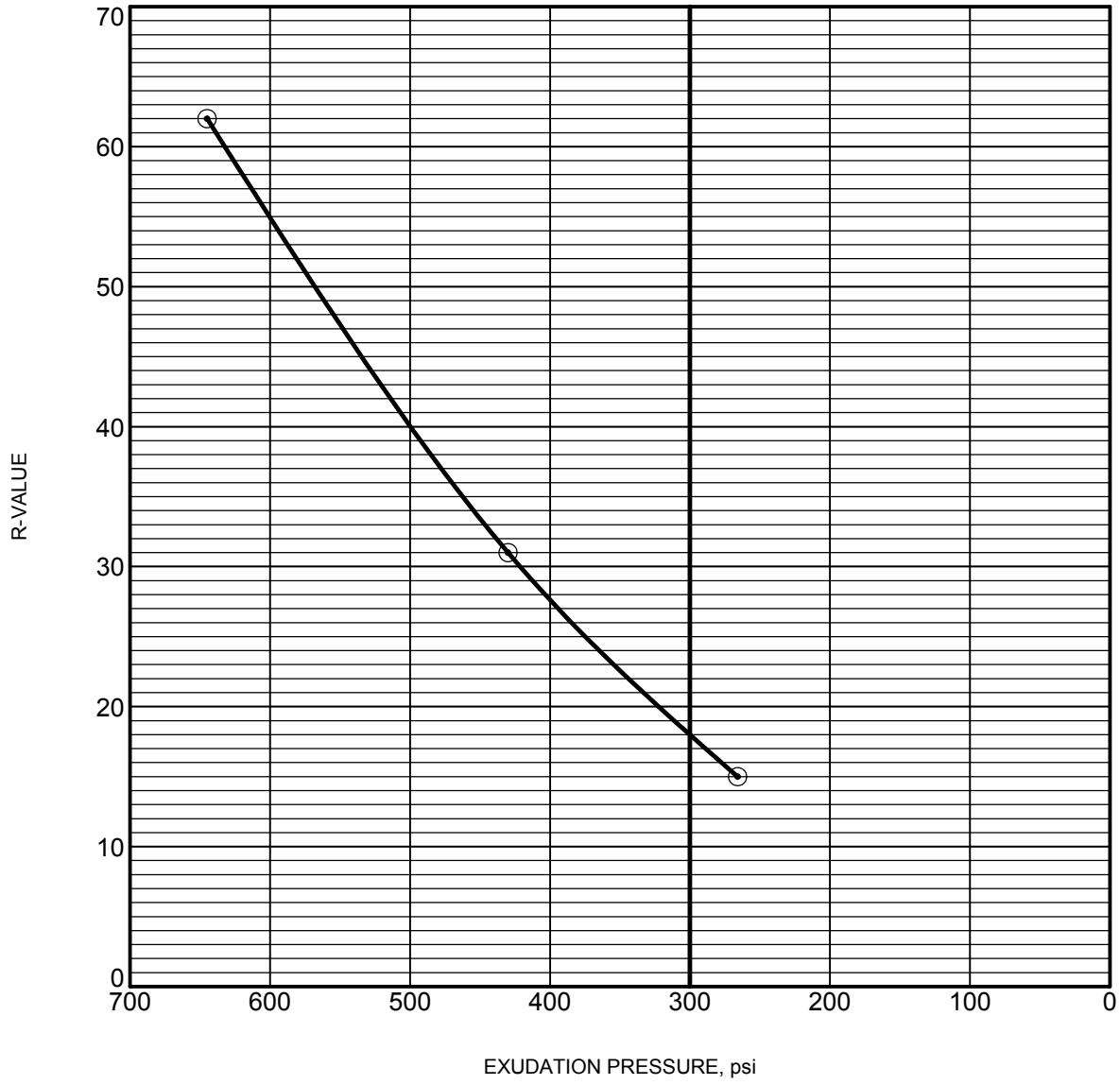
Ascenté Geotechnical Investigation

RESISTANCE VALUE TEST

Job Number: 9019.004 Date: November 2017

PLATE

E-4.2



Test Data

Specimen No.	Water Content (%)	Dry Density (pcf)	Expansion (psf)	Exudation (psi)	Test R-Value*
1	**22.8**	**92.1**	**52.0**	**645.0**	**62.0**
2	**24.2**	**100.1**	**4.0**	**430.0**	**31.0**
3	**25.0**	**102.2**	**0.0**	**266.0**	**15.0**

* Reported values have been corrected for sample height, where required.

Test Result

Specimen Identification		Classification	R-Value
TP-17	**5.0**	**Silty SAND with Gravel (SM)**	**18**

LUMOS & ASSOCIATES

Lumos and Associates
800 E. College Parkway
Carson City, NV 89706
(775) 883-7077
Fax: (775) 883-7114
mburns@lumosinc.com

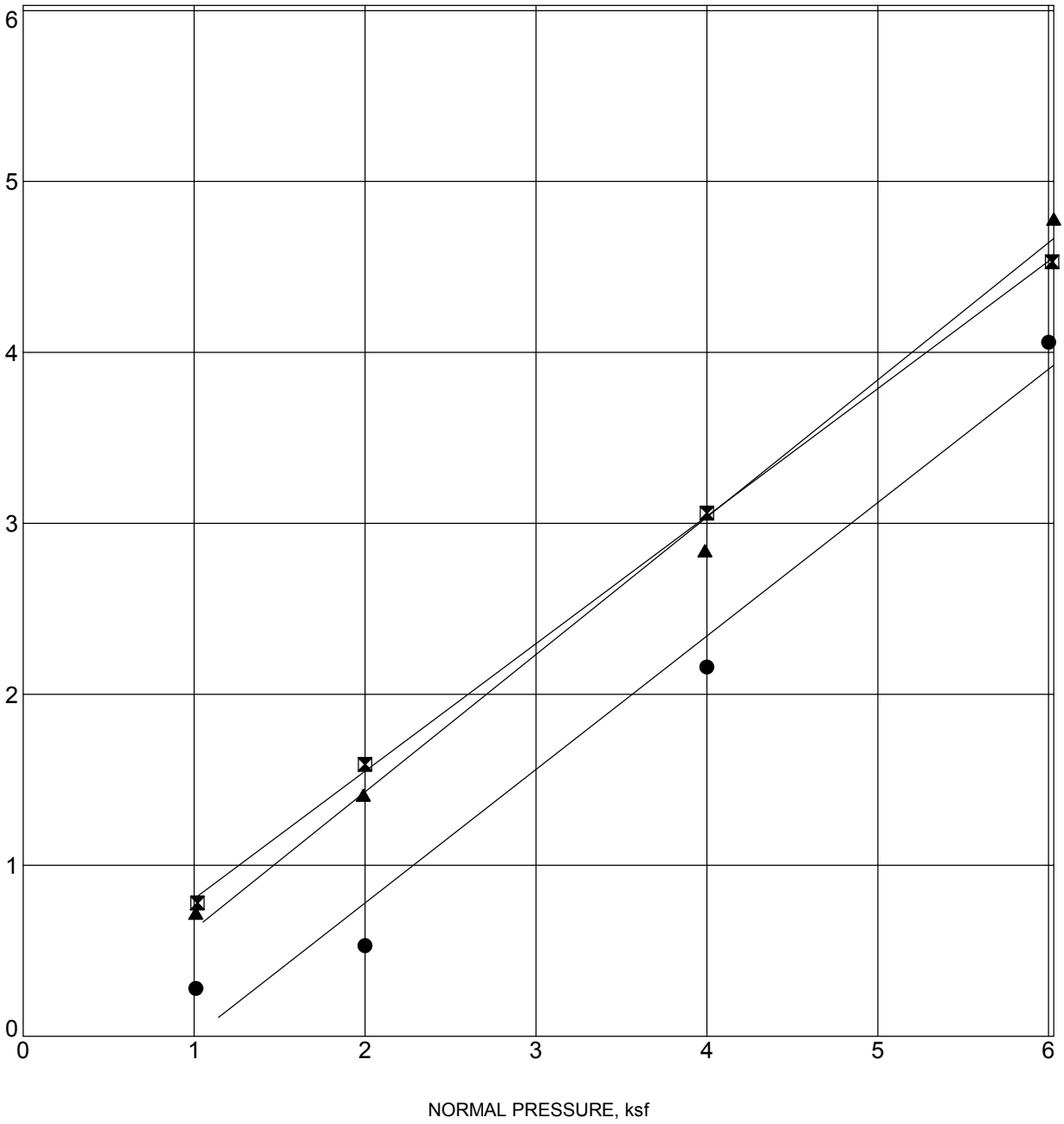
Ascenté Geotechnical Investigation

RESISTANCE VALUE TEST

Job Number: 9019.004 Date: November 2017

PLATE

E-4.3



Specimen Identification			Classification	γ_d	MC%	c	ϕ
●	TP-06	1.0	Silty SAND (SM)	126	10	0.00	31.1
⊠	TP-10	3.0	Silty GRAVEL with Sand (GM)	111	15	0.06	36.7
▲	TP-14	0.5	Silty SAND (SM)	131	9	0.00	37.3

LUMOS & ASSOCIATES
Lumos and Associates
800 E. College Parkway
Carson City, NV 89706
(775) 883-7077
Fax: (775) 883-7114
mburns@lumosinc.com

Ascenté Geotechnical Investigation

DIRECT SHEAR TEST

Job Number: 9019.004 Date: November 2017

PLATE

E-5

Silver State Labs-Reno
1135 Financial Blvd
Reno, NV 89502
(775) 857-2400 FAX: (888) 398-7002
www.ssalabs.com

Analytical Report

Workorder#: **17091289**
Date Reported: **10/3/2017**

Client: Lumos and Associates-C.C
Sampled By: B. Sexton
Project Name: Soil-Resistivit Suite-AASHTO/ 9019.004/TP-5, 4'-5'
PO #:

Laboratory Accreditation Number: NV015/CA2990

Laboratory ID	Client Sample ID	Date/Time Sampled	Date Received
17091289-01	TP-5, 4'-5'	09/22/2017 0:00	9/27/2017

Parameter	Method	Result	Units	PQL	Analyst	Date/Time Analyzed	Data Flag
Chloride	EPA 300.0	< 10	mg/Kg	10	KL	09/28/2017 20:13	
pH	SW-846 9045D	6.64	pH Units		LRB	09/28/2017 15:39	
pH Temperature	SW-846 9045D	22.0	°C		LRB	09/28/2017 15:39	
Resistivity	AASHTO T288	5860	Ohms-cm		LRB	09/28/2017 16:08	
Sodium	ASTM D2791	< 0.01	%	0.01	LRB	09/29/2017 9:38	
Sodium Sulfate as Na2SO4	Calculation	< 0.01	%	0.01	LRB	09/29/2017 10:41	
Sulfate	SM4500 SO4E	< 0.01	%	0.01	LRB	09/29/2017 9:53	

Laboratory Accreditation Number: NV015/CA2990

Laboratory ID	Client Sample ID	Date/Time Sampled	Date Received
17091289-02	TP-8 4'-5'	09/22/2017 0:00	9/27/2017

Parameter	Method	Result	Units	PQL	Analyst	Date/Time Analyzed	Data Flag
Chloride	EPA 300.0	< 10	mg/Kg	10	KL	09/28/2017 20:41	
pH	SW-846 9045D	6.73	pH Units		LRB	09/28/2017 15:39	
pH Temperature	SW-846 9045D	22.0	°C		LRB	09/28/2017 15:39	
Resistivity	AASHTO T288	8410	Ohms-cm		LRB	09/28/2017 16:08	
Sodium	ASTM D2791	< 0.01	%	0.01	LRB	09/29/2017 9:38	
Sodium Sulfate as Na2SO4	Calculation	< 0.01	%	0.01	LRB	09/29/2017 10:41	
Sulfate	SM4500 SO4E	< 0.01	%	0.01	LRB	09/29/2017 9:53	

Laboratory Accreditation Number: NV015/CA2990

Laboratory ID	Client Sample ID	Date/Time Sampled	Date Received
17091289-03	TP-10, 2'-3'	09/22/2017 0:00	9/27/2017

Parameter	Method	Result	Units	PQL	Analyst	Date/Time Analyzed	Data Flag
Chloride	EPA 300.0	< 10	mg/Kg	10	KL	09/28/2017 21:10	
pH	SW-846 9045D	6.79	pH Units		LRB	09/28/2017 15:39	
pH Temperature	SW-846 9045D	22.0	°C		LRB	09/28/2017 15:39	
Resistivity	AASHTO T288	3150	Ohms-cm		LRB	09/28/2017 16:08	
Sodium	ASTM D2791	< 0.01	%	0.01	LRB	09/29/2017 9:38	
Sodium Sulfate as Na2SO4	Calculation	< 0.01	%	0.01	LRB	09/29/2017 10:41	
Sulfate	SM4500 SO4E	< 0.01	%	0.01	LRB	09/29/2017 9:53	

Original

LUMOS & ASSOCIATES
Lumos and Associates
800 E. College Parkway
Carson City, NV 89706
(775) 883-7077
Fax: (775) 883-7114
bsexton@lumosinc.com

Ascenté Geotechnical Investigation

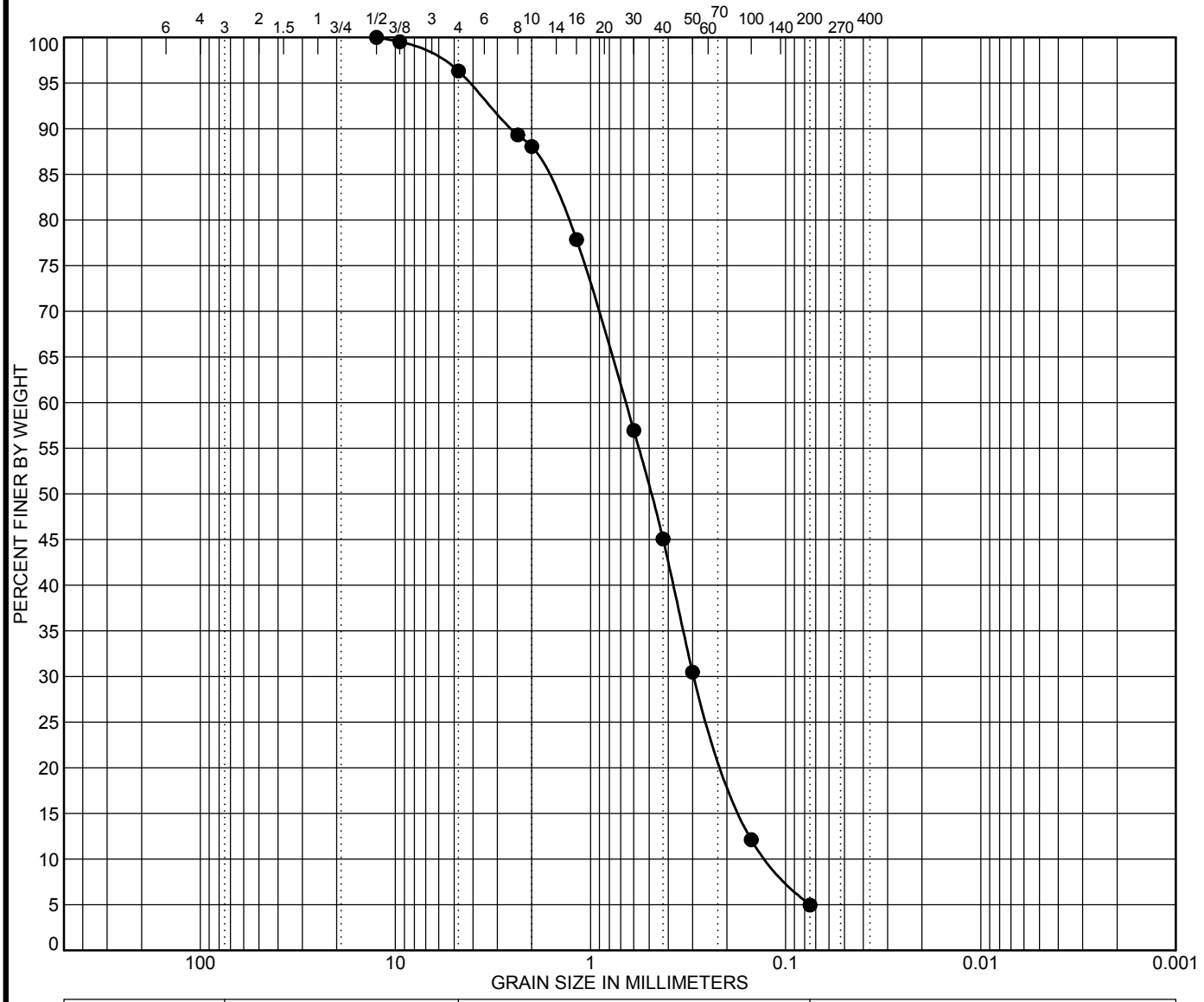
SOLUBLE SULFATE

Job Number: 9019.004
Date: Nov. 2017

PLATE
E-6

APPENDIX F

LUMOS & ASSOCIATES



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification	Date: 10-13-2017						
●	**B-01**	Classification	LL	PL	PI	Cc	Cu
	Depth: 20.5	Poorly Graded SAND (SP)	NP	NP	NP	1.1	5.4
	Sample Location	Boring 1 from 20.5' - 21'					
	USCS	SP					
	AASHTO						

	Specimen Identification								
●	**B-01**	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
	Depth: 20.5	12.5	0.662	0.295	0.122	3.7	91.4	5.0	
	Natural Moisture	1.9 %		**S.E.**		**Absorption %**			
	R-Value			**Durability Index**		**Soundness**			
	Perctage of Wear (500 rev)	%		**Specific Gravity**		**Direct Shear**			

Lumos and Associates
800 E. College Parkway
Carson City, NV 89706
(775) 883-7077
Fax: (775) 883-7114
mburns@lumosinc.com

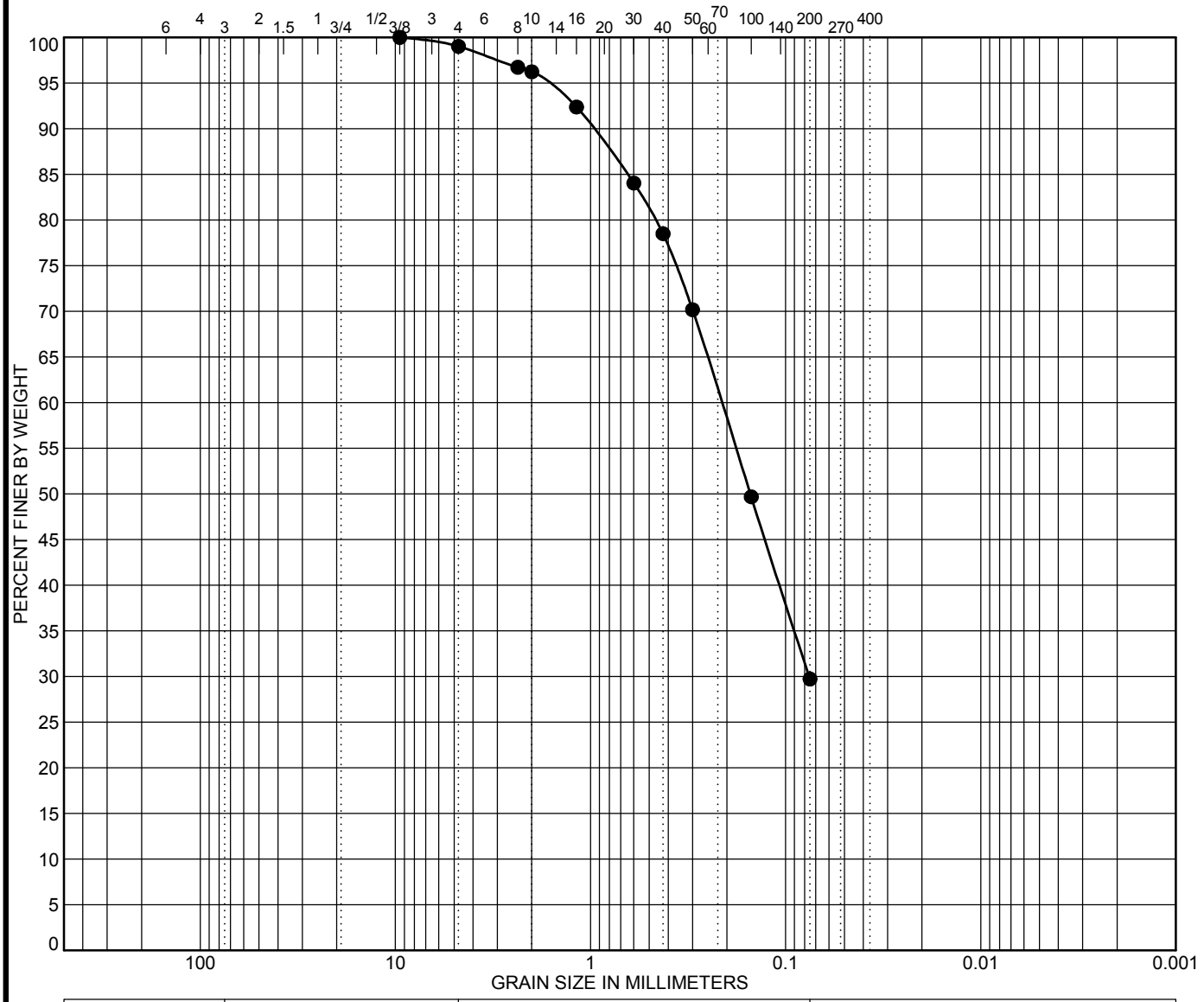
Ascenté Geotechnical Investigation

GRAIN SIZE DISTRIBUTION

Job Number: 9019.004 Date: November 2017

PLATE

F-1.1



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification	Date: 10-13-2017							
●	**B-02**	Classification			LL	PL	PI	Cc	Cu
	Depth: 15.5	Silty SAND (SM)			NP	NP	NP		
	Sample Location	Boring 2 from 15.5' - 16'							
	USCS	SM							
	AASHTO								

	Specimen Identification								
●	**B-02**	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
	Depth: 15.5	9.5	0.213	0.076		1.0	69.3	29.7	
	Natural Moisture	12.7 %		**S.E.**		**Absorption %**			
	R-Value			**Durability Index**		**Soundness**			
	Perctage of Wear (500 rev)	%		**Specific Gravity**		**Direct Shear**			

Lumos and Associates
800 E. College Parkway
Carson City, NV 89706
(775) 883-7077
Fax: (775) 883-7114
mburns@lumosinc.com

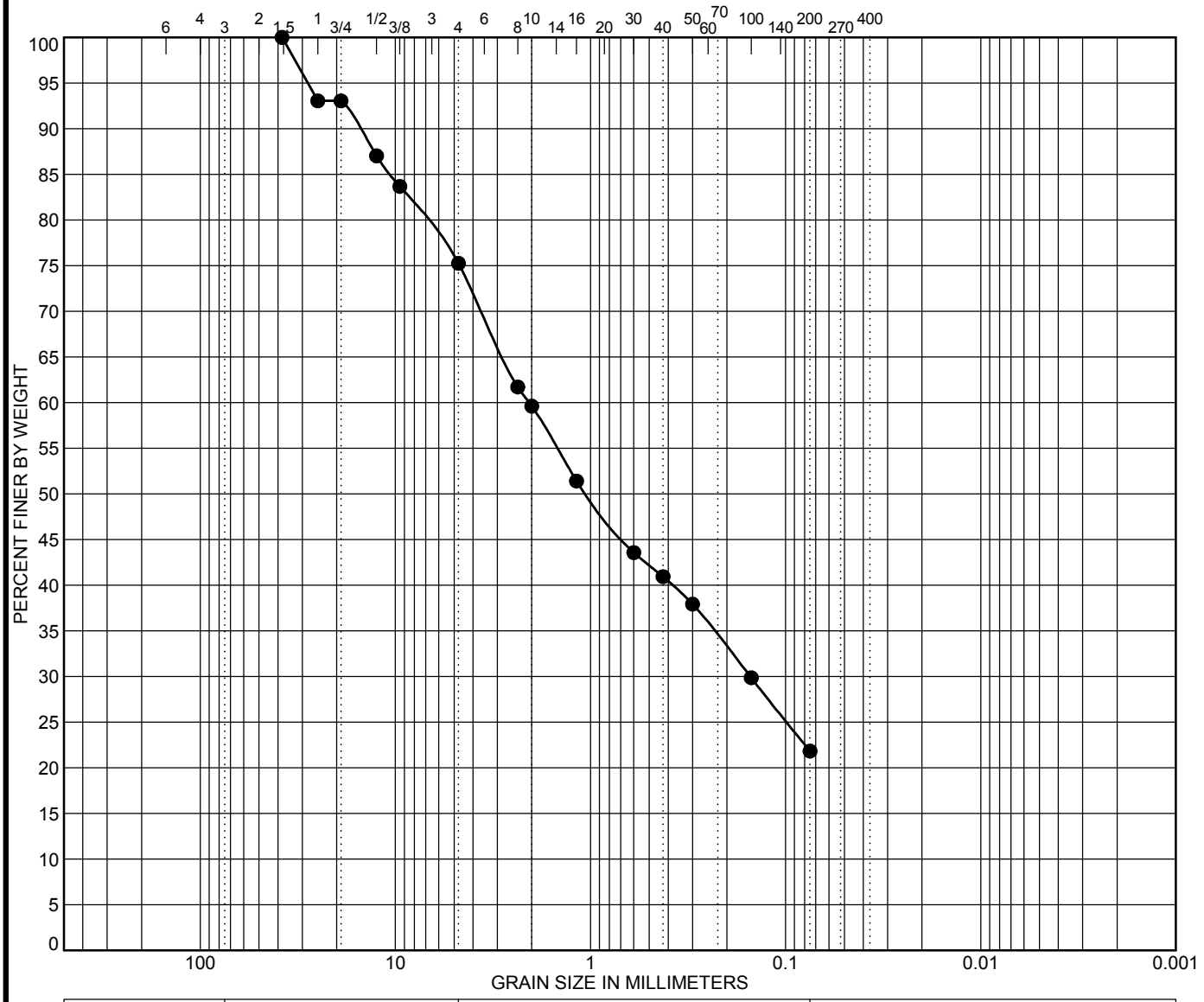
Ascenté Geotechnical Investigation

GRAIN SIZE DISTRIBUTION

Job Number: 9019.004 Date: November 2017

PLATE

F-1.2



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification	Date: 10-13-2017							
●	**B-04**	Classification				LL	PL	PI	Cc	Cu
	Depth: 30.5	Silty SAND with Gravel (SM)				34	24	10		
	Sample Location	Boring 4 from 30.5' - 31'								
	USCS	SM								
	AASHTO									

	Specimen Identification								
●	**B-04**	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
	Depth: 30.5	38.1	2.063	0.152		24.8	53.4	21.8	

Natural Moisture	26.1 %		**S.E.**		**Absorption %**		
R-Value			**Durability Index**		**Soundness**		
Perctage of Wear (500 rev)	%		**Specific Gravity**		**Direct Shear**		

Lumos and Associates
800 E. College Parkway
Carson City, NV 89706
(775) 883-7077
Fax: (775) 883-7114
mburns@lumosinc.com

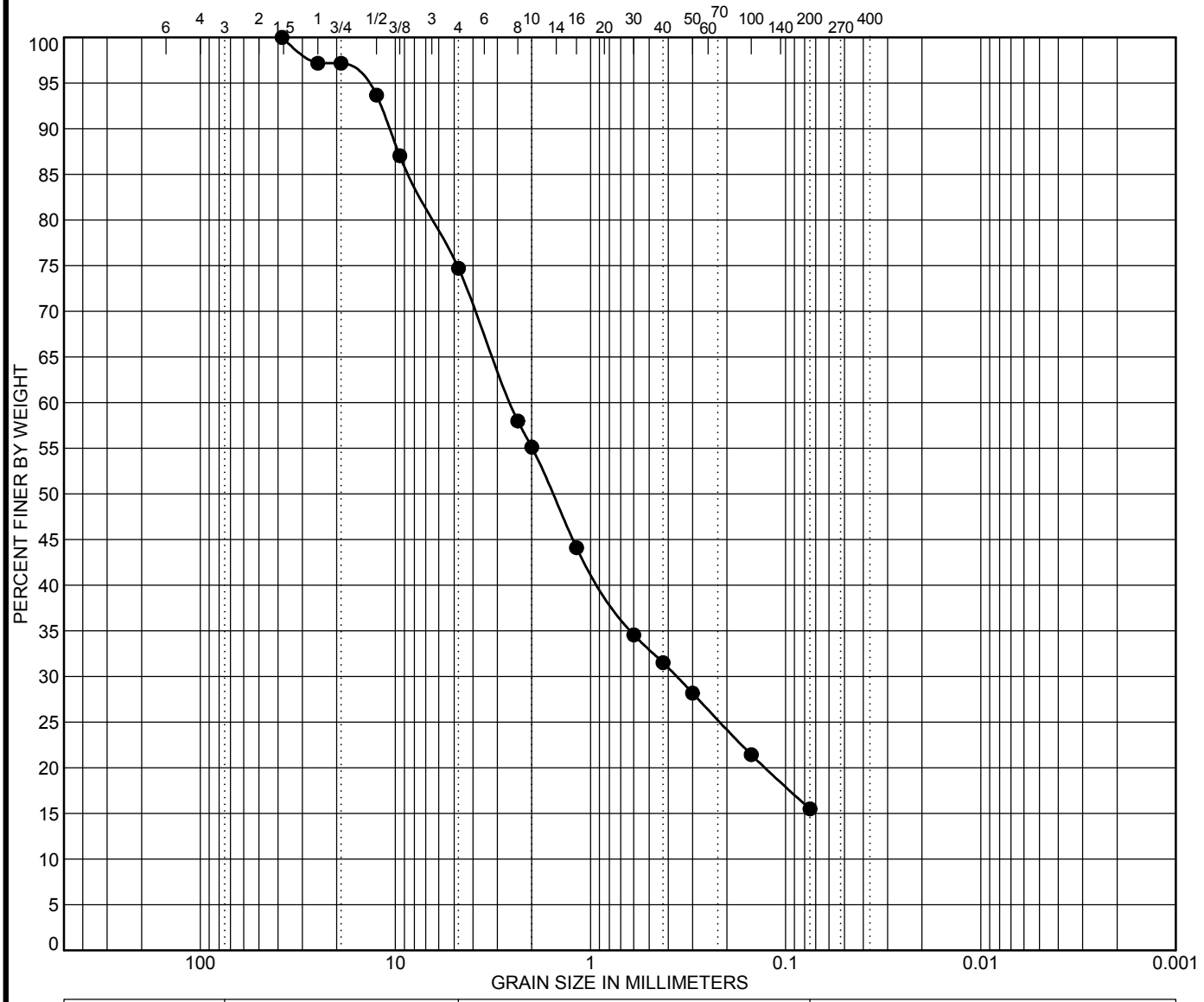
Ascenté Geotechnical Investigation

GRAIN SIZE DISTRIBUTION

Job Number: 9019.004 Date: November 2017

PLATE

F-1.3



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification	Date: 10-13-2017							
●	**B-04**	Classification		LL	PL	PI	Cc	Cu
	Depth: 40	Silty SAND with Gravel (SM)		NP	NP	NP		
	Sample Location	Boring 4 from 40' - 41.5'						
	USCS	SILTY SAND with GRAVEL(SM)						
	AASHTO							

	Specimen Identification								
●	**B-04**	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
	Depth: 40	38.1	2.568	0.363		25.3	59.2	15.5	

Natural Moisture	21.5 %	**S.E.**		**Absorption %**	
R-Value		**Durability Index**		**Soundness**	
Perctage of Wear (500 rev)	%	**Specific Gravity**		**Direct Shear**	

Lumos and Associates
800 E. College Parkway
Carson City, NV 89706
(775) 883-7077
Fax: (775) 883-7114
mburns@lumosinc.com

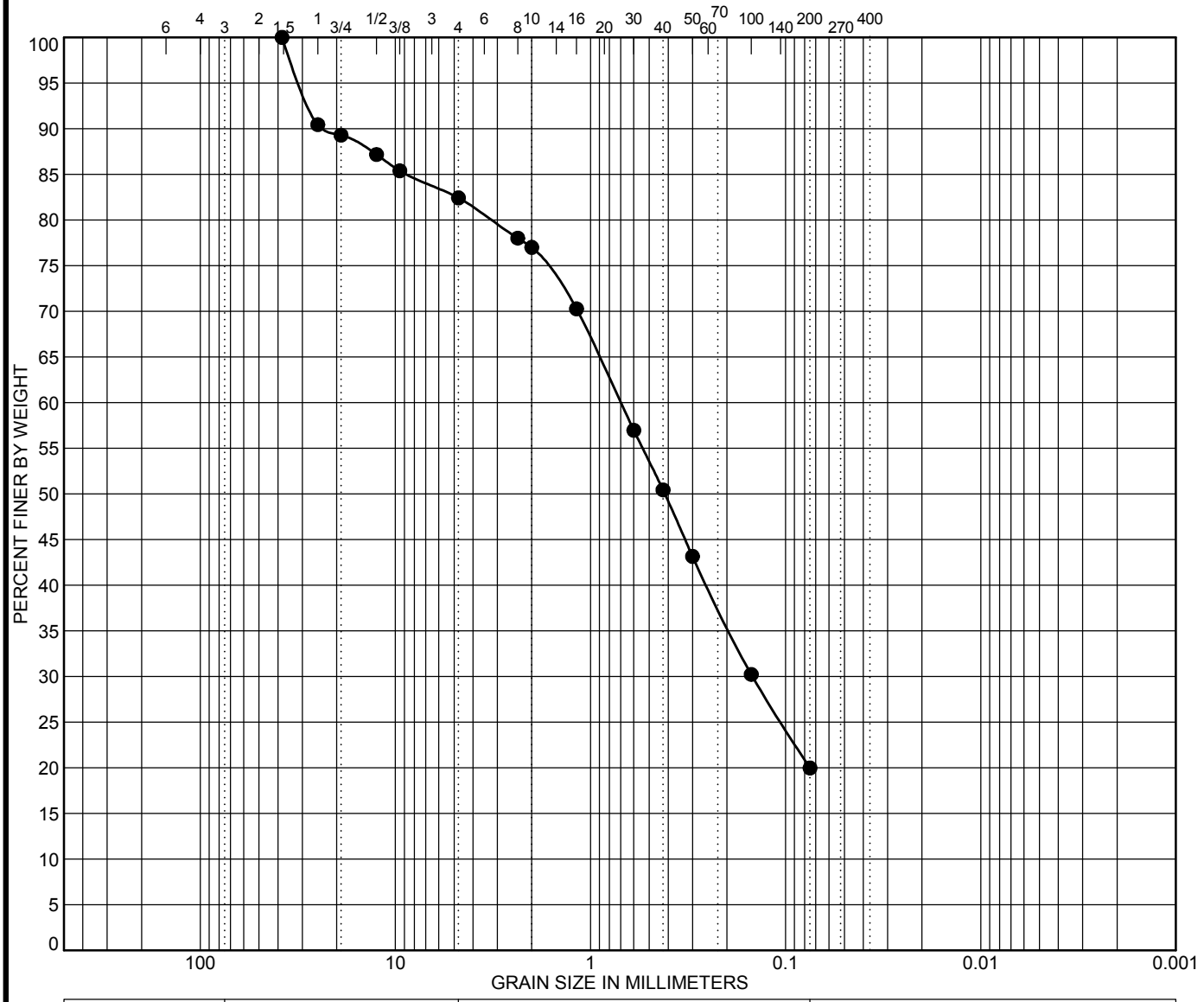
Ascenté Geotechnical Investigation

GRAIN SIZE DISTRIBUTION

Job Number: 9019.004 Date: November 2017

PLATE

F-1.4



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification	Date: 10-13-2017								
● **B-06**	Classification					LL	PL	PI	Cc	Cu
Depth: 35	Silty SAND with Gravel (SM)					NP	NP	NP		
Sample Location	Boring 6 from 35' - 36'									
USCS	SM									
AASHTO										

Specimen Identification								
● **B-06**	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
Depth: 35	38.1	0.7	0.148		17.6	62.5	20.0	

Natural Moisture	13.5 %	**S.E.**		**Absorption %**	
R-Value		**Durability Index**		**Soundness**	
Perctage of Wear (500 rev)	%	**Specific Gravity**		**Direct Shear**	

Lumos and Associates
800 E. College Parkway
Carson City, NV 89706
(775) 883-7077
Fax: (775) 883-7114
mburns@lumosinc.com

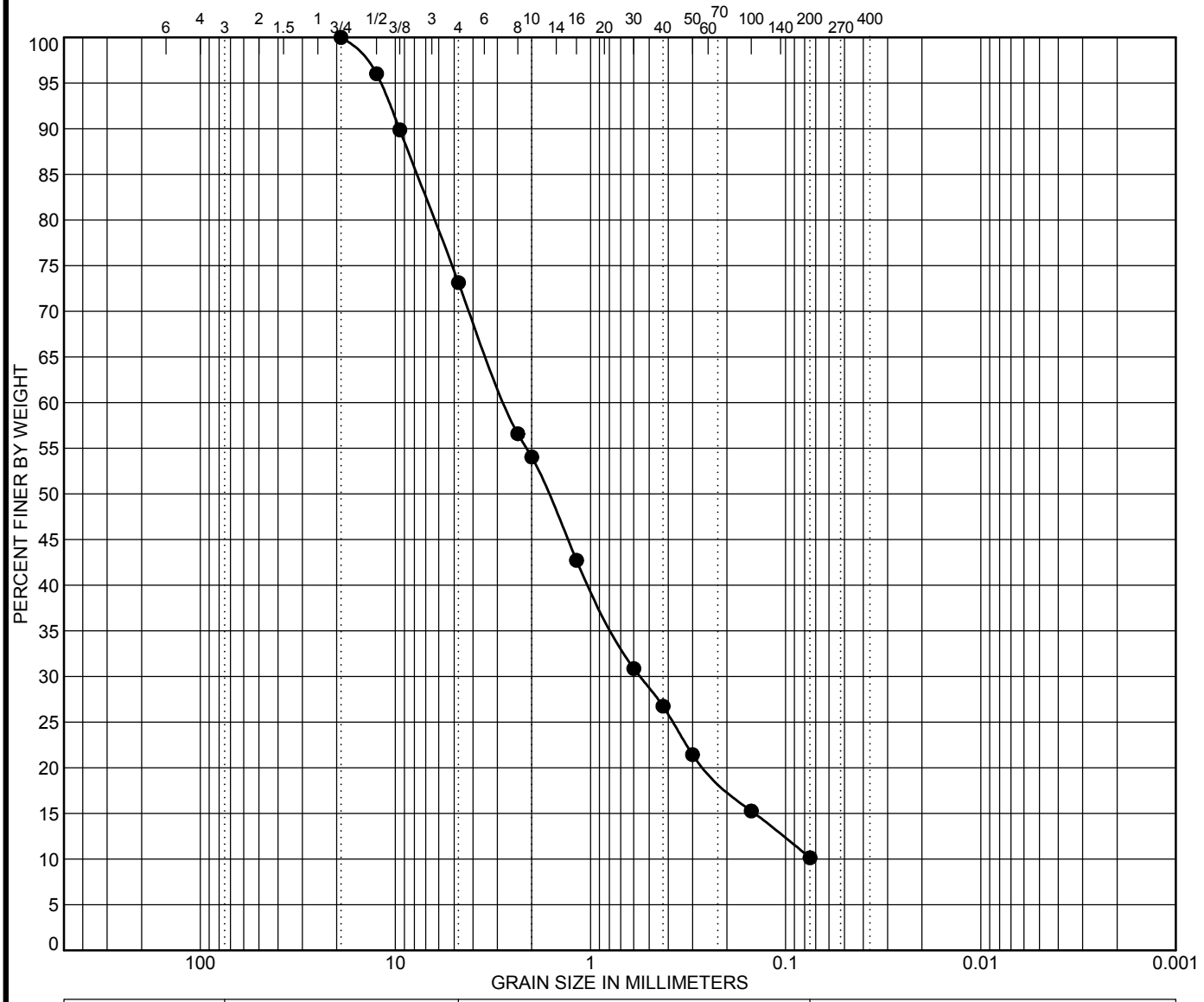
Ascenté Geotechnical Investigation

GRAIN SIZE DISTRIBUTION

Job Number: 9019.004 Date: November 2017

PLATE

F-1.5



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification	Date: 10-13-2017								
● **B-10**	Classification					LL	PL	PI	Cc	Cu
Depth: 11.2	Well-Graded Sand with Silt and Gravel (SW-SM)					NP	NP	NP	1.6	37.1
Sample Location	Boring 10 from 11.2' - 11.5'									
USCS	SW-SM									
AASHTO										

Specimen Identification								
● **B-10**	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
Depth: 11.2	19	2.726	0.558		26.9	63.0	10.1	

Natural Moisture	5.6 %	**S.E.**		**Absorption %**		
R-Value		**Durability Index**		**Soundness**		
Perctage of Wear (500 rev)	%	**Specific Gravity**		**Direct Shear**		

Lumos and Associates
800 E. College Parkway
Carson City, NV 89706
(775) 883-7077
Fax: (775) 883-7114
mburns@lumosinc.com

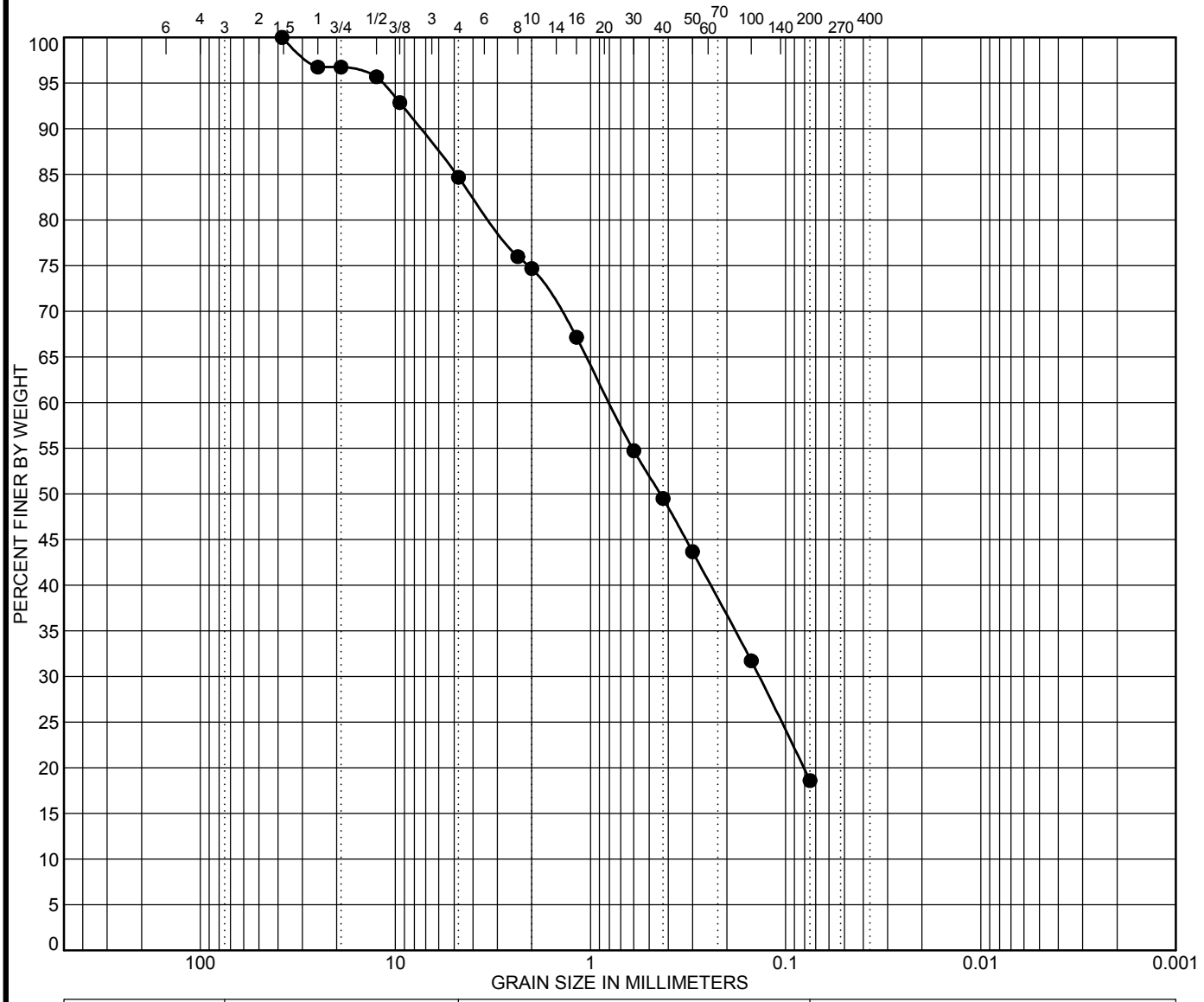
Ascenté Geotechnical Investigation

GRAIN SIZE DISTRIBUTION

Job Number: 9019.004 Date: November 2017

PLATE

F-1.6



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification	Date: 10-13-2017								
●	**B-11**	Classification				LL	PL	PI	Cc	Cu
	Depth: 15	Silty SAND with Gravel (SM)				NP	NP	NP		
	Sample Location	Boring 11 from 15' - 16.5'								
	USCS	SM								
	AASHTO									

	Specimen Identification								
●	**B-11**	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
	Depth: 15	38.1	0.799	0.137		15.3	66.1	18.6	

Natural Moisture	12.6 %	**S.E.**		**Absorption %**	
R-Value		**Durability Index**		**Soundness**	
Perctage of Wear (500 rev)	%	**Specific Gravity**		**Direct Shear**	

Lumos and Associates
800 E. College Parkway
Carson City, NV 89706
(775) 883-7077
Fax: (775) 883-7114
mburns@lumosinc.com

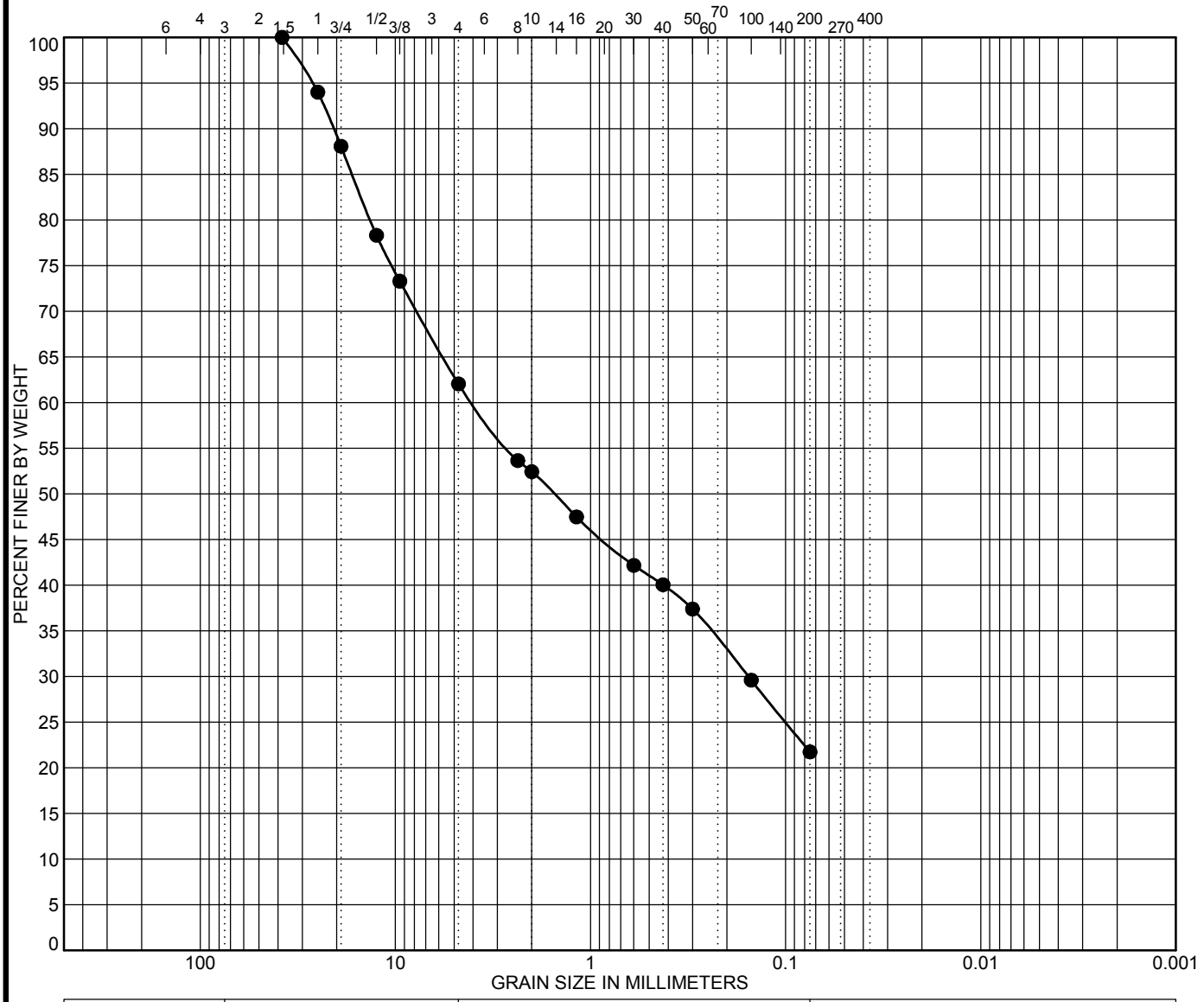
Ascenté Geotechnical Investigation

GRAIN SIZE DISTRIBUTION

Job Number: 9019.004 Date: November 2017

PLATE

F-1.7



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification	Date: 10-13-2017							
●	**B-12**	Classification				LL	PL	PI	Cc	Cu
	Depth: 15	Clayey SAND with Gravel (SC)				27	17	10		
	Sample Location	Boring 12 from 15' - 16.5'								
	USCS	SC								
	AASHTO									

	Specimen Identification								
●	**B-12**	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
	Depth: 15	38.1	4.005	0.155		38.0	40.3	21.7	

Natural Moisture	12.1 %		**S.E.**		**Absorption %**	
R-Value			**Durability Index**		**Soundness**	
Perctage of Wear (500 rev)	%		**Specific Gravity**		**Direct Shear**	

LUMOS & ASSOCIATES
Lumos and Associates
800 E. College Parkway
Carson City, NV 89706
(775) 883-7077
Fax: (775) 883-7114
mburns@lumosinc.com

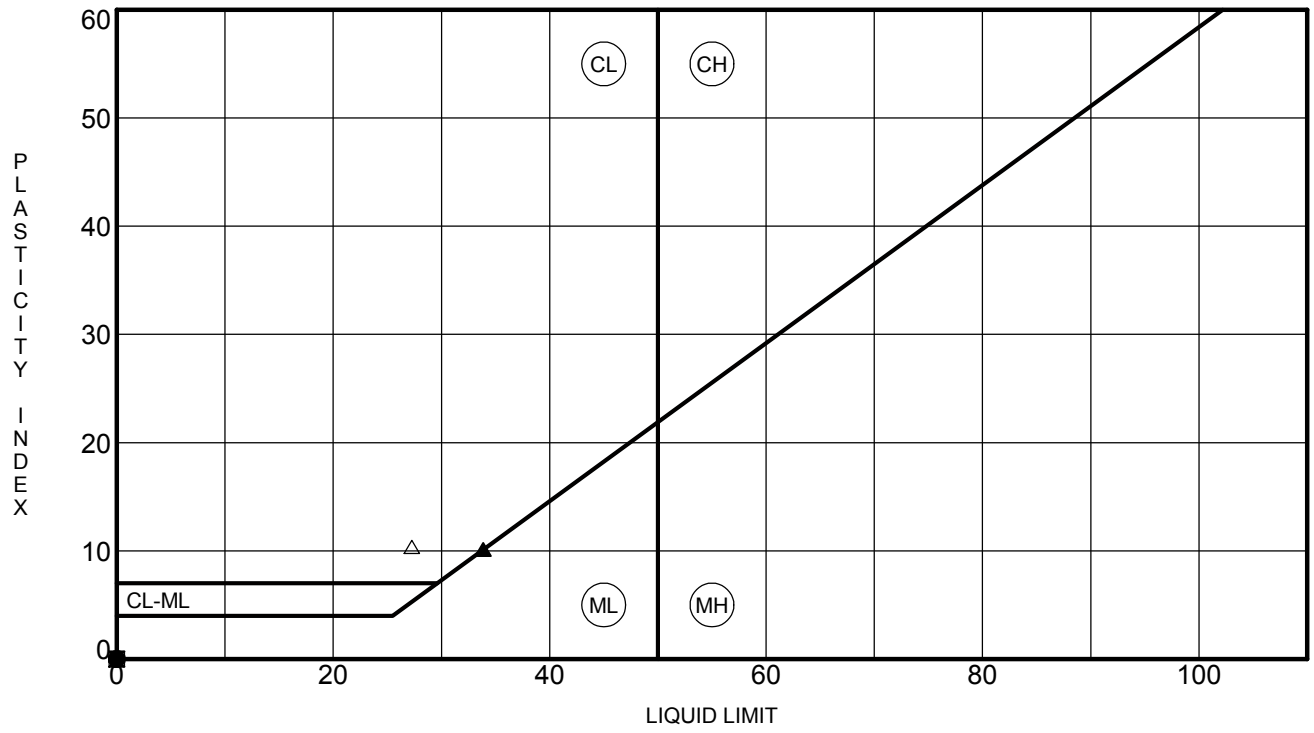
Ascenté Geotechnical Investigation

GRAIN SIZE DISTRIBUTION

Job Number: 9019.004 Date: November 2017

PLATE

F-1.8



Specimen Identification			LL	PL	PI	Fines	Classification
●	**B-01**	**20.5**	**NP**	**NP**	**NP**	**5**	Poorly Graded SAND (SP)
⊠	**B-02**	**15.5**	**NP**	**NP**	**NP**	**30**	Silty SAND (SM)
▲	**B-04**	**30.5**	**34**	**24**	**10**	**22**	Silty SAND with Gravel (SM)
★	**B-04**	**40.0**	**NP**	**NP**	**NP**	**15**	Silty SAND with Gravel (SM)
⊙	**B-06**	**35.0**	**NP**	**NP**	**NP**	**20**	Silty SAND with Gravel (SM)
✿	**B-10**	**11.2**	**NP**	**NP**	**NP**	**10**	Well-Graded Sand with Silt and Gravel (SW-SM)
○	**B-11**	**15.0**	**NP**	**NP**	**NP**	**19**	Silty SAND with Gravel (SM)
△	**B-12**	**15.0**	**27**	**17**	**10**	**22**	Clayey SAND with Gravel (SC)

Lumos and Associates
800 E. College Parkway
Carson City, NV 89706
(775) 883-7077
Fax: (775) 883-7114
mburns@lumosinc.com

Ascenté Geotechnical Investigation

ATTERBERG LIMITS' RESULTS

Job Number: 9019.004 Date: November 2017

PLATE

F-2

LUMOS & ASSOCIATES

L.A. Abrasion and Specific Gravity

ASTM C-535 AND ASTM C-127

CLIENT NNV1 Partners

PROJECT Ascente

JOB NO. 9019.004 **SAMPLED BY** B. Sexton **DATE** 10/6/2017

TEST METHOD **TESTED BY** K. Panos/A. Szendrey **DATE** 11/3/2017

LAB NO. **SAMPLE LOCATION** Boring 8 from 5' to 40'

AGGREGATE DESCRIPTION Native **COLOR** Grayish Brown

NOMINAL AGGREGATE SIZE 3/8" to 1 1/2"

L.A. ABRASION GRADING (C535) 1 2 [3]

A	INITIAL WEIGHT	10,009.70 (g)	
B	FINAL WEIGHT	5,848.10 (g)	
C	WEIGHT LOSS	4,161.60 (g)	(A-B)
D	PERCENT LOSS	**42** (%)	(A-B)/A (Nearest 1%)

SPECIFIC GRAVITY (C127)

(A) = DRY WEIGHT	2389.7	GRAMS
(B) = SSD WEIGHT	2521.8	GRAMS
(C) = SUMBERGED WEIGHT	1453.1	GRAMS

BULK SPECIFIC GRAVITY	(A/(B-C)	=	**2.236**
SSD SPECIFIC GRAVITY	(B/B-C)	=	**2.360**
APPARENT SPECIFIC GRAVITY	(A/A-C)	=	**2.551**
% ABSPORTION	((B-A)/A)	=	**5.50%**

LUMOS & ASSOCIATES

Lumos and Associates

800 E. College Parkway
Carson City, NV 89706
(775) 883-7077
Fax: (775) 883-7114
bsexton@lumosinc.com

Ascenté Geotechnical Investigation

L.A. ABRASION AND SPECIFIC GRAVITY

Job Number: 9019.004 Date: Nov. 2017

PLATE F-3

APPENDIX G

LUMOS & ASSOCIATES

Job # 9019.004
Client: NNV1, Partners, LLC
Description: Pavement Calculations
By: B. Sexton

R-Value of 18 Utilized due to it being the middle R-value tested
R-Value for Gravel (Type II, Class B) = 70
T.I. = 5 (Car and Light Truck Areas)
Gf = 2.50
GE = 0.0032(TI)(100-R)
tlayer = GE/Gf

GE_{AC}= 0.0032(5)(100-70) = 0.48'
t_{AC}= 0.48/(2.50)*(12") = 2.30" => **use 3" asphalt**
$t_{AC(actual)}$= (3)(2.50)/12" = 0.63'

GE_{AB}= 0.0032(5)(100-18) = 1.31'
t_{AB}= (1.31 - 0.63)(12")/1.1 = 7.4" => **use 8" aggregate base**

Therefore, use 3" of Asphalt Concrete underlain by a minimum of 6" of Aggregate Base in Car and Light Truck Areas.

LUMOS & ASSOCIATES
Lumos and Associates
800 E. College Parkway
Carson City, NV 89706
(775) 883-7077
Fax: (775) 883-7114
bsexton@lumosinc.com

Ascenté Geotechnical Investigation

PAVEMENT DESIGN

Job Number: 9019.004 Date: Nov. 2017

PLATE

G-1

APPENDIX H

LUMOS & ASSOCIATES

USGS Design Maps Summary Report

User–Specified Input

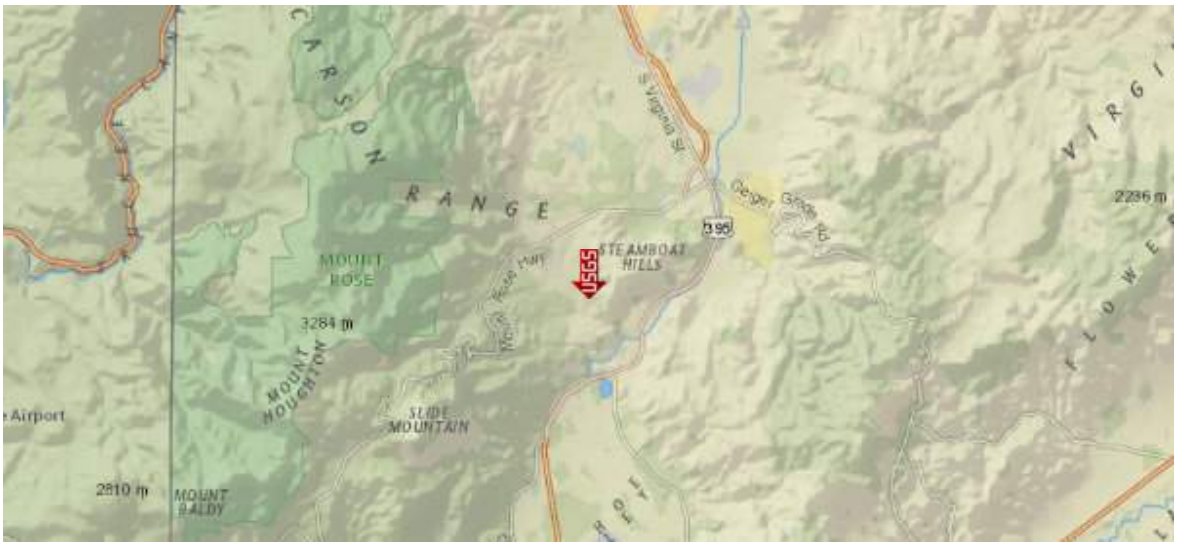
Report Title Ascente
Tue October 31, 2017 00:55:07 UTC

Building Code Reference Document 2012/2015 International Building Code
(which utilizes USGS hazard data available in 2008)

Site Coordinates 39.3686°N, 119.8039°W

Site Soil Classification Site Class D – "Stiff Soil"

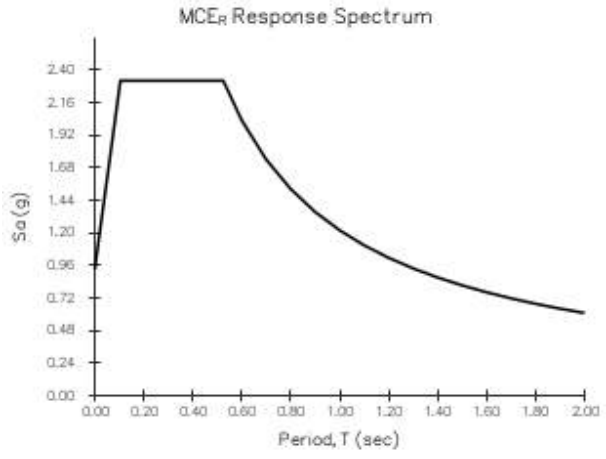
Risk Category I/II/III

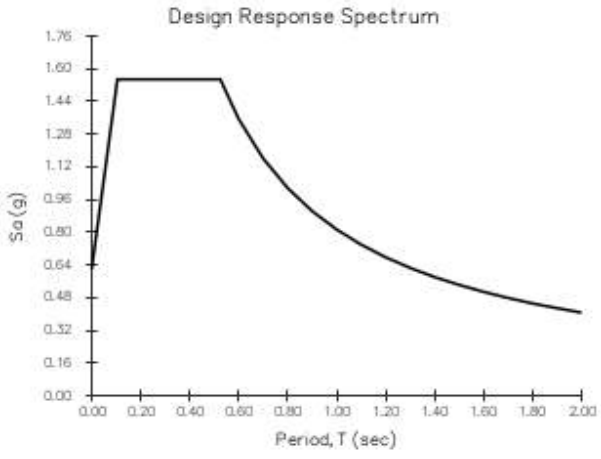


USGS–Provided Output

S_S =	2.322 g	S_{MS} =	2.322 g	S_{DS} =	1.548 g
S_1 =	0.813 g	S_{M1} =	1.219 g	S_{D1} =	0.813 g

For information on how the SS and S1 values above have been calculated from probabilistic (risk-targeted) and deterministic ground motions in the direction of maximum horizontal response, please return to the application and select the "2009 NEHRP" building code reference document.





LUMOS & ASSOCIATES
Lumos and Associates
800 E. College Parkway
Carson City, NV 89706
(775) 883-7077
Fax: (775) 883-7114
bsexton@lumosinc.com

Ascenté Geotechnical Investigation
DESIGN RESPONSE SPECTRUM
Job Number: 9019.004 Date: Nov. 2017

PLATE H-1

APPENDIX I

LUMOS & ASSOCIATES

Fred Saunders
Consulting Geologist
Certified Professional Geologist #11807
252 La Costa Ave
Dayton, Nevada 89403
775-450-4540 cell
ftsaunders@charter.net

To: Mitch Burns & Bert Sexton September 21, 2017
From: Fred Saunders
RE: Ascente Trenches

I was contacted by Mitch Burns of Lumos & Associates (Lumos) to see if I would go out to Ascente Property and evaluate the trenching that their doing. The objective of the trenching is to determine if the faults previously mapped by geologist from the Nevada Bureau of Mines and Geology and myself actual exist and if they extend onto the proposed Ascente development (Figure 1 Fault and trench map of Ascente Property).

I met Bert Sexton at the property on September 20, 2017 and we proceeded to Trench 1, located on the northeast corner of the property. The trench locations are plotted on figure 1 and the coordinates are tabulated in appendix A. Bert Sexton, the onsite engineer, supervised cutting the trenches that were located in the field by Mitch Burns of Lumos.

Faults

The faults on the property can be divided into two types. The first type are faults within or separating the volcanic units. These are not significant faults as they are believed to be quite older. The geologic mapping did not find any indication that these can be traced into alluvial or show offset of the alluvial. These fault usually trend in a northeast or northwest direction.

The second type of faults are the north-south faults that separate alluvial from bedrock volcanics. These faults are the significant faults as they are younger and potentially more active. The Galena Creek fault which is inferred to lie just off the west edge of the property is a typical example

of this type of fault as it separates outcropping volcanic units on the east from outwash deposits (? landslide breccia) on the west. It is mapped as a concealed fault by Romanelli & others (Preliminary Revised Geologic Map of the Reno Urban Area, Nevada, 2011). Concealed faults mean there is no surface evidence that the fault exist other than a linear feature. Their mapping shows that this north-south trending fault takes a sharp northeast turn across the north end of the Ascente property and then turns back north-south north of the property. The author believes that these are two different north-south faults and that there is no evidence to connect them (See Geology Map).
All trenches were surveyed using a handheld GPS (Nad 27 Zone 11 UTM coordinates). The trenches were photographed, but the sun angle and cloudy conditions were not conducive for good photographs (Photos attached).

Trench 1
Trench 1 is a 55 foot long roughly east-west trench that parallels the north property line. It was designed to cut a N 50°W trending fault that is defined by linear contact separating andesite's and dacites. The trench did not extend far enough to the east to intercept the fault. The last few feet on the eastern end of the trench did have some iron stained clay that could indicate it was getting near the fault.
The location of the fault doesn't affect any of the development plans for the project so it was decided not to extend the trench any further east.

Trench 2
Trench 2 is located on the northwestern edge of the property. It is 85 feet long and dug in an east west direction paralleling the north property line. It was designed to test the extension of the large north-south trending proposed Galena Creek fault that follows Galena Creek. This fault separates the outcropping dacitic and andesitic volcanics on the east from outwash deposits (thought to be a landslide breccia) on the west that is derived of dominantly large granitic boulders.

The trench did not intercept the fault as the fault projects further west off the Ascente Propety on the geologic map and therefore should not effect the Ascente development. The alluvial consisted mostly of rounded boulders of dacites from the hill to the east. There were a few decomposed boulders of granitics on the west end that would have come from a western source.

Trench 3

This trench is on west edge of the property line approximately 1,150 feet south of trench 2. It is 75 feet long in an east-west direction. It was designed to test the same north-south trending fault. The fault was not recognized in the trench but there was a dark clay zone. The dark clay zone is believed to be from the bottom of the existing drainage. The trench contained numerous large rounded boulders of granitics on the west end and more angular cobbles of dacitic volcanics on the east end, this suggests a fault could be located further to the west off the Ascente property. The fault believed located to the west of the trench should not effect the Ascente development.

Trench 4

This trench is again an east-west trench located near the west edge of the property approximately 100 feet south of the turnoff to the water tower road. The trench was 80 feet long. It was designed to test the same north-south trending fault located near the west edge of the property. The trench did not cut the fault zone as the trench was located too far to the east. It did intersect a small N30°E near vertical fracture zone within the dacitic volcanics. This fracture is believed to an older feature as it is within the dacitic rocks and of little significance to the project.

Trench 5

This was an added trench located approximately 300 feet southeast of trench 4. It was designed to test a north-south striking fault that separated outcropping dacitic rocks on west from alluvial on east

(Saunders Geologic Map 2016). This trench was deemed important as it was within designed lots in the development.
The east-west trench was only 40 feet long. The west end of the trench was cut down 4 feet to outcropping dacite. At about ½ way in the trench the fault was cut. The alluvial had a marked color change and represented a sharp drop off of basement depth. The trench was cut 15 feet deep on the east side of the fault and never encountered bedrock, thus indicating a vertical offset. This fault will need to have a 50 foot offset designed in the Ascente plot plan.
The projected core hole located east of the trench could be moved closer to the trench to see if it encounters bedrock at a reasonable depth.

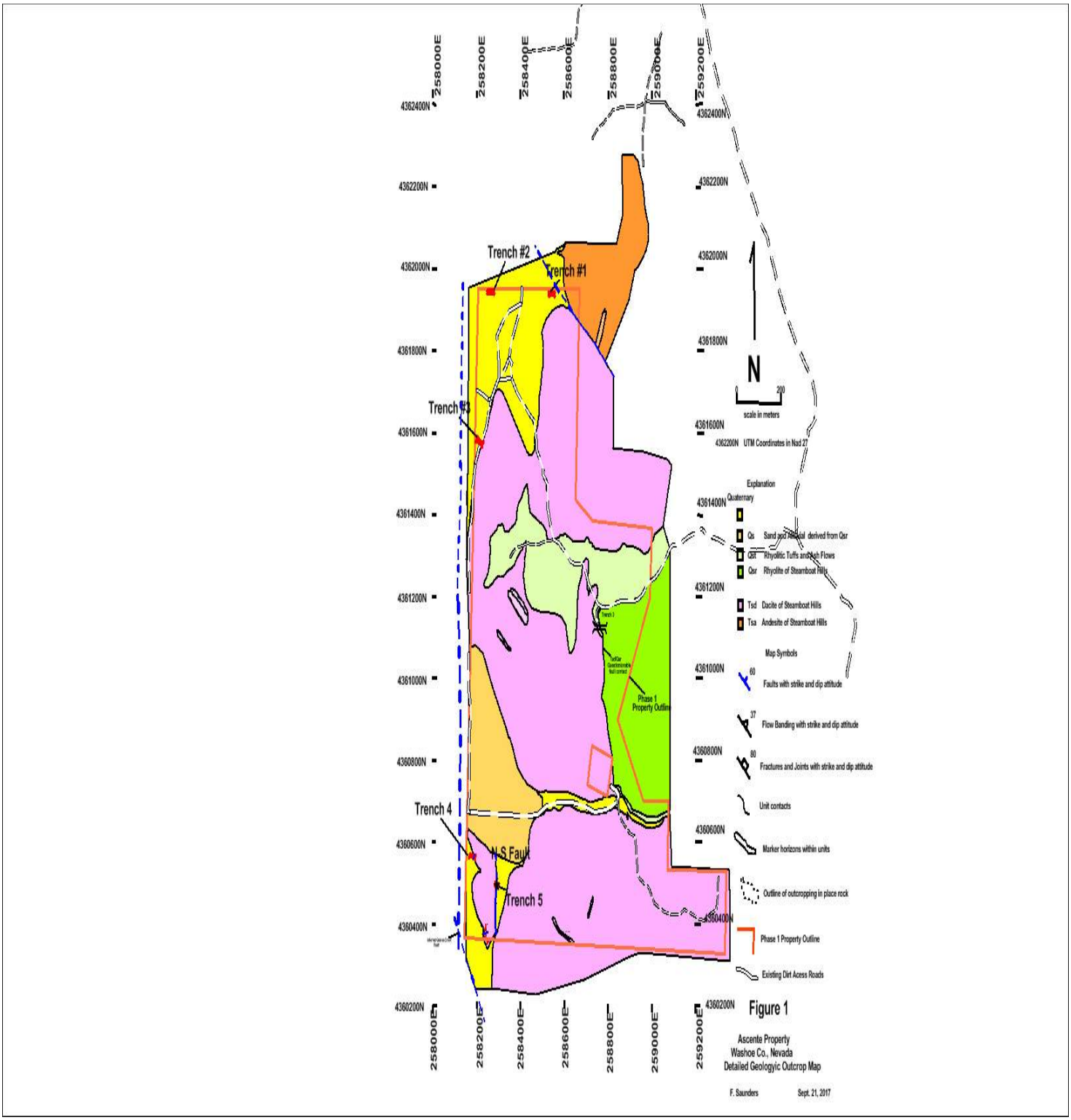
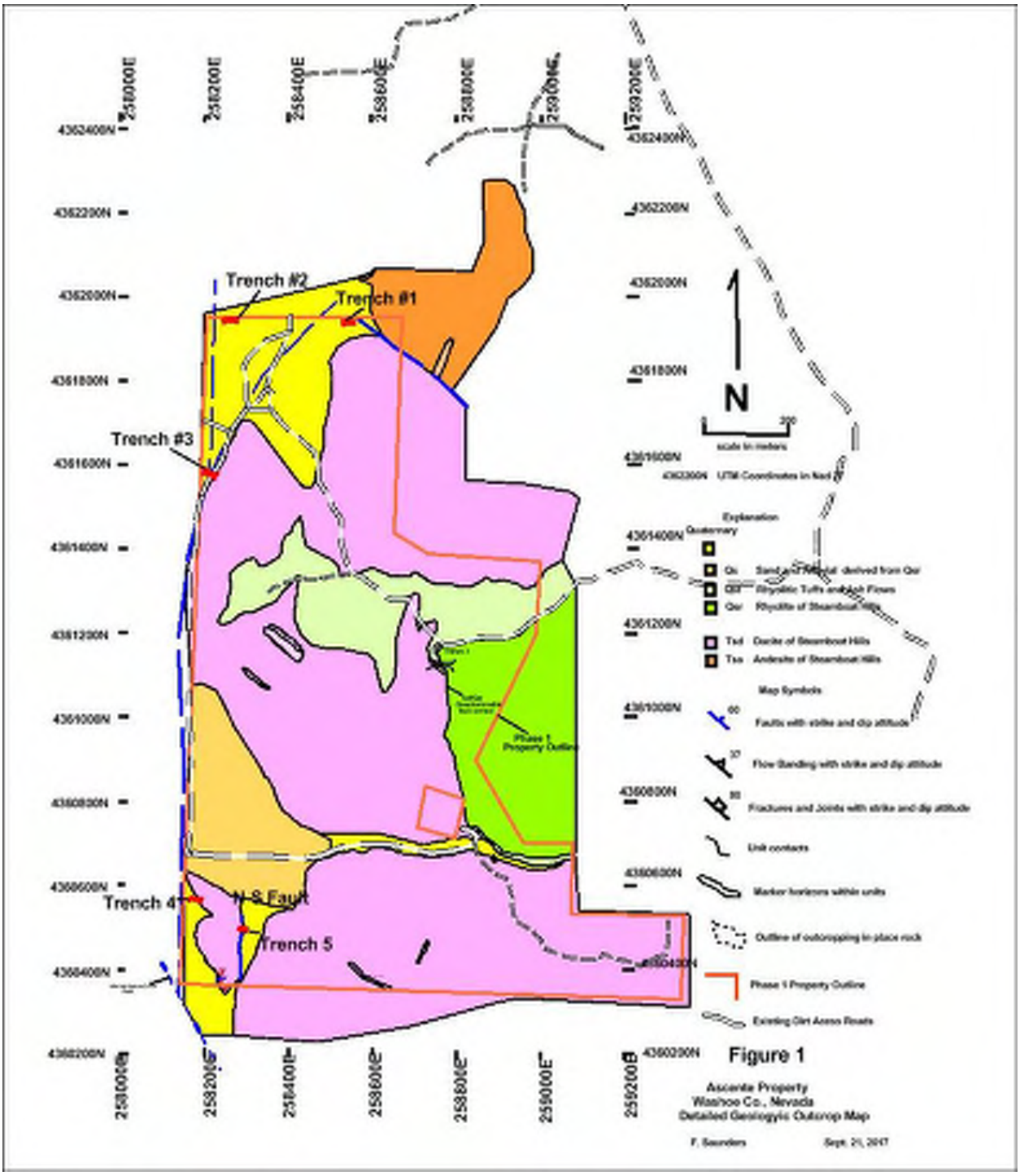


Figure 1 Geology Map showing 2017 trenches


Trench #2
Trench #1
Trench #3
Trench 4
N-S Fault
Trench 5
N
Phase 1 Property Outline
Figure 1
Ascente Property
Washoe Co., Nevada
Detailed Geologyic Outcrop Map
F. Saunders
Sept. 21, 2017

Appendix A

Trench #	Location	Easting	Northing	Discription
Trench 1	West end	258535	4361938	Qal with angular dacite boulders
Trench 1	East End	258552	4361939	same with some red clay at end
Trench 2	West end	258251	4361942	Qal with some granitics boulders
Trench 2	East end	258277	4361943	Qal with rounded dacite boulders
Trench 3	West end	258203	4361586	Qal with mostly granitic boulders
Trench 3	East end	258226	4361576	Qal with angular dacite cobbles
Trench 3	Fault	258215	4361582	dark clay zone in Qal
Trench 4	West end	258168	4360567	Qal with angular dacite cobbles
Trench 4	East end	258193	4360565	dacite bedrock
Trench 4	Fault	258188	4360565	N30°E 55°SE fault in bedrock
Trench 5	West End	258287	4360500	4’ to dacite bedrock
Trench 5	East End	258299	4360496	15 ft. all alluvial
Trench 5	N-S Fault*	258291	4360500	soil color change 15 ft. drop no dacite

*Trench was too dangerous to get into to get attitude on fault.

- **Fred Saunders**
- **Consulting Geologist**
- **Certified Professional Geologist #11807**
- **252 La Costa Ave**
- **Dayton, Nevada 89403**
- **775-450-4540 cell**
- **ftsaunders@charter.net**

- To: Mitch Burns November 3, 2017
- From: Fred Saunders

Re:Seismic Findings Report Issues – Ascente Project

I was asked by Mitch Burns to review the findings report submitted by Gasch Geophysics Services (GES) of Rancho Cordova, California. More specifically I was asked to review siesmic line RS-4 in relationship to my interpretations of the fault scenario at the Ascente Property.

I reveiwed the report and feel the possible fault zone in siesmic line RS -4 could be reinterpretated as a bedrock or basement high. Seismic geophysics essentially measures variances in the density of the material that it encounters and reflects various sound waves velocities back to the surface. Denser rocks such as outcrops will reflect higher velocity sound waves than lower density rocks such as alluvial.

If you compare Line RS-4 to line RS-5, where in line RS-5 we definitely hit the N-S fault that that can be seen on the google earth base map of GES. In line RS-5 There is a marked break in seismic profile right at the fault, (shown in blue on my figure below) showing a decrese in wave speed on the hanging wall side of the fault. Indicating this a normal fault dipping eastward with a small downdropped displacement on the east or hanging wall side of the fault which is what we saw in Trench 5. This is typical of horst and graben faulting within the Basin and Range Province of Nevada.

Line RS-4 on the does not show this same pattern. It shows a zone that GES has outlined as a possible fault zone in the Seismic Velocity Section – RS-4 as a higher density material sourrounded on both sides by a lower

density material. Indicating this a bedrock high surrounded by gravels or alluvial shwon in red on attached Seismic Line RS-4 profile.

This seismic anomaly is located just north of an outcropping ridge that is interpretated to extend out under the alluvial to the north as shown on the attached Ascente Geologic map and enlargement map . The attitudes, although somewhat chaotic on the geologic map, due roughly indicate that the outcropping ridge of dacite bedrock is is elongated in a north-south direction and dipping back to the west, which is what the seismic data indicates.

Other less likely, but possible options could be it is an intrusive high similar to the rhyolitic intrusive located ½ mile to the southeast. The choatic nature of the flow bedding attitudes also might indicate that this maybe an older vent area for the volcanics.

A shallow (100 feet deep) reverse circulation drill hole located in the center of the high on seismic line RS-4 would test the bedrock extension and hopefully help resolve the question.

RS Line Location Map

Base Map Courtesy of Google Earth Pro

Figure 2

0 250' 500' 1000'
Scale: 1" = 500'

North

Refraction Seismic Investigation:
Ascenté Development Site

Prepared for: ***Lumos & Associates***

Project Number: 2017-29.01 *Date:* October, 2017

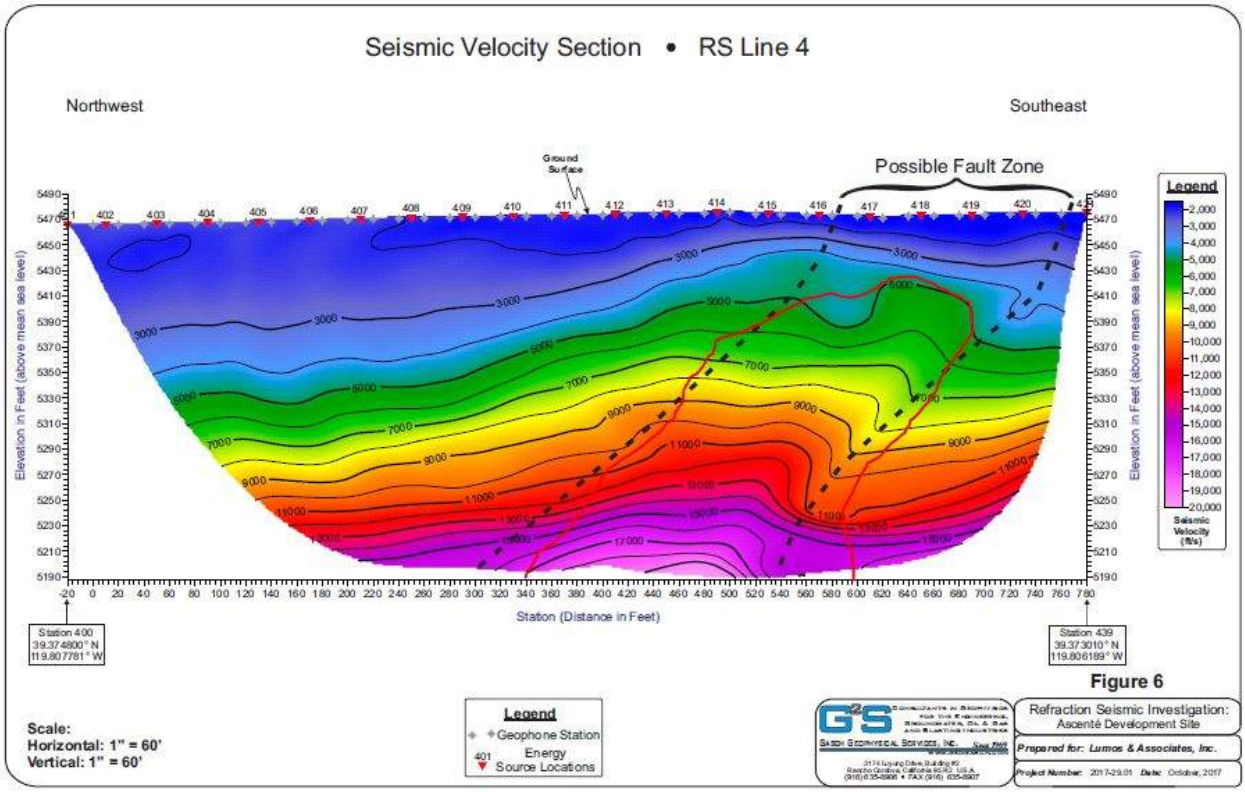


Figure 6

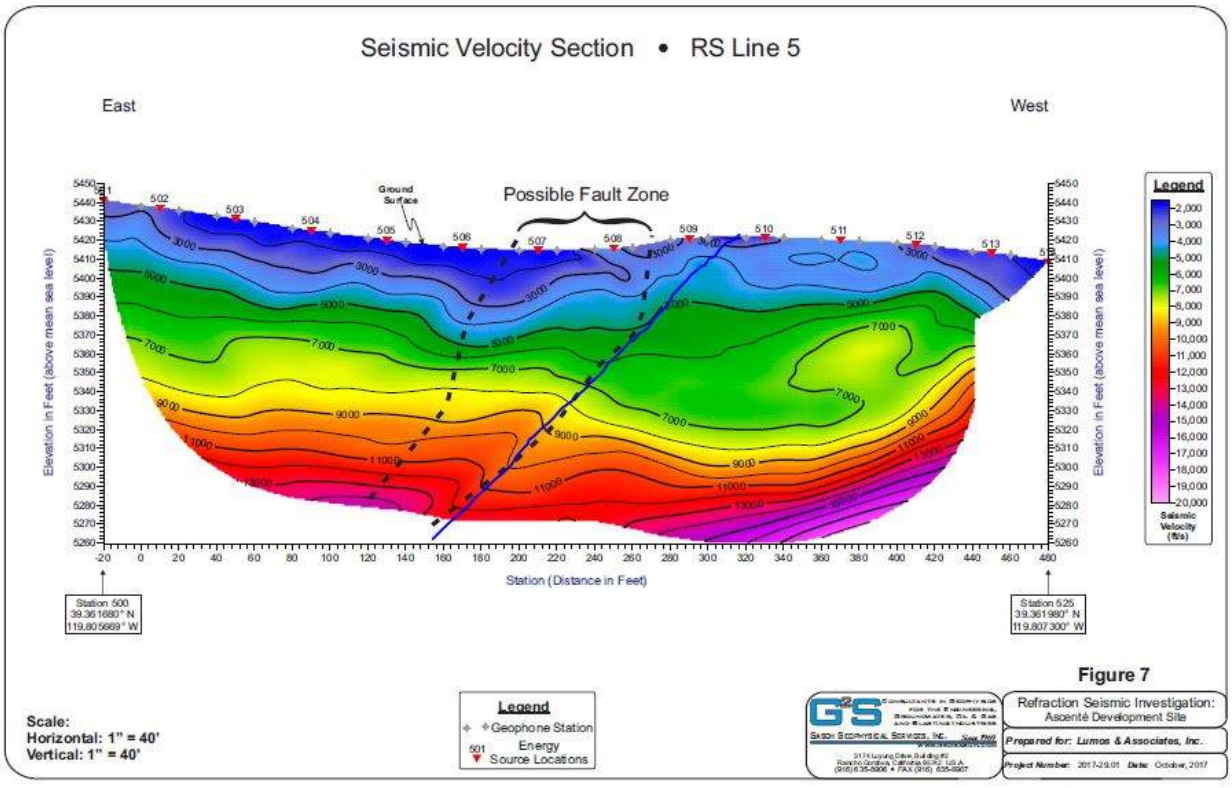
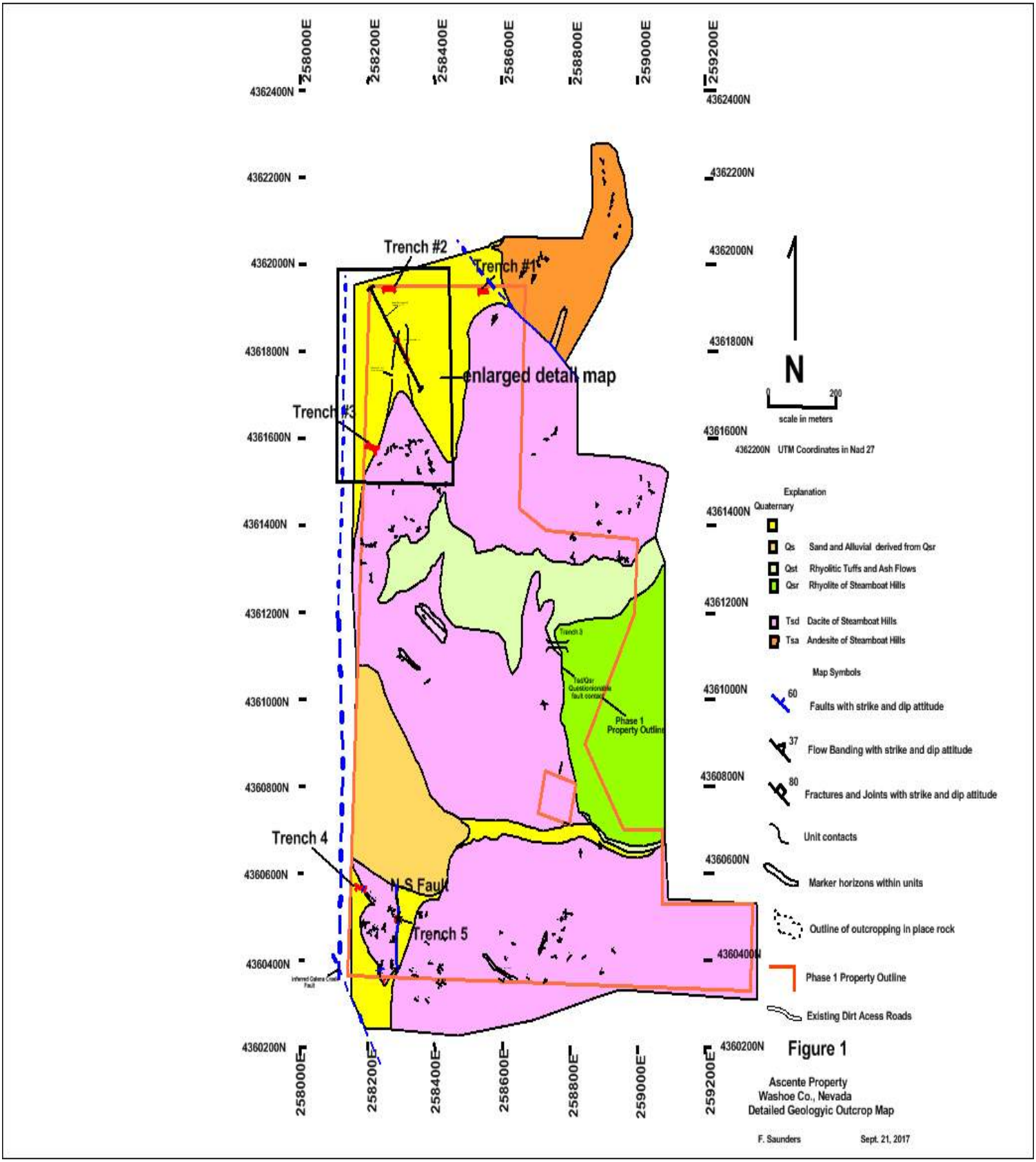
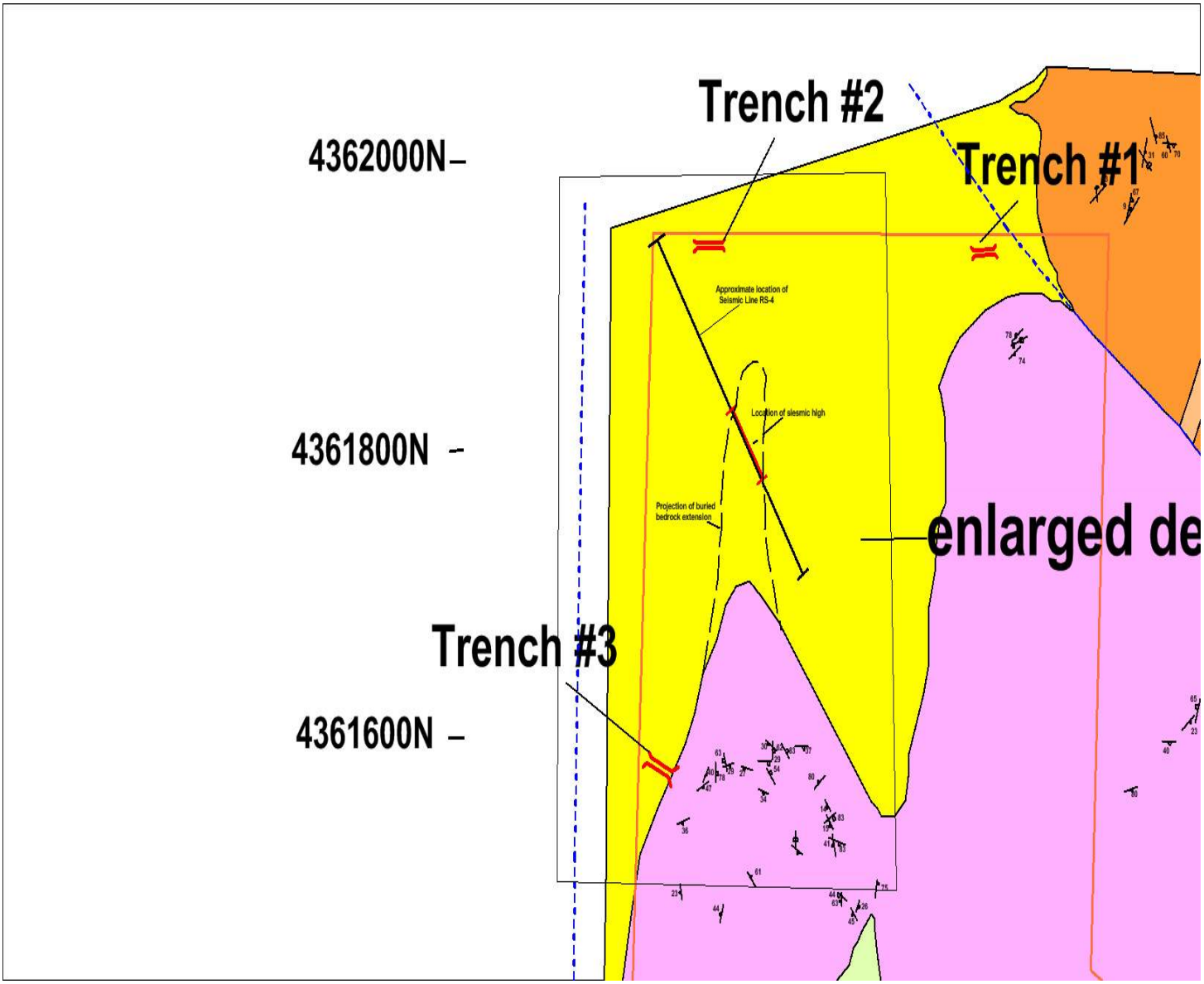


Figure 7

GES seismic lines RS-4 & 5 with new interpretation.



Ascente Geology map showing block of enlarged area and seismic line RS-4.



Enlarged Ascente Geology Map with Siesmic line RS-4 and Proposed bedrock extension.

APPENDIX J

LUMOS & ASSOCIATES

LUMOS & ASSOCIATES

INFILTRATION RATE OF SOILS

ASTM D-3385

Project Name: Ascente Geotechnical Investigation

Client: NNV1 Partners, LLC

Job Number: 9019.004

Sample Location: **Infiltration 3** on 10/4/2017

Project Location: Reno, Nevada

Tested By: Z. Lim

Time		Heights		Small Cylinder (Inner Ring)			Large Cylinder (Outer Ring)			Temperature		
		Inner (in.)	Annular (in.)	Δ Vol. (mL)	Δ Vol. (in^3) = mL*0.0610237	Flow = ΔV (in^3) / Time (hr)	Δ Vol. (mL)	Δ Vol. (in^3) = mL*0.0610237	Flow = ΔV (in^3) / Time (hr)	Ground (°C)	Water - Inner (°C)	Water - Annular (°C)
9:13 AM	0:00 START	5.00	4.75	-	-	-	-	-	-	12.0	20.0	20.0
9:28 AM	0:15	4.75	4.75	700	42.7	170.9	3500	213.6	854.3	25.2	22.0	22.0
9:43 AM	0:30	4.75	4.75	475	29.0	115.9	2300	140.4	561.4	21.0	20.0	20.0
9:58 AM	0:45	4.75	4.75	450	27.5	109.8	1700	103.7	415.0	25.2	21.0	23.0
10:13 AM	1:00	4.75	4.75	425	25.9	103.7	1850	112.9	451.6	27.6	22.0	23.0
10:43 AM	1:30	4.75	4.75	550	33.6	67.1	2600	158.7	317.3	33.6	21.0	23.0
11:13 AM	2:00	4.75	4.75	200	12.2	24.4	2350	143.4	286.8	32.2	22.0	22.0
12:13 PM	3:00	4.75	4.75	750	45.8	45.8	4700	286.8	286.8	33.8	27.0	27.0
1:13 PM	4:00	4.75	4.75	775	47.3	47.3	4300	262.4	262.4	29.4	29.0	29.0
2:13 PM	5:00	4.75	4.75	775	47.3	47.3	4100	250.2	250.2	15.6	29.0	29.0
3:13 PM	6:00	4.75	4.75	**750**	45.8	45.8	4300	262.4	262.4	23.2	30.0	31.0

Infiltration Rate = (750ml/(3600sec)(0.073m²))x10^{-6} = **2.9x10^{-6} m/s**

LUMOS & ASSOCIATES

INFILTRATION RATE OF SOILS

ASTM D-3385

Project Name: Ascente Geotechnical Investigation

Client: NNV1 Partners, LLC

Job Number: 9019.004

Sample Location: **Infiltration 2** on 10/3/2017

Project Location: Reno, Nevada

Tested By: K. Panos and Z. Lim

Time		Heights		Small Cylinder (Inner Ring)			Large Cylinder (Outer Ring)			Temperature		
		Inner (in.)	Annular (in.)	Δ Vol. (mL)	Δ Vol. (in^3) = mL*0.0610237	Flow = ΔV (in^3) / Time (hr)	Δ Vol. (mL)	Δ Vol. (in^3) = mL*0.0610237	Flow = ΔV (in^3) / Time (hr)	Ground (°C)	Water - Inner (°C)	Water - Annular (°C)
9:07 AM	0:00 START	4.25	4.50	-	-	-	-	-	-	5.6	24.0	24.0
9:22 AM	0:15	4.50	4.25	1425	87.0	347.8	4100	250.2	1000.8	2.0	21.0	21.0
9:37 AM	0:30	4.50	4.50	550	33.6	134.3	1300	79.3	317.3	22.0	24.0	23.0
9:52 AM	0:45	4.75	4.50	1150	70.2	280.7	1100	67.1	268.5	9.6	21.0	21.0
10:07 AM	1:00	4.50	4.25	200	12.2	48.8	1200	73.2	292.9	17.0	21.0	19.0
10:37 AM	1:30	4.50	4.25	600	36.6	73.2	1100	67.1	134.3	16.6	20.0	21.0
11:07 AM	2:00	4.50	4.25	700	42.7	85.4	500	30.5	61.0	27.0	22.0	22.0
12:07 PM	3:00	4.50	4.50	850	51.9	51.9	5400	329.5	329.5	29.0	25.0	25.0
1:07 PM	4:00	4.75	4.75	675	41.2	41.2	5400	329.5	329.5	17.2	28.0	29.0
2:07 PM	5:00	4.75	4.50	600	36.6	36.6	2200	134.3	134.3	24.4	25.0	26.0
3:07 PM	6:00	4.75	4.50	700	42.7	42.7	2400	146.5	146.5	14.4	22.0	22.0
4:07 PM	7:00	4.75	4.75	**625**	38.1	38.1	4550	277.7	277.7	13.2	27.0	29.0

Infiltration Rate = (625ml/(3600sec)(0.073m²))x10^{-6} = **2.4x10^{-6} m/s**

LUMOS & ASSOCIATES

INFILTRATION RATE OF SOILS

ASTM D-3385

Project Name: Ascente Geotechnical Investigation

Client: NNV1 Partners, LLC

Job Number: 9019.004

Sample Location: **Infiltration 1** on 10/2/2017

Project Location: Reno, Nevada

Tested By: K. Panos and Z. Lim

Time		Heights		Small Cylinder (Inner Ring)			Large Cylinder (Outer Ring)			Temperature		
		Inner (in.)	Annular (in.)	Δ Vol. (mL)	Δ Vol. (in^3) = mL*0.0610237	Flow = ΔV (in^3) / Time (hr)	Δ Vol. (mL)	Δ Vol. (in^3) = mL*0.0610237	Flow = ΔV (in^3) / Time (hr)	Ground (°C)	Water - Inner (°C)	Water - Annular (°C)
1:05 PM	0:00 START	6.25	6.25	-	-	-	-	-	-	35.0	31.5	33.0
1:20 PM	0:15	6.25	6.50	875	53.4	213.6	6350	387.5	1550.0	42.4	31.0	31.0
1:35 PM	0:30	6.25	6.50	400	24.4	97.6	3500	213.6	854.3	33.6	31.0	31.0
1:50 PM	0:45	6.50	6.50	350	21.4	85.4	2100	128.1	512.6	40.6	35.0	32.0
2:05 PM	1:00	6.50	6.50	50	3.1	12.2	2100	128.1	512.6	37.2	35.0	35.0
2:35 PM	1:30	6.50	6.50	675	41.2	82.4	3250	198.3	396.7	37.0	35.0	32.0
3:05 PM	2:00	6.25	6.25	725	44.2	88.5	2100	128.1	256.3	37.6	30.0	30.0
4:05 PM	3:00	6.25	6.25	1550	94.6	94.6	4700	286.8	286.8	37.6	32.0	32.0
5:05 PM	4:00	6.25	6.25	1350	82.4	82.4	4400	268.5	268.5	14.2	29.0	30.0
6:05 PM	5:00	6.25	6.25	1400	85.4	85.4	4100	250.2	250.2	12.7	28.0	30.0
7:05 PM	6:00	6.50	6.25	**1150**	70.2	70.2	4700	286.8	286.8	7.0	22.0	20.0

Infiltration Rate = (1150ml/(3600sec)(0.073m^2))x10^{-6} = **4.4x10^{-6} m/s**

APPENDIX K

LUMOS & ASSOCIATES

Refraction Seismic Investigation
at the
Ascenté Development Site,
Reno, Washoe County, Nevada

GGSI Project No. 2017-29.01

Prepared by:

Gasch Geophysical Services, Inc.
Rancho Cordova, California 95742-6576

Submitted to:

Mr. Mitch Burns
Lumos & Associates, Inc.
800 College Parkway
Carson City, Nevada 89701

October, 2017

GASCH GEOPHYSICAL SERVICES, INC.
WWW.GEOGASCH.COM *Since 1969*

October 9, 2017

Mr. Mitch Burns
Lumos & Associates, Inc.
800 College Parkway
Carson City, Nevada 89701

Re: Refraction Seismic Investigation at the Ascenté Development Site in Reno, Washoe County, Nevada.
GGSI Project No. 2017-29.01

Dear Mr. Burns,

At your request and authorization, Gasch Geophysical Services, Inc. (GGSI) has completed a refraction seismic investigation to evaluate the characteristics of the sub-surface materials and locate suspected faults at the Ascenté Development Site in Reno, Washoe County, Nevada (Figure 1).

Purpose

The purpose of this investigation was to define the characteristics of the sub-surface and the depth to higher velocity material to aid in determining the excavatability of materials in areas of proposed roadway and housing pad cuts. Additionally, refraction seismic data were used to aid in determining the existence and/or extent of several fault systems thought to be present in the area.

Method, Instrumentation and Software

The refraction seismic (RS) method was used to evaluate the rock velocities on site, as seismic primary-wave travel times are used to quantify the rock velocities and, as a result, can determine the general competency/rippability in areas of various rock types. The RS method measures the velocity at which a seismic wave propagates through a soil or rock medium. In this case, the primary seismic wave (p-wave) was measured. Higher seismic p-wave velocities (measured in feet per second, ft/s) indicate material of higher density, thus quantifying the competency, or strength, of the soil or rock medium and providing an estimation of the rippability and/or excavatability of the sub-surface materials.

GGSI's seismic data acquisition system was a Seistronix EX-6 Explorer which is a distributed, 24-bit digital instrument with data output to electronic media for subsequent processing. Geophones were single, 28-Hz, digital grade units manufactured by OYO Geospace Corporation. Spread cables were manufactured by Pro-Seismic Services. The energy source for this project was a sixteen pound sledge hammer with a hardwired link for system triggering. All data were processed in house, on our data reduction and plotting workstation.

Refraction seismic data processing was carried out using Rayfract® version 3.34. This refraction seismic processing software utilizes Wavepath Eikonal Traveltime (WET) tomography, which models multiple signal propagation paths contributing to one first break (the Fresnel volume approach). Conventional ray tracing tomography is limited to the modeling of just one ray path per first break. The WET inversion method is founded upon a back-projection formula for inverting velocities from travel times computed by a finite-difference solution to the Eikonal equation (Qin, et al. 1992). An Eikonal solver is used for traveltime field computation which models diffraction in addition to refraction and transmission of acoustic waves. As a result, the velocity anomaly imaging capability is enhanced with the WET tomographic inversion method compared to conventional ray tomography. This software is developed by Intelligent Resources, Inc. of Vancouver, British Colombia, Canada.

A color-coded seismic velocity cross-section of the subsurface has been generated for each RS line, where cool colors (blues) indicate lower seismic velocities and warm colors (reds, purple) indicate higher velocities. Color scaling of these seismic velocity sections is based on the range of seismic velocity values calculated. Velocity scaling has been normalized on all RS velocity sections.

Data Acquisition Parameters

A total of 7 RS lines were acquired during this investigation. RS Line locations were suggested by Lumos personnel and slightly adjusted in the field to allow for efficient and safe data acquisition. The end points of each line were marked in the field using orange stakes with appropriate labels and pink flagging material. All seven lines were acquired with geophone stations spaced at 20-foot intervals. RS Lines 1, 2, 3, 5, and 7 were acquired with 24 geophone stations for total line lengths of 500 feet each. RS Line 4 was acquired with 39 geophone stations for a total line length of 800 feet, and RS Line 6 was acquired with 12 geophone stations for a total line length of 260 feet. Energy source points were located every other geophone station, as well as off the ends of each line. A total of 3,560 lineal feet of data were collected for all 7 lines. Collection of the field data were carried out on October 2nd and 3rd, 2017. The field crew consisted of Professional Geophysicist Kent Gasch and Geophysicist Tim Brandt. The locations of the RS lines are presented on Figure 2.

Rippability

Rippability is dependent on the physical condition of the rock masses to be excavated. In addition to rock type and degree of weathering, structural features in the rock such as bedding planes, cleavage planes, joints, fractures, consolidation and shear zones also influence rippability. Rock masses tend to be more easily ripped if they have well defined, closely spaced fractures, joints, or other planes of weakness. Massive rock bodies which lack discontinuities may allow for slow and difficult ripping or refusal, even

where partially weathered, and may require blasting to break the rock for efficient removal.

The association between the seismic velocity of any given earth material and its rippability varies greatly from one type of earth-moving equipment to another. For example, although a large track laying dozer with a single ripper tooth can sometimes rip material with seismic velocities in excess of 10,000 ft/s, GGSI has experienced a limiting (refusal) velocity for large excavators to range from 3,500 ft/s to 4,500 ft/s, and a standard backhoe may meet refusal at seismic velocities as low as 2,000 ft/s. Although low seismic velocities in any rock type indicate probable rippability, if the fractures, bedding and/or joints do not allow tooth penetration, the material still may not be ripped efficiently. In some cases, drilling and blasting may be required to induce sufficient fracturing to allow for excavation. Ultimately, the relationship between seismic velocity and rippability is dependent on a combination of site conditions, equipment and/or operator ability.

Seismic p-wave velocities are related to both rock hardness and fracture density. Rippability has been empirically correlated to refraction seismic velocities by Caterpillar Inc., as displayed on Figure 10 for a CAT D10R (Caterpillar Performance Handbook, Edition 45, January, 2015). According to this chart, igneous rock, in this case rhyolite becomes marginally rippable near 7,200 ft/s and non-rippable at around 8,500 ft/s for a D10R dozer with a single shank ripper tooth. These estimations are based on the published values for metamorphic rocks on the CAT chart; however, site geology and topography may cause some variations of these values.

The Caterpillar Chart of Ripper Performance should be considered as being only one indicator of rippability. Ripper tooth penetration is the key to successful ripping, regardless of seismic velocity. This criterion is particularly true in finer-grained, homogeneous materials and in tightly cemented formations. Ripping success may ultimately be determined by the operator finding the proper combination of factors, such as: number of shanks used, length and depth of shank, tooth angle, direction of travel, and use of throttle. Although low seismic velocities in any rock type indicate probable rippability, it is possible that, if the fractures, bedding and/or joints do not allow tooth penetration, the material still may not be ripped efficiently. In some cases, drilling and blasting may be required to induce sufficient fracturing to allow for excavation.

Seismic Velocities

Generally, seismic p-wave velocities less than 3,000 ft/s indicate native soil, fill material or highly weathered and/or decomposed rock, while velocities in excess of 10,000 ft/s indicate fresh (essentially non-weathered) rock. Seismic velocities between these two values typically indicate rock with varying degrees of weathering and/or fracturing. Consolidation and cementation, as well as, fracture spacing and density also affect the measured seismic velocities. Moderate velocities may indicate compacted soil, moderately weathered rock or loosely consolidated sediment such as gravel, sand and

silt. Saturated sediment below the water table characteristically displays seismic velocities near or slightly above 5,000 ft/s.

Extremes in seismic velocities may range from below 1,000 ft/s to over 20,000 ft/s. Very low seismic velocities usually indicate highly weathered or poorly compacted material, either natural or man-made. Extremely high velocities are rare in the near-surface, and only possible in certain types of rock. Rock velocities are dependent on the physical condition of the rock masses evaluated, as a result, seismic p-wave velocities are related to rock hardness, fracture density and sediment consolidation, saturation and cementation.

Findings

The results of this refraction seismic investigation are summarized by Figures 3 through 9. These seismic velocity sections, which were created through the inversion process, have very low error and provide a high degree of lateral definition of the seismic velocity horizons found beneath each line. The seismic velocity sections have been scaled from 1,500 ft/s to 20,000 ft/s for the velocity window. Horizontal and vertical axes have both been scaled to 40 feet per inch on all RS lines except for RS Line 4, which was scaled to 60 feet per inch in both the horizontal and vertical axes. In addition, the approximate coordinates of each endpoint, as acquired in the field using a handheld Garmin GPSmap 76CSx, have been labeled on each figure.

RS Line 1 (Figure 3)

RS Line 1 is located in the central-western portion of the project area. This Line is oriented approximately southwest to northeast (see Figure 2) and is positioned approximately 4 feet west of Lumos Stake No. 1017 at geophone station 112+00 feet.

Measured seismic velocities at this location generally stay below 7,000 ft/s across the length of the line down to the maximum depth of exploration at approximately 80 feet below ground surface (bgs). Measured seismic velocities also stay below 5,000 ft/s down to apparent depths of 30-40 feet bgs on the entire line. Based on information provided by Lumos personnel, the maximum planned cut depth in this area is approximately 20-25 feet bgs. Measured velocities in this depth range are 5,000 ft/s or less across all of RS Line 1, suggesting that materials in this area should be rippable with a large dozer down to the proposed maximum cut depth.

RS Line 2 (Figure 4)

RS Line 2 is located in the central portion of the project area. This Line is oriented approximately west to east (see Figure 2) and is positioned approximately 15 feet north of Lumos Stake No. 1019 at geophone station 215+00 feet.

Measured seismic velocities at this location also generally stay below 7,000 ft/s across the length of the line down to the maximum depth of exploration at approximately 105 bgs. Measured seismic velocities also stay below 5,000 ft/s down to apparent depths of 25-95 feet bgs on the entire line. Based on information provided by Lumos personnel, the maximum proposed cut depth in this area is approximately 15-20 feet bgs. Since measured velocities in this depth range are 5,000 ft/s or less across the line, it suggests that materials in this area should be rippable with a large dozer down to the proposed maximum cut depth.

RS Line 3 (Figure 5)

RS Line 3 is located in the central-eastern portion of the project area. This Line is oriented approximately southeast to northwest (see Figure 2) and is positioned approximately 5 feet west of Lumos Stake No. 1021 at geophone station 302+3 feet.

Measured seismic velocities at this location grade at a rapid rate on the southeast end of the line and very gradually on the northwest end. The southeastern end of the line shows a rapid gradation from the from distance station -20 feet to 100 feet where velocities range from less than 5,000 ft/s at the surface to over 11,000 ft/s at the maximum depth of exploration at the extreme southeast end of the line. On the northwestern end of the line, low to moderate velocities were measured from distance station 100 feet to the end of the line. Velocities grade most rapidly from the southeast end of the line to distance station 100 feet, at which point there is an abrupt shift to lower velocity material down to the maximum depth of exploration (~80 feet bgs) for the remainder of the line. Based on information provided by Lumos personnel, the maximum proposed cut depth in this area is approximately 20-25 feet bgs. Measured velocities at this depth are near 9,000 ft/s from distance station -20 feet to 60 feet indicating non-rippable material in this area. From distance station 60 feet to approximately 75 feet, velocities suggest marginally rippable material and rippable material from distance stations 75 feet to the northwest end of the line. Between distance stations -20 feet to 60 feet, where velocities are greater than 7,200 ft/s, excavation progress is likely to slow and drilling and blasting may be the most efficient method to fracture the rock for further excavation.

RS Line 4 (Figure 6)

RS Line 4 is located in the northwest corner of the project area. This Line is oriented approximately northwest to southeast (see Figure 2). Based on information provided by Lumos personnel, RS Line 4 is located in an area where minimal cutting is to occur. The main purpose of this line was to evaluate the existence of a fault trace previously mapped in this area.

The seismic data show a distinct set of abrupt shifts at depth, indicative of faulted and/or displaced strata, ranging from distance station 580 feet to distance station 750 feet at the surface. The data show this possible fault zone dipping to the northwest at

approximately a 45º angle to the maximum depth of exploration of approximately 285 feet bgs. The location of this possible fault zone, which has been labeled on the figure for ease of viewing, corresponds well to the location of the fault trace previously mapped to the area.

RS Line 5 (Figure 7)

RS Line 5 is located in the southwest corner of the project area. This Line is oriented approximately east to west (see Figure 2) and is positioned approximately 30 feet south of Lumos Stake No. 1045 at geophone station 516+00 feet. The purpose of this line was to provide excavatability characteristics and to evaluate the previously located fault trace found during trenching work.

Measured seismic velocities at this location grade slowly, generally less than 7,000 ft/s across the length of the line down to apparent depths ranging from 40 feet to 100 feet bgs. Based on information provided by Lumos personnel, the maximum proposed cut depths in this area range from approximately 5-15 feet bgs. Measured seismic velocities are less than 5,000 ft/s down to apparent depths of 24-50 feet bgs across the entire length of the line. Since measured velocities in this depth range are 5,000 ft/s or less across all of RS Line 5, it suggests that materials in this area should be rippable with a large dozer down to the proposed maximum cut depth.

In addition, this line sought to evaluate the existence of a fault trace previously located in this area via trenching. The seismic data show a distinct shift at depth, indicative of faulted and/or displaced strata, ranging from distance station 190 feet to distance station 270 feet at the surface. The data show this possible fault zone dipping to the east at approximately a 70-75º angle down to the maximum depth of exploration at approximately 160 feet bgs. The location of this possible fault zone, which has been labeled on the figure for ease of viewing, corresponds well to the location of the fault trace previously found in the area during trenching work.

RS Line 6 (Figure 8)

RS Line 6 is located in the northwestern portion of the project area. This Line is oriented approximately northwest to southeast (see Figure 2) and is positioned approximately 6 feet north of Lumos Stake No. 1003 at geophone station 602+00 feet.

Measured seismic velocities at this location grade moderately with a dip of higher velocities to the northwest. Based on information provided by Lumos personnel, the maximum proposed cut depths in this area range from approximately 5-10 feet bgs. Measured seismic velocities are less than 5,000 ft/s to depths of approximately 24 feet across the entire line, which suggests that materials in this area should be rippable with a large dozer to the proposed maximum cut depth.

RS Line 7 (Figure 9)

RS Line 7 is located in the southwest corner of the project area. This Line is oriented approximately south to north (see Figure 2) and is positioned approximately 11 feet east of Lumos Stake No. 1040 at geophone station 713+07 feet and is in line with Lumos Stake No. 1039 at geophone station 719+14 feet.

Based on information provided by Lumos personnel, the maximum planned cut depths in this area are approximately 5-20 feet bgs. Measured seismic velocities at this location shows moderately undulating velocity contours with low velocities at the surface and grading to high velocities at the maximum depth of exploration. At 20 feet bgs, velocities are less than 4,000 ft/s which are well within the range of rippable material at the maximum depth of planned cuts. Material in this area should be rippable with a large dozer down to the proposed maximum cut depth.

Summary

This refraction seismic investigation revealed a moderate degree of variation in the calculated seismic velocities of the subsurface materials, with maximum seismic velocity values greater than 19,000 ft/s measured on Line 4. Lower velocity material (1,500 ft/s to 3,000 ft/s) was encountered in the near surface on all lines which is suggestive of native soil, fill material or highly weathered and/or decomposed rock. All RS Lines show a moderate to high velocity section of material, to some extent, from near-surface to varying depths. The moderate to high velocities ranging from 3,000 ft/s to the 7,000+ ft/s, suggests highly compacted soil or fill and/or rock with varying degrees of fracturing, weathering which would expectedly decrease with depth and increase in velocity.

In general, rippability with a large track laying dozer should not be problematic, except where noted on RS Line 3, in the areas of this refraction seismic data based on the CAT D10R Rippability Performance Chart (Figure 10). Based on this information and cut-and-fill information provided by Lumos personnel, it is likely that excavation crews will encounter rippable materials down to the proposed maximum cut depths on all seven RS Lines, except for a short section on RS Line 3 where blasting may be necessary. It should also be noted that observed rock outcrops at the site may could be associated with large rock masses (large boulders) which may be difficult to remove mechanically and may require blasting to move efficiently.

Warranty and Limitations

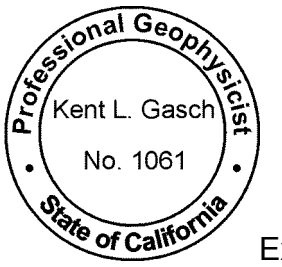
Gasch Geophysical Services, Inc. has performed these services in a manner which is consistent with standards of the profession. Site conditions can cause some variations of the calculated seismic velocities. Refraction seismic velocities assume that velocities increase with depth; therefore, a lower seismic velocity layer beneath a higher seismic velocity layer will not be resolved. No guarantee, with respect to the results and

performance of services or products delivered for this project, is implied or expressed by Gasch Geophysical Services, Inc.

We trust that this is the information you require; however, should you have comments or questions, please contact our Rancho Cordova office at your convenience. Thank you for this opportunity to again be of service.

Sincerely,

GASCH GEOPHYSICAL SERVICES, INC.



Expires 12/31/2017

Kent L. Gasch
Professional Geophysicist #1061

Timothy W. Brandt
Geophysicist

Site Location Map

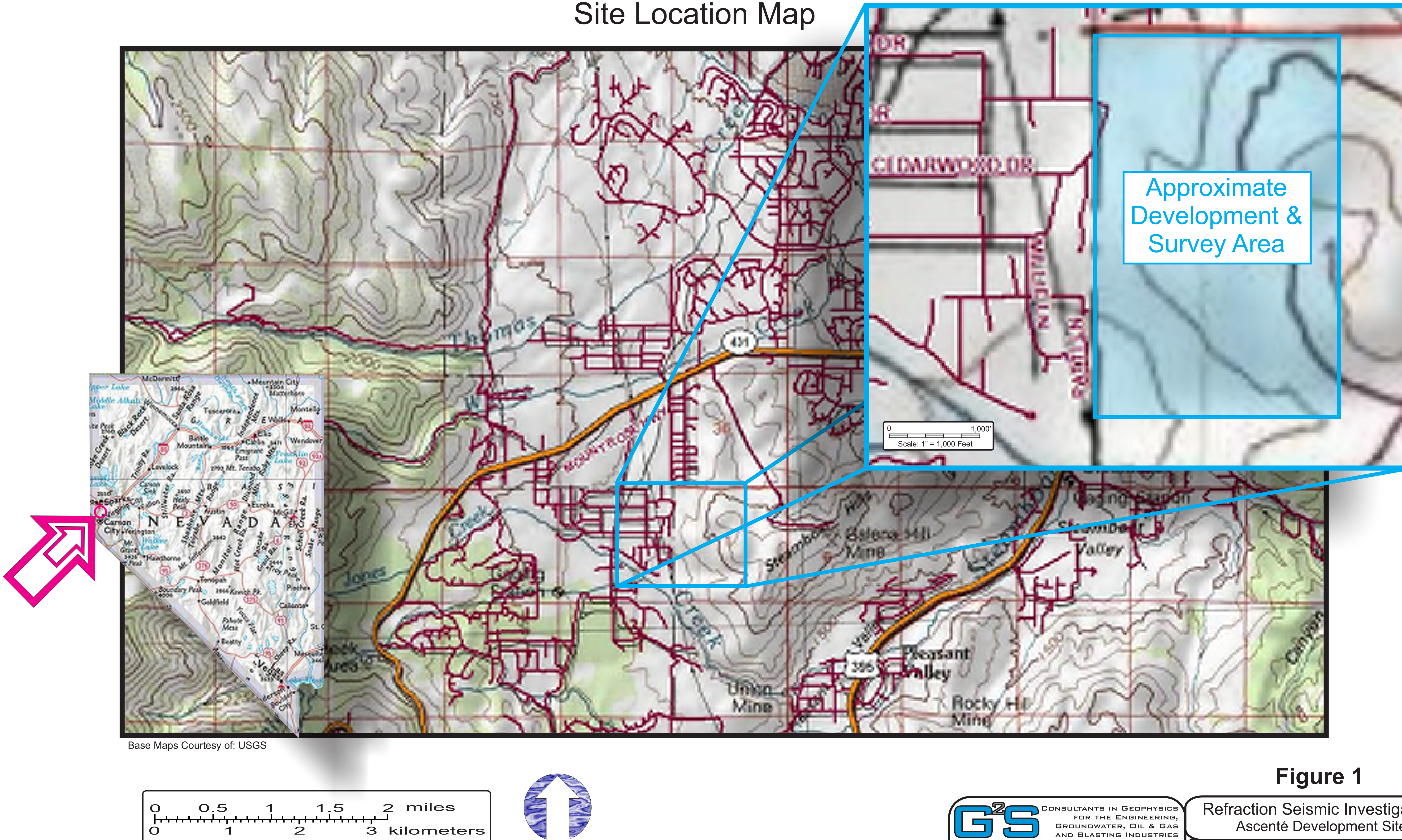


Figure 1

Refraction Seismic Investigation:
Ascenté Development Site

Prepared for: ***Lumos & Associates***

Project Number: 2017-29.01 ***Date:*** October, 2017

G²S
Consultants in Geophysics for the Engineering, Groundwater, Oil & Gas and Blasting Industries
Gasch Geophysical Services, Inc. *Since 1969*
www.geogasch.com
3174 Luyung Drive, Building #2
Rancho Cordova, California 95742 U.S.A.
(916) 635-8906 • FAX (916) 635-8907

RS Line Location Map

Base Map Courtesy of Google Earth Pro

0’ 250’ 500’ 1000’

Scale: 1" = 500'

North

Figure 2

G²S Consultants in Geophysics for the Engineering, Groundwater, Oil & Gas and Blasting Industries

Gasch Geophysical Services, Inc. *Since 1969*

www.geogasch.com

3174 Luyung Drive, Building #2
Rancho Cordova, California 95742 U.S.A.
(916) 635-8906 • FAX (916) 635-8907

Refraction Seismic Investigation:
Ascenté Development Site

Prepared for: ***Lumos & Associates***

Project Number: 2017-29.01 ***Date:*** October, 2017

Seismic Velocity Section • RS Line 1

Southwest

Northeast

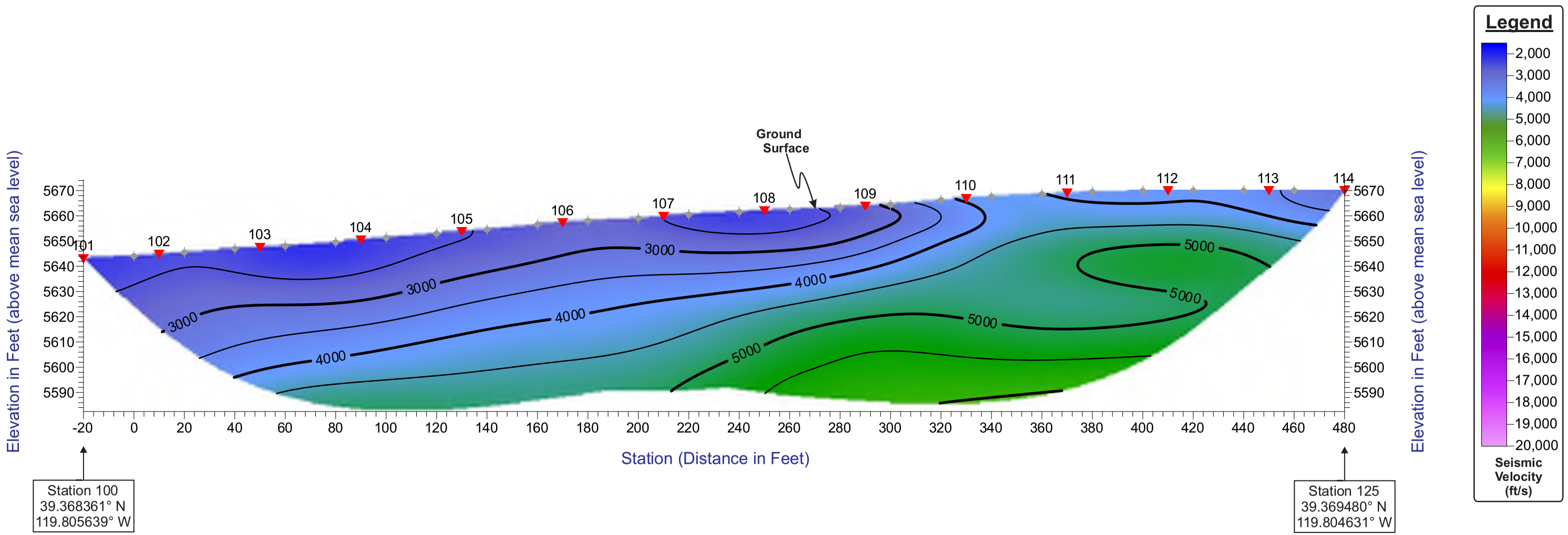


Figure 3

Scale:
Horizontal: 1” = 40’
Vertical: 1” = 40’

Legend
Geophone Station
101 Energy Source Locations

G2S Consultants in Geophysics for the Engineering, Groundwater, Oil & Gas and Blasting Industries
Gasch Geophysical Services, Inc. Since 1969
www.geogasch.com
3174 Luyung Drive, Building #2
Rancho Cordova, California 95742 U.S.A.
(916) 635-8906 • FAX (916) 635-8907

Refraction Seismic Investigation:
Ascenté Development Site

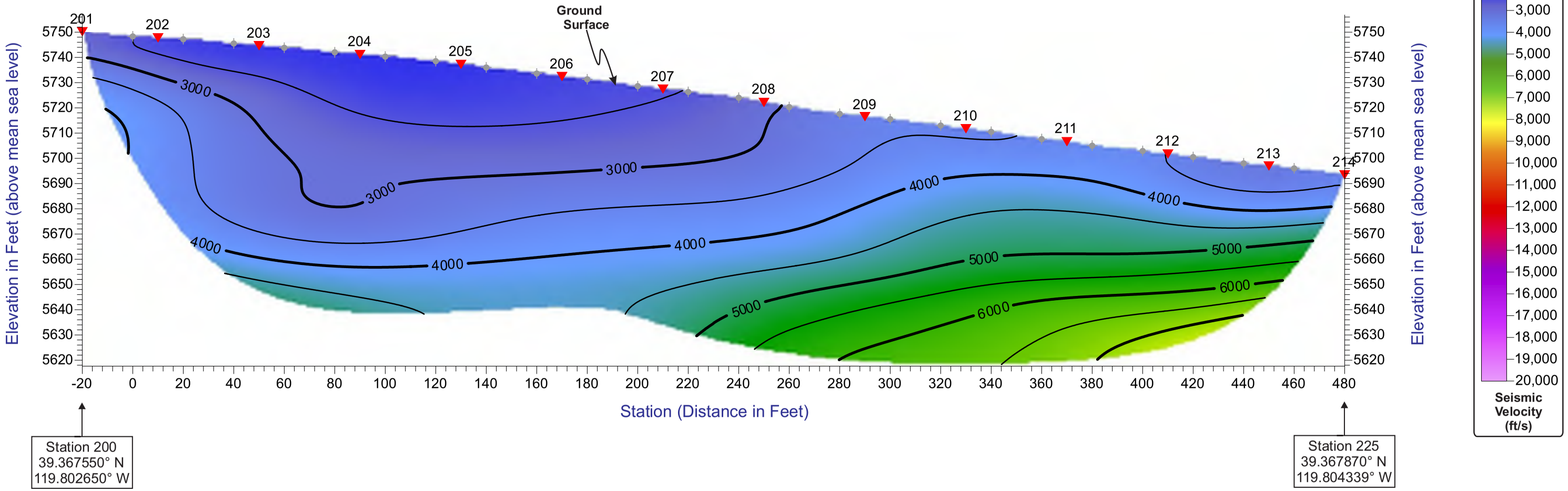
Prepared for: ***Lumos & Associates, Inc.***

Project Number: 2017-29.01 ***Date:*** October, 2017

Seismic Velocity Section • RS Line 2

East

West



Station 200
39.367550° N
119.802650° W

Station 225
39.367870° N
119.804339° W

Figure 4

Scale:
Horizontal: 1” = 40’
Vertical: 1” = 40’

Legend
Geophone Station
201 Energy Source Locations

G2S Consultants in Geophysics for the Engineering, Groundwater, Oil & Gas and Blasting Industries
Gasch Geophysical Services, Inc. Since 1969
www.geogasch.com
3174 Luyung Drive, Building #2
Rancho Cordova, California 95742 U.S.A.
(916) 635-8906 • FAX (916) 635-8907

Refraction Seismic Investigation:
Ascenté Development Site

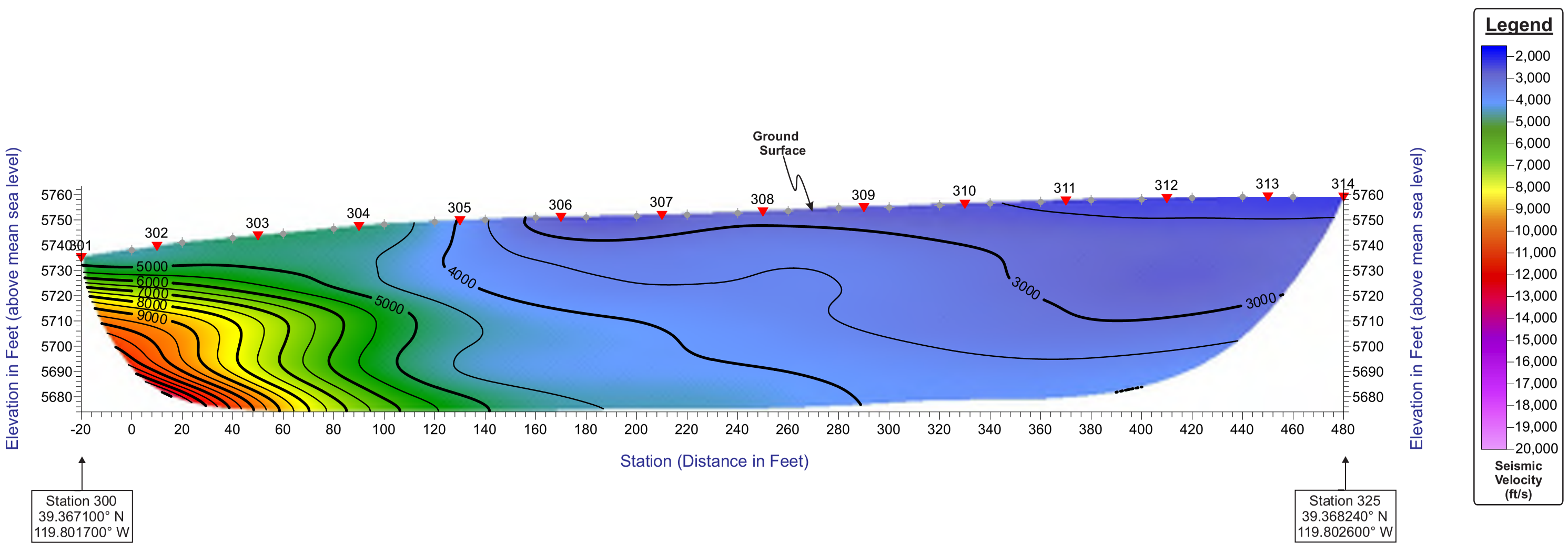
Prepared for: ***Lumos & Associates, Inc.***

Project Number: 2017-29.01 ***Date:*** October, 2017

Seismic Velocity Section • RS Line 3

Southeast

Northwest



Station 300
39.367100° N
119.801700° W

Station 325
39.368240° N
119.802600° W

Scale:
Horizontal: 1” = 40’
Vertical: 1” = 40’

Legend
Geophone Station
301 Energy Source Locations

Figure 5

G2S Consultants in Geophysics for the Engineering, Groundwater, Oil & Gas and Blasting Industries
Gasch Geophysical Services, Inc. Since 1969
www.geogasch.com
3174 Luyung Drive, Building #2
Rancho Cordova, California 95742 U.S.A.
(916) 635-8906 • FAX (916) 635-8907

Refraction Seismic Investigation:
Ascenté Development Site

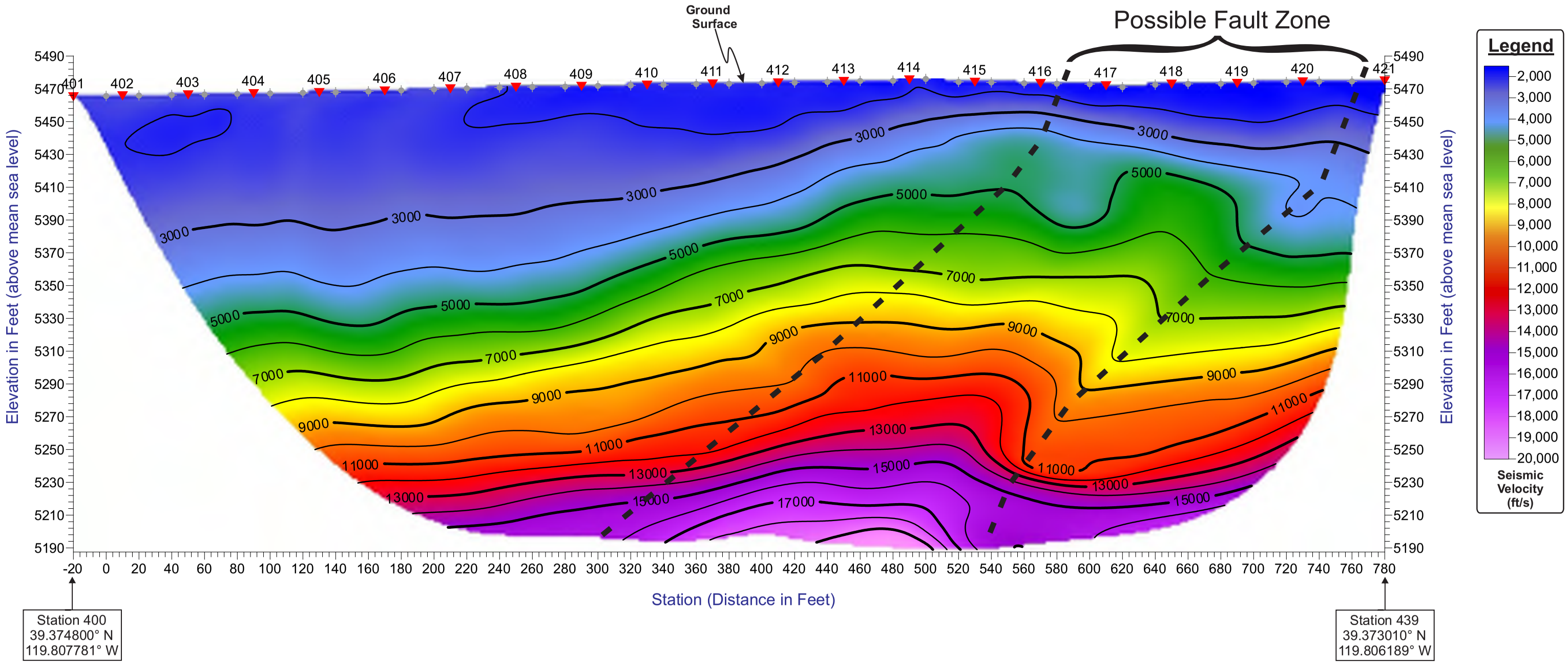
Prepared for: ***Lumos & Associates, Inc.***

Project Number: 2017-29.01 ***Date:*** October, 2017

Seismic Velocity Section • RS Line 4

Northwest

Southeast



Station 400
39.374800° N
119.807781° W

Station 439
39.373010° N
119.806189° W

Figure 6

Scale:
Horizontal: 1” = 60’
Vertical: 1” = 60’

Legend
Geophone Station
401 Energy Source Locations

G2S Consultants in Geophysics for the Engineering, Groundwater, Oil & Gas and Blasting Industries
Gasch Geophysical Services, Inc. Since 1969
www.geogasch.com
3174 Luyung Drive, Building #2
Rancho Cordova, California 95742 U.S.A.
(916) 635-8906 • FAX (916) 635-8907

Refraction Seismic Investigation:
Ascenté Development Site

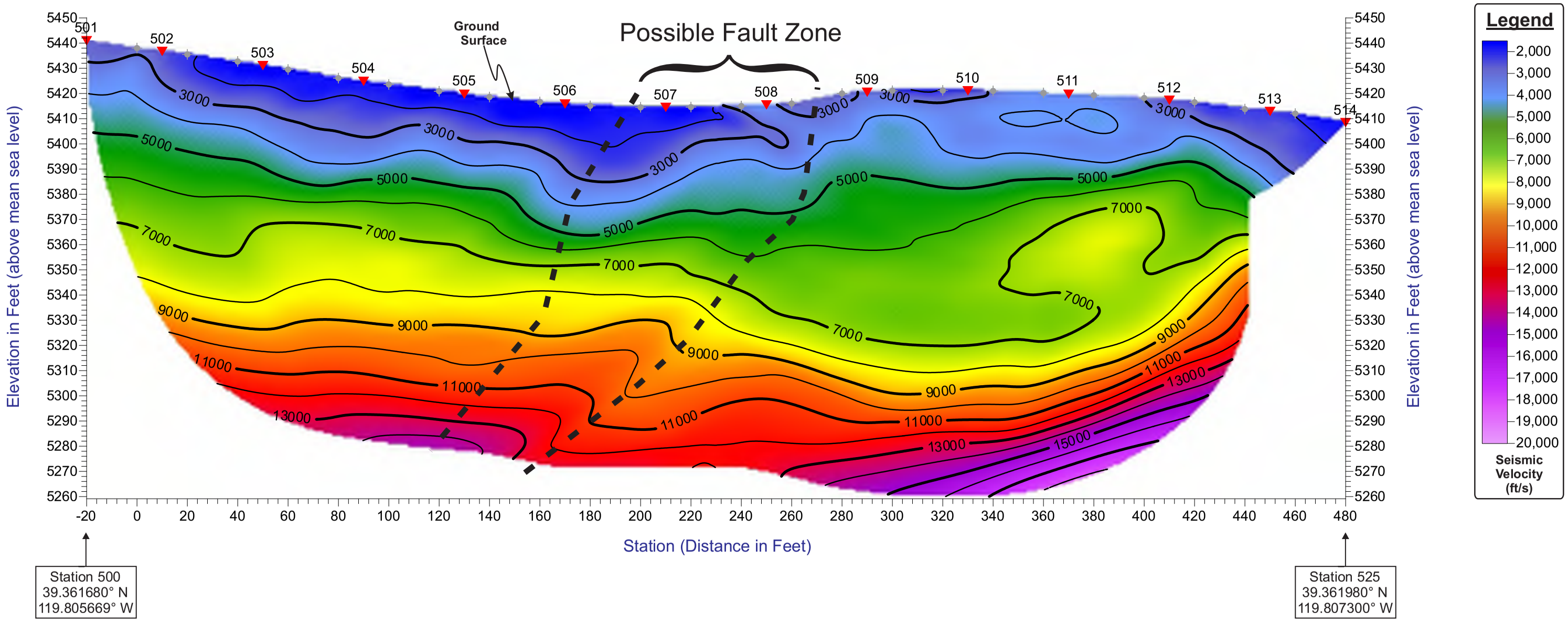
Prepared for: ***Lumos & Associates, Inc.***

Project Number: 2017-29.01 ***Date:*** October, 2017

Seismic Velocity Section • RS Line 5

East

West



Scale:
Horizontal: 1” = 40’
Vertical: 1” = 40’

Legend
Geophone Station
501 Energy Source Locations

Figure 7

Refraction Seismic Investigation:
Ascenté Development Site

Prepared for: Lumos & Associates, Inc.

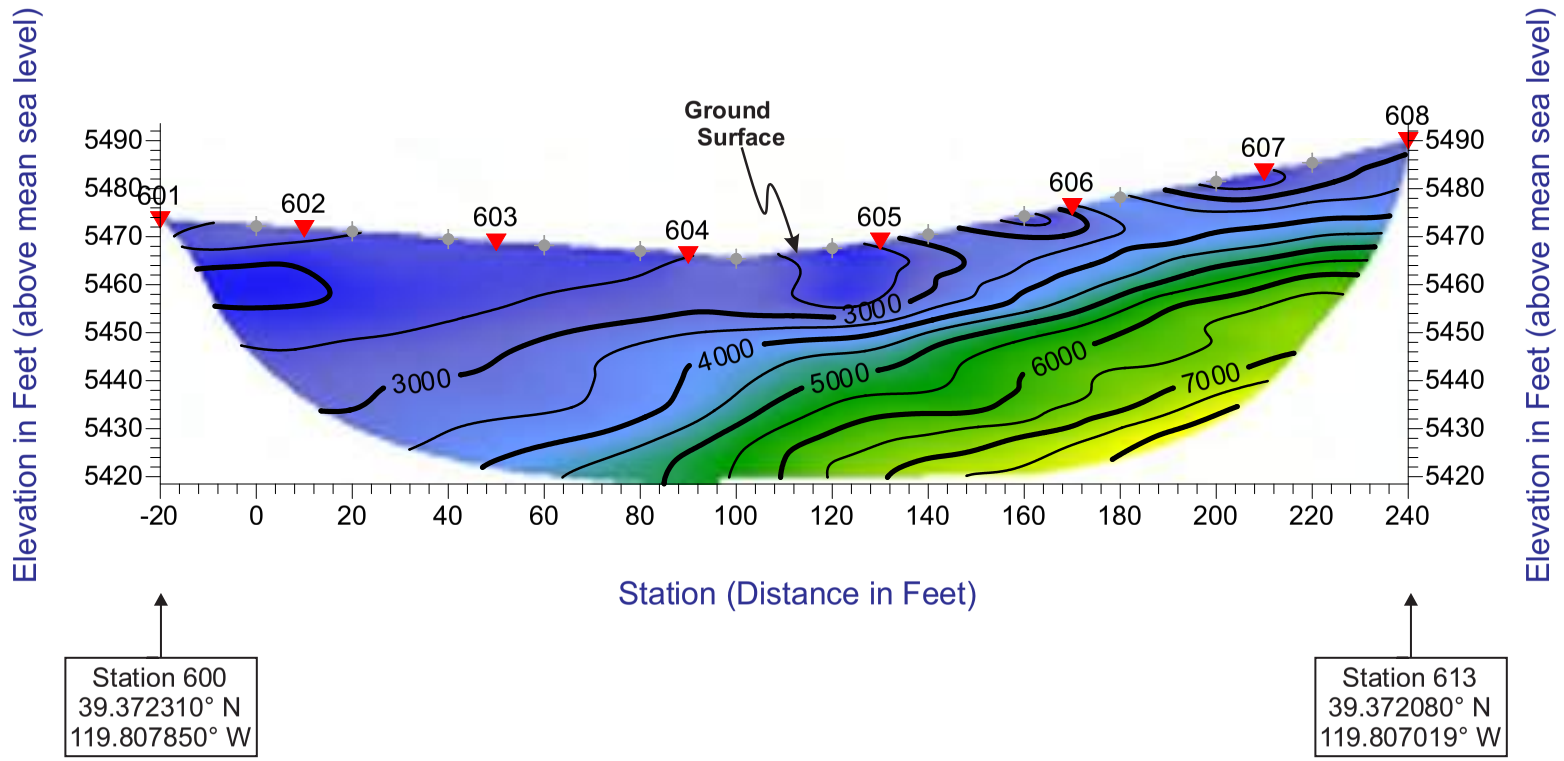
Project Number: 2017-29.01 ***Date:*** October, 2017

G2S Consultants in Geophysics for the Engineering, Groundwater, Oil & Gas and Blasting Industries
Gasch Geophysical Services, Inc. *Since 1969*
www.geogasch.com
3174 Luyung Drive, Building #2
Rancho Cordova, California 95742 U.S.A.
(916) 635-8906 • FAX (916) 635-8907

Seismic Velocity Section • RS Line 6

Northwest

Southeast



Station 600
39.372310° N
119.807850° W

Station 613
39.372080° N
119.807019° W

Legend

- 2,000
- 3,000
- 4,000
- 5,000
- 6,000
- 7,000
- 8,000
- 9,000
- 10,000
- 11,000
- 12,000
- 13,000
- 14,000
- 15,000
- 16,000
- 17,000
- 18,000
- 19,000
- 20,000

Seismic Velocity (ft/s)

Scale:
Horizontal: 1” = 40’
Vertical: 1” = 40’

Legend

- Geophone Station
- 601 Energy Source Locations

Figure 8

G2S Consultants in Geophysics for the Engineering, Groundwater, Oil & Gas and Blasting Industries
Gasch Geophysical Services, Inc. Since 1969
www.geogasch.com
3174 Luyung Drive, Building #2
Rancho Cordova, California 95742 U.S.A.
(916) 635-8906 • FAX (916) 635-8907

Refraction Seismic Investigation:
Ascenté Development Site

Prepared for: ***Lumos & Associates, Inc.***

Project Number: 2017-29.01 ***Date:*** October, 2017

Seismic Velocity Section • RS Line 7

South

North

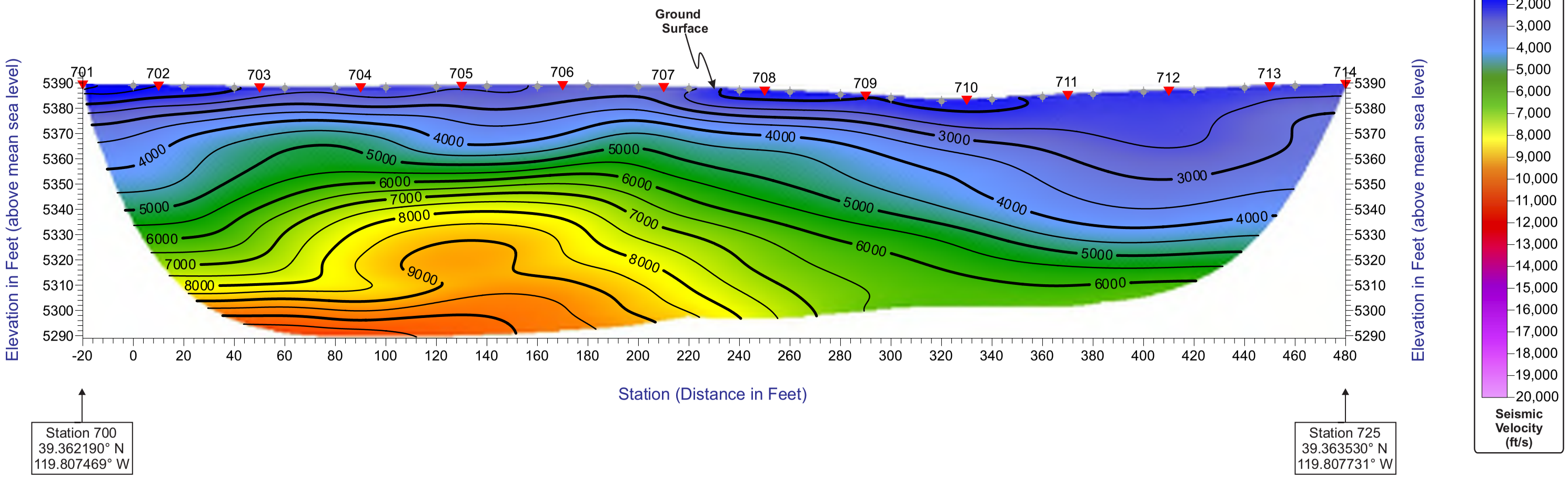


Figure 9

Scale:
Horizontal: 1” = 40’
Vertical: 1” = 40’

Legend

Geophone Station

701 Energy Source Locations

G2S Consultants in Geophysics for the Engineering, Groundwater, Oil & Gas and Blasting Industries

Gasch Geophysical Services, Inc. *Since 1969*

www.geogasch.com

3174 Luyung Drive, Building #2
Rancho Cordova, California 95742 U.S.A.
(916) 635-8906 • FAX (916) 635-8907

Refraction Seismic Investigation:
Ascenté Development Site

Prepared for: Lumos & Associates, Inc.

Project Number: 2017-29.01 ***Date:*** October, 2017

Caterpillar D10R Ripper Performance Chart*

D10R

Multi or Single Shank No. 10 Ripper
Estimated by Seismic Wave Velocities

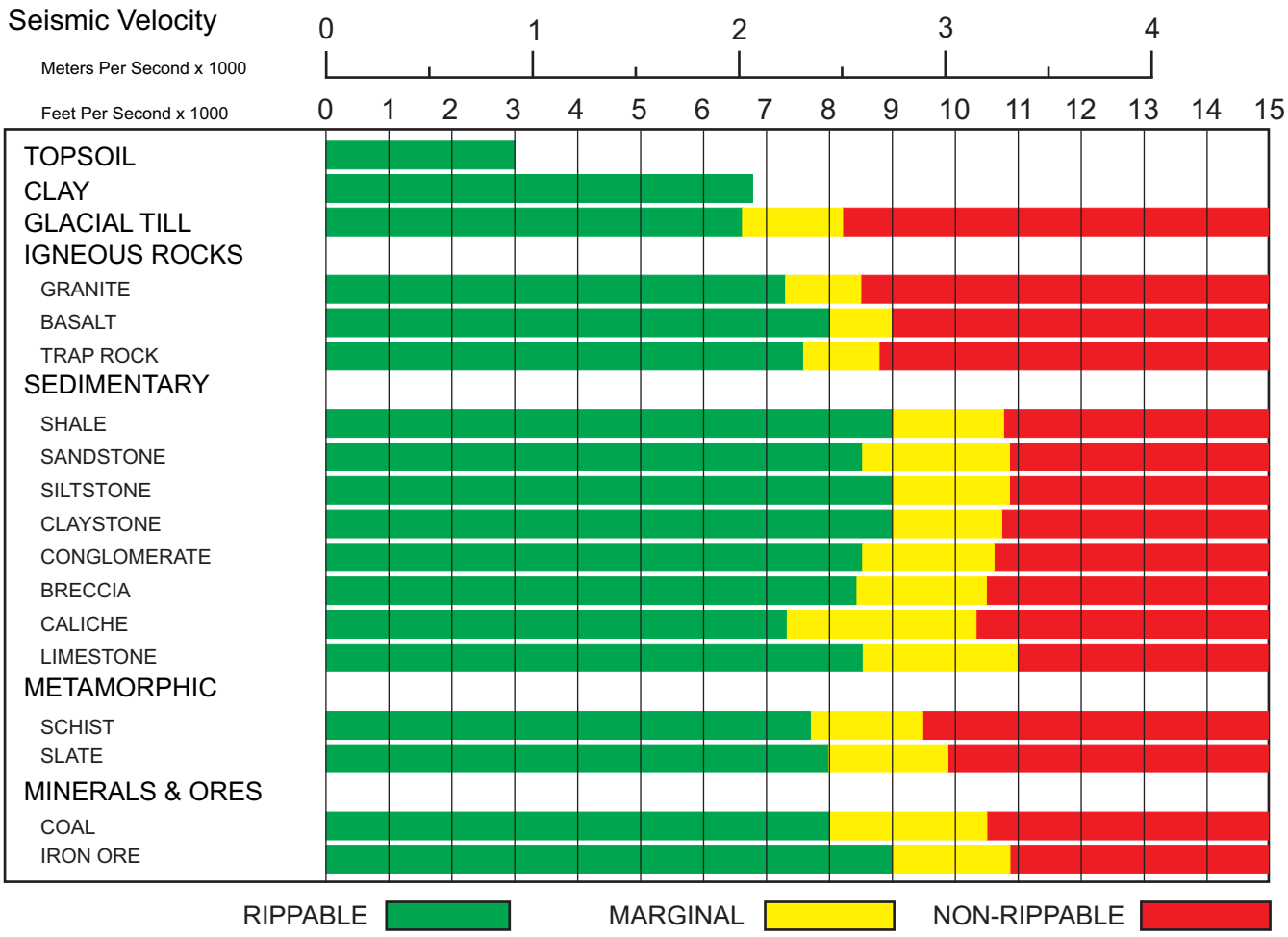


Figure 10

* Based on the Caterpillar Performance Handbook Edition 45 - January, 2015

G²S Consultants in Geophysics for the Engineering, Groundwater, Oil & Gas and Blasting Industries
Gasch Geophysical Services, Inc. *Since 1969*
www.geogasch.com
3174 Luyung Drive, Building #2
Rancho Cordova, California 95742 U.S.A.
(916) 635-8906 • FAX (916) 635-8907

Refraction Seismic Investigation:
Ascenté Development Site

Prepared for: Lumos & Associates

Project Number: 2017-29.01 **Date:** October, 2017

APPENDIX L

LUMOS & ASSOCIATES

geosUAS, Inc. ~ *Natural resource assessment and management…*

PO Box 19805, Reno, Nevada, 89511 * (775) 287-9038 *

July 26, 2017

Mr. Michael Barnes
NNV1 Partners, LLC.
6151 Lakeside Dr. Ste. 100
Reno, NV 89511

SUBJECT: PRELIMINARY EVALUATION OF ASCENTE ON MT. ROSE PROJECT, RENO, NEVADA REGARDING THE PRESENCE OR ABSENCE OF WATERS OF THE UNITED STATES/WETLANDS (WOUS) SUBJECT TO POSSIBLE REGULATION BY THE U.S. ARMY CORPS OF ENGINEERS

Dear Mr. Barnes,

geosUAS, Inc., (Geos) conducted a preliminary evaluation regarding the presence or absence of waters of the United States (wetlands and other waters) subject to possible regulation by the U.S. Army Corps of Engineers[1]. Geos also conducted a field reconnaissance of the Ascente property and have prepared this letter report documenting potential WOUS on the site. Geos also conducted a data base search for threatened and endangered (T&E) species designations for the Ascente site.

The Ascente site is composed of a approximately 640 acres, as Section 1, T. 17 N., R 19 E., M.D.B.&M., Reno Nevada (Attachment 1, Figure 1a). The site ranges in elevation between 5400 feet msl to 6700 feet msl (Attachment 1, Figure 1b). The site is within the Truckee River Watershed and within the Galena and Thomas Creek sub-watershed (Attachment 1, Figure 1c). Because drainages from the site would discharge to Galena Creek or Steamboat Creek which drains to the Truckee River, intermittent or ephemeral drainages with a defined bed and bank could potentially be subject to the USACE. Attachment 1, Figure 2 depicts land use which is reported as Forest Service.

Attachment 1, Figure 3 depicts the major geologic units according to the Nevada Bureau of Mines and Geology. There are 6 major geologic units in the Ascente site area, Tertiary andesite and related rocks of intermediate composition (Ta), Tertiary (Tkf), Quaternary (Qsg), Quaternary (Qsh), Quaternary (Qsu), Quaternary (Qfb).

Attachment 1, Figure 4, depicts the NRCS soils, which are listed in Attachment 2, Table 1. There are 20 soils units within the project boundary and none are classified as hydrophytic (or wetland) soils by the USACE (Attachment 2, Table 1). One of the soils, the Settlemeyer-Notus complex is classified as having a hydric inclusion of 4 percent. The Settlemeyer-Notus complex (513) makes up 31.2 acres of the Ascente site, which accounts for 3.2 percent of the total land area. The largest contributing soil map unit is the Old Camp-Rock outcrop complex, 15 to 50 percent slopes (931),

[1]A site visit was conducted by Ms. Lori Carpenter, PWS, Hydrologist/Hydrogeologist on September 15, 2016 and June 24, 2017.

which accounts for 22.0 percent of the site.

Attachment 1, Figure 5 shows the USFWS NWI mapped wetlands for the Ascente site location. Three NWI wetlands are mapped within the project location boundary with additional wetlands nearby in the Galena Creek drainage. All three mapped wetlands within the project boundary are classified as Palustrine Emergent wetlands with a saturated water regime.

Attachment 1, Figure 7 contains the SWReGAP ground cover and vegetation map for the Ascente site. The site has seven distinct vegetation types. The site is primarily composed of Great Basin Pinyon-Juniper Woodland vegetation, which is classified by SWReGAP as an ecological system typically found in dry mountain ranges at elevations of 1600-2600 m, dominated by *Pinus monophylla*, *Juniperus oseteosperma*, and *Cercocarpus ledifolius*. None of the seven SWReGAP vegetation covers are dominated by wetland vegetation.

Attachment 1, Figure 8 depicts flowlines for potential drainages. Water flow from precipitation or springs will flow away from the Ascente site. Flow will move west towards Galena Creek in the southwestern quadrant of the Ascente project area, and eastward toward White's Creek and Thomas Creek in the northeastern quadrant of the Ascente project area.

Attachment 3 Contains representative project photos.

Attachment 4 contains the results from the USFWS Ecos report. The report lists proposed, threatened, endangered, and candidate species that could potentially occur in the site area or be affected by activities in the site area. These species include Steamboat Buckwheat, Webber Ivesia, North American Wolverine, Cui-ui, Lahontan Cutthroat Trout, Bald Eagle, Black Rosy-finch, Brewer's Sparrow, Burrowing Owl, Calliope Hummingbird, Eared Grebe, Flammulated Owl, Fox Sparrow, Greater Sage-grouse, Green-tailed Towhee, Loggerhead Shrike, Long-billed Curlew, Olive-sided Flycatcher, Peregrine Falcon, Pinyon Jay, Sage Thrasher, Short-eared Owl, Snowy Plover, Swainson's Hawk, Tricolored Blackbird, Virginia's Warbler, Western Grebe, White Headed Woodpecker, and Williamson's Sapsucker. There are currently no critical habitats identified in the Ascente site location

Additionally, the Ecos report identifies USFWS NWI mapped wetlands in the site location. There are eleven wetlands identified within or partially within the site location, these wetlands are classified as freshwater emergent wetlands, freshwater forested/shrub wetlands, freshwater ponds, and Riverine.

Also included in Attachment 4 is a letter from the Nevada Natural Heritage Program which documents the endangered, threatened, candidate, and at risk species known by the NNHP to be found at and around the Ascente site location. There are no species recorded in their database for the site area, but the site may provide habitat for the Great Grey Owl and Mono Checkerspot which are both listed as USFS sensitive species.

FINDINGS: The USGS 7.5 inch topographic geospatial database has identified both intermittent and ephemeral drainages within the project boundary and this was also reflected within the National Hydrography Database (Attachment 1, Figures 1b and 8). While there are swale/drainage features within the project boundary, Geos not find physical channels with a defined bed and bank, that were continuous through the site and that then flowed connected off-site and terminated in either Galena Creek or Steamboat Creek. The features that are within the site would not be considered water of the United States. Galena Creek is down gradient of the southwest corner of the site and not within the project boundary. The NWI identified wetland areas were identified in the field. Holes were dug with a shovel to a depth of 12 inches and there were no hydric or redoximorphic soil indicators. Also there were no hydrologic indicators. Geos did not find palustrine emergent areas as identified in the NWI data base (Attachment 1, Figure 5). As depicted within the site photographs, the NWI features are low lying areas within the "topographic saddle" or, hillside seep areas where soil texture allowed for more surface hydrology to collect. All these areas were composed of more upland vegetation as depicted within the photographs (Attachment 3). The NHD flowline that was identified towards the southwest area of the site is actually a dirt road (Attachment 1, Figure 8).

In summary, a field and database investigation was conducted for the presence or absence of WOUS/wetlands within the Ascente site. We did not find areas that would be considered subject to the US Army Corps of Engineers jurisdiction under section 404 of the Clean Water Act, nor waters of the State. Further, Geos did not find features that would indicate a formal wetland delineation is necessary.

Please call me with any other questions or concerns.

Best Regards,

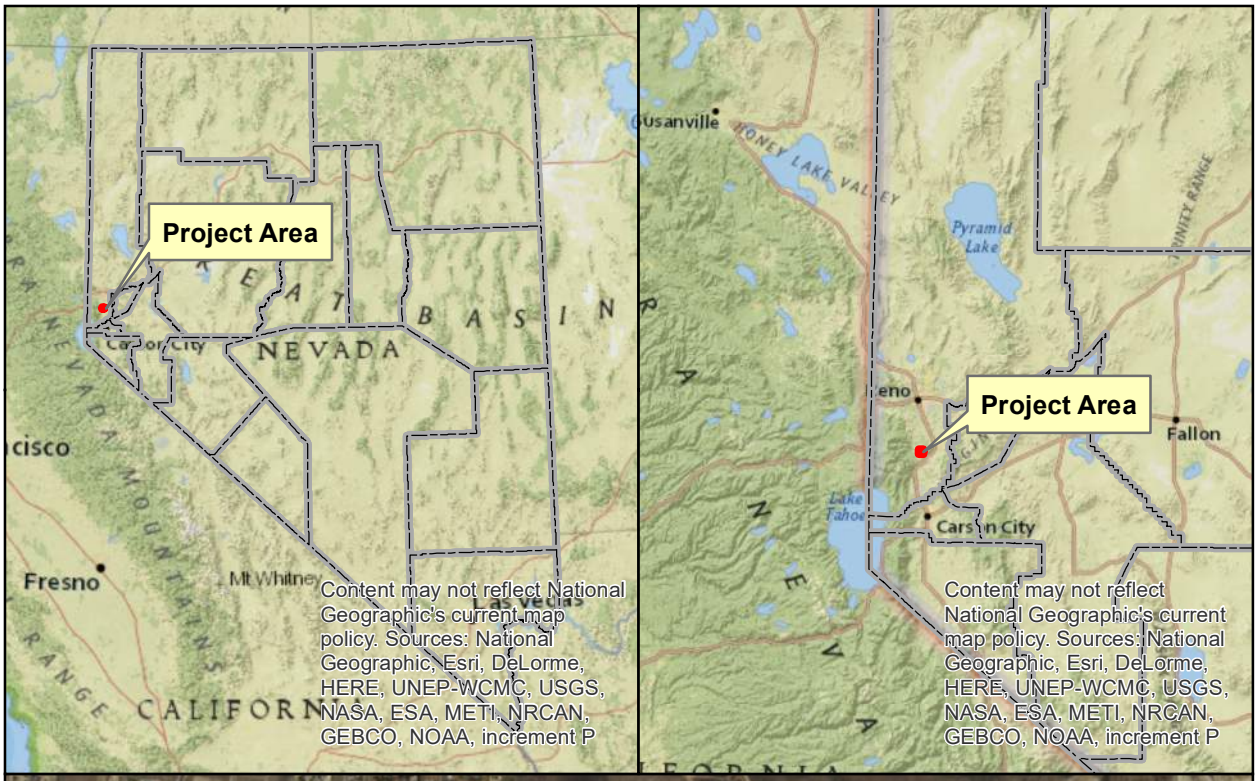
Lori Carpenter

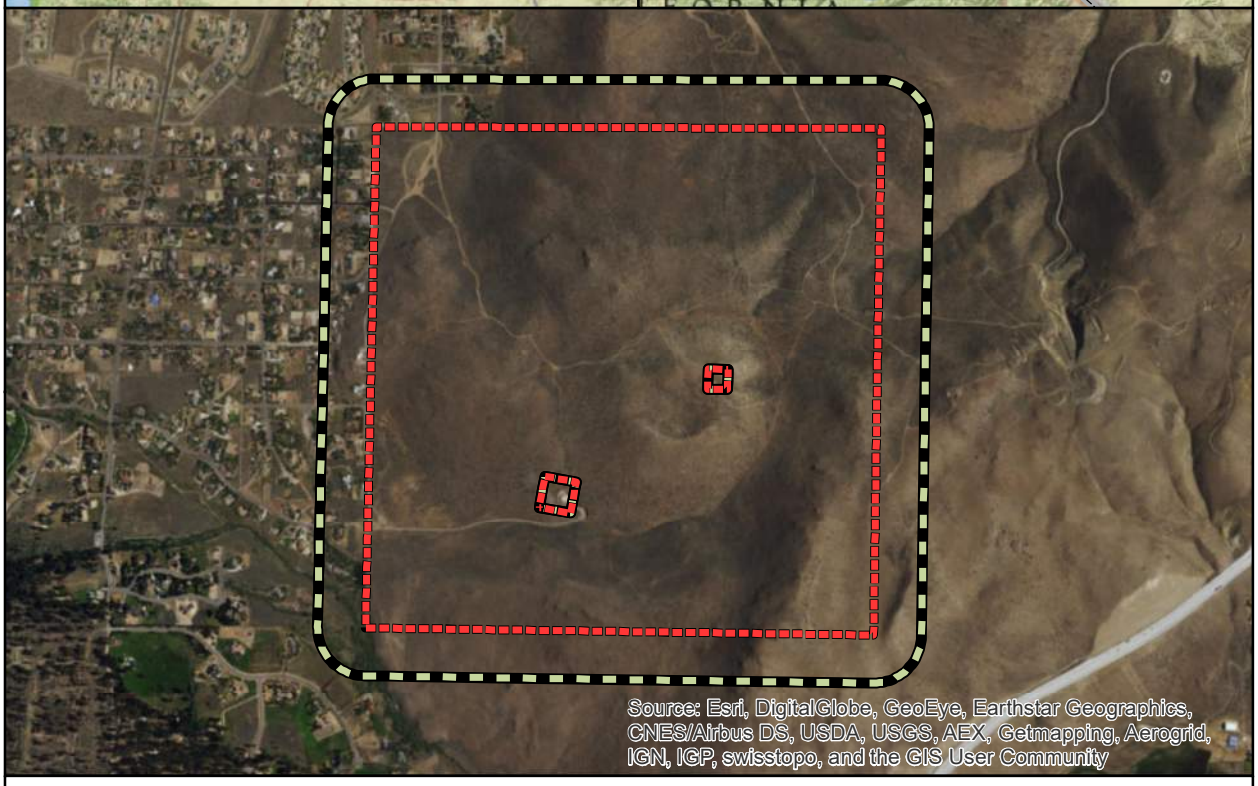
Lori Carpenter, PWS, CPESC
Hydrologist/Hydrogeologist

Attachments

ATTACHMENT 1
FIGURES

Figure 1a - Site Location
Figure 1b - USGS TOPO Map
Figure 1c - Watershed Map
Figure 2 - Land Use Map
Figure 3 - Geology Map
Figure 4 - NRCS Soils Map
Figure 5 - NWI Map
Figure 6 - Reserved
Figure 7 - SWReGAP Vegetation Map
Figure 8 - NHD Flowline Map





geosUAS

P. O. Box 19805
Reno, NV. 89511

Location Map

Projection: State Plane, NV West, US Feet

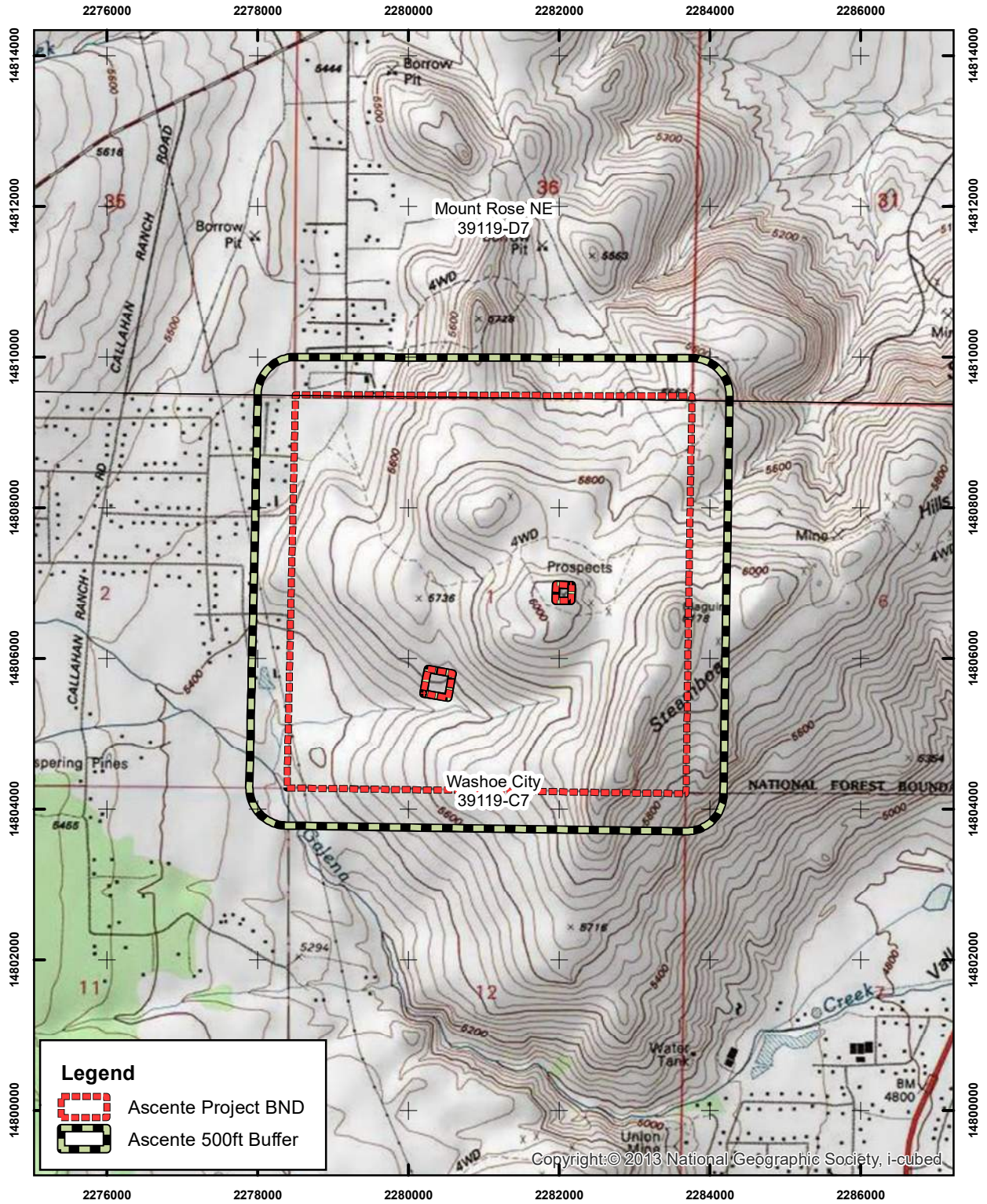
Attachment 1 Figure 1a

N

Legend

- Ascente Project BND
- Ascente 500ft Buffer

Date: 9/4/2016
Document Path: F:\7Q10\Ascente_Madera_Ridge_Project\MXDs\Att1_Figure_1a_Overview.mxd



geosUAS
P. O. Box 19805
Reno, NV. 89511

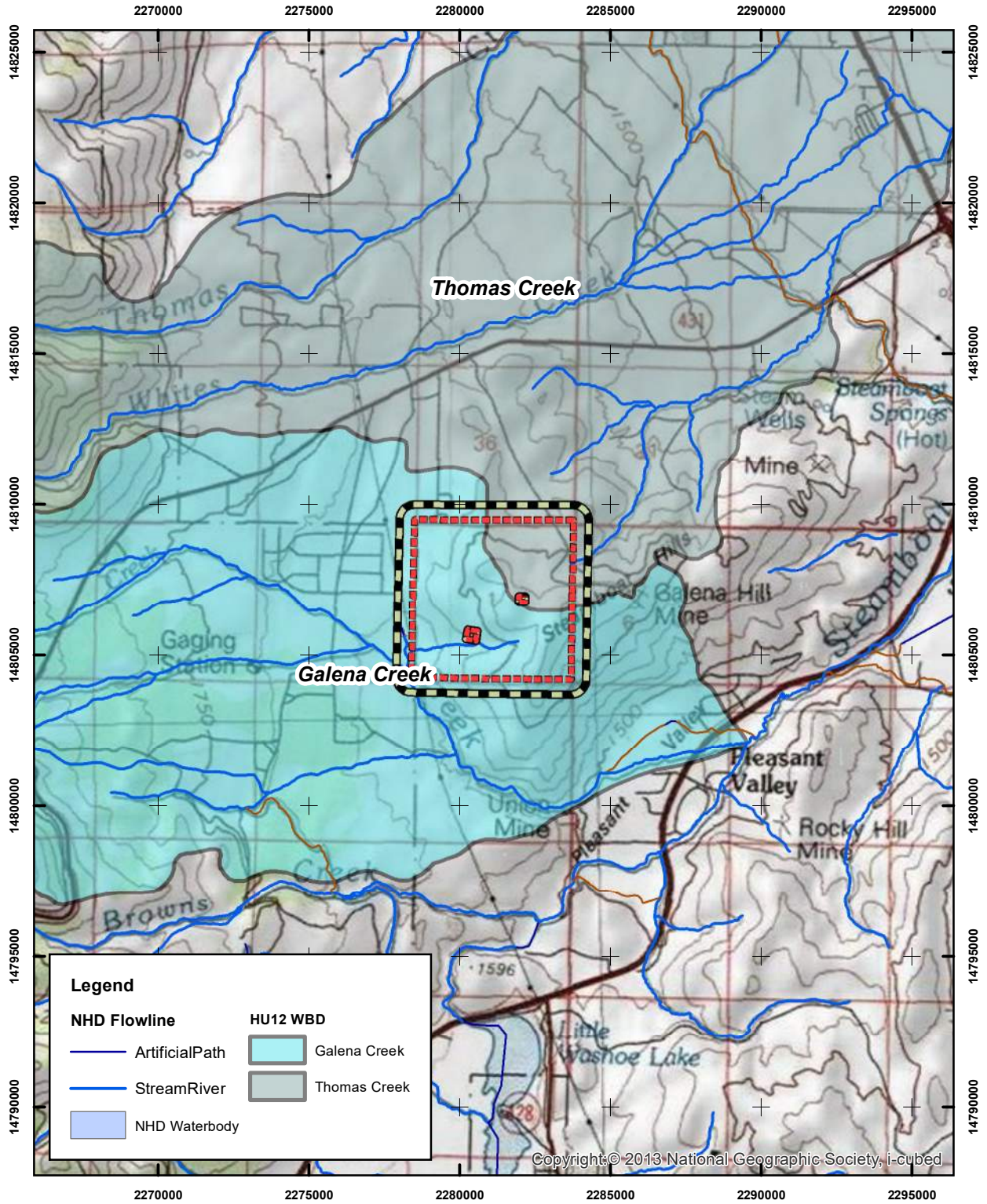
USGS TOPO Map

USGS 7.5" Quadrangles:
Mount Rose NE - 39119-D7
Washoe City - 39119-C7

Attachment 1 Figure 1b

Feet
0 2,000
1 inch = 2,000 feet
Projection: State Plane, NV West, US Feet

Date: 9/4/2016
Document Path: F:\7Q10\Ascente_Madera_Ridge_Project\MXDs\Att1_Figure_1b_USGS_TOPO.mxd



geosUAS

P. O. Box 19805
Reno, NV. 89511

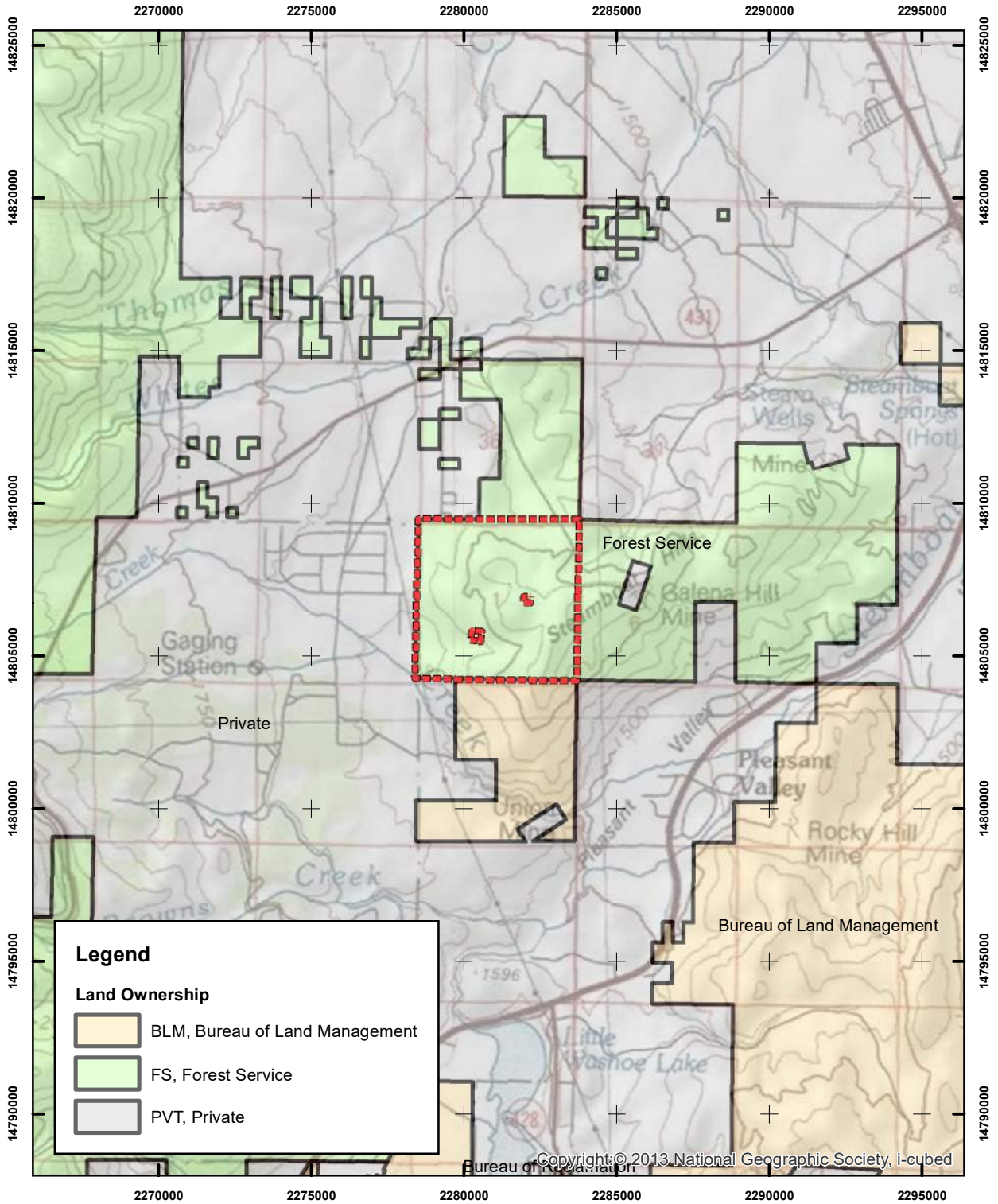
Watershed Map

Projection: State Plane, NV West, US Feet

Attachment 1 Figure 1c

Feet
0
5,000
1 inch = 5,000 feet

Date: 9/4/2016
Document Path: F:\7Q10\Ascente_Madera_Ridge_Project\MXDs\Att1_Figure_1c_Watershed_Map.mxd



geosUAS
P. O. Box 19805
Reno, NV. 89511

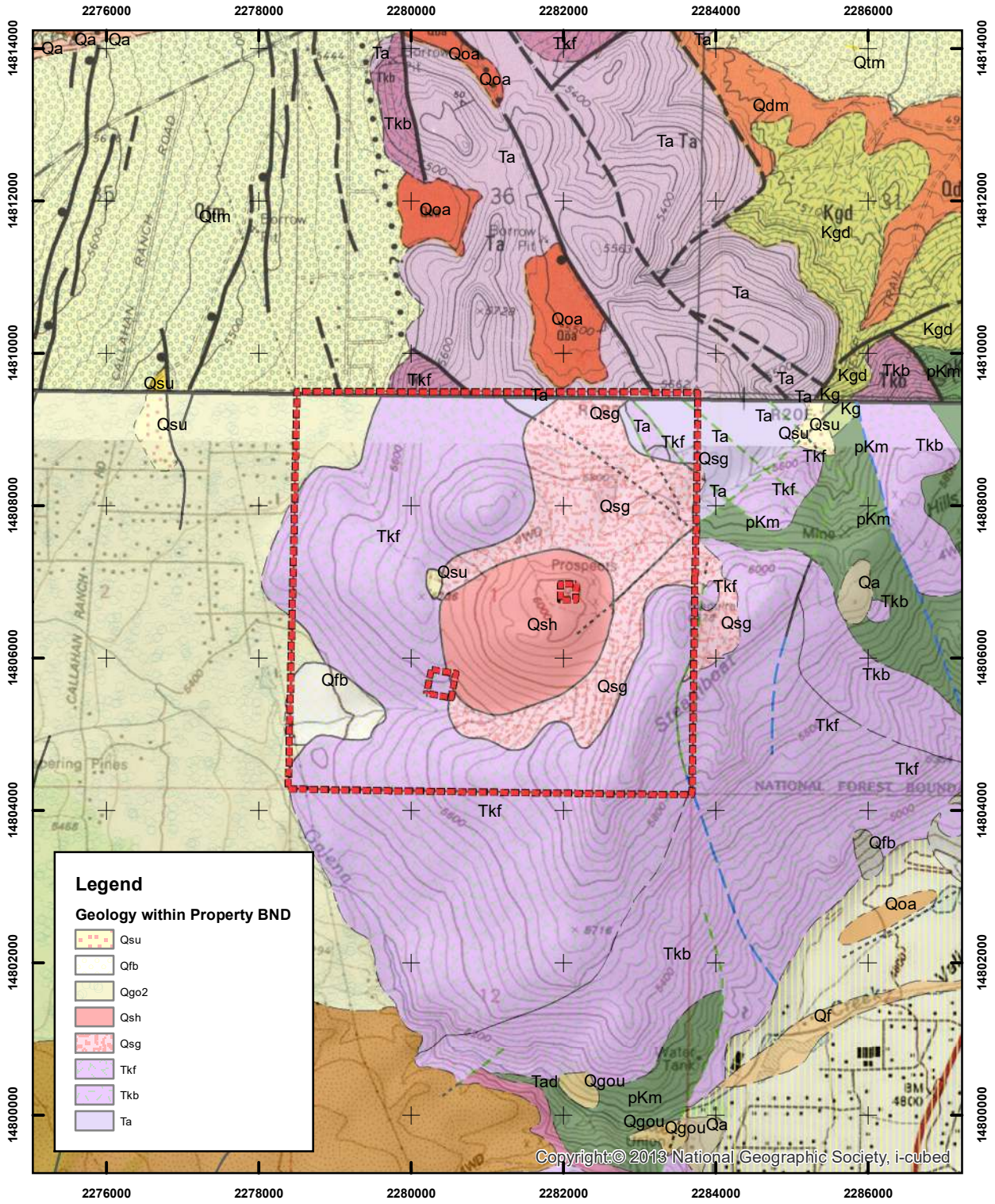
Land Use Map

Projection: State Plane, NV West, US Feet

Attachment 1 Figure 2

Feet
0
5,000
1 inch = 5,000 feet

Date: 9/4/2016
Document Path: F:\7Q10\Ascente_Madera_Ridge_Project\MXDs\Att1_Figure_2_Landuse.mxd



geosUAS
P. O. Box 19805
Reno, NV. 89511

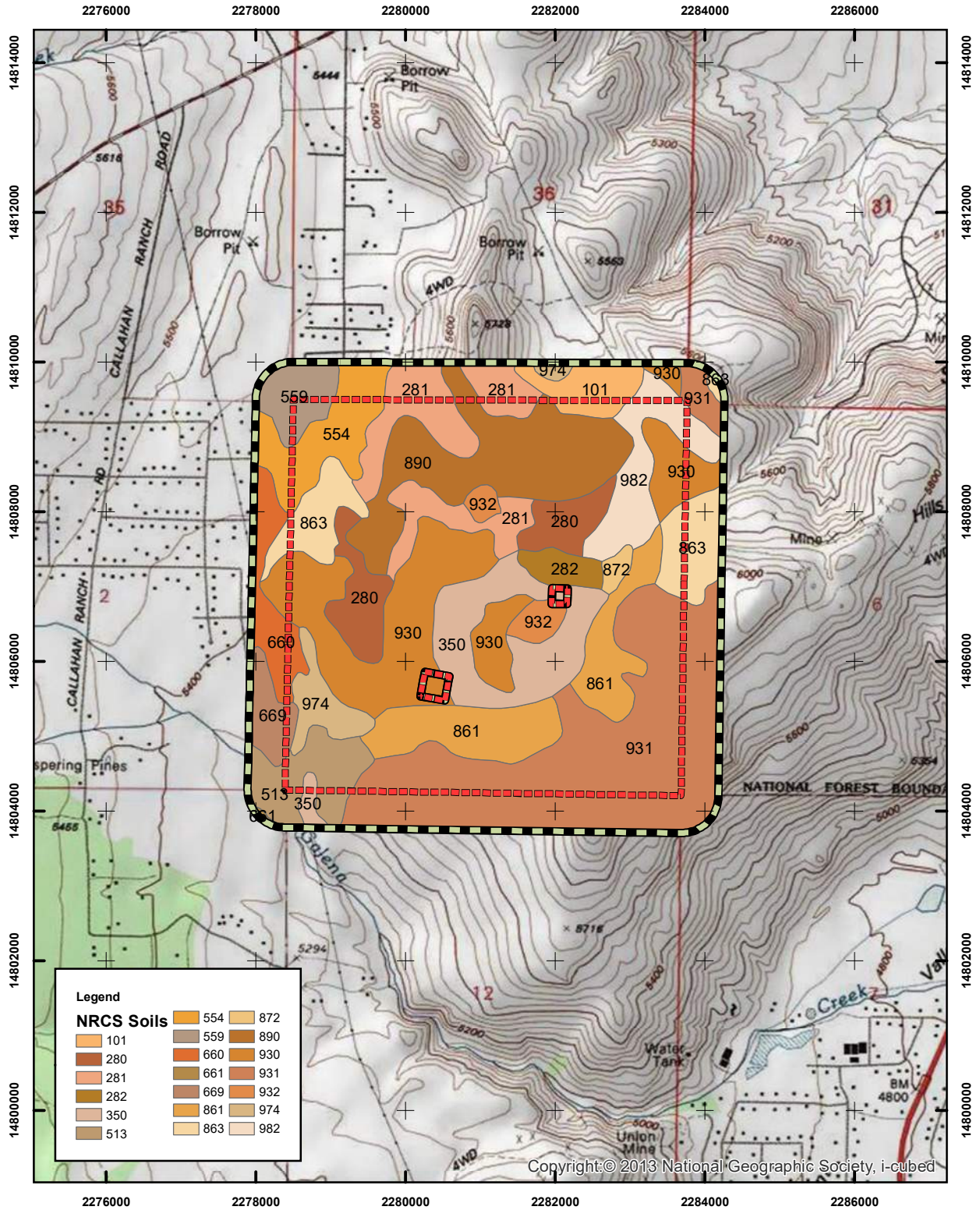
Geology Map

Projection: State Plane, NV West, US Feet

Attachment 1 Figure 3

Feet
0
2,000
1 inch = 2,000 feet

Date: 9/4/2016
Document Path: F:\7Q10\Ascente_Madera_Ridge_Project\MXDs\Att1_Figure_3_Geology.mxd



geosUAS

P. O. Box 19805
Reno, NV. 89511

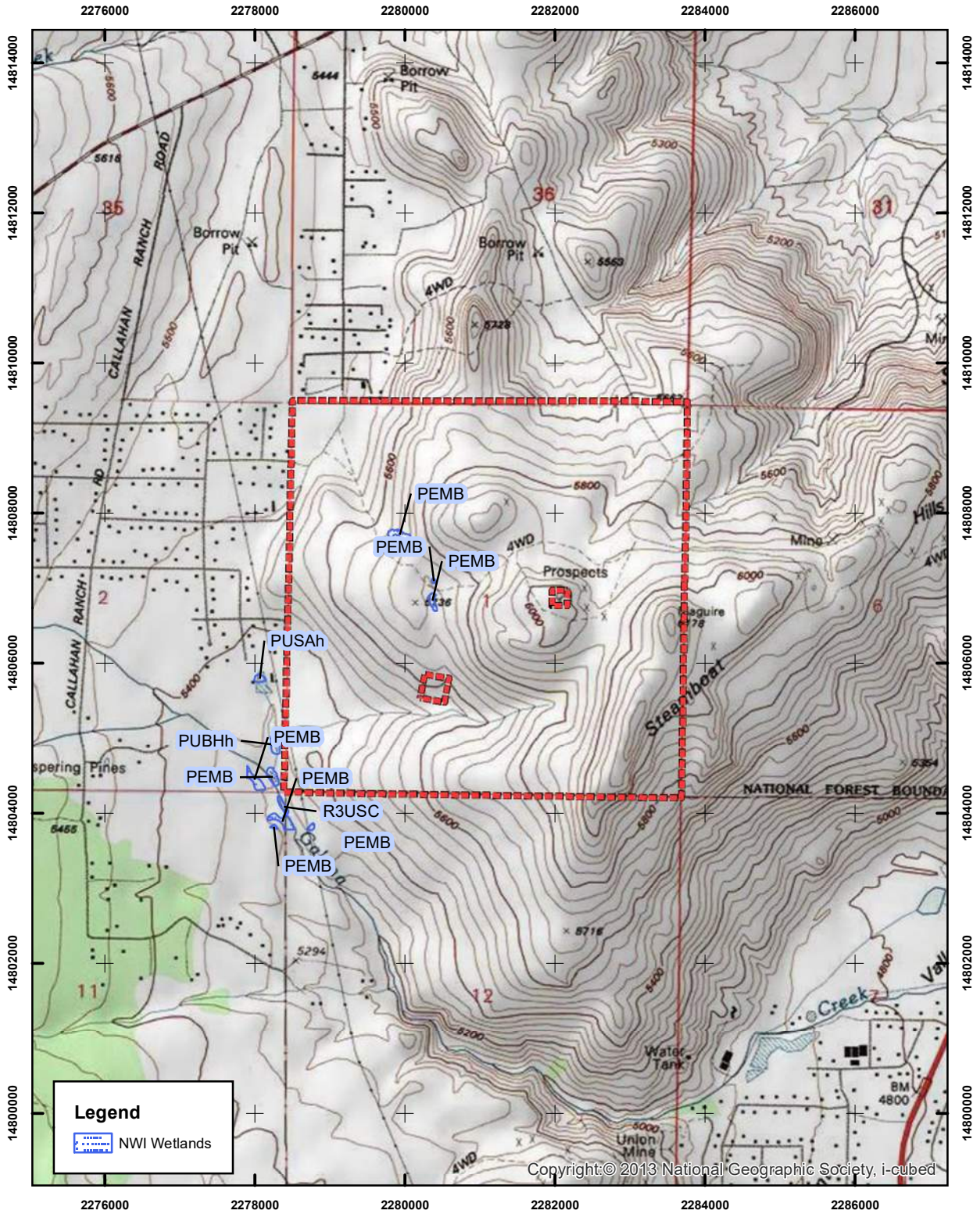
NRCS Soils Map

Projection: State Plane, NV West, US Feet

Attachment 1 Figure 4

Feet
0
2,000
1 inch = 2,000 feet

Date: 9/4/2016
Document Path: F:\7Q10\Ascente_Madera_Ridge_Project\MXDs\Att1_Figure_4_Soils.mxd



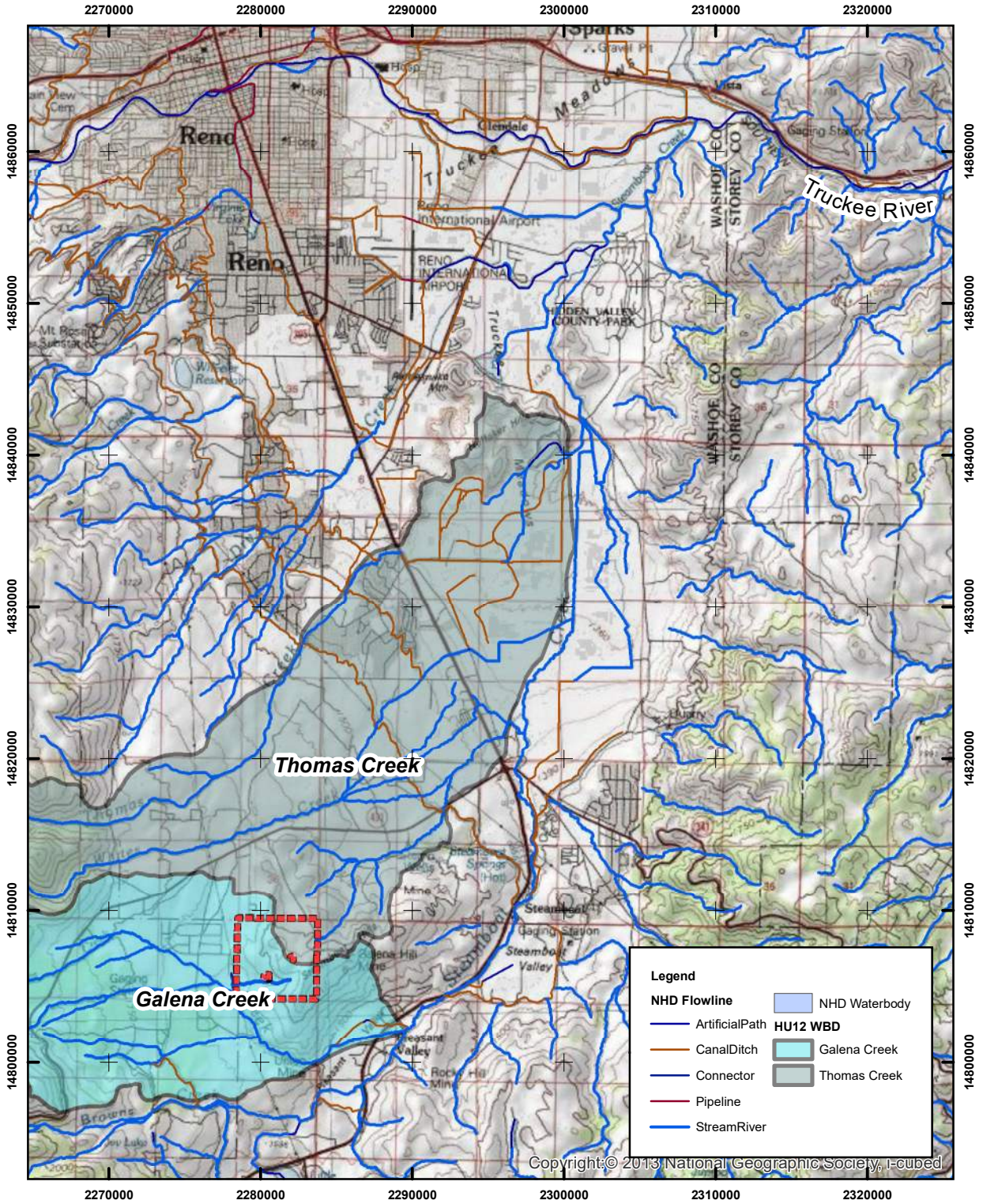
geosUAS
P. O. Box 19805
Reno, NV. 89511

NWI Map

Projection: State Plane, NV West, US Feet

Attachment 1 Figure 5

Feet
0
2,000
1 inch = 2,000 feet



geosUAS
P. O. Box 19805
Reno, NV. 89511

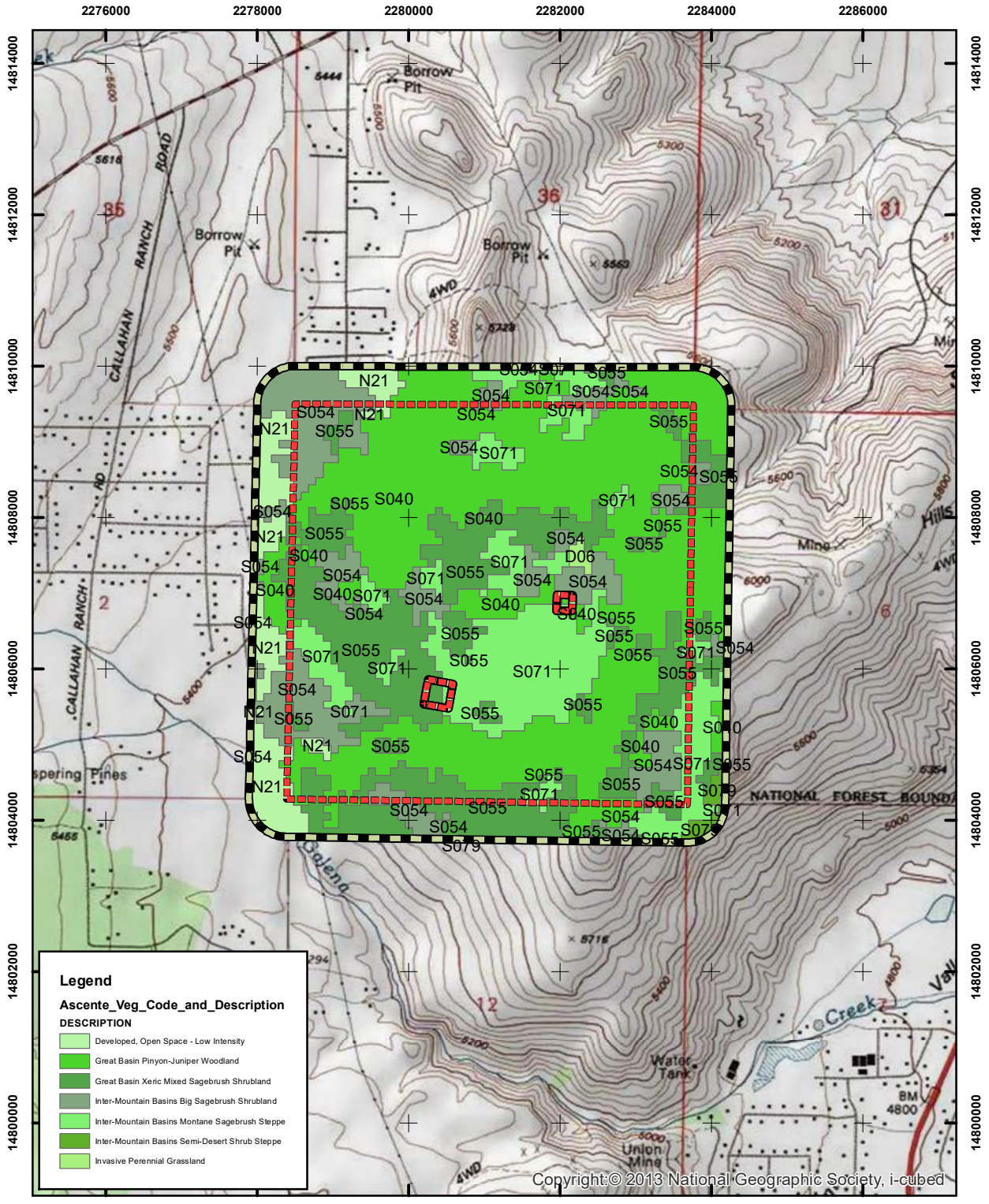
Watershed Map

Attachment 1 Figure 6

Projection: State Plane, NV West, US Feet

Feet
0
10,000
1 inch = 10,000 feet

Date: 9/4/2016
Document Path: F:\7Q10\Ascente_Madera_Ridge_Project\MXDs\Att1_Figure_6_Watershed_Map.mxd



geosUAS

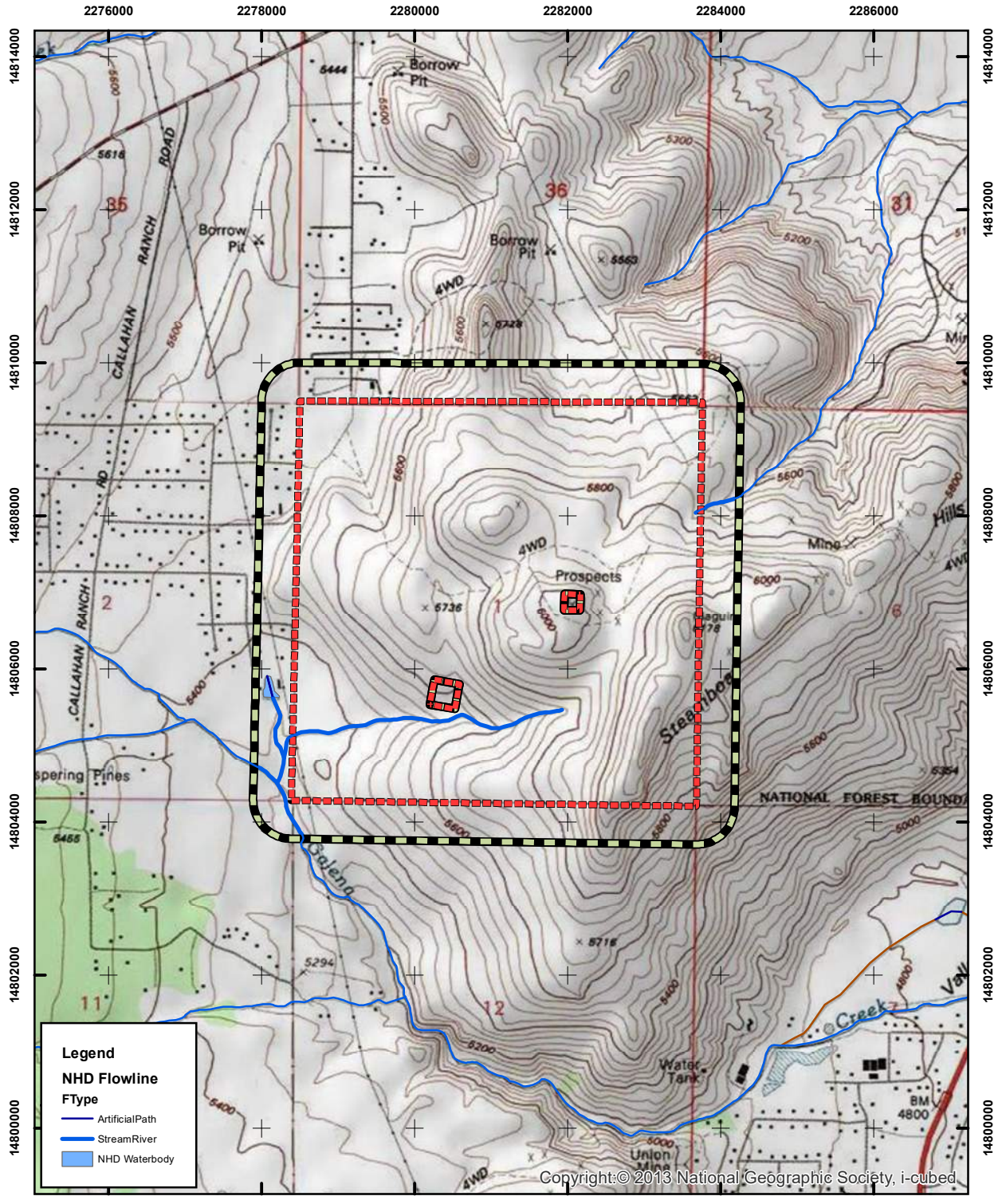
P. O. Box 19805
Reno, NV. 89511

SWReGAP Vegetation Map

Projection: State Plane, NV West, US Feet

Attachment 1 Figure 7

Feet
0
2,000
1 inch = 2,000 feet



geosUAS

P. O. Box 19805
Reno, NV. 89511

NHD Flowline Map

Projection: State Plane, NV West, US Feet

Attachment 1 Figure 8

Feet
0
2,000
1 inch = 2,000 feet

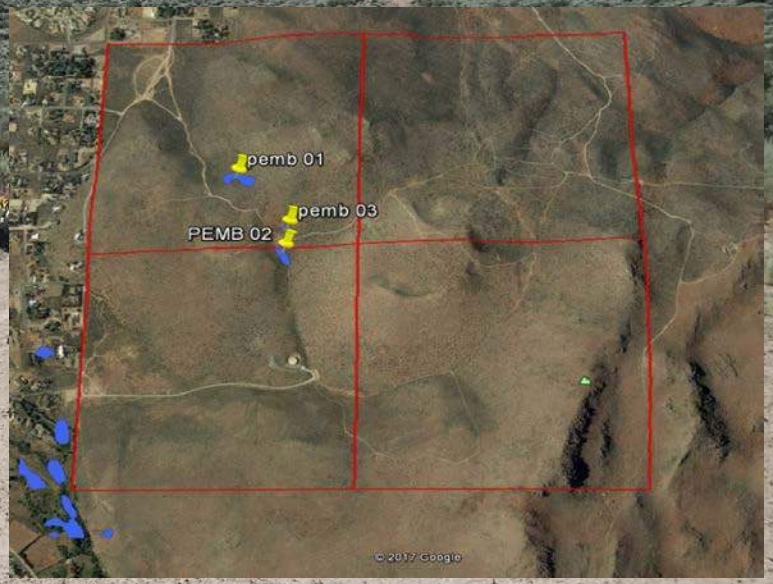
Date: 9/4/2016
Document Path: F:\7Q10\Ascente_Madera_Ridge_Project\MXDs\Att1_Figure_8_NHD_Flowline.mxd

ATTACHMENT 2
TABLES

Table 1 NRCS Soils and Hydric Soils

ATTACHMENT 3
REPRESENTATIVE PROJECT PHOTOS

Ascente Project NWI Features Photo Documentation



June 2017

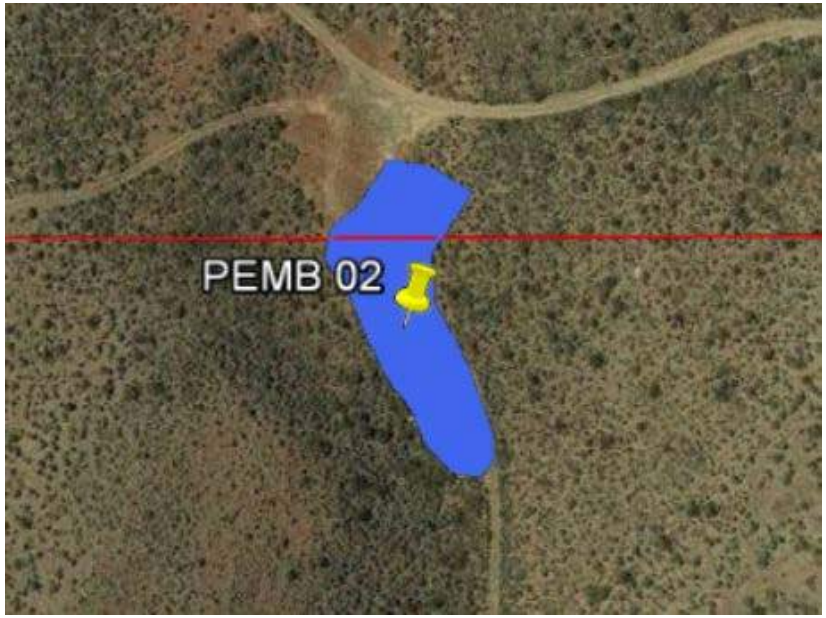
PEMB-01 – 39D22'12.74"N, 119D48'10.44W (0.06 ACRE)

PEMB-01 – 39D22'12.74"N, 119D48'10.44W (0.06 ACRE)

PEMB-01 – 39D22'12.74"N, 119D48'10.44W (0.06 ACRE)

PEMB-01 – 39D22'12.74"N, 119D48'10.44W (0.06 ACRE)

PEMB-02, 39D22’3.74”N., 119D48’4.47”W (0.36 ACRE)

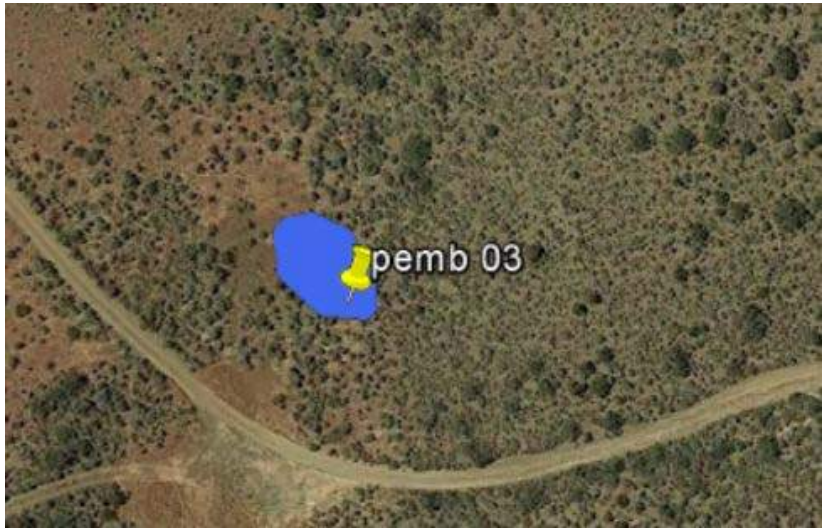


PEMB-02, 39D22’3.74”N., 119D48’4.47”W (0.36 ACRE)

PEMB-02, 39D22’3.74”N., 119D48’4.47”W (0.36 ACRE)

PEMB-02, 39D22’3.74”N., 119D48’4.47”W (0.36 ACRE)

PEMB-03 39D22’6.38”N., 119D48’4.06”W (0.05 ACRE)



PEMB-03 39D22’6.38”N., 119D48’4.06”W (0.05 ACRE)

PEMB-03 39D22’6.38”N., 119D48’4.06”W (0.05 ACRE)

PEMB-03 39D22’6.38”N., 119D48’4.06”W (0.05 ACRE)

ATTACHMENT 4
ENDANGERED SPECIES AND HABITAT INQUIRIES

U.S. Fish & Wildlife Service Ascente Ecos Report IpaC Trust Resources Report

Correspondence from State of Nevada Department of Conservation and Natural Resources
Nevada Natural Heritage Program: Data request received 11 August 2016

Nevada Natural Heritage Program

STATE OF NEVADA
DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES
Nevada Natural Heritage Program

Brian Sandoval
Governor

Leo Drozdoff
Director

Kristin Szabo
Administrator

16 August 2016

Lori Carpenter
geosUAS, Inc.
P.O. Box 19805
Reno, NV 89511

RE: Data request received 11 August 2016

Dear Ms. Carpenter:

We are pleased to provide the information you requested on endangered, threatened, candidate, and/or At Risk plant and animal taxa recorded within or near the Ascente Project area in Washoe County. We searched our database and maps for the following, a 2 kilometer radius around map provided including:

Township 17N Range 19E Section 01

There are no at risk taxa recorded within the given area. However, habitat may be available for, the Great Grey Owl, *Strix nebulosa*, a U.S. Forest Service (Region 5) Sensitive Species and the Mono checkerspot, *Euphydryas editha monoensis*, a U.S. Forest Service (Region 5) Sensitive Species. The Nevada Department of Wildlife (NDOW) manages, protects, and restores Nevada's wildlife resources and associated habitat. Please contact Bonnie Weller, NDOW GIS biologist (775) 688-1439 to obtain further information regarding wildlife resources within and near your area of interest. Removal or destruction of state protected flora species requires a special permit from Nevada Division of Forestry (NRS 527.270).

Please note that our data are dependent on the research and observations of many individuals and organizations and in most cases are not the result of comprehensive or site-specific field surveys. Natural Heritage reports should never be regarded as final statements on the taxa or areas being considered, nor should they be substituted for on-site surveys required for environmental assessments.

Thank you for checking with our program. Please contact us for additional information or further assistance.

Sincerely,

Eric S. Miskow
Biologist/Data Manager

U.S. Fish & Wildlife Service

Ascente Ecos Report

IPaC Trust Resources Report

Generated August 11, 2016 02:07 PM MDT, IPaC v3.0.8

This report is for informational purposes only and should not be used for planning or analyzing project level impacts. For project reviews that require U.S. Fish & Wildlife Service review or concurrence, please return to the IPaC website and request an official species list from the Regulatory Documents page.

IPaC - Information for Planning and Conservation (https://ecos.fws.gov/ipac/): A project planning tool to help streamline the U.S. Fish & Wildlife Service environmental review process.

Table of Contents

U.S. Fish & Wildlife Service

IPaC Trust Resources Report

NAME

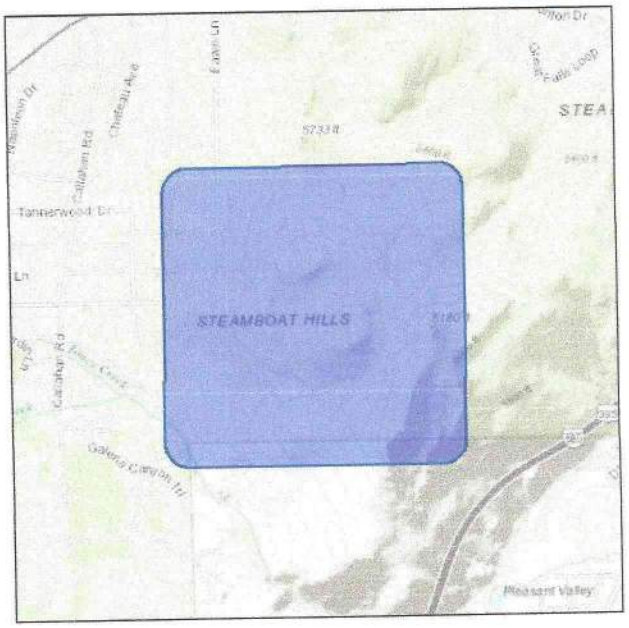
Ascente Ecos Report

LOCATION

Washoe County, Nevada

IPAC LINK

https://ecos.fws.gov/ipac/project/4ODHZ-7IL2Z-HSVOC-2JTF5-ZWPW2A



U.S. Fish & Wildlife Service Contact Information

Trust resources in this location are managed by:

Reno Fish And Wildlife Office
1340 Financial Boulevard, Suite 234
Reno, NV 89502-7147
(775) 861-6300

Endangered Species

Proposed, candidate, threatened, and endangered species are managed by the Endangered Species Program of the U.S. Fish & Wildlife Service.

This USFWS trust resource report is for informational purposes only and should not be used for planning or analyzing project level impacts.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list from the Regulatory Documents section.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency.

A letter from the local office and a species list which fulfills this requirement can only be obtained by requesting an official species list either from the Regulatory Documents section in IPaC or from the local field office directly.

The list of species below are those that may occur or could potentially be affected by activities in this location:

Fishes

Cui-ui Chasmistes cujus — Endangered

CRITICAL HABITAT
No critical habitat has been designated for this species.
http://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=E001

Lahontan Cutthroat Trout Oncorhynchus clarkii henshawi — Threatened

CRITICAL HABITAT
No critical habitat has been designated for this species.
http://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=E00Y

Flowering Plants

Steamboat Buckwheat Eriogonum ovalifolium var. williamsiae — Endangered

CRITICAL HABITAT

No critical habitat has been designated for this species.

http://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=Q2OR

Webber Ivesia Ivesia webberi — Threatened

CRITICAL HABITAT

There is **final** critical habitat designated for this species.

http://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=Q34J

Mammals

North American Wolverine Gulo gulo luscus — Proposed Threatened

CRITICAL HABITAT

No critical habitat has been designated for this species.

http://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=A0FA

Critical Habitats

There are no critical habitats in this location

Migratory Birds

Birds are protected by the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act.

Any activity that results in the take of migratory birds or eagles is prohibited unless authorized by the U.S. Fish & Wildlife Service.[1] There are no provisions for allowing the take of migratory birds that are unintentionally killed or injured.

Any person or organization who plans or conducts activities that may result in the take of migratory birds is responsible for complying with the appropriate regulations and implementing appropriate conservation measures.

---

1. 50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)

Additional information can be found using the following links:

- Birds of Conservation Concern
  http://www.fws.gov/birds/management/managed-species/birds-of-conservation-concern.php
- Conservation measures for birds
  http://www.fws.gov/birds/management/project-assessment-tools-and-guidance/conservation-measures.php
- Year-round bird occurrence data
  http://www.birdscanada.org/birdmon/default/datasummaries.jsp

The following species of migratory birds could potentially be affected by activities in this location:

Bald Eagle Haliaeetus leucocephalus — Bird of conservation concern
Season: Year-round
http://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B008

Black Rosy-finch Leucosticte atrata — Bird of conservation concern
Season: Year-round
http://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B0J4

Brewer's Sparrow Spizella breweri — Bird of conservation concern
Season: Breeding
http://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B0HA

Burrowing Owl Athene cunicularia — Bird of conservation concern
Season: Breeding
http://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B0NC

Calliope Hummingbird Stellula calliope — Bird of conservation concern
Season: Breeding
http://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B0K3

Eared Grebe Podiceps nigricollis — Bird of conservation concern
Season: Breeding

Flammulated Owl Otus flammeolus — Bird of conservation concern
Season: Breeding
http://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B0DK

Fox Sparrow Passerella iliaca — Bird of conservation concern
Season: Year-round

Greater Sage-grouse Centrocercus urophasianus — Bird of conservation concern
Season: Year-round
http://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B06W

Green-tailed Towhee Pipilo chlorurus — Bird of conservation concern
Season: Breeding
http://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B0IO

Loggerhead Shrike Lanius ludovicianus — Bird of conservation concern
Season: Year-round
http://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B0FY

Long-billed Curlew Numenius americanus — Bird of conservation concern
Season: Breeding
http://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B06S

Olive-sided Flycatcher Contopus cooperi — Bird of conservation concern
Season: Breeding
http://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B0AN

Peregrine Falcon Falco peregrinus — Bird of conservation concern
Season: Year-round
http://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B0FU

Pinyon Jay Gymnorhinus cyanocephalus — Bird of conservation concern
Season: Year-round
http://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B0I0

Sage Thrasher Oreoscoptes montanus — Bird of conservation concern
Season: Breeding
http://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B0ID

Short-eared Owl Asio flammeus — Bird of conservation concern
Season: Year-round
http://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B0HD

Snowy Plover Charadrius alexandrinus — Bird of conservation concern
Season: Breeding

Swainson's Hawk Buteo swainsoni — Bird of conservation concern
Season: Breeding
http://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B070

Tricolored Blackbird Agelaius tricolor — Bird of conservation concern
Season: Breeding
http://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B06P

Virginia's Warbler Vermivora virginiae — Bird of conservation concern
Season: Breeding
http://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B0IL

Western Grebe aechmophorus occidentalis — Bird of conservation concern
Season: Breeding
http://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B0EA

White Headed Woodpecker Picoides albolarvatus — Bird of conservation concern
Season: Year-round
http://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B0HU

Williamson's Sapsucker Sphyrapicus thyroideus — Bird of conservation concern
Season: Year-round
http://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B0FX

Wildlife refuges and fish hatcheries

There are no refuges or fish hatcheries in this location

Wetlands in the National Wetlands Inventory

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

DATA LIMITATIONS

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

DATA EXCLUSIONS

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tuberficid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

DATA PRECAUTIONS

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

This location overlaps all or part of the following wetlands:

Freshwater Emergent Wetland

PEM1B
PEM1C
PEM1Cx

Freshwater Forested/shrub Wetland

PSSCx

Freshwater Pond

PUBHh
PUSAh

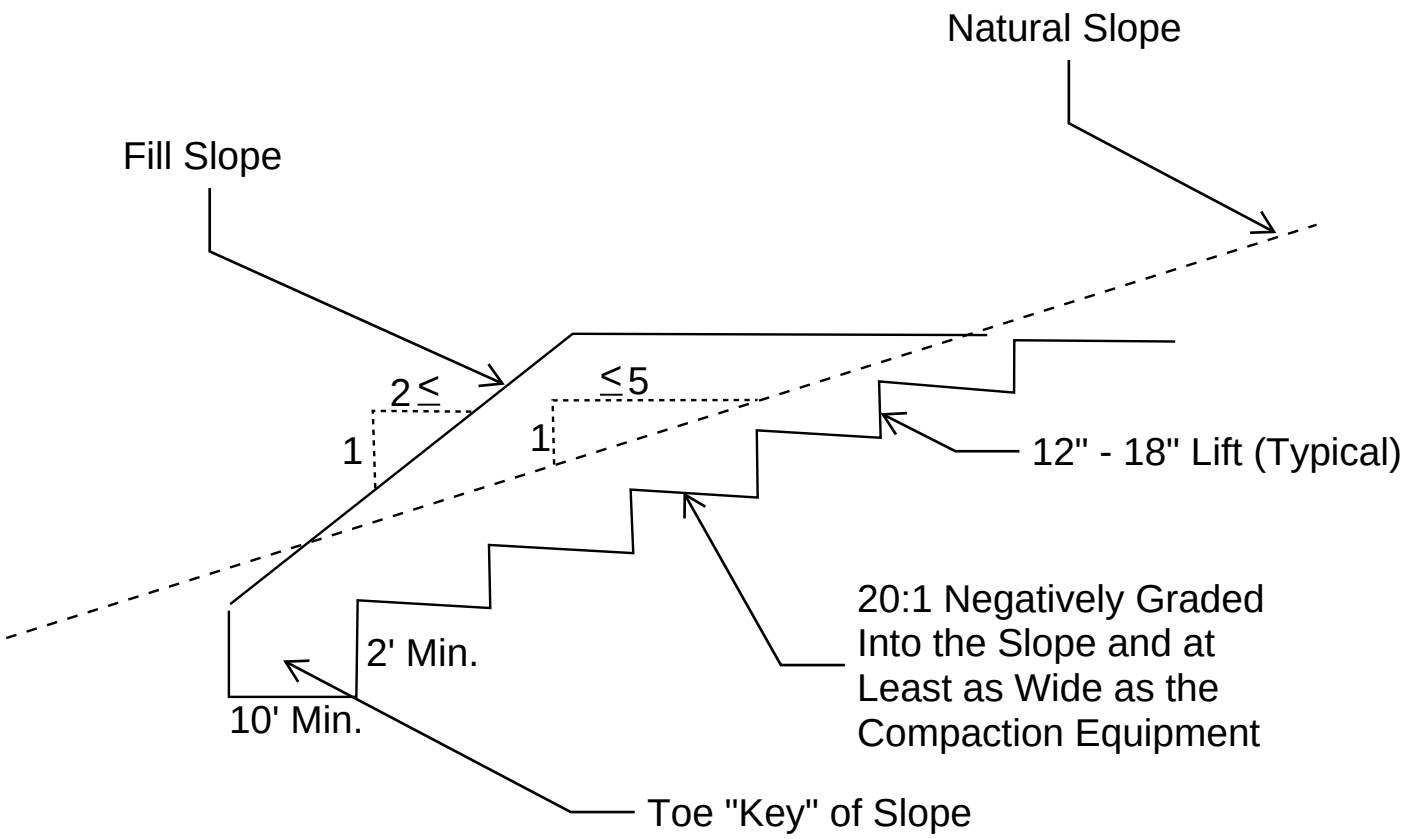
Riverine

R3UBH
R3USC
R4SBC
R4SBJ
R5UBH

A full description for each wetland code can be found at the National Wetlands Inventory website: http://107.20.228.18/decoders/wetlands.aspx

APPENDIX M

LUMOS & ASSOCIATES



Lumos and Associates
800 E. College Parkway
Carson City, NV 89706
(775) 883-7077
Fax: (775) 883-7114
bsexton@lumosinc.com

Ascenté Geotechnical Investigation

FILL SLOPE DETAIL

Job Number: 9019.004

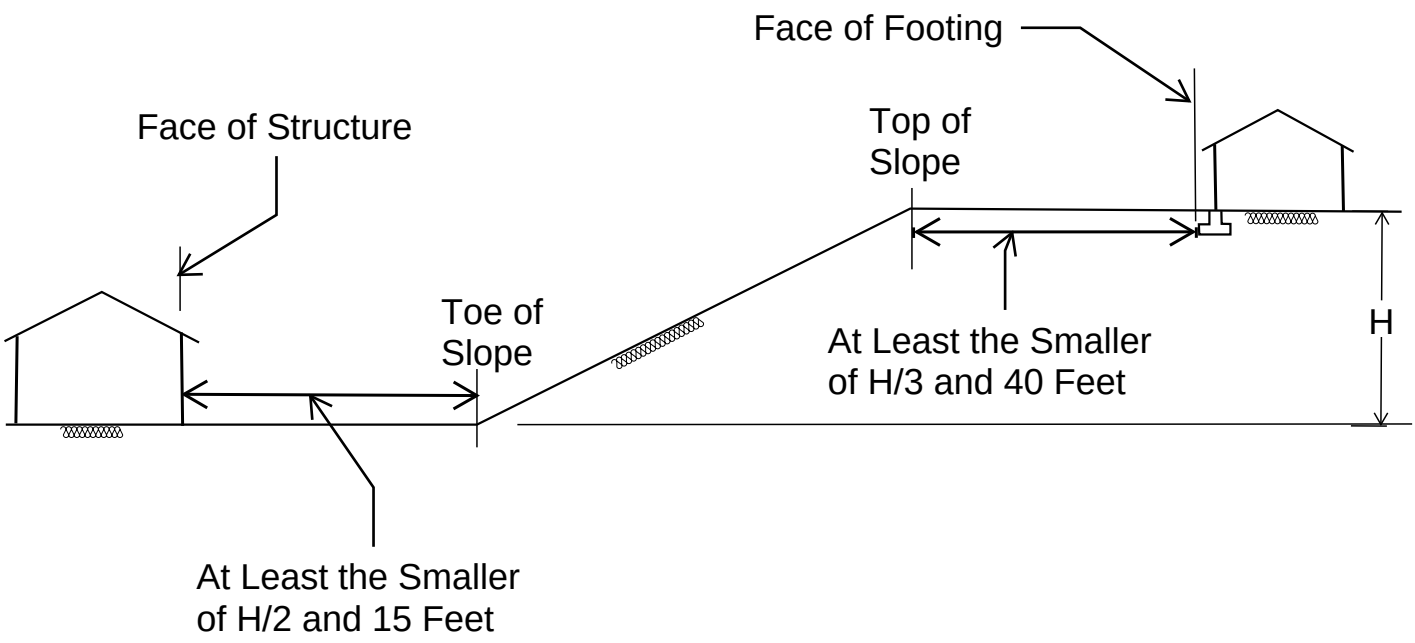
Date: Nov. 2017

PLATE

M-1

APPENDIX N

LUMOS & ASSOCIATES



LUMOS & ASSOCIATES

Lumos and Associates

800 E. College Parkway
Carson City, NV 89706
(775) 883-7077
Fax: (775) 883-7114
bsexton@lumosinc.com

Ascenté Geotechnical Investigation

SLOPE LOCATION TO STRUCTURE

Job Number: 9019.004

Date: Nov. 2017

PLATE

N-1