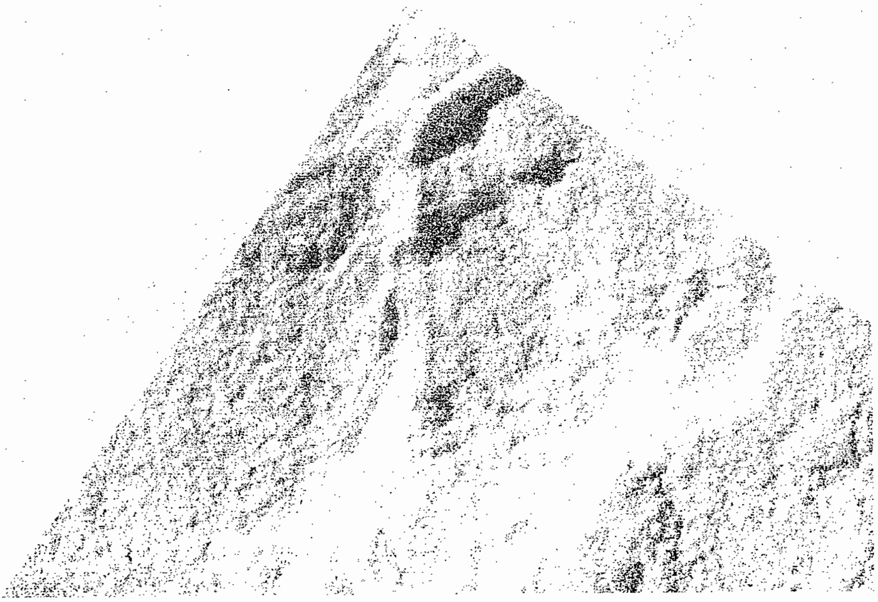
THE J. BYER GROUP, INC.
A GEOTECHNICAL CONSULTING FIRM
1461 E. CHEVY CHASE DR. #200, GLENDALE, CA 91206
818•549•9959 TEL 818•543•3747 FAX
"Trust the Name You Know"

GEOLOGIC AND SOILS ENGINEERING EXPLORATION

PROPOSED 37 UNIT RESIDENTIAL DEVELOPMENT
TENTATIVE TRACT 61553
PORTION OF LOT 1083, TRACT 1000
22255 MULHOLLAND DRIVE
WOODLAND HILLS, CALIFORNIA
FOR D. S. VENTURES, LLC
THE J. BYER GROUP, INC. PROJECT NUMBER JB 19553-Z
MARCH 22, 2005



GEOLOGIC AND SOILS ENGINEERING EXPLORATION
PROPOSED 37 UNIT RESIDENTIAL DEVELOPMENT
TENTATIVE TRACT 61553
PORTION OF LOT 1083, TRACT 1000
22255 MULHOLLAND DRIVE
WOODLAND HILLS, CALIFORNIA
FOR D. S. VENTURES, LLC
THE J. BYER GROUP, INC. PROJECT NUMBER JB 19553-Z
MARCH 22, 2005

INTRODUCTION

This report has been prepared per our signed Agreement and summarizes findings of The J. Byer Group, Inc. geologic and soils engineering exploration performed on the site. The purpose of this study is to evaluate the nature, distribution, engineering properties, and relative stability of the earth materials underlying the site with respect to development of Tentative Tract 61553 and construction of 37 residences.

INTENT

It is the intent of this report to assist in the design and completion of the proposed project. The recommendations are intended to reduce geotechnical risks affecting the project. The professional opinions and advice presented in this report are based upon commonly accepted standards and are subject to the general conditions described in the NOTICE section of this report.

EXPLORATION

The scope of the field exploration was determined from our initial site visit and consultation with the client. Exploration was conducted using techniques normally applied to this type of project in this setting. This report is limited to the area of the exploration and the proposed project as shown on the enclosed Geologic Map and cross sections. Conditions affecting portions of the property outside the area explored, are beyond the scope of this report.

Exploration was conducted on August 11, 12, and 22, and September 9, 2003 with the aid of hand labor, a hollow-stem auger drill rig, and an electronic piezocone rig (CPT). It included excavating four test pits, drilling 12 borings, and advancing two CPT soundings to depths of 10 to 35 feet. Samples of the earth materials were obtained from the test pits and borings and delivered to the soils engineering laboratory for testing and analysis. The test pits were downhole logged by personnel of The J. Byer Group.

Office tasks included laboratory testing of selected soil samples, reviewing the United States Department of Agriculture 1952 series air photos, reviewing the City of Los Angeles grading records, preparing the Geologic Map and cross sections, and performing engineering analysis. Earth materials exposed in the test pits and borings are described on the enclosed Log of Test Pits and Log of Borings. Appendix I contains a discussion of the laboratory testing procedures and results. Appendix II contains a discussion of the CPT procedures and the interpreted results and calculations.

The proposed project, surface geologic conditions, and the locations of the test pits, borings, and CPT soundings are shown on Geologic Map #1. Geologic Map #2 is the removal and shoring plan. Subsurface distribution of the earth materials, projected geologic structure, and the proposed project are shown on Sections A and B.

RESEARCH

The records at the City of Los Angeles were researched prior to preparing this report. No records were found that pertain to the subject property.

The J. Byer Group performed a geologic and soils engineering exploration on an adjacent property to the west (4606 San Feliciano Drive). The following documents were reviewed:

> *Geologic and Soils Engineering Exploration, Proposed Foundation Underpin and New Gazebo*, dated March 16, 1994;
>
> *Response to City Review Letter, Proposed Underpinning*, dated March 6, 1995; and
>
> *Additional Friction Pile Recommendations, Proposed Foundation Underpin*, dated June 9, 1995.

The City of Los Angeles reviewed the first two reports an issued a conditional approval letter dated March 17, 1995. Geologic data from the study has been transferred to Geologic Map #1.

PROPOSED DEVELOPMENT

Information concerning the proposed project was provided by the client. The Grading Plan provided was a guide for preparing this report. It is proposed to subdivide the subject property and create 37 pads suitable for development with residential construction. Vehicular access to the pads will be from a proposed street extending from Mulholland Drive to San Feliciano Drive.

In general, the pads are to be close to existing grade to preserve the existing oak trees. Conventional cut and fill grading techniques are planned to create the building sites and the road. A 10 foot high 2:1 cut slope is planned south of Pads 36 and 37, above a retaining wall up to 20 feet high. Fill slopes at a 2:1 gradient are planned up to 10 feet high south of Pad 35, south of Pads 15 and 16, and northeast of Pad 7. Retaining walls are also planned to support changes in grade north of Pads 1 through 9, south of Pads 25, 36, and 37, all around Pad 24, and south of the section of street across from Pads 10 through 12.

SITE DESCRIPTION

The subject property consists of approximately six acres of hillside and canyon terrain, north of Mulholland Drive, south of San Feliciano Drive, west of the intersection of Mulholland Drive and Topanga Canyon Road, in the Woodland Hills section of the city of Los Angeles, California. The abandoned Girardi Reservoir is located north and east of the project. The majority of the land is vacant. Two abandoned residential structures (22241 and 22255 Mulholland Drive) are present on the east-central portion of the site.

The pre-grading topography consists of a north-draining main canyon and a secondary canyon. A north-trending bedrock spur ridge separates the main and easterly secondary canyon. The existing residential structures were built on the bedrock ridge. Minor cut and fill grading techniques were employed to create level building sites for the structures. Past grading, associated with construction of Mulholland Drive has consisted of placing fill where the roadway crosses the main and secondary canyons. Fill was also placed along the margins of the main canyon and within a secondary canyon to support residential development and San Feliciano Drive to the west. The abandoned reservoir was created by placing fill within the main canyon.

GROUNDWATER

Groundwater was encountered on portions of the site. Generally, groundwater is present within the alluvium in the axis of the main and secondary canyons at 16 to 23 feet below grade and is perched on the bedrock. The water level at the time of the exploration is indicated on the boring logs and is plotted on the geologic cross sections.

EARTH MATERIALS

Fill

Fill, associated with previous site grading, blankets the majority of the site. In the main canyon, Borings 1, 2, 6, 7, and 8 encountered fill ranging from 7 to 10 feet. Between four and five feet of fill was observed in Borings 3, 4, and 5, on the northern portion of the site. For the easterly secondary canyon, in Borings 9 through 11, the fill is generally less than three feet. The fill consists of silty sand that is mottled brown and dark brown, slightly moist to moist, and slightly dense to dense. Fill on the bedrock ridge ranges from less than 12 inches to 3 feet. The fill does not appear to have been compacted and no record of compaction certification was located in the Building Department records.

Alluvium

Natural alluvium underlies the majority of the western and eastern portions of the study area. Within the main canyon, the thickness of alluvium encountered in the borings ranges from 9 to 25 feet. The alluvium likely thickens to on the order of 30 to 35 feet near the axis as shown on the geologic cross sections. For the easterly secondary canyon, the alluvium observed in the borings ranges in thickness from 8 to 23 feet. The alluvium consists of silty sand, clayey sand, and sand that is mottled brown, brownish gray, moist to saturated, and slightly dense to dense. Soft to slightly dense areas within the alluvium were observed at or near the groundwater level.

Bedrock

Bedrock underlying the site and encountered in the borings and test pits consists of siltstone and sandstone mapped as part of the Modelo Formation by T. W. Dibblee, 1992 (*Geologic Map of the Topanga and Canoga Park (South ½) Quadrangles)*. The bedrock is light gray, moderately hard to hard, massive to weakly bedded, and very to moderately weathered.

GEOLOGIC STRUCTURE

The bedrock described is common to this area of the Santa Monica Mountains and the geologic structure is consistent with regional trends. The bedrock encountered in the test pits is generally massive. Bedding planes mapped within the bedrock nearby strike north 43° to 53° east and dip 8° to 12° to the northwest. The geologic structure of the bedrock is not favorably oriented for stability of north facing slopes.

GENERAL SEISMIC CONSIDERATIONS

Southern California is located in an active seismic region (CBC Seismic Zone IV). Moderate to strong earthquakes can occur on numerous local faults. The United States Geological Survey, California Geological Survey, private consultants, and universities have been studying earthquakes in southern California for several decades. Early studies were directed toward earthquake prediction and estimation of the effects of strong ground shaking. Studies indicate that earthquake prediction is not practical and not sufficiently accurate to benefit the general public. Governmental agencies are shifting their focus to earthquake resistant structures as opposed to prediction. The purpose of the code seismic design parameters is to prevent collapse during strong ground shaking. Cosmetic damage should be expected.

Within the past 34 years, southern California and vicinity have experienced an increase in seismic activity beginning with the San Fernando earthquake in 1971. In 1987, a moderate earthquake struck the Whittier area and was located on a previously unknown fault. Ground shaking from this event caused substantial damage to the City of Whittier, and surrounding cities.

The January 17, 1994, Northridge earthquake was initiated along a shallowly dipping, previously unrecognized fault below the San Fernando Valley. The energy released by the earthquake propagated to the southeast, northwest, and northeast in the form of shear and compression waves, which caused the strong ground shaking in portions of the San Fernando Valley, Simi Valley, City of Santa Clarita, and City of Santa Monica.

Southern California faults are classified as: active, potentially active, or inactive. Faults from past geologic periods of mountain building, but do not display any evidence of recent offset, are considered "inactive" or "potentially active." Faults that have historically produced earthquakes or show evidence of movement within the past 11,000 years are known as "active faults." There are no known active faults within close vicinity of the subject property and the site is not within an Alquist-Priolo fault hazard zone.

The nearest known potentially active fault is located 9.6 kilometers from the site. From a Building Code (Chapter 16) standing, the fault is classified as a Type "B" fault. The following table lists the applicable Building Code seismic coefficients for the project:

BUILDING CODE SEISMIC COEFFICIENTS	
Earth Materials	Compacted Fill, Alluvium, and Soft Bedrock
Soil Profile Type	S_D
Seismic Coefficient (C_a)	$0.44N_a$
Seismic Coefficient (C_v)	$0.64N_v$
Near-Source Factor (N_a)	1.0
Near-Source Factor (N_v)	1.016

The principal seismic hazard to the subject property and proposed project is strong ground shaking from earthquakes produced by local faults. Modern, well-constructed buildings are designed to resist ground shaking through the use of shear panels and reinforcement. Additional precautions may be taken to protect personal property and reduce the chance of injury, including strapping water heaters and securing furniture. It is likely that the subject property will be shaken by future earthquakes produced in southern California.

SEISMIC HAZARD ZONES

The California State Legislature enacted the Seismic Hazards Mapping Act of 1990, which was prompted by damaging earthquakes in northern and southern California, and was intended to protect public safety from the effects of strong ground shaking, liquefaction, landslides, and other earthquake-related hazards. The Seismic Hazards Mapping Act requires that the State Geologist delineate various "seismic hazards zones." The maps depicting the zones are released by the California Geological Survey (CGS formally CDMG). Sites outside hazard zones are not necessarily free of seismic or geologic hazards. Not all of southern California has been mapped, and new maps are issued and existing maps refined from time to time.

The Seismic Hazards Mapping Act requires a site investigation by a certified engineering geologist and/or civil engineer with expertise in geotechnical engineering, for projects sited within a hazard zone. The investigation is to include recommendations for a "minimum level of mitigation" that should reduce the risk of ground failure during an earthquake to a level that does not cause the collapse of buildings for human occupancy. The Seismic Hazards Mapping Act does not require mitigation to a level of no ground failure and/or no structural damage.

Seismic Hazard Zone delineations are based on correlation of a combination of factors, including: surface distribution of soil deposits; physical relief; depth to historic high groundwater; shear strength of the soils; and occurrence of past seismic failure. Maps within the series are further designated as Reconnaissance, Preliminary, or Official. Reconnaissance Maps are draft level, while the Official Maps have been thoroughly researched and reviewed.

The CGS has released a map titled "*Seismic Hazard Zones, Canoga Park 7.5 Minute Quadrangle, Official Map, Seismic Hazard Zone Report 007,*" 1997, revised 2001. Official Seismic Hazard Zones Maps are the culmination of mapping, analysis, review and comment of Division, other State agencies, and the public following review and revision of the Preliminary Map.

The map delineates areas that have been subject to, or are potentially subject to liquefaction; and areas where previous landsliding has occurred or conditions for potential permanent ground displacements exist as a result of earthquake-caused ground shaking. Portions of the subject property are included within an area that may be subject to liquefaction.

Liquefaction

Liquefaction is a process that occurs when saturated sediments are subjected to repeated strain reversals during an earthquake. The strain reversals cause increased pore water pressure such that the internal pore pressure approaches the overburden pressure and the shear strength approaches zero. Liquefied soils may be subject to flow or excessive strain, which can cause settlement. Liquefaction occurs in soils below the groundwater table. Soils commonly subject to liquefaction include loose to medium dense sand and silty sand. Predominantly fine-grained soils, such as silts and clay, are less susceptible to liquefaction. Generally, soils with a clay content of greater than 15 percent and/or a fines content (percent passing the 200 sieve) greater than 30 percent, are not considered subject to liquefaction.

Soils data collected in the borings and CPT soundings were utilized to quantify the liquefaction potential of the site. A ground acceleration of 0.46g and a design magnitude earthquake of 6.9 were used for the analyses. The historic high groundwater for this area of Woodland Hills is not indicated by the California Geological Survey. The groundwater at the time of exploration is 20 feet below the ground surface in CPT1 and 16 feet in CPT2.

The last column of "*F.S. Liquef.*" of "*Interpretation of Electronic Piezocone (CPT) Data - Liquefaction Analysis*" lists the calculated safety factor of the soils encountered in the CPT soundings. The stresses and safety factor for liquefaction were calculated using the methodologies by T.L. Youd, et. al., (NCEER/NSF Workshop, 1998), P.K. Robertson (*Cyclic Liquefaction and its Evaluation Based on the SPT and CPT, 1997*), and "*Recommended Procedures for Implementation of DMG Special Publication 117, Guidelines for Analyzing and Mitigating Liquefaction in California*" (Southern California Earthquake Center, Figure 7.5b, p. 39, 2002).

The liquefaction potential across the site is variable because of the lenticular nature of the clayey and sandy alluvium.

For CPT1, liquefaction is indicated (safety factor less than 1.2) below the observed groundwater level at depths of 20 to 24, 26, and 29 feet. For CPT 2, a potential for liquefaction is present at depths of 26 to 28 feet.

ONE FOOT THICK LAYERS WITH LIQUEFACTION POTENTIAL (FS <1.2)	
CPT 1 (depth-feet)	CPT 2 (depth-feet)
20	26
21	27
23	28
24	
26	
29	

Lateral Spreading Hazard

Saturated soils that have experienced liquefaction may be subject to liquefaction where located adjacent to free-faces, such as slopes, channels, and rivers. The site is remote to free-faces and the lateral spreading hazard at the site is nil.

Dynamic Settlement

Dissipation of excess pore pressure after liquefaction can result in settlement. The volumetric strain and accompanying settlement of saturated soils was estimated using procedures developed by Ishihara and Yoshimine. The enclosed Seismic Settlement calculations indicate 3.11 inches of dynamic settlement near CPT 1 and 0.94 inches near CPT 2. According to the referenced 2002 SCEC publication, differential settlement is typically of ½ to ⅔ of the total settlement for Holocene sediments. Therefore, the liquefaction induced differential settlement potential of the alluvium underlying the site 1.5 to 2.1 inches.

SLOPE STABILITY

All of the cut and fill slopes are to be less than 10 feet high and are programmed at a 2:1 slope gradient. These slopes are considered to be grossly stable. North dipping bedding will be unsupported in the down-dip direction in the north facing cut slope planned south of Pads 36 and 37. A 2:1 compacted stabilization fill is recommended to support bedding.

CONCLUSIONS AND RECOMMENDATIONS

General Findings

The conclusions and recommendations of this exploration are based upon twelve borings, four test pits, two CPT soundings, field geologic mapping, research of available records, consultation, years of experience observing similar properties in similar settings and review of the development plans. It is the finding of The J. Byer Group, Inc. that development of Tentative Tract 61553 and the construction of 37 residences is feasible from a geologic and soils engineering standpoint provided the advice and recommendations contained in this report are included in the plans and are implemented during construction.

Geotechnical issues affecting the site include liquefaction and dynamic settlement potential of the alluvium.

SITE PREPARATION

Surficial materials consisting of uncertified fill and poorly consolidated alluvium underlie portions of the site. Remedial grading is recommended to improve site conditions.

General Grading Specifications

The following guidelines may be used in preparation of the grading plan and job specifications. The J. Byer Group would appreciate the opportunity of reviewing the plans to insure that these recommendations are included. The grading contractor should be provided with a copy of this report.

A. The areas to receive compacted fill should be prepared by removing all vegetation, debris, existing fill, and alluvium. The exposed excavated area should be observed by the soils engineer or geologist prior to placing compacted fill. The exposed grade should be scarified to a depth of six inches, moistened to optimum moisture content, and recompacted to 90 percent of the maximum density.

B. For Pads 5, 6, 36, and 37, the proposed building sites shall be excavated to a minimum depth of at least three below feet below the bottom of all footings. The excavation shall extend a minimum of five feet beyond the building footprint, or equal to the depth of fill, whichever is greater. The excavated areas shall be observed by the soils engineer or geologist prior to placing compacted fill.

C. Fill, consisting of soil approved by the soils engineer, shall be placed in horizontal lifts and compacted in six inch layers with suitable compaction equipment. The excavated onsite materials are considered satisfactory for reuse in the controlled fills. Any imported fill shall be observed by the soils engineer prior to use in fill areas. Rocks larger than six inches in diameter shall not be used in the fill.

D. Field observation and testing shall be performed by the soils engineer during grading to assist the contractor in obtaining the required degree of compaction and the proper moisture content. Where compaction is less than required, additional compactive effort shall be made with adjustment of the moisture content, as necessary, until 90 percent compaction is obtained. One compaction test is required for each 500 cubic yards or two vertical feet of fill placed.

E. The alluvial soils will shrink approximately 8 to 12 percent upon recompaction.

Fill Slopes

Fill slopes may be constructed at a 2:1 gradient. Compacted fill should be keyed and benched into bedrock. Keyways should be a minimum of 15 feet wide and three feet into bedrock as measured on the downhill side. The base of all fills and the axis of drainage courses require subdrains.

Cut Slopes

North facing cut slopes will unsupport bedding in the down dip direction. The slopes should be over cut 15 feet and replaced as stabilization fills.

Excavation Characteristics

The test pits, borings and CPT soundings did not encounter hard, cemented bedrock. Excavation difficulty is a function of the degree of weathering and amount of fracturing within the bedrock. The bedrock generally becomes harder and more difficult to excavate with increasing depth. Hard cemented layers are also known to occur at random locations and depths and may be encountered during foundation excavation, friction and soldier pile drilling, and mass grading.

Groundwater

Groundwater was encountered in the borings and CPT soundings. Groundwater and saturated soils should be anticipated for the deep removals. Saturated soils exposed in removal excavations may have to be stabilized prior to the placement of fill. One or more feet of ¾ inch crushed rock may be used to establish a firm surface for fill placement.

Water and caving should be expected in pile excavations. Casings may be necessary. The water should be displaced from the pile excavation by pumping the concrete via a tremie. The tip of the hose should always be about five feet below the surface of the concrete, and definite steps and safeguards should be taken so that the tip of the hose is never raised above the surface of the concrete. Where water is to be displaced by pumping the concrete, the structural design of the concrete should be increased a minimum of 1,000 pounds per square inch.

FOUNDATION DESIGN

General Conditions

The following foundation recommendations are minimum requirements. The structural engineer may require footings that are deeper, wider, or larger in diameter, depending on the final loads.

Spread Footings

Continuous and/or pad footings may be used to support the proposed structures provided they are founded in approved compacted fill. Continuous footings should be a minimum of 12 inches in width. Pad footings should be a minimum of 24 inches square. The following chart contains the recommended design parameters.

Bearing Material	Minimum Embedment Depth of Footing (Inches)	Vertical Bearing (psf)	Coefficient of Friction	Passive Earth Pressure (pcf)	Maximum Earth Pressure (psf)
Future Compacted Fill	18	1,500	0.35	300	4,000

Increases in the bearing value are allowable at a rate of 300 pounds per square foot for each additional foot of footing width or depth to a maximum of 4,000 pounds per square foot. For bearing calculations, the weight of the concrete in the footing may be neglected.

The bearing value shown above is for the total of dead and frequently applied live loads and may be increased by one third for short duration loading, which includes the effects of wind or seismic forces. When combining passive and friction for lateral resistance, the passive component should be reduced by one third.

All continuous footings should be reinforced with a minimum of four #4 steel bars; two placed near the top and two near the bottom of the footings. Footings should be cleaned of all loose soil, moistened, free of shrinkage cracks and approved by the geologist prior to placing forms, steel or concrete.

Deepened Foundations - Friction Piles

If the fill and alluvium are not removed, then drilled, cast in place concrete friction piles may be used to support the proposed residences. Piles should be a minimum of 24 inches in diameter and a minimum of eight feet into bedrock. Piles may be assumed fixed at three feet into bedrock. The piles may be designed for a skin friction of 500 pounds per square foot for that portion of pile in contact with the bedrock.

Lateral Design

The friction value is for the total of dead and frequently applied live loads and may be increased by one third for short duration loading, which includes the effects of wind or seismic forces. Resistance to lateral loading may be provided by passive earth pressure within the bedrock.

Passive earth pressure may be computed as an equivalent fluid having a density of 500 pounds per cubic foot. The maximum allowable earth pressure is 4,000 pounds per square foot. For design of isolated piles, the allowable passive and maximum earth pressures may be increased by 100 percent. Piles spaced more than 2½ pile diameters on center may be considered isolated.

Foundation Setback

The Building Code requires that foundations be a sufficient depth to provide horizontal setback from a descending slope steeper than 3:1. The required setback is ⅓ the height of the slope with a minimum of five feet and a maximum of 40 feet measured horizontally from the base of the foundation to the slope face.

Toe of Slope Clearance

The Building Code requires a level yard setback between the toe of an ascending slope and the rear wall of the proposed structure of one half the slope height to a maximum 15 feet clearance for slopes steeper than 3:1. For retained slopes, the face of the retaining wall is considered the toe of the slope.

RETAINING WALLS

General Design

Cantilevered retaining walls including north facing retaining walls up to 20 feet high that support backslopes between level and 2:1 may be designed for an equivalent fluid pressure of 43 pounds per cubic foot per the enclosed calculations. Retaining walls should be provided with a subdrain or weepholes covered with a minimum of 12 inches of ¾ inch crushed gravel.

Backfill

Retaining wall backfill should be compacted to a minimum of 90 percent of the maximum density as determined by ASTM D 1557-02 or equivalent. Where access between the retaining wall and the temporary excavation prevents the use of compaction equipment, retaining walls should be backfilled with ¾ inch crushed gravel to within two feet of the ground surface. Where the area between the wall and the excavation exceeds 18 inches, the gravel must be vibrated or wheel-rolled, and tested for compaction. The upper two feet of backfill above the gravel should consist of a compacted fill blanket to the surface. Retaining wall backfill should be capped with a paved surface drain.

Foundation Design

Retaining wall footings may be sized per the "Spread Footings" sections of this report.

TEMPORARY EXCAVATIONS

Excavations ranging up to 30 feet deep will be necessary to remove the alluvium. Excavations can be sloped at 1:1 (45 degrees). Where slopes are not possible, shoring piles will be required to support the vertical portions of the excavation.

Soldier Piles

Soldier piles may be utilized to support temporary excavations where structures and property lines prevent sloping the excavation at 1:1. Soldier piles should be a minimum of 24 inches in diameter and a minimum of eight feet into the bedrock and eight feet below the bottom of the deepest removal. Piles may be assumed fixed at four feet below the lowest excavation. For the vertical forces, piles may be designed for a skin friction of 500 pounds per square foot for that portion of pile in contact with the bedrock. Soldier piles should be spaced a maximum of eight feet on center.

Cantilevered soldier piles, which support a level backslope, may be designed for an equivalent fluid pressure of 30 pounds per cubic foot up to 14 feet, and 43 pounds per cubic foot for piles supporting 15 to 24 feet, and 47 pounds per cubic foot for piles supporting over 25 feet.

For design of tied-back or braced shoring, a trapezoidal distribution of earth pressure may be used. The design pressure on restrained shoring is 19H up to 14 feet, and 27H for 15 to 24 feet, and 30H for 25 to 30 feet where H is the height of the shoring in feet. The pressures assume that the alluvium and fill have been de-watered to at least the depth of the excavation. If de-watering is not possible, then hydrostatic pressure should be added to the soil pressure for the shoring design.

Lateral Design

The friction value is for the total of dead and frequently applied live loads and may be increased by one third for short duration loading, which includes the effects of wind or seismic forces. Resistance to lateral loading may by the soldier piles may be provided by passive earth pressure within the alluvium.

Passive earth pressure may be computed as an equivalent fluid having a density of 500 pounds per cubic foot. The maximum allowable earth pressure is 4,000 pounds per square foot. For design of isolated piles, the allowable passive and maximum earth pressures may be increased by 100 percent. Piles spaced more than 2½ pile diameters on center may be considered isolated.

To develop the full lateral value, provisions should be taken to assure firm contact between the soldier piles and the undisturbed soils. The concrete placed in the soldier pile excavations may be a lean-mix concrete. However, the concrete used in that portion of the soldier pile, which is below the finished floor level should be structural.

Lagging

Continuous lagging is anticipated between the soldier piles. Lagging may be designed for an earth pressure of 400 pounds per square foot. All lagging should be grouted in place.

Earth Anchors

Tie-back anchors may be used to resist lateral loads. Either friction anchors or belled anchors may be used. However, it has been our experience that friction anchors involve fewer installation problems and provide more uniform support than belled anchors.

For design purposes, it is assumed that the active wedge adjacent to the shoring is defined by a 54 degree plane measured up from the horizontal base of the excavation. Friction anchors should extend at least 20 feet beyond the potential active wedge, or to a greater length if necessary to develop the desired capacities.

The capacities of the anchors should be determined by testing of the initial anchors as outlined in a following section. For preliminary design purposes, it is estimated that drilled friction anchors will develop an average value of 400 pounds per square foot. Only the frictional resistance developed beyond the active wedge will be effective in resisting lateral loads. If the anchors are spaced at least six feet on center, no reduction in the capacity of the anchors need be considered due to group action.

The anchors may be installed at angles of 20 to 40 degrees below the horizontal. Caving and sloughing of the anchor hole should be anticipated and provisions made to minimize such caving and sloughing. The anchor excavations are expected to encounter sand layers with flowing water. The anchors should be filled with concrete placed by pumping through the auger from the tip out, and the concrete should extend from the top of the anchor to the active wedge. To minimize chances of caving and sloughing, that portion of the anchor shaft within the active wedge should be backfilled with sand or lean mix slurry before testing the anchor. This portion of the shaft should be filled tightly and flush with the face of the excavation. The sand backfill should be placed by pumping; the sand may contain a small amount of cement to facilitate pumping.

Our representative should select at least eight of the initial anchors for a 24-hour 200 percent test and eight additional anchors for quick 200 percent tests. The purpose of the 200 percent tests is to verify the friction value assumed in design. The anchors should be tested to develop twice the assumed friction value. Anchor rods of sufficient strength should be installed in these anchors to support the 200 percent test loading. Where satisfactory tests are not achieved on the initial anchors, the anchor diameter and/or length should be increased until satisfactory test results are obtained. The total deflection during the 24-hour 200 percent test should not exceed 12 inches. During the 24-hour test, the anchor deflection should not exceed 0.75 inch measured after the 200 percent test load is applied. If the anchor movement after the 200 percent load has been applied for 12 hours I less than 0.5 inch, and the movement over the previous four hours has been less than 0.1 inch, the 24-hour test may be terminated.

For the quick 200 percent tests, the 200 percent test load should be maintained for 30 minutes. The total deflection of the anchor during the 200 percent quick tests should not exceed 12 inches; the deflection after the 200 percent test load has been applied should not exceed 0.25 inch during the 30-minute period.

All of the anchors should be pretested to at least 150 percent of the design load; the total deflection during the test should not exceed 12 inches. The rate of creep under the 150 percent test should not exceed 0.1 inch over a 15 minute period for the anchor to be approved for the design loading.

After a satisfactory test, each anchor should be locked-off at the design load. The locked-off load should be verified by rechecking the load in the anchor. If the locked-off load varies by more than 10 percent from the design load, the load should be reset until the anchor is locked-off within 10 percent of the design load.

The installation of the anchors and the testing of the completed anchors should be observed by a representative of the geotechnical engineer.

Shoring Deflection

Some deflection of the shoring embankment should be anticipated. We estimate that this deflection will be one to two inches at the top of shored embankments up to 30 feet in height. If greater deflection occurs during construction, additional bracing may be necessary to minimize deflection. To reduce the deflection of the shoring, a greater active pressure can be used in the shoring design.

Monitoring of the performance of the shoring system is recommended. The monitoring should consist of periodic surveying of the lateral and vertical locations of the tops of all the soldier piles and periodically checking the load on selected anchors.

FLOOR SLABS, DECKING AND PAVING

Floor slabs and concrete decking should be cast over approved compacted fill and reinforced with a minimum of #4 bars on 16 inch centers, each way. Slabs which will be provided with a floor covering should be protected by a polyethylene plastic vapor barrier. The barrier should be covered with a thin layer of sand, about one inch, to prevent punctures and aid in the concrete cure.

It should be noted that cracking of concrete floor slabs is very common during curing. The cracking occurs because concrete shrinks as it cures. Crack control joints which are commonly used in exterior decking to control such cracking are normally not used in interior slabs. The reinforcement recommended above is intended to reduce cracking and its proper placement is critical to the slab's performance. The minor shrinkage cracks which often form in interior slabs generally do not present a problem when carpeting, linoleum, or wood floor coverings are used. The slab cracks can, however, lead to surface cracks in brittle floor coverings such as ceramic tile. A mortar bed or slip sheet is recommended between the slab and tile to limit the potential for cracking.

Interior slabs should be protected with a polyethylene plastic vapor barrier placed beneath the slab. This barrier is intended to prevent the upward migration of moisture from the subgrade soils through the porous concrete slab. It should be noted that vapor barriers are penetrated by any number of elements, including water lines, drain lines, and footings. These barriers are therefore not completely watertight. It is recommended that a surface seal be placed on slabs which will receive a wood floor. The floor installer should be consulted regarding an adequate product. The vapor barrier should be covered with a thin layer of sand, about one inch, to prevent punctures and aid in the concrete cure.

Decking which caps a retaining wall should be provided with a flexible joint to allow for the normal one to two percent deflection of the retaining wall. Decking which does not cap a retaining wall should not be tied to the wall. The space between the wall and the deck will require periodic caulking to prevent moisture intrusion into the retaining wall backfill.

Paving - Driveways

Flexible a/c paving may be placed over at least 24 inches of compacted fill. Trench backfill below paving, should be compacted to 90 percent of the maximum dry density. Irrigation water should be prevented from migrating under paving. The following table shows the recommended pavement sections:

Service	Pavement Thickness (Inches)	Base Course (Inches)
Light Passenger Cars or Moderate Trucks (Storage, etc.)	3	4

Base course should be compacted to 95 percent of the maximum density.

DRAINAGE

Control of site drainage is important for the performance of the proposed project. Roof gutters are recommended for the proposed structures. Pad and roof drainage should be collected and transferred to the street or approved location in non-erosive drainage devices. Drainage should not be allowed to pond on the pad or against any foundation or retaining wall. Drainage should not be allowed to flow uncontrolled over any descending slope. Planters located within retaining wall backfill should be sealed to prevent moisture intrusion into the backfill. Planters located next to raised floor type construction also should be sealed to the depth of the footings. Drainage control devices require periodic cleaning, testing and maintenance to remain effective.

WATERPROOFING

Retaining walls are subject to moisture intrusion, seepage, and leakage and should be waterproofed. Waterproofing paints, compounds, or sheeting can be effective if properly installed. Equally important is the use of a subdrain that daylights to the atmosphere. The subdrain should be covered with ¾ inch crushed gravel to help the collection of water. Landscape areas above walls should be sealed or properly drained to prevent moisture contact with the wall or saturation of wall backfill.

Construction of raised floor buildings where the grade under the floor has been lowered for joist clearance can also lead to moisture problems. Surface moisture can seep through the footing and pond in the underfloor area. Positive drainage away from the footings, waterproofing the footings, compaction of trench backfill and subdrains can help to reduce moisture intrusion.

PLAN REVIEW

Formal plans ready for submittal to the Building Department should be reviewed by The J. Byer Group. Any change in scope of the project may require additional work.

SITE OBSERVATIONS DURING CONSTRUCTION

The Building Department requires that the geotechnical company provide site observations during construction. The observations include foundation excavations, keyways for fill, benching, temporary slopes and permanent cut slopes. All fill that is placed should be tested for compaction and approved by the soils engineer prior to use for support of engineered structures. All retaining wall subdrains be observed by a representative of the geotechnical company and the City Inspector.

Please advise The J. Byer Group, Inc. at least 24 hours prior to any required site visit. The agency approved plans and permits should be at the job site and available to our representative. The project consultant will perform the observation and post a notice at the job site of his visit and findings. This notice should be given to the agency inspector.

FINAL INSPECTION

Many projects are required by the agency to have final geologic and soils engineering reports upon completion of the grading.

CONSTRUCTION SITE MAINTENANCE

It is the responsibility of the contractor to maintain a safe construction site. When excavations exist on a site, the area should be fenced and warning signs posted. All pile excavations must be properly covered and secured. Soil generated by foundation and subgrade excavations should be either removed from the site or properly placed as a certified compacted fill. Soil must not be spilled over any descending slope. Workers should not be allowed to enter any unshored trench excavations over five feet deep.

GENERAL CONDITIONS

This report and the exploration are subject to the following NOTICE. Please read the NOTICE carefully, it limits our liability.

NOTICE

In the event of any changes in the design or location of any structure, as outlined in this report, the conclusions and recommendations contained herein may not be considered valid unless the changes are reviewed by us and the conclusions and recommendations are modified or reaffirmed after such review.

The subsurface conditions, excavation characteristics, and geologic structure described herein and shown on the enclosed cross sections have been projected from excavations on the site as indicated and should in no way be construed to reflect any variations that may occur between these excavations or that may result from changes in subsurface conditions.

Fluctuations in the level of groundwater may occur due to variations in rainfall, temperature, irrigation, and other factors not evident at the time of the measurements reported herein. Fluctuations also may occur across the site. High groundwater levels can be extremely hazardous. Saturation of earth materials can cause subsidence or slippage of the site.

If conditions encountered during construction appear to differ from those disclosed herein, notify us immediately so we may consider the need for modifications. Compliance with the design concepts, specifications or recommendations during construction requires the review of the engineering geologist and geotechnical engineer during the course of construction.

THE EXPLORATION WAS PERFORMED ONLY ON A PORTION OF THE SITE, AND CANNOT BE CONSIDERED AS INDICATIVE OF THE PORTIONS OF THE SITE NOT EXPLORED.

This report is issued and made for the sole use and benefit of the client, is not transferable and is as of the exploration date. Any liability in connection herewith shall not exceed the fee for the exploration. No warranty, expressed or implied, is made or intended in connection with the above exploration or by the furnishing of this report or by any other oral or written statement.

THIS REPORT WAS PREPARED ON THE BASIS OF THE PRELIMINARY DEVELOPMENT PLAN FURNISHED. FINAL PLANS SHOULD BE REVIEWED BY THIS OFFICE AS ADDITIONAL GEOTECHNICAL WORK MAY BE REQUIRED.

The J. Byer Group appreciates the opportunity to provide our service on this project. Any questions concerning the data or interpretation of this report should be directed to the undersigned.

Respectfully submitted,
THE J. BYER GROUP, INC.

Robert I. Zweigler
E. G. 1210/G. E. 2120

ROBERT I. ZWEIGLER
No. 2120
Exp. 6-30-06

RIZ:flh
S:\FINAL\REPORTS\19553_Gedalia_Geologic_Report1.wpd

Enc: Appendix I - Laboratory Testing
  Shear Test Diagrams (4 Pages)
  Consolidation Diagrams (9 Pages)
  Appendix II - Interpretation of Cone Penetrometer Test Data (2 Pages)
    CPT Graphic Logs and Interpreted Soil Stratigraphy (2 Pages)
    Interpretation of Electronic Piezocone (CPT) Data - Interpreted Soil Types (2 Pages)
    Interpretation of Electronic Piezocone (CPT) Data-Liquefaction Analysis (2 Pages)
  Seismic Settlement Calculations
  Probabilistic PGA
  Predominate Earthquake
  Regional Geologic Map
  Vicinity Map
  CPT/SPT Blow Count Correlation Chart (2 Pages)
  Log of Borings 1-12 (19 Pages)
  Log of Test Pits 1-4
  Calculation Sheets (5 Pages)

  In Pocket: Geologic Maps 1 and 2
    Sections A and B (2 Sheets)

xc: (10) Addressee

APPENDIX I

LABORATORY TESTING

Undisturbed and bulk samples of the fill, alluvium, and bedrock were obtained from the test pits and borings and transported to the laboratory for testing and analysis. The samples were obtained by driving a ring lined barrel sampler conforming to ASTM D-3550-01 with successive drops of the sampler weight. Experience has shown that sampling causes some disturbance of the sample, however the test results remain within a reasonable range. The samples were retained in brass rings of 2.50 inches outside diameter and 1.00 inches in height. The central portions of the samples were stored in close fitting, waterproof containers for transportation to the laboratory.

Moisture-Density

The dry density of the samples was determined using the procedures outlined in ASTM D-2937-00. The moisture content of the samples was determined using the procedures outlined in ASTM D-2216-98. The results are shown on the Log of Borings.

Maximum Density

The maximum dry density and optimum moisture content of the future compacted fill was determined by remolding bulk samples of the alluvium using the procedures outlined in ASTM D 1557-00, a five-layer standard. Remolded samples were prepared at 90% of the maximum density. The remolded samples were tested for shear strength.

Boring	Depth (Feet)	Soil Type	Maximum Density (pcf)	Optimum Moisture %	Expansion Index
1	1-5	Clayey Silt	114.0	17.0	40 - Low
3	1-5	Silty Sand	132.0	10.0	Nil

Expansion Test

To find the expansiveness of the soil, swell tests were performed using the procedures outlined in ASTM D-4829-95.

Shear-Tests

Shear tests were performed on samples of future compacted fill, alluvium, and bedrock using the procedures outlined in ASTM D-3080-98 and a strain controlled, direct shear machine manufactured by Soil Test, Inc. The rate of deformation ranged between 0.010 and 0.025 inches per minute. The samples were tested in an artificially saturated condition. Following the shear test, the moisture content of the samples was determined to verify saturation. The results are plotted on the "Shear Test Diagrams."

Consolidation

Consolidation tests were performed on insitu samples of the using the procedures outlined in ASTM D-2435-96. Results are graphed on the "Consolidation Curves."

THE J. BYER GROUP, INC.
A GEOTECHNICAL CONSULTING FIRM
1461 E. CHEVY CHASE DRIVE, SUITE 200 GLENDALE, CA 91206
(818) 549-9959 Tel (818) 543-3747 FAX

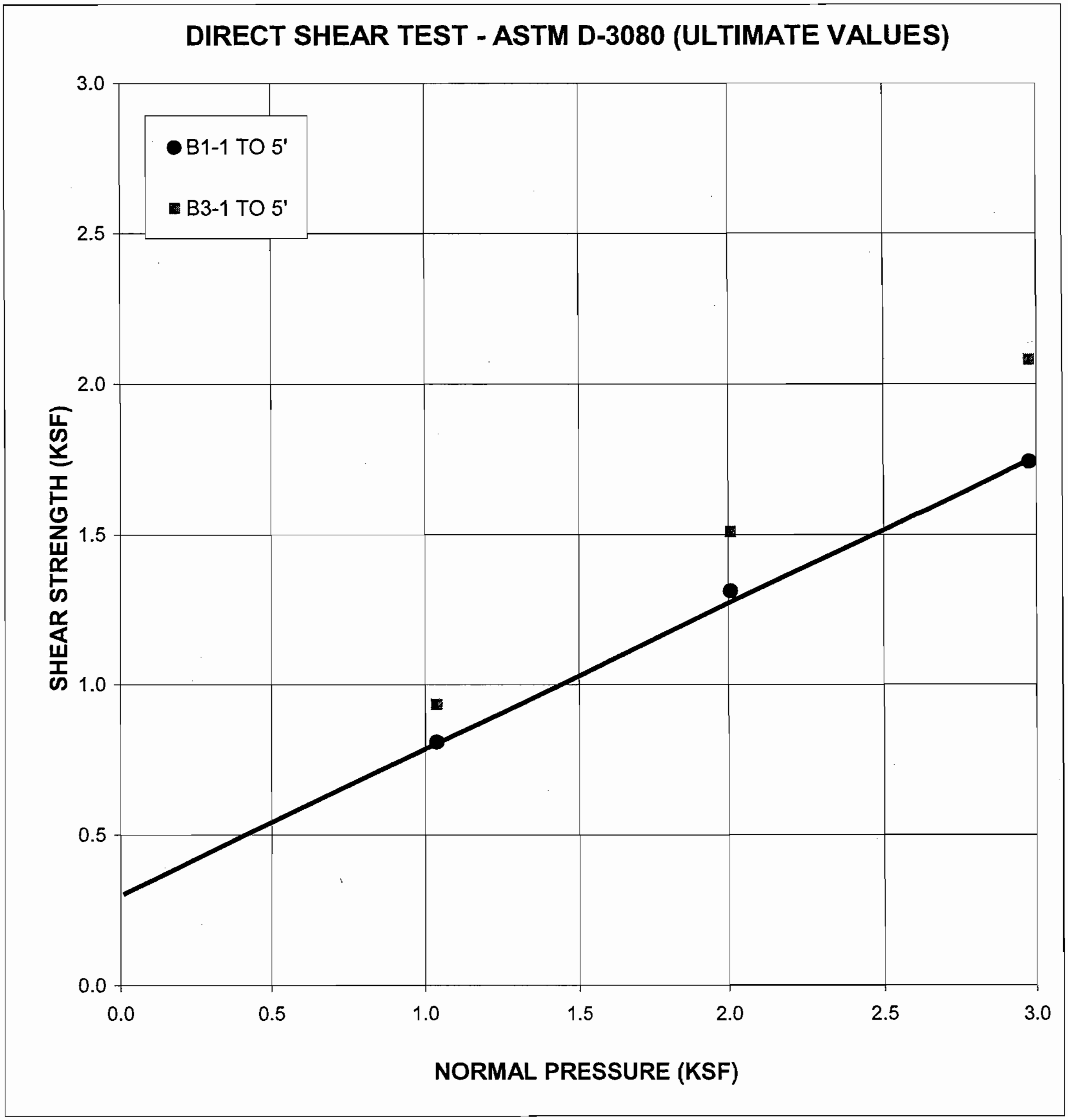
SHEAR DIAGRAM #1

JB: 19553-B CONSULT: RIZ
CLIENT: DS VENTURES

EARTH MATERIAL: FUTURE COMPACTED FILL

SAMPLES REMOLDED TO 90% OF THE MAXIMUM DENSITY

Phi Angle =	**26 degrees**	**Moisture Content**	**18.5%**
Cohesion =	**308 psf**	**Dry Density (pcf)**	**110.7**
		Percent Saturation	**99.3%**



THE J. BYER GROUP, INC.
A GEOTECHNICAL CONSULTING FIRM
1461 E. CHEVY CHASE DRIVE, SUITE 200 GLENDALE, CA 91206
(818) 549-9959 Tel (818) 543-3747 FAX

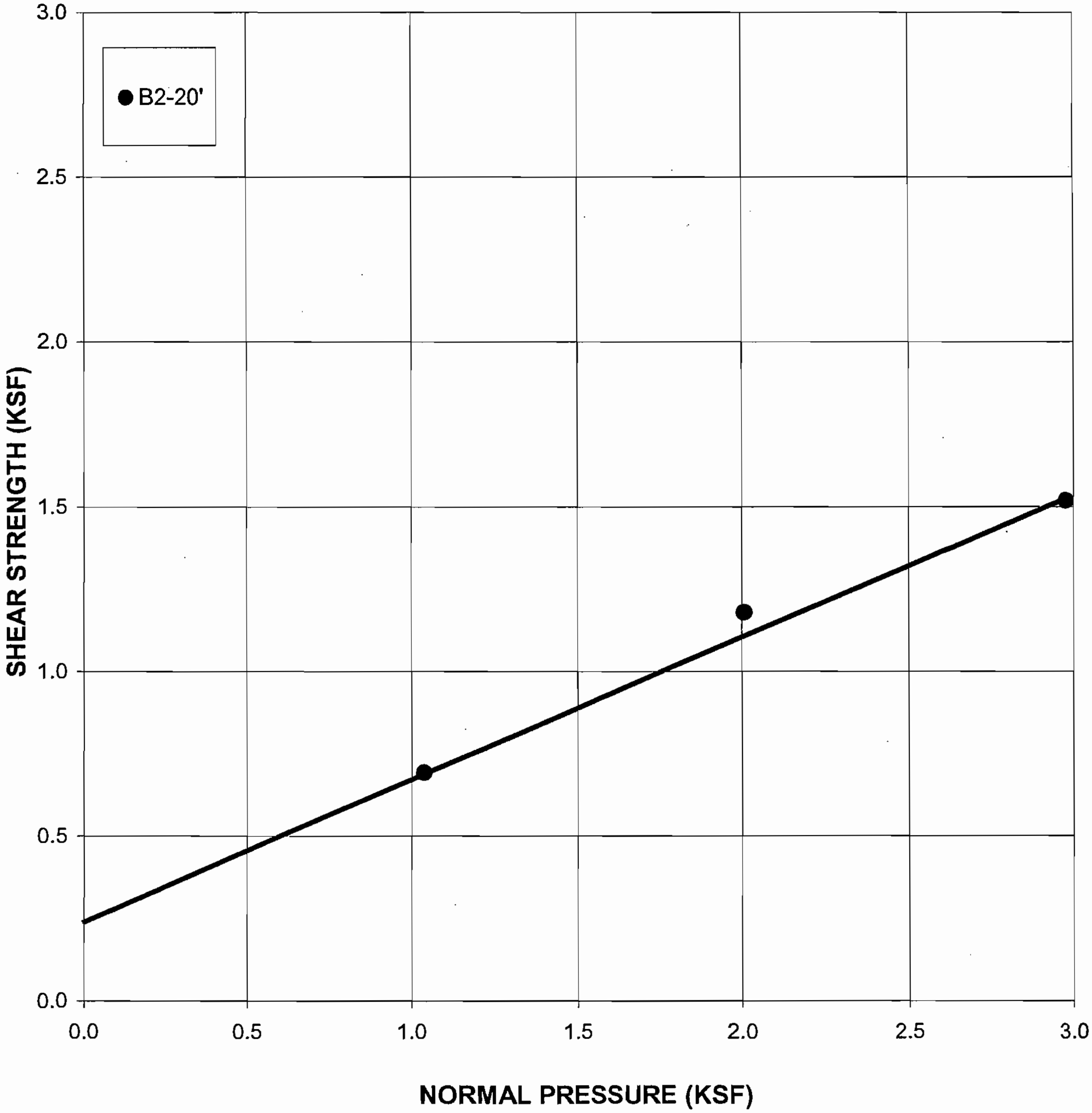
SHEAR DIAGRAM #2

JB: **19553-B** CONSULT: **RIZ**
CLIENT: **DS VENTURES**

EARTH MATERIAL: **ALLUVIUM**

Phi Angle =	**23 degrees**	**Moisture Content**	**24.2%**
Cohesion =	**249 psf**	**Dry Density (pcf)**	**100.5**
		Percent Saturation	**99.4%**

DIRECT SHEAR TEST - ASTM D-3080 (ULTIMATE VALUES)

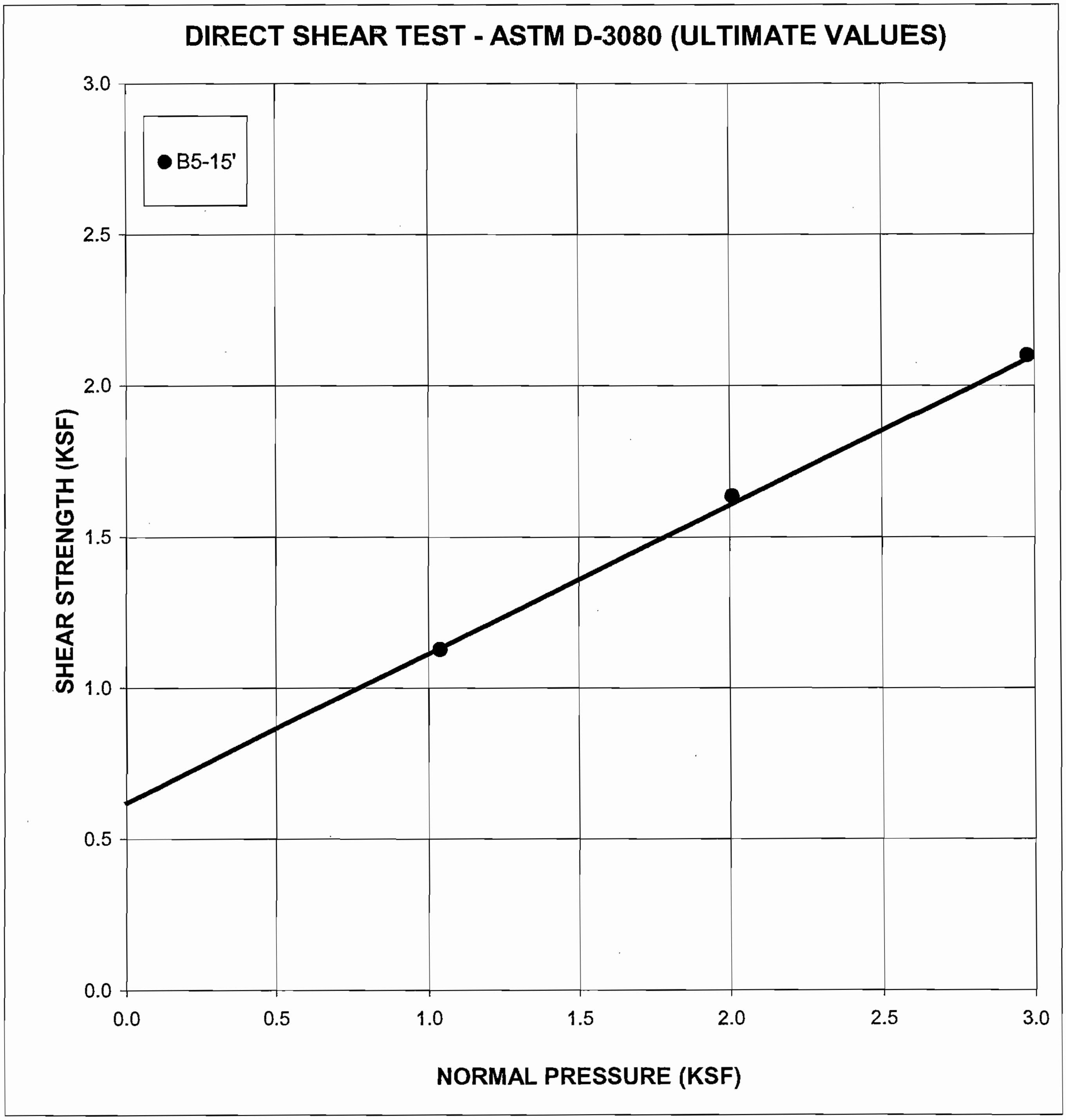


THE J. BYER GROUP, INC.
A GEOTECHNICAL CONSULTING FIRM
1461 E. CHEVY CHASE DRIVE, SUITE 200 GLENDALE, CA 91206
(818) 549-9959 Tel (818) 543-3747 FAX

SHEAR DIAGRAM #3

JB: 19553-B
CONSULT: RIZ
CLIENT: DS VENTURES
EARTH MATERIAL: BEDROCK

Phi Angle =	**27 degrees**	**Moisture Content**	**36.6%**
Cohesion =	**606 psf**	**Dry Density (pcf)**	**83.5**
		Percent Saturation	**98.9%**



THE J. BYER GROUP, INC.
A GEOTECHNICAL CONSULTING FIRM
1461 E. CHEVY CHASE DRIVE, SUITE 200 GLENDALE, CA 91206
(818) 549-9959 Tel (818) 543-3747 FAX

SHEAR DIAGRAM #4

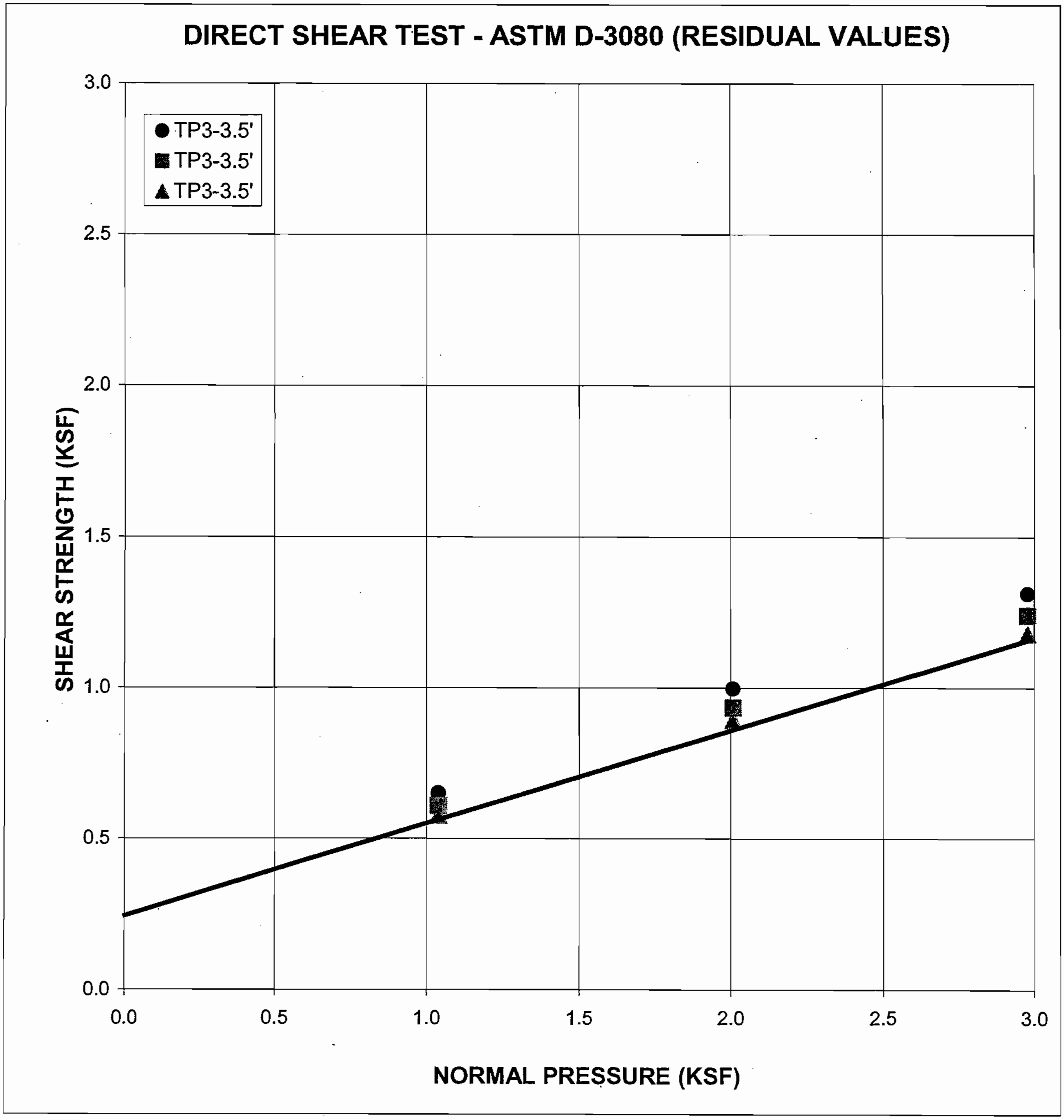
JB: **19553-B** CONSULT: **RIZ**
CLIENT: **DS VENTURES**

EARTH MATERIAL: **BEDDING**

BEDROCK SAMPLES REPEATEDLY SHEARED PARALLEL TO BEDDING TO OBTAIN RESIDUAL SHEAR STRENGTH

Phi Angle =	**17 degrees**
Cohesion =	**255 psf**

Moisture Content	**29.8%**
Dry Density (pcf)	**92.2**
Percent Saturation	**99.5%**



THE J. BYER GROUP, INC.

A GEOTECHNICAL CONSULTING FIRM

CONSOLIDATION DIAGRAM #1

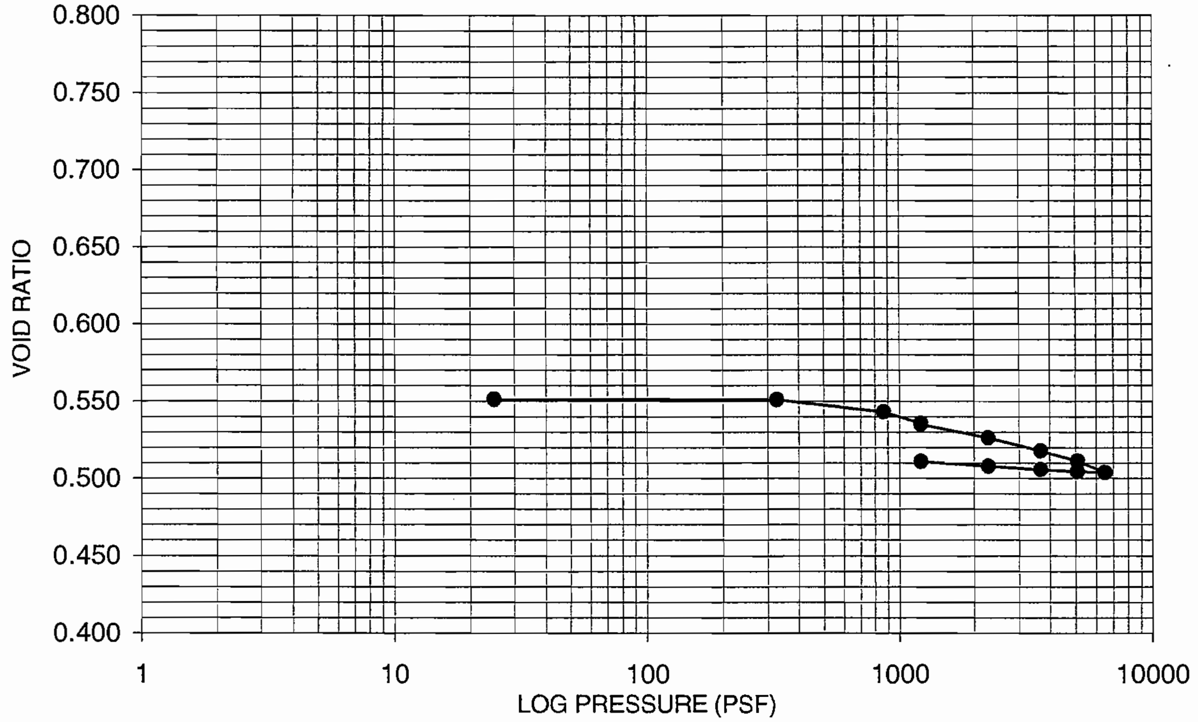
JB: **19553-Z** CONSULTANT: **JAI**

CLIENT: **DS VENTURES, LLC**

Earth Material:	ALLUVIUM		
Sample Location:	B1-10	Specific Gravity:	2.65
Dry Weight (pcf):	106.6	Initial Void Ratio:	0.551
Initial Moisture:	18.0%	Water Added At (psf):	1222.0
Initial Saturation:	86.6%	Consolidation Coef. (Cc):	0.0513
		Rebound Coef. (Cr):	0.0095

CONSOLIDATION DIAGRAM

ASTM 2435-96



THE J. BYER GROUP, INC.

A GEOTECHNICAL CONSULTING FIRM

CONSOLIDATION DIAGRAM #2

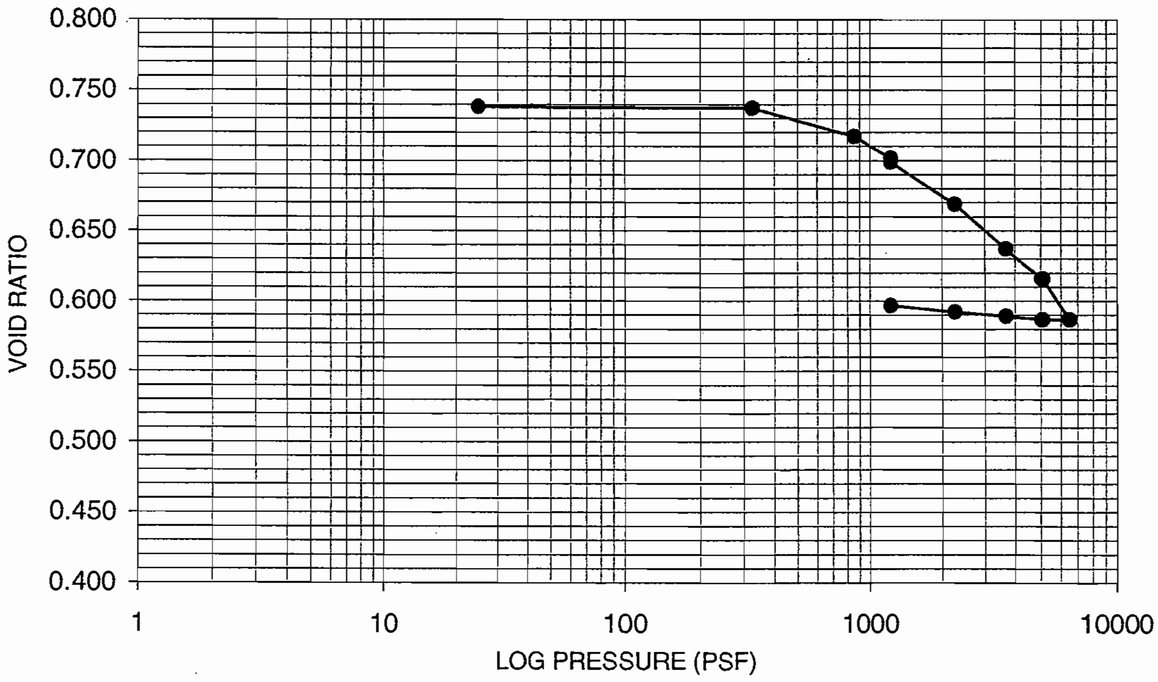
JB: **19553-Z** CONSULTANT **JAI**

CLIENT: **DS VENTURES, LLC**

Earth Material:	ALLUVIUM		
Sample Location:	B1-15	Specific Gravity:	2.65
Dry Weight (pcf):	95.1	Initial Void Ratio:	0.738
Initial Moisture:	27.7%	Water Added At (psf):	1228.0
Initial Saturation:	99.5%	Consolidation Coef. (Cc):	0.1868
		Rebound Coef. (Cr):	0.0132

CONSOLIDATION DIAGRAM

ASTM 2435-96



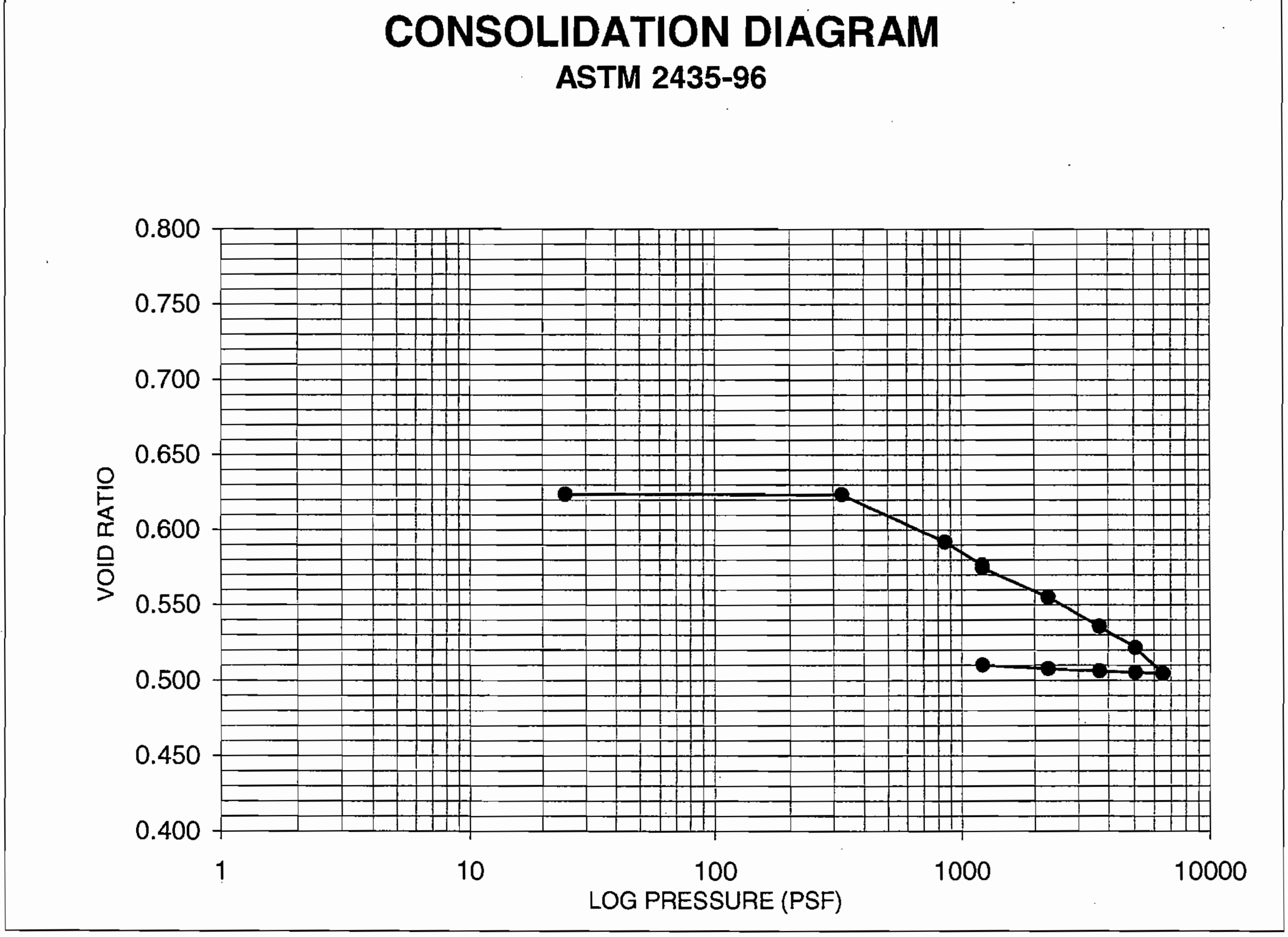
THE J. BYER GROUP, INC.
A GEOTECHNICAL CONSULTING FIRM

CONSOLIDATION DIAGRAM #3

JB: **19553-Z** CONSULTANT **JAI**

CLIENT: **DS VENTURES, LLC**

Earth Material:	ALLUVIUM		
Sample Location:	B1-20	Specific Gravity:	2.65
Dry Weight (pcf):	101.8	Initial Void Ratio:	0.624
Initial Moisture:	25.6%	Water Added At (psf):	1225.0
Initial Saturation:	86.6%	Consolidation Coef. (Cc):	0.1150
		Rebound Coef. (Cr):	0.0073



THE J. BYER GROUP, INC.
A GEOTECHNICAL CONSULTING FIRM

CONSOLIDATION DIAGRAM #4

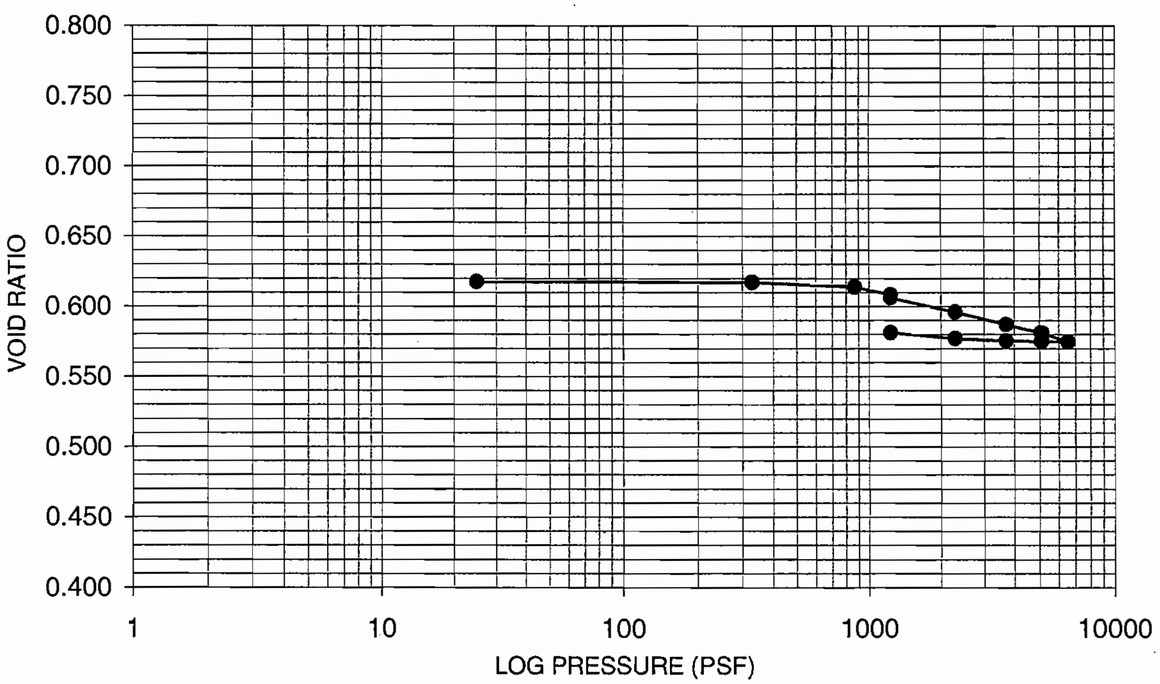
JB: **19553-Z** CONSULTANT **JAI**

CLIENT: **DS VENTURES, LLC**

Earth Material:	ALLUVIUM		
Sample Location:	B7-20	Specific Gravity:	2.65
Dry Weight (pcf):	102.2	Initial Void Ratio:	0.618
Initial Moisture:	21.2%	Water Added At (psf):	1228.0
Initial Saturation:	91.0%	Consolidation Coef. (Cc):	0.0482
		Rebound Coef. (Cr):	0.0089

CONSOLIDATION DIAGRAM

ASTM 2435-96



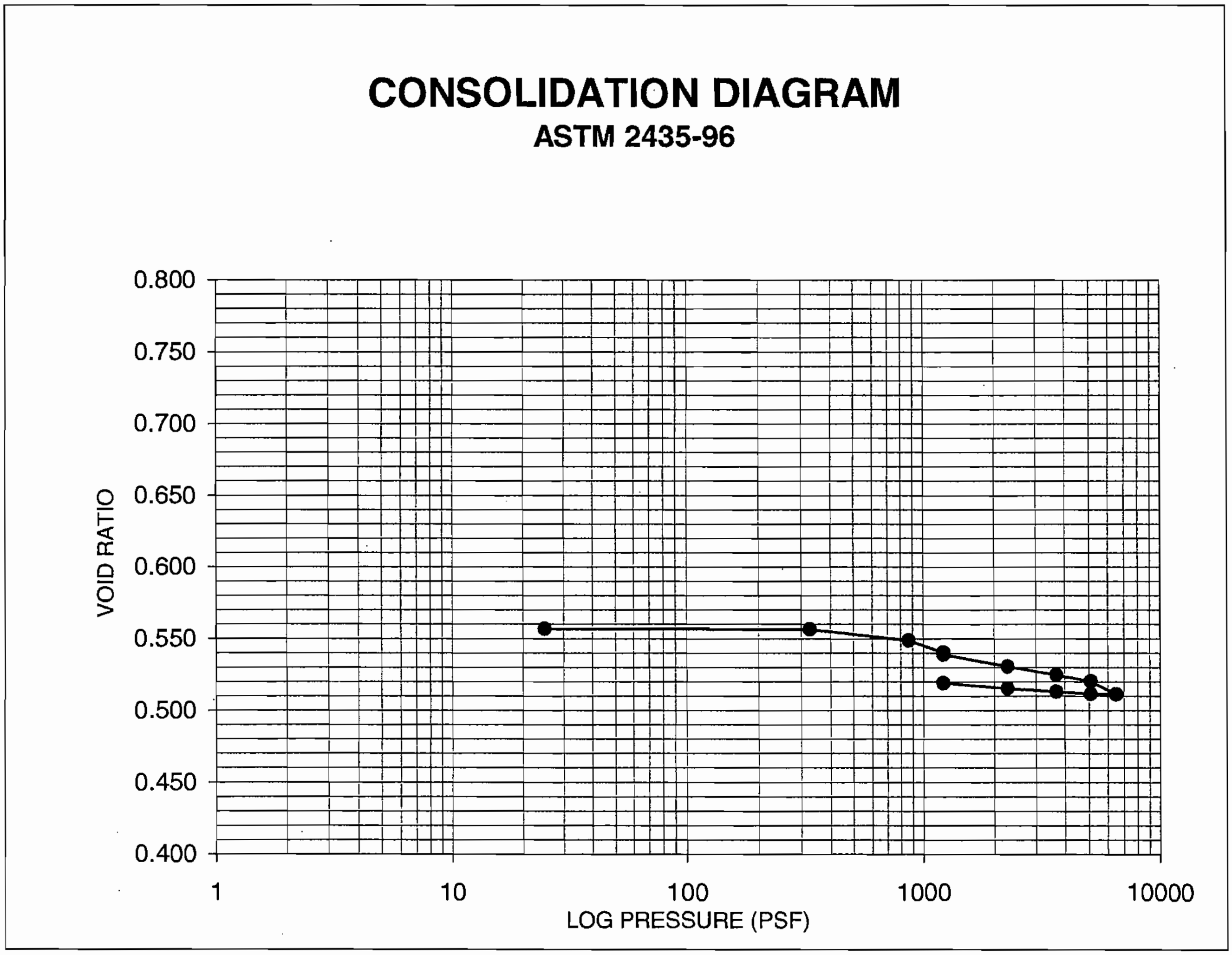
THE J. BYER GROUP, INC.
A GEOTECHNICAL CONSULTING FIRM

CONSOLIDATION DIAGRAM #5

JB: **19553-Z** CONSULTANT: **JAI**

CLIENT: **DS VENTURES, LLC**

Earth Material:	ALLUVIUM		
Sample Location:	B7-25	Specific Gravity:	2.65
Dry Weight (pcf):	106.2	Initial Void Ratio:	0.557
Initial Moisture:	20.5%	Water Added At (psf):	1222.0
Initial Saturation:	97.6%	Consolidation Coef. (Cc):	0.0455
		Rebound Coef. (Cr):	0.0101



THE J. BYER GROUP, INC.

A GEOTECHNICAL CONSULTING FIRM

CONSOLIDATION DIAGRAM #6

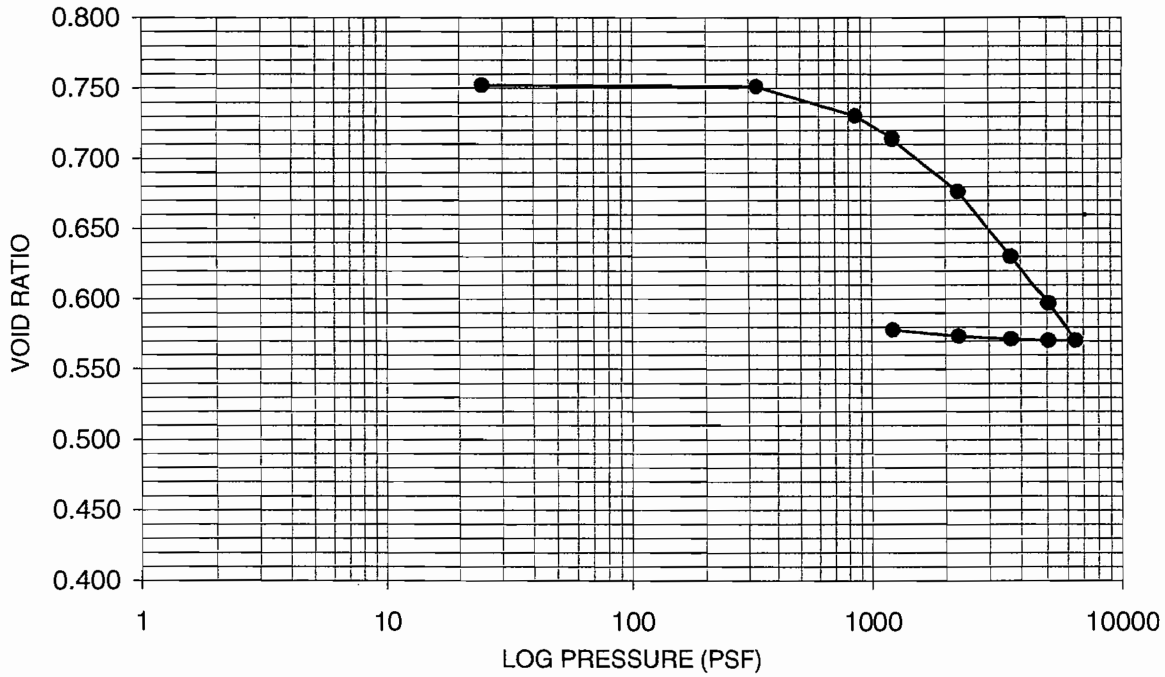
JB: **19553-Z** CONSULTANT **JAI**

CLIENT: **DS VENTURES, LLC**

Earth Material:	ALLUVIUM		
Sample Location:	B11-5	Specific Gravity:	2.65
Dry Weight (pcf):	94.4	Initial Void Ratio:	0.752
Initial Moisture:	10.4%	Water Added At (psf):	1228.0
Initial Saturation:	36.6%	Consolidation Coef. (Cc):	0.2357
		Rebound Coef. (Cr):	0.0104

CONSOLIDATION DIAGRAM

ASTM 2435-96



THE J. BYER GROUP, INC.
A GEOTECHNICAL CONSULTING FIRM

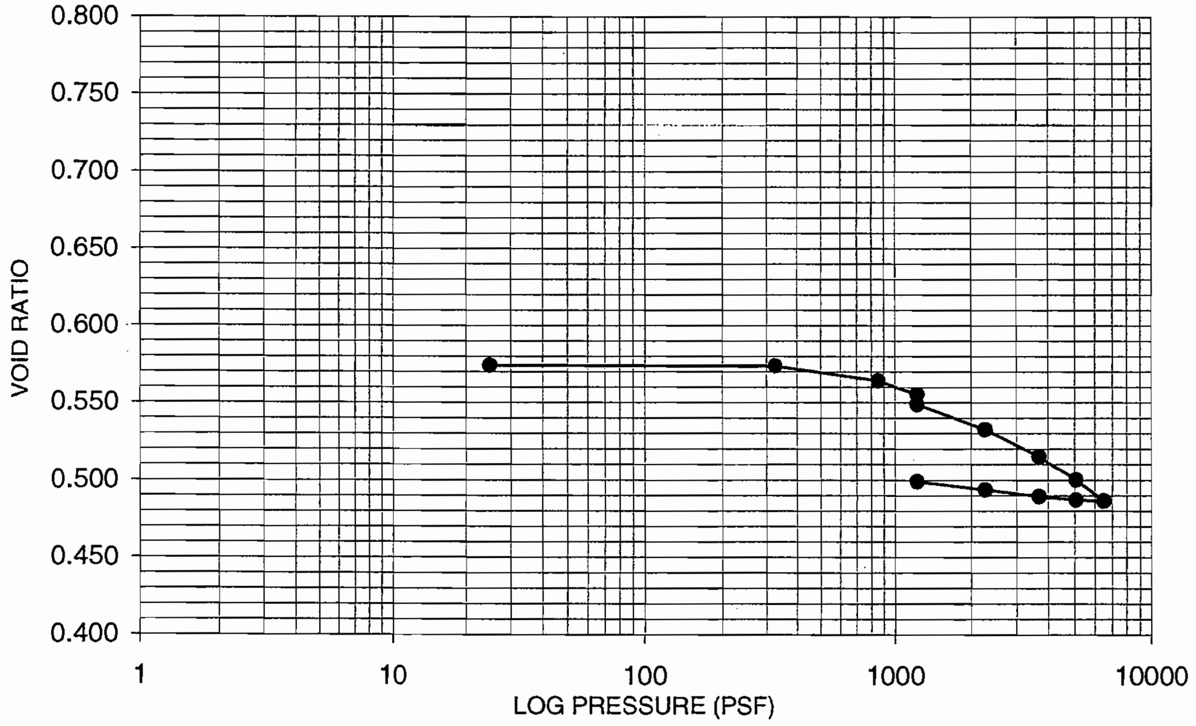
CONSOLIDATION DIAGRAM #7

JB: **19553-Z** CONSULTANT **JAI**

CLIENT: **DS VENTURES, LLC**

Earth Material:	ALLUVIUM		
Sample Location:	B11-10	Specific Gravity:	2.65
Dry Weight (pcf):	105.1	Initial Void Ratio:	0.574
Initial Moisture:	14.7%	Water Added At (psf):	1225.0
Initial Saturation:	97.6%	Consolidation Coef. (Cc):	0.1051
		Rebound Coef. (Cr):	0.0166

CONSOLIDATION DIAGRAM
ASTM 2435-96



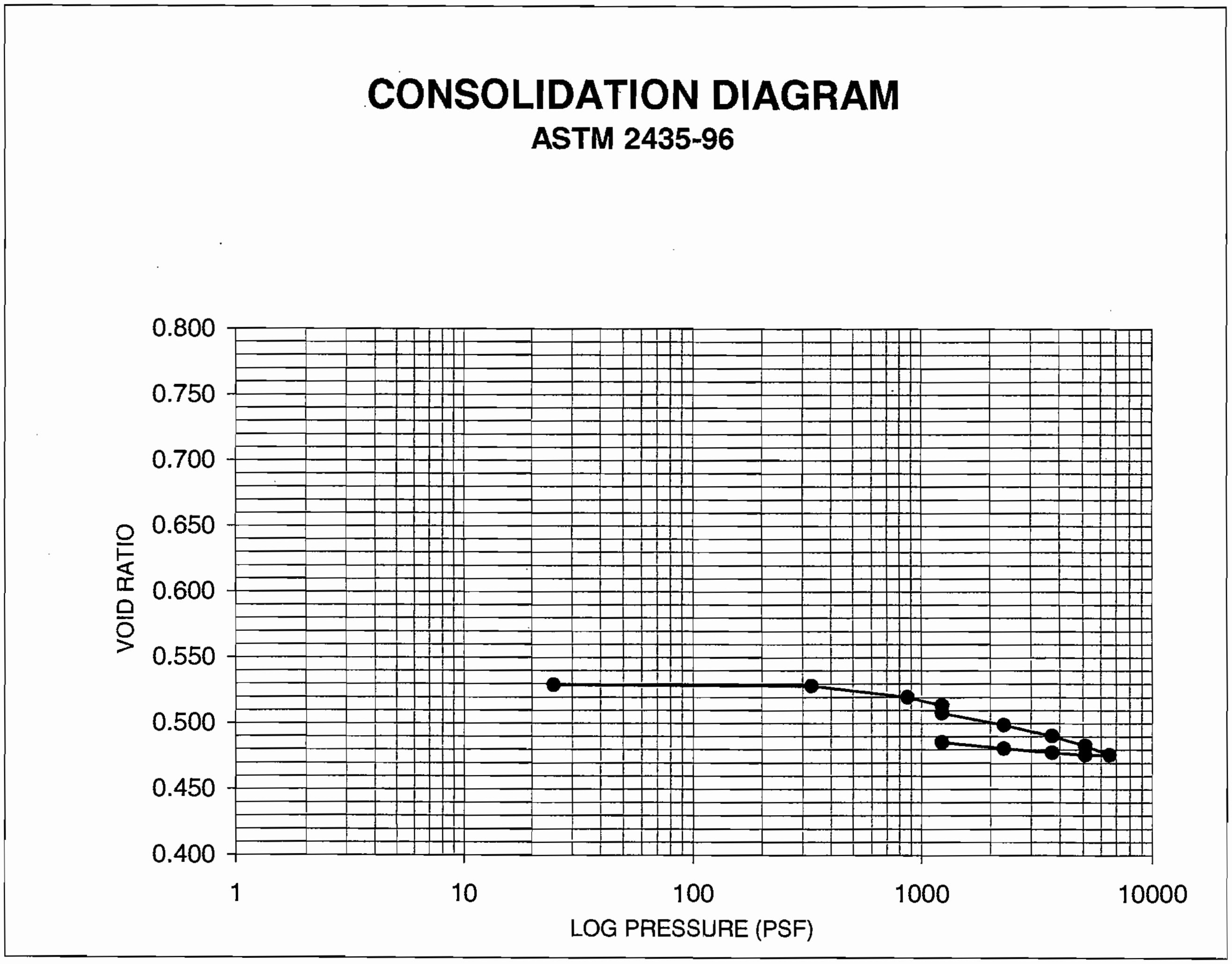
THE J. BYER GROUP, INC.
A GEOTECHNICAL CONSULTING FIRM

CONSOLIDATION DIAGRAM #8

JB: **19553-Z** CONSULTANT **JAI**

CLIENT: **DS VENTURES, LLC**

Earth Material:	ALLUVIUM		
Sample Location:	B11-15	Specific Gravity:	2.65
Dry Weight (pcf):	108.1	Initial Void Ratio:	0.529
Initial Moisture:	12.9%	Water Added At (psf):	1228.0
Initial Saturation:	64.6%	Consolidation Coef. (Cc):	0.0528
		Rebound Coef. (Cr):	0.0132



THE J. BYER GROUP, INC.
A GEOTECHNICAL CONSULTING FIRM

CONSOLIDATION DIAGRAM #9

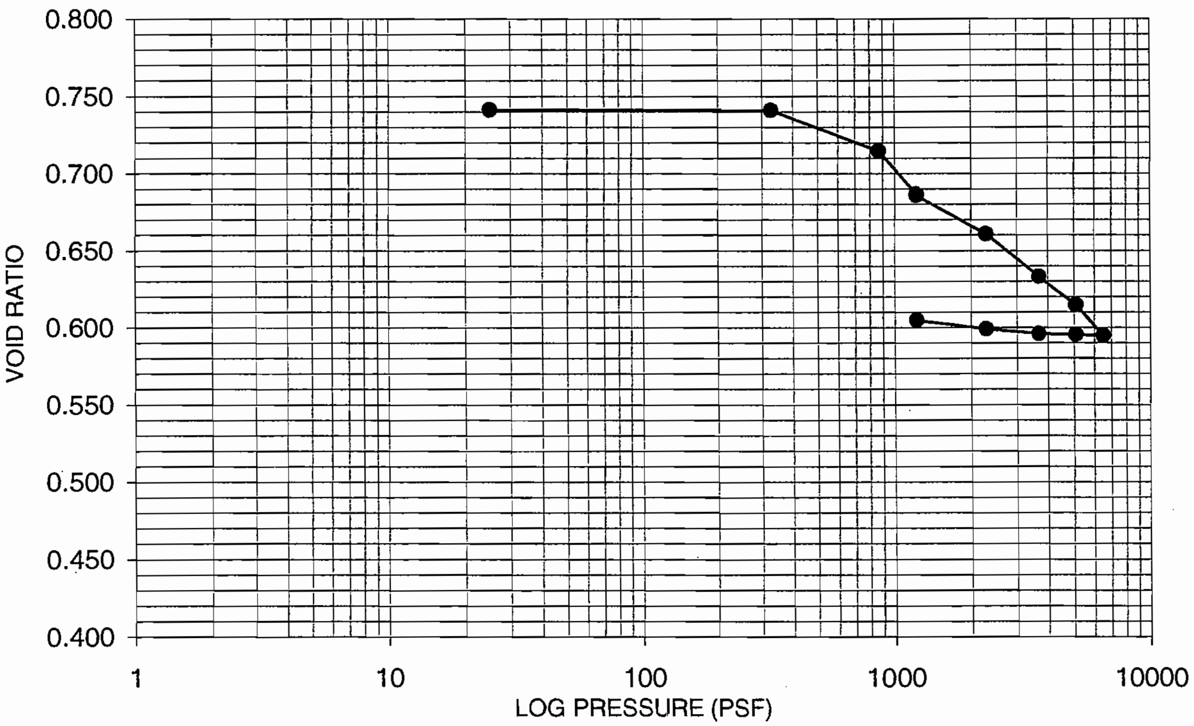
JB: **19553-Z** CONSULTANT: **JAI**

CLIENT: **DS VENTURES, LLC**

Earth Material:	ALLUVIUM		
Sample Location:	B11-20	Specific Gravity:	2.65
Dry Weight (pcf):	95.0	Initial Void Ratio:	0.741
Initial Moisture:	28.9%	Water Added At (psf):	1222.0
Initial Saturation:	103.3%	Consolidation Coef. (Cc):	0.1474
		Rebound Coef. (Cr):	0.0137

CONSOLIDATION DIAGRAM

ASTM 2435-96



APPENDIX II

INTERPRETATION OF CONE PENETRATION TEST DATA

A Cone Penetration Testing (CPT) program was carried out by Kehoe Testing and Engineering of Huntington Beach, California using an integrated electronic cone system. The CPT soundings were performed in accordance with ASTM standards (D5778-95). A 30 ton capacity cone was used for the soundings. This cone has a tip area of 15 square centimeters and friction sleeve area of 225 square centimeters. The cone is designed with an equivalent end area friction sleeve and a tip end area ratio of 0.85.

The cones used during the program recorded the following parameters at 2.5 cm depth intervals:

- Tip Resistance (Qc)
- Sleeve Friction (Fs)
- Dynamic Pore Pressure (Ut)
- Depth
- Inclination

The above parameters were printed simultaneously on a printer and stored on a computer diskette for analysis and reference.

The pore water pressure element, which is 5.0 mm thick and consists of porous plastic, is located directly behind the cone tip. Each of the elements were saturated in glycerine under vacuum pressure prior to penetration. A complete set of baseline reading was taken prior to each sounding to determine temperature shifts and any zero load offsets. Monitoring base line readings ensures that the cone electronics are operating properly.

The cone was pushed using Kehoe CPT rig, having a down pressure capacity of approximately 30 tons. Two CPT soundings were performed within the study area on September 9, 2003, to depths of 31 to 34 feet below the ground surface. The cones met refusal (tip resistance greater than 700 tsf) in bedrock. The test locations and depths were verified in the field by the personnel of The J. Byer Group, Inc.

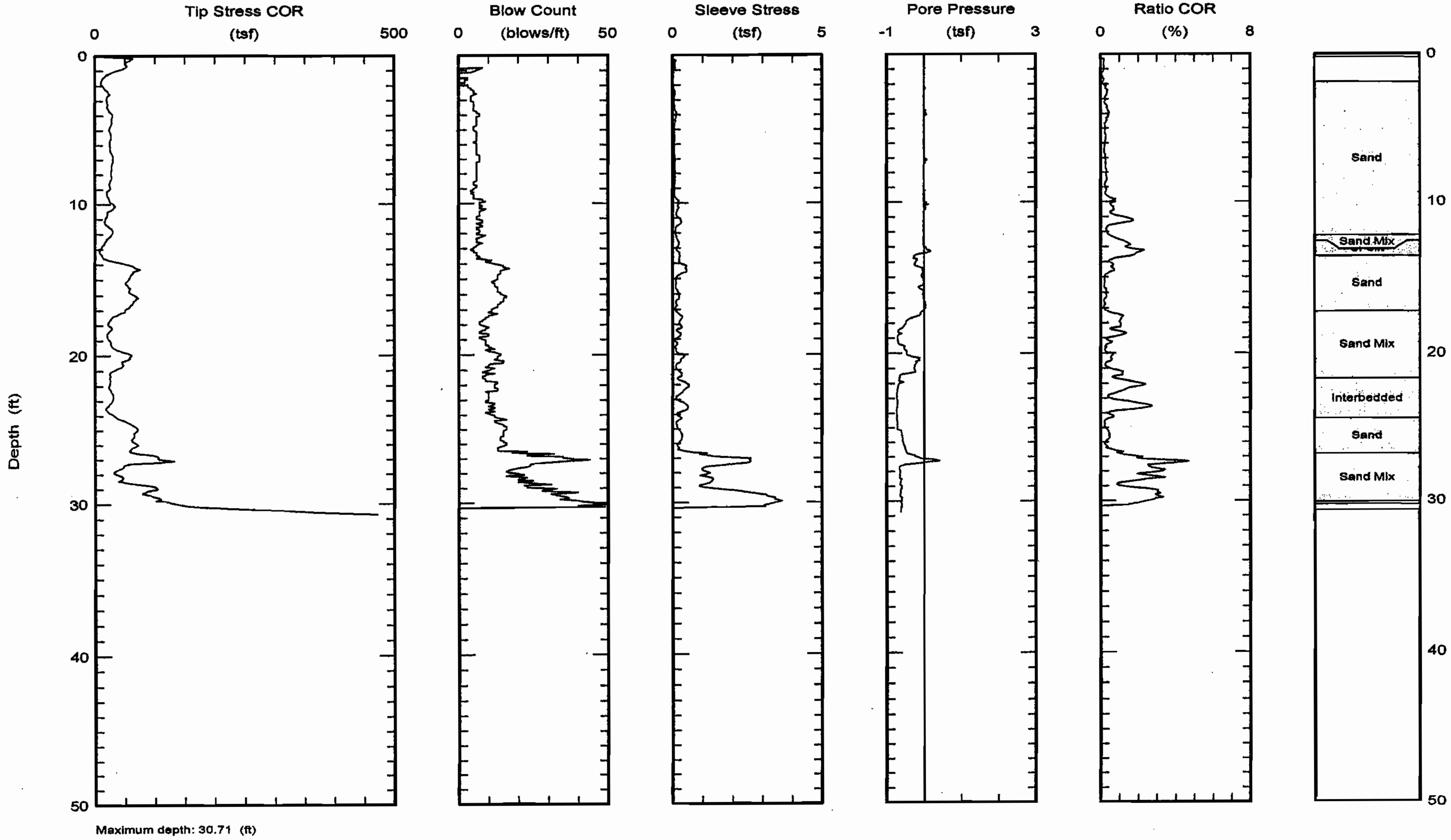
The cone penetration test data were averaged into one foot increments using the computer program CPTINT, version 5.0 developed by Wang and Greig of the Civil Engineering Department of the University of British Columbia, 1991. The averaged data were interpreted by the project engineer following procedures by P. K. Robertson, 1998 (*Cone Penetration Testing, Geotechnical Applications Guide*). The results are presented in tabular and graphical form. Penetration depths are referenced to existing ground surface. The stratigraphic interpretation is based on relationships between cone bearing (Qt), sleeve friction (Fs), and penetration pore pressure (Ut). The friction ratio (Rf), which is sleeve friction divided by cone bearing, is a calculated parameter which is used to infer soil behavior type. Generally, cohesive soils (clays) have high friction ratios, low cone bearing and generate large excess pore water pressures. Cohesionless soils (sands) have low friction ratios, high cone bearing and generate little in the way of excess pore water pressures. It should be noted that it is not always possible to clearly identify a soil type based on Qt, Fs and Ut. In these situations, experience and judgement and an assessment of the pore pressure dissipation data should be used to infer the soil behavior type. The stratigraphy and interpreted results are consistent with the borings.

Kehoe Testing & Engineering
Office: (714) 901-7220
Fax: (714) 901-7289
skehoe@msn.com
www.ara.com

Northing:
Easting:
Elevation:

Date: 09/Sep/2003
Test ID: CPT-1
Project: DSVentures

Client: J. Byer Group
Site: 22255 Mulholland Drive



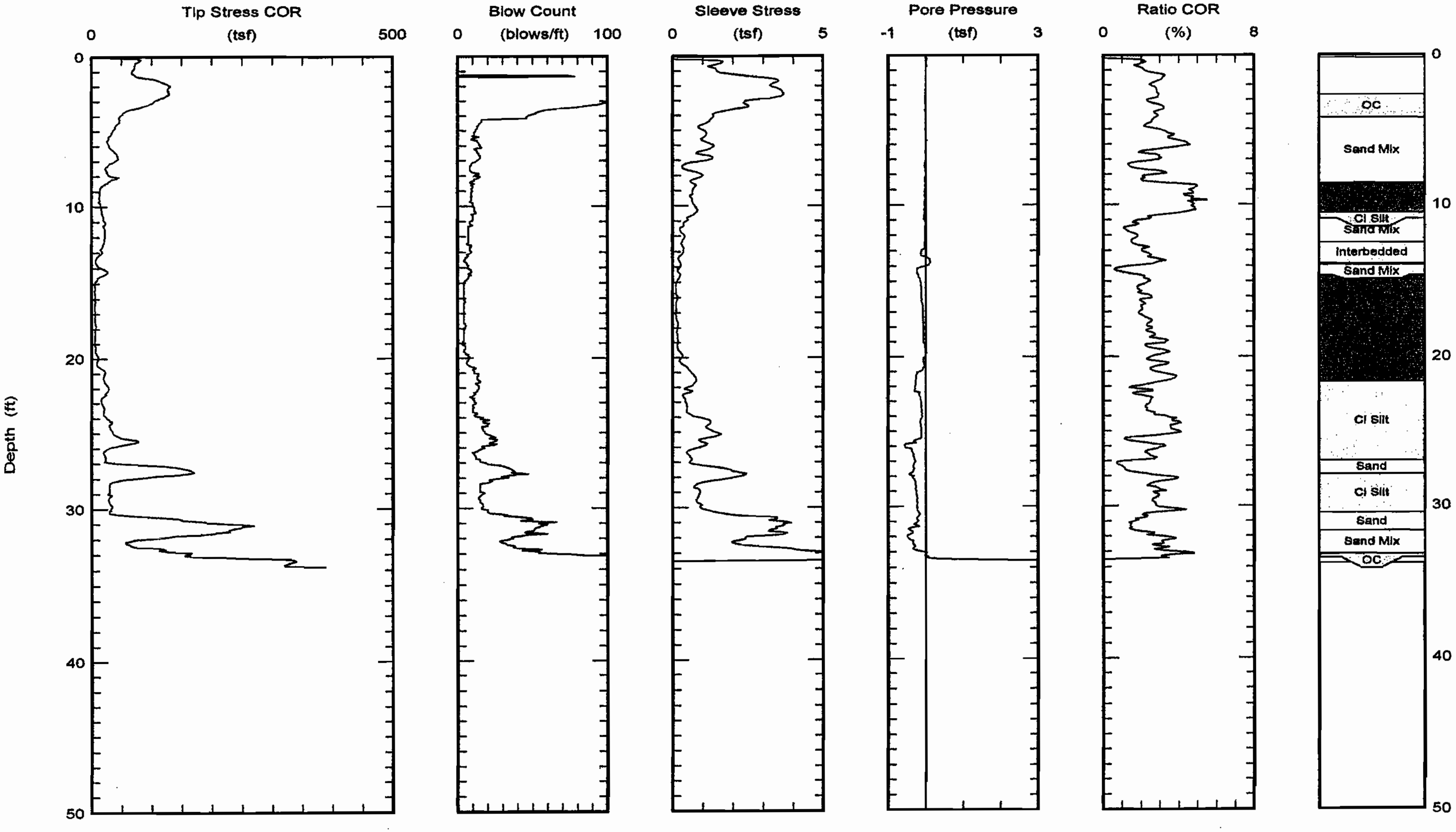
Test ID: CPT-1
File: C09S0301C.ecp

Kehoe Testing & Engineering
Office: (714) 901-7220
Fax: (714) 901-7289
skehoe@msn.com
www.ara.com

Northing:
Easting:
Elevation:

Date: 09/Sep/2003
Test ID: CPT-2
Project: DSVentures

Client: J. Byer Group
Site: 22255 Mulholland Drive



Maximum depth: 33.81 (ft)

Test ID: CPT-2
File: C09S0302C.ecp

INTERPRETATION OF ELECTRONIC PIEZOCONE (CPT) DATA
DATA AND INTERPRETED SOIL TYPES

CPT Company: Kehoe Testing and Engineering
Date of Soundings: September 9, 2003 CPT-1

a' for calculating Qt:	0.85
Depth to Ground Water at Time of Exploration (feet)	20
Perched Water Zone (feet)	0
Elevation of Groundsurface (feet)	1016.0

NOTE: '—' or 'ERR' denotes missing field or non-defined result

Depth (feet)	Qc (TSF)	Fs (Avg) (TSF)	Pore Pressure U2 (PSI)	Rfn (%)	Moist Unit Wt. (pcf)	Qtn (TSF)	OS (TSF)	EOS (TSF)	I_c SBT	Soil Behavior Type (SBT)	SPT N_{60} (blow/ft)
1	35.869	0.054	0.064	0.151	104	35.870	0.052	0.052	1.334	Fill-Sand	6
2	14.292	0.030	0.085	0.211	104	14.293	0.104	0.104	1.903	Fill-Sand	3
3	21.079	0.060	0.030	0.287	104	21.079	0.156	0.156	1.870	Fill-Sand	4
4	26.938	0.106	0.278	0.397	104	26.941	0.208	0.208	1.885	Fill-Sand	5
5	26.064	0.065	-0.020	0.252	104	26.064	0.260	0.260	1.868	Fill-Sand	5
6	25.308	0.060	-0.064	0.240	104	25.307	0.312	0.312	1.911	Fill-Sand	5
7	29.421	0.074	0.228	0.255	104	29.423	0.364	0.364	1.889	Fill-Sand	6
8	27.371	0.084	-0.109	0.312	104	27.370	0.416	0.416	1.976	Fill-Sand	6
9	22.977	0.065	-0.011	0.289	108	22.977	0.470	0.470	2.060	Silty Sand	5
10	27.714	0.164	0.189	0.603	108	27.716	0.524	0.524	2.136	Silty Sand	6
11	19.129	0.199	0.000	1.073	108	19.129	0.578	0.578	2.418	Sandy Silt	5
12	25.992	0.112	-0.182	0.442	108	25.990	0.632	0.632	2.138	Silty Sand	6
13	11.907	0.184	0.417	1.639	108	11.912	0.686	0.686	2.652	Clayey Silt	3
14	46.979	0.318	-2.759	0.688	108	46.949	0.740	0.740	2.030	Sand	10
15	57.000	0.182	-0.379	0.324	108	56.996	0.794	0.794	1.817	Sand	11
16	63.979	0.171	-0.556	0.271	108	63.973	0.848	0.848	1.754	Sand	12
17	48.836	0.154	-0.109	0.321	108	48.835	0.902	0.902	1.903	Sand	10
18	24.664	0.244	-6.638	1.033	124	24.592	0.964	0.964	2.411	Sandy Silt	6
19	24.321	0.165	-9.447	0.711	124	22.605	1.026	1.026	2.377	Sandy Silt	6
20	50.657	0.234	-5.418	0.473	124	45.506	1.088	1.088	2.037	Sand	11
21	33.979	0.200	-4.148	0.610	124	29.303	1.150	1.119	2.263	Silty Sand	8
22	25.229	0.384	-9.278	1.606	128	20.767	1.214	1.152	2.633	Clayey Silt	7
23	27.053	0.291	-10.012	1.134	128	21.671	1.278	1.184	2.517	Sandy Silt	7
24	34.407	0.280	-10.082	0.850	128	27.075	1.342	1.217	2.376	Sandy Silt	8
25	67.100	0.202	-9.425	0.308	128	52.474	1.406	1.250	1.933	Sand	14
26	64.427	0.237	-7.650	0.377	128	49.013	1.470	1.283	1.999	Sand	13
27	91.223	1.741	-2.351	1.942	128	68.154	1.534	1.316	2.270	Silty Sand	21
28	40.692	1.158	-8.709	2.969	128	28.923	1.598	1.348	2.727	Clayey Silt	12
29	86.738	1.637	-8.592	1.926	128	61.529	1.662	1.381	2.309	Sandy Silt	20
30	167.791	2.736	-8.398	1.648	132	117.212	1.728	1.416	2.060	Bedrock	36
31	404.175	3.000	-8.578	0.746	132	277.287	1.794	1.451	1.556	Bedrock	72

INTERPRETATION OF ELECTRONIC PIEZOCONE (CPT) DATA
DATA AND INTERPRETED SOIL TYPES

CPT Company: Kehoe Testing and Engineering
Date of Soundings: September 9, 2003 CPT-2

a' for calculating Qt:	0.85
Depth to Ground Water at Time of Exploration (feet)	16
Perched Water Zone (feet)	0
Elevation of Groundsurface (feet)	1035.0

NOTE: '---' or 'ERR' denotes missing field or non-defined result

Depth (feet)	Qc (TSF)	Fs (Avg) (TSF)	Pore Pressure U2 (PSI)	Rfn (%)	Moist Unit Wt. (pcf)	Qtn (TSF)	OS (TSF)	EOS (TSF)	I_c SBT	Soil Behavior Type (SBT)	SPT N_{60} (blow/ft)
1	75.638	1.865	0.085	2.467	111	75.639	0.056	0.056	1.878	Fill-Sand	15
2	124.892	3.463	0.012	2.775	111	124.892	0.111	0.111	1.889	Fill-Sand	25
3	104.385	2.884	-0.150	2.767	111	104.383	0.167	0.167	1.972	Fill-Sand	21
4	50.638	1.448	-0.064	2.872	94	50.637	0.214	0.214	2.205	Fill-Silty Sand	11
5	35.642	1.013	-0.023	2.863	94	35.642	0.261	0.261	2.336	Fill-Sandy Silt	9
6	31.123	1.129	0.139	3.664	94	31.125	0.308	0.308	2.479	Fill-Sandy Silt	8
7	35.823	0.848	-0.150	2.391	94	35.821	0.355	0.355	2.327	Fill-Sandy Silt	9
8	30.500	0.724	-0.139	2.406	94	30.498	0.402	0.402	2.400	Fill-Sandy Silt	8
9	14.900	0.672	-0.246	4.653	107	14.897	0.455	0.455	2.718	Clayey Silt	4
10	15.438	0.734	-0.331	4.918	107	15.434	0.509	0.509	2.758	Silty Clay	5
11	20.700	0.447	-0.353	2.220	107	20.696	0.562	0.562	2.563	Sandy Silt	6
12	21.538	0.328	-0.224	1.568	107	21.536	0.616	0.616	2.476	Sandy Silt	5
13	14.100	0.304	-0.791	2.265	107	14.091	0.669	0.669	2.662	Clayey Silt	4
14	16.723	0.228	-0.769	1.426	120	16.715	0.729	0.729	2.576	Sandy Silt	4
15	7.438	0.156	-2.084	2.354	120	7.415	0.789	0.789	2.961	Clay	2
16	6.200	0.135	-1.528	2.532	124	6.183	0.851	0.851	3.073	Clay	2
17	5.846	0.120	-1.015	2.438	124	5.835	0.913	0.882	3.099	Clay	2
18	6.531	0.162	-0.844	2.921	124	6.522	0.975	0.913	3.112	Clay	2
19	6.185	0.168	-0.566	3.267	124	6.179	1.037	0.943	3.170	Clay	2
20	9.485	0.279	-0.267	3.328	124	9.482	1.099	0.974	3.032	Clay	3
21	19.762	0.623	-2.191	3.354	128	18.446	1.163	1.007	2.814	Silty Clay	6
22	25.423	0.585	-3.687	2.422	128	23.232	1.227	1.040	2.659	Clayey Silt	7
23	18.262	0.428	-1.849	2.525	128	15.804	1.291	1.073	2.816	Silty Clay	6
24	26.338	0.874	-1.560	3.501	128	22.586	1.355	1.105	2.789	Silty Clay	8
25	42.100	1.289	-1.699	3.170	128	35.725	1.419	1.138	2.618	Clayey Silt	11
26	37.962	0.798	-5.439	2.191	128	31.102	1.483	1.171	2.546	Sandy Silt	10
27	71.325	0.828	-4.318	1.187	128	57.926	1.547	1.204	2.175	Silty Sand	16
28	86.469	1.773	-4.606	2.091	128	68.582	1.611	1.237	2.279	Silty Sand	20
29	30.025	0.849	-3.496	2.999	128	22.304	1.675	1.269	2.798	Silty Clay	9
30	35.285	1.079	-3.056	3.220	128	25.736	1.739	1.302	2.777	Silty Clay	10
31	197.600	3.357	-3.160	1.715	128	146.639	1.803	1.335	1.996	Sand	41
32	121.323	2.808	-5.589	2.352	128	87.290	1.867	1.368	2.255	Silty Sand	28
33	190.100	6.441	-1.731	3.423	132	134.143	1.933	1.403	2.255	Bedrock	44
34	337.060	6.000	123.417	1.784	132	234.029	1.999	1.437	1.886	Bedrock	67

INTERPRETATION OF ELECTRONIC PIEZOCONE (CPT) DATA
LIQUEFACTION ANALYSIS

CPT Company: Kehoe Testing and Engineering
Date of Soundings: September 9, 2003 CPT-1

a' for calculating Qt:	0.85
Maximum Horizontal Acceleration (%g)	0.46
Depth to Ground Water for Liquefaction Analysis (feet)	20
Perched Water Zone (feet)	0
Magnitude Scaling Factor	1.2
Design Magnitude Earthquake	6.9
Elevation of Groundsurface (feet)	1016.0

NOTE: '—' or 'ERR' denotes missing field or non-defined result

Depth (feet)	Qtn (TSF)	Rfn (%)	OS (TSF)	EOS (TSF)	I_c SBT	Soil Behavior Type (SBT)	SPT $(N_1)_{60}$ (blow/ft)	$q_{(c1N)}$	K_c	$Q_{(c1Ncs)}$	Stress CSR	Resist. CRR*MSF	F.S. Liquef.
1	35.870	0.15	0.052	0.052	1.334	Fill-Sand	10	60.98	1.000	60.977	0.298	0.125	0.42
2	14.293	0.21	0.104	0.104	1.903	Fill-Sand	5	24.30	1.192	28.957	0.298	0.092	0.31
3	21.079	0.29	0.156	0.156	1.870	Fill-Sand	7	35.83	1.162	41.627	0.297	0.105	0.35
4	26.941	0.40	0.208	0.208	1.885	Fill-Sand	9	45.79	1.175	53.828	0.296	0.117	0.39
5	26.064	0.25	0.260	0.260	1.868	Fill-Sand	9	44.31	1.160	51.395	0.296	0.115	0.39
6	25.307	0.24	0.312	0.312	1.911	Fill-Sand	9	43.02	1.199	51.584	0.295	0.115	0.39
7	29.423	0.25	0.364	0.364	1.889	Fill-Sand	10	50.02	1.178	58.933	0.294	0.123	0.42
8	27.370	0.31	0.416	0.416	1.976	Fill-Sand	10	46.53	1.269	59.070	0.293	0.123	0.42
9	22.977	0.29	0.470	0.470	2.060	Silty Sand	8	39.06	1.387	54.192	0.293	0.117	0.40
10	27.716	0.60	0.524	0.524	2.136	Silty Sand	10	45.00	1.523	68.544	0.292	0.136	0.47
11	19.129	1.07	0.578	0.578	2.418	Sandy Silt	7	28.86	2.386	68.862	0.291	0.137	0.47
12	25.990	0.44	0.632	0.632	2.138	Silty Sand	8	36.67	1.529	56.053	0.291	0.119	0.41
13	11.912	1.64	0.686	0.686	2.652	Clayey Silt	5	17.36	3.660	63.523	0.290	---	---
14	46.949	0.69	0.740	0.740	2.030	Sand	12	58.88	1.342	78.995	0.289	0.156	0.54
15	56.996	0.32	0.794	0.794	1.817	Sand	13	67.77	1.119	75.860	0.289	0.149	0.52
16	63.973	0.27	0.848	0.848	1.754	Sand	14	72.40	1.074	77.791	0.288	0.153	0.53
17	48.835	0.32	0.902	0.902	1.903	Sand	11	52.76	1.192	62.885	0.287	0.128	0.44
18	24.592	1.03	0.964	0.964	2.411	Sandy Silt	6	25.35	2.358	59.770	0.286	0.124	0.43
19	22.605	0.71	1.026	1.026	2.377	Sandy Silt	6	23.86	2.221	52.976	0.286	0.116	0.41
20	45.506	0.47	1.088	1.088	2.037	Sand	10	47.55	1.352	64.273	0.285	0.130	0.45
21	29.303	0.61	1.150	1.119	2.263	Silty Sand	7	31.24	1.836	57.336	0.292	0.121	0.41
22	20.767	1.61	1.214	1.152	2.633	Clayey Silt	6	21.91	3.537	77.479	0.299	---	---
23	21.671	1.13	1.278	1.184	2.517	Sandy Silt	6	23.83	2.858	68.095	0.305	0.135	0.44
24	27.075	0.85	1.342	1.217	2.376	Sandy Silt	7	29.69	2.219	65.879	0.311	0.132	0.42
25	52.474	0.31	1.406	1.250	1.933	Sand	12	56.76	1.222	69.339	0.317	0.137	0.43
26	49.013	0.38	1.470	1.283	1.999	Sand	11	53.45	1.299	69.428	0.322	0.138	0.43
27	68.154	1.94	1.534	1.316	2.270	Silty Sand	17	74.26	1.855	137.756	0.327	0.400	1.22
28	28.923	2.97	1.598	1.348	2.727	Clayey Silt	9	30.18	4.200	126.737	0.331	---	---
29	61.529	1.93	1.662	1.381	2.309	Sandy Silt	16	68.08	1.977	134.603	0.335	0.380	1.13
30	117.212	1.65	1.728	1.416	2.060	Bedrock	28	129.26	1.387	179.343	0.339	0.763	2.25
31	277.287	0.75	1.794	1.451	1.556	Bedrock	60	335.56	1.000	335.557	0.341	4.447	13.04

INTERPRETATION OF ELECTRONIC PIEZOCONE (CPT) DATA LIQUEFACTION ANALYSIS

CPT Company: Kehoe Testing and Engineering
Date of Soundings: September 9, 2003 CPT-2

a' for calculating Qt:	0.85
Maximum Horizontal Acceleration (%g)	0.46
Depth to Ground Water for Liquefaction Analysis (feet)	16
Perched Water Zone (feet)	0
Magnitude Scaling Factor	1.2
Design Magnitude Earthquake	6.9
Elevation of Groundsurface (feet)	6.9

NOTE: '---' or 'ERR' denotes missing field or non-defined result

Depth (feet)	Qtn (TSF)	Rfn (%)	OS (TSF)	EOS (TSF)	I_c SBT	Soil Behavior Type (SBT)	SPT $(N_1)_{60}$ (blow/ft)	$q_{(c1N)}$	K_c	$Q_{(c1Ncs)}$	Stress CSR	Resist. CRR*MSF	F.S. Liquef.
1	75.639	2.47	0.056	0.056	1.878	Fill-Sand	26	128.58	1.169	150.309	0.298	0.490	1.64
2	124.892	2.78	0.111	0.111	1.889	Fill-Sand	42	212.32	1.179	250.315	0.298	1.904	6.40
3	104.383	2.77	0.167	0.167	1.972	Fill-Sand	37	177.45	1.266	224.585	0.297	1.403	4.72
4	50.637	2.87	0.214	0.214	2.205	Fill-Silty Sand	19	86.08	1.679	144.529	0.296	0.446	1.51
5	35.642	2.86	0.261	0.261	2.336	Fill-Sandy Silt	14	60.59	2.069	125.339	0.296	0.326	1.10
6	31.125	3.66	0.308	0.308	2.479	Fill-Sandy Silt	13	52.91	2.663	140.878	0.295	0.421	1.43
7	35.821	2.39	0.355	0.355	2.327	Fill-Sandy Silt	14	60.90	2.038	124.085	0.294	0.319	1.08
8	30.498	2.41	0.402	0.402	2.400	Fill-Sandy Silt	13	51.85	2.312	119.865	0.293	0.297	1.01
9	14.897	4.65	0.455	0.455	2.718	Clayey Silt	7	25.33	4.126	104.504	0.293	---	---
10	15.434	4.92	0.509	0.509	2.758	Silty Clay	8	26.24	4.438	116.465	0.292	---	---
11	20.696	2.22	0.562	0.562	2.563	Sandy Silt	8	31.89	3.109	99.153	0.291	0.211	0.72
12	21.536	1.57	0.616	0.616	2.476	Sandy Silt	8	30.99	2.649	82.116	0.291	0.163	0.56
13	14.091	2.26	0.669	0.669	2.662	Clayey Silt	6	21.08	3.730	78.624	0.290	---	---
14	16.715	1.43	0.729	0.729	2.576	Sandy Silt	6	21.20	3.180	67.407	0.289	0.134	0.46
15	7.415	2.35	0.789	0.789	2.961	Clay	3	9.43	6.322	59.600	0.289	---	---
16	6.183	2.53	0.851	0.851	3.073	Clay	3	7.29	7.588	55.285	0.288	---	---
17	5.835	2.44	0.913	0.882	3.099	Clay	2	6.63	7.909	52.435	0.297	---	---
18	6.522	2.92	0.975	0.913	3.112	Clay	3	7.16	8.076	57.796	0.306	---	---
19	6.179	3.27	1.037	0.943	3.170	Clay	2	6.56	8.840	57.955	0.314	---	---
20	9.482	3.33	1.099	0.974	3.032	Clay	3	9.74	7.110	69.222	0.322	---	---
21	18.446	3.35	1.163	1.007	2.814	Silty Clay	6	19.62	4.904	96.242	0.328	---	---
22	23.232	2.42	1.227	1.040	2.659	Clayey Silt	7	24.45	3.709	90.685	0.335	---	---
23	15.804	2.52	1.291	1.073	2.816	Silty Clay	5	17.03	4.921	83.788	0.341	---	---
24	22.586	3.50	1.355	1.105	2.789	Silty Clay	7	23.83	4.689	111.712	0.346	---	---
25	35.725	3.17	1.419	1.138	2.618	Clayey Silt	10	36.99	3.441	127.274	0.351	---	---
26	31.102	2.19	1.483	1.171	2.546	Sandy Silt	9	33.72	3.012	101.562	0.356	0.220	0.62
27	57.926	1.19	1.547	1.204	2.175	Silty Sand	14	62.06	1.607	99.737	0.360	0.213	0.59
28	68.582	2.09	1.611	1.237	2.279	Silty Sand	17	73.74	1.884	138.890	0.364	0.407	1.12
29	22.304	3.00	1.675	1.269	2.798	Silty Clay	7	23.65	4.771	112.846	0.368	---	---
30	25.736	3.22	1.739	1.302	2.777	Silty Clay	8	27.10	4.593	124.449	0.371	---	---
31	146.639	1.71	1.803	1.335	1.996	Sand	33	159.10	1.294	205.907	0.372	1.104	2.96
32	87.290	2.35	1.867	1.368	2.255	Silty Sand	22	95.92	1.811	173.740	0.373	0.703	1.88
33	134.143	3.42	1.933	1.403	2.255	Bedrock	34	147.50	1.811	267.126	0.373	2.293	6.14
34	234.029	1.78	1.999	1.437	1.886	Bedrock	51	256.76	1.176	301.870	0.373	3.265	8.75

SEISMIC SETTLEMENT

JB: **19553-I** CONSULT: **RIZ**
CLIENT: **DS VENTURES**

CALCULATION SHEET # **1**

Calculate Volumetric Strain and Dynamic Settlement of Saturated Sand Using Ishihara and Yoshimine Method

CPT1

DEPTH (feet)	LAYER THICKNESS (feet)	LIQUE. F.S.	N60	N1	VOLUMETRIC STRAIN Ev*	SETTLEMENT (inches)
20	1	0.45	10	8	4.05%	0.49
21	1	0.41	7	6	4.55%	0.55
23	1	0.44	6	5	4.85%	0.58
24	1	0.42	7	6	4.55%	0.55
25	1	0.43	12	10	3.55%	0.43
26	1	0.43	11	9	3.80%	0.46
29	1	1.13	16	13	0.60%	0.07
					Total Settlement	3.11

CPT2

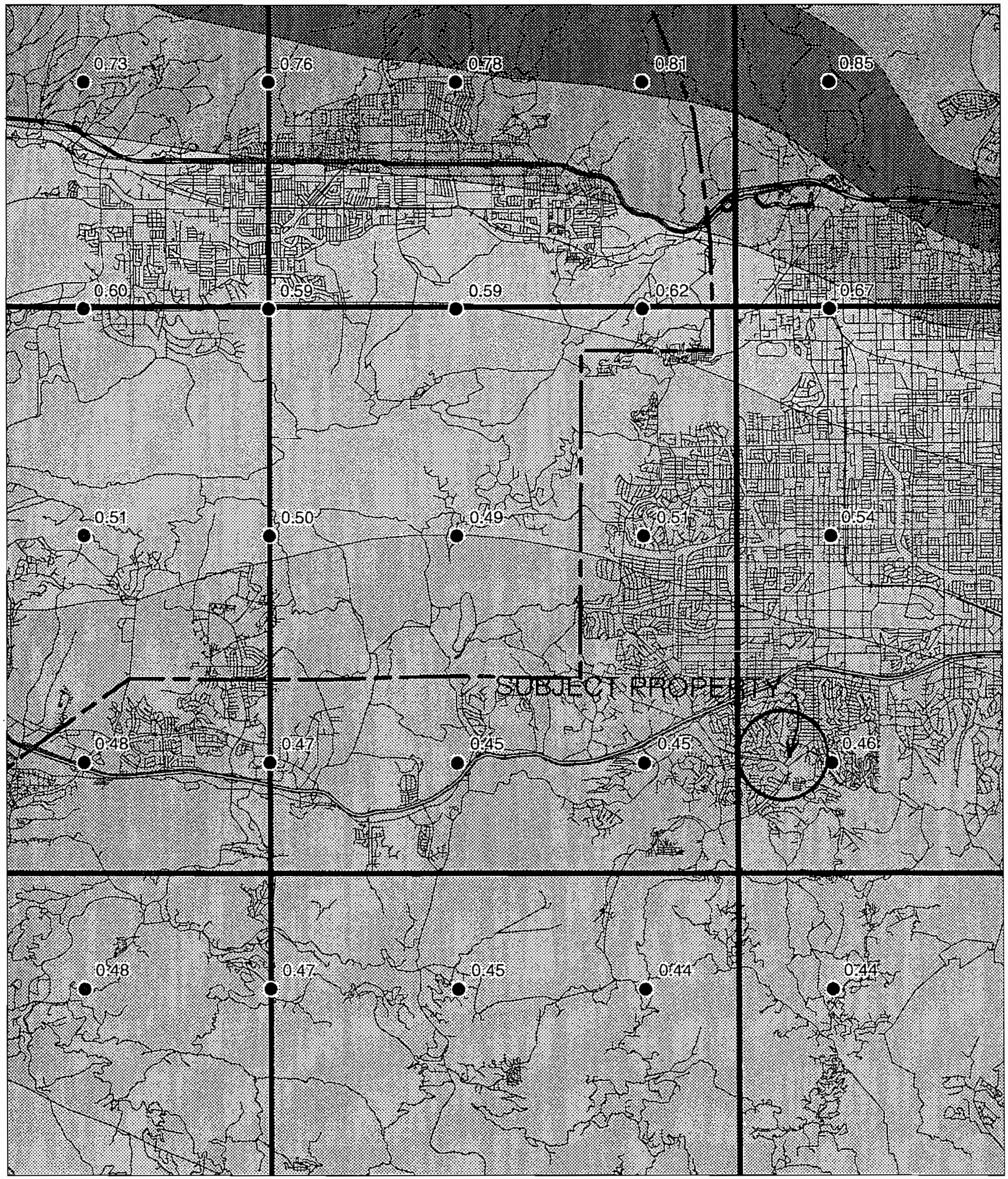
DEPTH (feet)	LAYER THICKNESS (feet)	LIQUE. F.S.	N60	N1	VOLUMETRIC STRAIN Ev*	SETTLEMENT (inches)
26	1	0.62	9	8	4.05%	0.49
27	1	0.59	14	12	3.20%	0.38
28	1	1.12	17	14	0.55%	0.07
					Total Settlement	0.94

CALABASAS 7.5 MINUTE QUADRANGLE AND PORTIONS OF ADJACENT QUADRANGLES

10% EXCEEDANCE IN 50 YEARS PEAK GROUND ACCELERATION (g)

1998

ALLUVIUM CONDITIONS



Base map modified from MapInfo Street Works ©1998 MapInfo Corporation

Department of Conservation
Division of Mines and Geology

Figure 3.3

CALABASAS 7.5 MINUTE QUADRANGLE AND PORTIONS OF ADJACENT QUADRANGLES

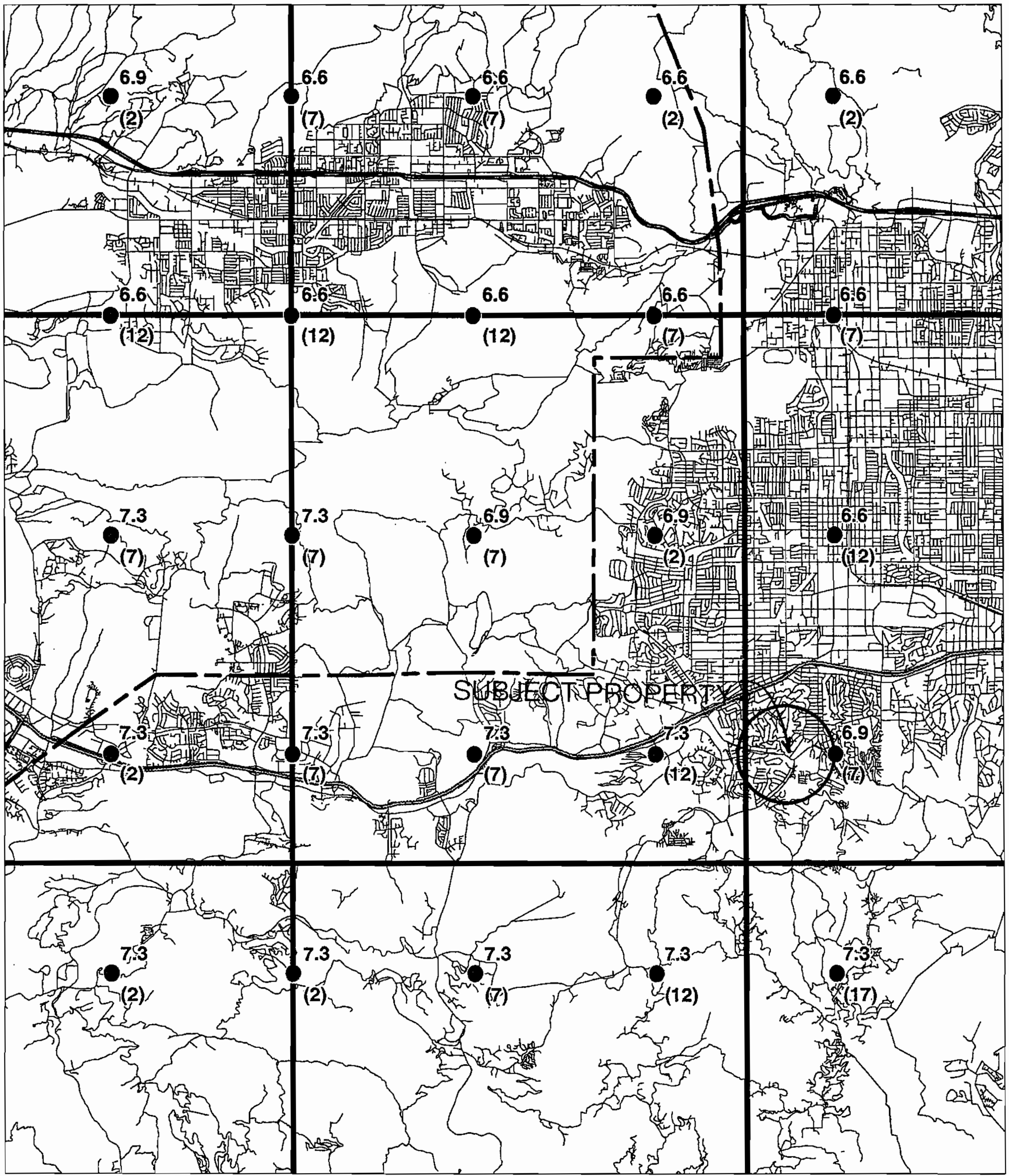
10% EXCEEDANCE IN 50 YEARS PEAK GROUND ACCELERATION

1998

PREDOMINANT EARTHQUAKE

Magnitude (Mw)

(Distance (km))



Base map modified from MapInfo StreetWorks ©1998 MapInfo Corporation

0 2.5 5
Kilometers

Department of Conservation
Division of Mines and Geology

Figure 3.4

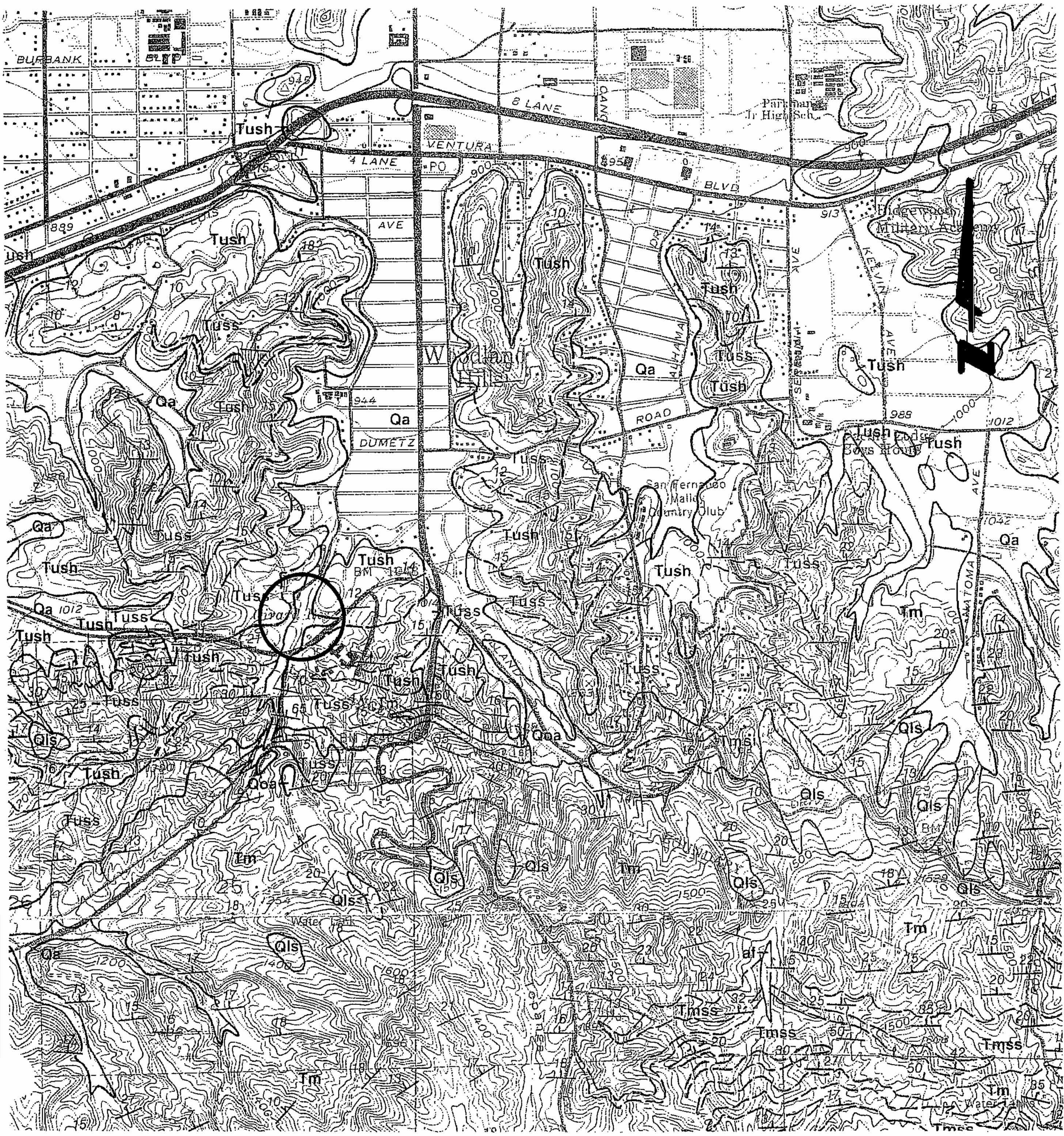
THE J. BYER GROUP, INC.
A GEOTECHNICAL CONSULTING FIRM
1461 E. CHEVY CHASE DRIVE, SUITE 200, GLENDALE, CA 91206
818•549•9959 Tel 818•543•3747 Fax

REGIONAL GEOLOGIC MAP

JB 19553-I DS VENTURES

CONSULTANT: JAI SCALE: 1" = 2,000'

REFERENCE: *Geologic Map of the Topanga and Canoga Park (South ½) Quadrangles,* T.W. Dibblee, 1992



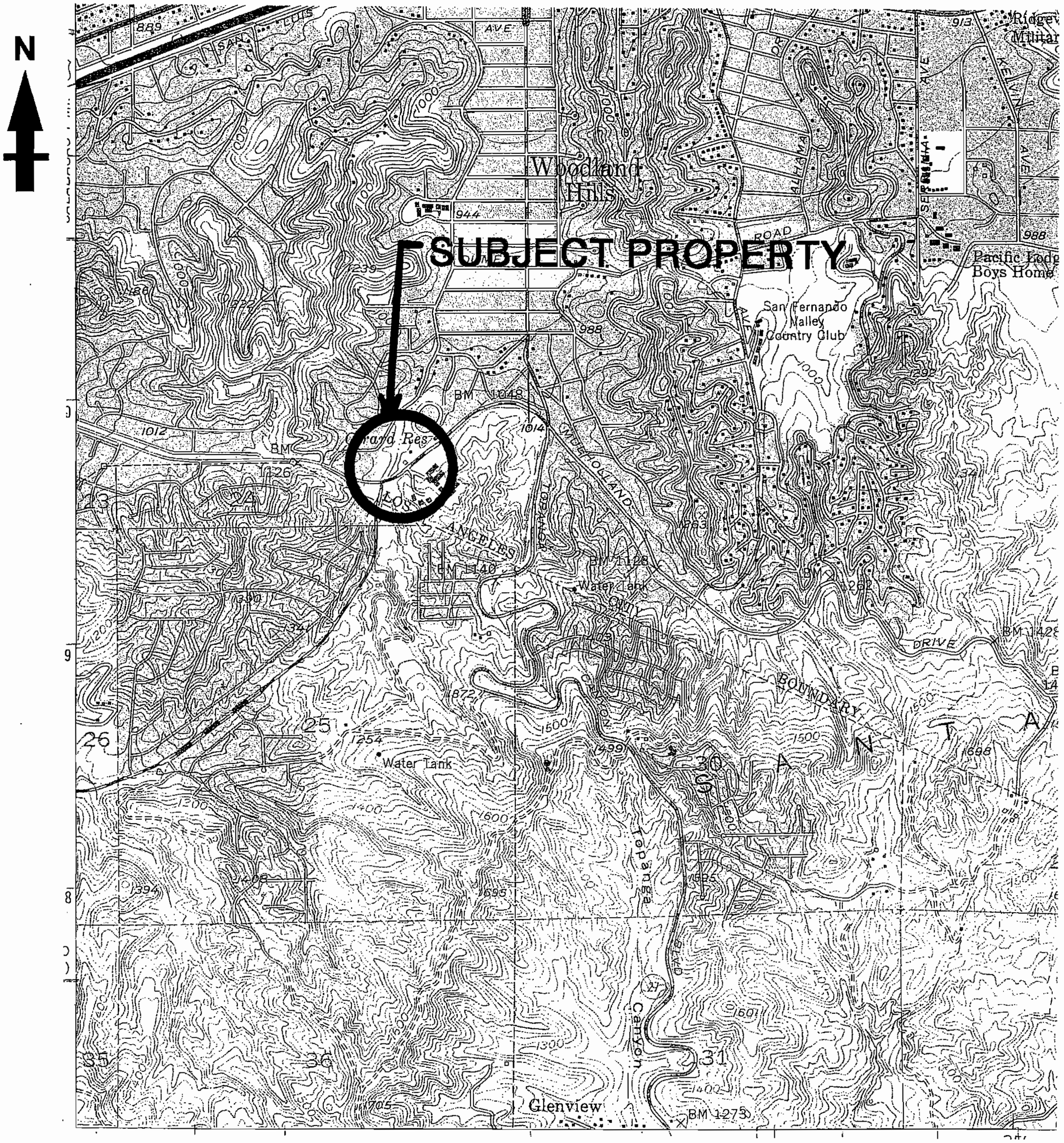
THE J. BYER GROUP, INC.
A GEOTECHNICAL CONSULTING FIRM
1461 E. CHEVY CHASE DRIVE, SUITE 200, GLENDALE, CA 91206
818•549•9959 Tel 818•543•3747 Fax

VICINITY MAP

JB: **19553-Z** DS VENTURES

CONSULTANT: RIZ SCALE: 1: 24,000

REFERENCE: *United States Geological Survey (Canoga Park - 7.5 minute Quadrangle)*



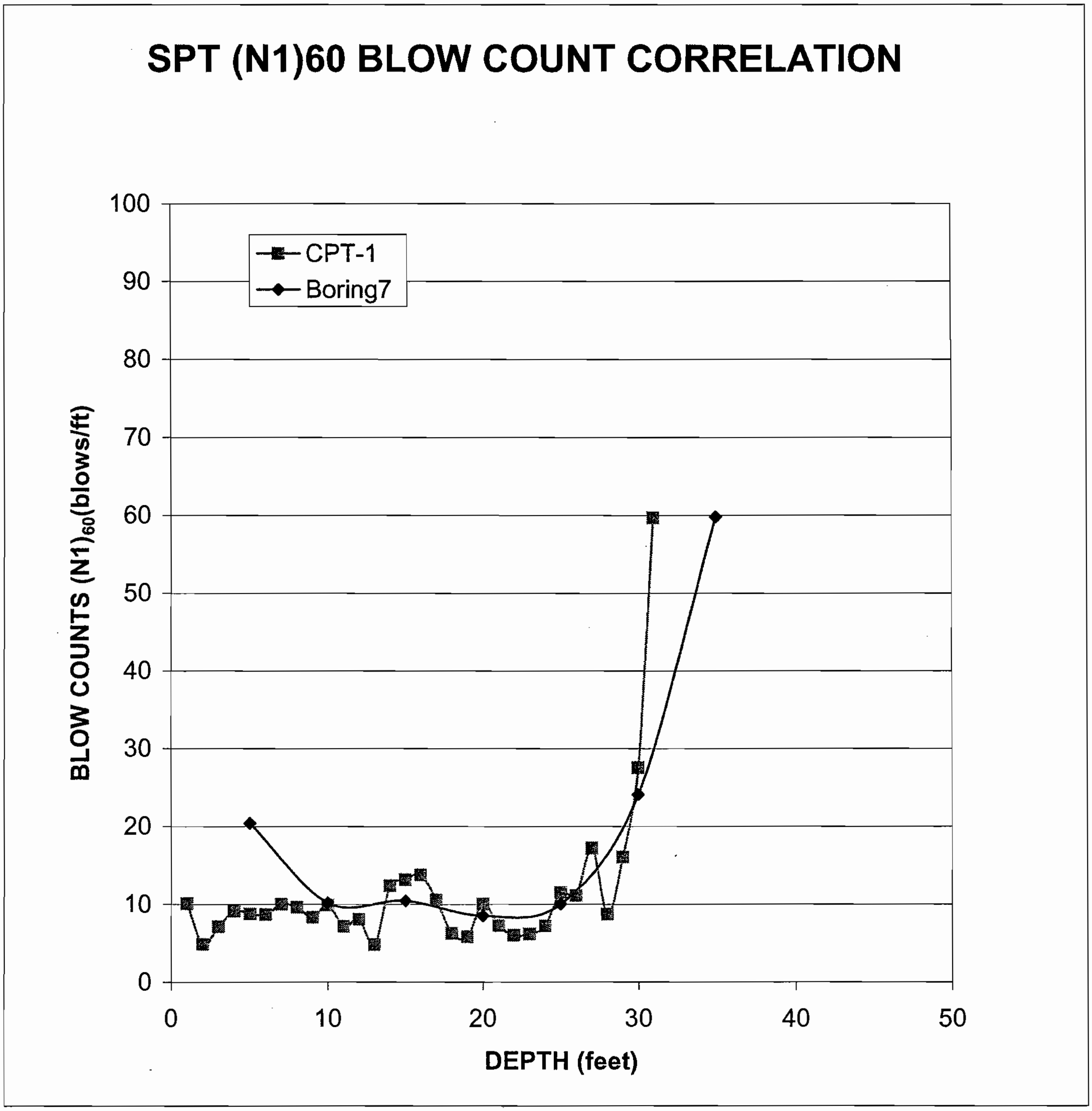
THE J. BYER GROUP, INC.

A GEOTECHNICAL CONSULTING FIRM

CPT/SPT BLOW COUNT

JB:	**19553-I**	CONSULT:	**RIZ**
CLIENT:	**DS VENTURES**		

CORRELATION SHEET # **1**



THE J. BYER GROUP, INC.

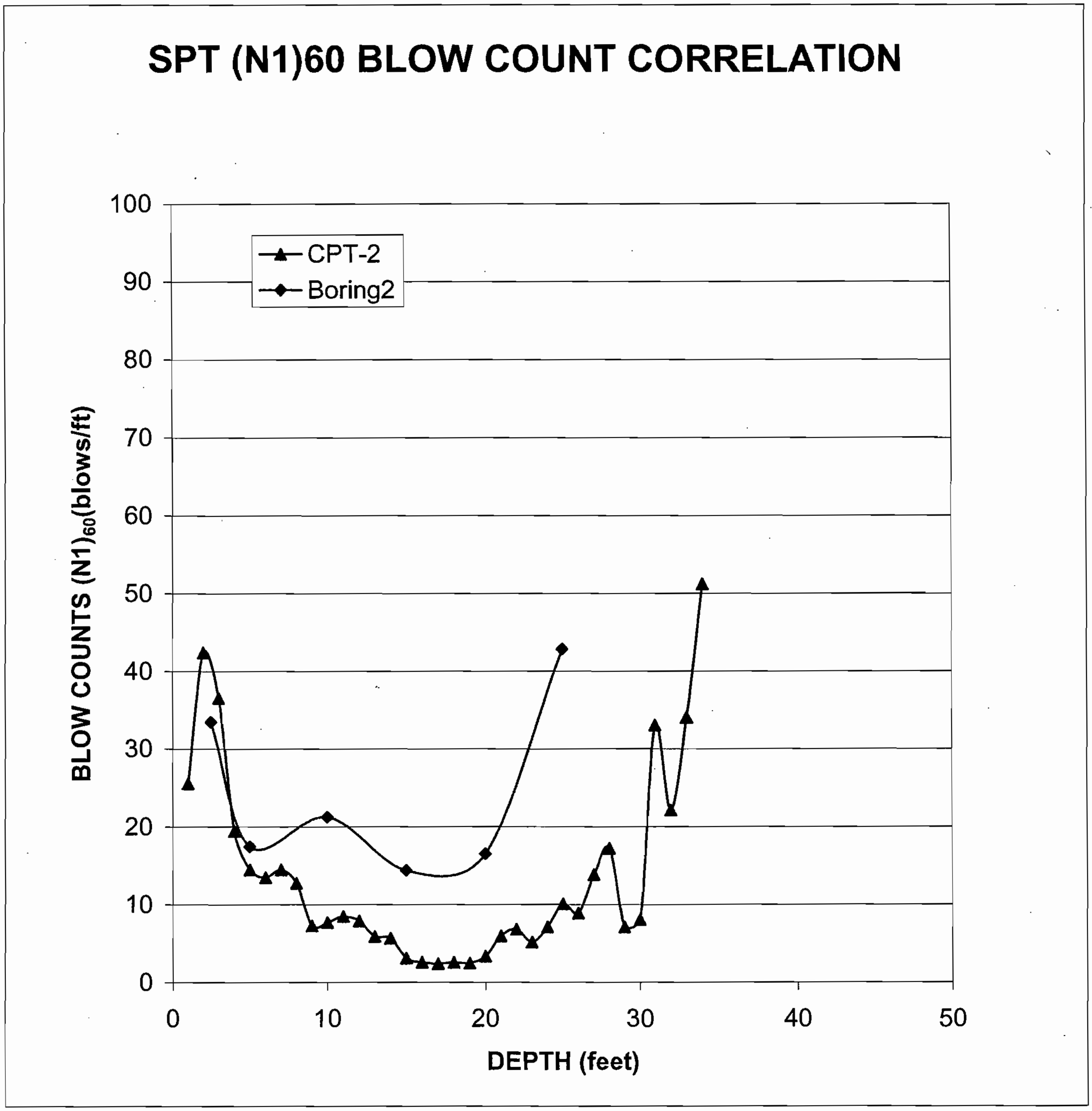
A GEOTECHNICAL CONSULTING FIRM

CPT/SPT BLOW COUNT

JB: **19553-I** CONSULT: **RIZ**

CLIENT: **DS VENTURES**

CORRELATION SHEET # 2



JB No: 19553-Z

Log of Boring: 1

Client: DS VENTURES, LLC

Logged By: JC

Site Location: 22255 Mulholland Drive, Woodland Hills

The J. Byer Group, Inc.
1461 E. Chevy Chase Dr., Ste 200
Glendale, CA. 91206
(818) 549-9959

SUBSURFACE PROFILE				SAMPLE						
Elevation	Depth	Description	Symbol	USCS	Type	Blow Count	Moisture Content (%)	Dry Density	% Saturation	Remarks
1029.0	1	*FILL:* Silty Sand, brown, slightly moist, medium dense								
1028.0	2									
1027.0	3			SM	R	25	10.7	102.9	47.0	
1026.0	4									
1025.0	5			SM	R	13	13.6	94.5	48.0	
1024.0	6									
1023.0	7	*ALLUVIUM:* Silty Sand, brown, very moist, dense								
1022.0	8									
1021.0	9									
1020.0	10			SM	R	50	18.0	106.4	86.0	
1019.0	11									
1018.0	12	Sandy Clay, brown, very moist, soft, plastic								
1017.0	13									
1016.0	14									
1015.0	15			CH	R	11	27.7	95.2	100.0	
1014.0	16									
1013.0	17									
1012.0	18									
1011.0	19	water at 19 feet								
1010.0	20									
1009.0	21			CH	R	8	25.6	101.9	100.0	
1008.0	22	*BEDROCK:* Sandstone, orange-brown, very moist, hard, massive								
1007.0	23									
1006.0	24									
1005.0	25									

Surface: Dirt, Dry Grass Vacant Lot

Drill Method: Hollow-Stem Auger Drill Rig

Drill Date: 8-11-03

Size: 8 Inch

Elevation: 1,030 Feet

Sheet: 1 of 1

JB No: 19553-Z

Log of Boring: 2

Client: DS VENTURES, LLC
Logged By: JC

Site Location: 22255 Mulholland Drive, Woodland Hills

The J. Byer Group, Inc.
1461 E. Chevy Chase Dr., Ste 200
Glendale, CA. 91206
(818) 549-9959

SUBSURFACE PROFILE				SAMPLE						
Elevation	Depth	Description	Symbol	USCS	Type	Blow Count	Moisture Content (%)	Dry Density	% Saturation	Remarks
1034.0	1	*FILL:* Silty Sand, brown, slightly moist, medium dense	▩							
1033.0	2		▩	SM	R	24	11.3	99.6	45.0	
1032.0	3		▩							
1031.0	4		▩							
1030.0	5		▩	SW	R	10	11.7	83.9	32.0	
1029.0	6		▩							
1028.0	7		▩							
1027.0	8		▩							
1026.0	9		▩							
1025.0	10	*ALLUVIUM:* Sand, brown, moist, slightly to medium dense, coarse	⁙	SP	R	16	3.6	103.3	16.0	
1024.0	11		⁙							
1023.0	12		⁙							
1022.0	13	Sandy Clay, brown-gray, very moist, soft	▤	CL						
1021.0	14		▤							
1020.0	15		▤	CL	R	10	----	----	----	No Recovery
1019.0	16	water at 16 feet	▤							
1018.0	17		▤							
1017.0	18		▤							
1016.0	19		▤							
1015.0	20		▤							
1014.0	21		▤	CL	R	12	23.6	100.5	97.0	
1013.0	22	Sand, orange-brown,saturated, dense	⁙							
1012.0	23		⁙							
1011.0	24	*BEDROCK:* Sandstone, gray-brown, moist, moderately hard	⁙							
1010.0	25		⁙							

Surface:
Size: 8 Inch

Drill Method: Hollow-Stem Auger Drill Rig
Elevation: 1,035 Feet

Drill Date: 8-11-03
Sheet: 1 of 2

JB No: 19553-Z

Log of Boring: 2

Client: DS VENTURES, LLC

Logged By: JC

Site Location: 22255 Mulholland Drive, Woodland Hills

The J. Byer Group, Inc.
1461 E. Chevy Chase Dr., Ste 200
Glendale, CA. 91206
(818) 549-9959

SUBSURFACE PROFILE				SAMPLE						
Elevation	Depth	Description	Symbol	USCS	Type	Blow Count	Moisture Content (%)	Dry Density	% Saturation	Remarks
1009.0	26	End at 25 Feet; Water at 16 Feet; No Caving; Fill to 9 Feet.								
1008.0	27									
1007.0	28									
1006.0	29									
1005.0	30									
1004.0	31									
1003.0	32									
1002.0	33									
1001.0	34									
1000.0	35									
999.0	36									
998.0	37									
997.0	38									
996.0	39									
995.0	40									
994.0	41									
993.0	42									
992.0	43									
991.0	44									
990.0	45									
989.0	46									
988.0	47									
987.0	48									
986.0	49									
985.0	50									

Surface:

Size: 8 Inch

Drill Method: Hollow-Stem Auger Drill Rig

Elevation: 1,035 Feet

Drill Date: 8-11-03

Sheet: 2 of 2

JB No: 19553-Z

Log of Boring: 3

Client: DS VENTURES, LLC

Logged By: JC

Site Location: 22255 Mulholland Drive, Woodland Hills

The J. Byer Group, Inc.
1461 E. Chevy Chase Dr., Ste 200
Glendale, CA. 91206
(818) 549-9959

SUBSURFACE PROFILE				SAMPLE						
Elevation	Depth	Description	Symbol	USCS	Type	Blow Count	Moisture Content (%)	Dry Density	% Saturation	Remarks
1006.0	1	*FILL:* Silty Sand, brown, slightly moist, medium dense	▩							
1005.0	2									
1004.0	3									
1003.0	4									
1002.0	5	*ALLUVIUM:* Silty Sand, reddish-brown, slightly moist, medium dense	░	SM	R	18	14.2	108.4	72.0	
1001.0	6									
1000.0	7									
999.0	8									
998.0	9	*BEDROCK:* Sandstone/Siltstone, brown, gray, orange layers, moist, moderately hard	▦							
997.0	10			----	R	28	25.1	95.4	91.0	
996.0	11									
995.0	12									
994.0	13									
993.0	14									
992.0	15	End at 15 Feet; No Water; No Caving; Fill to 4½ Feet.		----	R	50 9"	18.4	101.5	77.0	
991.0	16									
990.0	17									
989.0	18									
988.0	19									
987.0	20									
986.0	21									
985.0	22									
984.0	23									
983.0	24									
982.0	25									

Surface: Dirt/Dry Grass, Leaves

Drill Method: Hollow-Stem Auger Drill Rig

Drill Date: 8-11-03

Size: 8 Inch

Elevation: 1,007 Feet

Sheet: 1 of 1

JB No: 19553-Z

Log of Boring: 4

Client: DS VENTURES, LLC

Logged By: JC

Site Location: 22255 Mulholland Drive, Woodland Hills

The J. Byer Group, Inc.
1461 E. Chevy Chase Dr., Ste 200
Glendale, CA. 91206
(818) 549-9959

SUBSURFACE PROFILE				SAMPLE						
Elevation	Depth	Description	Symbol	USCS	Type	Blow Count	Moisture Content (%)	Dry Density	% Saturation	Remarks
		FILL: Silty Sand, light brown-gray, slightly moist, medium dense	▨							
999.0	1									
998.0	2									
997.0	3									
996.0	4	*ALLUVIUM:* Silty Sand, brown-gray, moist to very moist, slightly to medium dense	░							
995.0	5			SM	R	20	9.7	98.2	37.0	
994.0	6									
993.0	7									
992.0	8									
991.0	9									
990.0	10			SM	SPT	2 2 2	----	----	----	
989.0	11									
988.0	12									
987.0	13									
986.0	14									
985.0	15			----	SPT	2 2 3	----	----	----	
984.0	16									
983.0	17									
982.0	18									
981.0	19	Sandy Clay, dark gray, very moist, soft, plastic								
980.0	20	fragments of bedrock								
979.0	21			----	SPT	4 6 9	----	----	----	
978.0	22									
977.0	23									
976.0	24	*BEDROCK:* Siltstone, gray, brown, orange layers, moist, moderately hard	▦							
975.0	25									

Surface: Dry Grass, Dirt

Drill Method: Hollow-Stem Auger Drill Rig

Drill Date: 8-11-03

Size: 8 Inch

Elevation: 1,000 Feet

Sheet: 1 of 2

JB No: 19553-Z

Log of Boring: 4

Client: DS VENTURES, LLC

Logged By: JC

Site Location: 22255 Mulholland Drive, Woodland Hills

The J. Byer Group, Inc.
1461 E. Chevy Chase Dr., Ste 200
Glendale, CA. 91206
(818) 549-9959

SUBSURFACE PROFILE				SAMPLE						
Elevation	Depth	Description	Symbol	USCS	Type	Blow Count	Moisture Content (%)	Dry Density	% Saturation	Remarks
974.0	26		▨							
973.0	27		▨							
972.0	28		▨							
971.0	29		▨							
970.0	30	dark gray, moderately hard End at 30 Feet; No Water; Fill to 4 Feet.		----	SPT	19 33 50	----	----	----	
969.0	31									
968.0	32									
967.0	33									
966.0	34									
965.0	35									
964.0	36									
963.0	37									
962.0	38									
961.0	39									
960.0	40									
959.0	41									
958.0	42									
957.0	43									
956.0	44									
955.0	45									
954.0	46									
953.0	47									
952.0	48									
951.0	49									
950.0	50									

Surface: Dry Grass, Dirt

Drill Method: Hollow-Stem Auger Drill Rig

Drill Date: 8-11-03

Size: 8 Inch

Elevation: 1,000 Feet

Sheet: 2 of 2

JB No: 19553-Z

Log of Boring: 5

Client: DS VENTURES, LLC

Logged By: JC

Site Location: 22255 Mulholland Drive, Woodland Hills

The J. Byer Group, Inc.
1461 E. Chevy Chase Dr., Ste 200
Glendale, CA. 91206
(818) 549-9959

SUBSURFACE PROFILE				SAMPLE						
Elevation	Depth	Description	Symbol	USCS	Type	Blow Count	Moisture Content (%)	Dry Density	% Saturation	Remarks
1004.0	1	*FILL:* Silty Sand, gray, brown, slightly moist, slightly dense to dense, with roots	▨							
1003.0	2									
1002.0	3									
1001.0	4									
1000.0	5	*ALLUVIUM:* Silty Sand, light brown-gray, moist, medium dense	⁘	SM	R	21	18.2	97.2	69.0	
999.0	6									
998.0	7									
997.0	8									
996.0	9									
995.0	10	*BEDROCK:* Siltstone/Claystone, gray, very moist, soft, weathered	⁘	----	R	44	19.4	107.3	95.0	
994.0	11									
993.0	12									
992.0	13									
991.0	14									
990.0	15	Siltstone/Claystone, light gray, moist, moderately hard	⁙	----	R	30	37.7	83.5	100.0	
989.0	16									
988.0	17									
987.0	18									
986.0	19									
985.0	20	End at 20 Feet; No Water; Fill to 4 Feet.		----	R	49	35.1	87.2	100.0	
984.0	21									
983.0	22									
982.0	23									
981.0	24									
980.0	25									

Surface: Dirt/Dry Grass Vacant Lot

Drill Method: Hollow-Stem Auger Drill Rig

Drill Date: 8-11-03

Size: 8 Inch

Elevation: 1,005 Feet

Sheet: 1 of 1

JB No: 19553-Z

Log of Boring: 6

Client: DS VENTURES, LLC

Logged By: JC

Site Location: 22255 Mulholland Drive, Woodland Hills

The J. Byer Group, Inc.
1461 E. Chevy Chase Dr., Ste 200
Glendale, CA. 91206
(818) 549-9959

SUBSURFACE PROFILE				SAMPLE						
Elevation	Depth	Description	Symbol	USCS	Type	Blow Count	Moisture Content (%)	Dry Density	% Saturation	Remarks
1009.0	1	*FILL:* Silty Sand, brown, slightly moist, medium dense, with roots	▨							
1008.0	2		▨							
1007.0	3		▨							
1006.0	4		▨							
1005.0	5		▨	SM	R	23	19.6	91.4	64.0	
1004.0	6		▨							
1003.0	7		▨							
1002.0	8		▨							
1001.0	9	*ALLUVIUM:* Sandy Clay, brown, very moist, soft, roots	▤							
1000.0	10		▤	CH	R	8	31.9	85.1	90.0	
999.0	11		▤							
998.0	12		▤							
997.0	13		▤							
996.0	14		▤							
995.0	15	roots, saturated, firm	▤	CH	R	5	31.0	91.9	100.0	
994.0	16		▤							
993.0	17		▤							
992.0	18		▤							
991.0	19		▤							
990.0	20		▤							
989.0	21		▤	CH	R	6		89.8		
988.0	22		▤							
987.0	23	water at 23 feet	▤							
986.0	24		▤							
985.0	25		▤							

Surface: Dirt/Dry Grass

Size: 8 Inch

Drill Method: Hollow-Stem Auger Drill Rig

Elevation: 1,010 Feet

Drill Date: 8-11-03

Sheet: 1 of 2

JB No: 19553-Z

Log of Boring: 6

Client: DS VENTURES, LLC

Logged By: JC

Site Location: 22255 Mulholland Drive, Woodland Hills

The J. Byer Group, Inc.
1461 E. Chevy Chase Dr., Ste 200
Glendale, CA. 91206
(818) 549-9959

SUBSURFACE PROFILE				SAMPLE						
Elevation	Depth	Description	Symbol	USCS	Type	Blow Count	Moisture Content (%)	Dry Density	% Saturation	Remarks
984.0	26	*BEDROCK:* Siltstone/Claystone, gray-brown, orange layers, wet, moderately hard	▨							
983.0	27									
982.0	28									
981.0	29									
980.0	30	End at 30 Feet; Water at 23 Feet; Fill to 8½ Feet.		----	R	50 6"	11.3	132.1	100.0	
979.0	31									
978.0	32									
977.0	33									
976.0	34									
975.0	35									
974.0	36									
973.0	37									
972.0	38									
971.0	39									
970.0	40									
969.0	41									
968.0	42									
967.0	43									
966.0	44									
965.0	45									
964.0	46									
963.0	47									
962.0	48									
961.0	49									
960.0	50									

Surface: Dirt/Dry Grass

Drill Method: Hollow-Stem Auger Drill Rig

Drill Date: 8-11-03

Size: 8 Inch

Elevation: 1,010 Feet

Sheet: 2 of 2

JB No: 19553-Z

Log of Boring: 7

Client: DS VENTURES, LLC

Logged By: JC

Site Location: 22255 Mulholland Drive, Woodland Hills

The J. Byer Group, Inc.
1461 E. Chevy Chase Dr., Ste 200
Glendale, CA. 91206
(818) 549-9959

SUBSURFACE PROFILE				SAMPLE						
Elevation	Depth	Description	Symbol	USCS	Type	Blow Count	Moisture Content (%)	Dry Density	% Saturation	Remarks
		FILL: Silty Sand, light brown, slightly moist, slightly to medium dense, with minor rock chips	▩							
1015.0	1		▩							
1014.0	2		▩							
1013.0	3		▩							
1012.0	4		▩							
1011.0	5		▩	SM	R	16	6.4	97.8	25.0	
1010.0	6		▩							
1009.0	7		▩							
1008.0	8		▩							
1007.0	9	*ALLUVIUM:* Silty Sand, reddish brown, moist, slightly dense	⁘							
1006.0	10		⁘	SM	R	8	12.5	95.7	45.0	
1005.0	11		⁘							
1004.0	12		⁘							
1003.0	13		⁘							
1002.0	14		⁘							
1001.0	15		⁘	SM	R	13	----	----	----	No Recovery
1000.0	16		⁘							
999.0	17		⁘							
998.0	18	Sandy Clay, brown, wet, soft	☰							
997.0	19		☰							
996.0	20	water at 20 Feet	⁘	SW	R	8	21.2	102.3	91.0	
995.0	21	Sand, light brown, saturated, medium dense	⁚							
994.0	22		⁚							
993.0	23		⁚							
992.0	24		⁚							
991.0	25		⁚							

Surface: Dirt/Dry Grass

Drill Method: Hollow-Stem Auger Drill Rig

Drill Date: 8-12-03

Size: 8 Inch

Elevation: 1,016 Feet

Sheet: 1 of 2

JB No: 19553-Z

Log of Boring: 7

Client: DS VENTURES, LLC

Logged By: JC

Site Location: 22255 Mulholland Drive, Woodland Hills

The J. Byer Group, Inc.
1461 E. Chevy Chase Dr., Ste 200
Glendale, CA. 91206
(818) 549-9959

SUBSURFACE PROFILE				SAMPLE						
Elevation	Depth	Description	Symbol	USCS	Type	Blow Count	Moisture Content (%)	Dry Density	% Saturation	Remarks
990.0	26									
989.0	27									
988.0	28									
987.0	29									
986.0	30			SW	SPT	7 8 10	----	----	----	
985.0	31									
984.0	32									
983.0	33	*BEDROCK:* Sandstone, brown and green, very moist, hard								
982.0	34									
981.0	35	Refusal at 35 Feet; End at 35 Feet; Water at 20 Feet; Fill to 8½ Feet:		SP	SPT	50 5"	----	----	----	
980.0	36									
979.0	37									
978.0	38									
977.0	39									
976.0	40									
975.0	41									
974.0	42									
973.0	43									
972.0	44									
971.0	45									
970.0	46									
969.0	47									
968.0	48									
967.0	49									
966.0	50									

Surface: Dirt/Dry Grass

Size: 8 Inch

Drill Method: Hollow-Stem Auger Drill Rig

Elevation: 1,016 Feet

Drill Date: 8-12-03

Sheet: 2 of 2

JB No: 19553-Z

Log of Boring: 8

Client: DS VENTURES, LLC

Logged By: JC

Site Location: 22255 Mulholland Drive, Woodland Hills

The J. Byer Group, Inc.
1461 E. Chevy Chase Dr., Ste 200
Glendale, CA. 91206
(818) 549-9959

SUBSURFACE PROFILE				SAMPLE						
Elevation	Depth	Description	Symbol	USCS	Type	Blow Count	Moisture Content (%)	Dry Density	% Saturation	Remarks
		FILL: Silty Sand, light brown, slightly moist, slightly to medium dense	▨							
1017.0	1									
1016.0	2									
1015.0	3									
1014.0	4									
1013.0	5			SM	R	10	13.9	93.1	47.0	
1012.0	6									
1011.0	7									
1010.0	8									
1009.0	9	*ALLUVIUM:* Silty Sand, reddish brown, moist, slightly dense	⁘							
1008.0	10			SM	SPT	2 1 2				
1007.0	11									
1006.0	12									
1005.0	13									
1004.0	14									
1003.0	15	Sandy Clay, reddish-brown, very moist, soft	☰	CL	SPT	2 2 2				
1002.0	16									
1001.0	17									
1000.0	18	water at 18 feet								
999.0	19									
998.0	20	Silty Sand, brown, wet, slightly dense	⁘							
997.0	21			SM	SPT	2 4 7				
996.0	22									
995.0	23									
994.0	24									
993.0	25									

Surface: Dry Grass/Dirt

Drill Method: Hollow-Stem Auger Drill Rig

Drill Date: 8-12-03

Size: 8 Inch

Elevation: 1,018 Feet

Sheet: 1 of 2

JB No: 19553-Z

Log of Boring: 8

Client: DS VENTURES, LLC

Logged By: JC

Site Location: 22255 Mulholland Drive, Woodland Hills

The J. Byer Group, Inc.
1461 E. Chevy Chase Dr., Ste 200
Glendale, CA. 91206
(818) 549-9959

SUBSURFACE PROFILE				SAMPLE						
Elevation	Depth	Description	Symbol	USCS	Type	Blow Count	Moisture Content (%)	Dry Density	% Saturation	Remarks
992.0	26	*BEDROCK:* Sandstone/Siltstone, light brown, green with orange layers, moist, moderately hard	×							
991.0	27		×							
990.0	28		×							
989.0	29		×							
988.0	30	End at 30 Feet; Water at 18 Feet; Fill to 9 Feet.		----	SPT	22 31 50				
987.0	31									
986.0	32									
985.0	33									
984.0	34									
983.0	35									
982.0	36									
981.0	37									
980.0	38									
979.0	39									
978.0	40									
977.0	41									
976.0	42									
975.0	43									
974.0	44									
973.0	45									
972.0	46									
971.0	47									
970.0	48									
969.0	49									
968.0	50									

Surface: Dry Grass/Dirt
Size: 8 Inch
Drill Method: Hollow-Stem Auger Drill Rig
Elevation: 1,018 Feet
Drill Date: 8-12-03
Sheet: 2 of 2

JB No: 19553-Z

Log of Boring: 9

Client: DS VENTURES, LLC

Logged By: JC

Site Location: 22255 Mulholland Drive, Woodland Hills

The J. Byer Group, Inc.
1461 E. Chevy Chase Dr., Ste 200
Glendale, CA. 91206
(818) 549-9959

SUBSURFACE PROFILE				SAMPLE						
Elevation	Depth	Description	Symbol	USCS	Type	Blow Count	Moisture Content (%)	Dry Density	% Saturation	Remarks
		FILL: Silty Sand, brown, gray, slightly moist, slightly dense	▩							
1016.0	1		▩							
1015.0	2		▩							
1014.0	3	*ALLUVIUM:* Silty Sand, reddish brown, moist, slightly dense with roots and pores	░							
1013.0	4		░							
1012.0	5		░	SM	R	10	9.0	96.3	33.0	
1011.0	6		░							
1010.0	7		░							
1009.0	8		░							
1008.0	9		░							
1007.0	10	*BEDROCK:* Siltstone/Sandstone, light brown, orange layers, slightly moist, moderately hard, with roots End at 10 Feet; No Water; Fill to 2½ Feet.		----	R	26	17.4	102.4	25.0	
1006.0	11									
1005.0	12									
1004.0	13									
1003.0	14									
1002.0	15									
1001.0	16									
1000.0	17									
999.0	18									
998.0	19									
997.0	20									
996.0	21									
995.0	22									
994.0	23									
993.0	24									
992.0	25									

Surface: Dirt/Dry Grass/Leaves

Size: 8 Inch

Drill Method: Hollow-Stem Auger Drill Rig

Elevation: 1,017 Feet

Drill Date: 8-12-03

Sheet: 1 of 1

JB No: 19553-Z

Log of Boring: 10

Client: DS VENTURES, LLC

Logged By: JC

Site Location: 22255 Mulholland Drive, Woodland Hills

The J. Byer Group, Inc.
1461 E. Chevy Chase Dr., Ste 200
Glendale, CA. 91206
(818) 549-9959

SUBSURFACE PROFILE				SAMPLE						
Elevation	Depth	Description	Symbol	USCS	Type	Blow Count	Moisture Content (%)	Dry Density	% Saturation	Remarks
1022.0	1	*FILL:* Silty Sand, gray-brown, slightly moist, slightly to medium dense	▨							
1021.0	2									
1020.0	3	*ALLUVIUM:* Silty Sand, reddish brown, moist, slightly to medium dense, with roots	░							
1019.0	4									
1018.0	5			SM	R	7	3.9	92.3	13.0	
1017.0	6									
1016.0	7									
1015.0	8									
1014.0	9									
1013.0	10			SM	R	15	13.8	104.0	62.0	
1012.0	11									
1011.0	12									
1010.0	13									
1009.0	14									
1008.0	15			SM	R	20	15.3	101.6	65.0	
1007.0	16									
1006.0	17									
1005.0	18									
1004.0	19									
1003.0	20									
1002.0	21			SM	R	16	----	----	----	No Recovery
1001.0	22									
1000.0	23	water at 23 feet								
999.0	24									
998.0	25									

Surface:

Drill Method: Hollow-Stem Auger Drill Rig

Drill Date: 8-12-03

Size: 8 Inch

Elevation: 1,023 Feet

Sheet: 1 of 2

JB No: 19553-Z

Log of Boring: 10

Client: DS VENTURES, LLC

Logged By: JC

Site Location: 22255 Mulholland Drive, Woodland Hills

The J. Byer Group, Inc.
1461 E. Chevy Chase Dr., Ste 200
Glendale, CA. 91206
(818) 549-9959

SUBSURFACE PROFILE				SAMPLE						
Elevation	Depth	Description	Symbol	USCS	Type	Blow Count	Moisture Content (%)	Dry Density	% Saturation	Remarks
		BEDROCK: Siltstone/Sandstone, light brown, orange layers, moist, moderately hard, with roots	▨							
997.0	26									
996.0	27	End at 25 Feet; Water at 23 Feet; Fill to 2½ Feet.								
995.0	28									
994.0	29									
993.0	30									
992.0	31									
991.0	32									
990.0	33									
989.0	34									
988.0	35									
987.0	36									
986.0	37									
985.0	38									
984.0	39									
983.0	40									
982.0	41									
981.0	42									
980.0	43									
979.0	44									
978.0	45									
977.0	46									
976.0	47									
975.0	48									
974.0	49									
973.0	50									

Surface:

Drill Method: Hollow-Stem Auger Drill Rig

Drill Date: 8-12-03

Size: 8 Inch

Elevation: 1,023 Feet

Sheet: 2 of 2

JB No: 19553-Z

Log of Boring: 11

Client: DS VENTURES, LLC

Logged By: JC

Site Location: 22255 Mulholland Drive, Woodland Hills

The J. Byer Group, Inc.
1461 E. Chevy Chase Dr., Ste 200
Glendale, CA. 91206
(818) 549-9959

SUBSURFACE PROFILE				SAMPLE						
Elevation	Depth	Description	Symbol	USCS	Type	Blow Count	Moisture Content (%)	Dry Density	% Saturation	Remarks
1015.0	1	*FILL:* Silty Sand, brown gray, moist, slightly dense								
1014.0	2									
1013.0	3	*ALLUVIUM:* Sandy Clay, brown, moist, slightly to medium firm								
1012.0	4									
1011.0	5			CL	R	5	10.4	94.4	37.0	
1010.0	6									
1009.0	7									
1008.0	8									
1007.0	9									
1006.0	10	Silty Sand, orange-brown, moist, medium dense		SM	R	10	14.7	105.2	68.0	
1005.0	11									
1004.0	12									
1003.0	13									
1002.0	14									
1001.0	15	Silty Sand, orange-brown, moist, medium dense		SM	R	15	12.9	108.2	65.0	
1000.0	16									
999.0	17									
998.0	18									
997.0	19									
996.0	20	Sandy Silt with bedrock fragments, gray to tan, saturated, firm								
995.0	21			ML	R	7	28.9	95.0	100.0	
994.0	22	water at 22 feet								
993.0	23									
992.0	24									
991.0	25									

Surface: Dirt/Dry Grass

Size: 8 Inch

Drill Method: Hollow-Stem Auger Drill Rig

Elevation: 1,023 Feet

Drill Date: 8-12-03

Sheet: 1 of 2

JB No: 19553-Z

Log of Boring: 11

Client: DS VENTURES, LLC

Logged By: JC

Site Location: 22255 Mulholland Drive, Woodland Hills

The J. Byer Group, Inc.
1461 E. Chevy Chase Dr., Ste 200
Glendale, CA. 91206
(818) 549-9959

SUBSURFACE PROFILE				SAMPLE						
Elevation	Depth	Description	Symbol	USCS	Type	Blow Count	Moisture Content (%)	Dry Density	% Saturation	Remarks
		BEDROCK: Siltstone/Sandstone, light brown, orange layers, moist, moderately hard, with roots	▨							
990.0	26									
989.0	27	End at 25 Feet; Water at 23 Feet; Fill to 3 Feet.								
988.0	28									
987.0	29									
986.0	30									
985.0	31									
984.0	32									
983.0	33									
982.0	34									
981.0	35									
980.0	36									
979.0	37									
978.0	38									
977.0	39									
976.0	40									
975.0	41									
974.0	42									
973.0	43									
972.0	44									
971.0	45									
970.0	46									
969.0	47									
968.0	48									
967.0	49									
966.0	50									

Surface: Dirt/Dry Grass

Drill Method: Hollow-Stem Auger Drill Rig

Drill Date: 8-12-03

Size: 8 Inch

Elevation: 1,023 Feet

Sheet: 2 of 2

JB No: 19553-Z

Log of Boring: 12

Client: DS VENTURES, LLC

Logged By: JC

Site Location: 22255 Mulholland Drive, Woodland Hills

The J. Byer Group, Inc.
1461 E. Chevy Chase Dr., Ste 200
Glendale, CA. 91206
(818) 549-9959

SUBSURFACE PROFILE				SAMPLE						
Elevation	Depth	Description	Symbol	USCS	Type	Blow Count	Moisture Content (%)	Dry Density	% Saturation	Remarks
1026.0	1	*FILL:* Silty Sand, light brown, moist, medium dense	▩							
1025.0	2									
1024.0	3	*ALLUVIUM:* Silty Sand, light brown gray, moist, slightly to medium dense, with roots	⁘							
1023.0	4									
1022.0	5			SM	R	13	6.8	105.0	32.0	
1021.0	6									
1020.0	7									
1019.0	8	*BEDROCK:* Sandstone, Siltstone, light brown, orange, weathered, soft to moderately hard	░							
1018.0	9									
1017.0	10	End at 10 Feet; No Water; Fill to 2½ Feet.		----	R	34	8.6	100.3	35.0	
1016.0	11									
1015.0	12									
1014.0	13									
1013.0	14									
1012.0	15									
1011.0	16									
1010.0	17									
1009.0	18									
1008.0	19									
1007.0	20									
1006.0	21									
1005.0	22									
1004.0	23									
1003.0	24									
1002.0	25									

Surface: Pavement 2 Inches AC/No Base

Drill Method: Hollow-Stem Auger Drill Rig

Drill Date: 8-12-03

Size: 8 Inch

Elevation: 1,027 Feet

Sheet: 1 of 1

THE J. BYER GROUP, INC.
A GEOTECHNICAL CONSULTING FIRM
1461 E. CHEVY CHASE DRIVE, SUITE 200, GLENDALE, CA 91206
818•549•9959 Tel 818•543•3747 Fax

LOG OF TEST PITS

JB: 19553-Z
CLIENT: DS VENTURES, LLC
GEOLOGIST: JC
DATE LOGGED: 8/11/03
REPORT DATE: 03/22/05

TEST PIT #1

Surface Conditions: Dirt, Dry Grass

DEPTH INTERVAL (feet)	EARTH MATERIAL	LITHOLOGIC DESCRIPTION
0 - 1½	**FILL:**	Silty Sand, light brown to light gray, slightly moist, slightly dense to dense
1½ - 4½	**ALLUVIUM:**	Silty Sand with Gravel, light brown-gray, slightly moist to medium moist, dense
4½ - 5	**BEDROCK:**	Siltstone, Sandstone, light brown and gray, moist, hard, massive, moderately weathered

End at 5 Feet; No Water; No Caving; Fill to 1½ Feet.

TEST PIT #2

0 - 2	**FILL:**	Clayey Sand, very stiff, slightly moist
2 - 4½	**ALLUVIUM:**	Silty Sand, light brown gray, slightly moist, and dense
4½ - 5		Sand with Gravel, light brown, moist, dense

End at 5 Feet; No Water; No Caving; Fill to 2 Feet.

TEST PIT #3

0 - 2½	**FILL:**	Soil, Silty sand, gray-brown, slightly moist
2½ - 3½	**BEDROCK:**	Siltstone and Sandstone, gray-brown, moderately hard, massive, moderately weathered

End at 3½ Feet; No Water; No Caving; Fill to 2½ Feet.

TEST PIT #4

DEPTH INTERVAL (feet)	EARTH MATERIAL	LITHOLOGIC DESCRIPTION
0 - ¾	**FILL:**	Clayey Sand, brown-gray, slightly moist, stiff
¾ - 2½	**SOIL/ALLUVIUM:**	Silty Sand, light gray, slightly moist, medium dense
2½ - 5	**BEDROCK:**	Siltstone and Sandstone, light brown, moist, moderately hard to hard, massive, moderately weathered

End at 5 Feet; No Water; No Caving; Fill to ¾ Feet.

NOTE: The stratification depths shown on the Log of Test Pits are approximate and are based upon visual classification of samples and cuttings. The actual depths may vary. Variations between test pits may also occur.

THE J. BYER GROUP, INC.
A GEOTECHNICAL CONSULTING FIRM

SHORING PILE

JB: **19553-B** CONSULT: **JWB**
CLIENT: **DS VENTURES**

CALCULATION SHEET #

CALCULATE THE DESIGN MINIMUM EQUIVALENT FLUID PRESSURE (EFP) FOR PROPOSED RETAINING WALL SUPPORTING BEDROCK. ASSUME BACKFILL IS SATURATED AND THERE IS NO HYDROSTATIC PRESURE THE RETAINED HEIGHT AND BACKSLOPE AND SURCHARGE CONDITIONS ARE LISTED BELOW. USE THE MONONOBE-OKABE METHOD FOR SEISMIC FORCES.

CALCULATION PARAMETERS

EARTH MATERIAL:	ALLUVIUM	RETAINED LENGTH	14 feet
SHEAR DIAGRAM:	1	BACKSLOPE ANGLE:	0 degrees
COHESION:	249 psf	SURCHARGE:	0 pounds
PHI ANGLE:	23 degrees	SURCHARGE TYPE:	P Point
DENSITY	125 pcf	INITIAL FAILURE ANGLE:	30 degrees
SAFETY FACTOR:	1.25	FINAL FAILURE ANGLE:	70 degrees
PILE FRICTION	0 degrees	INITIAL TENSION CRACK:	2 feet
CD (C/FS):	199.2 psf	FINAL TENSION CRACK:	50 feet

PHID = ATAN(TAN(PHI)/FS) = 18.8 degrees

HORIZONTAL PSEUDO STATIC SEISMIC COEFFICIENT (k_h) 0 %g

VERTICAL PSEUDO STATIC SEISMIC COEFFICIENT (k_v) 0 %g

CALCULATED RESULTS

CRITICAL FAILURE ANGLE	54 degrees
AREA OF TRIAL FAILURE WEDGE	64.3 square feet
TOTAL EXTERNAL SURCHARGE	0.0 pounds
WEIGHT OF TRIAL FAILURE WEDGE	8034.8 pounds
NUMBER OF TRIAL WEDGES ANALYZED	2009 trials
LENGTH OF FAILURE PLANE	11.9 feet
DEPTH OF TENSION CRACK	4.4 feet
HORIZONTAL DISTANCE TO UPSLOPE TENSION CRACK	7.0 feet
CALCULATED THRUST ON PILE	**2926.6 pounds**
CALCULATED EQUIVALENT FLUID PRESSURE	**29.9 pcf**
DESIGN EQUIVALENT FLUID PRESSURE	**30.0 pcf**

THE CALCULATION INDICATES THAT THE PROPOSED SHORING PILES MAY MAY BE DESIGNED FOR AN EQUIVALENT FLUID PRESSURE OF 30 POUNDS PER CUBIC FOOT. THE FLUID PRESSURE SHOULD BE MULTIPLIED BY THE PILE SPACING.

THE J. BYER GROUP, INC.

A GEOTECHNICAL CONSULTING FIRM

SHORING PILE

JB: **19553-B** CONSULT: **JWB**

CLIENT: **DS VENTURES**

CALCULATION SHEET #

CALCULATE THE DESIGN MINIMUM EQUIVALENT FLUID PRESSURE (EFP) FOR PROPOSED RETAINING WALL SUPPORTING BEDROCK. ASSUME BACKFILL IS SATURATED AND THERE IS NO HYDROSTATIC PRESURE THE RETAINED HEIGHT AND BACKSLOPE AND SURCHARGE CONDITIONS ARE LISTED BELOW. USE THE MONONOBE-OKABE METHOD FOR SEISMIC FORCES.

CALCULATION PARAMETERS

EARTH MATERIAL:	ALLUVIUM	RETAINED LENGTH	24 feet
SHEAR DIAGRAM:	1	BACKSLOPE ANGLE:	0 degrees
COHESION:	249 psf	SURCHARGE:	0 pounds
PHI ANGLE:	23 degrees	SURCHARGE TYPE:	P Point
DENSITY	125 pcf	INITIAL FAILURE ANGLE:	30 degrees
SAFETY FACTOR:	1.25	FINAL FAILURE ANGLE:	70 degrees
PILE FRICTION	0 degrees	INITIAL TENSION CRACK:	2 feet
CD (C/FS):	199.2 psf	FINAL TENSION CRACK:	50 feet

PHID = ATAN(TAN(PHI)/FS) = 18.8 degrees

HORIZONTAL PSEUDO STATIC SEISMIC COEFFICIENT (k_h) 0 %g

VERTICAL PSEUDO STATIC SEISMIC COEFFICIENT (k_v) 0 %g

CALCULATED RESULTS

CRITICAL FAILURE ANGLE	54 degrees
AREA OF TRIAL FAILURE WEDGE	201.1 square feet
TOTAL EXTERNAL SURCHARGE	0.0 pounds
WEIGHT OF TRIAL FAILURE WEDGE	25139.3 pounds
NUMBER OF TRIAL WEDGES ANALYZED	2009 trials
LENGTH OF FAILURE PLANE	23.8 feet
DEPTH OF TENSION CRACK	4.7 feet
HORIZONTAL DISTANCE TO UPSLOPE TENSION CRACK	14.0 feet
CALCULATED THRUST ON PILE	**12261.6 pounds**
CALCULATED EQUIVALENT FLUID PRESSURE	**42.6 pcf**
DESIGN EQUIVALENT FLUID PRESSURE	**43.0 pcf**

THE CALCULATION INDICATES THAT THE PROPOSED SHORING PILES MAY MAY BE DESIGNED FOR AN EQUIVALENT FLUID PRESSURE OF 43 POUNDS PER CUBIC FOOT. THE FLUID PRESSURE SHOULD BE MULTIPLIED BY THE PILE SPACING.

THE J. BYER GROUP, INC.
A GEOTECHNICAL CONSULTING FIRM

SHORING PILE

JB: **19553-B** CONSULT: **JWB**
CLIENT: **DS VENTURES**

CALCULATION SHEET #

CALCULATE THE DESIGN MINIMUM EQUIVALENT FLUID PRESSURE (EFP) FOR PROPOSED RETAINING WALL SUPPORTING BEDROCK. ASSUME BACKFILL IS SATURATED AND THERE IS NO HYDROSTATIC PRESURE THE RETAINED HEIGHT AND BACKSLOPE AND SURCHARGE CONDITIONS ARE LISTED BELOW. USE THE MONONOBE-OKABE METHOD FOR SEISMIC FORCES.

CALCULATION PARAMETERS

EARTH MATERIAL:	ALLUVIUM	RETAINED LENGTH	30 feet
SHEAR DIAGRAM:	1	BACKSLOPE ANGLE:	0 degrees
COHESION:	249 psf	SURCHARGE:	0 pounds
PHI ANGLE:	23 degrees	SURCHARGE TYPE:	P Point
DENSITY	125 pcf	INITIAL FAILURE ANGLE:	30 degrees
SAFETY FACTOR:	1.25	FINAL FAILURE ANGLE:	70 degrees
PILE FRICTION	0 degrees	INITIAL TENSION CRACK:	2 feet
CD (C/FS):	199.2 psf	FINAL TENSION CRACK:	50 feet

PHID = ATAN(TAN(PHI)/FS) = 18.8 degrees

HORIZONTAL PSEUDO STATIC SEISMIC COEFFICIENT (k_h) 0 %g

VERTICAL PSEUDO STATIC SEISMIC COEFFICIENT (k_v) 0 %g

CALCULATED RESULTS

CRITICAL FAILURE ANGLE	55 degrees
AREA OF TRIAL FAILURE WEDGE	308.6 square feet
TOTAL EXTERNAL SURCHARGE	0.0 pounds
WEIGHT OF TRIAL FAILURE WEDGE	38580.0 pounds
NUMBER OF TRIAL WEDGES ANALYZED	2009 trials
LENGTH OF FAILURE PLANE	31.4 feet
DEPTH OF TENSION CRACK	4.3 feet
HORIZONTAL DISTANCE TO UPSLOPE TENSION CRACK	18.0 feet
CALCULATED THRUST ON PILE	**20941.9 pounds**
CALCULATED EQUIVALENT FLUID PRESSURE	**46.5 pcf**
DESIGN EQUIVALENT FLUID PRESSURE	**47.0 pcf**

THE CALCULATION INDICATES THAT THE PROPOSED SHORING PILES MAY MAY BE DESIGNED FOR AN EQUIVALENT FLUID PRESSURE OF 47 POUNDS PER CUBIC FOOT. THE FLUID PRESSURE SHOULD BE MULTIPLIED BY THE PILE SPACING.

RETAINING WALL

JB: **19553-B** CONSULT: **JWB**
CLIENT: **DS VENTURES**

CALCULATION SHEET #

CALCULATE THE DESIGN MINIMUM EQUIVALENT FLUID PRESSURE (EFP) FOR PROPOSED RETAINING WALL SUPPORTING BEDROCK. ASSUME BACKFILL IS SATURATED AND THERE IS NO HYDROSTATIC PRESURE THE RETAINED HEIGHT AND BACKSLOPE AND SURCHARGE CONDITIONS ARE LISTED BELOW. USE THE MONONOBE-OKABE METHOD FOR SEISMIC FORCES.

CALCULATION PARAMETERS

EARTH MATERIAL:	BEDDING	WALL HEIGHT	20 feet
SHEAR DIAGRAM:	4	BACKSLOPE ANGLE:	26 degrees
COHESION:	255 psf	SURCHARGE:	0 pounds
PHI ANGLE:	17 degrees	SURCHARGE TYPE:	P Point
DENSITY	120 pcf	INITIAL FAILURE ANGLE:	10 degrees
SAFETY FACTOR:	1.5	FINAL FAILURE ANGLE:	15 degrees
WALL FRICTION	0 degrees	INITIAL TENSION CRACK:	2 feet
CD (C/FS):	170.0 psf	FINAL TENSION CRACK:	20 feet

PHID = ATAN(TAN(PHI)/FS) = 11.5 degrees

HORIZONTAL PSEUDO STATIC SEISMIC COEFFICIENT (k_h) 0 %g

VERTICAL PSEUDO STATIC SEISMIC COEFFICIENT (k_v) 0 %g

CALCULATED RESULTS

CRITICAL FAILURE ANGLE	15 degrees
AREA OF TRIAL FAILURE WEDGE	40.4 square feet
TOTAL EXTERNAL SURCHARGE	0.0 pounds
WEIGHT OF TRIAL FAILURE WEDGE	4852.7 pounds
NUMBER OF TRIAL WEDGES ANALYZED	114 trials
LENGTH OF FAILURE PLANE	2.1 feet
DEPTH OF TENSION CRACK	20.4 feet
HORIZONTAL DISTANCE TO UPSLOPE TENSION CRACK	2.0 feet
CALCULATED HORIZONTAL THRUST ON WALL	**-50.5 pounds**
CALCULATED EQUIVALENT FLUID PRESSURE	**-0.3 pcf**
DESIGN EQUIVALENT FLUID PRESSURE	**43.0 pcf**

THE CALCULATION INDICATES THAT THE PROPOSED RETAINING WALL WHICH WILL BE SURCHARGED BY BEDDING MAY BE DESIGNED FOR AN EQUIVALENT FLUID PRESSURE OF 43 POUNDS PER CUBIC FOOT.

THE J. BYER GROUP, INC.

A GEOTECHNICAL CONSULTING FIRM

RETAINING WALL

JB: **19553-B** CONSULT: **JWB**

CLIENT: **DS VENTURES**

CALCULATION SHEET # –

CALCULATE THE DESIGN MINIMUM EQUIVALENT FLUID PRESSURE (EFP) FOR PROPOSED RETAINING WALL SUPPORTING BEDROCK. ASSUME BACKFILL IS SATURATED AND THERE IS NO HYDROSTATIC PRESURE THE RETAINED HEIGHT AND BACKSLOPE AND SURCHARGE CONDITIONS ARE LISTED BELOW. USE THE MONONOBE-OKABE METHOD FOR SEISMIC FORCES.

CALCULATION PARAMETERS

EARTH MATERIAL:	BEDROCK	WALL HEIGHT	20 feet
SHEAR DIAGRAM:	3	BACKSLOPE ANGLE:	26 degrees
COHESION:	606 psf	SURCHARGE:	0 pounds
PHI ANGLE:	26 degrees	SURCHARGE TYPE:	P Point
DENSITY	120 pcf	INITIAL FAILURE ANGLE:	30 degrees
SAFETY FACTOR:	1.5	FINAL FAILURE ANGLE:	70 degrees
WALL FRICTION	0 degrees	INITIAL TENSION CRACK:	2 feet
CD (C/FS):	404.0 psf	FINAL TENSION CRACK:	50 feet

PHID = ATAN(TAN(PHI)/FS) = 18.0 degrees

HORIZONTAL PSEUDO STATIC SEISMIC COEFFICIENT (k_h) 0 %g

VERTICAL PSEUDO STATIC SEISMIC COEFFICIENT (k_v) 0 %g

CALCULATED RESULTS

CRITICAL FAILURE ANGLE	47 degrees
AREA OF TRIAL FAILURE WEDGE	265.3 square feet
TOTAL EXTERNAL SURCHARGE	0.0 pounds
WEIGHT OF TRIAL FAILURE WEDGE	31834.7 pounds
NUMBER OF TRIAL WEDGES ANALYZED	2009 trials
LENGTH OF FAILURE PLANE	26.4 feet
DEPTH OF TENSION CRACK	9.5 feet
HORIZONTAL DISTANCE TO UPSLOPE TENSION CRACK	18.0 feet
CALCULATED HORIZONTAL THRUST ON WALL	**6044.9 pounds**
CALCULATED EQUIVALENT FLUID PRESSURE	**30.2 pcf**
DESIGN EQUIVALENT FLUID PRESSURE	**43.0 pcf**

THE CALCULATION INDICATES THAT THE PROPOSED RETAINING WALL UP TO 20 FEET HIGH SUPPORTING BEDROCK MAY BE DESIGNED FOR AN EQUIVALENT FLUID PRESSURE OF 43 POUNDS PER CUBIC FOOT.