GEOHAZARD REPORT
EL RODEO K-8 SCHOOL
605 WHITTIER DRIVE
BEVERLY HILLS, LOS ANGELES COUNTY, CALIFORNIA

Prepared for:

BEVERLY HILLS UNIFIED SCHOOL DISTRICT
255 South Lasky Drive
Beverly Hills, California 90212-3697

Project No. 10274.006

March 2, 2015

Leighton Consulting, Inc.
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Monday, March 02, 2015

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Beverly Hills Unified School District
Facilities Planning Office
255 South Lasky Drive
Beverly Hills, California 90212-3697

Attention: Ms. Barbara Beach
Administrative Assistant II

Subject: **Geohazard Report**
El Rodeo K-8 School
605 Whittier Drive
Beverly Hills, Los Angeles County, California

In accordance with our May 6 and July 3, 2014 proposals, with augmented scope as documented in *Exhibit "C" Amendment to Agreement*, approved by the Board on July 8, 2014, Leighton Consulting, Inc. has completed this *Geohazard Report* for the existing El Rodeo K-8 School campus located in western Beverly Hills, California. This report is intended to meet requirements of Section 1803A.6 of the 2013 California Building Code (CBC) and the California Geological Survey's (CGS's) Note 48 regarding assessment of site-specific geologic hazards. Purposes of our exploration were to evaluate geologic/geotechnical conditions at and in the vicinity of this public school, and to provide preliminary geotechnical recommendations for potential seismic lateral-load-resistance-strengthening of existing school buildings. **No** new buildings are currently proposed.

A May 6, 2014 fault study was conducted by Geocon West Inc. (GWI) for property at 9900 Wilshire Boulevard in Beverly Hills, which is located just south of this campus. Based upon analyses including correlation of primary stratigraphy, buried soils and differences in groundwater levels, GWI concluded in their May 6, 2014 report that southwest to northeast trending Holocene stratigraphy is offset along inferred faults; and are therefore active faults in accordance with the California Geological Survey's (CGS's) definition of active faulting. In addition, published geologic reports (Dolan et al. 2000a) also identify escarpments possibly associated with the Santa Monica Fault system terminating just within campus boundaries and trending toward the El Rodeo K-8 School. This combination of data and conclusions by others is the reason for this currently authorized evaluation for presence or absence of active surface-rupture faults through this existing El Rodeo K-8 School campus. Most recent compilation of fault

studies for this El Rodeo K-8 school campus is presented in our February 27, 2015 *Fault Hazard Assessment, El Rodeo K-8 School* report.

We find this site is **not** within a currently designated Alquist-Priolo Special Studies Zone. Based on our review of published and available unpublished geologic reports for the site vicinity, review of aerial photos, interpolation of 16 continuous core borings and two fault trenches, it is our opinion that there is no evidence to suggest active faults underlie the El Rodeo K-8 School campus buildings. In addition, building setback from active faults is deemed unnecessary for any existing El Rodeo K-8 School campus building. Although shallow isolated seepage was encountered in our borings as shallow as 20 feet, free groundwater was encountered in only four of our borings at depths of 128 feet or deeper. This campus is also not within a currently designated liquefaction hazard zone and damaging liquefaction is not expected to impact these existing buildings. There are no significant slopes on this site, and, other than strong ground shaking, there are no other known site-specific geologic hazards.

We appreciate the opportunity to be of additional service to the District. If you have any questions or if we can be of further service, please contact us at your convenience at ***866-LEIGHTON***, directly at the phone extensions and/or e-mail addresses listed below.

Respectfully submitted,

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1.0 INTRODUCTION

1.1 Site Location and Description

As can be seen on Figure 1, *Site Location Map*, El Rodeo K-8 School is located in the northwestern corner of the intersection of Wilshire Boulevard and Whittier Drive (N34.0676° latitude, W-118.4158° longitude), within the United States Geological Survey (USGS) *Beverly Hills*, Los Angeles County, California 7.5 Minute Series Quadrangle. To the west and north of this school is the Los Angeles Country Club golf course and a buried 20- by 15-foot box-culvert storm drain aligned parallel to the west property line and City of Los Angeles/Beverly Hills city limits; as mapped on Plate 1, *Exploration Map* (in pocket). Also depicted on Plate 1 (in pocket), this site is extensively developed with multi-level and split-level school buildings, paved play yards, track and field facilities, parking and driveways, exterior stairs and retaining walls to accommodate terraced pads and landscaped areas with extensive fencing around and within the campus.

As can be seen on Figure 1, site topography slopes relatively uniformly down to the south-southeast on this alluvial fan. This school campus is on the eastern edge of low hills referred to as Beverly and Cheviot Hills. These hills are characterized as terrestrial fluvial and alluvial sediments, which are locally incised from drainages emanating from the Santa Monica Mountains to the north and west; and are elevated 10 to 20 feet above Benedict Canyon drainage to the east. Campus elevations range from a high of approximately 310 feet above mean sea level (msl) in the northwest corner to a low of 290 feet msl in the southeast. The artificially channelized Moreno Creek Drainage transects the eastern portion of this campus within a buried 5½- by 7-foot box culvert, which intercepts local drainage from storm drain catch basins on the campus flowing southerly under Wilshire Boulevard.

This school was originally known as El Rodeo de Las Aguas Elementary School, which was built in 1927. Reportedly, following the Long Beach Earthquake, initial earthquake renovations were made in 1934. With rising enrollment, a two story addition was completed in 1963, which included a gymnasium, a new shop and music rooms. In the latter 1960's, there were a series of additions including a three story structure and additional classrooms.

1.2 Proposed Improvements

We understand that **no** new buildings are currently proposed at this school. Reportedly, a braced frame was installed in or around 2000, to provide enhanced lateral load resistance for existing Building C (see Plate 1, in pocket). However, seismic lateral-load resistance improvements are once again proposed for the main reinforced-concrete classroom building(s) to further improve seismic lateral load resistance more consistent with 2013 California Building Code (CBC) requirements.

Based on our brief discussion with the project Structural Engineer, Mr. Leslie Tso, SE at Kanda & Tso Associates, we understand that proposed seismic improvements have not been designed, but could include stiffening and/or augmentation of existing shear walls, either with new steel braced frames, fiber-wrapped concrete and/or new conventionally-reinforced concrete shear walls (e.g. pneumatically-applied concrete augmenting existing shear walls). Exact location for these improvements within these buildings has not yet been determined. A location-specific final-design geotechnical exploration will be performed once location of existing building improvements and strengthening is known.

1.3 Purpose and Scope of Exploration

Purposes of our exploration were to: (1) evaluate geotechnical conditions in the vicinity of the school, (2) identify significant geotechnical or geologic issues that would impact existing school buildings, and (3) provide initial geotechnical recommendations for design and construction of conceptually-proposed seismic strengthening of existing buildings. In accordance with our May 6 and July 3, 2014 proposals, with augmented scope as documented in *Exhibit "C" Amendment to Agreement*, approved by the Board on July 8, 2014, scope of our exploration and *Geohazard Report* included the following:

- **Research**: We reviewed readily available published and unpublished geotechnical literature, reports and aerial photographs relevant to this site. This included review of our prior fault assessment report (Leighton 2012c) for this campus. Pertinent geotechnical documents and aerial photos are referenced at the end of this report text.

- **Subsurface Exploration**: Prior to beginning fieldwork, we prepared a health and safety plan in compliance with 29 CFR 1910.120, and cleared utilities at proposed subsurface exploration locations. To supplement our previous

borings CB-1 through CB-6 (Leighton, 2012c) we drilled, logged and sampled an additional ten continuous core borings (CB-7 through CB-16) to depths ranging from 75 feet to 195 feet, from June 17 through July 17, 2014. After sampling and logging, all borings were immediately backfilled with bentonite grout and patched to match existing conditions. Two fault trenches were also excavated, logged and backfilled, as depicted on Plate A-1, *Fault Trench Logs FT-1 and FT-2* (in pocket in Appendix A). Approximate boring and trench locations are depicted in **blue** and **orange** on Plate 1, *Exploration Map* (in pocket). A description of our field exploration, boring and trench logs are presented in Appendix A, *Field Explorations.*

- **Geotechnical Laboratory Testing**: Geotechnical laboratory tests were conducted on selected bulk soil samples obtained from our continuous core borings. This laboratory testing program was designed to evaluate geotechnical (physical) characteristics of site soil. A description of geotechnical laboratory test-procedures and results are presented in Appendix B, *Geotechnical Laboratory Testing*.

- **Analytical Laboratory Testing**: Soils generated during continuous core exploration were contained in drums and removed from the site. Analytical (chemical) testing conducted on composite samples from these drums, for proper disposal, are presented in Appendix C, *Analytical Laboratory Test Results*.

- **Engineering and Geologic Analysis**: Data obtained from field explorations and geotechnical laboratory testing was evaluated and analyzed to develop geotechnical conclusions and provide recommendations in accordance with the California Geological Survey (CGS) Note 48 (October 2013 version). Geologic cross sections prepared for this campus are presented on Plates 2 and 3, *Geotechnical Cross Sections AA' and BB'* (in pockets). Site-specific geotechnical analyses for seismicity and piles are presented in Appendix D, *Geotechnical Calculations*.

- **Report Preparation**: Results of our geologic hazards review and geotechnical exploration have been summarized in this report, presenting our findings, conclusions and preliminary geotechnical design recommendations for future seismic retrofit of existing school structures.

2.0 FINDINGS

2.1 Regional Geologic Setting

Regionally mapped on Figure 2, *Regional Geologic Map*, this school is located within the northwest portion of the Los Angeles Basin at a transition between

elevated and dissected old Pleistocene alluvial and fluvial fan deposits (Qoa) transitioning to younger Pleistocene to Holocene age alluvial sediments associated with Benedict Canyon Drainage to the east (Qa). This uplifted area, commonly referred to as Beverly Hills, was dissected by streams emerging from the Santa Monica Mountains to the north. Older alluvium is exposed near-surface, and underlain by interbedded Pleistocene-age marine and terrestrial fan deposits.

The Santa Monica Mountains are north of this area, as can be seen on Figure 3, *Regional Surface Fault Map*. Uplift of the Santa Monica Mountains is considered a result mainly from movement along the Santa Monica and Hollywood Fault Zones. These faults are two of a series of east-west trending, reverse, left-lateral oblique-slip structures along the southern Transverse Ranges Geomorphic Province that accommodate north-directed shortening between the Peninsular Ranges Geomorphic Province (including the Los Angeles Basin), against the Transverse Ranges and westerly escape to accommodate NW-vergent portion of tectonic strain (Dolan et al., 1997).

2.2 On Site Geologic Units

In addition to our borings, recent (2014) borings and Cone Penetrometer Test (CPT) soundings performed by others within Wilshire Boulevard are shown in **green** on Plate 1 (in pocket). Our core borings (CB-1 through CB-16, shown in **blue** on Plate 1, in pocket) generally exposed flat lying to gently dipping Holocene to Pleistocene age sediments. Most sediments range in grain size from basal channel gravels overlain by progressively fining upward sands, silt and clays. These were mainly laid down by now dissected distributary fans emanating from the Santa Monica Mountains to the north. Clast composition typically consisted of angular Santa Monica Slate (Jsm), siltstone and sandstone of the Monterey Formation (Tm), and occasional rounded basalt or granitic cobbles and pebbles. For subsurface interpretation and distribution of the following earth units, see *Geologic Cross Sections A-A' and B-B'*, Plates 2 and 3, respectively, in pocket. Encountered geologic units are presented from youngest to oldest as follows:

2.2.1 Artificial Fill, Undocumented (Afu): Up to 18 feet of undocumented fill was observed during our exploration onsite, the deepest in the eastern ends of Fault Trenches FT-1 and FT-2 (see Plate A-1, in pocket in Appendix A). We are unaware of any documentation regarding compaction of fill material associated with prior grading and construction of the campus or within Wilshire

Boulevard. Encountered fill consisted of locally derived sandy silt and silty sand, locally with clay and varying amounts of gravel and artificial debris. Abundant concrete rubble exceeding 24-inches in diameter, was observed in places within backfill of Moreno Creek drainage in Fault Trenches FT-1 and FT-2. Localized seepage along root traces was observed in backfill along the southern sidewall of Fault Trench FT-1 and near a storm drain inlet within Fault Trench FT-2. As depicted on Cross-Sections A-A' and B-B', this unit included the top sections not logged from the auger spoils and the hand-augured section at the top of CPTs (Geocon, 2014, see too Appendix A).

2.2.2 **Modern and Holocene Alluvium in Historical Moreno Creek (Qw)**: This unit consisted of very recent alluvial washes, apparently occurring since asphalt pavement was placed within the area; consisting of silty sand to clayey sand grading to sand at depth, with minor gravel and thin gravel beds; light yellowish brown, brown to dark reddish brown; massive to crudely stratified; with small fragments of asphalt observed locally in CB-3.

2.2.3 **Holocene Alluvium of Benedict Canyon Wash (Qal)**: This slightly older alluvium consisted of sandy clay to clayey sand grading laterally to silty sand to sand with silt; coarsening downward near the thalweg of the channel to sand with gravel, sandy gravel or gravelly sand; brown, dark yellowish brown, dark brown to reddish brown; locally laminated; gravel consist of fine- to coarse-grained sub-angular to sub-rounded fragments of siltstone and slate; with few to common manganese oxide and iron oxide stains; and few roots.

2.2.4 **Pleistocene Alluvium of Benedict Canyon Wash (BCW_1)**: Recent continuous core borings exposed a repeating fining upward sequence of terrestrially derived fluvial, alluvial fan and mudflow sediments emanating from the Santa Monica Mountains via Benedict Canyon Wash and its tributaries. This unit consists predominately of dark yellowish brown, brown, dark brown to reddish brown; mottled; locally gleyed, poorly to moderately sorted channel (fluvial) deposits occurring in fining upward sequences beginning at basal gravel or sand beds grading upwards to sandy clay, clayey sand, sand with clay, and silty sand with clay. This unit grades laterally to silty sand and sand with silt. Near the channel centerline, this deposit coarsens downward to gravelly sand to clayey sand with gravel. Material was slightly moist to moist; massive too thinly laminated with few to many scattered gravel that consisted of sub-angular to sub-rounded and tabular fragments of siltstone, slate and weathered basalt.

Paleosols cap these sequences suggesting these sediments had frequent depositional hiatuses allowing time for the stable ground surface to develop a pedogenic weathering profile. Observed finer-grained sections were both gleyed and oxidized, resulting in a "tiger banded" appearance due to oxidation and reduction reactions along individual thin stratigraphic units. Observed

material contained sporadic to heavy manganese oxide development along poorly to moderately well-developed blocky ped structure. Incision associated with low sea level stand of Marine Isotope 6 (MI6), approximately 150,000 years ago, is estimated to correlate with cessation of BCW_1 deposition (Kenney, 2014).

2.2.5 **Pleistocene Alluvium of Benedict Canyon Wash (BCW_2)**: Recent continuous core borings exposed a similar repetitive fining upward sequence of terrestrially derived fluvial, alluvial fan, and mudflow sediments derived from the Santa Monica Mountains to the north. This unit consisted predominately of dark grayish brown, reddish brown, very dark brown, and dark yellowish brown; locally mottled and/or gleyed; poorly to moderately sorted channel (fluvial) deposits characterized as sandy clay, clayey sand and silty clay grading laterally to silty sand to sand with silt. This unit contained lenses and interbeds of sandy gravel coarsening downwards to basal channel deposits of sand, gravelly sand and gravel. Observed weathering consisted of oxidation-reduction banding; iron oxide and manganese oxide stains common on rock clasts and along basal channel contact. Encountered gravel consisted of fine- to medium-grained sub-rounded to sub-angular fragments of siltstone, slate, basalt and quartz. BCW_2 is characterized by moderate to well-developed paleosols with many moderately thin to thick clay films on ped faces and moderate to strong angular blocky soil structure with a distinctive erosional contact with underlying Cheviot Hills deposits. Cessation of deposition of the BCW_2 deposits may have been associated with the end of a glacial maximum estimated to be around Marine Isotope Stage 10 to 11 (MI 10 to 11), approximately 400,000 to 350,000 years ago (Kenney, 2014).

2.2.6 **Pleistocene Cheviot Hills Deposits (CHD)**: This unit correlates to Leighton Consulting, Inc.'s "Quaternary Old Alluvial and Fluvial Deposits (Qoaf)" identified and characterized as part of the work performed on the Beverly Hills High School (BHHS) campus (Leighton, 2012a, 2012d) and with the "Older Surficial Sediments (Qoa)" of Hoots, 1931.

Encountered Cheviot Hills Deposits were reddish brown, brown, and grayish brown locally gleyed alluvial sediments characterized as poorly to well-sorted sandy clay, clayey sand and silty clay; with thin silty sand and gravel layers and beds. Where encountered, this unit was moist to wet along sand beds with manganese oxide stains, streaks and nodules and iron oxide stains on rock fragments. Weathering, profiles of light gray to dark orange brown coloring as a result of oxidation-reduction banding were observed. Gravel consisted of sub-rounded to sub-angular fragments of siltstone and slate. At depth, encountered CHDs included abundant calcium carbonate in the form of specks, filaments, horizontal layers, and coatings on ped faces; color changes to grayish brown, gray and blue green reminiscent of the Lomita Marl with iron oxide staining along layers and locally on ped faces. Unit has been modified

by soil-forming processes, with pedogenic characteristics, including clay films on ped faces and moderate to strong angular blocky soil structure, observed at several intervals, including directly at or below its contact with the overlying Benedict Canyon Wash deposits. Predominately a terrestrial deposit consisting of fluvial and alluvial sediments derived from the San Pedro Formation deposited over a long period of time, with depositional hiatuses that allowed for soil development. This unit was exposed at the surface for thousands of years before it was buried by the Pleistocene alluvium of Benedict Canyon Wash.

The upper portion of the Cheviot Hills Deposits (CHD) is recognized as an approximately 12- to 15-foot thick, fine-grained clayey sequence that is typically well oxidized and gleyed forming a "tiger-banded" appearance due to oxidation and reduction of individual layers, possibly indicating seasonal variations, i.e. water-logging and aeration of soils. This sequence marked the erosional boundary between overlying Benedict Canyon Wash sediments. Several buried soils observed in borings performed at BHHS (Leighton, 2012a) estimates a minimum age for the Cheviot Hills Deposits (CHSs) of about 530,000 to 1,300,000 years at the contact between the underlying San Pedro sequences which include Marine Isotope Stages 19 through 15 at a minimum.

2.2.7 Quaternary San Pedro Formation (Qsp): In continuous corings, we recognized the San Pedro Formation, as described by Parsons (2011b) and encountered during fault study at BHHS (Leighton 2012a, b and d) as "Upper San Pedro Formation: (Qsp_1)". At El Rodeo, the San Pedro Formation was encountered at 132.1 feet below grade in boring CB-6 (see Plate 1, in pocket). This formation is typically a massive, friable to loose, yellow, olive brown to reddish orange brown to light greenish-gray, fine to medium-grained sand with scattered gravel and few silty to clayey laminations. Where encountered, this formation was described as loose to hard; dry near upper contact, becoming moist to wet at depth. Sand fraction consisted of fine to coarse, well-rounded quartz grains with scattered bi-valve shell fragments. This is a transitional terrestrial to marine unit deposited in a wave-dominated (beach) environment. In short, this is an overconsolidated beach sand.

2.3 Groundwater

Perched Groundwater was encountered in several of the core borings (Appendix A). The groundwater conditions encountered in each boring (including previously performed core borings, CB-1 through CB-6) is summarized below:

Table 1. Encountered Depth to Groundwater

Boring	Perched Water Depth (feet)	Groundwater Depth (feet)
CB-1	20-21.8, 35-37.4, 81.8-82.5, 91.5-93, 124.4-125	NE
CB-2	36.3, 41.6-44.5, 54.5-56.4, 61.7-62.3, 70-73.9, 75-78, 80-82, 90-91,100-100.7	NE
CB-3	44-45, 45.8-49.3, 51.5-53, 55.8-58.1, 60-64.3, 66.3-66.9, 90.3-92.8, 103.8-104.3, 107.8-109.3, 111.3-112, 112.5-112.7	NE
CB-4	24.5-25.8, 40-40.6, 54.5-55.8, 70-73, 80-81.5, 101.2-105, 107.1-109.8, 120.9-121.4	NE
CB-5	94.2-95, 101.7-103.4, 110-111.3, 113-113.9, 125-125.4, 130-130.9, 137.9-185	137.9
CB-6	25-27.5, 35-35.7, 40-76.7, 88-88.9, 90.9-92.1, 92.6-98.1, 100-101.6, 105-111, 114-115.7, 120-123.7, 130-131.3, 132.1-157.7	132
CB-7	40-40.9, 41.8-43.7, 52-52.5, 100-100.2, 105-108.1, 110-110.8, 120-121.8, 135-139, 140-140.7, 145-145.1, 145.3-148.2	135
CB-8	38.5-39.4, 40-43.6, 47.2-48.8, 51.5-52, 55-57, 58.6-59, 60-61.1,81.4-81.6, 81.9-82.2, 94.5-95, 95.7-99.3,99.7-102.4, 110-110.7, 111.6-111.9, 115-124.1, 128.4	128.4
CB-9	34.7-37.8, 40-41.8, 53.9-54.6	NE in borings shallower than 95 feet
CB-10	35.4-36.5, 36.8-39.6, 43-46, 48.6-50, 55-56.2	
CB-11	34-34.5, 42-43.2, 43.8-49	
CB-12	32.7-33.4, 38.4-40.5, 41-43.7, 45-45.3, 60-60.5, 67.9-74.6	
CB-13	37-37.1, 68.4-72.8	
CB-14	35-39.7, 40-41.6, 43.2-43.5, 45-47.3, 52.2-52.4, 60-60.2, 64.4-64.5, 67.7-69.7	
CB-15	39.4-40.4, 45.5-48.8, 65.3-65.5, 70-70.2, 71.7-71.9, 75-82.3	
CB-16	35-38.2, 40-42.1, 50-50.5, 53.6-54.4, 62.8-65,, 69-69.5, 70-74.2, 76.5-77	

NE=groundwater table not encountered

3.0 SITE-SPECIFIC SURFACE FAULTING HAZARDS

3.1 Aerial Photograph Review

We obtained and interpreted several vintage aerial photographs of the site to look for landforms potentially indicative of faulting associated with the Santa Monica Fault. Most images came from the University of California at Los Angeles (UCLA) as well as from our in-house collection (see references for a listing of photographs). Particularly relevant photographs with **annotation** are provided in Appendix E, *Historical Aerial Photographs*. Features visible in these photos are described as follows:

- **Aerial Photo E-1 (1926)**: Available aerial photographs did not show obvious geomorphic expression of recent faulting. The north, northwest-trending, east facing erosional escarpment between the elevated Cheviot Hills and the Benedict Canyon Wash that defines the West Beverly Hills Lineament (WBHL) is identifiable as a meandering feature marked by erosion of Moreno

Creek and stands of trees in Figure E-1 (in Appendix E). The historical channel of Moreno Creek visible in the early photographs (see Appendix E), and the current location of the box culvert storm drain (see Plate 1, in pocket) that captures upstream water from Moreno Creek, is located to the east of the original channel alignment (Hoots, 1931). Specifically, we focused on geomorphic evidence of faulting where Dolan and others (2000a) have mapped the Santa Monica Fault. This buried, inactive fault, mapped by Dolan and others, along and oblique to Santa Monica Boulevard is not readily visible in the photographs.

- **Aerial Photo E-2 (1927)**: An inferred fault location is marked by a slight topographical rise and row of trees in Figure E-2 along the west property line with the City of Los Angeles limits and The Los Angeles Country Club. We did find evidence of offset marker beds that we interpreted to be a result of faulting generally associated with this lineament at depth in the core borings interpreted to occur between core borings CB-2 and CB-8 (see Plate 2, *Cross Section A-A'*), located in the southwest corner of this campus. A linear depression is evident across the Los Angeles Country Club west of the campus (Figures E-1 and E-2) as depicted in northern, oblique 1920's imagery.

- **Aerial Photo E-3 (1947)**: Postulated fault escarpments (Dolan *et al.*, 1997) are shown as a wide zone of suspect faulting (Figure E-3). However, we found no evidence of active faulting associated with this lineament during our study of the El Rodeo campus. Rather we interpret this linear depression as an erosional incision into the elevated fan surface, due to drainage courses associated with tributary drainages emanating from the Santa Monica Mountains and Benedict Canyon Wash. No active faults were observed in our fault trenches and no active faults have been interpreted from extensive review of recovered cores from the excavations (see Plates 2 and 3, *Geologic Cross Section AA' and BB'*, respectively, in pockets).

3.2 Nearby Surface Rupture Fault Zones

3.2.1 North-South Trending West Beverly Hills Lineament (WBHL): Dolan and Sieh (1992) described the West Beverly Hills Lineament (WBHL) as a north, northwest-trending lineament oriented west of, but parallel to the projected trend of the Newport Inglewood fault zone (NIFZ) suggesting that the lineament is the possible northern extension of the NIFZ (see Figure 3, *Regional Surface Fault Map*). This lineament is mainly comprised of continuous, east-facing erosional escarpments that separate the elevated alluvial terrain to the west (within the Cheviot and Beverly Hills) from the gently sloping younger alluvium within the Benedict Canyon drainage to the east. Earlier work at Beverly Hills High School has shown this slope to be erosional and the geologic contact

between these two units to be unconformable and not faulted (Leighton 2012a, 2012d).

3.2.2 **East-West Trending Santa Monica Fault**: The Santa Monica Fault consists of one or more strands is about 40 kilometers (km, 25 miles) in length and is one of a series of east-southeast trending reverse, left-lateral oblique-slip structures that extend more than 200 km (125 miles) across southern California and accommodate westward motion of the Transverse Ranges (Dolan *et al.*, 1997). It has been delineated locally at depths of several-thousand feet through exploratory oil well drilling and oil field development (Wills *et al.*, 2008). High resolution seismic reflection profiles across the Santa Monica Fault zone were acquired (Pratt, *et al.,* 1998) as part of an integrated hazard assessment of this fault, which showed a series of near vertical strike-slip faults beneath topographic scarps inferred to be caused by thrust faulting on the Santa Monica Fault. Pleistocene or Holocene movement had been postulated, but not directly proven along some upper plate secondary fault segments related to the Santa Monica Fault in this zone (Dolan *et al.*, 2000a). But recurrence interval and recency of movement along many fault segments are neither well documented nor understood, mainly because intense urbanization has modified or destroyed any surface traces of the fault (Hill *et al.*, 1979). The Santa Monica Fault zone at the presumed eastern terminus (at El Rodeo K-8 School) had been mapped (Dolan *et al.*, 2000a) to occupy a broad zone approximately 300 feet wide extending into the southern portion of the school campus (see Figure E-3, *Aerial Photo*), even though unconformities interpreted in the seismic profile (Pratt, *et al.,* 1998) were constrained to a relatively narrow zone of approximately 150 feet wide.

3.2.3 **2012 and 2014 Site-Specific Surface Fault Studies Synopsis**: Based on our 2012 and 2014 site-specific trenching and core logging, we interpreted four stratigraphic anomalies in older deposits as possible faults (see Plate 2, in pocket). However, we found no active (Holocene-age) faults. Rather, we demonstrably correlated sediments and soils, dated by relative methods, as being un-faulted and overlying postulated faults; and these deposits were found to be substantially older than 11,700 years. This is older than defining age for an active fault hazard in California. Soil development age estimation of the sedimentary packages within the cores, and from the trench exposures, support an age of at least 100,000 years for stratigraphy lying un-faulted over postulated fault traces. Accordingly, we conclude that no active faults have ruptured to the surface at the El Rodeo K-8 school campus for at least 100,000 years and possibly considerably farther back in time. Therefore, we conclude that surface rupture along active faults does not pose a direct surface-rupture hazard to the El Rodeo K-8 school campus structures. For a compilation of fault assessment data see our February 27, 2015 *Fault Hazard Assessment, El Rodeo K-8 School* report.

3.3 Surface Fault Rupture

Based on our review of available in-house literature and recently completed (2012 to 2014) continuous coring and fault trenching, there are no currently known active surface faults that traverse this site, and this site is **not** located within a currently designated Alquist-Priolo Earthquake Fault Zone (CGS, 2007). However, as very roughly mapped for this region on Figure 4, *Regional Surface Fault Map*, the West Beverly Hills Lineament (WBHL) is labeled as the Pleistocene age Newport-Inglewood Fault, but should not be construed to project through this site. As described previously in Sections 2.3 of this report, it is our opinion, based on a high degree of intensive fault investigation across Beverly Hills High School and this El Rodeo K-8 School campus, that there is no evidence of active surface faulting through the El Rodeo K-8 School campus.

Location of closest active faults to the site was generated using the United States Geological Survey (USGS) Earthquake Hazards Program (USGS, 2008a) and site decimal degree (latitude-longitude) coordinates N34.0676° and W-118.4158°. Closest faults to the site considered active are the Santa Monica-Hollywood Fault Zone and the Newport Inglewood Fault Zone (NIFZ) electronically modeled to be within (<) two miles from this site. The San Andreas Fault, which is the largest active fault in California, is approximately 37 miles northeast of the site. Local active faults are described below:

3.3.1 Santa Monica Fault Zone (SMFZ): Although not yet recognized by the State of California as a Special Studies Zone, the Santa Monica Fault is the closest known fault to the site, considered but not proven to be active, mapped as being located primarily along Santa Monica Boulevard. This fault zone trends east-west along the southern boundary of the Santa Monica Mountains for more than 40 km included as part of the Transverse Ranges Southern Boundary fault system which consists of east-west trending, left-lateral and oblique-reverse movements along several active faults. North-dip west-slip rate across the SMFZ is estimated to vary with location along en-echelon faults to be minimally on the order of 0.6 mm/year (Dolan et. al., 2000) and as high as 3.9 to 5.9mm/year (Davis and Namson, 1994). For this fault, a deterministic estimated maximum magnitude earthquake is generally modeled between Magnitude (M_o) 6.0 and 7.0 if the entire Santa Monica Fault ruptured at once.

3.3.2 Hollywood Fault: The Hollywood Fault begins near the Los Angeles River and eastern edge of the Santa Monica Mountains and extends westward for approximately 9½ miles before shifting its locus of active deformation to the area of the West Beverly Hills Lineament (WBHL), where faulting takes a left step to the Santa Monica Fault. The Hollywood Fault is capable of producing a

M_w 6.4 to 6.6 earthquake (Dolan et al., 1997). Investigators have estimated the lateral slip rate to be about 1.0 ±0.5mm/year, with a vertical slip rate to be 0.25 mm/year (Dolan et al., 1997). Conversely, a lower slip rate of 0.04-0.4 mm/year (Ziony and Yerkes, 1985) leads to a long return period.

Recent detailed geologic and geotechnical studies have provided cumulative physical evidence for Holocene displacements resulting in a Alquist-Priolo Special Study Zone being established for the Hollywood Fault (CGS, 2014). Exposures identified in prior explorations (Crook and Proctor, 1992), coupled with bulk-soil radiocarbon ages provide scant evidence for an early to mid-Holocene age for the most recent surface rupture approximately 6,000 years to 11,000 years ago; suggesting a long period of quiescence between surface rupturing on the Hollywood Fault (Dolan, 1997, 2000) (Ziony and Yerkes, 1985).

3.3.3 **Newport Inglewood Fault Zone (NIFZ)**: The Newport Inglewood Fault Zone (NIFZ) is an active northwest-trending, approximately 2- to 4-mile wide belt of anticlinal folds and faults disrupting early Holocene to Late Pleistocene-age and older deposits (Barrows, 1974). The NIFZ is characterized by trends related to right-lateral shearing at depth (Moody and Hill, 1956). The zone defines the boundary between the western basement complex of Catalina type schist and related rocks to the southwest, and the eastern basement complex of metasedimentary, metavolcanic and plutonic rocks to the northeast (Yerkes, et al., 1965). Right-lateral, strike-slip displacement of 3,000 to 5,000 feet has been measured in Lower Pliocene strata along the NIFZ (Dudley, 1954; Hill, 1954; Poland, et al., 1959). Apparent vertical offset across faults of the NIFZ ranges from 4,000 feet at the basement interface, to 1,000 feet in the Pliocene strata, and 200 feet at the Plio-Pleistocene boundary (Yerkes, et al., 1965). Movement along this structural zone is inferred to have been initiated during middle Miocene time (circa 15 million years ago), with seismic activity continuing to the present time. There is abundant seismic evidence that the zone is tectonically active; thus, the surrounding metropolitan area is subject to certain seismic risks. At least five earthquakes of magnitude 4.9 or larger have been associated with the NIFZ since 1920 (Barrows, 1974). Estimated maximum deterministic magnitude earthquake is generally modeled between Magnitude (M_o) 6.5 and 7.2.

3.3.4 **Las Cienegas Fault**: Seismic models developed for the downtown Los Angeles area, based on oil well data, indicate oil development in the 1960's took place largely along a monocline overlying the Las Cienegas structural shelf located in the subsurface between the deep, regionally continuous, northwest trending syncline of the central trough in the Los Angeles Basin and the northern shelf of the Los Angeles Basin. The northern shelf defines the north and northeastern margin of the central trough and comprises a series of active folds and blind surface cutting faults. This monocline is interpreted to be

surface expression of the buried Las Cienegas thrust fault system, which terminates westward against the Newport-Inglewood Fault system and north against the Santa Monica Mountains. Cores of late Quaternary sediments, collected on both sides of this fault, indicate a differential vertical uplift rate for the past 330 thousand-years (ky) as 0.09-0.13 mm/year (Ponti et al., 1996).

3.3.5 **San Vicente Fault**: This east striking San Vicente blind fault, included in the northern Los Angeles fault system, extends through the San Vicente and South Salt Lake oil fields, and has a long varied history as an early to late Miocene extensional, north-dipping normal fault. At approximately the beginning of Pliocene (5.3 to 2.5 million years ago), contraction of the Los Angeles Basin began, resulting in reactivation of Miocene normal faults in a reverse sense with the initiation of monoclinal and secondary compressive structures. The San Vicente Fault is believed to account for approximately 20 percent of the structural relief represented by the northern Los Angeles shelf. Deformation modeling (Schneider, *et al.,* 1996) based on the length and thickness of growth strata suggests the northern Los Angeles fault system is growing at a reverse slip rate of 1.5 to 1.9 mm/year.

3.3.6 **Salt Lake Anticline**: Early Pliocene uplift on the monoclinal high of the northern Los Angeles Shelf has produced a structural buttress impinging on the position of the east Beverly Hills fold. This structure, the South Salt Lake anticline, plunges and dies out to the west under the San Vicente thrust. The Salt Lake anticlinal structures are highly permeable and porous serving as a trapping mechanism for oilfield gas migration which consistently produces high volumes of oil field gas from the Salt Lake Oilfield.

4.0 SEISMIC SHAKING AND FLOODING HAZARDS

4.1 Historical Seismicity

Although southern California has been seismically active during the historic recorded past 200 years, written accounts of only the strongest shocks survive the early part of this historical period. Early descriptions of earthquakes were rarely specific enough to allow an association with any particular fault zone. It is also not possible to locate epicenters of earthquakes that have occurred prior to the twentieth century precisely. A search of historical earthquakes listed in the ANSS Comprehensive Earthquake Catalog (ComCat) was performed from the USGS website for the time period between 1900 and July 29, 2014.

Within that time frame, 168 earthquakes (>M_o 4) were found within a 100-kilometer (62-mile) radius of the site. As plotted on Figure 4, *Historical Seismicity*

Map, of these earthquakes, the closest was located 1.8 miles (2.8 km) east of the site and occurred on September 9, 2001. Although not precisely located, its epicenter (N34.0590° latitude, W-118.3870° longitude) is approximately located within the Benedict Canyon Wash Drainage at a focal depth of approximately 2.4 miles (4 km). This magnitude 4.2 Mw earthquake was located near the tectonic intersection of the Newport Inglewood Fault and Hollywood Fault. The focal mechanism suggests horizontal strike slip motion of a northwest striking plane suggesting this event may be associated with the north end of the Newport Inglewood Fault.

4.2 Modeled Seismicity (Ground Shaking)

Principal seismic hazard that could affect El Rodeo K-8 School is ground shaking resulting from an earthquake occurring along several major active or potentially active faults in southern California. Blind-thrust-faults also exist throughout the Los Angeles Basin. Therefore, a site specific response analysis was developed using the computer program *EZ-FRISK* by Risk Engineering (v. 7.62) and the 2008 CGS Statewide Fault Model. Site-specific probabilistic and deterministic response spectra were developed using the average of the median ground motions obtained from the following next generation attenuation relationships (NGA):

- Boore and Atkinson (2008),
- Campbell and Bozorgnia (2008), and
- Abrahamson-Silva (2008).

Our probabilistic seismic hazard analysis (PSHA) performed using these NGA relationships considered the maximum rotated component of ground motion. Deterministic seismic hazard analysis (DSHA) performed using the NGA relations incorporated the 84th percentile of the maximum rotated component of ground motion. Site-specific acceleration response spectra are attached in Appendix D, *Geotechnical Calculations* as Figure D-1. Site-specific MCE and site-specific design response spectra in tabulated numerical form are shown on Tables D-1 through D-4, also included in Appendix D.

4.3 Secondary Seismic Hazards

In general, secondary seismic hazards for sites in this region could include soil liquefaction, earthquake-induced settlement, lateral spreading, slope instability and landslides, earthquake-induced seiches and tsunamis flooding. These potential secondary seismic hazards are discussed in the subsections below.

4.3.1 Liquefaction Potential: Liquefaction is the loss of soil strength due to a buildup of excess pore-water pressure during strong and long-duration ground shaking. Liquefaction is associated primarily with loose (low density), saturated, relatively uniform fine- to medium-grained, clean cohesionless soils. As shaking action of an earthquake progresses, soil granules are rearranged and the soil densifies within a short period. This rapid densification of soil results in a buildup of pore-water pressure. When the pore-water pressure approaches the total overburden pressure, soil shear strength reduces abruptly and temporarily behaves similar to a fluid. For liquefaction to occur there must be:

(1) loose, clean granular soils,
(2) shallow groundwater, **and**
(3) strong, long-duration ground shaking.

The site is **not** located within an area defined by the State of California as a liquefaction susceptibility zone (CDMG, March 25, 1999); as overlain in **green** on Figure 5, *Seismic Hazard Zone Map*, and as shown on the CGS web page:

http://gmw.consrv.ca.gov/shmp/download/pdf/ozn_bevh.pdf

Based on results of our current and prior explorations, alluvium below the historic-high ground-water level is predominantly stiff to very stiff, silty clay, silt, and sandy clay with thin layers of very dense sand. Susceptibility of these materials to liquefaction is considered to be low. In addition, except for some thin perched zones, encountered groundwater was well below 50 feet from the surface.

4.3.2 Seismically Induced Settlement: During a strong seismic event, seismically induced settlement can occur within loose to moderately dense, unsaturated granular soils, separate from liquefaction. Settlement caused by ground shaking is often non-uniformly distributed, which can result in differential settlement. Based primarily on CPT results (Leighton, 2014), seismically induced differential settlements of up to 1 inch over a distance of 30 feet should be anticipated in the vicinity of the school.

4.3.3 Lateral Spreading: Lateral spreading is a phenomenon in which large blocks of intact, non-liquefied soil move downslope on a liquefied soil layer. Lateral spreading is often a regional event. For lateral spreading to occur, the liquefiable soil zone must be laterally continuous, unconstrained laterally and free to move along sloping ground. Benedict Canyon Wash has been in-filled to the current grade thereby constraining the site laterally. In addition, liquefaction at this site is unlikely. Therefore, potential for lateral spreading is considered very low at this site.

4.3.4 Seismically Induced Landslides: Significant slopes are **not** located at this campus. Based on the State of California Seismic Hazard Zones Map for the Beverly Hills Quadrangle (CDMG, 1999), as reproduced on Figure 5, this campus and vicinity are **not** located within an area that has been identified by the State of California as being potentially susceptible to seismically induced landslides (depicted in **blue** on Figure 5). Therefore, the potential for seismically induced landslides to affect the site is not a consideration for this campus.

4.3.5 Earthquake-Induced Seiches and Tsunamis: Seiches are large waves generated in enclosed bodies of water in response to ground shaking. Tsunamis are predominately ocean waves generated by undersea large magnitude fault displacement or major ground movement. Based on separation of this campus from large bodies of water, site elevation approximately 300 feet above mean sea level and the inland location of the site relative to the Pacific Ocean (see California Geological Survey, 2009), seiche and tsunami risks at the site are not a concern.

4.3.6 Earthquake-Induced Inundation: This inundation hazard is flooding caused by failure of dams or other water-retaining structures as a result of earthquakes. Due to the absence of such structures upslope/up-gradient and near this site, the potential for earthquake-induced flooding is considered to be low. Stone Canyon Reservoir is located northwest of this site in the Santa Monica Mountains. Note that if Stone Canyon Reservoir were to fail, it would flood UCLA and areas to the northwest, and not likely to impact this site. Franklin Canyon Dam is currently empty.

4.4 Storm-Induced Flood Hazard

As depicted on Figure 6, *Flood Hazard Zone Map*, El Rodeo K-8 School is **not** located within a "100-year" or "500-year" flood zone as defined by the Federal Emergency Management Agency's (FEMA) Flood Insurance Rate Map (FIRM).

5.0 CONCLUSIONS AND RECOMMENDATIONS

This site is **not** located within a currently designated Alquist-Priolo Special Studies Zone for surface fault rupture. However, as is the case for most of Southern California, strong ground shaking has and will occur at this site. This site is also **not** within a currently designated liquefaction hazard zone. Due to the depth to groundwater and density of the native soil, damaging liquefaction is unlikely to occur at this site.

Tested site clays had an Expansion Index (EI) of 23 or less, indicative of **very low** expansion potential. Samples from similar soil types taken from the near-by Beverly

Hills High School were found to be moderately expansive (EI≤70) and highly corrosive for ferrous metals.

Based upon our exploration and analysis, the proposed seismic retrofit shear walls can be founded on a system of deep foundations penetrating into older alluvium at least 5 feet below existing shallow foundations. Drilled cast-in-place concrete piles can be used to support new shear walls. Micropiles can also be considered to support new shear walls; see:

http://www.haywardbaker.com/WhatWeDo/Techniques/StructuralSupport/Micropiles/default.aspx

Detailed geotechnical recommendations for new shear wall foundations in existing buildings are presented in the following subsections.

5.1 Earthwork

Earthwork within existing buildings is expected to be limited to shear wall foundation backfill and possibly buried utility repair and rerouting. Project earthwork is expected to include complete demolition/removal of existing slabs-on-grade in new foundation areas and complete overexcavation and recompaction of any remaining unsuitable or disturbed soils below new improvement footprints as described in the following subsections:

5.1.1 Earthwork Observation and Testing: Leighton Consulting, Inc. should observe and test all earthwork, to check that the site is properly prepared, the selected fill materials are satisfactory, and that placement and compaction of fills has been performed in accordance with our recommendations and the project specifications. Sufficient notification to us prior to earthwork is essential. Project plans and specifications should incorporate recommendations contained in the text of this report.

Variations in site conditions are possible and may be encountered during construction. To confirm correlation between soil data obtained during our field and laboratory testing and actual subsurface conditions encountered during construction, and to observe conformance with approved plans and specifications, it is essential that we be retained to perform continuous or intermittent review during earthwork, excavation and foundation construction phases. Therefore, conclusions and recommendations presented in this report are contingent upon us performing construction observation services.

5.1.2 Subgrade Preparation: Resulting removal excavation bottom-surfaces should be observed by Leighton Consulting, Inc., prior to placement of any

backfill or new construction. After these over-excavations are completed, and prior to fill placement, exposed surfaces should be scarified to a minimum depth of 6 inches, moisture-conditioned to or slightly above optimum moisture content, and recompacted to a minimum 90 percent relative compaction as determined by ASTM D 1557 standard test method (modified Proctor compaction curve). Efforts should be made to locate any existing utility lines that conflict with new foundations. Those lines should be removed or rerouted where interfering with proposed new foundations. **It is essential that excavation not undermine existing building foundations to remain.**

5.1.3 Reuse of Concrete and Asphalt In Fill: Pulverized demolition concrete free of rebar and other materials and demolished asphalt pavement can be pulverized to particles no-larger-than (≤) 3-inches, and mixed with site soils for use in compacted fill. Blended pulverized concrete and asphalt should be mixed with at least 25% soils by weight. Such materials must be free of and segregated from any hazardous materials and/or organic material of any kind.

5.1.4 Fill Placement and Compaction: Onsite soils free of organics, debris and oversized material (greater-than 3-inches in largest dimension) are suitable for use as compacted structural fill. However, any soil to be placed as fill, whether onsite or imported material, should be first viewed by Leighton Consulting, Inc., and then tested if and as necessary, prior to approval for use as compacted fill. All structural fill must be free of hazardous materials.

All fill soil should be placed in thin, loose lifts, moisture-conditioned, as necessary, to within 3 percent above optimum moisture content, and compacted to a minimum 90% relative compaction as determined by ASTM D 1557 standard test method (modified Proctor compaction curve) within building footprints. Aggregate base for pavement sections should be compacted to a minimum of 95% relative compaction.

5.1.5 Pipeline Backfilling: Pipeline trenches should be backfilled with compacted fill in accordance with this report, and applicable *Standard Specifications For Public Works Construction* (Greenbook), 2012 Edition standards. Backfill in and above the pipe zone should be as follows:

- **Pipe Zone**: Pipe bedding zone should be backfilled with Controlled Low Strength Material (CLSM) consisting of at least one sack of Portland cement per cubic-yard of sand, conforming to Section 201-6 of the 2012 Edition of the *Standard Specifications For Public Works Construction* (Greenbook). Due to expansive clays, sand bedding for conduits should not be allowed on this site. CLSM bedding should be placed to 1-foot (0.3 m) over the top of the conduit, and vibrated. CLSM should **not** be jetted.

- **Over Pipe Zone**: Above the pipe zone, trenches can be backfilled with excavated on-site soils free of debris, organic and oversized material greater-than (>) 3-inches in largest dimension. As an option, the whole trench can be backfilled with one-sack CLSM same as presented above for the pipe bedding zone. Oversized rock (cobbles and/or boulders) should either be removed from any backfill, or pulverized for use in backfill only above the pipe zone. Gravel larger than ¾-inch in diameter should be mixed with at least 80-percent soil by weight passing the No. 4 sieve. Native soil backfill over the pipe-bedding zone should be placed in thin lifts, moisture conditioned, as necessary, and mechanically compacted using a minimum standard of 90% relative compaction (relative to the laboratory modified Proctor maximum **dry** density), relative to the ASTM D 1557 laboratory maximum dry density within building footprints, or 85% under hardscape areas. Backfill above the pipe zone should **not** be jetted. In any case, backfill above the pipe zone (bedding) should be observed and tested by Leighton Consulting, Inc..

5.2 Seismic Design Parameters

To accommodate effects of ground shaking produced by regional seismic events, seismic design can, at the discretion of the designing Structural Engineer, be performed in accordance with the 2013 Edition of the California Building Code (CBC). Table 2, *2013 CBC Seismic Parameters* (next page), lists seismic design parameters based on the 2013 CBC methodology and ASCE 41-13 methodology, using the USGS 2008 design maps:

Table 2. 2013 CBC and ASCE 41-13 Site Specific Seismic Parameters

2013 CBC Seismic Design Parameters	2013 CBC	ASCE 41-13 Retrofit Standard			
		BSE-1E	BSE-2E	BSE-1N	BSE-2N
Site Longitude (decimal degrees) West	-118.4158				
Site Latitude (decimal degrees) North	34.0676				
Site Class Definition (Table 1613.5.2)	D				
Mapped Spectral Response Acceleration at 0.2s Period, S_s (Figure 1613.5(3))	2.276g	0.803	1.658	2.276	
Mapped Spectral Response Acceleration at 1s Period, S_1 (Figure 1613.5(4))	0.835	0.288	0.589	0.835	
Short Period Site Coefficient at 0.2s Period, F_a (Table 1613.5.3(1))	1.0	1.179	1.0	1.0	
Long Period Site Coefficient at 1s Period, F_v (Table 1613.5.3(2))	1.5	1.824	1.5	1.5	
Adjusted Spectral Response Acceleration at 0.2s Period, S_{MS} (Eq. 16-36)	2.276	0.946	1.658	2.276	
Adjusted Spectral Response Acceleration at 1s Period, S_{M1} (Eq. 16-37)	1.252	0.526	0.884	1.252	
Design Spectral Response Acceleration at 0.2s Period, S_{DS} (Eq. 16-38)	1.517	0.946	1.658	1.517	2.276
Design Spectral Response Acceleration at 1s Period, S_{D1} (Eq. 16-39)	0.835	0.526	0.884	0.835	1.252

*All were derived from the USGS web page: http://earthquake.usgs.gov/designmaps/us/application.php
(2008 seismic hazard maps); all coefficients in units of g (spectral acceleration).

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A site specific ground motion analysis was also performed. Details of the site specific evaluation are provided in Appendix D.

5.3 Drilled Cast-In-Place Concrete Piles (New Shear Walls)

New shear walls can be supported solely on drilled, cast-in-place concrete friction piles, as space permits and at the discretion of the project Structural Engineer (SE) based on uplift load demands and other structural considerations. Piles should be designed as specified in Section 1810A.3.9 of the 2013 California Building Code (CBC). Specific pile design recommendations are presented below.

5.3.1 Pile Vertical Load Capacity: Piles must derive support solely from the underlying native alluvium below any undocumented fill. Recommended allowable vertical downward pile capacities are presented on Figure 7, *Pile Downward Capacities*, as a function of penetration into undisturbed native alluvium below undocumented fill soils. Fill depth at proposed pile locations (on the order of 5 feet) should be added to desired pile penetration into native sands from above, to determine total design length of piles. This, ultimately, must be verified at the time of pile drilling, during construction, by geotechnical observation during pile installation. These are "net" capacities. Therefore, weight of the below-grade portion of piles need not be added to the anticipated vertical loads for structural design. Plotted pile capacities shown are for friction only, **without** end bearing, and these values include a factor-of-safety (FS) of 2.0. Plotted allowable downward capacities are for total dead loads and frequently applied live loads, and can be increased by one-third for short duration wind and seismic loads. Uplift for dynamic loads only, **not** sustained static loads, can be assumed to be half of downward capacities plotted on Figure 7.

These capacities are for undisturbed native alluvium capacities, and do not consider the pile as a reinforced-concrete structural element. Pile reinforcement should be designed by the project Structural Engineer. Relatively low skin friction values have been provided considering reductions in pile capacities due to anticipated undocumented fill downdrag. Capacities can be increased based on results of pile load tests. These values are for isolated single piles. Otherwise, a group action reduction in capacity will be required for piles spaced closer than three diameters on center. For closely spaced piles, vertical capacities should be reduced as follows:

Table 3. Reduction In Closely-Spaced Pile Vertical Capacities

Horizontal Pile Spacing Center-To-Center (pile diameters)	Reduced Static Vertical Capacity (percent)*	
	2 piles in a row	3 piles in a row
2½	90	80
2	80	70
1½	70	60

*Percent of capacity for pile spaced three or more diameters on center

Piles should not be spaced closer than 1½ diameters on center.

5.3.2 Pile Lateral Load Capacity: We do **not** expect sustained (static) lateral loads on piles. Short duration lateral wind and seismic loads exerted on new shear walls supported on piles and grade beams may be resisted by passive pressures against both the piles and grade beams. A passive equivalent fluid pressure of 240 pounds-per-square-foot per foot of embedment (pcf) acting against grade beams or pile caps can be used, not to exceed total passive pressure of 2,000 pounds-per-square-foot (psf). A passive resistance based on an equivalent fluid pressure of 480 pcf, acting against the projected area of an individual pile below lowest adjacent grade, can also be used for design, assuming ½-inch lateral deflection of a free pile head. This maximum passive pressure on piles, however, should not exceed 4,000 psf.

For design of pile lateral load resistance during short duration wind and/or seismic loads, laterally loaded pile design capacities are tabulated below:

Table 4. Drilled Cast-In-Place Pile Preliminary Lateral Capacities

Lateral Load Parameter As A Function Of Pile Diameter (inches)	18-inch		24-Inch		30-Inch	
	Free	Fixed	Free	Fixed	Free	Fixed
Maximum Lateral Load for ¼-Inch Deflection At Head (kips)	7	16	12	26	19	40
Maximum Moment (kip-feet)	26	-50	51	-89	93	-151
Depth To Maximum Moment (feet)	5	-0-	6½	-0-	7	-0-
Depth To First Zero Moment (feet)	16	3½	19½	3½	23	4

These capacities are for a ¼-inch dynamic (elastic) deflection at the top of 18-, 24- and 30-inch diameter drilled cast-in-place concrete piles, with a 28-day concrete compressive strength of 3,000 pounds-per-square-inch (psi). Both free head (no moment at head) and fixed head (translation without rotation at the head) lateral capacities are provided. For this analysis, a 40-foot-long pile

was modeled with level ground around the pile in the direction of loading, for at least 40 feet. No factor of safety has been applied to these capacities. Individual pile lateral load/deflection criteria can also be developed upon request, based upon the pile stiffness (EI) and sustained vertical load. Lateral capacities should be reduced for pile groups when the lateral (horizontal) load vector is in the direction of aligned piles as follows:

Table 5. Reduction In Closely-Spaced Pile Lateral Capacities

Horizontal Pile Spacing Center-To-Center (pile diameters)	Reduced Pile Capacity In Direction of Lateral Load (percent)*
7	94
6	88
5	82
4	75
3	70
2	65
1½	60

*Percent of capacity for pile spaced eight or more diameters on center aligned parallel to the lateral (horizontal) load vector

Lateral load capacity of piles need **not** be reduced for load vectors in a direction perpendicular to a row of piles.

5.3.3 **Pile Settlement:** Settlement of drilled cast-in-place concrete piles includes elastic shortening of the pile, as well as settlement of surrounding soil induced by mobilization skin-fiction resistance. For design loads presented above, individual pile settlement is anticipated to be on the order of ¼-inch or less (in areas of 10 feet of undocumented fill or less where raising grade is **not** proposed), and will most likely be negligible. These settlement estimates are based on the assumption that finish grades will be approximately the same as existing grades. In the unlikely event that finish grades are raised substantially (>5 feet) where piles are installed, then underlying compressible undocumented fill soils could settle more relative to these piles, resulting in additional downdrag. Piles may experience additional settlement to mobilize adequate resistance to accommodate any downdrag.

Total post construction settlement for the recommended pile foundations should not exceed ¼-inch, and post construction differential settlement between columns spaced no more than 50 feet on center (founded solely on piles) should be less-than (<) ¼-inch due to static loads.

5.4 Concrete Slab-On-Grade

New replacement concrete slabs-on-grade should be designed by the structural engineer in accordance with 2013 CBC requirements for soils with a moderate expansion potential. More stringent requirements may be required by the structural engineer and/or architect; however, slabs-on-grade should have the following minimum recommended components:

- **Subgrade:** On-site soils are sometimes expansive and will shrink and swell with changes in the moisture content. Therefore, floor slabs-on-grade and adjacent concrete flatwork should be underlain by at least 18-inches of relatively non-expansive soil (EI<30). Slab-on-grade subgrade soil should be moisture conditioned to or within 3% of optimum moisture content, to a minimum depth of 18-inches within building footprints, and compacted to 90% of the modified proctor (ASTM D 1557) laboratory maximum density prior to placing either a moisture barrier, steel and/or concrete.

- **Moisture Barrier:** A moisture barrier consisting of at least 15-mil-thick Stego-wrap vapor barriers (see: http://www.stegoindustries.com/products/stego_wrap_vapor_barrier.php), or equivalent, should then be placed below slabs where moisture-sensitive floor coverings or equipment will be placed.

- **Reinforced Concrete**: A conventionally reinforced concrete slab-on-grade with a thickness of at least 5-inches should be placed in pedestrian areas without heavy loads. This thickness can be reduced to 4-inches in areas where solely one-sack (or more) CLSM backfill is used. Reinforcing steel should be designed by the structural engineer, except when placed on potentially expansive site clays, where we recommend as a minimum that No. 3 rebar be placed at 18-inches on-center, each direction (perpendicularly), mid-depth in the slab. We defer to the project Structural Engineer to design/choose reinforcing for slabs-on-grade overlying solely CLSM backfill. A modulus of subgrade reaction (k) as a linear spring constant, of 75 pounds-per-square-inch per inch deflection (pci) can be used for design of heavily loaded slabs-on-grade, assuming a linear response up to deflections on the order of ¾-inch.

Minor cracking of concrete after curing due to expansion, drying and shrinkage is normal and should be expected. However, cracking is often aggravated by a high water-to-cement ratio, high concrete temperature at the time of placement, small nominal aggregate size, and rapid moisture loss due to hot, dry, and/or windy weather conditions during placement and curing. Cracking due to temperature and moisture fluctuations can also be expected. The use of low-slump concrete or low water/cement ratios can reduce the potential for shrinkage cracking.

6.0 CONSTRUCTION CONSIDERATIONS

6.1 Wet Clays

Site clays likely are already predominantly over optimum moisture content; and therefore, will be more difficult to compact compared to sands. Disking, blending, cement and/or lime treatment may be considered by the earthwork contractor to facilitate compaction. However, additional sulfate testing will be required prior to treating/mixing soils with lime, to avoid an adverse sulfate heave reaction. Lime and/or cement treatment also require specialized equipment to blend plastic clay thoroughly with cement or lime, to be effective. Choice of means and methods to mitigate wet clay compaction difficulty will be at the discretion of the contractor based on weather at the time of earthwork, available materials and equipment, among other considerations specific to the contractor. However any proposed cement and/or lime treatment must be reviewed and approved by Leighton Consulting, Inc. and the District prior to implementation.

6.2 Excavations

Based on our field observations, caving of cohesionless strata and loose fill soil will likely be encountered in unshored excavations. To protect workers entering excavations, excavations should be performed in accordance with OSHA and Cal-OSHA requirements, and the current edition of the California Construction Safety Orders, see:

http://www.dir.ca.gov/title8/sb4a6.html

Contractors should be advised that fill soil should be considered Type C soil as defined in the California Construction Safety Orders. As indicated in Table B-1 of Article 6, Section 1541.1, Appendix B, of the California Construction Safety Orders, excavations less-than (<) 20 feet deep within Type C soil should be sloped back no steeper than 1½:1 (horizontal:vertical), where workers are to enter the excavation. This may be impractical near adjacent existing utilities and structures; so shoring may be required depending on trench locations. Stiff undisturbed native clay will stand steeper. Loose, non-cohesive sandy gravel channels below the site should be expected to ravel and cave in unshored excavations.

During construction, soil conditions should be regularly evaluated to verify that conditions are as anticipated. The contractor is responsible for providing the "competent person" required by OSHA standards to evaluate soil conditions.

Close coordination between the competent person and Leighton Consulting, Inc. should be maintained to facilitate construction while providing safe excavations.

Excavations must not undermine existing foundations for existing buildings to remain. Excavations must not encroach within a 1:1 (horizontal:vertical) wedge extending down and out from existing shallow footings to remain. Shoring or underpinning of existing building foundations will likely be required if excavations will undermine adjacent existing structures.

6.3 Cast-In-Place Concrete Piles Construction

Bottoms of drilled cast-in-place pile excavations should be reasonably free of loose soil before reinforcing steel is installed and concrete is placed. We recommend that Leighton Consulting, Inc. observe pile drilling, in accordance with Section 1705A.8 of the 2013 California Building Code, to establish that piles are founded in suitable undisturbed native materials and constructed in accordance with the recommendations presented in this report. Cast-in-place piles should be constructed in accordance with Section 205-3.3.2 of the 2012 *Standard Specifications for Public Works Construction* (Green Book).

Due to the loose nature of fill and cohesionless alluvium, casing of each shaft may be necessary. If water cannot be removed from excavations prior to concrete placement, then concrete will need to be placed by tremie pipe or concrete pump hose. The concrete should be tremied or pumped to the bottom of the hole keeping the tremie or pipe below the surface of the concrete to avoid entrapment of water in placed concrete. As concrete is poured, water is displaced out of the hole. Some difficult drilling through the fill soils may be experienced due to rubble in the fill. The drilling contractor should be equipped to penetrate through this rubble, if encountered.

We understand that closely spaced piles may be required for this congested site. Care should be taken to avoid "blow-outs" into open drilled shafts when placing fresh concrete in adjacent closely spaced drilled shafts. Fluid pressure of uncured concrete under on-the-order-of (≈) 40-feet of head can deform or displace soils into an adjacent closely spaced shaft, particularly in rubble fill with voids. For new piles placed closer-than (<) 2½ diameters on center, construction sequencing should require curing concrete in one shaft before drilling the adjacent closely spaced shaft. Or, multiple (two or more) temporary steel casings can be used to stabilize multiple (two or more) adjacent closely-spaced

shafts simultaneously. Other options can be considered as the means-and-methods of the foundation contractor.

6.4 Geotechnical Services During Construction

Our geotechnical recommendations are contingent upon Leighton Consulting, Inc., providing geotechnical observation and testing services during earthwork and foundation construction. There is a potential for encountering deeper undocumented fill or otherwise unacceptable existing soil between or beyond our boring locations. We are unaware of any existing fill placement documentation for these building sites. Therefore, inconsistent existing fill materials and consistencies may be encountered during construction, possibly requiring revised geotechnical recommendations.

Our geotechnical recommendations provided in this report are based on information available at the time the report was prepared and may change as plans are developed. Additional geotechnical exploration, testing and/or analysis may be required based on final plans. Leighton Consulting, Inc. should review site grading, foundation and shoring (if any) plans when available, to comment further on geotechnical aspects of this project and check to see general conformance of final project plans to recommendations presented in this report.

Leighton Consulting, Inc. should be retained to provide geotechnical observation and testing during excavation and all phases of earthwork. Our conclusions and recommendations should be reviewed and verified by us during construction and revised accordingly if geotechnical conditions encountered vary from our findings and interpretations. Geotechnical observation and testing should be provided:

- During all excavation,
- During compaction of all fill materials,
- During pile installation,
- During utility trench backfilling and compaction,
- During pavement subgrade and base preparation, and/or
- If and when any unusual geotechnical conditions are encountered.

7.0 LIMITATIONS

Although some analytical testing of a site soil sample was performed as documented in Appendix C, this report does not address the potential for encountering hazardous materials in site soils nor groundwater.

This report was necessarily based in part upon data obtained from a limited number of observances, site visits, soil samples, tests, analyses, histories of occurrences, spaced subsurface explorations and limited information on historical events and observations. Such information is necessarily incomplete. The nature of many sites is such that differing characteristics can be experienced within small distances and under various climatic conditions. Changes in subsurface conditions can and do occur over time. This exploration was performed with the understanding that this subject site is proposed for development as described in Section 1.2 of this report. Important information about limitations of geotechnical reports in general is presented in Appendix F, ASFE's *Important Information About Your Geotechnical Report*.

Until reviewed and accepted by the California Geological Survey (CGS), this report may be subject to change. Changes may be required as part of the CGS review process. Leighton Consulting, Inc. assumes **no** risk or liability for consequential damages that may arise due to design work progressing before this report is reviewed and accepted by CGS.

This report was prepared for the Beverly Hills Unified School District based on their needs, directions and requirements at the time of our exploration, in accordance with generally accepted geotechnical engineering practices at this time in California for public schools. This report is not authorized for use by, and is not to be relied upon by, any party except the District and their design and construction management team, with whom Leighton Consulting, Inc. has contracted for this work. Use of or reliance on this report by any other party is at that party's risk. Unauthorized use of or reliance on this report constitutes an agreement to defend and indemnify Leighton Consulting, Inc. from and against any liability which may arise as a result of such use or reliance, regardless of any fault, negligence, and/or strict liability of Leighton Consulting, Inc.

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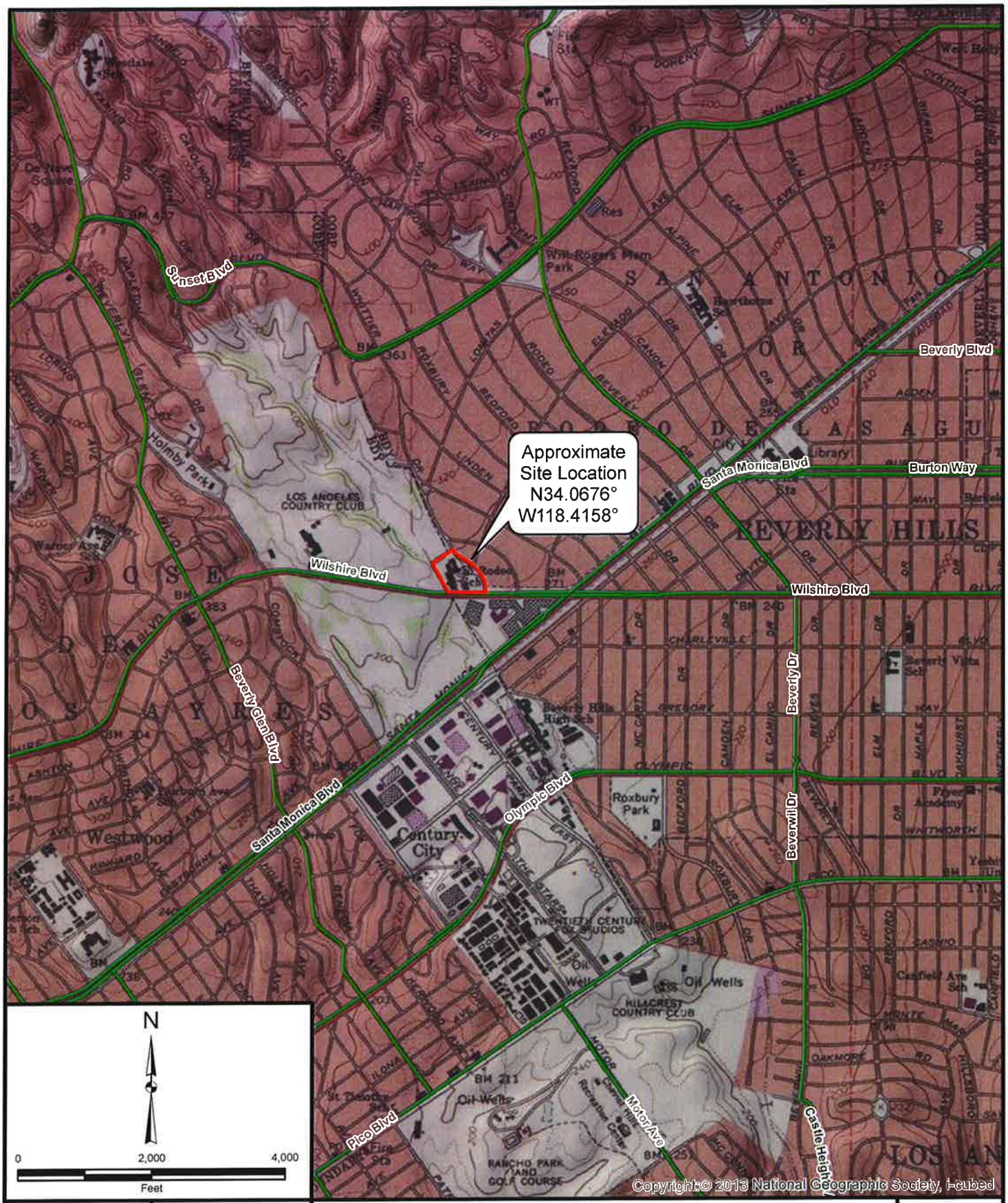

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Scale: 1 " = 2,000 '	Date: ~~November 2014~~ February 2014
Base Map: ESRI Resources Center, 2014	
Author: (btran)	

SITE LOCATION MAP

El Rodeo K-8
605 Whittier Boulevard
Beverly Hills, California

Figure 1

Leighton

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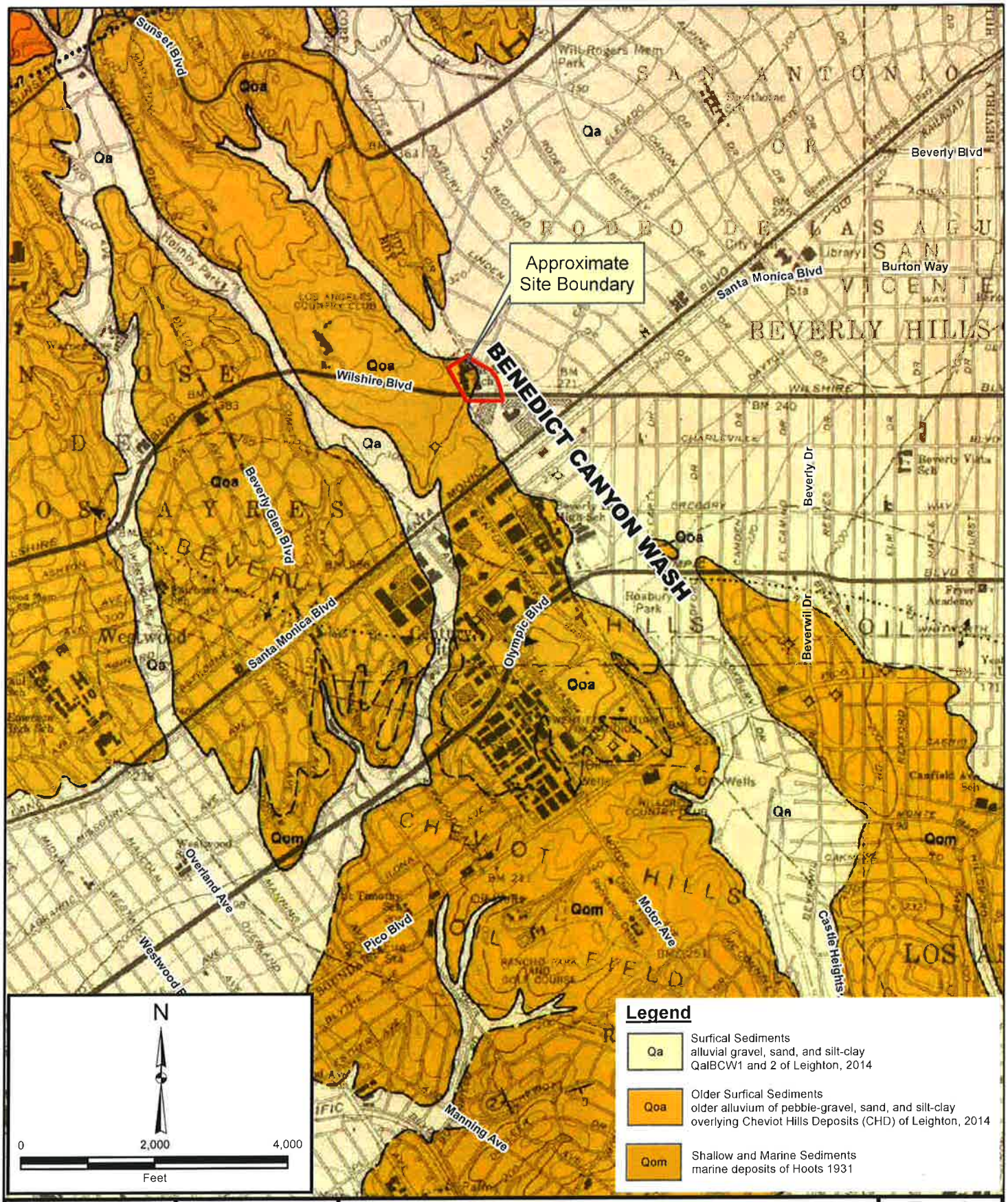

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Scale: 1 " = 2,000 '	Date: November 2014

Geology: Geologic Map of the Beverly Hills And Van Nuys (South 1/2) Quadrangles, Los Angeles County, California by Thomas W. Dibblee, Jr., 1991.

REGIONAL GEOLOGIC MAP

El Rodeo K8
605 Whittier Drive
Beverly Hills, California

Figure 2

Leighton

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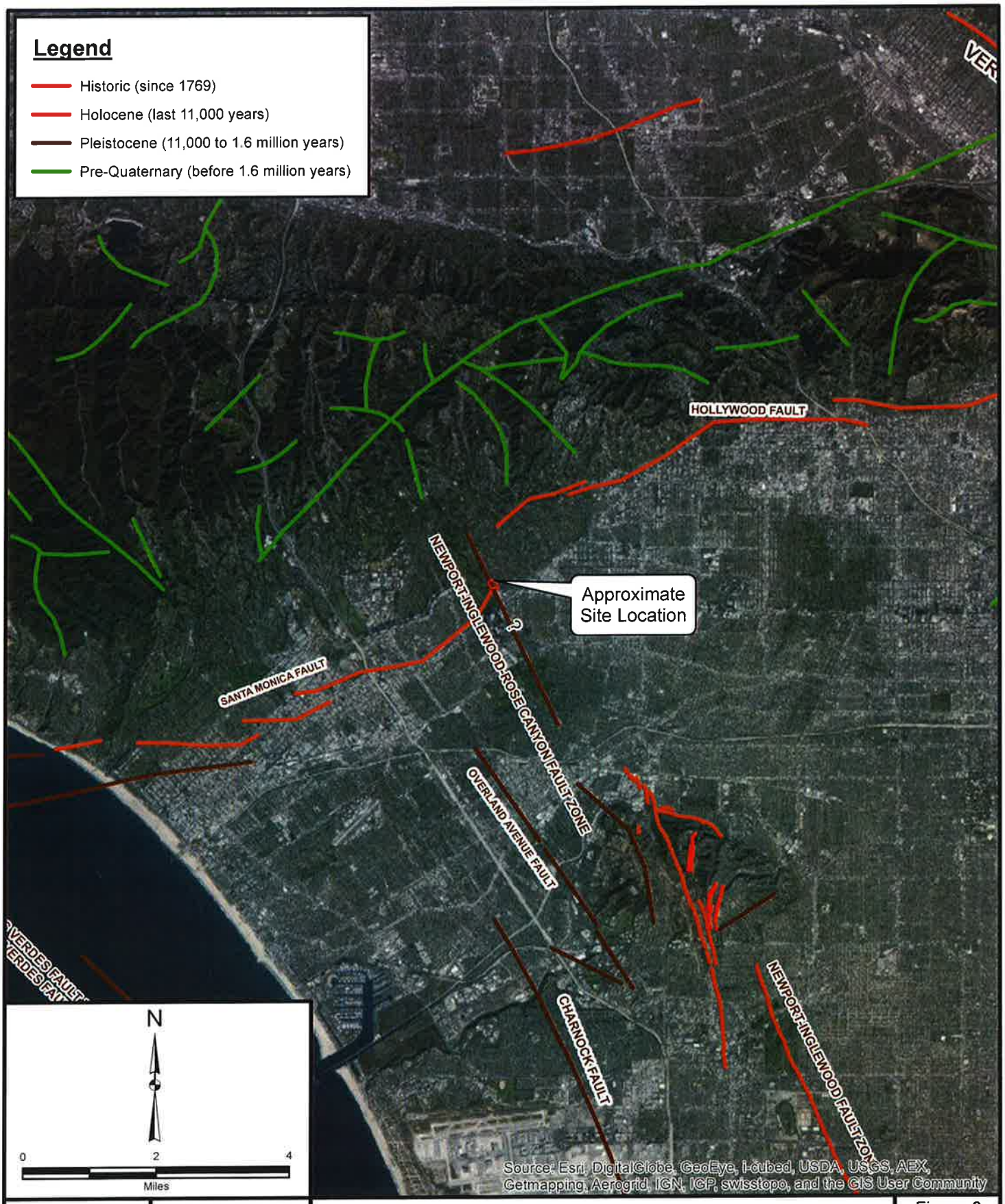

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Scale: 1 " = 2 miles	Date: November 2014

Base Map:ESRI Resources Center, 2014
Faults: CGS 2010

Author: (btran)

REGIONAL SURFACE FAULT MAP

El Rodeo K-8
605 Whittier Boulevard
Beverly Hills, California

Figure 3

Leighton

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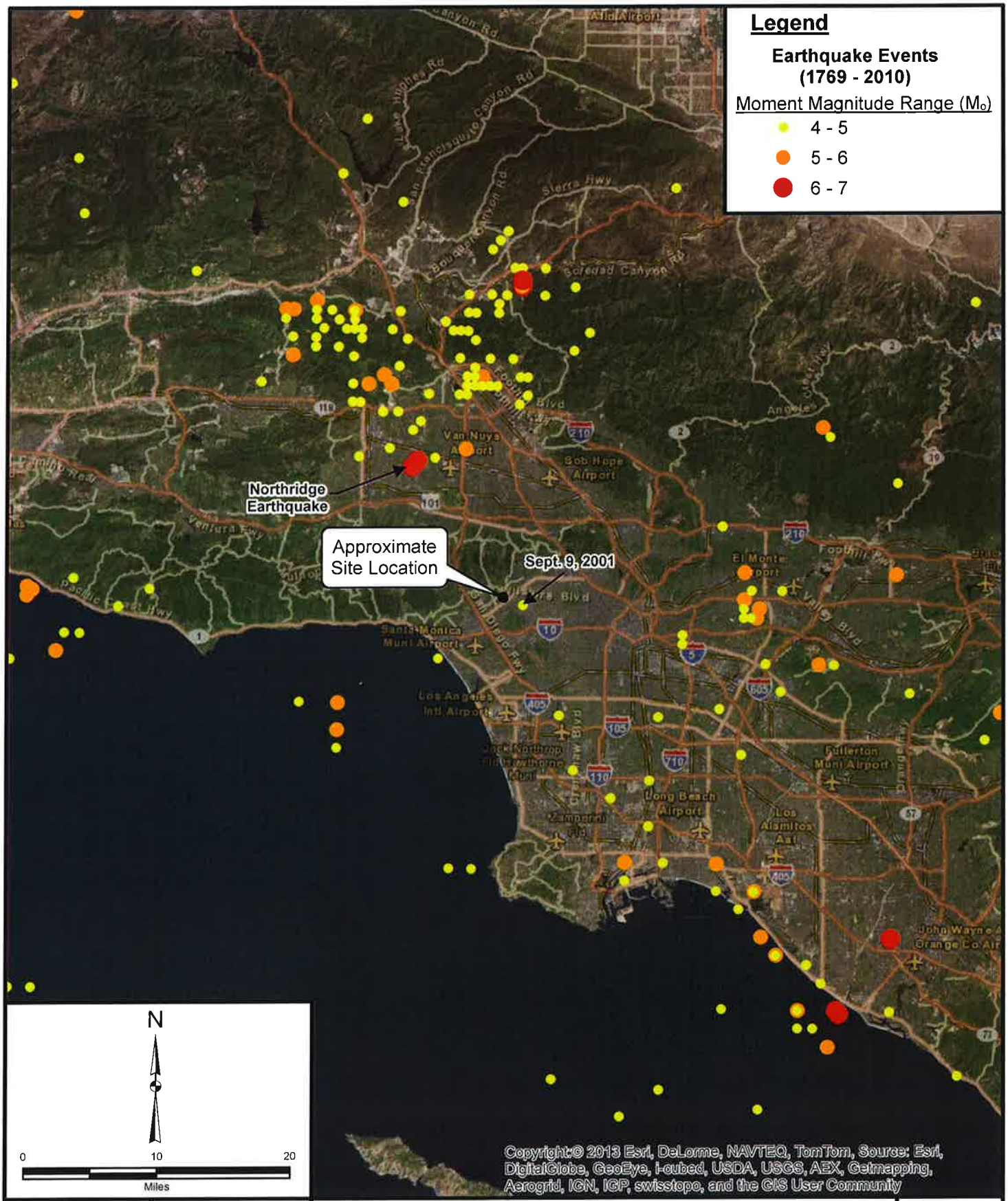

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Scale: 1 " = 10 miles	Date: February 2014

Base Map: ESRI ArcGIS Online 2014
Thematic Information: Leighton, USGS, NCEDC

Author: Leighton Geomatics (btran)

HISTORICAL SEISMICITY MAP

El Rodeo K-8
605 Whittier Boulevard
Beverly Hills, California

Figure 4

Leighton

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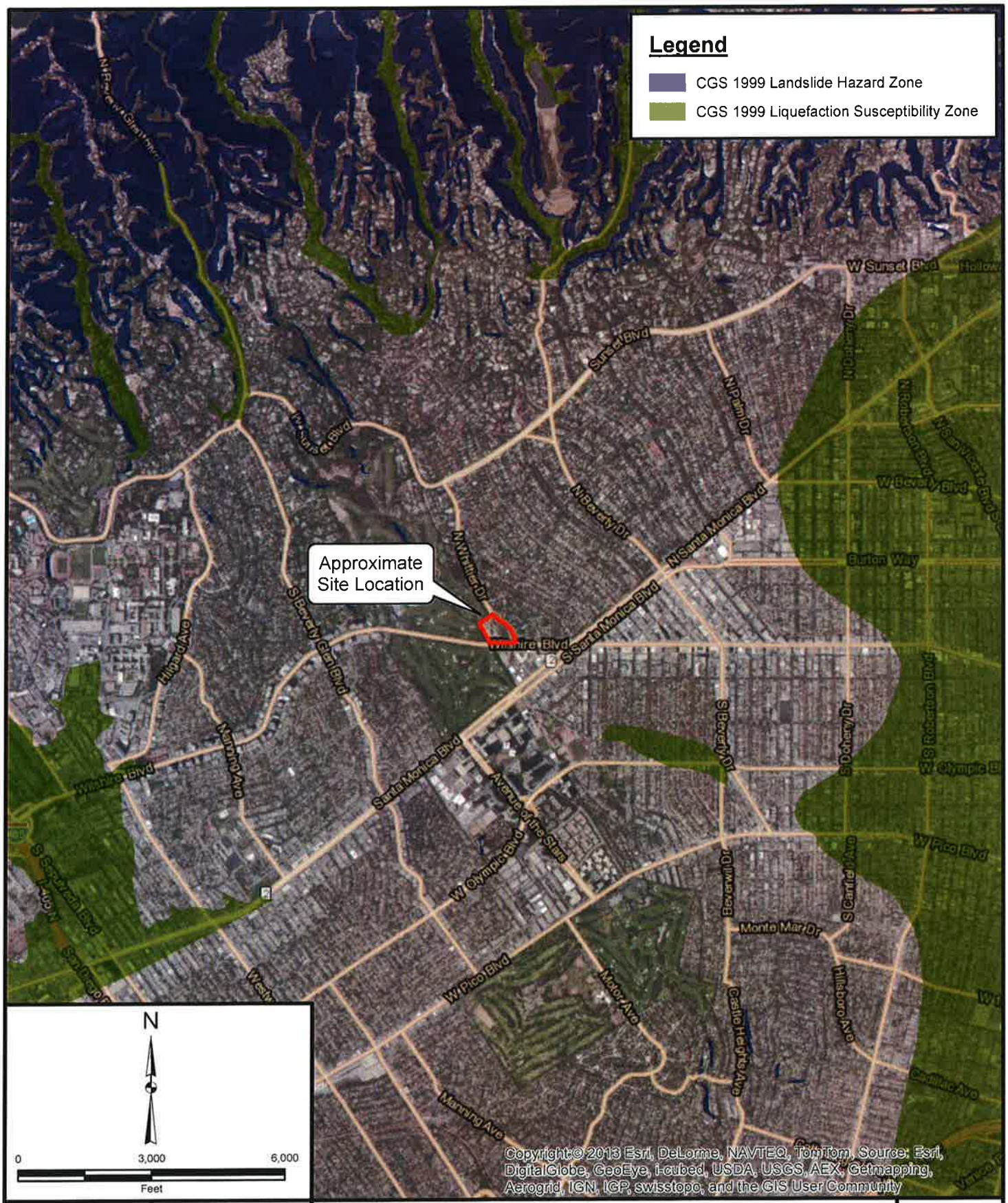

Project: 10274.006	Eng/Geol: TCB/JAR
Scale: 1 " = 3,000 '	Date: February 2014

Base Map: ESRI Resources Center, 2014
ArcGIS Online service, 2013
California Division of Mines and Geology (since renamed California Geological Survey), 1999 (seismic hazard zones)
Author: (btran)

SEISMIC HAZARD ZONE MAP

El Rodeo K-8
605 Whittier Boulevard
Beverly Hills, California

Figure 5

Leighton

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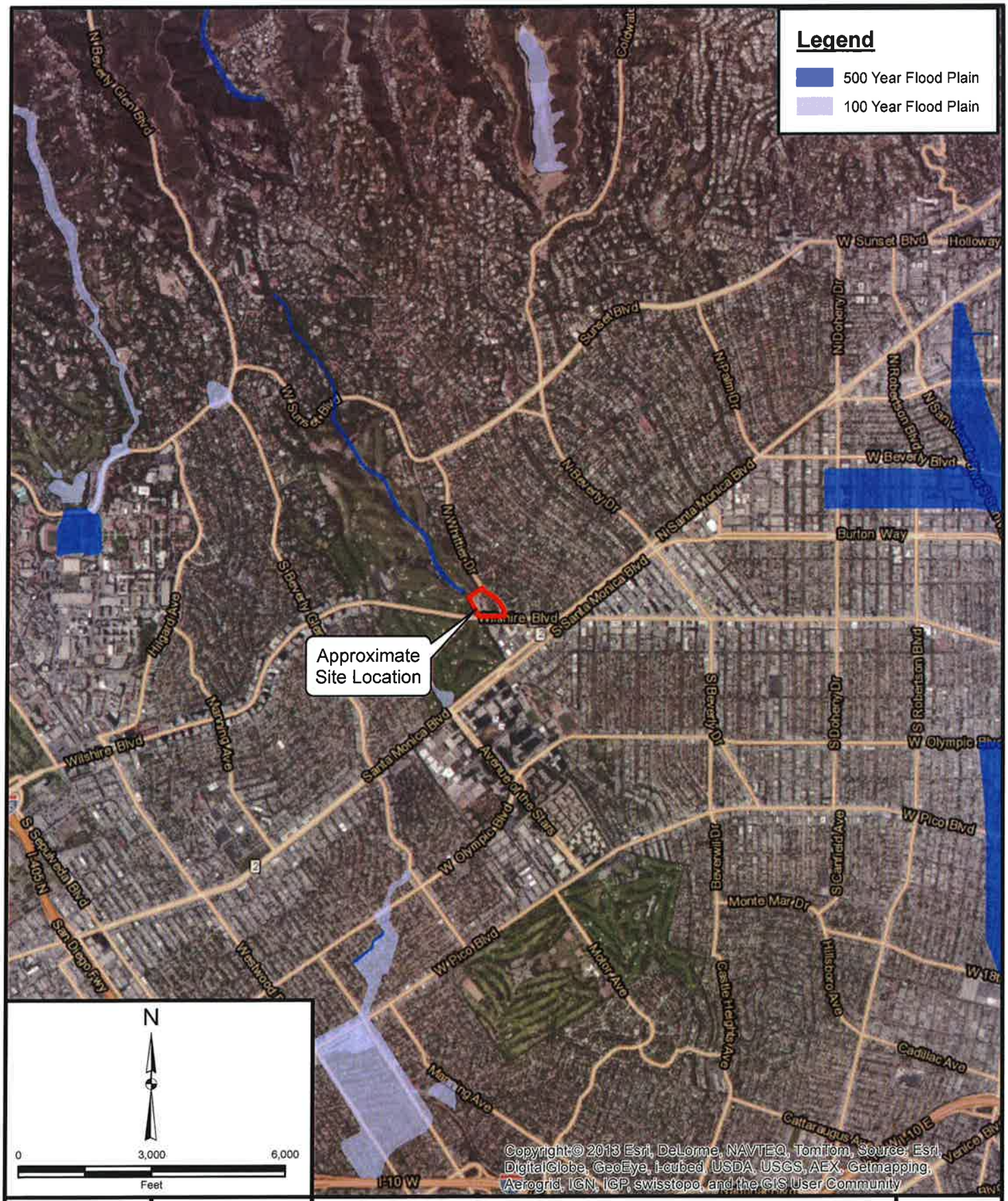

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Scale:1 " = 3,000 '	Date: February 2014

Base Map:ESRI Resources Center, 2014
Thematic Info: FEMA Q3 data, 2014

Author: (btran)

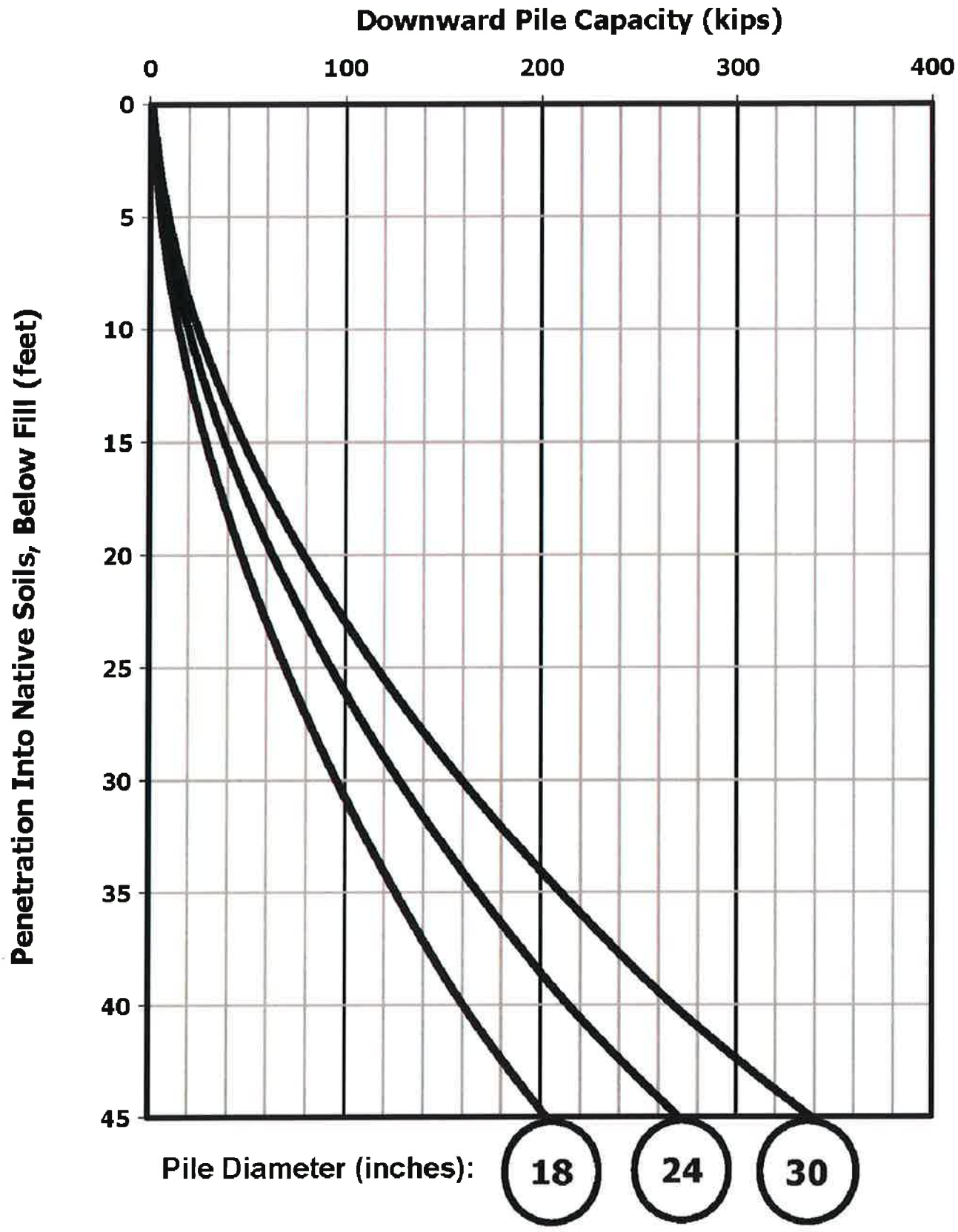
FLOOD HAZARD ZONE MAP

El Rodeo K-8
605 Whittier Boulevard
Beverly Hills, California

Figure 6

Leighton

Map Saved as P:\Drafting\10274\006\Maps\10274-006_F06_FHZM_2014-11-17.mxd on 11/17/2014 3:26:39 PM



Proj: 10274.006	Eng/Geol: TCB/JAR	**PILE DOWNWARD CAPACITIES** El Rodeo K8 605 Whittier Drive Beverly Hills, California	Figure 7
Scale: NTS	Date: February 2014		Leighton
Reference:			

APPENDIX A

FIELD EXPLORATION

Our field exploration consisted of a surface reconnaissance and a subsurface exploration program including core borings and fault trenches. Prior to beginning fieldwork, we prepared a health and safety plan in compliance with 29 CFR 1910.120, and cleared utilities at proposed subsurface exploration locations. These subsurface exploration locations are plotted on Plate 1, *Geotechnical Map* (in pocket), and describe in more detail below:

Borings: From June 17 through July 17, 2014, ten continuous core sample borings were drilled, logged and sampled to depths ranging from 75 feet to 195 feet. Encountered soils were continuously logged in the field by our representative and described in accordance with the Unified Soil Classification System (ASTM D 2488). Soil samples were transported to our Irvine geotechnical laboratory (DSA LEA-63) for observation and testing. Most of our borings were backfilled immediately after drilling, logging and sampling (the same day); using drilling cuttings and bentonite grout as backfill. Boring logs are included as part of this appendix.

Fault Trench: Two fault trenches were excavated with a backhoe to depths of 10- to 15-feet at the locations depicted in orange on Plate 1 (in pocket). Cross-braced temporary shoring was required during detailed logging requiring several days to complete. All logging was by or supervised by a California licensed Certified Engineering Geologist (CEG). Two-dimensional fault trench logs are depicted on Plate A-1, *Fault Trench Logs FT-1 and FT-2* (in pocket in Appendix A).

Subsurface Variations and Limitations: These attached subsurface exploration logs and related information depict subsurface conditions only at the approximate locations indicated and at the particular date designated on the logs. Subsurface conditions at other locations may differ from conditions occurring at these locations. Passage of time may result in altered subsurface conditions due to possible environmental changes. In addition, any stratification lines depicted on these logs represent an approximate boundary between soil types, but these transitions can be gradual.

LEIGHTON

CORE BORING LOG

BORING NO. CB-1
PAGE 1 OF 7

PROJECT: El Rodeo School
CLIENT: Hill, Farrer, & Burrill, LLP
CONTRACTOR: Martini Drilling Corporation
EQUIPMENT USED: CME-75, Continuous Core

GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION		CORE BARREL	
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	Split Sleeve
						HORIZONTAL	SIZE	2.5 I.D.
						INCLINED	Bit (Feet)	
						BEARING	Barrel (Feet)	5
					0	ANG. FROM VERT.	Total (Feet)	

JOB NO.: 603367-001
PAGE NO.: 1 of 7
ELEVATION: 302.5 Feet
DATE START: 2/14/2012
DATE FINISH: 2/14/2012
DRILLER: Martini
PREPARED BY: JMP
LOCATION: See Plate 1

ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS
						The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.
303 0						@Surface: 5" Asphalt concrete (Ac) over 4" Aggregate base (Ab)
						@0' to 5': Hand Auger
	1-3	SB-1				@0.75': **Artificial Fill, Undocumented (Afu):** Silty SAND (SM), brown to reddish brown, dry to slightly moist, fine sand, some fine angular gravels
298 5						
	5-10	Run 1 Box 1				@5.8': **Pleistocene Alluvium of Benedict Canyon Wash (BCW_2):** Sandy GRAVEL (GP), dark reddish to gray brown, dry to slightly moist, angular fine gravels, fine sand
						@6.4' to 7.3': Silty SAND (SM), reddish brown to olive brown, slightly moist
						@7.3' to 8.6': Sandy GRAVEL (GP), dark reddish to gray brown, slightly moist, angular fine gravels, primarily black slate
						@8.6' to 10': No Recovery
293 10						
	10-15	Run 2 Box 1				@10' to 15': No Recovery
288 15						
	15-20	Run 3 Box 1				@15' to 16.7': Sandy Silty GRAVEL (GP)
						@16.7' to 17.9': SAND (SP), interlayered dark reddish brown to olive green, moist to very moist, fine sand, some interlayered silts
						@17.9' to 20': No Recovery
283 20						

FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE	JOINTS / SHEAR / FRACTURE		WEATHERING
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE
							V. SEVERE
					Fe = Iron Oxide	Mn = Manganese Oxide	COMPLETE

ROCKLOG2014 EL RODEO BORING LOGS 4-27-12.GPJ ROCKLOG2012.GDT 2/18/15

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LEIGHTON

CORE BORING LOG

BORING NO. CB-1
PAGE 2 OF 7

PROJECT: El Rodeo School
CLIENT: Hill, Farrer, & Burrill, LLP
CONTRACTOR: Martini Drilling Corporation
EQUIPMENT USED: CME-75, Continuous Core

GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION		CORE BARREL	
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	Split Sleeve
						HORIZONTAL	SIZE	2.5 I.D.
						INCLINED	Bit (Feet)	
						BEARING	Barrel (Feet)	5
					0	ANG. FROM VERT.	Total (Feet)	

JOB NO.: 603367-001
PAGE NO.: 2 of 7
ELEVATION: 302.5 Feet
DATE START: 2/14/2012
DATE FINISH: 2/14/2012
DRILLER: Martini
PREPARED BY: JMP
LOCATION: See Plate 1

ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS
283 20						The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.
						@20' to 21.8': SAND (SP), dark reddish to yellowish brown, wet, fine to medium sand, few scattered fine gravels
	20-25	Run 4 Box 2				@21.8' to 22.7': Sandy GRAVEL (GP), dark gray brown with oxidation, moist, subangular gravels
						@22.7' to 28.3': CLAY (CL), dark yellow brown with orange oxidation, moist, blebs of olive gray coloring within, paleosol @24.3': Color grades to dark reddish brown @25.6': Gravel layer, becomes dark reddish brown to chocolate brown, moderately well-developed blocky structure, minor gleying along soil faces base of paleosol @ 29.1'
278 25						
	25-30	Run 5 Box 2				@28.3' to 29': Gravelly Sandy CLAY (CL), dark reddish brown, very moist, fine to medium sand, fine gravels, basal gravel, base of paleosol
						@29' to 33.7': Sandy CLAY to CLAY (CL), dark reddish to dark yellowish brown, few fine subrounded to angular scattered gravels @33.3': Few scattered gravels in thin bed with fine sand
273 30						
	30-35	Run 6 Box 2				@33.7' to 35', Chocolate brown, well developed soil
268 35						@35' to 37.4': Sandy Clayey GRAVEL (GP), dark yellow brown to gray brown, wet, fine to coarse angular black slate gravels, erosional surface below
	35-40	Run 7 Box 3				**Pleistocene Cheviot Hills Deposits (CHD):** @37.4' to 40.4': CLAY (CL), dark yellow brown, moist, some fine sand, color grades to dark reddish brown, oxidation and reduction banding with clay laminations
263 40						

FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE	JOINTS / SHEAR / FRACTURE		WEATHERING
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE
							V. SEVERE
					Fe = Iron Oxide	Mn = Manganese Oxide	COMPLETE

ROCKLOG2014 EL RODEO BORING LOGS 4-27-12 GPJ ROCKLOG2012.GDT 2/18/15

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LEIGHTON

CORE BORING LOG

BORING NO. CB-1
PAGE 3 OF 7

PROJECT: El Rodeo School
CLIENT: Hill, Farrer, & Burrill, LLP
CONTRACTOR: Martini Drilling Corporation
EQUIPMENT USED: CME-75, Continuous Core

GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION		CORE BARREL	
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	Split Sleeve
						HORIZONTAL	SIZE	2.5 I.D.
						INCLINED	Bit (Feet)	
						BEARING	Barrel (Feet)	5
					0	ANG. FROM VERT.	Total (Feet)	

JOB NO.: 603367-001
PAGE NO.: 3 of 7
ELEVATION: 302.5 Feet
DATE START: 2/14/2012
DATE FINISH: 2/14/2012
DRILLER: Martini
PREPARED BY: JMP
LOCATION: See Plate 1

ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS
263 40	40-45	Run 8 Box 3				The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual. @39.7': Color grades to dark reddish brown, moderate blocky structure, paleosol @40.4' to 49': Sandy CLAY with Gravel (CL), dark yellow brown, moist, scattered fine subangular gravels throughout, some fine sand, decrease in gravel between 46.5' to 49', contains pulses of gravels @ 41.1', 42.7' and 48.1' @45': Rounded gravels @47': Brown clay @48': Poorly developed blocky structure
258 45	45-50	Run 9 Box 3				@49': Gravelly SAND (SP), dark yellow brown, very moist, fine to medium sand, fine subangular gravels
253 50	50-55	Run 10 Box 4				@50' to 50.8': No Recovery @50.8' to 52': Sandy GRAVEL (GP), dark yellow brown, very moist, fine to coarse angular gravels @52' to 52.9': SAND with Gravel (SP), dark yellow brown, moist, fine sand, some fine gravels @52.9' to 53.6': Sandy GRAVEL (GP), dark yellow brown, very moist, fine to coarse angular gravels @53.6' to 58': SAND with Gravel (SP), dark yellow brown, moist, fine sand, some fine gravels, "Salt and Pepper" sands
248 55	55-60	Run 11 Box 4				@58' to 58.3': CLAY (CL), dark yellow brown, very moist, some fine sand @58.3' to 58.9': Sandy GRAVEL (GP), dark yellow to gray brown, moist, fine to coarse sand, fine to coarse gravels @58.9' to 60': No Recovery
243 60						

FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE	JOINTS / SHEAR / FRACTURE		WEATHERING
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE
							V. SEVERE
					Fe = Iron Oxide	Mn = Manganese Oxide	COMPLETE

ROCKLOG2014 EL RODEO BORING LOGS 4-27-12.GPJ ROCKLOG2012.GDT 2/18/15

LEIGHTON

CORE BORING LOG

BORING NO. CB-1
PAGE 4 OF 7

PROJECT: El Rodeo School
CLIENT: Hill, Farrer, & Burrill, LLP
CONTRACTOR: Martini Drilling Corporation
EQUIPMENT USED: CME-75, Continuous Core

GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION		CORE BARREL	
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	Split Sleeve
						HORIZONTAL	SIZE	2.5 I.D
						INCLINED	Bit (Feet)	
						BEARING	Barrel (Feet)	5
					0	ANG. FROM VERT.	Total (Feet)	

JOB NO.: 603367-001
PAGE NO.: 4 of 7
ELEVATION: 302.5 Feet
DATE START: 2/14/2012
DATE FINISH: 2/14/2012
DRILLER: Martini
PREPARED BY: JMP
LOCATION: See Plate 1

ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS
						The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.
243 60						@60' to 60.7': No Recovery
						@60.7' to 62.4': CLAY (CL), dark yellow brown, moist
	60-65	Run 12 Box 4				@62': Thin gravel layer
						@62.4' to 65.9': Sandy GRAVEL (GP), dark yellow to gray brown, very moist, fine to medium sand, fine to coarse subrounded to subangular black slate gravels and weathered basalt clasts
238 65						
						@65.9' to 70.4': No Recovery
	65-70	Run 13 Box 5				
233 70						
						@70.4' to 72.8': CLAY with Gravel (CL), dark reddish brown to chocolate brown, moist, few fine gravels scattered throughout, well-developed blocky structure
	70-75	Run 14 Box 5				@72.8' to 75': Sandy GRAVEL (GP), dark yellow brown, moist, fine to medium sands with some clay, fine to coarse black slate gravels
228 75						@75' to 76.8': No Recovery
	75-80	Run 15 Box 5				@76.8' to 77.6': Sandy GRAVEL (GP), dark yellow brown, moist, fine to medium sands with some clay, fine to coarse black slate gravels
						@77.6': CLAY (CL), dark yellow brown, moist, few scattered fine subrounded gravels @78.5': Color grades to dark reddish brown, moderate blocky structure @80' to 81.8': Dark yellowish brown
223 80						

FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE	JOINTS / SHEAR / FRACTURE		WEATHERING
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE
							V. SEVERE
					Fe = Iron Oxide	Mn = Manganese Oxide	COMPLETE

ROCKLOG2014 EL RODEO BORING LOGS 4-27-12.GPJ ROCKLOG2012.GDT 2/18/15

LEIGHTON

CORE BORING LOG

BORING NO. CB-1
PAGE 5 OF 7

PROJECT: El Rodeo School
CLIENT: Hill, Farrer, & Burrill, LLP
CONTRACTOR: Martini Drilling Corporation
EQUIPMENT USED: CME-75, Continuous Core

JOB NO.: 603367-001
PAGE NO.: 5 of 7
ELEVATION: 302.5 Feet
DATE START: 2/14/2012
DATE FINISH: 2/14/2012
DRILLER: Martini
PREPARED BY: JMP
LOCATION: See Plate 1

GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION		CORE BARREL	
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	Split Sleeve
						HORIZONTAL	SIZE	2.5 I.D
						INCLINED	Bit (Feet)	
						BEARING	Barrel (Feet)	5
					0	ANG. FROM VERT.	Total (Feet)	

ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS
						The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.
223 80	80-85	Run 16 Box 6				@81.8' to 82.5': Sandy GRAVEL (GP), dark gray brown, wet, fine to coarse sand, fine to coarse subangular gravels
						@82.5' to 84.6': Sandy CLAY (CL), dark yellowish brown, moist, fine sand
218 85	85-90	Run 17 Box 6				@84.6' to 85': Gravelly CLAY (CL), dark yellow to gray brown, moist, some sand, fine angular gravels
						@85' to 91.5': No Recovery
213 90	90-95	Run 18 Box 6				@91.5' to 93': SAND (SP), dark yellow brown to brown, wet, fine to medium sand
						@93' to 93.9': Sandy GRAVEL (GP), dark yellow brown, very moist, oxidized, fine to medium sand, fine gravels, basal gravels, erosional contact below
						@93.9' to 94.3': Clayey SAND with Gravel (SC), dark yellow to red brown, moist
208 95	95-100	Run 19 Box 7				@94.3': CLAY (CL), dark yellow brown, moist, MnO_2 laminations
						@97': Color grades to olive brown
203 100						@97.9': Color grades to grey marl

FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE	JOINTS / SHEAR / FRACTURE		WEATHERING
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE
							V. SEVERE
					Fe = Iron Oxide	Mn = Manganese Oxide	COMPLETE

ROCKLOG2014 EL RODEO BORING LOGS 4-27-12.GPJ ROCKLOG2012.GDT 2/18/15

LEIGHTON

CORE BORING LOG

BORING NO. CB-1
PAGE 6 OF 7

PROJECT: El Rodeo School
CLIENT: Hill, Farrer, & Burrill, LLP
CONTRACTOR: Martini Drilling Corporation
EQUIPMENT USED: CME-75, Continuous Core

GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION		CORE BARREL	
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	Split Sleeve
						HORIZONTAL	SIZE	2.5 I.D.
						INCLINED	Bit (Feet)	
						BEARING	Barrel (Feet)	5
					0	ANG. FROM VERT.	Total (Feet)	

JOB NO.: 603367-001
PAGE NO.: 6 of 7
ELEVATION: 302.5 Feet
DATE START: 2/14/2012
DATE FINISH: 2/14/2012
DRILLER: Martini
PREPARED BY: JMP
LOCATION: See Plate 1

ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS
203 100	100-105	Run 20 Box 7				The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual. @101.1': Color grades to olive green @103.5': Color grades to olive brown @104.5' to 106.9': Some scattered fine gravels
198 105	105-110	Run 21 Box 7				@105': Color grades to brown @108': $CaCO_3$ in matrix
193 110	110-115	Run 22 Box 8				@110': Grades to Silty CLAY (CL), brown to dark yellowish brown, moist, few scattered cemented $CaCO_3$ nodules @112': Color grades from brown to green, specks of $CaCO_3$ with scattered cemented $CaCO_3$ nodules
188 115	115-120	Run 23 Box 8				@113.6' to 118': Color grades from green to grey marl, continued specks of $CaCO_3$ and scattered cemented $CaCO_3$ nodules @118': Color grades to olive brown, abundant $CaCO_3$ deposits and nodules
183 120						

FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE	JOINTS / SHEAR / FRACTURE		WEATHERING
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE
							V. SEVERE
					Fe = Iron Oxide	Mn = Manganese Oxide	COMPLETE

ROCKLOG2014 EL RODEO BORING LOGS 4-27-12.GPJ ROCKLOG2012.GDT 2/18/15

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LEIGHTON

CORE BORING LOG

BORING NO. CB-1
PAGE 7 OF 7

PROJECT: El Rodeo School
CLIENT: Hill, Farrer, & Burrill, LLP
CONTRACTOR: Martini Drilling Corporation
EQUIPMENT USED: CME-75, Continuous Core

GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION		CORE BARREL	
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	Split Sleeve
						HORIZONTAL	SIZE	2.5 I.D.
						INCLINED	Bit (Feet)	
						BEARING	Barrel (Feet)	5
					0	ANG. FROM VERT.	Total (Feet)	

JOB NO.: 603367-001
PAGE NO.: 7 of 7
ELEVATION: 302.5 Feet
DATE START: 2/14/2012
DATE FINISH: 2/14/2012
DRILLER: Martini
PREPARED BY: JMP
LOCATION: See Plate 1

ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS
183 120	120-125	Run 24 Box 8				The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual. @120.5' to 121.8': Grades to Sandy CLAY (CL), olive brown, moist, fine sand, scattered $CaCO_3$ deposits @121.8' to 124.4': CLAY (CL), olive brown, moist, abundant $CaCO_3$ deposits between 122.1' to 122.8'
178 125						@124.4' to 125': SAND (SP), dark yellow brown, wet, fine sand
173 130						Total depth of boring: 125' bgs Perched groundwater encountered at approximately 20'-21.8', 35'-37.4', 81.8'-82.5', 91.5'-93', 124.4'-125' bgs Excavation backfilled with cuttings and patched with asphalt upon completion of drilling. Excess soil cuttings disposed of in D.O.T. approved drums and disposed of offsite.
168 135						
163 140						

FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE	JOINTS / SHEAR / FRACTURE		WEATHERING
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE
							V. SEVERE
					Fe = Iron Oxide	Mn = Manganese Oxide	COMPLETE

ROCKLOG2014 EL RODEO BORING LOGS 4-27-12.GPJ ROCKLOG2012.GDT 2/18/15

LEIGHTON

CORE BORING LOG

BORING NO. CB-2
PAGE 1 OF 7

PROJECT: El Rodeo School
CLIENT: Hill, Farrer, & Burrill, LLP
CONTRACTOR: Martini Drilling Corporation
EQUIPMENT USED: CME-75, Continuous Core

GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION		CORE BARREL	
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	Split Sleeve
						HORIZONTAL	SIZE	2.5 I.D.
						INCLINED	Bit (Feet)	
						BEARING	Barrel (Feet)	5
					0	ANG. FROM VERT.	Total (Feet)	

JOB NO.: 603367-001
PAGE NO.: 1 of 7
ELEVATION: 304.9 Feet
DATE START: 2/13/2012
DATE FINISH: 2/13/2012
DRILLER: Martini
PREPARED BY: JMP
LOCATION: See Plate 1

ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS
						The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.
305 0						@Surface: 4" Asphalt concrete
	1-3	SB-1				@0.3': **Artificial Fill, Undocumented (Afu):** Silty SAND (SM), dark yellowish brown, moist, some angular black slate gravels
						@4': Cobble
300 5						@5' to 5.9': No Recovery
	5-10	Run 1 Box 1				@5.9': **Pleistocene Alluvium of Benedict Canyon Wash: (BCW_2):** Sandy GRAVEL (GP), dark reddish brown to dark grayish brown, slightly moist, fine to coarse sand, fine to coarse subrounded to subangular black slate gravels, chaotic assemblage, oxidized
295 10						
	10-15	Run 2 Box 1				@12.5' to 15': No Recovery
290 15						@15' to 16.7': Sandy GRAVEL (GP), moist, large cobble @16.7' - clogged sampler, silty fine sand (SM) in shoe @ 20', driller indicated easier drilling at 18'
	15-20	Run 3 Box 1				@16.7' to 20': No Recovery
285 20						

FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE	JOINTS / SHEAR / FRACTURE		WEATHERING
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE
							V. SEVERE
					Fe = Iron Oxide	Mn = Manganese Oxide	COMPLETE

ROCKLOG2014 EL RODEO BORING LOGS 4-27-12.GPJ ROCKLOG2012.GDT 2/18/15

LEIGHTON

CORE BORING LOG

BORING NO. CB-2
PAGE 2 OF 7

PROJECT: El Rodeo School
CLIENT: Hill, Farrer, & Burrill, LLP
CONTRACTOR: Martini Drilling Corporation
EQUIPMENT USED: CME-75, Continuous Core

GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION		CORE BARREL	
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X VERTICAL		TYPE	Split Sleeve
					HORIZONTAL		SIZE	2.5 I.D.
					INCLINED		Bit (Feet)	
					BEARING		Barrel (Feet)	5
					0 ANG. FROM VERT.		Total (Feet)	

JOB NO.: 603367-001
PAGE NO.: 2 of 7
ELEVATION: 304.9 Feet
DATE START: 2/13/2012
DATE FINISH: 2/13/2012
DRILLER: Martini
PREPARED BY: JMP
LOCATION: See Plate 1

ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS
						The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.
285 20	20-25	Run 4 Box 2				@20' to 20.3': Silty SAND (SM), dark yellowish brown, moist, some subrounded gravels @20.3' to 23': Gravelly SAND (SP), dark yellowish to dark reddish brown, moist, fine to coarse sand, subrounded to subangular fine to coarse black slate gravels
						@23' to 24.5': Sandy GRAVEL (GP), dark gray brown to dark red brown, moist, few large cobbles
280 25						@24.5' to 26.1': Silty SAND (SM), olive gray, moist, fine sand
	25-30	Run 5 Box 2				@26.1' to 27.2': Sandy GRAVEL (GP), dark olive brown, moist, angular fine to coarse black slate gravels @27.2' to 27.5': SAND with fine gravel (SP), dark reddish brown, moist, fine sand, erosional contact below @27.5': Sandy CLAY (CL), olive gray, moist, fine sand, oxidation-reduction banded, gleyed to 31' @28.3' to 28.9': Sandy GRAVEL (GP), dark reddish brown, moist, fine to coarse subrounded gravels
275 30						@28.9' to 30': No Recovery @30' to 32.5': CLAY (CL), dark yellow brown to dark reddish brown, some olive gray mottling, moist, some fine gravels, paleosol, blocky to hackly structure, minor gleying on soil peds, moderate clay lining peds, few highly weathered siltstone fragments, 2-3% oxidized fine slaty gravels
	30-35	Run 6 Box 2				@32.5': base of peleosol @32.5' to 38.3': Grades to Sandy CLAY (CL), dark yellow brown mottled with olive gray, moist, fine sand, some fine gravels @33.3': $CaCO_3$ horizon @34.4': Thinly bedded gravel
270 35						
	35-40	Run 7 Box 3				@35.9': Thin gravel layer, angular siltstone clasts @36.3': Saturated @36.2': White siltstone, and slaty gravel bed @39' to 42': Grades to CLAY to Silty CLAY (CL), dark chocolate brown, moist, some fine gravels and SILT
265 40						

FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE	JOINTS / SHEAR / FRACTURE		WEATHERING
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE
							V. SEVERE
					Fe = Iron Oxide	Mn = Manganese Oxide	COMPLETE

ROCKLOG2014 EL RODEO BORING LOGS 4-27-12.GPJ ROCKLOG2012.GDT 2/18/15

LEIGHTON

CORE BORING LOG

BORING NO. CB-2
PAGE 3 OF 7

PROJECT: El Rodeo School
CLIENT: Hill, Farrer, & Burrill, LLP
CONTRACTOR: Martini Drilling Corporation
EQUIPMENT USED: CME-75, Continuous Core

GROUNDWATER		DEPTH TO (Feet):			ORIENTATION		CORE BARREL	
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	Split Sleeve
						HORIZONTAL	SIZE	2.5 I.D.
						INCLINED	Bit (Feet)	
						BEARING	Barrel (Feet)	5
					0	ANG. FROM VERT.	Total (Feet)	

JOB NO.: 603367-001
PAGE NO.: 3 of 7
ELEVATION: 304.9 Feet
DATE START: 2/13/2012
DATE FINISH: 2/13/2012
DRILLER: Martini
PREPARED BY: JMP
LOCATION: See Plate 1

ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS
265 40						The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.
	40-45	Run 8 Box 3				@41.6' to 44.5': Sandy GRAVEL (GP), dark yellow brown to gray brown, wet, fine to coarse subangular to subrounded gravels, fine to coarse sand, some clay, erosional contact below
260 45						@44.5': **Pleistocene Cheviot Hills Deposits (CHD):** Sandy silty CLAY (CL), dark reddish brown mottled with olive gray, moist, paleosol, fine to coarse slaty sand, subangular to subrounded gravels, gleying along pedfaces, moderate silica cement. Base of paleosol @ 46.7'
	45-50	Run 9 Box 3				@45' to 45.3': Silty Clayey SAND (SC), dark yellow brown, moist, fine sand @45.3' to 48.4': CLAY (CL), dark yellow brown to dark reddish brown, moist, few fine gravels @46.8': Thinly bedded gravels @48.4' to 48.9': Gravelly CLAY (CL), dark reddish brown, moist, fine angular gravels @48.9' to 50.4': CLAY (CL), dark yellow brown, moist, some silt and fine sand, few fine gravels
255 50						@50.4' to 50.6': Gravelly SAND (SP) layer
	50-55	Run 10 Box 4				@50.6' to 54.5': Sandy CLAY (CL), dark yellow brown, moist, fine sand, few fine gravels, 6-inch thick brown soil, upper part missing @51.5': Thin bed of fine to coarse sand
250 55						@54': Sandy clayey SILT (ML-CL), light orange brown, very moist, trace of siltstone rock fragments, poorly developed blocky structure, minor gleying along ped faces @54.5' to 55': Clean SAND (SP), fine to medium grained sand over gravel, thin bed @55' to 56.4': Sandy GRAVEL (GP), dark yellow to gray brown, wet, fine to coarse angular black slate gravels
	55-60	Run 11 Box 4				@56.4' to 57': Silty SAND (SP), dark yellow brown to brown, very moist, fine to medium sand, thinly bedded @57' to 57.5': Sandy GRAVEL (GP), dark yellow to gray brown, wet, angular gravels @57.5' to 60': No Recovery
245 60						

FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE	JOINTS / SHEAR / FRACTURE		WEATHERING
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE
							V. SEVERE
					Fe = Iron Oxide	Mn = Manganese Oxide	COMPLETE

ROCKLOG2014 EL RODEO BORING LOGS 4-27-12 GPJ ROCKLOG2012.GDT 2/18/15

*** This log is a part of a report by Leighton and should not be used as a stand-alone document. ***

LEIGHTON

CORE BORING LOG

BORING NO. CB-2
PAGE 4 OF 7

PROJECT: El Rodeo School
CLIENT: Hill, Farrer, & Burrill, LLP
CONTRACTOR: Martini Drilling Corporation
EQUIPMENT USED: CME-75, Continuous Core

GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION		CORE BARREL	
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	Split Sleeve
						HORIZONTAL	SIZE	2.5 I.D.
						INCLINED	Bit (Feet)	
						BEARING	Barrel (Feet)	5
					0	ANG. FROM VERT.	Total (Feet)	

JOB NO.: 603367-001
PAGE NO.: 4 of 7
ELEVATION: 304.9 Feet
DATE START: 2/13/2012
DATE FINISH: 2/13/2012
DRILLER: Martini
PREPARED BY: JMP
LOCATION: See Plate 1

ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS
245 60						The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.
						@60' to 61.7': No Recovery
	60-65	Run 12 Box 4				@61.7' to 62.3': Sandy GRAVEL (GP), dark gray brown, wet, angular fine to coarse black slate gravels, white siltstone fragments, erosional contact below
						@62.3' to 65.6': CLAY to Sandy CLAY (CL), yellow brown, slightly mottled with olive gray, moist, very fine sand
240 65						
						@65.6' to 67.1': CLAY with Sand and fine Gravels (CL), dark yellow brown, moist
						@66': Gravel bed
	65-70	Run 13 Box 5				@67.1' to 68.1': CLAY (CL), dark yellow brown, moist, some fine sand
						@68': Gravel bed, $CaCO_3$
						@68.1' to 69.6': SAND to Gravelly SAND (SW), dark yellow brown, moist to very moist, fine to coarse sand, fine gravels, well graded
						@69.6' to 70': CLAY (CL), dark yellow brown, moist
235 70						@70' to 70.5': Gravelly SAND (SW), dark yellow to gray brown, very moist to wet, fine to coarse sand, fine to coarse subrounded to subangular gravels, well graded
						@70.5' to 71.7': Sandy GRAVEL (GP), dark yellow to gray brown, very moist to wet, fine to coarse sand, fine to coarse subrounded to subangular gravels
	70-75	Run 14 Box 5				@71.7' to 73.9': Gravelly SAND (SW), dark yellow to gray brown, gleyed gravels, very moist to wet, fine to coarse sand, fine to coarse subrounded to subangular gravels, well graded, contact @73.5' becomes chocolate brown clay, thinly laminated, with trace gravels below laminations
						@73.9' to 75': No Recovery
230 75						@75' to 78': SAND (SP), gray brown, wet, clean fine sand, "Salt and Pepper" sand
	75-80	Run 15 Box 5				
						@78' to 78.3': Sandy GRAVEL (GP), dark yellow to gray brown, moist, chaotic assemblage of gravels and rock fragments, well graded
						@78.3' to 80': No Recovery
225 80						

FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE	JOINTS / SHEAR / FRACTURE		WEATHERING
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE
					Fe = Iron Oxide	Mn = Manganese Oxide	V. SEVERE
							COMPLETE

ROCKLOG2014 EL RODEO BORING LOGS 4-27-12.GPJ ROCKLOG2012.GDT 2/18/15

LEIGHTON

CORE BORING LOG

BORING NO. CB-2
PAGE 5 OF 7

PROJECT: El Rodeo School
CLIENT: Hill, Farrer, & Burrill, LLP
CONTRACTOR: Martini Drilling Corporation
EQUIPMENT USED: CME-75, Continuous Core

GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION		CORE BARREL	
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	Split Sleeve
						HORIZONTAL	SIZE	2.5 I.D.
						INCLINED	Bit (Feet)	
						BEARING	Barrel (Feet)	5
					0	ANG. FROM VERT	Total (Feet)	

JOB NO.: 603367-001
PAGE NO.: 5 of 7
ELEVATION: 304.9 Feet
DATE START: 2/13/2012
DATE FINISH: 2/13/2012
DRILLER: Martini
PREPARED BY: JMP
LOCATION: See Plate 1

ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS
						The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.
225 80						@80' to 82': SAND (SP), dark gray brown, wet, upward fining sequence
	80-85	Run 16 Box 6				@82' to 82.6': Sandy GRAVEL (GP), dark gray, brown, moist, angular fine gravels, chaotic assemblage, weathered slaty gravels
						@82.6' to 85': No Recovery
220 85						@85' to 88.3': Continued chaotic assemblage of Sandy GRAVEL (GP), dark gray brown, very moist, weathered slaty gravels
	85-90	Run 17 Box 6				@88.3' to 90': No Recovery, driller indicated that the material was hard based on drilling difficulty
215 90						@90' to 91': Gravelly SAND (SW), dark gray brown, wet, fine to very coarse sand, fine subrounded gravels, upward fining sequence
	90-95	Run 18 Box 6				@91' to 94.6': Silty Clayey SAND (SC), yellow brown, moist, fine sand @92' and 93.8': Thinly bedded gravels @92.3': Gravel bed, thin
						@94.6' to 95': No Recovery
210 95						@95' to 100': Silty Clayey SAND (SM-SC), thinly bedded gravels @96.2' and 99.3'
	95-100	Run 19 Box 7				
205 100						

FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE	JOINTS / SHEAR / FRACTURE		WEATHERING
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE
							V. SEVERE
					Fe = Iron Oxide	Mn = Manganese Oxide	COMPLETE

ROCKLOG2014 EL RODEO BORING LOGS 4-27-12.GPJ ROCKLOG2012.GDT 2/18/15

LEIGHTON

CORE BORING LOG

BORING NO. CB-2
PAGE 6 OF 7

PROJECT: El Rodeo School
CLIENT: Hill, Farrer, & Burrill, LLP
CONTRACTOR: Martini Drilling Corporation
EQUIPMENT USED: CME-75, Continuous Core

GROUNDWATER:		DEPTH TO (Feet):				ORIENTATION	CORE BARREL	
DATE	HRS AFT COMP	WATER	BOT OF CASING	BOT OF HOLE	X	VERTICAL	TYPE	Split Sleeve
						HORIZONTAL	SIZE	2.5 I.D.
						INCLINED	Bit (Feet)	
						BEARING	Barrel (Feet)	5
					0	ANG. FROM VERT	Total (Feet)	

JOB NO.: 603367-001
PAGE NO.: 6 of 7
ELEVATION: 304.9 Feet
DATE START: 2/13/2012
DATE FINISH: 2/13/2012
DRILLER: Martini
PREPARED BY: JMP
LOCATION: See Plate 1

ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS
						The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.
205 100	100-105	Run 20 Box 7				@100' to 100.7': Gravelly SAND (SP), yellow brown, wet, fine sand, fine to coarse siltstone gravels, subrounded @100.7' to 103': CLAY (CL), hard, dark reddish brown @103' to 103.4': Gravelly SAND (SP), dark yellow brown, moist, fine sand, fine to medium subangular gravels @103.4' to 105': No Recovery
200 105	105-110	Run 21 Box 7				@105' to 111': Gravel bed underlain by CLAY (CL), dark reddish brown, moist, isolated blebs of olive gray @106.2': Thin bed of fine to medium grained sand with MnO_2 laminations @107': gley banding @108.2' to 108.6': heavy MnO_2 banding
195 110	110-115	Run 22 Box 8				@110': becomes dark chocolate brown, oxidation-reduction banding, gleyed @111' to 114': Grades to Sandy CLAY (CL), dark yellow brown, moist, some fine angular gravels between 111' to 112.8', specks of $CaCO_3$ between 113' to 114', @113.2': Rounded fine gravel
190 115	115-120	Run 23 Box 8				@114' to 115.6': Silty Clayey SAND (SM-SC), dark yellow brown to brown, moist, fine sand @115.6' to 116.3': Grades to CLAY (CL), dark yellow brown to olive brown, increase in olive color with depth, moist, some oxidation between 115.6' to 116.3', some specks of $CaCO_3$ between 116.3' to 117.5', color change to green @116.7': Abundant $CaCO_3$ as thin horizontal layers, paleo horizon, Paleosol, marl @117.8' to 120': Silty CLAY (CL), color grades to grey brown, moist, gleyed, some slight oxidation and specks of $CaCO_3$ scattered gravels, paleosol, marl
185 120						

FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE	JOINTS / SHEAR / FRACTURE		WEATHERING
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE
							V. SEVERE
					Fe = Iron Oxide	Mn = Manganese Oxide	COMPLETE

ROCKLOG2014 EL RODEO BORING LOGS 4-27-12.GPJ ROCKLOG2012.GDT 2/18/15

*** * * This log is a part of a report by Leighton and should not be used as a stand-alone document. * * ***

LEIGHTON

CORE BORING LOG

BORING NO. CB-2
PAGE 7 OF 7

PROJECT: El Rodeo School
CLIENT: Hill, Farrer, & Burrill, LLP
CONTRACTOR: Martini Drilling Corporation
EQUIPMENT USED: CME-75, Continuous Core

GROUNDWATER:		DEPTH TO (Feet):				ORIENTATION		CORE BARREL	
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	Split Sleeve	
						HORIZONTAL	SIZE	2.5 I.D.	
						INCLINED	Bit (Feet)		
						BEARING	Barrel (Feet)	5	
					0	ANG. FROM VERT.	Total (Feet)		

JOB NO.: 603367-001
PAGE NO.: 7 of 7
ELEVATION: 304.9 Feet
DATE START: 2/13/2012
DATE FINISH: 2/13/2012
DRILLER: Martini
PREPARED BY: JMP
LOCATION: See Plate 1

ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS
						The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.
185 120						@120' to 120.6': gravel bed
						@120.6' to 123': Blue green CLAY to Silty CLAY (CL), moist, grey marl, specks of $CaCO_3$ scattered gravels, abrupt contact @120.6' to 121.6': heavy MnO_2 lamination
	120-125	Run 24 Box 8				
						@123': Grades to Silty SAND (SM), blue green, moist to very moist, fine sand
						@124' to 124.8': CLAY (CL), blue green, moist
180 125						@124.8' to 125': Silty SAND (SM), blue green, moist, fine sand
						Total depth of boring: 125' bgs Perched groundwater encountered at approximately 36.3', 41.6'-44.5', 54.5'-56.4', 61.7'-62.3', 70'-73.9', 75'-78', 80'-82', 90'-91', 100'-100.7' bgs Excavation backfilled with cuttings and patched with asphalt upon completion of drilling. Excess soil cuttings disposed of in D.O.T. approved drums and disposed of offsite.
175 130						
170 135						
165 140						

FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE	JOINTS / SHEAR / FRACTURE		WEATHERING
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE
							V. SEVERE
					Fe = Iron Oxide	Mn = Manganese Oxide	COMPLETE

ROCKLOG2014 EL RODEO BORING LOGS 4-27-12.GPJ ROCKLOG2012.GDT 2/18/15

LEIGHTON

CORE BORING LOG

BORING NO. CB-3
PAGE 1 OF 7

PROJECT: El Rodeo School
CLIENT: Hill, Farrer, & Burrill, LLP
CONTRACTOR: Martini Drilling Corporation
EQUIPMENT USED: CME-75, Continuous Core

GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION		CORE BARREL	
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	Split Sleeve
						HORIZONTAL	SIZE	2.5 I.D.
						INCLINED	Bit (Feet)	
						BEARING	Barrel (Feet)	5
					0	ANG. FROM VERT.	Total (Feet)	

JOB NO.: 603367-001
PAGE NO.: 1 of 7
ELEVATION: 292.4 Feet
DATE START: 2/10/2012
DATE FINISH: 2/10/2012
DRILLER: Martini
PREPARED BY: JMP
LOCATION: See Plate 1

ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS
						The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.
292 0						@Surface: 3" Asphalt concrete @0.33': 2" Aggregate base
	1-2	SB-1				@0.4': **Artificial Fill, Undocumented (Afu):** Clayey SILT (ML), brown, slightly moist
287 5						@5.5' to 6.5': Sandy GRAVEL (GP), light brown, dry
	5-10	Run 1 Box 1				@6.5': **Modern and Holocene Alluvium in Historical Channel of Moreno Creek (Qw):** Clayey SILT (ML), dark brown, slightly moist, some coarse gravels and asphalt @7.5' to 10': No Recovery
282 10						@10' to 15': SILT to Clayey SILT (ML), dark brown, slightly moist, few fine angular to subangular gravels throughout, trace asphalt fragments
	10-15	Run 2 Box 1				
277 15						@15': **Pleistocene Alluvium of Benedict Canyon Wash (BCW_1):** Silty Clayey SAND with Gravels (SP-SC), dark reddish/yellowish brown mottled, slightly moist, fine subangular to subrounded gravels, fine sand, well-graded
	15-20	Run 3 Box 1				
272 20						@19.2' to 20.7': SAND with some Clay (SC), dark reddish brown, slightly moist to moist, fine sand

FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE	JOINTS / SHEAR / FRACTURE		WEATHERING
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE
					Fe = Iron Oxide Mn = Manganese Oxide		V. SEVERE
							COMPLETE

ROCKLOG2014 EL RODEO BORING LOGS 4-27-12.GPJ ROCKLOG2012.GDT 2/18/15

LEIGHTON

CORE BORING LOG

BORING NO. CB-3
PAGE 2 OF 7

PROJECT: El Rodeo School
CLIENT: Hill, Farrer, & Burrill, LLP
CONTRACTOR: Martini Drilling Corporation
EQUIPMENT USED: CME-75, Continuous Core

GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION		CORE BARREL	
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	Split Sleeve
						HORIZONTAL	SIZE	2.5 I.D.
						INCLINED	Bit (Feet)	
						BEARING	Barrel (Feet)	5
					0	ANG. FROM VERT.	Total (Feet)	

JOB NO.: 603367-001
PAGE NO.: 2 of 7
ELEVATION: 292.4 Feet
DATE START: 2/10/2012
DATE FINISH: 2/10/2012
DRILLER: Martini
PREPARED BY: JMP
LOCATION: See Plate 1

ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS
272 20						The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.
						@20.7' to 22.6': Grades to Sandy SILT (ML), dark reddish brown, slightly moist to moist with clay, paleosol, moderate blocky structure, well developed to 26.8'
	20-25	Run 4 Box 2				@22.6' to 27': Grades to CLAY (CL), olive brown to dark yellowish brown mottled, moist, few scattered subangular to angular fine gravels of weathered black slate and siltstone, moderate blocky structure, minor gleying along soil faces, paleosol @27' to 27.5': Grades to Silty CLAY (CL) @27.5' to 28.3': Grades to Sandy CLAY (CL)
267 25						
	25-30	Run 5 Box 2				
						@28.3' to 33.7': Clayey Sandy GRAVEL (GC), dark grayish brown, moist to very moist, angular fine to coarse black slate gravels
262 30						
	30-35	Run 6 Box 2				Pleistocene Alluvium of Benedict Canyon Wash (BCW_2): @33.7' to 34.2': Silty CLAY (CL), dark yellowish brown, very moist, some angular coarse black slate gravels, Paleosol, blocky structure, gleyed on ped facies @34.2' to 35': No Recovery
257 35						
	35-40	Run 7 Box 3				@35' to 39': Silty sandy CLAY (CL), hard, dark yellowish brown, very moist, trace very fine sand, contains siltstone and fine slaty rock fragments, moderate blocky to hackly structure, fine sand along soil faces, gleyed at parting surfaces, moderate amounts of silica cement
						@39' to 43': Grades to Sandy CLAY (CL), dark reddish brown, very moist, very fine sand, few fine subangular gravels, isolated siltstone clast @41.9'
252 40						

FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE	JOINTS / SHEAR / FRACTURE		WEATHERING
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE
					Fe = Iron Oxide	Mn = Manganese Oxide	V. SEVERE
							COMPLETE

ROCKLOG2014 EL RODEO BORING LOGS 4-27-12.GPJ ROCKLOG2012.GDT 2/18/15

LEIGHTON

CORE BORING LOG

BORING NO. CB-3
PAGE 3 OF 7

PROJECT: El Rodeo School
CLIENT: Hill, Farrer, & Burrill, LLP
CONTRACTOR: Martini Drilling Corporation
EQUIPMENT USED: CME-75, Continuous Core

JOB NO.: 603367-001
PAGE NO.: 3 of 7
ELEVATION: 292.4 Feet
DATE START: 2/10/2012
DATE FINISH: 2/10/2012
DRILLER: Martini
PREPARED BY: JMP
LOCATION: See Plate 1

GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION		CORE BARREL	
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	Split Sleeve
						HORIZONTAL	SIZE	2.5 I.D.
						INCLINED	Bit (Feet)	
						BEARING	Barrel (Feet)	5
					0	ANG. FROM VERT.	Total (Feet)	

ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS
						The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.
252 40	40-45	Run 8 Box 3				
						@43' to 44': Silty SAND w/ clay (SM), orange brown to reddish brown, fine sand, fine sand-sized siltstone with subrounded slaty pebbles, poorly developed blocky facture, minor gleying along soil faces
						@44' to 45': Grades quickly into upward fining sequence of SAND (SP), dark yellowish brown, wet, fine to coarse sand
247 45	45-50	Run 9 Box 3				@45' to 45.8': No Recovery
						@45.8' to 46.4': SAND (SP), dark yellowish brown, wet, fine to coarse sand
						@46.4' to 49.3': Grades to Sandy Clayey GRAVEL (GC), dark grayish brown to dark reddish brown, very moist to wet, fine to coarse subangular black slate gravels
242 50	50-55	Run 10 Box 4				**Pleistocene Cheviot Hills Deposits (CHD):**
						@49.3' to 50.9': Grades to Sandy CLAY (CL), dark reddish brown, very moist, few fine gravels throughout, oxidation-reduction banding, gleyed
						@50.9': Grades to SAND (SP)
						@51.5' to 53': Grades to Sandy GRAVEL (GP), dark reddish brown, wet, fine to coarse angular to subangular gravels
						@53' to 53.3': Thin layer of Silty Gravelly SAND (SP)
						@53.3' to 55': Sandy GRAVEL (GP)
237 55	55-60	Run 11 Box 4				@55' to 55.8': No Recovery
						@55.8' to 57.6': SAND (SP), dark yellow brown, wet, fine to medium sand
						@57.6' to 58.1': Sandy GRAVEL (GP), dark gray brown, wet, fine to coarse sand, fine subangular gravels
232 60						@58.1' to 60': Clayey Sandy GRAVEL (GP), dark yellow brown, very moist, increase in gravel with depth to 60'

FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE	JOINTS / SHEAR / FRACTURE		WEATHERING
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE
							V. SEVERE
					Fe = Iron Oxide	Mn = Manganese Oxide	COMPLETE

ROCKLOG2014 EL RODEO BORING LOGS 4-27-12.GPJ ROCKLOG2012.GDT 2/18/15

LEIGHTON

CORE BORING LOG

BORING NO. CB-3
PAGE 4 OF 7

PROJECT: El Rodeo School
CLIENT: Hill, Farrer, & Burrill, LLP
CONTRACTOR: Martini Drilling Corporation
EQUIPMENT USED: CME-75, Continuous Core

GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION		CORE BARREL	
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	Split Sleeve
						HORIZONTAL	SIZE	2.5 I.D
						INCLINED	Bit (Feet)	
						BEARING	Barrel (Feet)	5
					0	ANG. FROM VERT.	Total (Feet)	

JOB NO.: 603367-001
PAGE NO.: 4 of 7
ELEVATION: 292.4 Feet
DATE START: 2/10/2012
DATE FINISH: 2/10/2012
DRILLER: Martini
PREPARED BY: JMP
LOCATION: See Plate 1

ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS
						The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.
232 60						@60' to 60.7': No Recovery
	60-65	Run 12 Box 4				@60.7' to 64.3': SAND (SP), dark yellow brown, wet, fine sand
227 65						@64.3' to 65': Sandy GRAVEL (GP), dark yellow brown to dark gray brown, moist, subangular black slate gravels
						@65' to 66.3': No Recovery
						@66.3' to 66.9': SAND (SP), reddish brown, wet, fine to coarse sand
	65-70	Run 13 Box 5				@66.9' to 67.3': Clayey Gravelly SAND (SC) @67.3' to 67.6': Silty Clayey SAND (SM-SC) @67.6': CLAY to Sandy CLAY (CL), mottled olive brown and dark yellowish brown, well oxidized, oxidation-reduction banding, gleyed, few specs of MnO_2 @68' to 68.5': Zone of increased sand @68.6' to 69.1': Color grades to dark brown
222 70						@70' to 72.4': Zone of increased sand, isolated siltstone clasts @ 72.4'
	70-75	Run 14 Box 5				@72.4' to 72.6': siltstone clasts, oxidation-reduction banded, with gley and MnO_2 laminations @72.8': paleosol, moderate soil development, blocky structure, dark reddish brown, clayey, thin bed
217 75						@76.0' to 77.8': Grades to Gravelly CLAY (CL), dark reddish brown, moist, scattered fine angular to subangular gravels, few siltstone clasts @76.7': coarse sized siltstone clasts
	75-80	Run 15 Box 5				@77.8' to 87.5': Grades to Sandy CLAY (CL), dark yellowish to reddish brown, moist, some angular fine gravels, scattered fine sand @81.1' to 83': Increase in gravel @83' to 90.3': paleosol, reddish brown to orange brown, sandy silty clay with fine rounded gravel
212 80						

FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE	JOINTS / SHEAR / FRACTURE		WEATHERING
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE
							V. SEVERE
					Fe = Iron Oxide	Mn = Manganese Oxide	COMPLETE

ROCKLOG2014 EL RODEO BORING LOGS 4-27-12.GPJ ROCKLOG2012.GDT 2/18/15

LEIGHTON

CORE BORING LOG

BORING NO. CB-3
PAGE 5 OF 7

PROJECT: El Rodeo School
CLIENT: Hill, Farrer, & Burrill, LLP
CONTRACTOR: Martini Drilling Corporation
EQUIPMENT USED: CME-75, Continuous Core

GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION		CORE BARREL	
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	Split Sleeve
						HORIZONTAL	SIZE	2.5 I.D.
						INCLINED	Bit (Feet)	
						BEARING	Barrel (Feet)	5
					0	ANG. FROM VERT.	Total (Feet)	

JOB NO.: 603367-001
PAGE NO.: 5 of 7
ELEVATION: 292.4 Feet
DATE START: 2/10/2012
DATE FINISH: 2/10/2012
DRILLER: Martini
PREPARED BY: JMP
LOCATION: See Plate 1

ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS
						The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.
212 80	80-85	Run 16 Box 6				
207 85	85-90	Run 17 Box 6				@87.5' to 89.5': CLAY (CL), dark reddish brown, moist, few coarse sands, moderate blocky structure
						@89.5' to 90.3': Gravelly CLAY (CL), dark reddish brown, very moist, angular black slate gravels
202 90	90-95	Run 18 Box 6				@90.3' to 92.8': Sandy GRAVEL (GP), dark yellow brown, wet, fine to coarse subrounded to angular gravel, medium to coarse sand
						@92.8' to 93.6': Sandy CLAY (CL), dark yellow brown, moist, fine to medium sand, few fine gravels
						@93.6' to 95.2': CLAY (CL), dark yellow brown, moist, few fine gravels
197 95	95-100	Run 19 Box 7				@95.2' to 99': Grades to Silty CLAY with Gravel (CL), dark yellow brown, moist, concentrated gravels between 95.4' to 95.8' and 96.8' to 97', otherwise scattered fine gravels, increase in silt with depth
						@99' to 101.1': Grades to Clayey Sandy SILT (ML), dark yellow brown, moist, fine sand, few fine angular gravel
192 100						

FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE	JOINTS / SHEAR / FRACTURE		WEATHERING
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE
							V. SEVERE
					Fe = Iron Oxide	Mn = Manganese Oxide	COMPLETE

ROCKLOG2014 EL RODEO BORING LOGS 4-27-12.GPJ ROCKLOG2012.GDT 2/18/15

*** This log is a part of a report by Leighton and should not be used as a stand-alone document. ***

LEIGHTON

CORE BORING LOG

BORING NO. CB-3
PAGE 6 OF 7

PROJECT: El Rodeo School
CLIENT: Hill, Farrer, & Burrill, LLP
CONTRACTOR: Martini Drilling Corporation
EQUIPMENT USED: CME-75, Continuous Core

GROUNDWATER:		DEPTH TO (Feet):				ORIENTATION		CORE BARREL	
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	Split Sleeve	
						HORIZONTAL	SIZE	2.5 I.D.	
						INCLINED	Bit (Feet)		
						BEARING	Barrel (Feet)	5	
					0	ANG. FROM VERT	Total (Feet)		

JOB NO.: 603367-001
PAGE NO.: 6 of 7
ELEVATION: 292.4 Feet
DATE START: 2/10/2012
DATE FINISH: 2/10/2012
DRILLER: Martini
PREPARED BY: JMP
LOCATION: See Plate 1

ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS
						The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.
192 100	100-105	Run 20 Box 7				@101.1' to 102.1': Sandy GRAVEL (GP), dark yellow brown, wet, fine to coarse sands, fine to coarse gravels, abundant black slaty gravels
						@102.1' to 103.8': CLAY (CL), dark yellow brown, moist
						@103.8' to 104.3': Sandy GRAVEL (GP), dark gray to yellow brown, wet, coarse gravels
187 105						@104.3' to 105': Sandy SILT (ML), weak soil development, dark yellow brown, moist, very fine sand
	105-110	Run 21 Box 7				@105' to 106.1': No Recovery
						@106.1' to 107.8': Sandy SILT (ML) with interlayered gravels, dark yellow brown
						@107.8' to 109.3': Interlayered Sandy GRAVELS (GP) and CLAYS (CL), dark yellow brown, wet, fine to coarse subrounded gravels
						@109.3' to 110': CLAY (CL), dark yellow brown, moist
182 110						@110' to 111.3': No Recovery
	110-115	Run 22 Box 8				@111.3' to 112': SAND to Gravelly SAND (SP), dark yellow brown, wet, fine subangular gravels
						@112' to 112.5': CLAY with Gravel (CL)
						@112.5' to 112.7': GRAVEL (GP) layer, fine subangular gravels, wet
						@112.7' to 115': Clayey SAND to Sandy CLAY (SC-CL), dark yellowish brown, moist, fine sand
177 115						@115' to 116': No Recovery
	115-120	Run 23 Box 8				@116' to 116.3': Clayey SAND (SC), dark yellow brown, moist
						@116.3' to 120': CLAY to Sandy CLAY (CL), dark yellow brown, moist
						@116.8' to 117.2': Gravelly SAND (SP) layer
172 120						

FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE	JOINTS / SHEAR / FRACTURE		WEATHERING
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE
							V. SEVERE
					Fe = Iron Oxide	Mn = Manganese Oxide	COMPLETE

ROCKLOG2014 EL RODEO BORING LOGS 4-27-12.GPJ ROCKLOG2012.GDT 2/18/15

LEIGHTON

CORE BORING LOG

BORING NO. CB-3
PAGE 7 OF 7

PROJECT: El Rodeo School
CLIENT: Hill, Farrer, & Burrill, LLP
CONTRACTOR: Martini Drilling Corporation
EQUIPMENT USED: CME-75, Continuous Core

GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION		CORE BARREL	
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	Split Sleeve
						HORIZONTAL	SIZE	2.5 I.D.
						INCLINED	Bit (Feet)	
						BEARING	Barrel (Feet)	5
					0	ANG. FROM VERT.	Total (Feet)	

JOB NO.: 603367-001
PAGE NO.: 7 of 7
ELEVATION: 292.4 Feet
DATE START: 2/10/2012
DATE FINISH: 2/10/2012
DRILLER: Martini
PREPARED BY: JMP
LOCATION: See Plate 1

ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS
						The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.
172 120					* . *	@120' to 120.5': Gravelly SAND (SP), dark yellow brown, moist,
						@120.5' to 125': No Recovery
	120-125	Run 24 Box 8				
167 125						Total depth of boring: 125' bgs Perched groundwater encountered at approximately 44'-45', 45.8'-49.3', 51.5'-53', 55.8'-58.1', 60'-64.3', 66.3'-66.9', 90.3'-92.8', 103.8'-104.3', 107.8'-109.3', 111.3'-112', 112.5'-112.7' bgs Excavation backfilled with cuttings and patched with asphalt upon completion of drilling. Excess soil cuttings disposed of in D.O.T. approved drums and disposed of offsite.
162 130						
157 135						
152 140						

FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE	JOINTS / SHEAR / FRACTURE		WEATHERING
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE
							V. SEVERE
					Fe = Iron Oxide	Mn = Manganese Oxide	COMPLETE

ROCKLOG2014 EL RODEO BORING LOGS 4-27-12.GPJ ROCKLOG2012.GDT 2/18/15

LEIGHTON

CORE BORING LOG

BORING NO. CB-4
PAGE 1 OF 7

PROJECT: El Rodeo School
CLIENT: Hill, Farrer, & Burrill, LLP
CONTRACTOR: Martini Drilling Corporation
EQUIPMENT USED: CME-75, Continuous Core

GROUNDWATER:		DEPTH TO (Feet):				ORIENTATION	CORE BARREL	
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	Split Sleeve
						HORIZONTAL	SIZE	2.5 I.D.
						INCLINED	Bit (Feet)	
						BEARING	Barrel (Feet)	5
					0	ANG. FROM VERT.	Total (Feet)	

JOB NO.: 603367-001
PAGE NO.: 1 of 7
ELEVATION: 288.4 Feet
DATE START: 2/9/2012
DATE FINISH: 2/9/2012
DRILLER: Martini
PREPARED BY: JMP
LOCATION: See Plate 1

ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS
288 0						The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.
						@Surface: 4" Asphalt concrete
						@ 0.33': 2" Aggregate base
						@0.5': **Artificial Fill, Undocumented (Afu):** Clayey SILT to Silty CLAY (ML-CL), brown, moist, trace fine sand
						@1' to 2': some concrete pieces
283 5						@5.5' **Holocene Alluvium of Benedict Canyon Wash (Qal):** Clayey SILT to Silty CLAY (ML-CL), brown, moist
						@6' to 7': Grades to Sandy SILT (ML), medium brown, moist, fine sand, few fine gravels
	5-10	Run 1 Box 1				@7' to 10': Grades to Silty CLAY (CL), brown, moist, soft, scattered subangular fine black slate gravels
278 10						@10' to 12.2': Grades to Clayey Silty SAND (SM), brown, moist, some subrounded fine to coarse black slate gravels, fine to medium sand
	10-15	Run 2 Box 1				@12.2': **Pleistocene Alluvium of Benedict Canyon Wash (BCW_1):** Grades to Silty CLAY (CL), brown, moist, few scattered fine gravels,
273 15						
	15-20	Run 3 Box 1				@16.3': Thin GRAVEL (GP) layer, angular fine to coarse black slate gravels, 0.1' thick
268 20						

FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE	JOINTS / SHEAR / FRACTURE		WEATHERING
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE
							V. SEVERE
					Fe = Iron Oxide	Mn = Manganese Oxide	COMPLETE

ROCKLOG2014 EL RODEO BORING LOGS 4-27-12.GPJ ROCKLOG2012.GDT 2/18/15

LEIGHTON

CORE BORING LOG

BORING NO. CB-4
PAGE 2 OF 7

PROJECT: El Rodeo School
CLIENT: Hill, Farrer, & Burrill, LLP
CONTRACTOR: Martini Drilling Corporation
EQUIPMENT USED: CME-75, Continuous Core

GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION		CORE BARREL	
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	Split Sleeve
						HORIZONTAL	SIZE	2.5 I.D.
						INCLINED	Bit (Feet)	
						BEARING	Barrel (Feet)	5
					0	ANG. FROM VERT.	Total (Feet)	

JOB NO.: 603367-001
PAGE NO.: 2 of 7
ELEVATION: 288.4 Feet
DATE START: 2/9/2012
DATE FINISH: 2/9/2012
DRILLER: Martini
PREPARED BY: JMP
LOCATION: See Plate 1

ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS
						The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.
268 20	20-25	Run 4 Box 2				@20': Becomes Silty CLAY (CL) @21.5': Grades to Sandy CLAY (CL), brown, moist, fine sand, few scattered fine subangular gravels
						@22.3' to 24.3': Grades to Sandy SILT (ML), brown, moist to very moist, continued fine gravels scattered, some clay
263 25	25-30	Run 5 Box 2				@24.5' to 25.8'Sandy SILT to Silty SAND (SM-ML), brown, very moist to wet, very fine sand @25.8' to 27.5': Sandy GRAVEL (GP), brownish gray, slightly moist, fine to coarse subrounded to subangular gravels, coarse sand matrix @27.5' to 30': No Recovery
258 30	30-35	Run 6 Box 2				@30' to 31.5': Sandy GRAVEL (GP), moist, fine to coarse subangular to subrounded black slate gravels, few siltstone clasts @31.5'Pleistocene Alluvium of Benedict Canyon Wash (BCW_2): Silty CLAY (CL), brown to reddish brown, moist, homogeneous @32': Sandy CLAY (CL), dark reddish brown, fine sand with fine sand-sized siltstone fragments, moderate amount of silica cement, moderate blocky structure, some fine subrounded slaty gravel, gleyed along pedogenic facies, paleosol @35': Sandy CLAY (CL), brown to reddish brown, moist, some fine gravels
253 35	35-40	Run 7 Box 3				@35.5' to 38.1': Grades to Gravelly SAND (SP), brown to reddish brown, moist, subrounded fine gravels, some coarse gravels @38': well graded @38.1' to 40': No Recovery
248 40						

FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE	JOINTS / SHEAR / FRACTURE		WEATHERING
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE
					Fe = Iron Oxide Mn = Manganese Oxide		V. SEVERE
							COMPLETE

ROCKLOG2014 EL RODEO BORING LOGS 4-27-12.GPJ ROCKLOG2012.GDT 2/18/15

LEIGHTON

CORE BORING LOG

BORING NO. CB-4
PAGE 3 OF 7

PROJECT: El Rodeo School
CLIENT: Hill, Farrer, & Burrill, LLP
CONTRACTOR: Martini Drilling Corporation
EQUIPMENT USED: CME-75, Continuous Core

GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION		CORE BARREL	
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	Split Sleeve
						HORIZONTAL	SIZE	2.5 I.D.
						INCLINED	Bit (Feet)	
						BEARING	Barrel (Feet)	5
					0	ANG. FROM VERT.	Total (Feet)	

JOB NO.: 603367-001
PAGE NO.: 3 of 7
ELEVATION: 288.4 Feet
DATE START: 2/9/2012
DATE FINISH: 2/9/2012
DRILLER: Martini
PREPARED BY: JMP
LOCATION: See Plate 1

ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS
						The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.
248 40	40-45	Run 8 Box 3				@40' to 40.6': Gravelly SAND (SP), brown to reddish brown, very moist to wet, well graded @40.6' to 42.5': CLAY (CL), paleosol, brown to reddish brown, very moist, medium stiff, angular black slate gravels, well developed blocky fracture @42.5' to 44.3': Grades to Sandy silty CLAY (CL), brown to reddish brown, moist to very moist, some angular black slate gravels @43.3' to 43.7': Very fine sand and clay laminations, trace siltstone sand-sized fragments, poorly developed soil, porous, 1-2 mm voids, minor gleying along sand laminations @44.3' to 44.9': Gravelly Clayey SAND (SC), brown, to grayish brown, very moist to moist, fine subrounded black slate gravels
243 45	45-50	Run 9 Box 3				@44.9' to 45.8': Silty SAND (SM), brown to reddish brown, very moist, fine sand @45.8' to 46.2': Gradational zone of Clayey SILT (ML) @46.2' to 50': Grades to Silty fine sand (SM), moist, brown to reddish brown, zone of medium sand @47.8' to 48'
238 50	50-55	Run 10 Box 4				@50' to 52.6': SAND with Gravel (SP), wet, brown, medium to coarse sand, fine subrounded gravels with few coarse gravels concentrated @52.6', upward fining sequence @52.6': <u>Pleistocene Cheviot Hills Deposits (CHD):</u> CLAY (CL), olive brown, moist, few scattered fine gravels @53.7': Color grades to dark reddish brown
233 55	55-60	Run 11 Box 4				@54.5' to 55.8': Grades to Clayey Gravelly SAND (SP), reddish brown, wet, fine to coarse subrounded gravels, well graded @55.8' to 57': Grades to Silty SAND (SM), brown to reddish brown, very moist to wet, fine sand, no gravels @57' to 59.8': Grades to CLAY (CL), brown to reddish brown, moist, subangular gravels @59.3' to 59.8'
228 60						

FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE	JOINTS / SHEAR / FRACTURE		WEATHERING
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE
							V. SEVERE
					Fe = Iron Oxide	Mn = Manganese Oxide	COMPLETE

ROCKLOG2014 EL RODEO BORING LOGS 4-27-12.GPJ ROCKLOG2012.GDT 2/18/15

LEIGHTON

CORE BORING LOG

BORING NO. CB-4
PAGE 4 OF 7

PROJECT: El Rodeo School
CLIENT: Hill, Farrer, & Burrill, LLP
CONTRACTOR: Martini Drilling Corporation
EQUIPMENT USED: CME-75, Continuous Core

GROUNDWATER		DEPTH TO (Feet):			ORIENTATION		CORE BARREL	
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	Split Sleeve
						HORIZONTAL	SIZE	2.5 I.D.
						INCLINED	Bit (Feet)	
						BEARING	Barrel (Feet)	5
					0	ANG. FROM VERT.	Total (Feet)	

JOB NO. 603367-001
PAGE NO. 4 of 7
ELEVATION: 288.4 Feet
DATE START: 2/9/2012
DATE FINISH: 2/9/2012
DRILLER: Martini
PREPARED BY: JMP
LOCATION: See Plate 1

ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS
228 60	60-65	Run 12 Box 4				The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual. @59.8' to 60': Grades to Silty SAND to SAND (SP-SM), very moist, brown to reddish brown, fine to medium sand @60' to 66.2': Clay to Sandy CLAY (CL), brown to reddish brown, moist to very moist, some gravels @60' to 60.3' and @63.1' @61.6': thin olive gray clay laminations, gleyed along moderately developed soil facies @62.9': 2-3 inch thick gravel bed @64.6: Siltstone rock fragments, thin bed, 2-3 inches thick
223 65	65-70	Run 13 Box 5				@66.2' to 67': Sandy CLAY (CL), brown, very moist, fine gravels, thin layer of fine angular siltstone gravels @66.2' @67' to 67.5': Grades to CLAY (CL), brown, very moist @67.5' to 70': Clay to Sandy CLAY (CL), brown, very moist, fine gravels scattered throughout @68.7' to 69.2': Dark red clay bed
218 70	70-75	Run 14 Box 5				@70' to 73': Sandy GRAVELS to Gravelly SANDS (SP), grayish brown, wet, rounded fine to coarse black slate gravels @73' to 73.8': CLAY (CL), olive gray, moist, few fine angular black slate gravels @73.8' to 76': Sandy Gravelly CLAY (CL), olive gray to brown, moist, generally fine subangular gravels
213 75	75-80	Run 15 Box 5				@76' to 80': Sandy GRAVEL (GP), grayish brown, subangular to subrounded gravels
208 80						

FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE	JOINTS / SHEAR / FRACTURE		WEATHERING
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE
							V. SEVERE
					Fe = Iron Oxide	Mn = Manganese Oxide	COMPLETE

ROCKLOG2014 EL RODEO BORING LOGS 4-27-12.GPJ ROCKLOG2012.GDT 2/18/15

LEIGHTON

CORE BORING LOG

BORING NO. CB-4
PAGE 5 OF 7

PROJECT: El Rodeo School
CLIENT: Hill, Farrer, & Burrill, LLP
CONTRACTOR: Martini Drilling Corporation
EQUIPMENT USED: CME-75, Continuous Core

GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION		CORE BARREL	
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	Split Sleeve
						HORIZONTAL	SIZE	2.5 I.D.
						INCLINED	Bit (Feet)	
						BEARING	Barrel (Feet)	5
					0	ANG. FROM VERT.	Total (Feet)	

JOB NO.: 603367-001
PAGE NO.: 5 of 7
ELEVATION: 288.4 Feet
DATE START: 2/9/2012
DATE FINISH: 2/9/2012
DRILLER: Martini
PREPARED BY: JMP
LOCATION: See Plate 1

ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS
						The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.
208 80						@80' to 81.5': Upward fining sequence of SAND (SP), grayish brown, wet, very coarse to fine sand
	80-85	Run 16 Box 6				@81.5' to 85': No Recovery
203 85						@85' to 90': CLAY (CL), paleosol, reddish brown, moist, few scattered coarse sands, homogeneous, well developed blocky structure, gleying along soil faces
	85-90	Run 17 Box 6				
198 90						@90' to 92.9': Sandy CLAY with Gravel (CL), brown to dark yellowish brown, moist, thin gravel layer @91'
	90-95	Run 18 Box 6				@92.9' to 93.1': GRAVEL layer (GP) @93.1' to 95': Clayey SAND (SC), dark yellowish brown, moist, fine sand, few fine subrounded to subangular gravels
193 95						@95.5' to 97.5: Grades to CLAY (CL), dark reddish brown, moist, few scattered coarse sands, well developed blocky structure @97.5' to 100': Grades to Sandy CLAY (CL), dark yellowish brown, fine sand, isolated 1/2" @97.8': siltstone rock fragments
	95-100	Run 19 Box 7				
188 100						

FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE	JOINTS / SHEAR / FRACTURE		WEATHERING
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE
							V. SEVERE
					Fe = Iron Oxide	Mn = Manganese Oxide	COMPLETE

ROCKLOG2014 EL RODEO BORING LOGS 4-27-12.GPJ ROCKLOG2012.GDT 2/18/15

LEIGHTON

CORE BORING LOG

BORING NO. CB-4
PAGE 6 OF 7

PROJECT: El Rodeo School
CLIENT: Hill, Farrer, & Burrill, LLP
CONTRACTOR: Martini Drilling Corporation
EQUIPMENT USED: CME-75, Continuous Core

GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION		CORE BARREL	
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	Split Sleeve
						HORIZONTAL	SIZE	2.5 I.D.
						INCLINED	Bit (Feet)	
						BEARING	Barrel (Feet)	5
					0	ANG. FROM VERT.	Total (Feet)	

JOB NO.: 603367-001
PAGE NO.: 6 of 7
ELEVATION: 288.4 Feet
DATE START: 2/9/2012
DATE FINISH: 2/9/2012
DRILLER: Martini
PREPARED BY: JMP
LOCATION: See Plate 1

ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS
						The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.
188 100	100-105	Run 20 Box 7				@100' to 100.4': Sandy GRAVEL (GP) @100.4' to 101.2': Sandy CLAY (CL), dark yellowish brown, moist @101.2' to 105': Sandy GRAVELS (GP), grayish brown, wet, fine to coarse sand, fine to coarse subangular to subrounded gravels of various origins, primarily black slate
183 105	105-110	Run 21 Box 7				@105' to 107.1': No Recovery @107.1' to 109.8': SAND (SP), dark gray brown, wet, fine to coarse sand, upward fining sequence, with siltstone sand sized rock fragments
178 110	110-115	Run 22 Box 8				@109.8' to 110': Sandy Clayey GRAVEL (GP), dark gray brown, slightly moist, angular black slate gravels @110' to 110.8': No Recovery @110.8' to 111.5': Sandy CLAY (CL), dark yellowish brown, moist, few fine subangular black slate gravels @111.5' to 113': Grades to Silty SAND (SM), very moist, dark yellowish brown, fine sand @113' to 113.9': Grades to Sandy CLAY (CL), moist, dark yellowish brown @113.9' to 115': Grades to CLAY (CL), dark reddish brown, moist
173 115	115-120	Run 23 Box 8				@115' to 117.2': No Recovery @117.2' to 117.8': CLAY with Sand and Gravel (CL), dark reddish brown, very moist, some fine sand and very fine gravels @117.8' to 118.7': Grades to Clayey GRAVEL (GC), dark grayish brown, very moist, subangular gravels @118.7' to 120': CLAY with Sand and Gravel (CL), dark reddish brown, moist, some coarse sands and few fine subangular gravels
168 120						

FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE	JOINTS / SHEAR / FRACTURE		WEATHERING
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE
							V. SEVERE
					Fe = Iron Oxide	Mn = Manganese Oxide	COMPLETE

ROCKLOG2014 EL RODEO BORING LOGS 4-27-12.GPJ ROCKLOG2012.GDT 2/18/15

*** This log is a part of a report by Leighton and should not be used as a stand-alone document. ***

LEIGHTON

CORE BORING LOG

BORING NO. CB-4
PAGE 7 OF 7

PROJECT: El Rodeo School
CLIENT: Hill, Farrer, & Burrill, LLP
CONTRACTOR: Martini Drilling Corporation
EQUIPMENT USED: CME-75, Continuous Core

GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION		CORE BARREL	
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	Split Sleeve
						HORIZONTAL	SIZE	2.5 I.D.
						INCLINED	Bit (Feet)	
						BEARING	Barrel (Feet)	5
					0	ANG. FROM VERT.	Total (Feet)	

JOB NO.: 603367-001
PAGE NO.: 7 of 7
ELEVATION: 288.4 Feet
DATE START: 2/9/2012
DATE FINISH: 2/9/2012
DRILLER: Martini
PREPARED BY: JMP
LOCATION: See Plate 1

ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS
						The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.
168 120						@120' to 120.9': No Recovery
						@120.9' to 121.4': Sandy GRAVEL (GP), yellowish brown, very moist to wet, fine subangular gravels
	120-125	Run 24 Box 8				@121.4' to 122': CLAY with Sand and Gravel (CL)
						@122' to 122.5': Gravelly SAND (SW), dark yellow brown, very moist
						@122.5' to 123.3': Clayey SILT (ML), dark yellow brown, very moist
						@123.3' to 123.4': Sandy GRAVEL (GP) layer, dark yellow brown, very moist
						@123.4' to 124': CLAY (CL), dark yellow brown, very moist
						@124' to 125': Gravelly SAND (SW), dark yellow brown, very moist
163 125						Total depth of boring: 125' bgs Perched groundwater encountered at approximately 24.5'-25.8', 40'-40.6', 54.5'-55.8', 70'-73', 80'-81.5', 101.2'-105', 107.1'-109.8', 120.9'-121.4' bgs Excavation backfilled with cuttings and patched with asphalt upon completion of drilling. Excess soil cuttings disposed of in D.O.T. approved drums and disposed of offsite.
158 130						
153 135						
148 140						

FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE	JOINTS / SHEAR / FRACTURE		WEATHERING
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE
							V. SEVERE
					Fe = Iron Oxide	Mn = Manganese Oxide	COMPLETE

ROCKLOG2014 EL RODEO BORING LOGS 4-27-12.GPJ ROCKLOG2012.GDT 2/18/15

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LEIGHTON

CORE BORING LOG

BORING NO. CB-5
PAGE 1 OF 10

PROJECT: El Rodeo School
CLIENT: Hill, Farrer, & Burrill, LLP
CONTRACTOR: Martini Drilling Corporation
EQUIPMENT USED: CME-75, Continous Core

GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION		CORE BARREL	
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X VERTICAL		TYPE	Split Sleeve
					HORIZONTAL		SIZE	2.5 I.D.
		▽			INCLINED		Bit (Feet)	
					BEARING		Barrel (Feet)	5
					0 ANG. FROM VERT.		Total (Feet)	

JOB NO.: 603367-001
PAGE NO.: 1 of 10
ELEVATION: 294 Feet
DATE START: 3/26/2012
DATE FINISH: 3/27/2012
DRILLER: Martini
PREPARED BY: AWS
LOCATION: See Plate 1

ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS
						The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.
294 0						@Surface: 3" Asphalt concrete
						@0.25': 3" Aggregate base
						@0.5': Artificial Fill, Undocumented (Afu): Silty SAND (SM), dark yellow brown, slightly moist, fine sand, few fine gravels
						@1.0': Pleistocene Alluvium of Benedict Canyon Wash (BCW_1): Silty SAND (SM), orange brown, slightly moist, fine sand, few gravels, trace pieces of asphalt
289 5						@5.8' to 6.4': Silty SAND (SM), dark yellow brown, moist, fine sand
						@6.4' to 7.3': Sandy GRAVEL (GP), dark yellow brown, moist, fine to coarse angular gravels, fine sand matrix
	5-10	Run 1 Box 1				@7.3' to 8.0': Sandy SILT (ML), dark yellow brown, moist, fine sand
						@8' to 10': No Recovery
284 10						@10' to 11.1': SAND (SP), orange brown, slightly moist, fine to medium sand, few fine black slate gravels
						@11.1' to 12.3': Silty CLAY (CL-ML), strong brown, moist, few fine black slate gravels
	10-15	Run 2 Box 1				@12.3' to 15': CLAY (CL), strong brown to gray brown, moist, few fine gravels
279 15						@15' to 17': Gravelly SAND (SP), strong brown to gray brown, slightly moist, fine sand, fine to coarse angular black slate gravels
	15-20	Run 3 Box 1				@17': CLAY (CL), orange brown to gray brown, moist
						@17.7': Thin GRAVEL (GP) bed
274 20						

FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE	JOINTS / SHEAR / FRACTURE		WEATHERING
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE
							V. SEVERE
					Fe = Iron Oxide	Mn = Manganese Oxide	COMPLETE

ROCKLOG2014 EL RODEO BORING LOGS 4-27-12.GPJ ROCKLOG2012.GDT 2/18/15

*** This log is a part of a report by Leighton and should not be used as a stand-alone document. ***

LEIGHTON

CORE BORING LOG

BORING NO. CB-5
PAGE 2 OF 10

PROJECT: El Rodeo School
CLIENT: Hill, Farrer, & Burrill, LLP
CONTRACTOR: Martini Drilling Corporation
EQUIPMENT USED: CME-75, Continous Core

GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION		CORE BARREL	
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X VERTICAL	TYPE	Split Sleeve	
					HORIZONTAL	SIZE	2.5 I.D	
		▽			INCLINED	Bit (Feet)		
					BEARING	Barrel (Feet)	5	
					0 ANG. FROM VERT	Total (Feet)		

JOB NO.: 603367-001
PAGE NO.: 2 of 10
ELEVATION: 294 Feet
DATE START: 3/26/2012
DATE FINISH: 3/27/2012
DRILLER: Martini
PREPARED BY: AWS
LOCATION: See Plate 1

ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS
						The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.
274 20	20-25	Run 4 Box 2				@19.7': Some SAND (SP) @20' to 20.4': Clayey SILT (ML) with sand, dark yellow, moist, paleosol, fine grained, blocky to columnar structure, minor gleying along pedogenic facies @20.4' to 23.5': Silty CLAY (CL), dark yellow brown to gray brown
						@23.5' to 24.5': Sandy CLAY (CL), dark yellow brown to gray brown, fine sand
269 25	25-30	Run 5 Box 2				@24.7' to 25.4': Sandy SILT (ML), moderate brown, moist, fine sand, few fine subrounded black slate gravels @25.4' to 27.7': Sandy GRAVEL (GP), gray brown, slightly moist, fine to coarse sand, fine to coarse angular black slate gravels Pleistocene Alluvium of Benedict Canyon Wash (BCW_2): @27.7' to 29.2': Sandy CLAY (CL), moderate brown to gray brown, very moist, few gravels, fine sand
						@29.2' to 30': No Recovery
264 30	30-35	Run 6 Box 2				@30' to 30.9': Silty CLAY (CL), banded dark yellow brown to chocolate brown, moist to very moist, base of developed soil @30.9' to 32.1': Clayey SAND (SC), dark reddish brown to brown, moist, fine sand @32.1' to 36.3': Sandy Clayey GRAVEL (GC), dark gray brown, moist, fine to coarse angular to subangular black slate gravels
259 35	35-40	Run 7 Box 3				@36.3' to 43.2': CLAY to Sandy CLAY (CL), dark yellow brown to gray brown, moist, coarse sand, paleosol @37.2' to 37.8': Increased sand @38.6' to 39': Specks of MnO_2 deposits in clay-rich zones
254 40						

FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE	JOINTS / SHEAR / FRACTURE		WEATHERING
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE
							V. SEVERE
					Fe = iron Oxide	Mn = Manganese Oxide	COMPLETE

ROCKLOG2014 EL RODEO BORING LOGS 4-27-12.GPJ ROCKLOG2012.GDT 2/18/15

LEIGHTON

CORE BORING LOG

BORING NO. CB-5
PAGE 3 OF 10

PROJECT: El Rodeo School
CLIENT: Hill, Farrer, & Burrill, LLP
CONTRACTOR: Martini Drilling Corporation
EQUIPMENT USED: CME-75, Continous Core

GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION		CORE BARREL	
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X VERTICAL	TYPE	Split Sleeve	
					HORIZONTAL	SIZE	2.5 I.D.	
		▽			INCLINED	Bit (Feet)		
					BEARING	Barrel (Feet)	5	
					0 ANG. FROM VERT.	Total (Feet)		

JOB NO.: 603367-001
PAGE NO.: 3 of 10
ELEVATION: 294 Feet
DATE START: 3/26/2012
DATE FINISH: 3/27/2012
DRILLER: Martini
PREPARED BY: AWS
LOCATION: See Plate 1

ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS
254 40	40-45	Run 8 Box 3				The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.
249 45	45-50	Run 9 Box 3				@43.2' to 43.4': Clayey SAND (SC), gray brown, moist, coarse sand @43.4' to 43.7': CLAY (CL), dark yellow brown to gray brown, moist, trace fine sand @43.7' to 44.3': Sandy Clayey SILT (ML), dark yellow brown, moist, fine sand @44.3 to 44.7': Sandy Silty CLAY (CL), Paleosol, dark yellow brown to gray brown, moist, trace of fine sand and clay laminations, siltstone rock fragments, poorly developed blocky fracture, gleying along pedogenic facies @44.7' to 45.8': Sandy SILT (ML), dark yellow brown to reddish brown, moist, fine sand @45.8' to 46.2': CLAY (CL), dark yellow brown to gray brown, moist @46.2' to 46.5': SAND (SP), orange brown, moist, fine sand @46.5' to 46.8': CLAY (CL), gray brown, moist, few fine gravels @46.8' to 47': Clayey Gravelly SAND (SP), dark orange brown, moist, fine to medium sand, fine black slate gravels
244 50	50-55	Run 10 Box 4				@47.8': <u>Pleistocene Cheviot Hills Deposits (CHD):</u> CLAY (CL), dark orange brown to gray brown and dark brown between 48.2' to 49', moist, few fine black slate gravels, oxidation-reduction banding, gleyed, oxidized, banded between 49' to 55'
239 55	55-60	Run 11 Box 4				@52.9' to 53.2': Sandy CLAY (CL), with 2-inch slaty gravels @56.0' to 61.5': Sandy CLAY (CL), dark reddish brown, moist, fine to medium sand, few coarse white siltstone gravels (light yellow brown to gray) @ 59', 59.8', and 60.4', well-developed blocky structure @58' to 59': 1-foot thick chocolate brown clay @59.5': Siltstone rock fragments, thin bedded gravel
234 60						

FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE	JOINTS / SHEAR / FRACTURE		WEATHERING
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE
							V. SEVERE
					Fe = Iron Oxide	Mn = Manganese Oxide	COMPLETE

ROCKLOG2014 EL RODEO BORING LOGS 4-27-12.GPJ ROCKLOG2012.GDT 2/18/15

LEIGHTON

CORE BORING LOG

BORING NO. CB-5
PAGE 4 OF 10

PROJECT: El Rodeo School
CLIENT: Hill, Farrer, & Burrill, LLP
CONTRACTOR: Martini Drilling Corporation
EQUIPMENT USED: CME-75, Continous Core

GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION		CORE BARREL	
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X VERTICAL	TYPE	Split Sleeve	
					HORIZONTAL	SIZE	2.5 I.D.	
		▽			INCLINED	Bit (Feet)		
					BEARING	Barrel (Feet)	5	
					0 ANG. FROM VERT.	Total (Feet)		

JOB NO.: 603367-001
PAGE NO.: 4 of 10
ELEVATION: 294 Feet
DATE START: 3/26/2012
DATE FINISH: 3/27/2012
DRILLER: Martini
PREPARED BY: AWS
LOCATION: See Plate 1

ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS
						The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.
234 60						@61.5' to 62.1': Silty CLAY (CL), moderate brown to gray brown, moist
	60-65	Run 12 Box 4				@62.1' to 64.3': Sandy Gravelly CLAY (CL), moderate brown, moist, fine to coarse subrounded to angular gravels, scattered @63.4': $CaCO_3$ lining rock clasts
						@64.3' to 64.5': Clayey SAND (SC), brown, moist, fine sand, basal well rounded coarse gravel
229 65						@64.5' to 65': No Recovery
						@65' to 66.6': Silty CLAY (CL), dark yellow brown, moist, few very fine gravels
	65-70	Run 13 Box 5				@66.6' to 68': Sandy Gravelly CLAY (CL), dark yellow brown, moist, subrounded to subangular gravels
						@68' to 69.6': Becomes more heavily gleyed and dark reddish brown
						@69.6' to 70': No Recovery
224 70						@70' to 74.1': Sandy CLAY (CL), dark yellow brown, moist, fine sand, few very fine black slate gravels scattered @71.2': Gravel layer, primarily fine siltstone
	70-75	Run 14 Box 5				
						@74.1' to 75': Gravelly Silty SAND (SM), dark yellow brown, moist, fine to coarse gravels, fine sand in $CaCO_3$ lined matrix
219 75						@75' to 76.8': Silty Gravelly CLAY (CL), dark yellow brown, moist, some fine to coarse subangular black slate gravels
	75-80	Run 15 Box 5				@76.8' to 79': Clayey Gravelly SILT (ML), dark yellow brown, moist, few fine subangular to subrounded black slate gravels @78': basal rounded small cobble
						@79' to 81.6': Silty CLAY (CL), brown, moist, few very fine black slate gravels, lined with $CaCO_3$
214 80						

FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE	JOINTS / SHEAR / FRACTURE		WEATHERING
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE
							V. SEVERE
					Fe = Iron Oxide	Mn = Manganese Oxide	COMPLETE

ROCKLOG2014 EL RODEO BORING LOGS 4-27-12.GPJ ROCKLOG2012.GDT 2/18/15

LEIGHTON

CORE BORING LOG

BORING NO. CB-5
PAGE 5 OF 10

PROJECT: El Rodeo School
CLIENT: Hill, Farrer, & Burrill, LLP
CONTRACTOR: Martini Drilling Corporation
EQUIPMENT USED: CME-75, Continous Core

GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION		CORE BARREL	
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X VERTICAL		TYPE	Split Sleeve
					HORIZONTAL		SIZE	2.5 I.D
		▽			INCLINED		Bit (Feet)	
					BEARING		Barrel (Feet)	5
					0	ANG. FROM VERT	Total (Feet)	

JOB NO.: 603367-001
PAGE NO.: 5 of 10
ELEVATION: 294 Feet
DATE START: 3/26/2012
DATE FINISH: 3/27/2012
DRILLER: Martini
PREPARED BY: AWS
LOCATION: See Plate 1

ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS
						The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.
214 80						
	80-85	Run 16 Box 6				@81.6' to 85': Sandy GRAVEL (GP), gray brown, very moist, fine to coarse sand matrix, fine to coarse subangular to subrounded black slate gravels, few light brown siltstone gravels
209 85						@85' to 86': Clayey SILT (ML), dark yellow brown, moist, trace fine sand
						@86' to 87.3': Sandy CLAY (CL), strong brown, moist, scattered fine to medium sand, paleosol
	85-90	Run 17 Box 6				@87.3' to 89.2': CLAY (CL), strong brown, moist, very homogeneous and plastic, fine gravel with $CaCO_3$, blocky structure, minor laminations and oxidation-reduction banding
						@89.2' to 90.3': Gravelly CLAY (CL), strong brown, moist, fine to coarse angular to subangular gravels of various origin
204 90						@90.3' to 92.5': Clayey Gravelly SILT (ML), dark yellow brown, moist, some fine coarse subangular black slate gravels @ 92.5'
	90-95	Run 18 Box 6				@92.5' to 94.2': Sandy CLAY (CL), dark yellow brown, moist, fine sand, few fine subangular gravels
						@94.2' to 95': Gravelly SAND (SP), gray brown, very moist to wet with some siltstone and slaty gravels, well graded
199 95						@95' to 95.4': CLAY (CL), dark yellow to strong brown, moist
						@95.4' to 95.6': No Recovery
	95-100	Run 19 Box 7				@95.6' to 97.5': Sandy Gravel (GP), gray brown, very moist, fine to coarse subrounded to subangular gravels, pulses of thin beds of gravels
						@97.5' to 98.4': Silty SAND (SM), dark yellow brown, moist, fine sand
						@98.4' to 99.2': Sandy GRAVEL (GP), gray brown, very moist, fine subangular black slate gravels, basal gravel
						@99.2' to 100.9': CLAY (CL), dark yellow brown, moist, very fine sand
194 100						

FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE	JOINTS / SHEAR / FRACTURE		WEATHERING
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE
							V. SEVERE
					Fe = Iron Oxide	Mn = Manganese Oxide	COMPLETE

ROCKLOG2014 EL RODEO BORING LOGS 4-27-12.GPJ ROCKLOG2012.GDT 2/18/15

LEIGHTON

CORE BORING LOG

BORING NO. CB-5
PAGE 6 OF 10

PROJECT: El Rodeo School
CLIENT: Hill, Farrer, & Burrill, LLP
CONTRACTOR: Martini Drilling Corporation
EQUIPMENT USED: CME-75, Continous Core

GROUNDWATER:		DEPTH TO (Feet):		
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE
		▽		

	ORIENTATION	CORE BARREL	
X	VERTICAL	TYPE	Split Sleeve
	HORIZONTAL	SIZE	2.5 I.D.
	INCLINED	Bit (Feet)	
	BEARING	Barrel (Feet)	5
0	ANG. FROM VERT	Total (Feet)	

JOB NO.: 603367-001
PAGE NO.: 6 of 10
ELEVATION: 294 Feet
DATE START: 3/26/2012
DATE FINISH: 3/27/2012
DRILLER: Martini
PREPARED BY: AWS
LOCATION: See Plate 1

ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS
						The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.
194 100	100-105	Run 20 Box 7				@100.9' to 101.7': Gravelly CLAY (CL), dark yellow brown, moist, fine subangular gravels
						@101.7' to 103.4': Sandy Gravel (GP), gray brown, very moist to wet, fine to coarse subangular gravels, primarily slate
						@103.4' to 107': CLAY (CL), dark yellow brown, moist
						@104': Thin gravel layer
189 105	105-110	Run 21 Box 7				@105': Thin gravel layer
						@106.5': Mildly banded
						@107' to 108.5': Clayey SAND (SC), gray brown, very moist, fine to medium sand, fine black slate gravels with a few coarse gravels
						@108.6' to 110': CLAY (CL), dark yellow brown, moist, some fine sand, few very fine gravels of various origin, mildly banded @109'
184 110	110-115	Run 22 Box 8				@110' to 111.3': Sandy GRAVEL (GP), gray brown, very moist to wet
						@111.3' to 113': SILT (ML), dark yellow brown, very moist, very fine sand, trace of very fine gravels
						@113' to 113.9': Gravelly SAND (SW), gray brown, very moist to wet, fine to coarse sand, fine angular black slate gravels
						@113.9' to 115': No Recovery
179 115	115-120	Run 23 Box 8				@115' to 116.5': Gravelly SAND (SW), gray brown, very moist, fine to coarse sand, fine subangular gravels
						@116.5' to 117.5': Clayey GRAVEL (GC), dark yellow brown to gray brown, moist, fine subangular to angular gravels
						@117.5' to 120': No Recovery
174 120						

FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE	JOINTS / SHEAR / FRACTURE		WEATHERING
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE
							V. SEVERE
					Fe = Iron Oxide	Mn = Manganese Oxide	COMPLETE

ROCKLOG2014 EL RODEO BORING LOGS 4-27-12.GPJ ROCKLOG2012.GDT 2/18/15

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LEIGHTON

CORE BORING LOG

BORING NO. CB-5
PAGE 7 OF 10

PROJECT: El Rodeo School
CLIENT: Hill, Farrer, & Burrill, LLP
CONTRACTOR: Martini Drilling Corporation
EQUIPMENT USED: CME-75, Continous Core

GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION		CORE BARREL	
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	Split Sleeve
						HORIZONTAL	SIZE	2.5 I.D.
		▽				INCLINED	Bit (Feet)	
						BEARING	Barrel (Feet)	5
					0	ANG. FROM VERT.	Total (Feet)	

JOB NO.: 603367-001
PAGE NO.: 7 of 10
ELEVATION: 294 Feet
DATE START: 3/26/2012
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DRILLER: Martini
PREPARED BY: AWS
LOCATION: See Plate 1

ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS
						The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.
174 120	120-125	Run 24 Box 8				@120' to 121.5': SAND (SP), fine to coarse sand, gray brown
						@121.5' to 125': No Recovery
169 125	125-130	Run 25 Box 9				@125' to 125.4': SAND (SP), gray brown, wet, fine to coarse (possible heaved material)
						@125.4' to 128.3': CLAY (CL), dark yellow brown to strong brown
						@126': Slightly varved with gray, few scattered very fine gravel
						@128.3'-130': No Recovery
164 130	130-135	Run 26 Box 9				@130' to 130'9': Gravelly SAND (SW), gray brown, wet, fine to coarse sand, fine to coarse gravel, some clay
						@130.9' to 135': No Recovery
159 135	135-140	Run 27 Box 9				@135' to 136.7': CLAY (CL), yellow brown, moist, some silt
						@136.7' to 137.9': Sandy Gravelly CLAY (CL), yellow brown, moist, some fine angular gravels, dark brown 0.5" thick silty sand clay bed @137'
						@137.9' to 139': Sandy GRAVEL (GP), gray brown, wet, fine to coarse angular black slate gravels, fine to coarse sand
						@139' to 140': No Recovery
154 140						

FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE	JOINTS / SHEAR / FRACTURE		WEATHERING
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE
							V. SEVERE
					Fe = Iron Oxide	Mn = Manganese Oxide	COMPLETE

ROCKLOG2014 EL RODEO BORING LOGS 4-27-12.GPJ ROCKLOG2012.GDT 2/18/15

LEIGHTON

CORE BORING LOG

BORING NO. CB-5
PAGE 8 OF 10

PROJECT: El Rodeo School
CLIENT: Hill, Farrer, & Burrill, LLP
CONTRACTOR: Martini Drilling Corporation
EQUIPMENT USED: CME-75, Continous Core

GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION		CORE BARREL	
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	Split Sleeve
						HORIZONTAL	SIZE	2.5 I.D.
		▽				INCLINED	Bit (Feet)	
						BEARING	Barrel (Feet)	5
					0	ANG. FROM VERT	Total (Feet)	

JOB NO.: 603367-001
PAGE NO.: 8 of 10
ELEVATION: 294 Feet
DATE START: 3/26/2012
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DRILLER: Martini
PREPARED BY: AWS
LOCATION: See Plate 1

ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS
						The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.
154 140						@140' to 140.4': SAND (SP), brown, wet, medium to coarse sand
						@140.4' to 140.55': Silty SAND (SM) with clay, brown, wet, fine sand
						@140.5' to 141.2': Silty SAND (SM), brown, wet, fine sand, fine subangular gravel
	140-145	Run 28 Box 10				@141.2' to 142': Sandy CLAY (CL), orangish olive, wet, fine sand, FeO_3 staining, fine subangular black slate gravel
						@142' to 142.7': Sandy CLAY (CL), orangish brown, wet, fine sand, FeO_3 staining
						@142.7' to 143.5': Sandy CLAY (CL), dark brown, wet, fine sand, Mn nodules, subangular pebbles
						@143.5' to 144.15': Clayey SAND (SC), brownish dark gray, wet, fine sand, MnO_3 nodules, Fe staining, vertical $CaCO_2$ stringers @143.75' to 143.85', MnO_3 band @contact with below
149 145						@144.15' to 144.6': Clayey SAND (SC), orangish olive, very moist, fine sand, Fe staining, few angular coarse sand
						@144.6' to 145': No Recovery
						@145' to 145.3': Clayey SAND (SC), orangish brown, wet, fine sand, subangular black slate pebbles
	145-150	Run 29 Box 10				@145.3' to 146': Clayey SAND to Sandy CLAY (SC-CL), orangish olive, wet, fine sand, Fe staining, highly weathered angular gravels and pebbles
						@146' to 148.5': Sandy CLAY (CL), mottled orange brown to olive, very moist to wet, fine sand, Fe staining, MnO_3 banding, subangular to angular fine gravel
						@148.5' to 149.1': CLAY (CL), mottled orange to olive, wet, Fe staining
						@149.1' to 149.4': Clayey SAND (SC), mottled orange brown to olive, wet, fine with few coarse sand
144 150						@149.4' to 150': No Recovery
						@150' to 150.6': Clayey SAND (SC), mottled orangish to olive, wet, fine sand, FeO_3 staining, few coarse sand
						@150.6' to 153.2': Sandy CLAY (CL), mottled orange to olive, wet, very fine sand, FeO_3 staining, Mn nodules, with $CaCO_3$, with siltstone clasts
	150-155	Run 30 Box 10				@151': gleyed, oxidation-reduction banded, MnO_2
						@153.2' to 153.7': CLAY (CL), mottled orangish to olive, wet, FeO_3 staining, MnO_2 nodules
						@153.7' to 153.85': CLAY (CL), mottled orangish to olive, wet, FeO_3 staining, Mn_2 nodules, subangular pebbles
139 155						@153.85' to 155.8': CLAY (CL), mottled orangish to dark olive, wet, FeO_3 staining, MnO_2 nodules
						@155.8' to 157.35': Sandy CLAY (CL), mottled orangish to dark olive, wet, fine sand, FeO_3 staining
	155-160	Run 31 Box 11				@157.35' to 158.1': CLAY (CL), mottled orangish gray, wet, Fe staining, heavy $CaCO_3$ stringer development, near vertical, paleosol
						@158.1' to 158.6': CLAY (CL), mottled brown gray, wet, Fe staining, Mn nodules, vertical $CaCO_3$ stringers
						@158.6' to 159.3': CLAY (CL), brown, wet, vertical $CaCO_3$ stringers
134 160						@159.3' to 159.6': CLAY (CL), brown, wet, MnO_2 nodules, horizontal and

FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE	JOINTS / SHEAR / FRACTURE		WEATHERING
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE
							V. SEVERE
					Fe = Iron Oxide	Mn = Manganese Oxide	COMPLETE

ROCKLOG2014 EL RODEO BORING LOGS 4-27-12.GPJ ROCKLOG2012.GDT 2/18/15

LEIGHTON

CORE BORING LOG

BORING NO. CB-5
PAGE 9 OF 10

PROJECT: El Rodeo School
CLIENT: Hill, Farrer, & Burrill, LLP
CONTRACTOR: Martini Drilling Corporation
EQUIPMENT USED: CME-75, Continous Core

GROUNDWATER:		DEPTH TO (Feet):		
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE
		▽		

	ORIENTATION	CORE BARREL	
X	VERTICAL	TYPE	Split Sleeve
	HORIZONTAL	SIZE	2.5 I.D.
	INCLINED	Bit (Feet)	
	BEARING	Barrel (Feet)	5
0	ANG. FROM VERT.	Total (Feet)	

JOB NO.: 603367-001
PAGE NO.: 9 of 10
ELEVATION: 294 Feet
DATE START: 3/26/2012
DATE FINISH: 3/27/2012
DRILLER: Martini
PREPARED BY: AWS
LOCATION: See Plate 1

ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS
134 160	160-165	Run 32 Box 11				The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.
						vertical $CaCO_3$ stringers and nodules
						@159.6' to 160.6': Clayey SAND (SC), brown, wet, fine sand, angular fine gravel, $CaCO_3$ nodules
						@160.6' to 160.75': Angular gravel layer within unit
						@160.75' to 162.6': Clayey SAND (SC), orangish olive, wet, fine angular pebbles, with some MnO_2 and $CaCO_3$ nodules
						@162.2' to 162.3': MnO_2 banding
						@162.6' to 165': Sandy CLAY (CL), brown, wet, very fine sand, abundant $CaCO_3$ nodules
129 165	165-170	Run 33 Box 11				@165' to 165.7': Sandy CLAY (CL), brown, wet, fine sand, fine subangular gravel, $CaCO_3$ nodules
						@165.7' to 166': Sandy CLAY (CL), olive brown, wet, very fine sand, MnO_2 nodules, $CaCO_3$ nodules
						@166' to 166.7': CLAY (CL), olive, wet, MnO_2 banding
						@166.2' to 166.4': Sandy CLAY (CL), olive brown, wet, very fine sand
						@166.4' to 166.5': SAND (SP), brown, wet, fine sand, poorly sorted
						@166.5' to 166.9': Clayey SAND (SC), brown, wet, very fine sand, MnO_2 nodules, $CaCO_3$ nodules
						@166.9' to 167': CLAY (CL), brown, wet, MnO_2 nodules, $CaCO_3$ nodules
						@167' to 167.2': CLAY (CL), olive, wet, MnO_2 nodules, $CaCO_3$ nodules
						@167.2' to 167.25': SAND (SP), olive, wet, fine sand, poorly sorted
124 170	170-175	Run 34 Box 12				@167.25' to 167.4': Sandy CLAY (CL), dark olive, wet, MnO_2 nodules, $CaCO_3$ nodules
						@167.4' to 168.15': CLAY (CL), olive, wet, $CaCO_3$ nodules
						@168.15' to 168.6': CLAY (CL), mottled brown olive, wet, Mn nodules and $CaCO_3$ nodules prevalent
						@168.5' to 169.5': Sandy CLAY (CL), dark gray, wet, fine to medium sand
						@168.6' to 168.5': Clayey SAND (SC), dark gray, wet, fine to medium sand
						@169.5' to 170': SAND (SP), dark gray, wet, fine to medium sand
						@170' to 170.75': Clayey SAND (SC), gray brown, wet, fine sand, fine subrounded gravel
						@170.75' to 170.85': Silty SAND (SM), gray olive, wet, fine sand, MnO_2 nodules
119 175	175-180	Run 35 Box 12				@170.85' to 171.9': CLAY (CL) with sand, gray to olive, wet, fine sand, MnO_2 nodules, few fine subrounded gravel
						@171.9' to 172.8': Silty SAND (SM), dark olive gray, wet, fine sand
						@172.8' to 173': Silty SAND (SM), dark gray, wet, fine sand, FeO_3 staining
						@173' to 175': No Recovery
						@175' to 175.85': Silty SAND (SM), dark gray, wet, fine sand, fine subrounded gravel
						@175.85' to 176.1': CLAY (CL), marl, dark gray, wet, MnO_2 nodules, $CaCO_3$ nodules
						@176.1' to 180': No Recovery
114 180						

FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE	JOINTS / SHEAR / FRACTURE		WEATHERING
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE
							V. SEVERE
					Fe = Iron Oxide	Mn = Manganese Oxide	COMPLETE

ROCKLOG2014 EL RODEO BORING LOGS 4-27-12.GPJ ROCKLOG2012.GDT 2/18/15

LEIGHTON

CORE BORING LOG

BORING NO. CB-5
PAGE 10 OF 10

PROJECT: El Rodeo School
CLIENT: Hill, Farrer, & Burrill, LLP
CONTRACTOR: Martini Drilling Corporation
EQUIPMENT USED: CME-75, Continous Core

GROUNDWATER:		DEPTH TO (Feet):		
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE
		▽		

	ORIENTATION	CORE BARREL	
X	VERTICAL	TYPE	Split Sleeve
	HORIZONTAL	SIZE	2.5 I.D.
	INCLINED	Bit (Feet)	
	BEARING	Barrel (Feet)	5
0	ANG. FROM VERT.	Total (Feet)	

JOB NO.: 603367-001
PAGE NO.: 10 of 10
ELEVATION: 294 Feet
DATE START: 3/26/2012
DATE FINISH: 3/27/2012
DRILLER: Martini
PREPARED BY: AWS
LOCATION: See Plate 1

ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS
						The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.
114 180	180-185	Run 36 Box 12				@180' to 181.5': Silty SAND (SM), dark gray, wet, fine sand, massive, unconsolidated
						@181.5' to 183.8': CLAY (CL), dark gray, wet, with $CaCO_3$ nodules that increase with depth
						@183.8' to 184': Silty SAND (SM), brownish dark gray, wet, fine to very fine sand, MnO_2 banding
109 185						@184' to 185': CLAY (CL), mottled orange to olive, wet, $CaCO_3$ stringers and nodules, paleosol
						@184.4' to 184.65': Silty SAND (SM), olive dark gray, wet, very fine sand, MnO_2 nodules, micaceous
						@184.65' to 184.85': CLAY (CL), dark olive, wet, MnO_2 nodules
						@184.85' to 185': CLAY (CL), dark gray, wet
						Total depth of boring: 185' bgs
						Perched groundwater encountered at approximately 94.2-95', 101.7-103.4', 110'-111.3', 113'-113.9',125'-125.4', 130'-130.9', 137.9'-185' bgs
						Excavation backfilled with cuttings and patched with asphalt upon completion of drilling.
						Excess soil cuttings disposed of in D.O.T. approved drums and disposed of offsite.
104 190						
99 195						
94 200						

FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE	JOINTS / SHEAR / FRACTURE		WEATHERING
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE
					Fe = Iron Oxide Mn = Manganese Oxide		V. SEVERE
							COMPLETE

ROCKLOG2014 EL RODEO BORING LOGS 4-27-12.GPJ ROCKLOG2012.GDT 2/18/15

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LEIGHTON

CORE BORING LOG

BORING NO. CB-6
PAGE 1 OF 9

PROJECT: El Rodeo School
CLIENT: Hill, Farrer, & Burrill, LLP
CONTRACTOR: Martini Drilling Corporation
EQUIPMENT USED: CME-75, Continous Core

GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION		CORE BARREL	
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	Split Sleeve
						HORIZONTAL	SIZE	2.5 I.D.
						INCLINED	Bit (Feet)	
						BEARING	Barrel (Feet)	5
					0	ANG. FROM VERT.	Total (Feet)	

JOB NO.: 603367-001
PAGE NO.: 1 of 9
ELEVATION: 305 Feet
DATE START: 3/28/2012
DATE FINISH: 3/29/2012
DRILLER: Martini
PREPARED BY: AWS
LOCATION: See Plate 1

ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS
						The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.
305 0						@Surface: Asphalt concrete
						@0.4': **Artificial Fill, Undocumented (Afu):** Silty SAND (SM), light brown, moist, fine to medium sand with angular gravel
300 5						@5' to 5.8': Silty SAND (SM), brown, moist, fine to medium sand, clay, pipe fragments, rebar debris
						@5.8': **Pleistocene Alluvium of Benedict Canyon Wash (BCW_2):** Silty SAND (SM), gray brown, moist, fine to medium sand, fine and coarse subangular gravel
	5-10	Run 1 Box 1				@7.3' to 7.65': Clayey SAND (SP), gray brown, moist, fine sand, fine and coarse subrounded gravels
						@7.65'- 8': Gravelly SAND (SP), gray brown, moist, fine sand, fine subangular black slaty gravel
						@8' to 9': Sandy CLAY (CL), orange brown, moist, fine sand, fine subrounded gravel
295 10						@9' to 10': No Recovery
						@10' to 11': Sandy CLAY (CL), orange brown, moist, fine sand, FeO_3 staining, fine subangular black slate gravel
						@11' to 12': Sandy CLAY (CL), mottled orange olive, moist, very fine sand, FeO_3 staining
	10-15	Run 2 Box 1				@12.1' to 14.1': Gravelly SAND (SP), orange brown, moist, fine sand, fine and coarse subrounded to subangular black slate gravel, well graded
						@14.1' to 14.4': Silty SAND (SM), orange brown, moist, fine sand
						@14.4' to 15': No Recovery
290 15						@15' to 17.3': Silty SAND (SM) with clay, orange brown, moist, fine sand with interbedded layers of clay (~1/2" thick), olive, moist
	15-20	Run 3 Box 1				@17.3' to 17.6': Silty SAND (SM), dark brown, moist, fine to medium sand, subangular gravel, hydrocarbon odor
						@17.6' to 20': No Recovery
285 20						

FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE	JOINTS / SHEAR / FRACTURE		WEATHERING
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE
							V. SEVERE
					Fe = Iron Oxide	Mn = Manganese Oxide	COMPLETE

ROCKLOG2014 EL RODEO BORING LOGS 4-27-12.GPJ ROCKLOG2012.GDT 2/18/15

LEIGHTON

CORE BORING LOG

BORING NO. CB-6
PAGE 2 OF 9

PROJECT: El Rodeo School
CLIENT: Hill, Farrer, & Burrill, LLP
CONTRACTOR: Martini Drilling Corporation
EQUIPMENT USED: CME-75, Continous Core

GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION		CORE BARREL	
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	Split Sleeve
						HORIZONTAL	SIZE	2.5 I.D
						INCLINED	Bit (Feet)	
						BEARING	Barrel (Feet)	5
					0	ANG. FROM VERT.	Total (Feet)	

JOB NO.: 603367-001
PAGE NO.: 2 of 9
ELEVATION: 305 Feet
DATE START: 3/28/2012
DATE FINISH: 3/29/2012
DRILLER: Martini
PREPARED BY: AWS
LOCATION: See Plate 1

ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS
						The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.
285 20	20-25	Run 4 Box 2				@20' to 23': Gravelly SAND (SP), dark gray, moist, fine to medium sand, fine and coarse subangular to subrounded gravel, hydrocarbon odor and residue on material
						@23' to 23.7': Gravelly SAND (SP), orange gray, moist, fine to medium sand, fine and coarse subangular to sudrounded gravel, hydrocarbon odor
						@23.7' to 25': No Recovery
280 25	25-30	Run 5 Box 2				@25' to 27.5': Gravelly SAND (SP), orange dark gray, wet, fine to medium sand, fine and coarse subangular to subrounded gravel, trace cobbles, hydrocarbon odor, well graded
						@27.5' to 29.3': CLAY (CL), orange, olive, moist, FeO_3 staining
						@29.3' to 30': No Recovery
275 30	30-35	Run 6 Box 2				@30' to 32.6': CLAY (CL), mottled olive to red brown, moist, FeO_3 staining, few fine subangular black slate gravel, well developed blocky fracture, gleying along soil facies, paleosol
						@36.6' base of paleosol @32.6' to 34.5': Clayey SAND to Sandy CLAY (SC-CL), orange, moist, fine sand, fine subangular black slate gravel, with olive clay laminations
						@34.5' to 35': Sandy CLAY (CL), orange brown, fine sand
270 35	35-40	Run 7 Box 3				@35' to 35.7': Silty SAND (SM), red brown, wet, medium sand
						@35.7' to 36.5': Sandy CLAY (CL), orange brown, very moist, fine sand, few subangular siltstone fragments
						@36.5' to 38': Clayey SAND (SC), orange brown, very moist, fine sand with highly weathered angular gravels and fine subangular black slate gravel
						@38' to 40': CLAY (CL),chocolate brown, very moist, few subangular black slate gravel
265 40						

FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE	JOINTS / SHEAR / FRACTURE		WEATHERING
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE
							V. SEVERE
					Fe = Iron Oxide	Mn = Manganese Oxide	COMPLETE

ROCKLOG2014 EL RODEO BORING LOGS 4-27-12.GPJ ROCKLOG2012.GDT 2/18/15

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LEIGHTON

CORE BORING LOG

BORING NO. CB-6
PAGE 3 OF 9

PROJECT: El Rodeo School
CLIENT: Hill, Farrer, & Burrill, LLP
CONTRACTOR: Martini Drilling Corporation
EQUIPMENT USED: CME-75, Continous Core

GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION		CORE BARREL	
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	Split Sleeve
						HORIZONTAL	SIZE	2.5 I.D.
						INCLINED	Bit (Feet)	
						BEARING	Barrel (Feet)	5
					0	ANG. FROM VERT.	Total (Feet)	

JOB NO.: 603367-001
PAGE NO.: 3 of 9
ELEVATION: 305 Feet
DATE START: 3/28/2012
DATE FINISH: 3/29/2012
DRILLER: Martini
PREPARED BY: AWS
LOCATION: See Plate 1

ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS
						The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.
265 40						@40' to 42.7': Gravelly SAND (SP), grayish brown, wet, subangular gravel
	40-45	Run 8 Box 3				**Pleistocene Cheviot Hills Deposits (CHD):**
						@42.7' to 43.3': Silty SAND (SM) with clay, brown, wet, very fine sand, subrounded gravel, oxidized sand with MnO_2
						@43.3' to 44.1': Gravelly SAND (SP), gray brown, wet, fine subangular gravel, well graded
260 45						@44.1' to 45': No Recovery
						@45' to 45.7': SAND (SP), gray brown, wet, medium sand, poorly sorted
						@45.7' to 46.1': SAND (SP), gray brown, wet, coarse sand, poorly sorted
						@46.1' to 46.3': Gravelly SAND (SP), gray brown, wet, coarse sand, poorly sorted, fine and coarse subangular gravel, well graded
	45-50	Run 9 Box 3				@46.3' to 50': No Recovery
255 50						@50' to 50.9': SAND (SP), gray brown, wet, medium sand, poorly sorted
						@50.9' to 51.2': Gravelly SAND (SP), gray brown, wet, coarse sand, poorly sorted, subangular gravel, well graded
						@51.2' to 51.5': CLAY (CL), orange brown, very moist to wet, angular black slate gravel
	50-55	Run 10 Box 4				@51.5' to 55': No Recovery
250 55						@55' to 55.7': Gravelly SAND (SW), dark gray brown, wet, medium to coarse sand, subangular gravel
						@55.7' to 56.3': CLAY (CL), orange brown, wet, subangular gravels, poorly developed blocky fracture
						@56.3' to 56.7': Silty SAND (SM), red brown, wet, fine sand, FeO_3 staining, few subangular gravel
	55-60	Run 11 Box 4				@56.7' to 58.8': Gravelly SAND (SP), dark grayish orange, wet, fine sand, fine subrounded to angular black slate gravel
						@58.8' to 60': No Recovery
245 60						

FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE	JOINTS / SHEAR / FRACTURE		WEATHERING
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE
							V. SEVERE
					Fe = Iron Oxide	Mn = Manganese Oxide	COMPLETE

ROCKLOG2014 EL RODEO BORING LOGS 4-27-12.GPJ ROCKLOG2012.GDT 2/18/15

LEIGHTON

CORE BORING LOG

BORING NO. CB-6
PAGE 4 OF 9

PROJECT: El Rodeo School
CLIENT: Hill, Farrer, & Burrill, LLP
CONTRACTOR: Martini Drilling Corporation
EQUIPMENT USED: CME-75, Continous Core

GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION		CORE BARREL	
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	Split Sleeve
						HORIZONTAL	SIZE	2.5 I.D.
						INCLINED	Bit (Feet)	
						BEARING	Barrel (Feet)	5
					0	ANG. FROM VERT.	Total (Feet)	

JOB NO.: 603367-001
PAGE NO.: 4 of 9
ELEVATION: 305 Feet
DATE START: 3/28/2012
DATE FINISH: 3/29/2012
DRILLER: Martini
PREPARED BY: AWS
LOCATION: See Plate 1

ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS
245 60	60-65	Run 12 Box 4				The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual. @60' to 60.5': SAND (SP), dark gray brown, wet, fine to coarse sand, subangular black slate gravel @60.5' to 61.4': CLAY (CL), dark red brown, wet subangular black slate gravel @61.4' to 61.8': Gravelly SAND (SW), dark gray brown, wet fine sand, subangular black slate gravel @61.8' to 62.15': Silty SAND (SM), dark red brown, wet, fine sand @62.15' to 62.3': SAND (SP), dark gray brown, wet, fine to medium sand, subangular black slate gravel @62.3' to 62.5': Sandy CLAY (CL), dark red brown, wet, fine to very fine sand @62.5' to 62.8': Gravelly SAND (SW), dark gray red brown, wet, fine sand, angular to subangular gravel
240 65	65-70	Run 13 Box 5				@62.8' to 65': No Recovery @65' to 65.4': CLAY (CL), olive brown, wet @65.4' to 65.8': Sandy CLAY (CL), olive, wet, very fine sand @65.8' to 66': Silty SAND (SM),olive, wet, fine sand @66' to 66.3': Sandy CLAY (CL), olive, wet, very fine sand @66.3' to 66.5': Silty SAND (SM), red brown, wet, fine sand @66.5' to 67.3': Sandy CLAY (CL), red olive, wet, very fine sand @67.3' to 68.3': CLAY (CL), chocolate brown, wet, FeO_3 staining, MnO_2 nodules @68.3' to 68.6': CLAY (CL), brown, wet, subangular slaty gravel @68.6' to 69': Silty SAND (SM), orange olive, wet, very fine sand @69' to 69.7': CLAY (CL), olive, wet with brown banding
235 70	70-75	Run 14 Box 5				@69.7' to 70': No Recovery @70' to 70.9': Sandy CLAY (CL), orange olive, wet, fine to very fine sand @70.9' t0 72': Gravelly SAND (SW) with clay, dark gray brown, wet, fine to medium sand, subangular black slate gravel and subrounded gravel @72' to 72.55': CLAY (CL), olive brown, wet @72.55' to 73.15': Silty SAND (SM), orange brown, wet, fine to very fine sand @73.15' to 73.5': Sandy CLAY (CL), dark brown, wet, very fine sand, subangular black slate gravel @73.5' to 74.3': Silty SAND (SM), orange brown, wet, fine sand, subangular black slate gravel @74.3' to 74.4': Gravelly SAND (SW), dark gray brown, wet, subangular gravel
230 75	75-80	Run 15 Box 5				@74.4' to 75'- No Recovery @75' to 76.7': Sity SAND (SM), dark gray brown, wet, fine to medium sand, few subangular gravel, "Salt and Pepper" sands @76.7' to 80': No Recovery
225 80						

FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE	JOINTS / SHEAR / FRACTURE		WEATHERING
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE
							V. SEVERE
					Fe = Iron Oxide	Mn = Manganese Oxide	COMPLETE

ROCKLOG2014 EL RODEO BORING LOGS 4-27-12.GPJ ROCKLOG2012.GDT 2/18/15

LEIGHTON

CORE BORING LOG

BORING NO. CB-6
PAGE 5 OF 9

PROJECT: El Rodeo School
CLIENT: Hill, Farrer, & Burrill, LLP
CONTRACTOR: Martini Drilling Corporation
EQUIPMENT USED: CME-75, Continous Core

GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION		CORE BARREL	
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X VERTICAL		TYPE	Split Sleeve
					HORIZONTAL		SIZE	2.5 I.D.
					INCLINED		Bit (Feet)	
					BEARING		Barrel (Feet)	5
					0 ANG. FROM VERT.		Total (Feet)	

JOB NO.: 603367-001
PAGE NO.: 5 of 9
ELEVATION: 305 Feet
DATE START: 3/28/2012
DATE FINISH: 3/29/2012
DRILLER: Martini
PREPARED BY: AWS
LOCATION: See Plate 1

ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS
						The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.
225 80	80-85	Run 16 Box 6				@80' to 80.7': Sandy CLAY (CL), orange brown, very moist, fine sand, subangular gravel @80.7' to 81.9': Sandy CLAY (CL), chocolate brown, very moist, fine sand, MnO_2 nodules @81.9' to 83.7': Sandy CLAY (CL), orange brown, very moist, fine sand, subangular gravel, with oxidation-reduction banded olive clayey sand @83.7' to 85': CLAY (CL), orange brown, moist, abundant MnO_2 nodules
220 85	85-90	Run 17 Box 6				@85' to 85.6': CLAY (CL), red brown, moist, MnO_2 nodules @85.6 to 88': Sandy CLAY (CL), red brown, moist, fine sand, fine subangular gravel @88' to 88.9': Sandy CLAY (CL), red brown,wet, fine sand, subangular gravel
215 90	90-95	Run 18 Box 6				@88.9' to 90.2': Clayey SAND (SC), orange brown, very moist, fine sand, fine and coarse subangular gravels @90.2' to 90.6': Silty SAND (SM), olive brown, very moist, fine sand @90.6' to 90.9': CLAY (CL), olive brown, very moist @90.9' to 91.6': Silty SAND (SM), red brown, wet, fine sand @91.6' to 92.1': Silty SAND (SM), olive brown, wet, very fine sand @92.1' to 92.4': Sandy CLAY (CL), olive brown, very moist, fine sand, FeO_3 staining, MnO_2 nodules @92.4' to 92.6': CLAY (CL), olive brown, very moist, FeO_3 staining, MnO_2 nodules @92.6' to 94.1': Clayey SAND (SC), orange olive, wet, fine sand, FeO_3 staining, fine and coarse subangular black slaty gravels @94.1' to 94.6': Clayey SAND(SC), orange olive, wet, very fine sand, FeO_3 staining, subangular gravel @94.6' to 95': Clayey SAND (SC), red olive, moist, very fine sand, FeO_3 staining
210 95	95-100	Run 19 Box 7				@95' to 95.7': Clayey SAND (SC), orange olive, moist, fine sand, FeO_3 staining @95.7' to 96.2': Clayey SAND (SC), red brown, moist, fine sand, FeO_3 staining, subangular gravel @96.2' to 96.7': Clayey SAND (SC), orangish olive, moist, fine sand, FeO_3 staining @96.7' to 97.8': Silty SAND (SM), brown, wet, fine sand, subangular to angular gravels @97.8' to 98.1': Silty SAND (SM), olive brown, wet, fine sand @98.1' to 98.6': Clayey SAND (SC), orangish olive, moist, very fine sand, subangular black slaty gravel
205 100						

FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE	JOINTS / SHEAR / FRACTURE		WEATHERING
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE
							V. SEVERE
					Fe = Iron Oxide	Mn = Manganese Oxide	COMPLETE

ROCKLOG2014 EL RODEO BORING LOGS 4-27-12.GPJ ROCKLOG2012.GDT 2/18/15

*** This log is a part of a report by Leighton and should not be used as a stand-alone document. ***

LEIGHTON

CORE BORING LOG

BORING NO. CB-6
PAGE 6 OF 9

PROJECT: El Rodeo School
CLIENT: Hill, Farrer, & Burrill, LLP
CONTRACTOR: Martini Drilling Corporation
EQUIPMENT USED: CME-75, Continous Core

GROUNDWATER		DEPTH TO (Feet)			ORIENTATION		CORE BARREL	
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	Split Sleeve
						HORIZONTAL	SIZE	2.5 I.D.
						INCLINED	Bit (Feet)	
						BEARING	Barrel (Feet)	5
					0	ANG. FROM VERT.	Total (Feet)	

JOB NO.: 603367-001
PAGE NO.: 6 of 9
ELEVATION: 305 Feet
DATE START: 3/28/2012
DATE FINISH: 3/29/2012
DRILLER: Martini
PREPARED BY: AWS
LOCATION: See Plate 1

ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS
205 100						The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.
						@98.6' to 98.8': CLAY (CL), olive brown, moist, MnO_2 nodules
						@98.8' to 99': Clayey SAND (SC), orange olive, moist, fine sand
						@99' to 100': CLAY (CL), mottled orange to olive, moist, FeO_3 staining, few MnO_2 nodules from 99' to 99.2'
	100-105	Run 20 Box 7				@100' to 100.85': Silty SAND (SM), orange brown, wet, fine sand, angular black slaty gravels, basal gravelly sand
						@100.85' to 101.6': Sandy CLAY (CL), red brown, wet, fine sand, FeO_3 staining, some coarse sand, gleyed
						@101.6' to 103': Sandy CLAY (CL), olive brown, moist, fine sand, FeO_3 staining, MnO_2 banding, few fine angular gravel
						@103' to 103.9': Clayey Gravel (GC), mottled orange to olive, moist, FeO_3 staining
200 105						@103.9' to 105': CLAY (CL), mottled orange to brown, moist, FeO_3 staining
						@105' to 105.7': CLAY (CL), olive, wet, FeO_3 staining, MnO_2 nodules
						@105.7' to 106.3': CLAY (CL), olive, wet, FeO_3 staining, MnO_2 nodules, subangular gravel
	105-110	Run 21 Box 7				@106.3' to 109.2': CLAY (CL), mottled orange to olive, wet, FeO_3 staining, trace MnO_2 nodules
						@109.2' to 111': CLAY (CL), mottled red brown to dark gray, wet, FeO_3 staining, MnO_2 nodules
195 110						@111' to 113.2': CLAY (CL), orange brown, very moist, FeO_3 staining, subangular black slaty gravel increasing with depth
	110-115	Run 22 Box 8				@113.2' to 114.1': CLAY (CL) with sand, orangish olive, very moist, FeO_3 staining, trace subangular gravel
						@114.1' to 115.7': CLAY (CL), brown, very moist to wet with few highly weathered angular gravel,
190 115						@115.7' to 116.1': CLAY (CL), olive brown, moist to very moist, micaceous, sharp contact with above
						@116.1' to 116.7': Sandy CLAY (CL), color change from brown to green, very moist, fine sand with few subangular gravel
	115-120	Run 23 Box 8				@116.7' to 117.4': Sandy CLAY (CL), dark green, moist, fine sand
						@117.4' to 118.2': Clayey SAND (SC), dark green, moist, fine sand, MnO_2 nodules
185 120						@118.2' to 120': CLAY (CL), color change brown to dark olive gray, moist, subrounded pebbles, $CaCO_3$ nodules, MnO_2 banding, grey marl with clayey calcareous laminations, marl

FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE	JOINTS / SHEAR / FRACTURE		WEATHERING
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE
							V. SEVERE
					Fe = Iron Oxide	Mn = Manganese Oxide	COMPLETE

ROCKLOG2014 EL RODEO BORING LOGS 4-27-12.GPJ ROCKLOG2012.GDT 2/18/15

LEIGHTON

CORE BORING LOG

BORING NO. CB-6
PAGE 7 OF 9

PROJECT: El Rodeo School
CLIENT: Hill, Farrer, & Burrill, LLP
CONTRACTOR: Martini Drilling Corporation
EQUIPMENT USED: CME-75, Continous Core

GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION		CORE BARREL	
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	Split Sleeve
						HORIZONTAL	SIZE	2.5 I.D.
						INCLINED	Bit (Feet)	
						BEARING	Barrel (Feet)	5
					0	ANG. FROM VERT.	Total (Feet)	

JOB NO.: 603367-001
PAGE NO.: 7 of 9
ELEVATION: 305 Feet
DATE START: 3/28/2012
DATE FINISH: 3/29/2012
DRILLER: Martini
PREPARED BY: AWS
LOCATION: See Plate 1

ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS
						The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.
185 120	120-125	Run 24 Box 8				@120' to 120.5': CLAY (CL), dark gray, wet, $CaCO_3$ stingers and nodules, MnO_2 laminations
						@120.5' to 121.4': SAND (SP), dark gray, wet, fine to medium sand
						@121.4' to 122': CLAY (CL), dark gray, wet, $CaCO_3$ nodules
						@122' to 123.55': Gravelly CLAY (CL) with sand, dark gray, wet, subangular to angular gravel, MnO_2 laminations
						@123.55' to 123.7': CLAY (CL), dark gray, wet, $CaCO_3$ nodules
						@123.7' to 123.8': SILT (ML), dark gray, moist
						@123.8' to 125': No Recovery
180 125	125-130	Run 25 Box 9				@125' to 125.3': Silty SAND (SM), gray olive, moist, very fine sand
						@125.3' to 126.15': CLAY (CL), dark gray olive, moist to very moist, $CaCO_3$ nodules, MnO_2 nodules
						@126.15' to 126.8': CLAY (CL), sharp contact with above, brown, moist to very moist, $CaCO_3$ nodules and medium sand prevalent
						@126.8' to 128.7': CLAY (CL), olive dark gray, moist, $CaCO_3$ nodules
						@128.7' to 129.1': CLAY (CL), orangish olive gray, moist, $CaCO_3$ nodules
						@129.1' to 129.3': CLAY (CL), light brown, moist to very moist, FeO_2 staining, sharp contact with below, $CaCO_3$, stringers
175 130	130-135	Run 26 Box 9				@129.3' to 130': CLAY (CL), gray, moist
						@130' to 131': Clayey SAND (SC), light yellow brown, wet, fine sand, MnO_2 nodules
						@131' to 131.3': Silty SAND (SM), light yellow brown, wet, fine sand
						@131.3' to 132.1': CLAY (CL), light yellow brown, moist, fine sand, FeO_3 staining, MnO_2 nodules
						@132.1': Quaternary San Pedro Formation (Qsp): Silty SAND (SM), light yellow brown, wet, very fine sand, FeO_3 staining, angular gravel
						@133.5' to 135': No Recovery
170 135	135-140	Run 27 Box 9				@135' to 140': No Recovery
165 140						

FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE	JOINTS / SHEAR / FRACTURE		WEATHERING
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE
							V. SEVERE
					Fe = Iron Oxide	Mn = Manganese Oxide	COMPLETE

ROCKLOG2014 EL RODEO BORING LOGS 4-27-12.GPJ ROCKLOG2012.GDT 2/18/15

LEIGHTON

CORE BORING LOG

BORING NO. CB-6
PAGE 8 OF 9

PROJECT: El Rodeo School
CLIENT: Hill, Farrer, & Burrill, LLP
CONTRACTOR: Martini Drilling Corporation
EQUIPMENT USED: CME-75, Continous Core

GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION		CORE BARREL	
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	Split Sleeve
						HORIZONTAL	SIZE	2.5 I.D.
						INCLINED	Bit (Feet)	
						BEARING	Barrel (Feet)	5
					0	ANG. FROM VERT.	Total (Feet)	

JOB NO.: 603367-001
PAGE NO.: 8 of 9
ELEVATION: 305 Feet
DATE START: 3/28/2012
DATE FINISH: 3/29/2012
DRILLER: Martini
PREPARED BY: AWS
LOCATION: See Plate 1

ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS
						The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.
165 140	140-145	Run 28 Box 10				@140' to 140.5': Sandy SILT (ML), yellowish olive, wet, very fine sand, subrounded gravel and cobbles @140.5' to 145': No Recovery
160 145	145-150	Run 29 Box 10				@145' to 145.5': Silty SAND (SM), yellowish olive, wet, fine sand, FeO_3 staining, subangular to subrounded gravel @145.5' to 147.2': Sandy SILT (ML), yellowish olive, wet, very fine sand, FeO_3 staining, subangular to subrounded gravel @147.2' to 150': No Recovery
155 150	150-155	Run 30 Box 10				@150' to 151': Silty SAND (SM), light olive, wet, fine to medium sand @151' to 151.4': Silty SAND (SM), orangish olive, wet, fine sand, FeO_3 staining, subrounded gravel @151.4' to 152.1': Silty SAND (SM), orangish olive, wet, fine sand, FeO_3 staining, subrounded gravel @152.1' to 155': No Recovery
150 155	155-160	Run 31 Box 11				@155' to 155.5': Silty SAND (SM), red orange, wet, fine sand, FeO_3, prevalent staining @155.5' to 155.9': Silty SAND to Sandy SILT (SM-ML), orangish olive, wet, very fine sand, FeO_3 staining @155.9' to 157.7': Silty SAND to Sandy SILT (SM-ML), light olive, wet, very fine sand, FeO_3 staining, subrounded gravel @157.7'- 160': No Recovery
145 160						

FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE	JOINTS / SHEAR / FRACTURE		WEATHERING
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE
							V. SEVERE
					Fe = Iron Oxide	Mn = Manganese Oxide	COMPLETE

ROCKLOG2014 EL RODEO BORING LOGS 4-27-12.GPJ ROCKLOG2012.GDT 2/18/15

LEIGHTON

CORE BORING LOG

BORING NO. CB-6
PAGE 9 OF 9

PROJECT: El Rodeo School
CLIENT: Hill, Farrer, & Burrill, LLP
CONTRACTOR: Martini Drilling Corporation
EQUIPMENT USED: CME-75, Continous Core

GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION		CORE BARREL	
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	Split Sleeve
						HORIZONTAL	SIZE	2.5 I.D.
						INCLINED	Bit (Feet)	
						BEARING	Barrel (Feet)	5
					0	ANG. FROM VERT.	Total (Feet)	

JOB NO.: 603367-001
PAGE NO.: 9 of 9
ELEVATION: 305 Feet
DATE START: 3/28/2012
DATE FINISH: 3/29/2012
DRILLER: Martini
PREPARED BY: AWS
LOCATION: See Plate 1

ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS
145 160						The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.
						Total depth of boring: 160' bgs Perched groundwater encountered @ 25'-27.5', 35'-35.7', 40'-76.7', 88'-88.9', 90.9'-92.1', 92.6'-98.1', 100'-101.6', 105'-111', 114.1'-115.7', 120'-123.7', 130'-131.3', and 132.1'-157.7' bgs. Excavation backfilled with cuttings and patched with asphalt upon completion of drilling. Excess soil cuttings disposed of in D.O.T. approved drums and disposed of offsite.
140 165						
135 170						
130 175						
125 180						

FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE	JOINTS / SHEAR / FRACTURE		WEATHERING
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE
					Fe = Iron Oxide Mn = Manganese Oxide		V. SEVERE
							COMPLETE

ROCKLOG2014 EL RODEO BORING LOGS 4-27-12.GPJ ROCKLOG2012.GDT 2/18/15

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LEIGHTON

CORE BORING LOG

BORING NO. CB- 7
PAGE 1 OF 10

PROJECT: El Rodeo Geohazard Investigation
CLIENT: Beverly Hills Unified School District
CONTRACTOR: Martini Drilling Corporation
EQUIPMENT USED: CME-75

GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION		CORE BARREL	
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	
						HORIZONTAL	SIZE	
06/17/14	ATD	▽ 40				INCLINED	Bit (Feet)	
06/17/14	ATD	▼ 135				BEARING	Barrel (Feet)	
		▼			0	ANG. FROM VERT	Total (Feet)	

JOB NO.: 10274.006
PAGE NO.: 1 of 10
ELEVATION: 293 Feet
DATE START: 6/17/2014
DATE FINISH: 6/17/2014
DRILLER: Martini
PREPARED BY: EH
LOCATION: 605 Whittier Blvd., Beverly Hills, Ca

ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS
						The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.
293 0						@Surface: 3" Asphalt
						@0.25': 21" Aggregate base
						@2': **Artificial Fill, Undocumented (Afu):** Silty CLAY with sand (CL), brown, moist, fine to medium grained sand, trace fine gravel sized slate fragments, medium subrounded slate and pebbly gravels
	2-5	Box 1				@3': **Modern and Holocene Alluvium in Historical Channel of Moreno Creek (Qw):** Silty SAND (SM), brown to dark brown mottling, fine grained sand, trace medium to coarse grained sand, trace clay rich zones, trace slate fragments
288 5						
						@6.3' to 6.5': Dark brown, with trace clay
	5-10	Box 1				
						@8.9' to 9.2': Silty SAND with gravel (SM), reddish brown, moist, mostly fine to medium grained sand, few coarse grained sand and fine gravel, with abundant slate fragments @9.1' to 9.2', with minor yellowish oxidation coating slate fragments
283 10						@9.2' to 9.4': Lamination of sandy silt
						@9.4' to 10': No Recovery
						@10' to 10.6': Silty SAND (SM), reddish brown, moist, fine to medium grained sand, few coarse sand grains, few gravel sized slate fragments
						@10.6' to 10.8': Lamination of silty clay
	10-15	Box 2				@10.8' to 11.3': Silty SAND with GRAVEL zone (SW), subangular to subrounded clasts
						@11.3' to 11.9': Silty SAND (SM), reddish brown, moist, fine to coarse grained sand, few fine gravels
						@11.9' to 16.4': fine to coarse GRAVEL (GP-GC), subangular clasts with matrix of clayey sand, reddish brown, with yellowish oxidation staining, clasts consist of tabular slate and basalt, fine to coarse subrounded to subangular gravels
278 15						
						@16.4': Becomes Silty SAND (SM), with some clay, fine to medium grained sand, with interbedded medium to coarse grained sand, moist, reddish brown
	15-20	Box 2				**Pleistocene Alluvium of Benedict Canyon Wash (BCW_1):** @17.2' to 18.4': Sandy CLAY (CL) bed, olive gray, moist, with some coarse slaty sand, abrupt contact below
						@18.4' to 18.9': Silty SAND (SM), with fine gravel, dark reddish brown, moist, unconsolidated, friable
273 20						@18.9' to 20': No Recovery

FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE	JOINTS / SHEAR / FRACTURE		WEATHERING
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE
							V. SEVERE
					Fe = Iron Oxide	Mn = Manganese Oxide	COMPLETE

ROCKLOG2014 10274.006 LOGS-RECOVER.GPJ ROCKLOG2012.GDT 2/18/15

LEIGHTON

CORE BORING LOG

BORING NO. CB- 7

PROJECT: El Rodeo Geohazard Investigation
CLIENT: Beverly Hills Unified School District
CONTRACTOR: Martini Drilling Corporation
EQUIPMENT USED: CME-75

GROUNDWATER:		DEPTH TO (Feet):		
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE
06/17/14	ATD	▽ 40		
06/17/14	ATD	▼ 135		
		▼		

ORIENTATION		CORE BARREL	
X	VERTICAL	TYPE	
	HORIZONTAL	SIZE	
	INCLINED	Bit (Feet)	
	BEARING	Barrel (Feet)	
0	ANG. FROM VERT.	Total (Feet)	

JOB NO.: 10274.006
PAGE NO.: 2 of 10
ELEVATION: 293 Feet
DATE START: 6/17/2014
DATE FINISH: 6/17/2014
DRILLER: Martini
PREPARED BY: EH
LOCATION: 605 Whittier Blvd., Beverly Hills, Ca

ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS
						The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.
273 20	20-25	Box 3				@20': Sandy CLAY (CL), reddish brown, mostly massive, minor sporadic laminations, few fine slaty gravels, gleyed zone from 21.6' to 23.4', occuring along ~45° laminations, gradational contact
						@23.9' to 24.9': Clayey SILT (ML), with fine sand, dark reddish brown, increase in moisture, minor to poor blocky structure, abrupt contact below with MnO_2 banding
268 25	25-30	Box 3				@24.9' to 25': SAND (SP), orangish brown, fine grained
						@25' to 26': Fine GRAVEL (GW), subangular to subrounded tabular slate clasts, reddish brown, with yellow oxidation, clayey sand matrix
						@26' to 26.5': Silty SAND (SM), fine to medium grained sand, grades to fine to coarse basal fine tabular slaty gravels, reddish brown, with yellow oxidation, upwardly fining sequence
						@26.5' to 27': Silty SAND (SM), fine to medium grained sand, grades coarses, basal gravel bed, subrounded slaty gravels, upwardly fining sequence,
						@27' to 28.9': Clayey SILT (ML), with sand laminations, oxidation-reduction banding, gleying along sand laminations, orangish brown to grayish brown, sporadic fine gravels, very sandy from 27.8' to 28.3', gradational contact with below, oxidation-reduction banded
263 30	30-35	Box 4				@28.9' to 30': Sandy CLAY (CL), moderate blocky structure, waxy (sheared) on faces, internal random shears from 29.5' to 29.7', fine to medium grained sand, with fine gravel
						@30' to 30.2': Silty CLAY to Clayey SILT (CL-ML), with some fine sand, brick red, very moist, abrupt contact below
						@30.2': Sandy CLAY (CL), very fine grained, orange brown
						@30.8' to 33.5': Silty Clayey SAND (SC-SM), increase in granular percentage of fine grained sand, some clay, gleyed along laminations, spotty gleying in matrix
						@33.5' to 33.7': Silty SAND (SM), reddish brown to yellow brown to orange red, moist, fine grained, unconsolidated, thin bed to 34.5'
258 35	35-40	Box 4				**Pleistocene Alluvium of Benedict Canyon Wash (BCW_2):**
						@34.5': Becomes Silty CLAY (CL), with very fine sand, reddish brown to orange brown
						@34.8' to 35': Very sandy
						@35' to 35.7': Silty Sandy CLAY (CL-ML)
						@35.7' to 36.1': Sandy CLAY (CL), very dark reddish brown to chocolate brown, with fine gravel sized slate fragments, base of developed soil
						@36.1': Silty Sandy CLAY (CL-ML), poorly laminated, weathered slaty fragments to 39.7', gleyed along laminations and in matrix
253 ▽ 40						

FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE	JOINTS / SHEAR / FRACTURE		WEATHERING
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE
							V. SEVERE
					Fe = Iron Oxide	Mn = Manganese Oxide	COMPLETE

LEIGHTON

CORE BORING LOG

BORING NO. CB- 7
PAGE 3 OF 10

PROJECT: El Rodeo Geohazard Investigation
CLIENT: Beverly Hills Unified School District
CONTRACTOR: Martini Drilling Corporation
EQUIPMENT USED: CME-75

GROUNDWATER:		DEPTH TO (Feet):		
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE
06/17/14	ATD	▽ 40		
06/17/14	ATD	▼ 135		
		▼		

ORIENTATION		CORE BARREL	
X	VERTICAL	TYPE	
	HORIZONTAL	SIZE	
	INCLINED	Bit (Feet)	
	BEARING	Barrel (Feet)	
0	ANG. FROM VERT	Total (Feet)	

JOB NO.: 10274.006
PAGE NO.: 3 of 10
ELEVATION: 293 Feet
DATE START: 6/17/2014
DATE FINISH: 6/17/2014
DRILLER: Martini
PREPARED BY: EH
LOCATION: 605 Whittier Blvd., Beverly Hills, Ca

ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS
						The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.
253 40	40-45	Box 5				@39.7' to 40': Silty CLAY (CL), dark reddish brown to brick red, gleyed, poorly developed blocky strucure @40' to 40.9': Clayey SILT (ML), with fine sand, dark brown, wet @40.9' to 41.8': Sandy CLAY (CL), orange brown to reddish brown, very moist, fine grained, minor gleying along laminations @41.6': Appearance of fine to coarse slaty gravel, 3% @41.8': Gravelly SAND (SW), wet, fine to coarse sand and gravel, slaty rock fragments to 43.7' @43.7': Basal sandstone cobbles @43.7' to 45': No Recovery
248 45	45-50	Box 5				@45' to 47.1': gravels and sands, slaty fine to coarse weathered gravel, sandstone cobble @47.1': **Pleistocene Cheviot Hill Deposit (CHD):** Abrupt contact to 47.6', Sandy CLAY (CL), orange brown, very moist, fine grained @47.6': Becomes dark reddish brown to orange brown, gleying @48.1' to 48.3': Trace slaty coarse gravel in sandy clay matrix, moist @48.3' to 50': Sandy CLAY (CL), massive, increase in sand volume
243 50	50-55	Box 6				@50' to 52': Silty Sandy CLAY (CL-ML), poor blocky structure, spotty MnO_2 on faces, reddish brown, moist, with minor gleying, mostly fine grained sand @52' to 52.5': Silty SAND (SM), wet, perched zone, fine grained sand, reddish brown @52.5' to 52.7': CLAY (CL) lamination, poor blocky structure, reddish brown with yellow oxidation staining @52.7' to 52.9': Gravelly SAND with clay (SW-SC), fine to coarse grained sand, fine subangular to subrounded slaty gavel @52.9' to 53.2': CLAY (CL) lamination, poor blocky structure, reddish brown, with minor gleying, yellowish oxidation staining
238 55	55-60	Box 6				@53.2' to 54.8': Sandy CLAY with Silt (CL-ML), olive brown to reddish brown, gleyed, massive, sporadic fine to coarse subangular slaty gravels, very moist, heavily oxidized @54.4' to 54.8' @55' to 55.5': Clayey Silty SAND (SC-SM), olive brown to reddish brown, gleyed, fine grained sand, trace medium grained sand, grades coarser @55.5' to 55.9': Silty CLAY (CL-ML), reddish brown, gleyed, poor blocky structure, some fine grained sand, gradational contact @55.9' to 57.2': Sandy CLAY (CL), with gravel, reddish brown, gleyed, oxidized, massive, fine to coarse grained sand, fine subangular gravels, feldspars and slate @57.2' to 57.5': SAND (SP) bed, fine to coarse grained, trace fine gravel
233 60						

FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE	JOINTS / SHEAR / FRACTURE		WEATHERING
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE
							V. SEVERE
					Fe = Iron Oxide	Mn = Manganese Oxide	COMPLETE

ROCKLOG2014 10274.006 LOGS-RECOVER.GPJ ROCKLOG2012.GDT 2/18/15

LEIGHTON

CORE BORING LOG

BORING NO. CB- 7
PAGE 4 OF 10

PROJECT: El Rodeo Geohazard Investigation
CLIENT: Beverly Hills Unified School District
CONTRACTOR: Martini Drilling Corporation
EQUIPMENT USED: CME-75

GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION		CORE BARREL	
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT OF HOLE	X	VERTICAL	TYPE	
						HORIZONTAL	SIZE	
06/17/14	ATD	▽ 40				INCLINED	Bit (Feet)	
06/17/14	ATD	▼ 135				BEARING	Barrel (Feet)	
		▼			0	ANG. FROM VERT.	Total (Feet)	

JOB NO.: 10274.006
PAGE NO.: 4 of 10
ELEVATION: 293 Feet
DATE START: 6/17/2014
DATE FINISH: 6/17/2014
DRILLER: Martini
PREPARED BY: EH
LOCATION: 605 Whittier Blvd., Beverly Hills, Ca

ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS
						The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.
233 60	60-65	Box 7				@57.5' to 58': Sandy CLAY (CL), reddish brown, gleyed, poorly developed soil, fine to medium grained sand
						@58' to 58.3': Sandy SILT with Clay (ML-CL), reddish brown, gleyed, fine grained sand, slightly micaceous
						@58.3' to 59': Gravelly SAND with Clay (SW-SC), brown, medium to coarse grained sand, fine subangular slate and quartz gravels
						@59' to 59.5': Silty SAND with Clay lamination (SP-SC), fine grained, slightly micaceous
						@59.5': Medium to coarse grained sand lamination
						@59.6' to 59.8': Sandy SILT with Clay (ML-CL), reddish brown, moist, fine grained sand
228 65	65-70	Box 7				@59.8' to 60': Clayey SAND (SC), reddish brown, fine to coarse grained sand, gleyed, trace fine slaty gravels
						@60' to 62': SAND with Silt and Clay (SC-SM), brown, moist, normal graded, fine to coarse grained sand, quartz and slate grains
						@62' to 65': No Recovery
						@65' to 66.8': SAND with Silt and Clay (SC-SM), brown, fine to coarse grained, no grading, white siltstone sand size fragments
						@66.8' to 70': Sandy CLAY (CL), dark reddish brown, laminated, MnO_2 on poorly developed soil faces, trace fine subrounded slaty gravels, oxidation-reduction banded, MnO_2 laminated @69.6'
223 70	70-75	Box 8				@70' to 70.3': Clayey SAND (SC), reddish brown, fine to medium grained, gradational contact below
						@70.3' to 71.3': Sandy CLAY (CL), reddish brown, minor gleying, laminated oxidation-reduction banding, spotty MnO_2 on poorly developed faces
						@71.3' to 73.7': Sandy CLAY (CL), dark reddish brown, gleyed, MnO_2 staining, faintly laminated, poor blocky structure
						@73.7' to 75': No Recovery
218 75	75-80	Box 8				@75' to 75.6': Clayey SAND (SC), reddish brown, very moist, mostly fine to medium grained, trace coarse grained sand and fine gravel
						@75.5': Gravelly layer, fine to coarse subrounded slate fragments
						@75.6' to 76.6': Sandy CLAY (CL), with gravel, minor gleying, massive, fine to coarse subangular to subrounded quartzite, carbonate, slaty gravels, and basalt
						@76.6' to 78.9': Sandy CLAY (CL), reddish brown, moist, hard, minor gleying and oxidation, sporadic fine to coarse subangular to subrounded slate and quartzite, carbonate gravels, faintly laminated, moderate blocky structure, sporadic MnO_2.
						@78.9' to 79.1': GRAVEL (GW) layer, slate
213 80						@79.1' to 79.8': Becomes sandier, dark reddish brown, fine to medium grained

FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE	JOINTS / SHEAR / FRACTURE		WEATHERING
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE
							V. SEVERE
					Fe = Iron Oxide	Mn = Manganese Oxide	COMPLETE

ROCKLOG2014 10274.006 LOGS-RECOVER.GPJ ROCKLOG2012.GDT 2/18/15

LEIGHTON

CORE BORING LOG

BORING NO. CB- 7
PAGE 5 OF 10

PROJECT: El Rodeo Geohazard Investigation
CLIENT: Beverly Hills Unified School District
CONTRACTOR: Martini Drilling Corporation
EQUIPMENT USED: CME-75

GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION		CORE BARREL	
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	
						HORIZONTAL	SIZE	
06/17/14	ATD	▽ 40				INCLINED	Bit (Feet)	
06/17/14	ATD	▼ 135				BEARING	Barrel (Feet)	
		▼			0	ANG. FROM VERT.	Total (Feet)	

JOB NO.: 10274.006
PAGE NO.: 5 of 10
ELEVATION: 293 Feet
DATE START: 6/17/2014
DATE FINISH: 6/17/2014
DRILLER: Martini
PREPARED BY: EH
LOCATION: 605 Whittier Blvd., Beverly Hills, Ca

ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS
						The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.
213 80						sand, trace coarse grained sand and fine gravel, slightly micaceous
						@79.8' to 80.2': Subangular fine to coarse GRAVEL (GW) layer, slate, Tm, carbonate, basalt
	80-85	Box 9				@80.2' to 83.9': Sandy CLAY (CL), reddish brown, very sporadic gleying, fine to medium grained sand, sporadic subrounded fine slaty gravels, moderate blocky structure, fine to coarse gravel layer @81.9' to 82', yellow oxide staining
						@83.3', gradational contact
						@83.9': Becomes sandier, fine to coarse grained sand, abundant fine subangular to subrounded slaty gravels, poor blocky structure
208 85						@84.7' to 86': Sandy CLAY (CL), dark reddish brown, fine grained sand, trace medium grained sand, very sporadic fine slaty gravels, moderate blocky structure
						@86': Becomes sandier, less consolidated, strong blocky structure, moist
	85-90	Box 9				@87' to 87.9': Increase in fine to coarse gravels, subangular to subrounded, with tabular slate fragments, reddish brown
						@87.9' to 89.6': GRAVEL (GP), fine to coarse tabular slate, with subrounded clasts, abrupt contact
						@89.6' to 90': Sandy CLAY (CL), reddish brown, poor blocky structure, shimmer on faces, possible $CaCO_3$ cement mineralization on pedogenic faces
203 90						@90' to 90.5': Gravelly SAND with Clay (SW-SC), dark reddish brown, fine to coarse grained sand, fine subangular to subrounded slaty gravels, abrupt contact
						@90.5' to 90.8': Sandy CLAY (CL), with silt, reddish brown, fine grained sand, poor blocky structure, shimmer on faces
	90-95	Box 10				@90.8' to 91.1': Clayey SAND (SC), reddish brown, fine to medium grained sand, gradational contact
						@91.1' to 91.9': CLAY (CL), reddish brown, some silt, hard, depositional (non-blocky), trace fine grained sand
						@91.7': Becomes dark chocolate brown
						@91.7' to 96.3': Brown paleosol clay with some sand
						@91.9' to 93.2': Dark reddish brown
198 95						@93.2' to 96.3': Sandy CLAY (CL), with gravel, reddish brown, hard, chaotic assemblage of fine to coarse gravel (debris flow), gravels consist of predominantly slate, minor amounts of Tm, gravels become more abundant towards 95'
						@95': 2-inch slaty cobbles
	95-100	Box 10				@96.3' to 98.2': Sandy CLAY (CL), reddish brown, hard, poor blocky structure, shimmer on faces, sporadic fine subangular slaty gravels, gradational contact
						@98.2' to 98.7': GRAVEL (GW) bed, fine to coarse subangular slate fragments
						@98.7' to 99.5': Sandy CLAY (CL), reddish brown, moist, slightly micaceous, no structure, sporadic fine gravel
193 100						@99.5': Becomes sandier

FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE	JOINTS / SHEAR / FRACTURE		WEATHERING
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE
							V. SEVERE
					Fe = Iron Oxide	Mn = Manganese Oxide	COMPLETE

ROCKLOG2014 10274.006 LOGS-RECOVER.GPJ ROCKLOG2012.GDT 2/18/15

LEIGHTON

CORE BORING LOG

BORING NO. CB- 7
PAGE 6 OF 10

PROJECT: El Rodeo Geohazard Investigation
CLIENT: Beverly Hills Unified School District
CONTRACTOR: Martini Drilling Corporation
EQUIPMENT USED: CME-75

GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION		CORE BARREL	
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	
						HORIZONTAL	SIZE	
06/17/14	ATD	▽ 40				INCLINED	Bit (Feet)	
06/17/14	ATD	▼ 135				BEARING	Barrel (Feet)	
		▽			0	ANG. FROM VERT.	Total (Feet)	

JOB NO.: 10274.006
PAGE NO.: 6 of 10
ELEVATION: 293 Feet
DATE START: 6/17/2014
DATE FINISH: 6/17/2014
DRILLER: Martini
PREPARED BY: EH
LOCATION: 605 Whittier Blvd., Beverly Hills, Ca

ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS
						The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.
193 ▽ 100	100-105	Box 11				@100' to 100.2': Sandy CLAY (CL), reddish brown, poor to moderate blocky structure, spotty MnO_2, staining on faces, low sand content @100.2' to 100.6': Increase in sand, wet, perched zone @100.6' to 102': Sandy CLAY (CL), reddish brown, fine grained sand, poor blocky structure, minor gleying, trace fine tabular slaty gravels, coated with clay
						@102' to 102.7': Gravel and Cobble zone, clasts up to 2-inches, tabular slate, Tm, and basalt, clayey sand matrix, gleyed
						@102.7' to 104': Sandy CLAY to Clayey SAND (SC-CL), reddish brown, mostly fine grained sand, trace medium to coarse grained sand, trace fine gravel, gradational contact
188 ▽ 105	105-110	Box 11				@104' to 105': Sandy CLAY (CL), reddish brown, fine grained sand, minor gleying, trace medium to coarse grained sand, sandy lenses @104.8' to 105' @105' to 108.1': Silty SAND with Clay (SC-SM), brown, moist to wet, mostly fine to medium grained sand, some coarse grained sand, fining upward, slightly micaceous, gradational contact, white siltstone rock fragments in matrix
						@108.1' to 108.4': Sandy CLAY (CL), dark reddish brown, fine to medium grained sand, trace coarse grained sand, gradational contact
						@108.4' to 109': Silty CLAY (CL-ML), dark reddish brown, faintly laminated, minor spotty MnO_2, abrupt contact
183 ▽ 110	110-115	Box 12				@109' to 109.6': Channel Gravels, fine to coarse gravels, consisting of slate, quartz, and minor amounts of slaty, cobble-sized basalt @109.6' to 110': No Recovery @110' to 110.2': Gravelly SAND with Clay (SW-SC), reddish brown, wet, fine to coarse grained sand, fine subangular slaty gravels @110.2' to 110.5': Sandy CLAY to Clayey SAND (SC-CL), reddish brown, fine to medium grained sand, trace coarse grained sand @110.5' to 110.8': Sandy GRAVEL (GW) bed, dark reddish brown, wet, fine to coarse grained sand, fine to coarse subangular to subrounded slate, Tm, and basalt gravels, gradational contact @110.8' to 111.1': Sandy CLAY (CL), reddish brown, moist, fine grained sand, faint laminations, minor gleying, poor blocky structure
178 115	115-120	Box 12				@111.1' to 111.9': Clayey SAND (SC), with gravel, dark reddish brown, fine to coarse grained sand, fine to coarse slate and quartzite, gravel bed @111.5' to 111.6' @111.9' to 112': Thin Sandy CLAY (CL) bed, moderate blocky structure @112' to 112.2': Clayey SAND (SC), reddish brown, moist, fine grained sand @112.2' to 115': No Recovery @115' to 115.8': Sandy CLAY (CL), reddish brown, fine to medium grained sand, laminated, moderate blocky structure, thin MnO_2 blebs, brown, minor gleying, fine to medium grained sand lens @115.6' @115.8' to 115.9': Thin Silty CLAY (CL-ML) lamination, olive brown @115.9': Sandy CLAY (CL), reddish brown, fine to medium grained sand @116' to 116.2': Thin Silty CLAY (CL-ML) lamination, dark reddish brown,
173 ▽ 120						

FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE	JOINTS / SHEAR / FRACTURE		WEATHERING
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE
							V. SEVERE
					Fe = Iron Oxide	Mn = Manganese Oxide	COMPLETE

ROCKLOG2014 10274.006 LOGS-RECOVER.GPJ ROCKLOG2012.GDT 2/18/15

LEIGHTON

CORE BORING LOG

BORING NO. CB- 7
PAGE 7 OF 10

PROJECT: El Rodeo Geohazard Investigation
CLIENT: Beverly Hills Unified School District
CONTRACTOR: Martini Drilling Corporation
EQUIPMENT USED: CME-75

GROUNDWATER:		DEPTH TO (Feet):		
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE
06/17/14	ATD	▽ 40		
06/17/14	ATD	▼ 135		
		▼		

ORIENTATION		CORE BARREL	
X	VERTICAL	TYPE	
	HORIZONTAL	SIZE	
	INCLINED	Bit (Feet)	
	BEARING	Barrel (Feet)	
0	ANG. FROM VERT.	Total (Feet)	

JOB NO.: 10274.006
PAGE NO.: 7 of 10
ELEVATION: 293 Feet
DATE START: 6/17/2014
DATE FINISH: 6/17/2014
DRILLER: Martini
PREPARED BY: EH
LOCATION: 605 Whittier Blvd., Beverly Hills, Ca

ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS
						The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.
173 120	120-125	Box 13				MnO_2 blebs @116.1': Sandy GRAVEL (GW) bed, fine to coarse grained sand, fine slaty gravels @116.2' to 116.7': Sandy CLAY (CL), dark reddish brown, fine grained sand, MnO_2 blebs, small brown blebs @116.7' to 117.3': Channel Deposits, fine to coarse subangular slate, fine to coarse grained sand, clayey matrix, gleyed, MnO_2 lamination, yellow oxide laminations, entire unit laminated @117.3' to 120': No Recovery @120' to 121.8': Silty SAND (SM), brown, wet, fine to medium grained sand, trace coarse grained sand, trace fine subangular siltstone gravels @121.8' to 125': No Recovery
168 125	125-130	Box 13				@125' to 125.2': Sandy CLAY (CL), with gravel, dark reddish brown, fine to coarse grained sand, fine to coarse predominantly subangular to subrounded slaty gravels, clay coated grains @125.2' to 126.1': Sandy CLAY (CL), reddish brown, fine to medium grained sand, poor blocky structure, MnO_2 blebs, trace fine gravel, lens of sand and gravel @125.6', gradational contact @126.1' to 126.5': Silty CLAY (CL-ML), reddish brown, trace fine to medium grained sand, fine gravel, shimmer on facies @126.5' to 126.9': Gravelly Sandy CLAY (CL), dark reddish brown, hard, fine to medium grained sand, fine slaty gravels, iron oxide blebs, carbonate stringers @126.9' to 130': No Recovery
163 ▽ 130	130-135	Box 14				@130' to 130.8': Clayey GRAVEL (GC), with sand, grayish brown, wet, fine to coarse grained sand, fine to coarse subangular to subrounded slaty gravels, gradational contact @130.8' to 133.1': Sandy CLAY (CL), reddish brown, laminated, hard, few fine subrounded gravels, gleyed, poor blocky structure, MnO_2 spotting, laminations becomes less apparent @131': sharp contact, gleyed, clay below oxidation-reduction banded @132.7', gradational contact @133.1' to 133.6': Silty CLAY (CL-ML), with sand, dark reddish brown, hard, massive, fine to medium grained sand, trace coarse grained sand, fine subrounded slaty gravels @133.6': Sandy @133.6' to 135': No Recovery
158 ▼ 135	135-140	Box 14				@135' to 135.5': Silty Clayey SAND (SM-SC), reddish brown, wet, fine to coarse grained sand, some fine gravels at contact below @135.5' to 135.6': Gravelly CLAY (CL), with sand lamination, reddish brown, wet, fine to coarse grained sand, fine to coarse subangular to subrounded slaty gravels @135.6' to 137.7': Sandy GRAVEL (GW), with clay, dark reddish brown, wet, fine to coarse grained sand, fine to coarse subrounded slaty gravels, gradational contact @137.7' to 138.1': Becomes Silty SAND (SM), with gravel, dark reddish brown, wet, mostly fine to medium grained sand, trace coarse grained sand, fine subrounded slate and quartz gravels @138.1': GRAVEL (GW) bed, subrounded quartz and slate gravel
153 140						

FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE	JOINTS / SHEAR / FRACTURE		WEATHERING
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE
							V. SEVERE
					Fe = Iron Oxide	Mn = Manganese Oxide	COMPLETE

ROCKLOG2014 10274.006 LOGS-RECOVER.GPJ ROCKLOG2012.GDT 2/18/15

LEIGHTON

CORE BORING LOG

BORING NO. CB- 7
PAGE 8 OF 10

PROJECT: El Rodeo Geohazard Investigation
CLIENT: Beverly Hills Unified School District
CONTRACTOR: Martini Drilling Corporation
EQUIPMENT USED: CME-75

GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION		CORE BARREL	
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	
						HORIZONTAL	SIZE	
06/17/14	ATD	▽ 40				INCLINED	Bit (Feet)	
06/17/14	ATD	▼ 135				BEARING	Barrel (Feet)	
		▼			0	ANG. FROM VERT.	Total (Feet)	

JOB NO.: 10274.006
PAGE NO.: 8 of 10
ELEVATION: 293 Feet
DATE START: 6/17/2014
DATE FINISH: 6/17/2014
DRILLER: Martini
PREPARED BY: EH
LOCATION: 605 Whittier Blvd., Beverly Hills, Ca

ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS
153 140						The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.
						@138.2' to 139': Gravelly SAND (SW), dark reddish brown, wet, fine to coarse grained sand, fine to coarse subangular to subrounded slate and quartz gravels
						@139' to 139.2': 2-inch slate COBBLE, with heavily oxidized orange yellow staining
						@139.2' to 140': No Recovery
	140-145	Box 15				@140' to 140.9': Fining upward sequence @140': Silty SAND (SM), with clay, grayish reddish brown, wet, mostly fine to medium grained sand, trace coarse grained sand, fine slaty gravels @140.5': Becomes mostly medium to coarse grained sand, wet @140.7': Becomes mostly coarse grained sand and fine wet slaty gravels
						@140.9' to 141.2': Clayey GRAVEL (GC), with sand, grayish reddish brown, fine to coarse grained sand, fine to coarse subangular platy slate gravels
148 145						@141.2' to 141.3': 2+ - inch slate gravels, within clayey matrix, clay is oxidized and gleyed, waxy surface on faces
						@141.3' to 145': No Recovery
						@145' to 145.1': Very thin layer of Clayey SAND (SC), with gravel, dark grayish reddish brown, wet, fine to coarse grained sand, fine slaty gravel
	145-150	Box 15				@145.1' to 145.3': Sandy CLAY (CL), reddish brown, fine to medium grained sand, trace coarse grained sand, fine slaty gravels, moderate blocky structure, minor gleying, faint oxidized laminations, abrupt contact
						@145.3' to 148.2': Wet, fine to coarse grained sand, fine to coarse subrounded platy slate and basalt gravels, clayey matrix, gleyed @146.3' to 146.9': Very Gravelly layer, mostly coarse gravel @146.9' to 147.2': Increases in clayey matrix, heavily gleyed, yellow oxide band @147.2', gravels become subangular, gradational contact below
143 150						@148.2': Sandy CLAY (CL), reddish brown, fine to medium grained sand, trace coarse grained sand, MnO_2 spotting, moderate blocky structure, trace siltstone fragments, minor gleying, abrupt contact
						@148.6' to 148.8': Clayey Sandy GRAVEL (GW-GC), reddish brown, fine to coarse grained sand, fine subrounded slaty gravels, abrupt contact
	150-155	Box 16				@148.8' to 149': Sandy Silty CLAY (CL-ML), reddish brown, MnO_2 banding, gradational contact
						@149' to 150': Sandy CLAY (CL), reddish brown, fine to medium grained sand, trace coarse grained sand, fine gravel, MnO_2 spotting and minor bands, minor gleying, spotty oxides, moderate blocky structure
						@150' to 151.4': Sandy CLAY (CL), reddish brown, fine to medium grained sand, trace coarse grained sand, fine slaty gravels, gleyed on minor sandy laminations, moderate blocky structure, abundant MnO_2 spotting on faces
138 155						@151.4' to 151.6': Increase in sand content, increase in gleying, moderate blocky structure
						@151.6' to 152.4': Sandy CLAY (CL), reddish brown, fine to medium grained sand, poor blocky structure, moderately gleyed @152.4': Sandier lamination
	155-160	Box 16				@152.5' to 152.7': Sandy CLAY (CL), reddish brown, fine to medium grained sand, gleyed, moderate blocky structure @152.7' to 152.8': Lamination with increase in coarse grained sand @152.8' to 153.3': Fining upward sequence, Sandy CLAY (CL), reddish brown to dark reddish brown, gleyed, fine grained sand in upper zone, fine to medium grained sand in middle, fine to coarse grained at base, trace fine slaty gravels, moderate blocky structure, MnO_2 spotting, gleyed
133 160						@153.3' to 153.8': Sandy CLAY (CL), reddish brown, fine to medium grained

FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE	JOINTS / SHEAR / FRACTURE		WEATHERING
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE
							V. SEVERE
					Fe = Iron Oxide	Mn = Manganese Oxide	COMPLETE

ROCKLOG2014 10274.006 LOGS-RECOVER.GPJ ROCKLOG2012.GDT 2/18/15

LEIGHTON

CORE BORING LOG

BORING NO. CB- 7
PAGE 9 OF 10

PROJECT: El Rodeo Geohazard Investigation
CLIENT: Beverly Hills Unified School District
CONTRACTOR: Martini Drilling Corporation
EQUIPMENT USED: CME-75

GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION		CORE BARREL	
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	
						HORIZONTAL	SIZE	
06/17/14	ATD	▽ 40				INCLINED	Bit (Feet)	
06/17/14	ATD	▼ 135				BEARING	Barrel (Feet)	
		▼			0	ANG. FROM VERT.	Total (Feet)	

JOB NO.: 10274.006
PAGE NO.: 9 of 10
ELEVATION: 293 Feet
DATE START: 6/17/2014
DATE FINISH: 6/17/2014
DRILLER: Martini
PREPARED BY: EH
LOCATION: 605 Whittier Blvd., Beverly Hills, Ca

ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS
133 160						The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.
						sand, trace coarse grained sand, poor blocky structure, faintly laminated @153.8' to 154.4': Sandy CLAY (CL), dark reddish brown, fine to medium grained sand, trace coarse grained sand, fine gravel, laminated, gleyed, moderate blocky structure, MnO_2 spotting
						@154.4' to 155': No Recovery
	160-165	Box 17				@155' to 155.4': Sandy CLAY (CL), reddish brown, fine to medium grained sand, laminated, moderate blocky structure, trace fine gravel, gleyed
						@155.4' to 155.6': Fine to coarse GRAVEL (GW) zone, matrix has moderate blocky structure
						@155.6' to 156.5': Sandy CLAY (CL), reddish brown, fine to medium grained sand, minor gleying, massive @156.3': GRAVEL (GW) bed, fine slate and basalt gravels, gradational contact below
128 165						@156.5' to 158.6': Silty CLAY (CL-ML), with sand, dark reddish brown, faintly oxidation-reduction banded, progressively clayier, fine to medium grained sand, trace coarse grained sand, minor gleying, MnO_2 spotting
						@158.6' to 158.8': Fine slaty GRAVEL bed with Clayey matrix (GC)
	165-170	Box 17				@158.8' to 159.1': Clayey SAND (SC), reddish brown, fine to medium grained sand, abrupt contact
						@159.1' to 160': Silty Sandy CLAY (CL-ML), dark reddish brown, fine grained sand, faintly laminated, gleyed, moderate blocky structure, MnO_2 spotting @160' to 162.8': Silty Sandy CLAY (CL-ML), dark reddish brown, oxidation-reduction banded laminations, fine grained sand, poor blocky structure, gleyed, MnO_2 spotting, gradational contact @162.8' to 163.4': Increasing sand content, fine to medium grained sand, trace coarse grained sand, dark reddish brown, gradational contact @163.4' to 164.3': Silty Sandy CLAY (CL-ML), dark reddish brown, faint oxidation-reduction banded laminations, fine grained sand, poor to moderate blocky structure @164.3' to 165': Becomes very dark reddish brown, laminations become less apparent and abundant
123 170						@165' to 166.5': Silty CLAY (CL-ML), with sand, very dark reddish brown, fine to medium grained sand, trace fine slaty gravels, abundant vertical carbonate stringers, moderate blocky structure
	170-175	Box 18				@166.5': Becomes Sandy CLAY (CL), carbonate stringers continue
						@167.2' to 167.6': Sporadic fine slaty GRAVEL in Sandy Clay matrix (GC), carbonate becomes less abundant
118 175						@167.6' to 169.3': Sandy CLAY (CL), reddish brown, fine to medium grained sand, with few coarse grained sand, trace fine slaty and Tm gravels, poor blocky structure, sporadic carbonate stringers
						@169.3' to 169.4': Sandy lamination
	175-180	Box 18				@169.4' to 171.4': Sandy CLAY (CL), dark reddish brown, fine to medium grained sand, few coarse grained sand, trace fine slaty gravels, sporadic carbonate stringers @171.4' to 172': Becomes sandier
						@172.2' to 174.7': Silty Sandy CLAY (CL-ML), very dark reddish brown, fine grained sand, trace medium to coarse grained sand, MnO_2 nodules, sporadic carbonate stringers, moderate blocky structure
113 180						@174.7' to 175': Sandy CLAY (CL), very dark reddish brown, fine to medium grained sand, sporadic carbonate stringers, oxidized blebs, MnO_2 blebs,

FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE	JOINTS / SHEAR / FRACTURE		WEATHERING
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE
							V. SEVERE
					Fe = Iron Oxide	Mn = Manganese Oxide	COMPLETE

ROCKLOG2014 10274.006 LOGS-RECOVER.GPJ ROCKLOG2012.GDT 2/18/15

LEIGHTON

CORE BORING LOG

BORING NO. CB- 7
PAGE 10 OF 10

PROJECT: El Rodeo Geohazard Investigation
CLIENT: Beverly Hills Unified School District
CONTRACTOR: Martini Drilling Corporation
EQUIPMENT USED: CME-75

GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION		CORE BARREL	
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	
						HORIZONTAL	SIZE	
06/17/14	ATD	▽ 40				INCLINED	Bit (Feet)	
06/17/14	ATD	▼ 135				BEARING	Barrel (Feet)	
		▼			0	ANG. FROM VERT.	Total (Feet)	

JOB NO.: 10274.006
PAGE NO.: 10 of 10
ELEVATION: 293 Feet
DATE START: 6/17/2014
DATE FINISH: 6/17/2014
DRILLER: Martini
PREPARED BY: EH
LOCATION: 605 Whittier Blvd., Beverly Hills, Ca

ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS
113 180						The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.
						gradational contact
						@175' to 175.3': Sandy CLAY (CL), grayish brown, very moist, fine grained sand, few medium grained sand, soft, shimmer on faces, gradational contact
						@175.3' to 175.4': Lamination of Sandy CLAY to Clayey SAND (SC-CL), fine to medium grained sand, trace coarse grained sand
	180-185	Box 19				@175.4' to 175.6': Sandy CLAY (CL), grayish brown, slight reddish brown mottling, poor blocky structure, slightly micaceous
						@175.6' to 175.9': Lamination of Clayey SAND (SC), fine to medium grained sand, trace coarse grained sand, slate fragments
						@175.9' to 177.9': Sandy CLAY (CL), grayish brown, fine grained sand, trace medium to coarse grained sand, trace fine gravel, Tm and slate, carbonate stringers, shell fragments, poor blocky structure, gradational contact
108 185						@177.9' to 178.9': Clayey Silty SAND (SC-SM), gray, fine grained sand, trace medium grained sand, well sorted, abrupt contact
						@178.8': MnO_2
						@178.9' to 179.9': Silty CLAY (CL-ML), gray, fine grained sand, sporadic carbonate stringers, shimmer on faces, thin sandy lamination @179.2'
	185-190	Box 19				@179.9' to 180': Lamination of Silty SAND (SM), gray, fine to medium grained sand
						@180' to 180.4': Sandy CLAY to Clayey SAND (SC-CL), gray, very moist, fine grained sand, moderate blocky structure, carbonate stringers, calcite crystals, gradational contact
						@180.4' to 180.5': GRAVEL (GW) layer, fine subrounded slate and quartz gravels
103 190						@180.5' to 180.9': Sandy Silty CLAY (CL-ML), gray, fine grained sand, trace medium grained sand, carbonate stringers and nodules, gradational contact
						@180.9' to 182': Sandy CLAY (CL), gray, fine grained sand, moderate blocky structure, faintly laminated, carbonate stringers
						@182' to 185': No Recovery
	190-195	Box 20				@185' to 185.4': Interlaminated Silty CLAY and Clayey SAND (SM-SC), gray to dark gray, clay is well developed, with waxy finish on faces, fine grained sand
						@185.4' to 188.1': Silty CLAY (CL-ML), with sand, gray, massive, fine grained sand, minor carbonate blebs
						@188.1' to 188.7': Silty CLAY (CL-ML), with sand, gray, with abundant reddish brown staining, fine grained sand, carbonate blebs, minor carbonate stringers
						@188.7' to 190': No Recovery
98 195						@190' to 193.8': Silty CLAY (CL-ML), dark gray, faintly laminated, sporadic carbon concretions and blebs, trace fine grained sand
						@193.8' to 194.2': Sandy SILT (ML), with clay, dark gray, fine grained sand, trace medium flat rounded sand grains
						@194.2' to 195': No Recovery
93 200						Total depth of coring: 195' bgs
						Perched groundwater encountered @ 40'-40.9', 41.8'-43.7', 52'-52.5', 100'-100.2', 105'-108.1', 110'-110.8', 120'-121.8', 135'-139', 140'-140.7', 145'-145.1', and 145.3'-148.2' bgs
						Local groundwater table encountered @135' bgs
						Boring backfilled with bentonite and soil cuttings upon completion of drilling.
						Boring capped with approximately 6-inches of cold patch mix asphalt.
						Excess cuttings disposed of in D.O.T. approved drums and disposed offsite

FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE	JOINTS / SHEAR / FRACTURE		WEATHERING
V. HARD	= KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH
HARD	= SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT
MOD. HARD	= SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT
SOFT	= GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE
V. SOFT	= CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE
							V. SEVERE
					Fe = Iron Oxide	Mn = Manganese Oxide	COMPLETE

ROCKLOG2014 10274.006 LOGS-RECOVER.GPJ ROCKLOG2012.GDT 2/18/15

LEIGHTON

CORE BORING LOG

BORING NO. CB- 8
PAGE 1 OF 8

PROJECT: El Rodeo Geohazard Investigation
CLIENT: Beverly Hills Unified School District
CONTRACTOR: Martini Drilling Corporation
EQUIPMENT USED: CME-75

GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION		CORE BARREL	
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	
						HORIZONTAL	SIZE	
06/17/14	ATD	▽ 38.5				INCLINED	Bit (Feet)	
06/17/14	ATD	▼ 128.4				BEARING	Barrel (Feet)	
		▼			0	ANG. FROM VERT.	Total (Feet)	

JOB NO.: 10274.006
PAGE NO.: 1 of 8
ELEVATION: 299.5 Feet
DATE START: 6/17/2014
DATE FINISH: 6/17/2014
DRILLER: Martini
PREPARED BY: EH
LOCATION: 605 Whittier Blvd., Beverly Hills, Ca

ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS
						The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.
300 0						@Surface: 5-inches Asphalt @0.4': 8-inches Portland Cement @1':**Artificial Fill, Undocumented (Afu):** @1' to 5': Hand auger
295 5	5-10	Box 1				@5' to 5.2': Asphalt chunks with clay @5.2': **Pleistocene Alluvium of Benedict Canyon Wash (BCW_1):** Sandy SILT (ML), with clay, brown, moist, fine grained sand, trace medium to coarse grained sand @5.7' to 7': Sandy CLAY (CL), with silt, brown, fine grained sand, slightly micaceous, zone with fine to coarse grained sand @5.9' to 6.1' @7' to 10': No Recovery
290 10	10-15	Box 1				@10' to 11': Sandy SILT (ML), reddish brown, moist, fine grained sand, trace clay, gradational contact @11' to 11.9': Silty SAND (SM), reddish brown, fine grained sand, trace medium grained sand, abrupt contact @11.9' to 12.3': Silty SAND with Gravel (SW-SM), reddish brown matrix, with fine to medium grained sand, fine to coarse gravels, up to 2+ -inches @12.3' to 12.9': Silty Gravelly SAND (SP-GM), brown, moist, fine to medium grained sand, few coarse grained sand, fine subangular slaty gravels @12.9' to 13.2': Sandy SILT (ML), with clay, olive brown, moist, laminated, fine grained sand, poor blocky structure @13.2' to 15': No Recovery
285 15	15-20	Box 2				@15' to 16.4': Silty SAND (SM), olive brown, laminated, mostly fine grained sand, trace medium grained sand, trace clay, abrupt contact @16.4' to 16.7': GRAVEL (GW) bed, gray, fine subangular to subrounded slaty gravels, with silty sand matrix @16.7' to 17': Silty CLAY (CL-ML), olive brown to greenish brown, moist, trace fine grained sand @17' to 17.5': Silty SAND with Gravel (SP-GM), reddish brown, moist, fine to coarse grained sand, fine subangular slate and basalt gravels, trace coarse gravels @17.5' to 20': No Recovery
280 20						

FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE	JOINTS / SHEAR / FRACTURE		WEATHERING
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE
							V. SEVERE
					Fe = Iron Oxide	Mn = Manganese Oxide	COMPLETE

ROCKLOG2014 10274.006 LOGS-RECOVER.GPJ ROCKLOG2012.GDT 2/18/15

LEIGHTON

CORE BORING LOG

BORING NO. CB- 8
PAGE 2 OF 8

PROJECT: El Rodeo Geohazard Investigation
CLIENT: Beverly Hills Unified School District
CONTRACTOR: Martini Drilling Corporation
EQUIPMENT USED: CME-75

GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION		CORE BARREL	
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	
						HORIZONTAL	SIZE	
06/17/14	ATD	▽ 38.5				INCLINED	Bit (Feet)	
06/17/14	ATD	▼ 128.4				BEARING	Barrel (Feet)	
		▼			0	ANG. FROM VERT.	Total (Feet)	

JOB NO.: 10274.006
PAGE NO.: 2 of 8
ELEVATION: 299.5 Feet
DATE START: 6/17/2014
DATE FINISH: 6/17/2014
DRILLER: Martini
PREPARED BY: EH
LOCATION: 605 Whittier Blvd., Beverly Hills, Ca

ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS
						The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.
280 20						@20' to 20.6': Silty Gravelly SAND (SP-GM), reddish brown, moist, fine to coarse grained sand, fine to coarse subangular slate and basalt gravels
						@20.6' to 25': No Recovery
	20-25	Box 2				
275 25						@25' to 25.7': Silty Clayey SAND (SM-SC), with gravel, brown, moist, fine to coarse grained sand, fine subrounded slate and basalt gravels
						@25.7' to 25.9': Interbedded zone, Sandy CLAY (CL), reddish brown, fine grained sand, interbedded with orange fine grained SAND (SP)
						@25.9' to 26.1': Sandy CLAY (CL), brownish gray, moist, fine grained sand, poor blocky structure
	25-30	Box 3				@26.1' to 26.5': Sandy Silty CLAY (CL-ML), reddish brown with gray mottling, fine grained sand, laminated, gleyed, poor to moderate blocky structure, gradational contact
						@26.5' to 27.4': Gravelly SAND (SW), reddish brown matrix, fine to coarse grained sand, fine to coarse subangular slaty gravels, some silt and clay
						@27.4' to 30': No Recovery
270 30						@30' to 31.7': Silty Gravelly SAND (SP-GM), reddish brown, fine to coarse grained sand, fine to coarse slate and basalt gravels, normally graded unit, gradational contact
						Pleistocene of Benedict Canyon Wash (BCW_2):
	30-35	Box 3				@31.7' to 32.3': Silty Clayey SAND (SM-SC), reddish brown, moist, fine to medium grained sand, faintly laminated, poor blocky structure, minor carbonate stringers
						@32.3' to 32.7': Clayey SAND (SC), reddish brown with yellowish mottling, fine to coarse grained sand, poor to moderate blocky structure
						@32.7' to 33.9': Silty Gravelly SAND (SP-GM), reddish brown, fine to coarse grained sand, fine to coarse gravel, normally graded
265 35						@33.9' to 35': No Recovery
						@35' to 35.3': Sandy SILT (ML), with clay, possible debris flow, reddish olive brown, massive, fine to coarse grained sand
						@35.3' to 36.3': Gravelly SAND (SW), with clay, reddish brown, moist, fine to coarse grained sand, fine subangular to subrounded slaty gravels
	35-40	Box 4				@36.3' to 36.9': Silty Clayey SAND (SM-SC), reddish brown with grayish (gley-?) mottling, fine to coarse grained sand, trace fine basal gravels
▽						@36.9' to 37.1': Clayey SAND (SC), reddish brown, fine to medium grained sand, moderate blocky structure
						@37.1' to 37.4': Clayey Gravelly SAND (SW-SC), reddish brown, moist, fine to coarse grained sand, fine subangular to subrounded slate and basalt gravel, gradational contact
260 ▽ 40						

FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE	JOINTS / SHEAR / FRACTURE		WEATHERING
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE
							V. SEVERE
					Fe = Iron Oxide	Mn = Manganese Oxide	COMPLETE

ROCKLOG2014 10274.006 LOGS-RECOVER.GPJ ROCKLOG2012.GDT 2/18/15

LEIGHTON

CORE BORING LOG

BORING NO. CB- 8
PAGE 3 OF 8

PROJECT: El Rodeo Geohazard Investigation
CLIENT: Beverly Hills Unified School District
CONTRACTOR: Martini Drilling Corporation
EQUIPMENT USED: CME-75

GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION		CORE BARREL	
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	
						HORIZONTAL	SIZE	
06/17/14	ATD	▽ 38.5				INCLINED	Bit (Feet)	
06/17/14	ATD	▼ 128.4				BEARING	Barrel (Feet)	
		▽			0	ANG. FROM VERT.	Total (Feet)	

JOB NO.: 10274.006
PAGE NO.: 3 of 8
ELEVATION: 299.5 Feet
DATE START: 6/17/2014
DATE FINISH: 6/17/2014
DRILLER: Martini
PREPARED BY: EH
LOCATION: 605 Whittier Blvd., Beverly Hills, Ca

ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS
260 40						The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.
	40-45	Box 4				@37.4' to 37.9': Sandy CLAY (CL), reddish brown, moist, fine grained sand, trace medium grained sand, moderate blocky structure
						@37.9' to 38': Layer of fine to coarse slate and Tm GRAVEL (GW) in sandy clay matrix
						@38' to 38.5': Clayey SAND (SC), reddish brown, very moist, fine to medium grained sand, trace coarse grained sand, fine gravel, poor to moderate blocky structure, yellowish oxidation staining
						@38.5' to 39.4': Clayey Gravelly SAND (SW-SC), wet, fine to coarse grained sand, fine subangular to subrounded slaty gravels
						@39.4' to 40': No Recovery
255 45						@40' to 42': Sandy GRAVEL (GW), reddish brown matrix, wet, medium to coarse grained sand, fine subrounded basalt and slate gravels, clayey matrix, well sorted, gradational contact
						@42' to 42.7': Clayey SAND (SC), with gravel, reddish brown, wet, fine to coarse grained sand, fine subrounded gravels
▽	45-50	Box 5				@42.7' to 42.9': Layer of Sandy GRAVEL with Clay (GW-GC), wet, reddish brown, fine to coarse grained sand, fine to coarse gravel, @42.9': bottom of gravel, top of clay paleosol, gleyed at top, capped with coarse gravels
						@42.9': **Pleistocene Cheviot Hills Deposits (CHD):** Clayey SAND (SC), reddish brown, wet, mostly fine to medium grained sand, trace coarse grained sand, bottom of gravel, top of clay paleosol, gleyed at top, capped with coarse gravels, clay lamination @43.0', erosional contact, gleyed
						@43.6' to 44.3': Silty CLAY (CL-ML), olive brown, moist, trace fine sand, abundant reddish brown streaky staining, laminated, well oxidized, minor gleying
250 50						@44.3' to 45': No Recovery
▽						@45' to 45.9': Silty Sandy CLAY (CL-ML), olive brown, moist, fine grained sand, moderate blocky structure, abundant reddish brown staining @45.9' to 47.2': Becomes sandier
	50-55	Box 5				@47.2' to 48.8': Becomes Clayey SAND (SC), reddish brown, wet, laminated, abundant dark reddish brown staining, fine to medium grained sand, trace coarse grained sand, sporadic sandy clay laminations
						@48.8' to 50': No Recovery
						@50' to 51.5': Silty SAND (SM), reddish brown, clean sand, very moist, mostly fine grained sand, some medium grained sand, trace clay
245 ▽ 55						@51.5' to 52': Becomes Sandy GRAVEL (GW-GC), reddish brown, wet, fine to coarse grained sand, fine to coarse subangular to subrounded gravel, gradational contact
						@52' to 52.2': Lamination of reddish brown SILT (ML)
						@52.2' to 52.6': Clayey SAND to Sandy CLAY (SC-CL), reddish brown, fine to coarse grained sand, poor to moderate blocky structure
	55-60	Box 6				@52.6': Clayey SAND with Gravel (SW-SC) lamination, fine subrounded gravels
						@52.7' to 53.1': Silty Sandy CLAY (CL-ML), reddish brown, moist
						@53.1' to 53.8': Clayey SAND (SC), reddish brown, very moist, fine to coarse grained sand, with white siltstone clasts and basal capping gravels, poor to moderate blocky structure, sporadic clay rich laminations
240 60						@53.8' to 55': No Recovery

FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE	JOINTS / SHEAR / FRACTURE		WEATHERING
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE
							V. SEVERE
					Fe = Iron Oxide	Mn = Manganese Oxide	COMPLETE

ROCKLOG2014 10274.006 LOGS-RECOVER.GPJ ROCKLOG2012.GDT 2/18/15

LEIGHTON

CORE BORING LOG

BORING NO. CB- 8
PAGE 4 OF 8

PROJECT: El Rodeo Geohazard Investigation
CLIENT: Beverly Hills Unified School District
CONTRACTOR: Martini Drilling Corporation
EQUIPMENT USED: CME-75

GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION		CORE BARREL	
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	
						HORIZONTAL	SIZE	
06/17/14	ATD	▽ 38.5				INCLINED	Bit (Feet)	
06/17/14	ATD	▼ 128.4				BEARING	Barrel (Feet)	
		▼			0	ANG. FROM VERT.	Total (Feet)	

JOB NO.: 10274.006
PAGE NO.: 4 of 8
ELEVATION: 299.5 Feet
DATE START: 6/17/2014
DATE FINISH: 6/17/2014
DRILLER: Martini
PREPARED BY: EH
LOCATION: 605 Whittier Blvd., Beverly Hills, Ca

ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG
240 60	60-65	Box 6			
235 65	65-70	Box 7			
230 70	70-75	Box 7			
225 75	75-80	Box 8			
220 80					

FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS

The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.

@55' to 55.8': Clayey Silty SAND (SC-SM), reddish brown, wet, fine to medium grained sand

@55.8' to 55.9': Reddish brown lamination of Sandy CLAY (CL)

@55.9' to 56.2': Silty Clayey SAND (SM-SC), with gravel, reddish brown, wet, fine to coarse grained sand, fine subrounded slaty gravel

@56.2' to 56.4': Silty CLAY (CL-ML), reddish brown, wet, trace fine grained sand

@56.4' to 57': Clayey SAND (SC), with gravel, reddish brown, wet, fine to coarse grained sand, fine subangular to subrounded gravel, normally graded

@57' to 58': Sandy CLAY (CL), reddish brown to grayish olive brown, laminated, fine to medium grained sand, trace coarse grained sand, gleyed, moderate blocky structure, slightly micaceous, MnO_2 spotting

@58' to 58.6': Becomes interbedded Clayey SAND and Sandy CLAY (SC-CL), fine to coarse grained sand, thinly laminated

@58.6' to 59': Clayey SAND (SC), reddish brown, gleyed, wet, fine to coarse grained sand, normally graded

@59' to 60': No Recovery, likely gravels

@60' to 61.1': Silty SAND (SM), reddish brown, gleyed, wet, fine to medium grained sand, normally graded, few basal gravels, sharp contact

@61.1' to 64.8': Silty CLAY (CL-ML), with sand, reddish brown to grayish brown, thinly laminated, oxidation-reduction banding, MnO_2 spotting, gleyed
@63.7': MnO_2 spotting
@ 64.1': becomes chocolate brown, thinly laminated

@66' to 70': Sandy CLAY (CL), reddish brown and gray, with oxidation staining, laminated, oxidation-reduction banded, occasional fine slate and Tm gravels, waxy finish on faces and surrounding gravel clasts, MnO_2 spotting, dark red well developed paleosol

@70' to 70.9': Sandy CLAY (CL), reddish brown and gray, with faint MnO_2 lamination, moderate blocky structure, fine to medium grained sand

@70.9' to 75': Becomes mostly massive, occasional MnO_2 laminations, reddish brown, gleyed, gray mottling, sporadic fine gravel zones @72.9', 73.7', and 74.4', fine to medium grained sand, poor to moderate blocky structure, very occasional carbonate stringers

@75' to 81.4': Sandy CLAY (CL), reddish brown, with minor gleying, mostly fine grained sand, some medium grained sand, trace coarse grained sand, fine subrounded gravels, poor blocky structure, with moderate to strong blocky structure @71.1' to 71.6', mostly massive, waxy coat on gravel impressions

FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE	JOINTS / SHEAR / FRACTURE		WEATHERING
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE
							V. SEVERE
					Fe = Iron Oxide	Mn = Manganese Oxide	COMPLETE

ROCKLOG2014 10274.006 LOGS-RECOVER.GPJ ROCKLOG2012.GDT 2/18/15

LEIGHTON

CORE BORING LOG

BORING NO. CB- 8
PAGE 5 OF 8

PROJECT: El Rodeo Geohazard Investigation
CLIENT: Beverly Hills Unified School District
CONTRACTOR: Martini Drilling Corporation
EQUIPMENT USED: CME-75

GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION		CORE BARREL	
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	
						HORIZONTAL	SIZE	
06/17/14	ATD	▽ 38.5				INCLINED	Bit (Feet)	
06/17/14	ATD	▼ 128.4				BEARING	Barrel (Feet)	
		▼			0	ANG. FROM VERT.	Total (Feet)	

JOB NO.: 10274.006
PAGE NO.: 5 of 8
ELEVATION: 299.5 Feet
DATE START: 6/17/2014
DATE FINISH: 6/17/2014
DRILLER: Martini
PREPARED BY: EH
LOCATION: 605 Whittier Blvd., Beverly Hills, Ca

ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS
220 80						The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.
▽	80-85	Box 8				@81.4' to 81.6': Gravelly zone, fine subangular slate gravels, wet @81.6' to 81.9': Sandy CLAY (CL), reddish brown, very moist, fine to medium grained sand, trace coarse grained sand, trace subrounded slate gravels, poor blocky structure @81.9' to 82.2': Interbedded zone of fine to coarse subangular to subrounded sandy slate GRAVEL (GW) beds and Sandy CLAY (CL), wet @82.2' to 82.9': Sandy CLAY to Clayey SAND (SC-CL), reddish brown, very moist, fine grained sand, trace medium to coarse grained sand, moderate to strong blocky structure
215 85						@82.9' to 83.4': Sandy CLAY (CL), reddish brown, moist, fine grained sand, slightly micaceous @83.4' to 83.5': Thin sand rich lens, fine to medium grained @83.5' to 85': Becomes less sandy, reddish brown, moderate blocky structure, fine grained sand, white brown well developed soil with MnO>2,
	85-90	Box 9				@85' to 86': Sandy CLAY (CL), reddish brown, with minor gleying, fine to medium grained sand, trace coarse grained sand, poor blocky structure, trace fine gravel, shimmer on facies @86': Thinly laminated brown clay, oxidation-reduction banding of 1-foot thick clays @87.3' to 88.3': Slight increase in fine gravel content, gravels are coated with clay, white siltstone and weathered slaty gravel
210 90						@88.3' to 91.7': Sandy CLAY (CL), reddish brown, faintly laminated, minor gleying, fine to medium grained sand, trace coarse grained sand, trace fine slaty gravel, poor blocky structure @91.2': Sand rich lamination, fine grained sand
	90-95	Box 9				@91.7' to 91.9': Lamination of orangish brown fine grained SAND (SP), micaceous @91.9' to 94.5': Sandy CLAY (CL), reddish brown, moist, fine grained sand, trace medium to coarse grained sand, minor sandier laminations, moderate blocky structure, MnO_2 staining on faces
▽						
205 95						@94.5' to 95': Sandy GRAVEL with Clay (GW-GC), fine to coarse grained sand, fine to coarse predominantly subangular slaty gravels, wet @95' to 95.1': Thin lamination of Clayey SAND (SC), fine to coarse grained sand
	95-100	Box 10				@95.1' to 95.7': Sandy CLAY (CL), reddish brown, very moist, fine grained sand, trace medium grained sand, poor blocky structure, fining upward, gradational contact with below @95.7' to 96.5': Gravelly SAND with Clay (SW-SC), wet, fine to coarse grained sand, fine subangular slaty gravels, trace Tm clasts
▽						@96.5' to 96.9': Clayey SAND (SC), reddish brown, wet, fine grained sand, slightly micaceous @96.9' to 97.1': Slate GRAVEL (GW) bed
200 100						@97.1' to 97.7': Interbedded Sandy CLAY (CL) and Clayey SAND (SC), fine to

FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE	JOINTS / SHEAR / FRACTURE		WEATHERING
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE
					Fe = Iron Oxide	Mn = Manganese Oxide	V. SEVERE
							COMPLETE

ROCKLOG2014 10274.006 LOGS-RECOVER.GPJ ROCKLOG2012.GDT 2/18/15

LEIGHTON

CORE BORING LOG

BORING NO. CB- 8
PAGE 6 OF 8

PROJECT: El Rodeo Geohazard Investigation
CLIENT: Beverly Hills Unified School District
CONTRACTOR: Martini Drilling Corporation
EQUIPMENT USED: CME-75

GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION		CORE BARREL	
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	
						HORIZONTAL	SIZE	
06/17/14	ATD	▽ 38.5				INCLINED	Bit (Feet)	
06/17/14	ATD	▼ 128.4				BEARING	Barrel (Feet)	
		▼			0	ANG. FROM VERT	Total (Feet)	

JOB NO.: 10274.006
PAGE NO.: 6 of 8
ELEVATION: 299.5 Feet
DATE START: 6/17/2014
DATE FINISH: 6/17/2014
DRILLER: Martini
PREPARED BY: EH
LOCATION: 605 Whittier Blvd., Beverly Hills, Ca

FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS

The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.

ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	
200 100						medium grained sand
						@97.7' to 98.8': SAND with Silt (SP-SM), reddish brown, wet, mostly fine grained sand, some medium grained sand, lamination of sandy clay @98.5'
						@98.8' to 99.1': Fine to coarse slaty GRAVEL (GW) bed, subangular
						@99.1' to 99.3': Silty SAND (SM), reddish brown, wet, fine to coarse grained sand, trace gravel, gradational contact
	100-105	Box 10				@99.3' to 99.7': Sandy CLAY to Clayey SAND (SC-CL), reddish brown, very moist, fine to medium grained sand, moderate blocky structure
						@99.7' to 100': Clayey Sandy GRAVEL (GW-GC), wet, fine to coarse grained sand, fine subangular slaty gravels
						@100' to 102': SAND (SP), grayish brown to reddish brown, wet, fining upwards
						@100' to 101.2': Fine to medium grained sand
195 105						@101.2' to 102': Medium to coarse grained sand, slate, quartz, and siltstone fragments, gradational contact
						@102' to 102.4': Sandy CLAY (CL), reddish brown, wet, fine grained sand, trace medium grained sand, MnO_2 spotting
						@102.4' to 103.1': Clayey SAND (SC), mottled yellowish brown to brown, fine to medium grained sand, carbonate stringers, chaotic jumble
	105-110	Box 11				@103.1' to 105': No Recovery
						@105' to 105.6': Silty Sandy CLAY (CL-ML), reddish brown, moist, fine grained sand
						@105.6' to 106': Becomes less sandy, MnO_2 spotting
						@106' to 106.5': Sandy CLAY (CL), reddish brown, moist, fine to medium grained sand, poor blocky structure
190 ▽ 110						@106.5' to 106.9': Becomes less sandy, MnO_2 spotting
						@106.9' to 107.2': Sandy lamination
						@107.2' to 107.6': Sandy CLAY (CL), reddish brown, fine grained sand, some silt, MnO_2 spotting
						@107.6' to 108.1': Becomes laminated, gleyed
	110-115	Box 11				@108' to 109.5': Silty CLAY (CL-ML), with sand, olive brown to reddish gray brown, fine grained sand, brown streaks, laminations
						@108.1' to 108.3': Lamination of Clayey SAND (SC), reddish brown, fine to coarse grained sand
						@108.3' to 108.7': Sandy CLAY (CL), reddish brown, fine grained sand, trace medium grained sand, MnO_2 spotting, carbonate stringers
						@108.7': Dark brown lamination
185 ▽ 115						@109.5' to 110': No Recovery
						@110' to 110.7': Clayey Gravelly SAND (SW-SC), reddish brown, wet, fine to coarse grained sand, fine slaty gravels, gradational contact
						@110.7' to 111.2': Sandy CLAY (CL), reddish brown, with minor gleying, faintly laminated, fine grained sand, MnO_2 spotting
	115-120	Box 12				@111.2' to 111.6': Sandy GRAVEL (GW) bed, fine to coarse grained sand, fine slaty gravels, trace coarse gravel
						@111.6' to 111.9': Sandy CLAY (CL), reddish brown, fine grained sand, wet, MnO_2 spotting, blebs, grades coarser
						@111.9' to 113.9': Channel Deposits, Sandy Clayey GRAVEL (GW-GC), fine to coarse grained sand, fine to coarse subangular slate fragments and gravels
180 120						@113.9' to 115': No Recovery

FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE	JOINTS / SHEAR / FRACTURE		WEATHERING
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE
							V. SEVERE
					Fe = Iron Oxide	Mn = Manganese Oxide	COMPLETE

ROCKLOG2014 10274.006 LOGS-RECOVER.GPJ ROCKLOG2012.GDT 2/18/15

LEIGHTON

CORE BORING LOG

BORING NO. CB- 8
PAGE 7 OF 8

PROJECT: El Rodeo Geohazard Investigation
CLIENT: Beverly Hills Unified School District
CONTRACTOR: Martini Drilling Corporation
EQUIPMENT USED: CME-75

GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION		CORE BARREL	
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	
						HORIZONTAL	SIZE	
06/17/14	ATD	▽ 38.5				INCLINED	Bit (Feet)	
06/17/14	ATD	▼ 128.4				BEARING	Barrel (Feet)	
		▼			0	ANG. FROM VERT.	Total (Feet)	

JOB NO.: 10274.006
PAGE NO.: 7 of 8
ELEVATION: 299.5 Feet
DATE START: 6/17/2014
DATE FINISH: 6/17/2014
DRILLER: Martini
PREPARED BY: EH
LOCATION: 605 Whittier Blvd., Beverly Hills, Ca

ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS
						The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.
180 120	120-125	Box 12				@115' to 118.8': Silty SAND (SM), medium reddish brown, wet, fine to medium grained sand, low silt content, some clay @118.8' to 118.9': Thin layer of gray shale fragments @120' to 121.6': Silty SAND (SM), medium brown, wet, fine to medium grained sand, low silt content @121.6' to 124.1': Slightly coarser @124.1' to 125': No Recovery
175 125	125-130	Box 13				@125' to 125.6': Sandy CLAY (CL), dark reddish brown to chocolate brown with gray mottling, fine grained sand, trace medium to coarse grained sand, minor $CaCO_3$ @125.6' to 126.1': Sandy CLAY (CL), with gravel, dark reddish brown with gray mottling, fine grained sand, some medium to coarse grained sand, fine slaty gravels @126.1' to 128.4': Gravelly Sandy CLAY (CL), reddish brown with gray mottling, very moist, fine to medium grained sand, some coarse grained sand, fine quartz and slate gravels, with carbonate nodules and concretions, poor to moderate blocky structure, high sand content, abrupt contact @128.4': Clayey Gravelly SAND (SW-SC), reddish brown and gray, gleyed, wet, fine to coarse grained sand, fine subangular slate, oxide staining, minor carbonate blebs @128.4' to 130': Missing
170 130	130-135	Box 13				@130' to 130.5': Silty SAND (SM), reddish brown, mostly fine to medium grained sand, some coarse grained sand @130.5' to 130.7': Basal Gravelly SAND (SW), fine to coarse grained sand, fine to coarse subangular to subrounded slaty gravels @130.7' to 131.2': Silty Clayey SAND (SM-SC), with gravel, thinly laminated, reddish brown to black, orange and tan, MnO_2 banding, carbonate concretions, fine slaty gravels, fine to medium grained sand @131.2' to 135': No Recovery
165 135	135-140	Box 14				@135' to 136.9': Clayey SAND (SC), orangish brown, fine to coarse grained sand, trace fine slaty gravels, carbonate nodules and concretions, coarsens downward, poor blocky structure, minor MnO_2 spotting, gradational contact @136.9' to 137.5': Clayey Sandy SILT (ML-CL), orangish brown, fine grained sand, trace medium grained sand, trace fine gravel, MnO_2 banding, minor carbonate, gradational contact @137.5' to 138': Clayey SAND (SC), with gravel, orangish brown, very moist, fine to coarse grained sand, fine slaty gravels, oxidation staining, faintly gleyed, abrupt contact @138.1' to 138.3': Silty SAND with Clay (SM-SC), orangish tan brown, fine
160 140						

FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE	JOINTS / SHEAR / FRACTURE		WEATHERING
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE
							V. SEVERE
					Fe = Iron Oxide	Mn = Manganese Oxide	COMPLETE

ROCKLOG2014 10274.006 LOGS-RECOVER.GPJ ROCKLOG2012.GDT 2/18/15

LEIGHTON

CORE BORING LOG

BORING NO. CB- 8
PAGE 8 OF 8

PROJECT: El Rodeo Geohazard Investigation
CLIENT: Beverly Hills Unified School District
CONTRACTOR: Martini Drilling Corporation
EQUIPMENT USED: CME-75

GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION		CORE BARREL	
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	
						HORIZONTAL	SIZE	
06/17/14	ATD	▽ 38.5				INCLINED	Bit (Feet)	
06/17/14	ATD	▼ 128.4				BEARING	Barrel (Feet)	
		▼			0	ANG. FROM VERT.	Total (Feet)	

JOB NO.: 10274.006
PAGE NO.: 8 of 8
ELEVATION: 299.5 Feet
DATE START: 6/17/2014
DATE FINISH: 6/17/2014
DRILLER: Martini
PREPARED BY: EH
LOCATION: 605 Whittier Blvd., Beverly Hills, Ca

ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS
160 140	140-145	Box 14				The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual. grained sand, laminated, MnO_2 band @138.3' to 138.4': Becomes fine to medium grained Silty SAND (SM) @138.4' to 140': No Recovery @140' to 144.8': SAND with Silt (SP-SM), medium brown, very moist, fine to medium grained sand, trace coarse grained sand, quartz and slate grains
155 145						@144.8' to 145': Lamination of Sandy CLAY (CL), with fine gravel, slate fragments, laminated, carbonate concretions Total depth of coring: 145' bgs Perched groundwater encountered @ 38.5'-39.4', 40'-43.6', 47.2'-48.8', 51.5'-52', 55-57', 58.6-59', 60'-61.1', 81.4'-81.6', 81.9'-82.2', 94.5'-95',95.7'-99.3', 99.7'-102.4', 110'-110.7', 111.6'-111.9', 115'-124.1', and 128.4' bgs Boring backfilled with bentonite and soil cuttings upon completion of drilling. Boring capped with approximately 6-inches of cold patch mix asphalt. Excess cuttings disposed of in D.O.T. approved drums and disposed offsite
150 150						
145 155						
140 160						

FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE	JOINTS / SHEAR / FRACTURE		WEATHERING
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE
							V. SEVERE
					Fe = Iron Oxide	Mn = Manganese Oxide	COMPLETE

ROCKLOG2014 10274.006 LOGS-RECOVER.GPJ ROCKLOG2012.GDT 2/18/15

*** * * This log is a part of a report by Leighton and should not be used as a stand-alone document. * * ***

LEIGHTON

CORE BORING LOG

BORING NO. CB- 9
PAGE 1 OF 4

PROJECT: El Rodeo Geohazard Investigation
CLIENT: Beverly Hills Unified School District
CONTRACTOR: Martini Drilling Corporation
EQUIPMENT USED: CME-75

GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION		CORE BARREL	
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	
						HORIZONTAL	SIZE	
07/07/14	ATD	▽ 34.7				INCLINED	Bit (Feet)	
		▼				BEARING	Barrel (Feet)	
					0	ANG. FROM VERT.	Total (Feet)	

JOB NO.: 10274.006
PAGE NO.: 1 of 4
ELEVATION: 298 Feet
DATE START: 7/7/2014
DATE FINISH: 7/8/2014
DRILLER: Martini
PREPARED BY: EH
LOCATION: 605 Whittier Blvd., Beverly Hills, Ca

ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS
						The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.
298 0						**Artificial Fill, Undocumented (Afu):** @0'-5': Hand Auger
293 5						@5': **Pleistocene of Benedict Canyon Wash (BCW_1):** Sandy CLAY (CL), brown, moist, fine to medium grained sand
						@5.2' to 7.3': Silty SAND (SM), with clay and gravel, brown, moist, fine to coarse grained sand, fine gravel
	5-10	Box 1				@7.3' to 7.7': Clayey SAND (SC), brown, moist, fine to medium grained sand, some slate fragments
						@7.7' to 7.8': Layer of fine subangular gravel
						@7.8' to 8.5': Silty SAND (SM), brown, moist, fine to medium grained sand, trace fine gravel
288 10						@8.5' to 10': Sandy CLAY to Clayey SAND (SC-CL), reddish brown, moist, fine grained sand, moderate blocky structure in sand rich zones @8.8' to 9' and @9.2' to 9.4', minor carbonate stringers
						@10': Sandy CLAY to Clayey SAND (SC-CL), reddish brown, moist, fine grained sand, poor to moderate blocky structure, shimmer on facies, trace siltstone fragments
	10-15	Box 1				@12.4' to 13.2': Silty SAND (SM), reddish brown, clean, fine to medium grained sand, trace clay, grades coarser, fining upward
						@13.2' to 13.5': Layer of Sandy GRAVEL (GW), subangular fine slate and quartz gravels, gradational contact
						@13.5' to 14.8': Clayey SAND (SC), with silt, mottled brown and reddish brown, moist, fine to medium grained sand, trace coarse grained sand, fine subangular slaty gravels
283 15						@14.8' to 15': Layer of Sandy GRAVEL (GW), reddish brown, fine to medium grained sand, with trace coarse grained sand, fine subangular platey slate gravels
						@15' to 16.1': Silty Clayey SAND (SC-SM), with gravel, reddish brown, moist, fine to coarse grained sand, fine subrounded slaty gravels, minor siltstone gravels
	15-20	Box 2				@16.1' to 16.8': Sandy GRAVEL (GW) layer, gleyed, fine to coarse slaty gravels, subangular to subrounded, iron oxide staining, some clay, gradational contact
						@16.8' to 17.7': Clayey SAND (SC), olive brown to faint reddish brown, very moist, fine grained sand, MnO_2 streaking, trace gravel @17.4', abrupt contact
278 20						

FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE	JOINTS / SHEAR / FRACTURE		WEATHERING
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE
							V. SEVERE
					Fe = Iron Oxide	Mn = Manganese Oxide	COMPLETE

ROCKLOG2014 10274.006 LOGS-RECOVER.GPJ ROCKLOG2012.GDT 2/18/15

LEIGHTON

CORE BORING LOG

BORING NO. CB- 9
PAGE 2 OF 4

PROJECT: El Rodeo Geohazard Investigation
CLIENT: Beverly Hills Unified School District
CONTRACTOR: Martini Drilling Corporation
EQUIPMENT USED: CME-75

JOB NO.: 10274.006
PAGE NO.: 2 of 4
ELEVATION: 298 Feet
DATE START: 7/7/2014
DATE FINISH: 7/8/2014
DRILLER: Martini
PREPARED BY: EH
LOCATION: 605 Whittier Blvd., Beverly Hills, Ca

GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION		CORE BARREL	
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	
						HORIZONTAL	SIZE	
07/07/14	ATD	▽ 34.7				INCLINED	Bit (Feet)	
		▼				BEARING	Barrel (Feet)	
					0	ANG. FROM VERT	Total (Feet)	

ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS
						The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.
278 20	20-25	Box 2				@17.7' to 17.9': SAND with Clay (SP-SC), tannish brown to reddish brown, fine to medium grained sand, siltstone clasts, heavily oxidized dark reddish brown, abrupt contact, basal gravel @17.9' to 18.6': Clayey SAND (SC), olive grey to reddish grey, moist, minor gleying, sporadic slaty gravels @18.6' to 20.2': Sandy CLAY (CL), reddish brown, gleyed, faintly laminated, poor blocky structure, sandy lamination @18.9', with yellow oxide staining, trace fine gravels, moderate blocky structure @19.6' to 20' @20.2' to 21.4': Silty Sandy CLAY (CL-ML), reddish brown, gleyed, fine grained sand, trace coarse grained sand, fine gravel, poor blocky structure, with waxy finish on red facies, minor calcium carbonate @21.4' to 21.8': Sandy CLAY (CL), reddish brown, gleyed, fine grained sand, poor to moderate blocky structure, clay on faces, abrupt contact
273 25	25-30	Box 3				@21.8' to 25.2': Sandy CLAY (CL), with gravel, dark reddish brown, moist, fine to coarse grained sand, fine to coarse subangular to subrounded slate and siltstone gravels, intermittent gravel beds @23.5': large siltstone clasts @25.2' to 26.5': Clayey SAND (SC), dark brown, with very faint reddish hue, slightly gleyed, fine to medium grained sand, trace coarse grained sand, fine subrounded slaty gravels, minor siltstone gravels @26.5' to 27.5': Becomes sandier @27.5' to 28': Layer of Sandy GRAVEL (GW), fine to coarse grained sand, fine to coarse subangular to subrounded slaty gravels
268 30	30-35	Box 3				@28' to 28.7': Silty Clayey SAND (SC-SM), with gravel, olive brown to reddish brown, moist, mostly fine to medium grained sand, some coarse grained sand, fine subangular to subrounded slaty gravels @28.7' to 30.2': Gravelly SAND with Clay (SW-SC), olive brown to reddish brown, gleyed, fine to coarse grained sand, fine subangular slaty gravels, some heavily oxidized clasts, abrupt erosional contact @30.2': **Pleistocece of Benedict Canyon Wash (BCW_2):** Sandy CLAY (CL), reddish brown, dark reddish brown in matrix, gleyed, very moist, gleyed, oxidation-reduction banding, fine grained sand, poor blocky structure, base of developed soil @31.9' to 32.1': Clayey SAND (SC) lamination, reddish brown, fine grained sand @32.1' to 34.4': Sandy CLAY (CL), reddish brown, minor gleying, becomes more massive than above, moderate blocky structure, sandy laminations @33.3', 33.7', and 33.9', abrupt contact
▽ 263 35	35-40	Box 4				@34.4' to 34.7': Clayey SAND (SC), reddish brown, moist, fine to coarse grained sand, few fine gravels, gradational contact @34.7' to 37.8': Gravelly SAND with Clay (SW-SC), reddish brown, wet, fine to coarse grained sand, fine subangular slate and siltstone gravels, thin clay and windblown silt lamination @36.3'
						@37.8' to 39.6': Clayey GRAVEL with Sand (GW-GC), yellowish to reddish brown, fine to coarse subangular slate and siltstone gravels, heavily oxidized clasts, becomes sandier @39'
258 40						@39.6' to 40': No Recovery

FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE	JOINTS / SHEAR / FRACTURE		WEATHERING
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE
							V. SEVERE
					Fe = Iron Oxide	Mn = Manganese Oxide	COMPLETE

ROCKLOG2014 10274.006 LOGS-RECOVER.GPJ ROCKLOG2012.GDT 2/18/15

LEIGHTON

CORE BORING LOG

BORING NO. CB- 9
PAGE 3 OF 4

PROJECT: El Rodeo Geohazard Investigation
CLIENT: Beverly Hills Unified School District
CONTRACTOR: Martini Drilling Corporation
EQUIPMENT USED: CME-75

GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION		CORE BARREL	
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	
						HORIZONTAL	SIZE	
07/07/14	ATD	▽ 34.7				INCLINED	Bit (Feet)	
		▼				BEARING	Barrel (Feet)	
					0	ANG. FROM VERT	Total (Feet)	

JOB NO.: 10274.006
PAGE NO.: 3 of 4
ELEVATION: 298 Feet
DATE START: 7/7/2014
DATE FINISH: 7/8/2014
DRILLER: Martini
PREPARED BY: EH
LOCATION: 605 Whittier Blvd., Beverly Hills, Ca

ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS
						The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.
258 40						@40' to 40.6': Gravelly SAND (SW), reddish brown, wet, fine to coarse grained sand, fine subangular to subrounded gravels, some clay, gradational contact
						@40.6' to 41.8': Clayey SAND (SC), with gravel, reddish brown, wet, fine to coarse grained sand, fine to coarse slaty gravel, heavily weathered basalt gravels @40.7', gradational contact, bedded sand, very fine, friable
	40-45	Box 4				@41.8': **Pleistocene Cheviot Hills Deposits (CHD):** Sandy CLAY (CL), reddish brown, massive, fine grained sand
						@44.6': Becomes Sandy CLAY (CL), reddish brown, minor gleying, fine grained sand, trace fine subrounded gravel
						@44.6' to 45': No Recovery, sand in sampler
253 45						@45' to 50': Sandy CLAY to Clayey SAND (SC-CL), reddish brown, gleyed, MnO_2 spotting, sand rich zones show moderate blocky structure, @48.9' slaty gravel laminations
	45-50	Box 5				
248 50						@50' to 53.9': Sandy CLAY (CL), reddish brown, gleyed and oxidized, fine to medium grained sand, MnO_2 spotting, minor sand rich zones, with moderate blocky structure, waxy finish on faces, abrupt contact
	50-55	Box 5				
▽						@53.9' to 54.6': Clayey Gravelly SAND (SW-SC), reddish brown, wet, fine to coarse grained sand, fine subangular slate gravels, siltstone clasts, base of contact is sand with coarse sand-sized siltstone fragments, abrupt erosional contact below
243 55						@54.6' to 55': Sandy CLAY (CL), reddish brown, gleyed and oxidized, fine to medium grained sand, oxidation-reduction banding, variegated below
						@55' to 57': Sandy CLAY (CL), reddish brown, gleyed and oxidized, fine grained sand, few medium to coarse grained sand, very sporadic fine subrounded white slaty gravels, MnO_2 spotting
	55-60	Box 6				@57': Becomes slightly sandier, fine to coarse grained sand
						@57.5' to 58.5': Sandy CLAY (CL), reddish brown, gleyed and oxidized, fine grained sand, trace medium to coarse grained sand, poor blocky structure
						@58.5' to 59': Becomes sandier
238 60						@59' to 60': Sandy CLAY (CL), reddish brown, gleyed and oxidized, fine to medium grained sand, trace coarse grained sand, grades finer and darker, with

FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE	JOINTS / SHEAR / FRACTURE		WEATHERING
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE
							V. SEVERE
					Fe = Iron Oxide	Mn = Manganese Oxide	COMPLETE

ROCKLOG2014 10274.006 LOGS-RECOVER.GPJ ROCKLOG2012.GDT 2/18/15

*** * * This log is a part of a report by Leighton and should not be used as a stand-alone document. * * ***

LEIGHTON

CORE BORING LOG

BORING NO. CB- 9
PAGE 4 OF 4

PROJECT: El Rodeo Geohazard Investigation
CLIENT: Beverly Hills Unified School District
CONTRACTOR: Martini Drilling Corporation
EQUIPMENT USED: CME-75

GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION		CORE BARREL	
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	
						HORIZONTAL	SIZE	
07/07/14	ATD	▽ 34.7				INCLINED	Bit (Feet)	
		▼				BEARING	Barrel (Feet)	
					0	ANG. FROM VERT	Total (Feet)	

JOB NO.: 10274.006
PAGE NO.: 4 of 4
ELEVATION: 298 Feet
DATE START: 7/7/2014
DATE FINISH: 7/8/2014
DRILLER: Martini
PREPARED BY: EH
LOCATION: 605 Whittier Blvd., Beverly Hills, Ca

ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS
						The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.
238 60	60-65	Box 6				minor faint carbonate stringers, poor blocky structure @59.5': Chocolate brown clay @60' to 65': Sandy CLAY (CL), reddish brown and gray, laminated, oxidation-reduction banding, gleyed, fine grained sand, trace medium to coarse grained sand, MnO_2 spotting, heavily oxidized @60.4' to 60.9': dark reddish brown sandy clay paleosol' @61.4': well developed soil structure, paleosol
233 65	65-70	Box 7				@65' to 66.7': Sandy CLAY (CL), dark reddish brown, laminated, gleyed, fine grained sand, trace medium to coarse grained sand, MnO_2 spotting, waxy finish on faces, trace fine gravel, gleyed @66.7': Gleyed above, becomes more reddish brown with depth @68.1' to 70.4': Sandy CLAY (CL), with gravel, reddish brown, gleyed, fine to medium grained sand, trace coarse grained sand, fine subrounded slate and siltstone gravels, moderate blocky structure
228 70	70-75	Box 7				@70.4' to 75': Sandy CLAY (CL), reddish brown, faintly laminated, fine grained sand, few medium to coarse grained sand, trace fine gravel, MnO_2 spotting, distinct gravelly beds @71.7' and 74.3'
223 75						Total depth of coring: 75' bgs Perched groundwater encountered @34.7'-37.8', 40'-41.8', and 53.9'-54.6' bgs Boring backfilled with bentonite and soil cuttings upon completion of drilling. Boring capped with approximately 6-inches of Rapid Set Concrete and black dye. Excess cuttings disposed of in D.O.T. approved drums and disposed offsite
218 80						

FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE	JOINTS / SHEAR / FRACTURE		WEATHERING
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE
							V. SEVERE
					Fe = Iron Oxide	Mn = Manganese Oxide	COMPLETE

ROCKLOG2014 10274.006 LOGS-RECOVER.GPJ ROCKLOG2012.GDT 2/18/15

*** This log is a part of a report by Leighton and should not be used as a stand-alone document. ***

LEIGHTON

CORE BORING LOG

BORING NO. CB- 10
PAGE 1 OF 4

PROJECT: El Rodeo Geohazard Investigation
CLIENT: Beverly Hills Unified School District
CONTRACTOR: Martini Drilling Corporation
EQUIPMENT USED: CME-75

GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION		CORE BARREL	
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	
						HORIZONTAL	SIZE	
07/08/14	ATD	▽ 35.4				INCLINED	Bit (Feet)	
		▼				BEARING	Barrel (Feet)	
		▼			0	ANG. FROM VERT.	Total (Feet)	

JOB NO.: 10274.006
PAGE NO.: 1 of 4
ELEVATION: 296.5 Feet
DATE START: 7/8/2014
DATE FINISH: 7/9/2014
DRILLER: Martini
PREPARED BY: EH
LOCATION: 605 Whittier Blvd., Beverly Hills, Ca

ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS
						The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.
297 0						**Artificial Fill, Undocumented (Afu):** @0'-5': Hand Auger 2.5 ft Runs to 30'
292 5	5-10	Box 1				@5': **Pleistocene Alluvium of Benedict Canyon Wash (BCW_1):** Sandy SILT with Clay (ML-CL), medium brown, moist, fine grained sand, occasional fine slaty gravel @8.1' to 9.4': Increased clay with depth
287 10	10-15	Box 1				@9.4' to 10': Clayey Silty SAND (SC-SM), with gravel, medium brown, moist, mostly fine to medium grained sand, some coarse grained sand, fine subangular slate and siltstone gravels @10' to 12.1': Silty Clayey SAND (SC-SM), with gravel, medium brown to slightly reddish brown, moist, fine to medium grained sand, some coarse grained sand, high fines content, fine subangular slate and siltstone gravels @12.1' to 14.1': Sandy CLAY (CL), reddish brown, moist, fine grained sand, high sand content, slightly micaceous, poor blocky structure, gradational contact @14.1' to 15': Clayey SAND (SC), with gravel, reddish brown, moist, mostly fine to medium grained sand, few coarse grained sand, fine subrounded slaty gravels
282 15	15-20	Box 2				@15' to 17': Grades to Silty Clayey SAND (SC-SM), with gravel, reddish brown, moist, mostly fine to medium grained sand, some coarse grained sand, fine subangular slaty gravels @17' to 18': Increase in gravel content, gradational contact @18' to 18.8': Sandy Clayey GRAVEL (GW-GC), mottled reddish brown to yellowish brown to orange, fine to coarse grained sand, fine to coarse slate and siltstone gravels, erosional contact @18.8' to 19.6': Sandy CLAY (CL), reddish brown, moist, fine grained sand, gradational contact
277 20						

FIELD HARDNESS		BEDDING	
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"
SOFT	- GROVES	THICK	36"-120"
V. SOFT	- CARVES	V. THICK	>120"

ATTITUDE AND ANGLE
HORIZONTAL (0-5°)
SHALLOW OR LOW ANGLE (5-35°)
MODERATELY DIPPING (35-55°)
STEEP OR HIGH ANGLE (55-85°)
VERTICAL (85-90°)

JOINTS / SHEAR / FRACTURE	
V. CLOSE	<2"
CLOSE	2"-12"
MOD. CLOSE	12"-36"
WIDE	36"-120"
V. WIDE	>120"

Fe = Iron Oxide Mn = Manganese Oxide

WEATHERING
FRESH
V. SLIGHT
SLIGHT
MODERATE
MOD. SEVERE
V. SEVERE
COMPLETE

ROCKLOG2014 10274.006 LOGS-RECOVER.GPJ ROCKLOG2012.GDT 2/18/15

LEIGHTON

CORE BORING LOG

BORING NO. CB- 10
PAGE 2 OF 4

PROJECT: El Rodeo Geohazard Investigation
CLIENT: Beverly Hills Unified School District
CONTRACTOR: Martini Drilling Corporation
EQUIPMENT USED: CME-75

GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION		CORE BARREL	
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	
						HORIZONTAL	SIZE	
07/08/14	ATD	▽ 35.4				INCLINED	Bit (Feet)	
		▼				BEARING	Barrel (Feet)	
		▼			0	ANG. FROM VERT.	Total (Feet)	

JOB NO.: 10274.006
PAGE NO.: 2 of 4
ELEVATION: 296.5 Feet
DATE START: 7/8/2014
DATE FINISH: 7/9/2014
DRILLER: Martini
PREPARED BY: EH
LOCATION: 605 Whittier Blvd., Beverly Hills, Ca

ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS
						The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.
277 20	20-25	Box 2				@19.4' to 20': Sandy Clayey GRAVEL (GW-GC), mottled reddish brown to yellowish brown to orange, fine to medium grained sand, fine subangular slaty gravels, oxidized clasts @20' to 20.5': Sandy CLAY (CL), olive brown to reddish brown, fine grained sand, with trace medium to coarse grained sand, fine gravel, poor blocky structure, abundant brownish spotting @20.5' to 20.6': Lamination of Clayey SAND (SC), fine to coarse grained sand, gradational contact @20.6' to 22.6': Sandy CLAY (CL), reddish brown, very moist, fine grained sand, faint gleying, occasional fine subrounded slaty gravels, clasts are clay coated, poor to moderate blocky structure, abrupt contact @22.6' to 24.6': Gravelly Sandy CLAY (CL), mottled reddish brown to yellowish brown to greenish brown, faintly gleyed, fine to coarse grained sand, fine to coarse subangular to subrouned slaty gravels, gradational contact
272 25	25-30	Box 3				@24.6' to 25.1': Clayey SAND with Gravel (SW-SC), reddish brown, moist, mostly fine to medium grained sand, fine slate and quartz gravels @25.1' to 25.8': GRAVEL (GP) bed, fine to coarse quartz and slate gravels, with sandy clay matrix, gradational contact @25.8' to 27.5': Clayey SAND to Sandy CLAY (SC-CL), with gravel, reddish brown, faintly gleyed, fine to coarse grained sand, fine subangular slate and siltstone gravels, occasional yellowish oxidation staining, abrupt contact @27.5' to 28.3': Clayey Sandy GRAVEL (GW-GC), dark reddish brown, moist, fine to coarse grained sand, fine subangular to subrounded slate gravels, gradational contact @28.3' to 30.4': Sandy Clayey GRAVEL (GW-GC), mottled reddish brown to yellowish brown to red and olive brown, very chaotic assemblage of fine to coarse grained sand, fine subangular slate, basalt, and siltstone gravels, highly weathered and oxidized clasts, faint gleying, abrupt erosional contact
267 30	30-35	Box 3				@30.3': **Pleistocene Alluvium of Benedict Canyon Wash (BCW_2):** Sandy CLAY (CL), reddish brown, moist, fine grained sand, faint gleying, MnO_2 streaking, with discrete clayey sand laminations, base of developed soil @31.5', 31.8', 32', and 34.6', clayey sand exhibits moderate blocky structure @33.3': siltstone rock clast
262 ▽ 35	35-40	Box 4				@35' to 35.4': Sandy CLAY (CL), reddish brown, very moist, fine to medium grained sand, faintly gleyed, MnO_2 spotting, poor blocky structure, with waxy finish and shimmer on facies @35.4' to 35.9': Clayey SAND (SC), reddish brown, wet, faint gleying, poor blocky structure, MnO_2 streaking @35.9' to 36.5': Grades much sandier, reddish brown, wet, very low clay content @36.5': Grades finer with increase in clay content, abrupt contact @36.8' to 39.6': Sandy GRAVEL with Clay (GW-GC), dark reddish brown, wet, fine to coarse grained sand, fine to coarse subangular to subrounded slate and few quartz gravels
257 40						@39.6' to 40': No Recovery

FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE	JOINTS / SHEAR / FRACTURE		WEATHERING
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE
							V. SEVERE
					Fe = Iron Oxide	Mn = Manganese Oxide	COMPLETE

ROCKLOG2014 10274.006 LOGS-RECOVER.GPJ ROCKLOG2012.GDT 2/18/15

LEIGHTON

CORE BORING LOG

BORING NO. CB- 10
PAGE 3 OF 4

PROJECT: El Rodeo Geohazard Investigation
CLIENT: Beverly Hills Unified School District
CONTRACTOR: Martini Drilling Corporation
EQUIPMENT USED: CME-75

GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION		CORE BARREL	
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	
						HORIZONTAL	SIZE	
07/08/14	ATD	▽ 35.4				INCLINED	Bit (Feet)	
		▼				BEARING	Barrel (Feet)	
		▼			0	ANG. FROM VERT.	Total (Feet)	

JOB NO.: 10274.006
PAGE NO.: 3 of 4
ELEVATION: 296.5 Feet
DATE START: 7/8/2014
DATE FINISH: 7/9/2014
DRILLER: Martini
PREPARED BY: EH
LOCATION: 605 Whittier Blvd., Beverly Hills, Ca

ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS
257 40	40-45	Box 4				The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual. @40' to 43': slight increase in clay content, abrupt erosional contact with below
						@43':**Pleistocene Cheviot Hills Deposits (CHD):** Sandy CLAY (CL), reddish brown, wet, fine to medium grained sand, high sand content, thin beds, very fine, friable, poor blocky structure, MnO_2 spotting, faint gleying, minor sand rich laminations
252 45	45-50	Box 5				@45' to 45.6': Silty Clayey SAND (SC-SM), reddish brown, wet, slightly micaceous, low fines content @45.6' to 46': Clayey SAND (SC), reddish brown, wet, fine grained sand @46': 1-foot thick bed of sand on top of clay @47' to 48.6': Sandy CLAY (CL), reddish brown, very moist, gleyed, faint laminations, oxidation-reduction banded, MnO_2 streaking
						@48.6' to 50': Clayey SAND (SC), reddish brown, wet, fine to medium grained sand, trace coarse grained sand, fine gravel, gleyed, pebble bed @49.7'
247 50	50-55	Box 5				@50' to 53.3': Silty SAND (SM), reddish brown, moist, fine to medium grained sand, trace coarse grained sand with sand sized siltstone chips, very low silt content, trace clay, gradational contact below
						@53.3' to 53.7': Clayey SAND with Silt (SC-SM), reddish brown, gleyed, increasingly clayier, moderate blocky structure, gradational contact
242 ▽ 55	55-60	Box 6				@53.7' to 55': Sandy GRAVEL with Clay (GW-GC), mottled reddish brown to grayish brown to yellowish orange brown, fine to coarse grained sand, fine to coarse slaty gravels, 3-inch cobble stuck in shoe @55' to 56.2': wet, grades coarser, gradational contact @55' to 56.5': basal gravel
						@56.5' to 57': Interlaminated Sandy CLAY and Clayey SAND (SC-CL), reddish brown, moist, gleyed, fine to medium grained sand in sandy clay, fine to coarse grained sand in clayey sand, abundant MnO_2, oxidation-reduction banding @56.2' to 56.8': minor sand bed with siltstone chips @56.8': sandy clay, glayed, oxidized @57' to 57.7': Sandy CLAY (CL), reddish brown and gray, oxidation-reduction banding, gleyed, heavily oxidized zones, white siltstone clasts @57.7' to 60': No Recovery
237 60						

FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE	JOINTS / SHEAR / FRACTURE		WEATHERING
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE
							V. SEVERE
					Fe = Iron Oxide	Mn = Manganese Oxide	COMPLETE

ROCKLOG2014 10274.006 LOGS-RECOVER.GPJ ROCKLOG2012.GDT 2/18/15

LEIGHTON

CORE BORING LOG

BORING NO. CB- 10
PAGE 4 OF 4

PROJECT: El Rodeo Geohazard Investigation
CLIENT: Beverly Hills Unified School District
CONTRACTOR: Martini Drilling Corporation
EQUIPMENT USED: CME-75

GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION		CORE BARREL	
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	
						HORIZONTAL	SIZE	
07/08/14	ATD	▽ 35.4				INCLINED	Bit (Feet)	
		▼				BEARING	Barrel (Feet)	
		▼			0	ANG. FROM VERT.	Total (Feet)	

JOB NO.: 10274.006
PAGE NO.: 4 of 4
ELEVATION: 296.5 Feet
DATE START: 7/8/2014
DATE FINISH: 7/9/2014
DRILLER: Martini
PREPARED BY: EH
LOCATION: 605 Whittier Blvd., Beverly Hills, Ca

ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS
						The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.
237 60	60-65	Box 6				@60' to 65': Sandy CLAY (CL), reddish brown and gray, oxidation-reduction banding, laminated with minor sand rich zones, MnO_2 spotting, waxy finish on ped faces slightly micaceous, heavily oxidized and gleyed @60' to 60.7': sandy chocolate brown clay @60.7' to 61.3': dark reddish brown clay, paleosol
232 65	65-70	Box 7				@65' to 68.8': Sandy CLAY (CL), reddish brown and gray, oxidation-reduction banding, fine grained sand, abundant MnO_2 spotting and streaking, sandy zones @65.8' and 67', exhibit moderate blocky structure @67.2' to 70': dark reddish brown clay with some fine sand and minor slaty gravel
						@68.8': thin gravel bed over dark reddish brown clayey soil
227 70	70-75	Box 7				@70' to 75': Sandy CLAY (CL), reddish brown, laminated, gleyed, occasional fine subrounded slaty gravels, gravel bed @73'
222 75						Total depth of coring: 75' bgs Perced groundwater encountered @ 35.4'-36.5', 36.8'-39.6', 43'-46', 48.6'-50'and 55'-56.5' bgs Boring backfilled with bentonite and soil cuttings upon completion of drilling. Boring capped with approximately 6-inches of Rapid Set concrete and black dye. Excess cuttings disposed of in D.O.T. approved drums and disposed offsite
217 80						

FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE	JOINTS / SHEAR / FRACTURE		WEATHERING
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE
							V. SEVERE
					Fe = Iron Oxide	Mn = Manganese Oxide	COMPLETE

ROCKLOG2014 10274.006 LOGS-RECOVER.GPJ ROCKLOG2012.GDT 2/18/15

LEIGHTON

CORE BORING LOG

BORING NO. CB- 11
PAGE 1 OF 4

PROJECT: El Rodeo Geohazard Investigation
CLIENT: Beverly Hills Unified School District
CONTRACTOR: Martini Drilling Corporation
EQUIPMENT USED: CME-75

JOB NO.: 10274.006
PAGE NO.: 1 of 4
ELEVATION: 292.5 Feet
DATE START: 7/9/2014
DATE FINISH: 7/10/2014
DRILLER: Martini
PREPARED BY: EH
LOCATION: 605 Whittier Blvd., Beverly Hills, Ca

GROUNDWATER: DATE	HRS AFT COMP	DEPTH TO (Feet): WATER	BOT. OF CASING	BOT. OF HOLE
07/09/14	ATD	▽ 34		
		▼		

ORIENTATION		CORE BARREL	
X	VERTICAL	TYPE	
	HORIZONTAL	SIZE	
	INCLINED	Bit (Feet)	
	BEARING	Barrel (Feet)	
0	ANG. FROM VERT.	Total (Feet)	

ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG
293 0					
288 5	5-10	Box 1			
283 10	10-15	Box 1			
278 15	15-20	Box 2			
273 20					

FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS

The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.

Artificial Fill, Undocumented (Afu):
@0'-5': Hand Auger

@5' to 5.2': Chunks of asphalt
@5.2': **Holocene Alluvium of Benedict Canyon Wash (Qal):**
Sandy CLAY (CL), dark olive brown, moist, soft, little fine grained sand, minor very occasional reddish brown laminations, mostly massive, MnO_2 spotting

@10': Becomes slightly sandier, with occasional fine subrounded gravels, with reddish brown FeO_3 staining

@11.1' to 11.7': Increase in fine grained sand content

@11.7' to 12.5': Clayey SAND (SC), with gravel, mottled brown to reddish brown to greenish brown, fine to coarse grained sand, fine subangular to subrounded gravels, very gravelly @12.2'

@12.5' to 12.8': Lamination of Sandy CLAY (CL)

@12.8' to 13.1': Clayey SAND (SC), reddish brown, moist, fine to medium grained sand

@13.1': Clayey Gravelly SAND (SW-SC), reddish brown, fine to coarse grained sand, fine subangular slaty gravels, normally graded
@14.2': Thin clayey lamination

@14.3' to 15.8': Grades into Silty Clayey SAND (SC-SM), dark reddish brown, moist, fine to coarse grained sand, occasional fine gravel
@15.8' to 16.5': Grades coarser with increase in fine subangular slaty gravels

@16.5' to 16.8': GRAVEL (GP) layer, fine subangular slate gravels in sandy clay matrix

@16.8' to 18.6': Clayey Sandy GRAVEL (GW-GC), mottled reddish brown to brown to yellowish brown, fine to coarse grained sand, fine to coarse subangular to subrounded slate, siltstone, and sandstone gravels, appears chaotic, minor notable stratigraphy, gradational contact

Pleistocene Alluvium of Benedict Canyon Wash (BCW_1):
@18.6' to 20': Grades to Clayey SAND (SC), reddish olive brown, moist, fine

FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE	JOINTS / SHEAR / FRACTURE		WEATHERING
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE
							V. SEVERE
					Fe = Iron Oxide	Mn = Manganese Oxide	COMPLETE

ROCKLOG2014 10274.006 LOGS-RECOVER.GPJ ROCKLOG2012.GDT 2/18/15

LEIGHTON

CORE BORING LOG

BORING NO. CB- 11
PAGE 2 OF 4

PROJECT: El Rodeo Geohazard Investigation
CLIENT: Beverly Hills Unified School District
CONTRACTOR: Martini Drilling Corporation
EQUIPMENT USED: CME-75

GROUNDWATER:		DEPTH TO (Feet):		
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE
07/09/14	ATD	▽ 34		
		▼		

	ORIENTATION	CORE BARREL	
X	VERTICAL	TYPE	
	HORIZONTAL	SIZE	
	INCLINED	Bit (Feet)	
	BEARING	Barrel (Feet)	
0	ANG. FROM VERT	Total (Feet)	

JOB NO.: 10274.006
PAGE NO.: 2 of 4
ELEVATION: 292.5 Feet
DATE START: 7/9/2014
DATE FINISH: 7/10/2014
DRILLER: Martini
PREPARED BY: EH
LOCATION: 605 Whittier Blvd., Beverly Hills, Ca

ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG
273 20	20-25	Box 2			
268 25	25-30	Box 3			
263 30	30-35	Box 3			
▽					
258 35	35-40	Box 4			
253 40					

FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS

The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.

grained sand, trace medium grained sand
@20' to 20.7': Clayey SAND (SC), reddish brown, gleyed, fine grained sand, poor to moderate blocky structure, shimmer on faces, abrupt contact
@20.7' to 21.4': Clayey SAND (SC), with gravel, reddish brown and grayish brown, gleyed, fine to coarse grained sand, fine subangular slaty gravels, gradational contact
@21.4' to 22.3': Gravelly SAND with Clay (SM-SC), reddish gray brown, very moist, fine to coarse grained sand, normally graded, some fine gravels at base, abrupt contact with below
@22.3' to 22.9': Sandy CLAY (CL), reddish brown, gleyed, fine grained sand, some medium grained sand, abundant brownish blebs, gleyed on laminations, poor blocky structure
@22.9' to 26.7': Sandy CLAY (CL), reddish brown, slightly gleyed, moderate blocky structure, shimmer on faces, faintly laminated, MnO_2 spotting, well developed blocky structure @26.5' to 26.7', with waxy finish

@27.2' to 29': Sandy CLAY (CL), reddish brown, with grayish oxidation-reduction banding, gleyed, laminated, fine grained sand, MnO_2 spotting

@29' to 30': Grades to dark reddish brown, oxidation-reduction banded, with occasional medium to coarse grained sand and fine gravel, harder than overlying sandy clay
@30' to 32': Sandy CLAY (CL), greenish brown to olive reddish brown, moist, fine grained sand, with some medium to coarse slaty sand, mottled, gleyed, poor to moderate blocky structure, occasional fine subangular slaty gravels, abrupt contact
@30' to 34.5': heavily gleyed
@32': Lamination of carbonate, caliche, very hard basalt clasts
@32.1' to 33.7': Clayey Sandy GRAVEL (GW-GC), mottled reddish brown to gray to yellowish brown, gleyed, fine to coarse grained sand, fine subangular slate and siltstone gravels, abundant yellowish oxide staining, discrete sand rich laminations
@33.7' to 34': Grades finer, less gravel
@34' to 34.5': Sandy GRAVEL (GW), wet, medium to coarse grained sand, fine subrounded slate fragments, gradational contact
@34.5': **Pleistocene Alluvium of Benedict Canyon Wash (BCW_2):** Sandy CLAY (CL), reddish brown to gray, oxidation-reduction banding, gleyed, fine to medium grained sand, few fine slaty gravels, oxidized
@35' to 36.3': Clayey SAND (SC), reddish brown, gleyed, fine grained sand, trace medium grained sand, moderate to well developed blocky structure
@36.3' to 38.7': Clayey SAND (SC), reddish brown to grayish brown, oxidation-reduction banding, fine grained sand, with occasional medium to coarse grained sand, gleyed

@38.7' to 40': Clayey SAND (SC), with gravel, dark reddish brown, fine grained sand, some medium to coarse grained sand, fine subangular slaty gravels, trace granitic gravels and siltstone gravels

FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE	JOINTS / SHEAR / FRACTURE		WEATHERING
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE
					Fe = Iron Oxide	Mn = Manganese Oxide	V. SEVERE
							COMPLETE

ROCKLOG2014 10274.006 LOGS-RECOVER.GPJ ROCKLOG2012.GDT 2/18/15

LEIGHTON

CORE BORING LOG

BORING NO. CB- 11
PAGE 3 OF 4

PROJECT: El Rodeo Geohazard Investigation
CLIENT: Beverly Hills Unified School District
CONTRACTOR: Martini Drilling Corporation
EQUIPMENT USED: CME-75

GROUNDWATER:		DEPTH TO (Feet):				ORIENTATION		CORE BARREL	
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE		
						HORIZONTAL	SIZE		
07/09/14	ATD	▽ 34				INCLINED	Bit (Feet)		
		▼				BEARING	Barrel (Feet)		
					0	ANG. FROM VERT.	Total (Feet)		

JOB NO.: 10274.006
PAGE NO.: 3 of 4
ELEVATION: 292.5 Feet
DATE START: 7/9/2014
DATE FINISH: 7/10/2014
DRILLER: Martini
PREPARED BY: EH
LOCATION: 605 Whittier Blvd., Beverly Hills, Ca

ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS
						The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.
253 40						@39.6': siltstone clasts
▽	40-45	Box 4				@40' to 42': Sandy CLAY grading to Clayey SAND (SC-CL), reddish brown, gleyed, mostly fine grained sand, some medium to coarse grained sand, occasional fine slaty gravels, fining upward sequence, MnO_2 spotting, sandier zones have poor to moderate blocky structure
						@42' to 43.2': Clayey Sandy GRAVEL (GW-GC), reddish brown, wet, fine to coarse grained sand, fine subangular slaty gravels
						@43.2' to 43.8': Clayey SAND (SC), reddish brown, very moist, fine to medium grained sand, low clay content
248 45	45-50	Box 5				@43.8' to 49': Channel Deposits, Clayey Sandy GRAVEL (GW-GC), reddish brown, wet, fine to coarse grained sand, fine subangular to subrounded slate and siltstone gravels, poorly stratified, abrupt contact
243 50	50-55	Box 5				**Pleistocene Cheviot Hills Deposits (CHD):** @49' to 53.8': Sandy CLAY with Silt (CL-ML), reddish brown, moist, minor gleying, fine grained sand, occasional medium to coarse grained sand, MnO_2 spotting and streaking, sand lens @52.6', MnO_2 becomes prevalent after 52.7', gradational contact
						@53.8' to 55': Grades to Sandy CLAY (CL), with gravel, reddish brown, very moist, fine to medium grained sand, some coarse grained sand, fine subangular slaty gravels
238 55	55-60	Box 6				@55' to 58.2': Laminated Sandy CLAY and Clayey SAND (SC-CL), reddish brown and gray, gleyed, mostly fine grained sand, some medium to coarse grained sand, occasional fine subrounded slaty gravels, MnO_2 spotting throughout, gravel bed @55.6', fine to coarse grained sand lens @56.5'
						@58.2' to 59.7': Sandy CLAY (CL), reddish brown, gleyed, fine to coarse grained sand, occasional fine gravel, massive
233 60						

FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE	JOINTS / SHEAR / FRACTURE		WEATHERING
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE
							V. SEVERE
					Fe = Iron Oxide	Mn = Manganese Oxide	COMPLETE

ROCKLOG2014 10274.006 LOGS-RECOVER.GPJ ROCKLOG2012.GDT 2/18/15

LEIGHTON

CORE BORING LOG

BORING NO. CB- 11
PAGE 4 OF 4

PROJECT: El Rodeo Geohazard Investigation
CLIENT: Beverly Hills Unified School District
CONTRACTOR: Martini Drilling Corporation
EQUIPMENT USED: CME-75

GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION		CORE BARREL	
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	
						HORIZONTAL	SIZE	
07/09/14	ATD	▽ 34				INCLINED	Bit (Feet)	
		▼				BEARING	Barrel (Feet)	
					0	ANG. FROM VERT.	Total (Feet)	

JOB NO.: 10274.006
PAGE NO.: 4 of 4
ELEVATION: 292.5 Feet
DATE START: 7/9/2014
DATE FINISH: 7/10/2014
DRILLER: Martini
PREPARED BY: EH
LOCATION: 605 Whittier Blvd., Beverly Hills, Ca

ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS
233 60	60-65	Box 6				The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.
						@59.7' to 64': Interlaminated Sandy CLAY and Clayey SAND (SC-CL), reddish brown, gleyed, mostly fine grained sand, some medium to coarse grained sand, MnO_2 nodules, sand lens @62.1' to 62.4': sand bed with fine to coarse sand and siltstone fragments, basal coarse siltstone rock fragments at 62.4' @62.4' to 62.8': sandy clay @62.8' to 63': sand bed with siltstone rock fragments and subrounded slaty gravel @63': sandy clay
228 65	65-70	Box 7				@63' to 65': Sandy CLAY (CL), reddish brown, gleyed, faintly laminated, fine to medium grained sand, some coarse grained sand, well oxidized @65' to 73.6': Sandy CLAY (CL), reddish brown to gray, oxidation-reduction banding, fine grained sand, with some medium to coarse grained sand, occasional fine subrounded slaty gravel, MnO_2 streaks, @64.1' carbonate stringers begin, @70-70.5' abundant carbonate stringers, @70.5-75' abundant MnO_2, @72.3'-72.9' carbonate stringers, @74.4' carbonate stringers
223 70	70-75	Box 7				
218 75						Total depth of coring: 75' bgs Perched groundwater encountered @ 34'-34.5', @42'-43.2', and 43.8'-49' bgs Boring backfilled with bentonite and soil cuttings upon completion of drilling. Boring capped with approximately 6-inches of Rapid Set Concrete and black dye. Excess cuttings disposed of in D.O.T. approved drums and disposed offsite
213 80						

FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE	JOINTS / SHEAR / FRACTURE		WEATHERING
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE
							V. SEVERE
					Fe = Iron Oxide	Mn = Manganese Oxide	COMPLETE

ROCKLOG2014 10274.006 LOGS-RECOVER.GPJ ROCKLOG2012.GDT 2/18/15

LEIGHTON

CORE BORING LOG

BORING NO. CB- 12
PAGE 1 OF 4

PROJECT: El Rodeo Geohazard Investigation
CLIENT: Beverly Hills Unified School District
CONTRACTOR: Martini Drilling Corporation
EQUIPMENT USED: CME-75

GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION		CORE BARREL	
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	
						HORIZONTAL	SIZE	
07/10/14	ATD	▽ 32				INCLINED	Bit (Feet)	
		▼				BEARING	Barrel (Feet)	
		▼			0	ANG. FROM VERT.	Total (Feet)	

JOB NO.: 10274.006
PAGE NO.: 1 of 4
ELEVATION: 290.5 Feet
DATE START: 7/10/2014
DATE FINISH: 7/11/2014
DRILLER: Martini
PREPARED BY: EH
LOCATION: 605 Whittier Blvd., Beverly Hills, Ca

ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS
						The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.
291 0						**Artificial Fill, Undocumented (Afu):** @0'-5': Hand Auger 2.5 ft Runs to 30'
286 5						@5' to 6.5': Sandy CLAY with Silt (CL-ML), medium brown, slightly moist, fine grained sand, trace fine gravel, soft
						@6.5' to 7.5': No Recovery
	5-10	Box 1				@7.5': **Holocene Alluvium of Benedict Canyon Wash (Qal):** Sandy CLAY with Silt (CL-ML), medium brown, slightly moist, fine grained sand, some oxidation, trace fine subrounded gravel, soft
						@8.4' to 10': No Recovery
281 10						@10' to 14.6': Silty Sandy CLAY (CL-ML), mottled medium brown to olive brown to reddish brown, mostly fine grained sand, @10.3' lamination of fine to coarse grained silty sand
	10-15	Box 1				
						@14.6' to 15': No Recovery
276 15						@15' to 15.1': siltstone fragment in sample, subangular, 2-inch diameter
						Pleistocene of Benedict Canyon Wash (BCW_1): @15.1' to 15.9': Sandy Silty CLAY (CL-ML), dark grayish brown, moist, fine grained sand, trace fine subangular Tm and tabular slaty gravels @15.9' to 20.5': Silty CLAY (CL-ML), with sand, reddish brown, moist, fine grained sand, trace very fine tabular slate fragments, poorly developed blocky structure, shimmer on faces, very minor dark gray gleying
	15-20	Box 2				
271 20						

FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE	JOINTS / SHEAR / FRACTURE		WEATHERING
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE
							V. SEVERE
					Fe = Iron Oxide	Mn = Manganese Oxide	COMPLETE

ROCKLOG2014 10274.006 LOGS-RECOVER.GPJ ROCKLOG2012.GDT 2/18/15

LEIGHTON

CORE BORING LOG

BORING NO. CB- 12
PAGE 2 OF 4

PROJECT: El Rodeo Geohazard Investigation
CLIENT: Beverly Hills Unified School District
CONTRACTOR: Martini Drilling Corporation
EQUIPMENT USED: CME-75

GROUNDWATER		DEPTH TO (Feet):			ORIENTATION		CORE BARREL	
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	
						HORIZONTAL	SIZE	
07/10/14	ATD	▽ 32				INCLINED	Bit (Feet)	
		▼				BEARING	Barrel (Feet)	
		▼			0	ANG. FROM VERT.	Total (Feet)	

JOB NO.: 10274.006
PAGE NO.: 2 of 4
ELEVATION: 290.5 Feet
DATE START: 7/10/2014
DATE FINISH: 7/11/2014
DRILLER: Martini
PREPARED BY: EH
LOCATION: 605 Whittier Blvd., Beverly Hills, Ca

ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS
						The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.
271 20	20-25	Box 2				@20.5' to 20.6': Thin fine grained orange yellow Silty SAND (SM) lens, moist, micaceous @21' to 25': Silty CLAY (CL-ML), with sand, reddish brown, moist, fine grained sand, occasional subrounded fine gravels, poorly developed blocky structure, shimmer on faces, very minor dark gray gleying @23': Light reddish staining around sand and gravel lens @23.1': Waxy finish observed on clay faces @23.5' to 25': Light gray gleying more prevalent, fine subrounded slaty gravels, thin fine grained sand lenses, occasional coarse grained sand, poorly developed blocky structure
266 25	25-30	Box 3				@24.7' to 24.8': Fine gravel layer, subangular siltstone fragments @25' to 25.6': Silty Sandy CLAY (CL-ML), reddish brown, slightly moist, fine grained sand, poorly developed blocky structure, minor gleying, gradational contact below @25.6' to 27.2': Sandy CLAY (CL), with gravel and trace silt, reddish brown, moist, fine grained sand, occasional coarse grained sand, fine subangular to subrounded slate and siltstone gravels, poorly to moderately developed blocky structure @27.2': Silty CLAY (CL-ML), reddish brown to medium brown, moist, thinly laminated
261 30	30-35	Box 3				**Pleistocene of Benedict Canyon Wash (BCW$_2$):** @29.1' to 30.4': Becomes Sandy Silty CLAY (CL-ML), reddish brown to medium brown, thin lamination of MnO_2 @30.4' to 32.7': Sandy CLAY to Clayey SAND (SC-CL), reddish brown, very moist, thinly laminated, trace FeO staining between pedogenic faces, spotty MnO_2 staining
▽						@32.7' to 33.4': Sandy CLAY (CL) interbedded with Silty SAND (SM), reddish brown to medium brown, very moist to wet
256 35	35-40	Box 4				@33.4' to 36.9': Grades to Silty Sandy CLAY (CL-ML), with gravels, very moist, fine grained sand, trace coarse grained sand, fine subrounded slaty gravels, trace mechanically broken fine siltstone rock fragments, olive gray mottling, poorly to moderately developed blocky structure, @34.8' 2-inch subangular black siltstone rock fragment, @35.8' trace fine subangular dark purplish red siltstone rock fragments, micaceous @36.9' to 38.4': Silty CLAY (CL-ML), reddish brown to olive brown, moist, trace fine grained sand, trace fine subangular slaty gravels, trace coarse grained sand
▽						@38.4' to 39.5': Sandy CLAY (CL), with gravel, medium brown to olive gray, wet, fine grained sand, trace coarse grained sand, trace fine slaty gravels, poorly developed blocky structure, abrupt contact
251 40						@39.5' to 40.5': Gravelly SAND with Clay (SW-SC), olive brown to gray brown,

FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE	JOINTS / SHEAR / FRACTURE		WEATHERING
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE
							V. SEVERE
					Fe = Iron Oxide	Mn = Manganese Oxide	COMPLETE

ROCKLOG2014 10274.006 LOGS-RECOVER.GPJ ROCKLOG2012.GDT 2/18/15

*** * * This log is a part of a report by Leighton and should not be used as a stand-alone document. * * ***

LEIGHTON

CORE BORING LOG

BORING NO. CB- 12
PAGE 3 OF 4

PROJECT: El Rodeo Geohazard Investigation
CLIENT: Beverly Hills Unified School District
CONTRACTOR: Martini Drilling Corporation
EQUIPMENT USED: CME-75

GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION		CORE BARREL	
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	
						HORIZONTAL	SIZE	
07/10/14	ATD	▽ 32				INCLINED	Bit (Feet)	
		▼				BEARING	Barrel (Feet)	
		▼			0	ANG. FROM VERT.	Total (Feet)	

JOB NO.: 10274.006
PAGE NO.: 3 of 4
ELEVATION: 290.5 Feet
DATE START: 7/10/2014
DATE FINISH: 7/11/2014
DRILLER: Martini
PREPARED BY: EH
LOCATION: 605 Whittier Blvd., Beverly Hills, Ca

ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS
						The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.
251 40	40-45	Box 4				wet, fine to coarse grained sand, fine tabular slaty gravels @40.5' to 41': Silty CLAY (CL-ML), olive gray with orange brown thin laminations, moist, trace fine grained sand, $FeO_{>3}$ staining prevalent @41' to 43.7': Gravelly SAND (SW), with trace silt and clay, wet, fine to coarse grained sand, fine subangular slaty gravel @43.7' to 44.4': Silty SAND with Clay to Sandy SILT (SM-ML), reddish brown to gray, fine grained sand @44.4' to 44.7': Sandy Silty CLAY (CL-ML), reddish brown to gray, moist, thin well defined laminations, oxidation-reduction banded
246 45	45-50	Box 5				@44.7' to 45': No Recovery @45' to 45.3': Silty Clayey SAND (SM-SC), reddish brown, wet, fine to medium grained sand, grades coarser, trace fine gravel @45.3' to 45.5': Sandy CLAY (CL), reddish brown to olive brown, fine grained sand, trace medium to coarse grained sand, fine slaty gravel @45.5' to 47.6': Silty Clayey SAND (SM-SC), with gravel, reddish brown, mostly fine to coarse grained sand, fine subangular to subrounded slaty gravels, low fines content, with discrete gravel beds @46' and 46.7' to 46.9', highly oxidized sands @47.3' to 47.6' @47.6' to 47.9': Grades to Sandy CLAY to Clayey SAND (SC-CL), reddish brown and gray, gleyed, laminated, fine to medium grained sand, trace coarse grained sand, fine slaty gravels, poor blocky structure, gradational contact
241 50	50-55	Box 5				@47.9' to 48.3': Clayey SAND (SC), reddish brown, gleyed, fine to coarse grained sand, normally graded sequence, basal fine subrounded gravels, abrupt contact @48.3': CLAY with gleyed Sand (CL), olive brown to greenish brown, very moist, fine to medium grained sand, trace coarse grained sand @49.4' to 50': No Recovery @50': **Pleistocene Cheviot Hills Deposits (CHD):** Sandy CLAY (CL), reddish brown to gray, gleyed, fine grained sand, waxy finish on moderately developed faces, gradational contact @50.3' to 51': Grades to Silty CLAY with Sand (CL-ML), reddish brown to greenish gray, highly gleyed, plastic, gradational contact @50.4' to 51.5': heavily gleyed
236 55	55-60	Box 6				@51' to 51.8': Grades to Sandy CLAY (CL), with silt, reddish brown to greenish gray, gleyed, waxy finish on faces @51.8' to 55': Sandy CLAY (CL), reddish brown, gleyed, mostly fine grained sand, with some medium to coarse grained sand, occasional fine subrounded slate and siltstone gravel, waxy finish on poorly developed faces @53.9': becomes dark brown to reddish brown, oxidation-reduction banding @54.5': becomes oxidation-reduction banded with thin laminations @55' to 55.9': Sandy CLAY (CL), reddish brown, gleyed, moist, fine grained sand, waxy finish on well developed faces @55.9' to 58': Sandy CLAY (CL), reddish brown, gleyed, oxidation-reduction banding, mostly fine grained sand, with some medium to coarse grained sand, occasional fine subangular slaty gravel, faint MnO_2 spotting @58' to 60': Becomes more massive, with increase in fine gravels, oxidized
231 ▽ 60						

FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE	JOINTS / SHEAR / FRACTURE		WEATHERING
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE
							V. SEVERE
					Fe = Iron Oxide	Mn = Manganese Oxide	COMPLETE

ROCKLOG2014 10274.006 LOGS-RECOVER.GPJ ROCKLOG2012.GDT 2/18/15

LEIGHTON

CORE BORING LOG

BORING NO. CB- 12
PAGE 4 OF 4

PROJECT: El Rodeo Geohazard Investigation
CLIENT: Beverly Hills Unified School District
CONTRACTOR: Martini Drilling Corporation
EQUIPMENT USED: CME-75

GROUNDWATER:		DEPTH TO (Feet):		
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE
07/10/14	ATD	▽ 32		
		▼		
		▼		

	ORIENTATION	CORE BARREL	
X	VERTICAL	TYPE	
	HORIZONTAL	SIZE	
	INCLINED	Bit (Feet)	
	BEARING	Barrel (Feet)	
0	ANG. FROM VERT.	Total (Feet)	

JOB NO.: 10274.006
PAGE NO.: 4 of 4
ELEVATION: 290.5 Feet
DATE START: 7/10/2014
DATE FINISH: 7/11/2014
DRILLER: Martini
PREPARED BY: EH
LOCATION: 605 Whittier Blvd., Beverly Hills, Ca

ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS
231 60	60-65	Box 6				The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual. zone @59.2', @59' to 60' increase in fine subangular slaty gravels @60' to 60.5': Sandy GRAVEL (GW), reddish brown, wet, medium to coarse grained sand, fine subrounded slaty gravels, gradational contact @60.5' to 60.8': Becomes Clayey SAND (SC), reddish brown to orangish brown, highly oxidized, fine to medium grained sand, with some coarse grained sand, fine subrounded slaty gravels @60.8' to 61.1': Grades to Sandy CLAY (CL), reddish brown to gray, gleyed, fine grained sand, some medium grained sand @61.1' to 61.2': Lamination of dark gray fine to medium grained SAND (SP) @61.2' to 65.7': Sandy CLAY (CL), with gravel, reddish brown to greenish gray, heavily gleyed, fine to coarse grained sand, fine subangular slaty gravels, faintly laminated, oxidized orangish zones throughout, @62.6' and 65' carbonate blebs in matrix @65.7' to 66.6': Sandy CLAY (CL), reddish brown to greenish gray, mostly fine grained sand, grades sandier downward, gradational contact
226 65	65-70	Box 7				@66.6' to 67.3': Clayey Sandy GRAVEL (GW-GC), reddish brown to greenish gray, gleyed, fine to medium grained sand, some coarse grained sand, fine subangular slaty gravels, normally graded, with fine to coarse basal slate and siltstone gravels @67.3' to 67.7': Becomes Clayey SAND (SC), with gravel, reddish brown, gleyed, fine grained sand, high clay content, fine subangular slaty gravels @67.7' to 67.9': Layer of Clayey Sandy GRAVEL (GW-GC), fine grained sand, fine subangular slaty gravels @67.9' to 74.6': Clayey Sandy GRAVEL (GW-GC), reddish brown to greenish gray, gleyed, wet, fine to coarse grained sand, fine to coarse subangular slate and siltstone gravels
221 70	70-75	Box 7				
216 75						@74.6' to 75': No Recovery Total depth of coring: 75' bgs Perched groundwater encountered @ 32.7'-33.4', 38.4'-40.5', 41'-43.7', 45'-45.3', 60'-60.5' and 67.9'-74.6' bgs Boring backfilled with bentonite and soil cuttings upon completion of drilling. Boring capped with approximately 6-inches of Rapid Set Concrete and black dye. Excess cuttings disposed of in D.O.T. approved drums and disposed offsite
211 80						

FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE	JOINTS / SHEAR / FRACTURE		WEATHERING
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE
							V. SEVERE
					Fe = Iron Oxide	Mn = Manganese Oxide	COMPLETE

ROCKLOG2014 10274.006 LOGS-RECOVER.GPJ ROCKLOG2012.GDT 2/18/15

*** This log is a part of a report by Leighton and should not be used as a stand-alone document. ***

LEIGHTON

CORE BORING LOG

BORING NO. CB-13
PAGE 1 OF 4

PROJECT: El Rodeo Geohazard Investigation
CLIENT: Beverly Hills Unified School District
CONTRACTOR: Martini Drilling Corporation
EQUIPMENT USED: CME-75

GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION		CORE BARREL	
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	
						HORIZONTAL	SIZE	
07/11/14	ATD	▽ 37				INCLINED	Bit (Feet)	
		▼				BEARING	Barrel (Feet)	
					0	ANG. FROM VERT.	Total (Feet)	

JOB NO.: 10274.006
PAGE NO.: 1 of 4
ELEVATION: 287.5 Feet
DATE START: 7/11/2014
DATE FINISH: 7/12/2014
DRILLER: Martini
PREPARED BY: EBP
LOCATION: 605 Whittier Blvd., Beverly Hills, Ca

ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS
						The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.
288 0						@Surface: 6" Asphalt Concrete @0.5': 8" Portland Cement Concrete **Artificial Fill, Undocumented (Afu):**
283 5	5-10	Box 1				@5': **Holocene Alluvium of Benedict Canyon Wash (Qal):** Sandy SILT with Clay (ML-CL), yellowish brown, moist, fine grained sand, trace coarse grained sand, trace fine to coarse subangular gravels @5.4' to 11.5': Becomes brown in color
278 10	10-15	Box 1				@11.5' : **Pleistocene Alluvium of Benedict Canyon Wash (BCW_1):** Sandy CLAY with Silt (ML-CL), dark brown, moist, fine grained sand, trace coarse grained sand, few subangular to subrounded fine to coarse gravel @12.4' to 12.9': Sandy SILT with Clay (ML-CL), brown, moist, fine grained sand @12.9' to 15.1': Sandy CLAY with Silt (ML-CL), dark brown, moist, fine grained sand, trace coarse grained sand, few subangular to subrounded fine to coarse gravel
273 15	15-20	Box 2				@15.1' to 16.7': Silty CLAY with Sand (ML-CL), dark yellowish brown, moist, fine grained sand @16.7' to 16.9': Gradational contact zone, with few fine gravel @16.9' to 19.1': Silty SAND with Clay (SM-SC), brown, moist, fine grained, trace coarse grained, trace fine gravel, subangular to angular @19.1' to 20': Becomes fine to coarse grained sand
268 20						

FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE	JOINTS / SHEAR / FRACTURE		WEATHERING
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE
							V. SEVERE
					Fe = Iron Oxide	Mn = Manganese Oxide	COMPLETE

ROCKLOG2014 10274.006 LOGS-RECOVER.GPJ ROCKLOG2012.GDT 2/18/15

LEIGHTON

CORE BORING LOG

BORING NO. CB-13
PAGE 2 OF 4

PROJECT: El Rodeo Geohazard Investigation
CLIENT: Beverly Hills Unified School District
CONTRACTOR: Martini Drilling Corporation
EQUIPMENT USED: CME-75

GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION		CORE BARREL	
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	
						HORIZONTAL	SIZE	
07/11/14	ATD	▽ 37				INCLINED	Bit (Feet)	
		▼				BEARING	Barrel (Feet)	
					0	ANG. FROM VERT.	Total (Feet)	

JOB NO.: 10274.006
PAGE NO.: 2 of 4
ELEVATION: 287.5 Feet
DATE START: 7/11/2014
DATE FINISH: 7/12/2014
DRILLER: Martini
PREPARED BY: EBP
LOCATION: 605 Whittier Blvd., Beverly Hills, Ca

ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS
						The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.
268 20						@20' to 22.1': SAND with Silt (SP-SM), with gravel, yellowish brown, moist, fine to coarse grained, fine to coarse subangular to angular gravel
	20-25	Box 2				@22.1' to 23.2': Increase in gravels, becomes Gravelly SAND with Silt (SW-SM)
						@23.2' to 24.2': Silty SAND with Gravel (SM), yellowish brown, moist, fine to coarse grained, few fine gravels, spotty gleying, bottom of channel deposit, sharp contact with below
263 25						@24.2': Clay (CL), dark reddish brown, moist, trace medium to coarse grained sand, gleying, heavily oxidized
	25-30	Box 3				@26.2' to 28.6': CLAY with Sand (CL), dark yellowish brown, moist, fine to coarse grained sand, trace fine gravel, blocky structure, clay films, subangular to subrounded, minor gleying along laminations and pedogenic faces, heavy MnO, root holes to 27.3', sharp basal contact
						@27.3': **Pleistocene Alluvium of Benedict Canyon Wash (BCW_2):**
						@28.6' to 28.8': 1/2-inch to 1/4-inch thick Silty SAND (SM) bed, light yellowish brown with large siltstone rock fragments
258 30						@28.8' to 30.1': Increase in gravel and coarse grained sand
	30-35	Box 3				@30.1' to 31.3': Clayey SILT (ML-CL), dark yellowish brown, moist, trace fine grained sand @30.5': Increase in sand to Clayey SILT with Sand (ML-CL), few fine subangular to subrounded slaty gravels, spotty gleying @31.3': 1/8-inch yellowish brown fine grained Silty SAND (SM) lens @31.9' to 34.2': Sandy SILT with Clay (ML-CL), dark yellowish brown, moist, fine grained sand, trace coarse grained sand, homogeneous
						@34.2' to 34.9': Grades to Silty SAND with Clay (SM-SC), dark yellowish brown, very moist, fine grained
253 35						@34.9' to 35.3': Silty CLAY (CL-ML), dark yellowish brown, very moist @35.3' to 35.7': Silty CLAY with Sand (CL-ML), dark yellowish brown, very moist, fine grained sand, few fine subangular to subrounded slaty gravels
▽						@35.7' to 37': Sandy CLAY (CL), dark yellowish brown, very moist, fine grained, trace fine subangular to subrounded slaty gravels, fining upwards from 37', @35.5' to 36.2' few fine to coarse subangular to subrounded slaty gravels
	35-40	Box 4				@37' to 37.1': SAND with Clay (SP-SC) bed, dark yellowish brown, very moist to wet, medium to coarse grained, few subrounded fine gravels, minor $CaCO_3$
						@37.1' to 37.9': Sandy CLAY (CL), dark yellowish brown, very moist, fine grained, trace fine subangular to subrounded slaty gravels
248 40						@37.9' to 39.1': Silty SAND (SM), dark yellowish brown, moist, fine grained, trace coarse grained sand, @38.4' to 38.5' Sandy CLAY, fine grained bed,

FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE	JOINTS / SHEAR / FRACTURE		WEATHERING
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE
					Fe = Iron Oxide Mn = Manganese Oxide		V. SEVERE
							COMPLETE

ROCKLOG2014 10274.006 LOGS-RECOVER.GPJ ROCKLOG2012.GDT 2/18/15

LEIGHTON

CORE BORING LOG

BORING NO. CB-13
PAGE 3 OF 4

PROJECT: El Rodeo Geohazard Investigation
CLIENT: Beverly Hills Unified School District
CONTRACTOR: Martini Drilling Corporation
EQUIPMENT USED: CME-75

GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION		CORE BARREL	
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	
						HORIZONTAL	SIZE	
07/11/14	ATD	▽ 37				INCLINED	Bit (Feet)	
		▼				BEARING	Barrel (Feet)	
					0	ANG. FROM VERT.	Total (Feet)	

JOB NO.: 10274.006
PAGE NO.: 3 of 4
ELEVATION: 287.5 Feet
DATE START: 7/11/2014
DATE FINISH: 7/12/2014
DRILLER: Martini
PREPARED BY: EBP
LOCATION: 605 Whittier Blvd., Beverly Hills, Ca

ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS
248 40						The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.
						@38.8' 1/2-inch thick gravel bed, fine to coarse subangular slate gravels
						@39.1' to 39.6': Silty SAND with Clay (SM-SC), brown, very moist, fine to coarse grained, few fine subangular to angular slaty gravels, @39.1' 1/2-inch thick subangular slaty gravel layer
						@39.6' to 40': No Recovery
	40-45	Box 4				@40.1' to 41': Increase in gravel to Gravelly SAND with Silt (SW-SM), and trace clay, fine to coarse subrounded to angular gravel, mainly slate, some oxidation of slaty gravels
						@41' to 41.9': Sandy SILT (ML), yellowish brown, moist, fine grained, trace fine gravel, coarse grained sand, grades to Sandy CLAY @41.9'
243 45						@41.9' to 42.4': Silty SAND with Clay (SM-SC), dark yellowish brown, moist, fine to medium grained, trace gravel
						@42.4' to 43.7': Increase in gravel to Gravelly SAND with Clay (SW-SC), and silt
						@43.7' to 44.4': Gravelly SAND (SW), yellowish brown, moist, trace silt and clay, medium to coarse grained sand, fine to coarse gravel, subangular to subrounded FeO staining, basalt and slate gravels
	45-50	Box 5				@44.4' to 44.5': Silty SAND (SM), dark yellowish brown, moist, fine to medium grained, trace gravel
						@44.5' to 45': No Recovery
						@45.4' to 46.3': Silty SAND (SM), brown, very moist, fine to medium grained sand, oxidation staining and gleying along laminations, trace coarse grained sand
						@46.2': 1-inch gravel bed, fine to coarse slate gravels in light yellow brown silty sand matrix
238 50						@46.3' to 46.9': Sandy CLAY (CL), reddish brown, moist, fine grained sand, gleying along laminations, trace coarse grained sand
						@46.9' to 47.6': Silty SAND (SM), yellowish brown, moist, fine to medium grained, lenses with trace clay
						@47.6' to 48.3': Gravelly SAND with Silt (SW-SM)
	50-55	Box 5				@48.3' to 48.8': Sandy SILT (ML), brown, moist, fine grained
						@48.5': 1-inch lens of silty sand with fine gravels
						@48.8' to 49.8': SAND with Silt (SP-SM), yellowish brown, moist, fine to coarse grained, few fine gravels
						@49.8' to 50.3': Sandy SILT (ML), grayish brown, moist, fine grained, few fine to coarse subangular to subrounded slaty gravels
233 55						@50.3' to 51.9': SAND with Silt (SP-SM), yellowish brown, moist, fine to coarse grained, few fine gravels
						@51.9' to 52.8': Sandy SILT with Clay (ML-CL), brown, moist, fine grained sand, trace coarse grained sand, gleying along laminations at top of bed
						@52.8' to 52.9': Sandy CLAY (CL) lamination, yellow brown, fine to medium grained sand, few fine gravels
	55-60	Box 6				**Pleistocene Cheviot Hills Deposits (CHD):**
						@52.9' to 53.9': SAND (SP), brown, fine grained sand, trace coarse grained sand
						@55' to 56.6': Sandy CLAY (CL), brown, moist, fine grained sand, gleying along laminations, few fine subangular slate and basalt gravels @55.8' to 56.1', FeO staining, 1/8-inch to 1/4-inch dark brown fine silty sand lamination @57.6', sharp contact
228 60						

FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE	JOINTS / SHEAR / FRACTURE		WEATHERING
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE
							V. SEVERE
					Fe = Iron Oxide	Mn = Manganese Oxide	COMPLETE

ROCKLOG2014 10274 006 LOGS-RECOVER GPJ ROCKLOG2012 GDT 2/18/15

LEIGHTON

CORE BORING LOG

BORING NO. CB-13
PAGE 4 OF 4

PROJECT: El Rodeo Geohazard Investigation
CLIENT: Beverly Hills Unified School District
CONTRACTOR: Martini Drilling Corporation
EQUIPMENT USED: CME-75

GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION		CORE BARREL	
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	
						HORIZONTAL	SIZE	
07/11/14	ATD	▽ 37				INCLINED	Bit (Feet)	
		▼				BEARING	Barrel (Feet)	
					0	ANG. FROM VERT.	Total (Feet)	

JOB NO.: 10274.006
PAGE NO.: 4 of 4
ELEVATION: 287.5 Feet
DATE START: 7/11/2014
DATE FINISH: 7/12/2014
DRILLER: Martini
PREPARED BY: EBP
LOCATION: 605 Whittier Blvd., Beverly Hills, Ca

ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS
						The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.
228 60	60-65	Box 6				@56.6' to 65': CLAY (CL), brown, very moist, trace coarse grained sand, faint laminations @60' to 60.1': Sandy CLAY (CL), with fine siltstone gravels, coarse grained sand @60.1' to 63.9': Clay (CL), dark red brown @63.9': few siltstone rock clasts @61' to 61.1': Sandy CLAY (CL) lens
223 65	65-70	Box 7				@65' to 68.2': Sandy CLAY (CL), laminated with disseminated white siltstone rock fragments in mass
▽						@68.2' to 68.4': Gravel bed, with white siltstone fragments @68.4' to 68.8': Sandy CLAY (CL), brown, wet, fine to medium grained sand @68.8' grades to sand bed @69.9': Sandy GRAVEL with Clay (GW-GC), brown, wet, medium to coarse grained sand, fine to coarse subangular to subrounded gravel, mainly weathered basalt and siltstone rock fragments
218 70	70-75	Box 7				@70' to 70.6': Sandy SILT (ML), dark yellowish brown, wet, fine grained sand, trace coarse grained sand, fine gravel @70.6' to 72.2': Gravelly SAND with Silt (GW-GM), dark yellowish brown, wet, coarse grained sand, trace fine to medium grained sand, fine subrounded to subangular gravel, trace coarse gravel, various origins, trace clay @72.2': SILT (ML), with sand and clay, brown, wet, fine grained sand, oxidation and gleying at contact @72.3' to 73.4': Silty SAND (SM), yellowish brown, wet, fine to medium grained sand, minor gleying @73.4' to 75': Silty CLAY (CL-ML), olive brown, very moist, trace fine grained gleyed sand, trace fine to coarse gravels, FeO_3 staining, @74.5' 1/4-inch Silty SAND (SM) lamination with weathered gravelly basalt, light yellowish brown, oxidation staining
213 75						Total depth of coring: 75' bgs Perched groundwater encountered @ 68.4'-73.4' bgs Boring backfilled with bentonite and soil cuttings upon completion of drilling. Boring capped with approximately 6-inches of Rapid Set Concrete and black dye. Excess cuttings disposed of in D.O.T. approved drums and disposed offsite
208 80						

FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE	JOINTS / SHEAR / FRACTURE		WEATHERING
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE
							V. SEVERE
					Fe = Iron Oxide	Mn = Manganese Oxide	COMPLETE

ROCKLOG2014 10274.006 LOGS-RECOVER.GPJ ROCKLOG2012.GDT 2/18/15

***** This log is a part of a report by Leighton and should not be used as a stand-alone document. *****

LEIGHTON

CORE BORING LOG

BORING NO. CB-14
PAGE 1 OF 4

PROJECT: El Rodeo Geohazard Investigation
CLIENT: Beverly Hills Unified School District
CONTRACTOR: Martini Drilling Corporation
EQUIPMENT USED: CME-75

GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION		CORE BARREL	
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	
						HORIZONTAL	SIZE	
07/14/14	ATD	▽ 35				INCLINED	Bit (Feet)	
		▼				BEARING	Barrel (Feet)	
		▼			0	ANG. FROM VERT.	Total (Feet)	

JOB NO.: 10274.006
PAGE NO.: 1 of 4
ELEVATION: 286.5 Feet
DATE START: 7/14/2014
DATE FINISH: 7/15/2014
DRILLER: Martini
PREPARED BY: JWJ
LOCATION: 605 Whittier Blvd., Beverly Hills, Ca

ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS
						The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.
287 0						@Surface: **Artificial Fill, Undocumented (Afu):**
282 5	5-10	Box 1				**Holocene Alluvium of Benedict Canyon Wash (Qal):** @5' to 5.3': Silty SAND (SM), with trace clay, medium to olive brown, dry, trace very fine subangular slaty gravels, fine grained sand, trace rootlets @5.3' to 5.4': GRAVEL (GP) layer, subrounded slate @5.4': Silty SAND (SM), with trace gravel, medium brown, slightly moist, fine grained sand, fine tabular slaty gravels, trace rootlets, minor clay @7.5': Becomes Gravelly SAND (SP), with trace silt, reddish brown to dark gray brown, dry, fine grained sand, trace coarse grained sand, fine subrounded to subangular slate, Tm, and basalt gravels
277 10	10-15	Box 1				**Pleistocene Alluvium of Benedict Canyon Wash: (BCW_1):** @10': Clayey SAND with Gravel (SW-SC), reddish to dark brown, dry, fine grained sand, trace coarse grained sand, fine subangular slate and Tm gravels @10.3': Sandy CLAY (CL), reddish brown, moist, fine grained sand, poorly developed blocky structure, trace subangular slaty gravels @10.7' to 10.8': Thin Silty SAND (SM) lens, light tan, moist, fine grained sand @10.8' to 15': Sandy CLAY (CL), reddish brown, moist, fine grained sand, pinhole voids, very light frosting of sand grains between pedogenic facies, trace very fine subangular slaty gravels, poorly developed blocky structure @13.6' to 15': Increase in gravel size to fine to coarse subangular gravels
272 15	15-20	Box 2				@15' to 16.8': Sandy CLAY (CL), reddish brown, moist, poorly developed blocky structure, some fine subangular slate and siltstone gravels, gradational contact below @16.8' to 18.1': Clayey Silty SAND (SC-SM), with gravel, reddish brown, moist, fine grained sand, subangular to subrounded slaty gravels @18.1' to 19': Grades to Clayey SAND (SC), with gravel, reddish brown, moist, fine grained sand, subangular slaty gravels, poorly developed blocky structure @19' to 20.5': Sandy CLAY to Clayey SAND (SC-CL), reddish brown, moist, fine grained sand, trace fine subrounded siltstone, basalt, and slate gravel
267 20						

FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE	JOINTS / SHEAR / FRACTURE		WEATHERING
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE
							V. SEVERE
					Fe = Iron Oxide	Mn = Manganese Oxide	COMPLETE

ROCKLOG2014 10274.006 LOGS-RECOVER.GPJ ROCKLOG2012.GDT 2/18/15

LEIGHTON

CORE BORING LOG

BORING NO. CB-14
PAGE 2 OF 4

PROJECT: El Rodeo Geohazard Investigation
CLIENT: Beverly Hills Unified School District
CONTRACTOR: Martini Drilling Corporation
EQUIPMENT USED: CME-75

GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION		CORE BARREL	
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	
						HORIZONTAL	SIZE	
07/14/14	ATD	▽ 35				INCLINED	Bit (Feet)	
		▼				BEARING	Barrel (Feet)	
		▼			0	ANG. FROM VERT.	Total (Feet)	

JOB NO.: 10274.006
PAGE NO.: 2 of 4
ELEVATION: 286.5 Feet
DATE START: 7/14/2014
DATE FINISH: 7/15/2014
DRILLER: Martini
PREPARED BY: JWJ
LOCATION: 605 Whittier Blvd., Beverly Hills, Ca

ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS
267 20	20-25	Box 2				The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual. @20.5' to 24': Becomes CLAY (CL), reddish brown, moist, trace very fine to fine subangular slate and siltstone gravel, very poor blocky structure, heavily oxidized and gleyed
262 25	25-30	Box 3				@24' to 25.6': Becomes Sandy CLAY (CL), reddish brown to light olive gray, moist, more developed thin laminations, moderate blocky structure, FeO_3 staining between pedogenic faces, trace fine slaty gravels, heavily gleyed along pedogenic faces, porous with root holes, clay films @25.6' to 26.8': Sandy CLAY (CL), reddish orange brown to medium brown to light olive gray, moist, fine grained sand, oxidation-reduction banded laminations, moderately developed blocky structure, thin MnO_2 band @26.0' to 26.1' @26.8' : **Pleistocene Alluvium of Benedict Canyon Wash (BCW_2):** Trace fine slaty gravels, moderately to well developed blocky structure, waxy finish on pedogenic faces, oxidation-reduction banded thin laminations, color change below @27.7' to 28.4': Sandy CLAY (CL), reddish orange brown to medium brown to light olive gray, moist, moderately developed blocky structure, trace fine siltstone gravel @28' to 28.4'
257 30	30-35	Box 3				@28.4' to 29.3': Silty CLAY (CL), with sand and gravels, reddish brown, moist, laminated oxidation-reduction banding @29.3': basal siltstone rock clast @30' to 32.2': Sandy CLAY (CL), with trace silt, reddish brown, moist, fine grained sand, trace slaty tabular to subrounded gravels, moderately developed blocky structure @32.2' to 32.9': Sandy CLAY (CL), reddish brown, moist, fine grained sand, moderately developed blocky structure, trace $CaCO_3$ development between pedogenic faces @32.9' to 34.8': Clayey GRAVEL (GC), reddish brown to dark olive gray, moist, subangular slate, siltstone, and basalt gravels, fine grained sand, trace coarse grained sand, @34.7' to 34.8' reddish staining and coarse subangular gravels, abrupt change below
252 ▽ 35	35-40	Box 4				@34.8' to 35': Silty Sandy CLAY (CL-ML), medium brown, fine grained sand, moist, moderately developed blocky structure @35' to 35.4': SAND with Gravel (SP), reddish brown to light brown to dark olive gray, very moist to wet, medium to coarse grained, fine tabular to subrounded slaty gravels, gradational contact below @35.4' to 36.2': Sandy CLAY (CL), reddish brown to medium brown, very moist to wet, fine grained sand, moderately developed structure @36.2' to 38.9': Becomes Sandy CLAY (CL), with gravel, reddish brown, very moist to wet, fine grained sand, fine to medium subangular slate and siltstone gravel, trace $CaCO_3$ development, FeO_3 staining, poor to moderately developed blocky structure @38.9' to 39.7': Clayey SAND with Gravel (SC), trace silt, wet, fine grained
247 40						

FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE	JOINTS / SHEAR / FRACTURE		WEATHERING
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE
							V. SEVERE
					Fe = Iron Oxide	Mn = Manganese Oxide	COMPLETE

ROCKLOG2014 10274.006 LOGS-RECOVER.GPJ ROCKLOG2012.GDT 2/18/15

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LEIGHTON

CORE BORING LOG

BORING NO. CB-14
PAGE 3 OF 4

PROJECT: El Rodeo Geohazard Investigation
CLIENT: Beverly Hills Unified School District
CONTRACTOR: Martini Drilling Corporation
EQUIPMENT USED: CME-75

GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION		CORE BARREL	
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	
						HORIZONTAL	SIZE	
07/14/14	ATD	▽ 35				INCLINED	Bit (Feet)	
		▼				BEARING	Barrel (Feet)	
		▼			0	ANG. FROM VERT.	Total (Feet)	

JOB NO.: 10274.006
PAGE NO.: 3 of 4
ELEVATION: 286.5 Feet
DATE START: 7/14/2014
DATE FINISH: 7/15/2014
DRILLER: Martini
PREPARED BY: JWJ
LOCATION: 605 Whittier Blvd., Beverly Hills, Ca

ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS
247 40	40-45	Box 4				The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual. sand, trace coarse grained sand, fine to medium subangular slate and basalt gravels, light orange FeO_3 staining, @39.3' to 39.7' becomes medium to coarse grained sand @39.7' to 40': No Recovery @40' to 41': Clayey SAND with Gravel (SW-SC), reddish brown to olive brown, wet, subrounded fine slaty gravels, with $CaCO_3$ stringers, @40.5' to 40.6' granitic cobble, @40.6' to 41' dark red staining, abrupt contact below @41' to 41.6': Becomes Silty SAND with Gravel (SM), medium brown to olive brown, wet, fine to medium grained sand, trace coarse grained sand, subrounded quartz gravel, subangular fine slaty gravels @41.6' to 41.7': Thin coarse grained Clayey SAND (SC) lens, fine subangular slaty gravels
242 45	45-50	Box 5				@41.7' to 43.2': Sandy CLAY (CL), with gravel, very moist, fine grained sand, moderately developed blocky structure, trace FeO_3 staining on pedogenic faces, tabular slaty fine gravels, subangular Tm gravels @43.2' to 43.5': Clayey SAND (SC) lens, wet, coarse grained, with fine subangular gravels, trace FeO staining @43.5' to 44.1': Becomes Clayey GRAVEL (GC), reddish brown, very moist, subangular siltstone rock fragments @44.1': trace coarse grained sand @44.6' to 45': No Recovery @45' to 47.3': Clayey SAND with Gravel (SW-SC), and trace silt, medium brown to reddish brown, wet, fine grained sand, trace coarse grained sand, subangular slaty gravels
237 50	50-55	Box 5				@47.3' to 50': No Recovery @50' to 51.5': Clayey SAND with Gravel (SW-SC), reddish brown to olive gray, very moist, fine to coarse grained, fine subrounded to subangular slate, basalt, and quartz gravel @51.5' to 52.2': No Recovery @52.2': Clayey SAND with Gravel (SW-SC), medium brown to dark olive gray, wet, fine to coarse grained sand, trace subangular slaty gravels, abrupt contact below
▽						@52.4': **Pleistocene Cheviot Hills Deposits (CHD):** Sandy CLAY (CL), reddish brown to medium brown to dark olive gray, fine grained sand, trace fine subangular slate rock fragments, moderately to well developed blocky structure, clay on pedogenic faces, FeO_3 staining prevalent, MnO_2 nodules
232 55	55-60	Box 6				@55' to 55.6': Sandy CLAY (CL), reddish brown to light olive gray, moist, fine grained sand, FeO_3 staining prevalent, MnO_2 development, light olive gray gleying, poorly to moderately developed blocky structure, shimmer on well developed pedogenic faces @55.6' to 57.1': Grades to Sandy CLAY (CL), reddish orange brown to medium brown to light olive gray, wet @51.1' to 51.5', trace fine subrounded slate fragments, dark reddish brown FeO_3 staining prevalent, well developed blocky structure, oxidation-reduction banding, well developed thin laminations @57.1' to 57.6': Silty CLAY (CL-ML), with trace sand and gravel, reddish brown to light olive gray, moderately developed blocky structure, FeO_3 staining, gleying prevalent, well developed thin laminations @57.6' to 58.1': Grades to Sandy Silty CLAY (CL-ML)
227 ▽ 60						

FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE	JOINTS / SHEAR / FRACTURE		WEATHERING
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE
							V. SEVERE
					Fe = Iron Oxide	Mn = Manganese Oxide	COMPLETE

ROCKLOG2014 10274.006 LOGS-RECOVER.GPJ ROCKLOG2012.GDT 2/18/15

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LEIGHTON

CORE BORING LOG

BORING NO. CB-14
PAGE 4 OF 4

PROJECT: El Rodeo Geohazard Investigation
CLIENT: Beverly Hills Unified School District
CONTRACTOR: Martini Drilling Corporation
EQUIPMENT USED: CME-75

GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION		CORE BARREL	
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	
						HORIZONTAL	SIZE	
07/14/14	ATD	▽ 35				INCLINED	Bit (Feet)	
		▼				BEARING	Barrel (Feet)	
		▼			0	ANG. FROM VERT.	Total (Feet)	

JOB NO.: 10274.006
PAGE NO.: 4 of 4
ELEVATION: 286.5 Feet
DATE START: 7/14/2014
DATE FINISH: 7/15/2014
DRILLER: Martini
PREPARED BY: JWJ
LOCATION: 605 Whittier Blvd., Beverly Hills, Ca

ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS
						The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.
227 60	60-65	Box 6				@58.1' to 60': Grades to Silty CLAY (CL-ML), with sand, reddish brown to light olive gray, moist, moderately developed blocky structure, gleying prevalent, FeO_3 staining, shimmer on facies, trace fine slaty gravels @60' to 60.2': Sandy CLAY (CL), with gravel, reddish brown, wet, well developed blocky structure, waxy finish on faces, trace fine slaty rock fragments @60.2' to 64.4': Sandy CLAY (CL), massive, reddish orange brown to light olive gray, moist, fine grained sand, trace fine subangular slate and siltstone rock fragments, gleying prevalent, FeO_3 staining, moderately developed blocky structure
▽						@64.4' to 64.5': Thin Clayey SAND with Gravel (SW-SC) lens, reddish brown to olive gray, wet, fine to coarse grained sand, subrounded fine slaty gravels
222 65	65-70	Box 7				@64.5' to 65': Silty CLAY (CL-ML), light olive gray to medium brown, trace fine subrounded slate fragments, well developed blocky structure, FeO_3 staining prevalent, gleying prevalent, thinly laminated weak beds, trace MnO_2 nodules @65' to 67.7': Sandy CLAY (CL), reddish brown to light olive gray, moist, fine grained sand, FeO_3 staining prevalent, gleying prevalent, trace fine slate and siltstone gravel, moderately to well developed blocky structure,
▽						@67.7' to 68.5': Clayey SAND with Gravel (SW-SC), reddish brown to olive gray, wet, fine to coarse grained sand, subrounded to subangular slate and siltstone gravel
						@68.5' to 68.8': Becomes Silty SAND (SM), with fine gravels, wispy thin light brown and black MnO_2 laminations, wet
217 70	70-75	Box 7				@68.8' to 68.9': Clayey SAND with Gravel (SW-SC) lens, fine to coarse grained, wet, subrounded slate, siltstone, and quartz rock fragments @68.9' to 69.4': Silty SAND (SM), with fine gravels, medium brown to light olive gray, wet, fine grained sand, subrounded to subangular slaty gravel @69.4' to 69.7': Clayey SAND with Gravel (SW-SC), medium brown to light olive gray, wet, subrounded slaty fine gravel @69.7': Sandy CLAY (CL), with trace gravels, light olive gray with orange red staining, moist, moderately developed blocky structure, MnO_2 development on pedogenic faces, trace fine grained sand grains between pedogenic faces @71' to 72.3': Sandy CLAY (CL), light olive gray with orange brown staining, moist, gleying prevalent, moderately developed blocky structure, MnO_2 development on pedogenic faces, trace fine grained sand grains between pedogenic faces
212 75						@72.3' to 75': Becomes Sandy CLAY (CL), with gravel, medium brown to olive gray with orange brown staining, moist, fine grained sand, fine subrounded to subangular slate, Tm, and quartz gravels, FeO staining prevalent, moderately developed blocky structure, MnO_2 development and fine sand on pedogenic faces.
207 80						Total depth of coring: 75' bgs Perched groundwater encountered @ 35'-39.7', 40'-41.6', 43.2'-43.5', 45'-47.3', 52.2'-52.4', 60'-60.2', 64.4'-64.5' and 67.7'-69.7' bgs Boring backfilled with bentonite and soil cuttings upon completion of drilling. Boring capped with approximately 6-inches of Rapid Set Concrete and black dye. Excess cuttings disposed of in D.O.T. approved drums and disposed offsite

FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE	JOINTS / SHEAR / FRACTURE		WEATHERING
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE
							V. SEVERE
					Fe = Iron Oxide	Mn = Manganese Oxide	COMPLETE

ROCKLOG2014 10274.006 LOGS-RECOVER.GPJ ROCKLOG2012.GDT 2/18/15

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LEIGHTON

CORE BORING LOG

BORING NO. CB-15
PAGE 1 OF 5

PROJECT: El Rodeo Geohazard Investigation
CLIENT: Beverly Hills Unified School District
CONTRACTOR: Martini Drilling Corporation
EQUIPMENT USED: CME-75

GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION		CORE BARREL	
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	
						HORIZONTAL	SIZE	
07/15/14	ATD	▽ 38.7				INCLINED	Bit (Feet)	
		▼				BEARING	Barrel (Feet)	
		▼			0	ANG. FROM VERT.	Total (Feet)	

JOB NO.: 10274.006
PAGE NO.: 1 of 5
ELEVATION: 285.5 Feet
DATE START: 7/15/2014
DATE FINISH: 7/16/2014
DRILLER: Martini
PREPARED BY: JWJ
LOCATION: 605 Whittier Blvd., Beverly Hills, Ca

ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS
						The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.
286 0						@Surface: **Artificial Fill, Undocumented (Afu):** @0'-5': Hand auger
281 5						@5': **Holocene Alluvium of Benedict Canyon Wash (Qal):** Sandy CLAY to Clayey SAND (SC-CL), with silt, olive brown, dry, fine grained sand, trace fine slaty gravels
						@5.4' to 5.9': Silty Clayey SAND (SM-SC), olive brown to light reddish brown, dry, fine grained sand, trace subrounded fine slaty gravels, clay lamination @5.7', light reddish brown, gradational contact
	5-10	Box 1				@5.9' to 7.5': Sandy CLAY (CL), with gravels, light reddish brown to medium brown, dry to slightly moist, fine grained sand, trace fine tabular to subrounded slate and siltstone gravels, poorly developed blocky structure
						@7.5' to 10': Sandy, Clayey GRAVEL (GC), reddish brown to light orange brown to medium brown, slightly moist, fine grained sand, subrounded to subangular slate and siltstone gravel, poorly developed blocky structure, oxidized
276 10						@10': **Pleistocene Alluvium of Benedict Canyon Wash (BCW_1):** Sandy CLAY (CL), with trace gravels, reddish brown, moist, fine grained sand, poorly developed blocky structure, pinhole voids, trace fine subangular slate and siltstone gravel, gleyed, trace basalt fragments
	10-15	Box 1				
271 15						
	15-20	Box 2				@17.4' to 17.9': Clayey SAND (SC), light reddish brown, moist, fine grained, trace fine tabular and subangular slaty gravel, trace silt, gradational contact below
						@17.9' to 21.5': Grades to Sandy CLAY (CL), reddish brown to medium brown, with minor olive gray gleying, moist, fine grained sand, poorly developed blocky structure, trace fine gravel, trace rootlets
266 20						

FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE	JOINTS / SHEAR / FRACTURE		WEATHERING
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE
							V. SEVERE
					Fe = Iron Oxide Mn = Manganese Oxide		COMPLETE

ROCKLOG2014 10274.006 LOGS-RECOVER.GPJ ROCKLOG2012.GDT 2/18/15

LEIGHTON

CORE BORING LOG

BORING NO. CB-15
PAGE 2 OF 5

PROJECT: El Rodeo Geohazard Investigation
CLIENT: Beverly Hills Unified School District
CONTRACTOR: Martini Drilling Corporation
EQUIPMENT USED: CME-75

GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION		CORE BARREL	
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	
						HORIZONTAL	SIZE	
07/15/14	ATD	▽ 38.7				INCLINED	Bit (Feet)	
		▼				BEARING	Barrel (Feet)	
		▼			0	ANG. FROM VERT.	Total (Feet)	

JOB NO.: 10274.006
PAGE NO.: 2 of 5
ELEVATION: 285.5 Feet
DATE START: 7/15/2014
DATE FINISH: 7/16/2014
DRILLER: Martini
PREPARED BY: JWJ
LOCATION: 605 Whittier Blvd., Beverly Hills, Ca

ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS
						The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.
266 20	20-25	Box 2				@21.5' to 24.1': Becomes Sandy CLAY (CL), reddish brown to olive gray, moist, fine grained sand, trace fine subangular gravel, poorly developed blocky structure, @22' very faint thin light olive gray and orange reddish brown laminations
261 25						@24.1': Becomes Silty Gravelly SAND (SW-SM), with trace clay, light reddish brown to medium brown, moist, fine to coarse grained sand, subrounded to subangular slate and siltstone gravel
	25-30	Box 3				@25.9': Pleistocene Alluvium of Benedict Canyon Wash (BCW_2): CLAY (CL) with Sand, reddish orange brown to light olive gray, moist, trace fine subrounded slaty gravels, moderately developed blocky structure, some gleying, poorly developed thin laminations, oxidation-reduction banding
						@27.4' to 30': No Recovery
256 30	30-35	Box 3				@30' to 32.5': Sandy CLAY (CL), medium brown to light olive gray, moist, moderately developed blocky structure, fine grained sand, trace fine subangular slaty gravel, trace MnO_2 development, gleyed
						@32.5' to 35.9': Sandy Silty CLAY (CL-ML), light reddish brown to medium brown, moist, fine grained sand, moderately developed blocky structure, trace MnO_2 development
251 35	35-40	Box 4				@35.9' to 36.2': Sandy GRAVEL (GW) lens, subrounded siltstone fragments, fine subrounded slaty gravel
						@36.2': Sandy CLAY (CL), medium brown to olive gray, very moist, fine grained sand, trace fine slaty gravel, blocky structure, with pods of well developed dark purplish red clay
▽						@38': Clayey SAND with Gravel (SW-SC), medium brown to reddish brown, very moist, fine to medium grained sand, trace coarse grained sand, with fine subrounded to subangular slate, siltstone, and basalt gravels
246 40						@38' to 39.4': Becomes Sandy CLAY (CL-ML), with gravels, reddish brown to medium brown, with dark purplish red stained nodules, very moist, fine to

FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE	JOINTS / SHEAR / FRACTURE		WEATHERING
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE
							V. SEVERE
					Fe = Iron Oxide	Mn = Manganese Oxide	COMPLETE

ROCKLOG2014 10274.006 LOGS-RECOVER.GPJ ROCKLOG2012.GDT 2/18/15

LEIGHTON

CORE BORING LOG

BORING NO. CB-15
PAGE 3 OF 5

PROJECT: El Rodeo Geohazard Investigation
CLIENT: Beverly Hills Unified School District
CONTRACTOR: Martini Drilling Corporation
EQUIPMENT USED: CME-75

GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION		CORE BARREL	
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	
						HORIZONTAL	SIZE	
07/15/14	ATD	▽ 38.7				INCLINED	Bit (Feet)	
		▼				BEARING	Barrel (Feet)	
		▼			0	ANG. FROM VERT.	Total (Feet)	

JOB NO.: 10274.006
PAGE NO.: 3 of 5
ELEVATION: 285.5 Feet
DATE START: 7/15/2014
DATE FINISH: 7/16/2014
DRILLER: Martini
PREPARED BY: JWJ
LOCATION: 605 Whittier Blvd., Beverly Hills, Ca

ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS
						The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.
246 40	40-45	Box 4				coarse grained sand, fine subrounded slate, siltstone, and basalt gravels @39.4' to 40': Silty Sandy CLAY (ML-CL), with gravel, medium brown to light olive gray, wet, gleyed @40' to 40.4': Sandy GRAVEL (GW) lens, medium brown to olive gray, wet, fine to coarse grained sand, subrounded slate, siltstone, basalt, and quartz gravel @40.4': Sandy CLAY (CL), light reddish to medium brown with minor light olive gray gleying, fine grained sand, trace fine subangular slaty fragments, @40.5' to 40.7' sandstone cobble, trace $CaCO_3$ stringers, @42' to 42.1' becomes sandier @43.2' to 43.7': Clayey GRAVEL (GC), olive gray to medium brown, moist, subrounded to subangular slate, siltstone, and basalt gravels, @43.3' siltstone rock fragment
241 45	45-50	Box 5				@43.7' to 45': No Recovery @45' to 45.5': Gravelly CLAY (CL), with sand, reddish brown to olive gray, very moist, gleyed, moderately developed blocky structure, faint thinly laminated sand and clay laminations @45.5' to 48.8': Gravelly SAND (SP), reddish brown to olive gray, very moist to wet, fine grained, @45.8' to 46' becomes fine to coarse grained, with fine slate, siltstone, and basalt gravels at basal contact @48.8' to 50': No Recovery
236 50	50-55	Box 5				@50' to 50.8': Clayey SAND with Gravel to Clayey Sandy GRAVEL (SW-SC), reddish brown to medium brown to light yellow brown, moist, fine to coarse grained sand, fine subrounded to subangular slate, basalt, and siltstone gravels, sharp contact below @50.8': **Pleistocene Cheviot Hills Deposits (CHD):** Silty CLAY (CL), dark olive gray, moist, well developed blocky structure, well developed FeO_3 staining and nodules, MnO_2 development on pedogenic faces, laminated, oxidized, gleyed CLAY 1-foot below oxidation-reduction banding
231 55	55-60	Box 6				@55.4' to 55.5': Thin Silty Clayey SAND (SM-SC) lens, reddish brown to light olive gray, fine grained sand @55.5' to 65.3': Sandy CLAY (CL), reddish orange brown to dark olive gray, moist, varved, fine grained sand, scattered fine slate and Tm gravels, well defined thin laminations, oxidation-reduction banded, @56' to 56.8' dark olive gray vertical gleying, FeO staining prevalent, well developed blocky structure, clay developed pedogenic on faces, minor MnO_2 development, @64.1' to 64.3' heavy gleying and mineral leaching zone, @64.4' to 65' increase in gravels
226 60						

FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE	JOINTS / SHEAR / FRACTURE		WEATHERING
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE
							V. SEVERE
					Fe = Iron Oxide	Mn = Manganese Oxide	COMPLETE

ROCKLOG2014 10274.006 LOGS-RECOVER.GPJ ROCKLOG2012.GDT 2/18/15

LEIGHTON

CORE BORING LOG

BORING NO. CB-15
PAGE 4 OF 5

PROJECT: El Rodeo Geohazard Investigation
CLIENT: Beverly Hills Unified School District
CONTRACTOR: Martini Drilling Corporation
EQUIPMENT USED: CME-75

GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION		CORE BARREL	
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	
						HORIZONTAL	SIZE	
07/15/14	ATD	▽ 38.7				INCLINED	Bit (Feet)	
		▼				BEARING	Barrel (Feet)	
		▼			0	ANG. FROM VERT.	Total (Feet)	

JOB NO.: 10274.006
PAGE NO.: 4 of 5
ELEVATION: 285.5 Feet
DATE START: 7/15/2014
DATE FINISH: 7/16/2014
DRILLER: Martini
PREPARED BY: JWJ
LOCATION: 605 Whittier Blvd., Beverly Hills, Ca

ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS
226 60	60-65	Box 6				The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.
221 ▽ 65	65-70	Box 7				@65.3' to 65.5': Silty SAND (SM) lens, dark brown to reddish orange brown, wet, fine grained, oxidized heavily at contact below @65.5' to 66.2': Sandy Silty CLAY (CL-ML), reddish orange brown to dark olive gray, gleyed, FeO staining prevalent, poorly to moderately developed blocky structure @66.2' to 66.3': Sandy GRAVEL (GW) lens, fine to coarse grained sand, subrounded slaty gravel @66.3' to 67.1': CLAY with Silt (CL-ML), and sand, reddish orange brown to dark olive gray, moist, gleyed, FeO_3 staining prevalent, fine grained sand, trace subrounded fine slaty gravel, moderately developed blocky structure, clay on facies, MnO_2 development
216 70	70-75	Box 7				@67.1' to 67.5': Sandy Clayey GRAVEL (GW-GC) lens, fine to coarse grained sand, subrounded to subangular slate and siltstone gravels, abrupt contact with below @67.5' to 68.8': Silty Sandy CLAY (CL-ML), with fine gravels, reddish orange brown to olive gray, moderately to well developed blocky structure, very moist, @68.8' to 70': Sandy CLAY (CL), reddish orange brown to olive gray, moist, moderately developed blocky structure, FeO_3 nodules, MnO_2 development, coarse sand grains between pedogenic faces @70' to 70.2': Thin Clayey SAND with Gravel (SW-SC) lens, wet, fine to coarse grained sand, with subangular slaty gravels @70.2' to 71.7': Sandy Gravelly CLAY (CL), with silt, reddish brown to olive gray, moist, well developed blocky structure, orange FeO_3 staining, waxy finish on faces
211 ▽ 75	75-80	Box 8				@71.7' to 71.9': Sandy Clayey GRAVEL (GW-GC) lens, wet @71.9' to 72.5': Silty Sandy CLAY (CL-ML), with gravel, reddish brown to olive gray, very moist, well developed blocky structure, @72.1' to 72.2' sand and gravel lens @72.5' to 75': No Recovery @75' to 76.1': Silty SAND (SM), black and white, wet, fine to medium grained, coarsens downward, siltstone rock fragments @76.1' to 77': Becomes Gravelly SAND (SW), black and white, wet, medium to coarse grained sand, primarily subrounded grains, with subrounded to subangular fine gravels, slaty @77' to 807': Becomes Clayey Sandy GRAVEL (GW-GC), black and white to medium brown, wet, gradational contact below
206 80						

FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE	JOINTS / SHEAR / FRACTURE		WEATHERING
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE
							V. SEVERE
					Fe = Iron Oxide	Mn = Manganese Oxide	COMPLETE

ROCKLOG2014 10274.006 LOGS-RECOVER.GPJ ROCKLOG2012.GDT 2/18/15

*** * * This log is a part of a report by Leighton and should not be used as a stand-alone document. * * ***

LEIGHTON

CORE BORING LOG

BORING NO. CB-15
PAGE 5 OF 5

PROJECT: El Rodeo Geohazard Investigation
CLIENT: Beverly Hills Unified School District
CONTRACTOR: Martini Drilling Corporation
EQUIPMENT USED: CME-75

GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION		CORE BARREL	
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X VERTICAL / HORIZONTAL	TYPE / SIZE		
07/15/14	ATD	▽ 38.7			INCLINED	Bit (Feet)		
		▼			BEARING	Barrel (Feet)		
		▼			0 ANG. FROM VERT.	Total (Feet)		

JOB NO.: 10274.006
PAGE NO.: 5 of 5
ELEVATION: 285.5 Feet
DATE START: 7/15/2014
DATE FINISH: 7/16/2014
DRILLER: Martini
PREPARED BY: JWJ
LOCATION: 605 Whittier Blvd., Beverly Hills, Ca

ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS
						The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.
206 80						@80' to 82': Silty SAND (SM), olive brown, wet, fine grained, @81.3' to 82' medium grained, abundant gravel
	80-85	Box 8				@82' to 82.3': Sandy Clayey GRAVEL (GW-GC), wet, primarily coarse grained sand, subrounded to rounded slaty gravels, abrupt contact below @82.3': 1-inch glayed @82.3' to 83.1': Silty CLAY (CL-ML), dark olive gray, massive, moist, thin MnO_2 bands, well developed blocky structure, waxy finish on faces, FeO_3 staining
201 85						@83.1' to 89.8': Sandy CLAY (CL), dark red brown with dark olive gray laminations, moist, massive unit, oxidation-reduction banded, fine grained sand, trace fine subangular slate and siltstone gravels, well developed blocky structure, FeO_3 staining prevalent, MnO_2 development between well developed faces
	85-90	Box 9				
196 90						@89': Dark red clayey paleosol
	90-95	Box 9				MnO_2 bands @90.9', 92.3', and 92.9' to 93.9'
191 95						Total depth of coring: 95' bgs Perched groundwater encountered @ 39.4'-40.4', 45.5'-48.8', 65.3'-65.5', 70'-70.2', 71.7'-71.9', and 75'-82.3' bgs Boring backfilled with bentonite and soil cuttings upon completion of drilling. Boring capped with approximately 6-inches of Rapid Set Concrete and black dye. Excess cuttings disposed of in D.O.T. approved drums and disposed offsite
186 100						

FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE	JOINTS / SHEAR / FRACTURE		WEATHERING
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE
							V. SEVERE
					Fe = Iron Oxide	Mn = Manganese Oxide	COMPLETE

ROCKLOG2014 10274.006 LOGS-RECOVER.GPJ ROCKLOG2012.GDT 2/18/15

LEIGHTON

CORE BORING LOG

BORING NO. CB-16
PAGE 1 OF 5

PROJECT: El Rodeo Geohazard Investigation
CLIENT: Beverly Hills Unified School District
CONTRACTOR: Martini Drilling Corporation
EQUIPMENT USED: CME-75

GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION		CORE BARREL	
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL / HORIZONTAL	TYPE / SIZE	
07/16/14	ATD	▽ 35				INCLINED	Bit (Feet)	
		▼				BEARING	Barrel (Feet)	
		▼			0	ANG. FROM VERT.	Total (Feet)	

JOB NO.: 10274.006
PAGE NO.: 1 of 5
ELEVATION: 285 Feet
DATE START: 7/16/2014
DATE FINISH: 7/17/2014
DRILLER: Martini
PREPARED BY: EBP
LOCATION: 605 Whittier Blvd., Beverly Hills, Ca

ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS
						The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.
285 0						@Surface: 8-inches Asphalt Concrete
						@0.67': 7-inches Portland Cement Concrete
						@1.25': **Artificial Fill, Undocumented (Afu):** @1.25 to 5': Hand auger
280 5						@5': **Holocene Alluvium of Benedict Canyon Wash: (Qal):** Sandy SILT with Clay (ML), dark brown, moist, fine to medium grained sand, trace gravel
						@5.5' to 6.5': Silty SAND (SM), dark yellowish brown, moist, fine grained, trace clay, few fine to coarse subrounded to subangular gravels
	5-10	Box 1				@6.5' to 7.7': Silty CLAY (CL), with sand, dark brown, moist, fine to coarse grained sand, trace fine gravel
						@7.7' to 8.1': Clayey SAND (SC), dark yellowish brown, moist, fine grained sand, few coarse sand and gravel, gradational contact
						@8.1' to 10.2': Silty SAND (SM), dark yellowish brown, moist, fine grained, few coarse grained sand, fine to coarse gravel, trace clay
275 10						@10.2': **Pleistocene Alluvium of Benedict Canyon Wash (BCW_1):** Sandy CLAY (CL), dark yellowish brown to orange brown, moist, trace coarse grained sand
	10-15	Box 1				
270 15						@15.3' to 17.7': SAND with Clay (SC), yellowish brown to orange brown, moist, fine grained sand, trace coarse grained sand
	15-20	Box 2				@17.7' to 18.4': Sandy CLAY (CL), , dark yellow brown, moist, fine grained sand, trace fine gravel, few coarse gravel, mainly subrounded to subangular slaty gravels
						@18.4' to 19.9': Clayey SAND (SC), dark yellowish brown, moist, fine to medium grained, few fine to coarse gravel, mainly subrounded to subangular slaty gravels
265 20						

FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE	JOINTS / SHEAR / FRACTURE		WEATHERING
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE
							V. SEVERE
					Fe = Iron Oxide	Mn = Manganese Oxide	COMPLETE

ROCKLOG2014 10274.006 LOGS-RECOVER.GPJ ROCKLOG2012.GDT 2/18/15

LEIGHTON

CORE BORING LOG

BORING NO. CB-16
PAGE 2 OF 5

PROJECT: El Rodeo Geohazard Investigation
CLIENT: Beverly Hills Unified School District
CONTRACTOR: Martini Drilling Corporation
EQUIPMENT USED: CME-75

GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION		CORE BARREL	
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	
						HORIZONTAL	SIZE	
07/16/14	ATD	▽ 35				INCLINED	Bit (Feet)	
		▼				BEARING	Barrel (Feet)	
		▼			0	ANG. FROM VERT.	Total (Feet)	

JOB NO.: 10274.006
PAGE NO.: 2 of 5
ELEVATION: 285 Feet
DATE START: 7/16/2014
DATE FINISH: 7/17/2014
DRILLER: Martini
PREPARED BY: EBP
LOCATION: 605 Whittier Blvd., Beverly Hills, Ca

ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS
						The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.
265 20	20-25	Box 2				@19.9' to 20.9': Silty SAND with Clay (SM-SC), dark yellowish brown, moist, fine to medium grained sand, few fine to coarse gravel, mainly subrounded to subangular slaty gravel @20.9' to 23.6': Sandy CLAY (CL), dark yellowish brown to brown, moist, fine grained sand, trace coarse grained sand @24.3' to 25': Silty SAND with Clay (SM-SC), yellowish brown, moist, fine grained sand, few fine to coarse subangular slaty gravels
260 25	25-30	Box 3				@25' to 25.2': Sandy CLAY (CL), dark brown, moist, medium to coarse grained sand, few fine gravels @25.2' to 26.2': Silty SAND with Clay (SM-SC), dark yellowish brown, moist, fine to medium grained sand, trace fine gravel, fining upwards from 26.4' @25.7': Becomes yellow brown, fine to coarse grained sand, no clay @26.2' to 26.4': Sandy GRAVEL (GW), dark yellowish brown, moist, fine to coarse grained sand, fine to coarse subrouned to subangular slate, siltstone, basalt, and granitic gravels, FeO_3 stained @26.4' to 27.3': Silty SAND (SM), dark yellowish brown, moist, fine to coarse grained, trace fine gravel @27.3' to 27.7': basal GRAVEL (GP) bed, siltstone and slate clasts @27.7': Pleistocene Alluvium of Benedict Canyon Wash (BCW_2): Sandy CLAY (CL), reddish-brown, moist, trace coarse grained sand, few slaty gravels
255 30	30-35	Box 3				@28.9' to 30': No Recovery @30' to 30.6': Sandy CLAY (CL), reddish brown, moist, fine grained sand, trace fine gravel @30.6' to 31.3': SAND and Gravel beds (SP) @31.3' to 33.6': Sandy CLAY (CL), dark yellow brown, moist, trace coarse grained sand @33.6' to 34.4': Clayey SAND (SC), dark yellowish brown, moist, fine to coarse grained, trace fine gravel @34.4' to 35': Silty SAND with Clay (SM-SC), dark yellowish brown, moist, fine to medium grained sand, trace fine gravel
250 ▽ 35	35-40	Box 4				@35' to 38.2': Clayey SAND (SC) with Silt, dark yellowish brown, wet, fine to coarse grained sand, trace clay @35.6': Fine grained sand @36.9' to 37.1': Few fine subangular slaty gravels @38.2' to 39.5': Silty SAND (SM) lamination, fine grained, yellowish brown
245 ▽ 40						@39.5' to 42.1': CLAY (CL), olive brown, very moist, gleying and oxidation

FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE	JOINTS / SHEAR / FRACTURE		WEATHERING
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE
							V. SEVERE
					Fe = Iron Oxide	Mn = Manganese Oxide	COMPLETE

ROCKLOG2014 10274.006 LOGS-RECOVER.GPJ ROCKLOG2012.GDT 2/18/15

*** * * This log is a part of a report by Leighton and should not be used as a stand-alone document. * * ***

LEIGHTON

CORE BORING LOG

BORING NO. CB-16
PAGE 3 OF 5

PROJECT: El Rodeo Geohazard Investigation
CLIENT: Beverly Hills Unified School District
CONTRACTOR: Martini Drilling Corporation
EQUIPMENT USED: CME-75

GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION		CORE BARREL	
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL / HORIZONTAL	TYPE / SIZE	
07/16/14	ATD	▽ 35				INCLINED	Bit (Feet)	
		▼				BEARING	Barrel (Feet)	
		▼			0	ANG. FROM VERT.	Total (Feet)	

JOB NO.: 10274.006
PAGE NO.: 3 of 5
ELEVATION: 285 Feet
DATE START: 7/16/2014
DATE FINISH: 7/17/2014
DRILLER: Martini
PREPARED BY: EBP
LOCATION: 605 Whittier Blvd., Beverly Hills, Ca

ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS
						The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.
245 40						staining along laminations @41.5': rounded 1+1/2-inch size gravel rock line
						@40' to 42.1': SAND with Clay (SC), dark yellowish brown to olive brown, wet, fine to medium grained, trace fine gravel
	40-45	Box 4				@42.1' to 43.2': Sandy SILT (ML), dark yellowish brown, moist, fine grained sand, few fine to coarse subangular slaty gravels, slight FeO_3 staining
						@43.2' to 43.3': Silty SAND (SM), yellowish brown, moist, fine to medium grained, sharp contact below, at basal siltstone rock clast
						@43.3' to 43.7': Sandy CLAY (CL), dark yellowish brown, moist, trace coarse grained sand
240 45						@43.7' to 44': Silty SAND (SM), dark yellowish brown, moist, fine grained sand, trace fine gravel
						@44' to 44.8': Sandy CLAY (CL), dark yellowish brown, moist, fine grained sand, trace fine gravel at base of contact
						@44.8' to 45': No Recovery
	45-50	Box 5				@45' to 45.7': Sandy SILT (ML), dark yellowish brown, moist, fine grained sand
						@45.7' to 46': CLAY with Sand (CL), gleyed, oxidized
						@46' to 46.5': Silty SAND (SM), dark yellowish brown, moist, fine grained
						@46.5' to 49.1': SILT with Sand (ML), yellowish brown, very moist, fine to coarse grained sand, few gravel, basal well cemented gravels
						@49.1' to 50': No Recovery
235 ▽ 50						**Pleistocene Cheviot Hills Deposits (CHD):**
						@50' to 50.5': Sandy SILT (ML), dark yellowish brown, wet, fine grained sand, pockets of gleyed clay @50': 1-inch Clay, gley to reddish orange, some banding
	50-55	Box 5				@50.5' to 51.6': Clayey SILT (ML-CL), brown, very moist, gleying along laminations
						@51.6' to 53.6': Grades to Sandy CLAY (CL), reddish brown, moist, gleying and oxidation staining along laminations
▽						@53.6' to 54.4': Sandy CLAY (CL), brown, wet, fine grained sand
						54.4' to 55.3': Grades to Clayey SILT (ML), with fine grained sand, very moist
230 55						@55.3' to 55.9': Silty CLAY (CL), with sand, olive brown, very moist, fine grained sand @55.6': Trace coarse sand
						@55.9' to 56.4': Sandy CLAY (CL), fine to medium grained sand, trace fine gravel
▽	55-60	Box 6				@56.4' to 62.8': Sandy CLAY (CL), olive brown, moist, vertical gleying, fine to medium grained sand, trace fine gravel
225 60						

FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE	JOINTS / SHEAR / FRACTURE		WEATHERING
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE
							V. SEVERE
					Fe = Iron Oxide	Mn = Manganese Oxide	COMPLETE

ROCKLOG2014 10274.006 LOGS-RECOVER.GPJ ROCKLOG2012.GDT 2/18/15

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LEIGHTON

CORE BORING LOG

BORING NO. CB-16
PAGE 4 OF 5

PROJECT: El Rodeo Geohazard Investigation
CLIENT: Beverly Hills Unified School District
CONTRACTOR: Martini Drilling Corporation
EQUIPMENT USED: CME-75

GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION		CORE BARREL	
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	
						HORIZONTAL	SIZE	
07/16/14	ATD	▽ 35				INCLINED	Bit (Feet)	
		▼				BEARING	Barrel (Feet)	
		▼			0	ANG. FROM VERT.	Total (Feet)	

JOB NO.: 10274.006
PAGE NO.: 4 of 5
ELEVATION: 285 Feet
DATE START: 7/16/2014
DATE FINISH: 7/17/2014
DRILLER: Martini
PREPARED BY: EBP
LOCATION: 605 Whittier Blvd., Beverly Hills, Ca

ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS
225 60						The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.
	60-65	Box 6				@62.8' to 62.9': Clayey GRAVEL (GC) bed, brown, wet, fine to coarse subangular slaty gravels
						@62.9' to 63.7': Sandy CLAY (CL), brown, wet, medium to coarse grained sand, trace fine gravel
220 65						@63.5' to 63.8': Gravelly SAND bed (SP), olive brown, wet, coarse grained sand, fine subangular slaty gravel
						63.8' to 64.6': Sandy CLAY (CL), olive brown, wet, trace fine gravel, gleying
						@64.6' to 65': Sandy GRAVEL with Clay (GW-GC), brown, wet, medium to coarse grained sand
						@64.9': Fine slate and basalt gravels, trace coarse gravels, minor FeO_3 staining
	65-70	Box 7				@65' to 69': Clayey GRAVEL (GC), fine to coarse gravels, poor recovery
▽						
						@69' to 69.5': Clayey GRAVEL (GC), brown, wet, medium to coarse grained sand, few fine to coarse subrounded to subangular gravels, well cemented
215 70						@69.5' to 70': Sandy CLAY (CL), dark gray and olive brown, moist, fine to medium grained sand, trace fine gravels
						@70' to 74.2': SAND (SP), yellowish brown, wet, medium grained, trace coarse grained sand, trace silt
	70-75	Box 7				
						@74.2' to 74.3': Gravelly CLAY (CL) bed, dark gray and brown, fine gravel, trace coarse grained sand
210 75						@74.3' to 75': No Recovery
						@75' to 76.5': SAND (SP), yellowish brown, wet, medium grained, trace coarse grained sand, trace silt
						@76.5' to 77': Sandy GRAVEL (GW), yellowish brown, wet, coarse grained sand, fine subrounded gravel
	75-80	Box 8				@77' to 77.8': Gravelly CLAY to Clayey GRAVEL (GC), dark yellowish brown to olive brown, moist, fine to coarse slaty gravels, slight FeO_3staining
						@77.8' to 80': No Recovery
205 80						

FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE	JOINTS / SHEAR / FRACTURE		WEATHERING
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE
							V. SEVERE
					Fe = Iron Oxide	Mn = Manganese Oxide	COMPLETE

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CORE BORING LOG

BORING NO. CB-16
PAGE 5 OF 5

PROJECT: El Rodeo Geohazard Investigation
CLIENT: Beverly Hills Unified School District
CONTRACTOR: Martini Drilling Corporation
EQUIPMENT USED: CME-75

GROUNDWATER:		DEPTH TO (Feet):			ORIENTATION		CORE BARREL	
DATE	HRS AFT COMP	WATER	BOT. OF CASING	BOT. OF HOLE	X	VERTICAL	TYPE	
						HORIZONTAL	SIZE	
07/16/14	ATD	▽ 35				INCLINED	Bit (Feet)	
		▼				BEARING	Barrel (Feet)	
		▼			0	ANG. FROM VERT.	Total (Feet)	

JOB NO.: 10274.006
PAGE NO.: 5 of 5
ELEVATION: 285 Feet
DATE START: 7/16/2014
DATE FINISH: 7/17/2014
DRILLER: Martini
PREPARED BY: EBP
LOCATION: 605 Whittier Blvd., Beverly Hills, Ca

ELEVATION & CORE DEPTH (Feet)	CORE DEPTH RANGE (Feet)	SAMPLE NUMBER	RECOVERY %	RQD	GRAPHIC LOG	FIELD CLASSIFICATION, REMARKS, AND LIMITATIONS
205 80						The Soil Description applies only to a location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.
						@80' to 80.7': Silty CLAY (CL-ML), olive gray, moist, trace coarse grained sand, oxidation staining, gleyed zone, top of thick soil development
	80-85	Box 8				@80.7' to 85': CLAY (CL), reddish brown, moist, trace coarse grained sand, trace fine gravel, slight gleying, faint lamination, 1-foot thick gleyed clay over oxidation-reduction banded clay unit
200 85						@85' to 87.1': Sandy CLAY with Gravel (CL), dark yellowish brown, moist, trace coarse grained sand, trace fine to coarse gravel
	85-90	Box 9				@86.7': GRAVEL (GW) beds within yellowish brown sandy clay matrix, fine to coarse subangular to angular siltstone and slaty gravels
						@87.1' to 87.3': GRAVEL (GW) beds within yellowish brown sandy clay matrix, fine to coarse subangular to subrounded silty and slaty gravels
						@87.3' to 90': Sandy CLAY (CL), dark yellowish brown, moist, fine to coarse grained sand, fine slaty gravel
195 90						@90' to 90.1': GRAVEL (GW) beds within yellowish brown sandy clay matrix, fine to coarse subangular to angular siltstone and slaty gravels
	90-95	Box 9				@90.1' to 95': Sandy CLAY with Gravel (CL), reddish brown, moist, trace coarse grained sand, fine gravels, gleyed, developed paleosol @90.5': CLAY (CL), reddish brown, moist, fine to coarse grained sand, trace fine gravel, minor gleying
190 95						
						Total depth of coring: 95' bgs Perched groundwater encountered @ 35'-38.2', 40'-42.1, 50'-50.5', 53.6'-54.4', 62.8'-65', 69'-69.5', 70'-74.2', and 76.5'-77' bgs Boring backfilled with bentonite and soil cuttings upon completion of drilling. Boring capped with approximately 6-inches of Rapid Set Concrete and black dye. Excess cuttings disposed of in D.O.T. approved drums and disposed offsite
185 100						

FIELD HARDNESS		BEDDING		ATTITUDE AND ANGLE	JOINTS / SHEAR / FRACTURE		WEATHERING
V. HARD	- KNIFE CAN'T SCRATCH	V. THIN	<2"	HORIZONTAL (0-5°)	V. CLOSE	<2"	FRESH
HARD	- SCRATCHES DIFFICULT	THIN	2"-12"	SHALLOW OR LOW ANGLE (5-35°)	CLOSE	2"-12"	V. SLIGHT
MOD. HARD	- SCRATCHES EASILY	MEDIUM	12"-36"	MODERATELY DIPPING (35-55°)	MOD. CLOSE	12"-36"	SLIGHT
SOFT	- GROVES	THICK	36"-120"	STEEP OR HIGH ANGLE (55-85°)	WIDE	36"-120"	MODERATE
V. SOFT	- CARVES	V. THICK	>120"	VERTICAL (85-90°)	V. WIDE	>120"	MOD. SEVERE
							V. SEVERE
					Fe = Iron Oxide	Mn = Manganese Oxide	COMPLETE

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APPENDIX B

GEOTECHNICAL LABORATORY TESTING

Our geotechnical laboratory testing program was directed toward a quantitative and qualitative evaluation of physical and mechanical properties of soils underlying this campus at proposed improvements, and to aid in verifying soil classification. This geotechnical testing was performed at our Irvine laboratory (DSA LEA 63).

Modified Proctor Compaction Curve: Laboratory modified Proctor compaction curves (ASTM D 1557) were established for bulk soil-samples to determine sample-specific modified Proctor laboratory maximum dry density and optimum moisture content. Results of these tests are presented on the following "*Modified Proctor Compaction Test*" sheets in this appendix.

Expansion Index (EI): Expansion Index (EI) tests were performed in accordance with the ASTM D 4829 Standard Test Method, for a shallow bulk soil samples from this site. EI results are included in this appendix on the "*Expansion Index of Soils*" sheets.

Direct Shear Tests: Direct shear tests were performed, in general accordance with ASTM Test Method D 3080, on remolded soil samples remolded to 90% of the ASTM D 1557 laboratory maximum density. Remolded specimens were soaked for a minimum of 24 hours under a surcharge equal to the applied normal force during testing. After transfer of the sample to the shear box, and reloading the sample, pore pressures set up in the sample due to the transfer were allowed to dissipate for a period of approximately 1 hour prior to application of shearing force. These specimens were tested under various normal loads with a motor-driven, strain-controlled, direct-shear testing apparatus at a strain rate of 0.05 inches per minute (depending upon the soil type). Test results are presented on the *Direct Shear Test Results* sheets which follow in this appendix.

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MODIFIED PROCTOR COMPACTION TEST

ASTM D 1557

Project Name:	BHUSD/El Rodeo School/Geo	Tested By:	O. Figueroa	Date:	07/21/14
Project No.:	10274.006	Input By:	J. Ward	Date:	07/23/14
Location:	Trench Backfill	Depth (ft.):	N/A		
Sample No.:	S-1				
Soil Identification:	Olive brown clayey sand with gravel (SC)g				

Preparation Method:	X	Moist	
		Dry	
Compaction Method	X	Mechanical Ram	
		Manual Ram	

Scalp Fraction (%)	
#3/4	
#3/8	12.5
#4	

Rammer Weight (lb.) = 10.0

Height of Drop (in.) = 18.0

Mold Volume (ft³) 0.03320

TEST NO.	1	2	3	4	5	6
Wt. Compacted Soil + Mold (g)	3770.0	3918.0	3965.0	3890.0		
Weight of Mold (g)	1843.0	1843.0	1843.0	1843.0		
Net Weight of Soil (g)	1927.0	2075.0	2122.0	2047.0		
Wet Weight of Soil + Cont. (g)	458.60	466.30	434.80	471.80		
Dry Weight of Soil + Cont. (g)	436.60	434.10	396.70	420.70		
Weight of Container (g)	37.70	38.20	36.80	37.80		
Moisture Content (%)	5.52	8.13	10.59	13.35		
Wet Density (pcf)	128.0	137.8	140.9	135.9		
Dry Density (pcf)	121.3	127.4	127.4	119.9		

Maximum Dry Density (pcf) 128.0

Corrected Dry Density (pcf) 132.0

Optimum Moisture Content (%) 9.5

Corrected Moisture Content (%) 8.5

☐ **Procedure A**
Soil Passing No. 4 (4.75 mm) Sieve
Mold : 4 in. (101.6 mm) diameter
Layers : 5 (Five)
Blows per layer : 25 (twenty-five)
May be used if +#4 is 20% or less

☒ **Procedure B**
Soil Passing 3/8 in. (9.5 mm) Sieve
Mold : 4 in. (101.6 mm) diameter
Layers : 5 (Five)
Blows per layer : 25 (twenty-five)
Use if +#4 is >20% and +3/8 in. is 20% or less

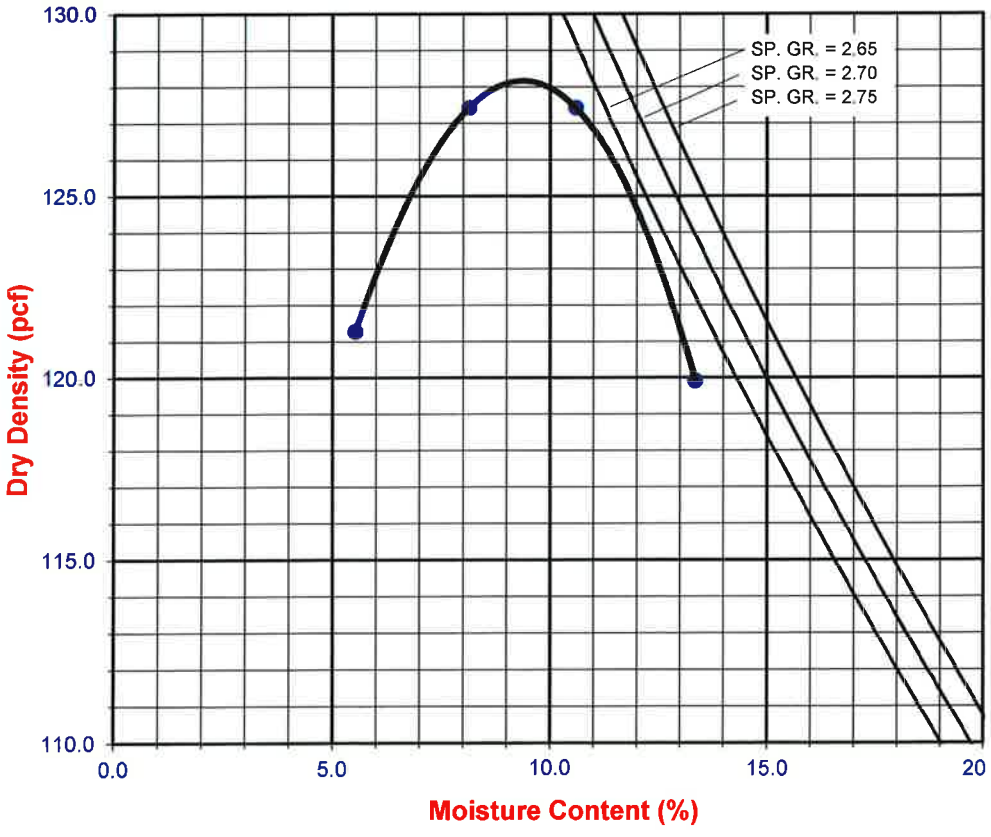
☐ **Procedure C**
Soil Passing 3/4 in. (19.0 mm) Sieve
Mold : 6 in. (152.4 mm) diameter
Layers : 5 (Five)
Blows per layer : 56 (fifty-six)
Use if +3/8 in. is >20% and +¾ in. is <30%

Particle-Size Distribution:

GR:SA:FI

Atterberg Limits:

LL,PL,PI



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MODIFIED PROCTOR COMPACTION TEST

ASTM D 1557

Project Name:	BHUSD/El Rodeo School/Geo	Tested By:	O. Figueroa	Date:	07/21/14
Project No.:	10274.006	Input By:	J. Ward	Date:	07/23/14
Location:	Trench Backfill	Depth (ft.):	N/A		
Sample No.:	S-2				
Soil Identification:	Dark olive brown clayey sand with gravel (SC)g				

Preparation Method:	X	Moist	
		Dry	
Compaction Method	X	Mechanical Ram	
		Manual Ram	

Scalp Fraction (%)	
#3/4	
#3/8	11.3
#4	

Rammer Weight (lb.) = 10.0

Height of Drop (in.) = 18.0

Mold Volume (ft³) 0.03320

TEST NO.	1	2	3	4	5	6
Wt. Compacted Soil + Mold (g)	3736.0	3912.0	3964.0	3898.0		
Weight of Mold (g)	1843.0	1843.0	1843.0	1843.0		
Net Weight of Soil (g)	1893.0	2069.0	2121.0	2055.0		
Wet Weight of Soil + Cont. (g)	422.80	403.80	439.90	427.10		
Dry Weight of Soil + Cont. (g)	405.90	379.70	405.40	384.90		
Weight of Container (g)	39.00	37.80	51.00	38.10		
Moisture Content (%)	4.61	7.05	9.73	12.17		
Wet Density (pcf)	125.7	137.4	140.8	136.5		
Dry Density (pcf)	120.2	128.3	128.3	121.7		

Maximum Dry Density (pcf) 129.5

Corrected Dry Density (pcf) 133.0

Optimum Moisture Content (%) 8.5

Corrected Moisture Content (%) 7.5

☐ **Procedure A**
Soil Passing No. 4 (4.75 mm) Sieve
Mold : 4 in. (101.6 mm) diameter
Layers : 5 (Five)
Blows per layer : 25 (twenty-five)
May be used if +#4 is 20% or less

☒ **Procedure B**
Soil Passing 3/8 in. (9.5 mm) Sieve
Mold : 4 in. (101.6 mm) diameter
Layers : 5 (Five)
Blows per layer : 25 (twenty-five)
Use if +#4 is >20% and +3/8 in. is 20% or less

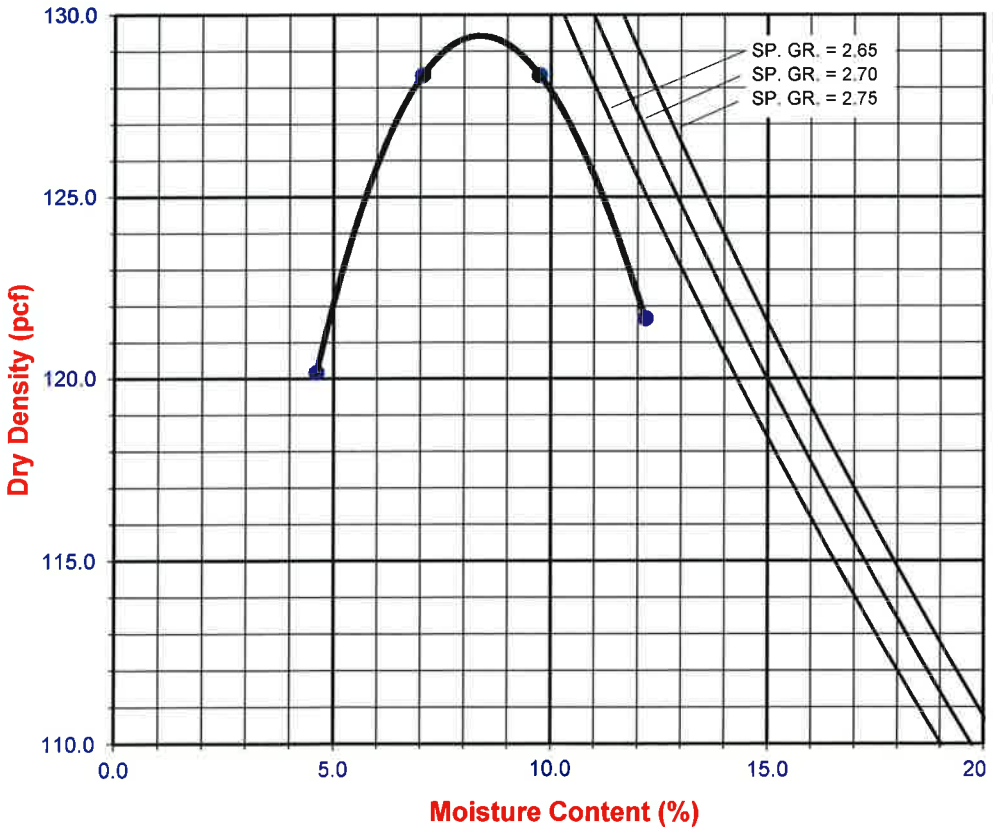
☐ **Procedure C**
Soil Passing 3/4 in. (19.0 mm) Sieve
Mold : 6 in. (152.4 mm) diameter
Layers : 5 (Five)
Blows per layer : 56 (fifty-six)
Use if +3/8 in. is >20% and +¾ in. is <30%

Particle-Size Distribution:

GR:SA:FI

Atterberg Limits:

LL,PL,PI



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EXPANSION INDEX of SOILS

ASTM D 4829

Project Name:	BHUSD/El Rodeo School/Geo	Tested By:	S. Felter	Date:	07/24/14
Project No.:	10274.006	Checked By:	J. Ward	Date:	07/28/14
Location:	Trench Backfill	Depth (ft.):	N/A		
Sample No.:	S-1				
Soil Identification:	Olive brown clayey sand with gravel (SC)g				

Dry Wt. of Soil + Cont.	(g)	1000.00
Wt. of Container No.	(g)	0.00
Dry Wt. of Soil	(g)	1000.00
Weight Soil Retained on #4 Sieve		0.00
Percent Passing # 4		100.00

MOLDED SPECIMEN		Before Test	After Test
Specimen Diameter	(in.)	4.01	4.01
Specimen Height	(in.)	1.0000	1.0225
Wt. Comp. Soil + Mold	(g)	573.80	437.93
Wt. of Mold	(g)	163.50	0.00
Specific Gravity (Assumed)		2.70	2.70
Container No.		O	O
Wet Wt. of Soil + Cont.	(g)	819.60	601.43
Dry Wt. of Soil + Cont.	(g)	751.90	539.92
Wt. of Container	(g)	0.00	163.50
Moisture Content	(%)	9.00	16.34
Wet Density	(pcf)	123.8	129.2
Dry Density	(pcf)	113.5	111.0
Void Ratio		0.485	0.518
Total Porosity		0.326	0.341
Pore Volume	(cc)	67.6	72.2
Degree of Saturation (%) [S meas]		**50.1**	85.2

SPECIMEN INUNDATION in distilled water for the period of 24 h or expansion rate < 0.0002 in./h

Date	Time	Pressure (psi)	Elapsed Time (min.)	Dial Readings (in.)
07/24/14	12:12	1.0	0	0.1230
07/24/14	12:22	1.0	10	0.1230
Add Distilled Water to the Specimen				
07/24/14	13:09	1.0	47	0.1450
07/25/14	7:10	1.0	1128	0.1455
07/25/14	8:17	1.0	1195	0.1455

Expansion Index (EI meas) = ((Final Rdg - Initial Rdg) / Initial Thick.) x 1000	**23**

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EXPANSION INDEX of SOILS

ASTM D 4829

Project Name:	BHUSD/El Rodeo School/Geo	Tested By:	S. Felter	Date:	07/24/14
Project No.:	10274.006	Checked By:	J. Ward	Date:	07/28/14
Location:	Trench Backfill	Depth (ft.):	N/A		
Sample No.:	S-2				
Soil Identification:	Dark olive brown clayey sand with gravel (SC)g				

Dry Wt. of Soil + Cont.	(g)	1000.00
Wt. of Container No.	(g)	0.00
Dry Wt. of Soil	(g)	1000.00
Weight Soil Retained on #4 Sieve		0.00
Percent Passing # 4		100.00

MOLDED SPECIMEN		Before Test	After Test
Specimen Diameter	(in.)	4.01	4.01
Specimen Height	(in.)	1.0000	1.0205
Wt. Comp. Soil + Mold	(g)	601.10	438.82
Wt. of Mold	(g)	190.50	0.00
Specific Gravity (Assumed)		2.70	2.70
Container No.		O	O
Wet Wt. of Soil + Cont.	(g)	828.60	629.32
Dry Wt. of Soil + Cont.	(g)	763.00	568.57
Wt. of Container	(g)	0.00	190.50
Moisture Content	(%)	8.60	16.07
Wet Density	(pcf)	123.9	129.7
Dry Density	(pcf)	114.0	111.8
Void Ratio		0.478	0.509
Total Porosity		0.323	0.337
Pore Volume	(cc)	67.0	71.2
Degree of Saturation (%) [S meas]		**48.5**	85.3

SPECIMEN INUNDATION in distilled water for the period of 24 h or expansion rate < 0.0002 in./h

Date	Time	Pressure (psi)	Elapsed Time (min.)	Dial Readings (in.)
07/24/14	11:53	1.0	0	0.1940
07/24/14	12:03	1.0	10	0.1930
Add Distilled Water to the Specimen				
07/24/14	13:12	1.0	69	0.2135
07/25/14	7:16	1.0	1153	0.2145
07/25/14	8:29	1.0	1226	0.2145

Expansion Index (EI meas) =	((Final Rdg - Initial Rdg) / Initial Thick.) x 1000	**22**

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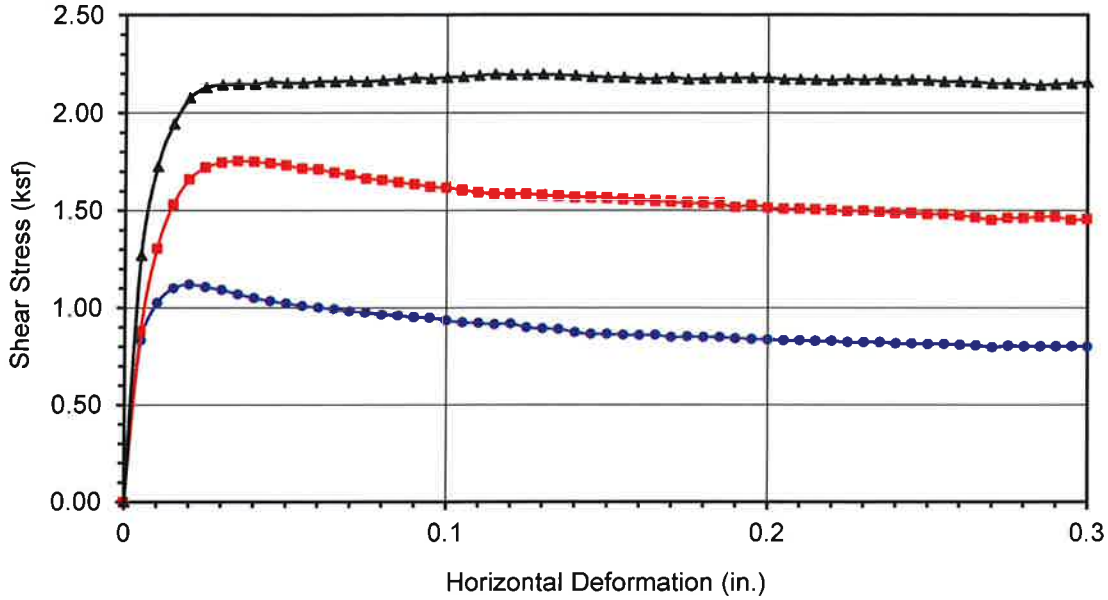
DIRECT SHEAR TEST

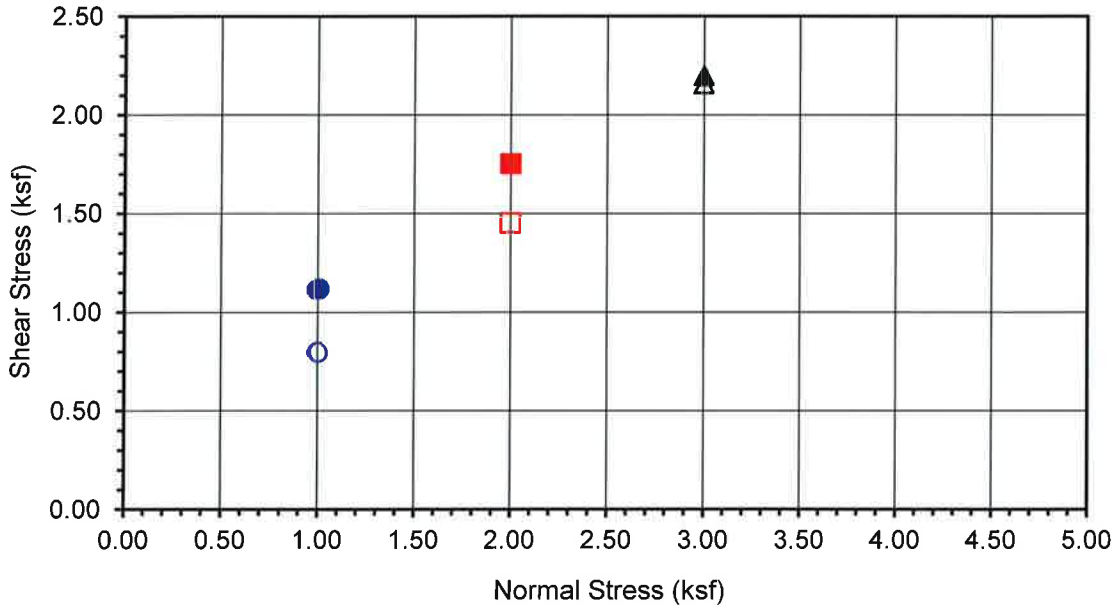
Consolidated Undrained

Project Name:	BHUSD/El Rodeo School/Geo	Tested By:	G. Bathala	Date:	07/24/14
Project No.:	10274.006	Checked By:	J. Ward		
Location:	Trench Backfill	Sample Type:	90% Remold		
Sample No.:	S-1	Depth (ft.):	N/A		
Soil Identification:	Olive brown clayey sand with gravel (SC)g				

Sample Diameter(in):	2.415	2.415	2.415
Sample Thickness(in.):	1.000	1.000	1.000
Weight of Sample + ring(gm):	194.47	194.26	194.03
Weight of Ring(gm):	42.81	42.68	42.48
Before Shearing			
Weight of Wet Sample+Cont.(gm):	266.86	266.86	266.86
Weight of Dry Sample+Cont.(gm):	247.03	247.03	247.03
Weight of Container(gm):	37.96	37.96	37.96
Vertical Rdg.(in): Initial	0.0000	0.2430	0.2489
Vertical Rdg.(in): Final	-0.0019	0.2508	0.2629
After Shearing			
Weight of Wet Sample+Cont.(gm):	198.84	194.98	196.76
Weight of Dry Sample+Cont.(gm):	176.64	174.59	176.20
Weight of Container(gm):	39.22	37.61	39.07
Specific Gravity (Assumed):	2.70	2.70	2.70
Water Density(pcf):	62.43	62.43	62.43

Note: Tests were performed on material passing sieve #4. Test samples were prepared to 90% relative compaction of the maximum dry density at optimum moisture content determined according to ASTM D1557 Procedure B, which includes material passing the 3/8-in sieve and retained on sieve #4.





Location	**Trench Backfill**
Sample No.	**S-1**
Sample Type:	
90% Remold	
Soil Identification:	
Olive brown clayey sand with gravel (SC)g	

Normal Stress (kip/ft²)	1.000	2.000	3.000
Peak Shear Stress (kip/ft²)	● 1.119	■ 1.754	▲ 2.197
Shear Stress @ End of Test (ksf)	○ 0.799	□ 1.456	△ 2.157
Deformation Rate (in./min.)	0.0500	0.0500	0.0500
Initial Sample Height (in.)	1.000	1.000	1.000
Diameter (in.)	2.415	2.415	2.415
Initial Moisture Content (%)	9.48	9.48	9.48
Dry Density (pcf)	115.2	115.1	115.1
Saturation (%)	55.3	55.2	55.2
Soil Height Before Shearing (in.)	0.9981	0.9922	0.9860
Final Moisture Content (%)	16.2	14.9	15.0

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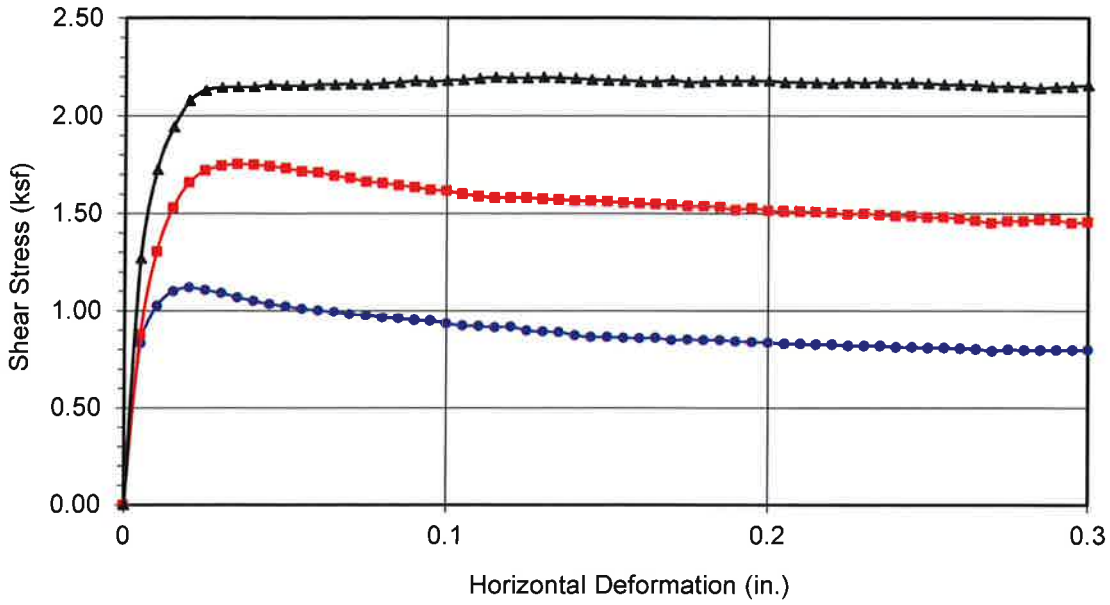
DIRECT SHEAR TEST RESULTS

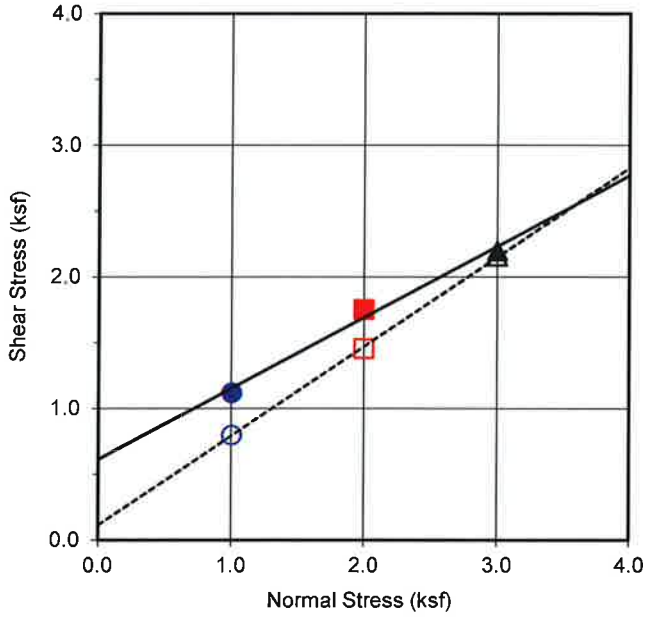
Consolidated Undrained

Project No.: 10274.006

BHUSD/El Rodeo School/Geo

07-14





Location	**Trench Backfill**
Sample No.	**S-1**
Sample Type:	90% Remold
Soil Identification:	Olive brown clayey sand with gravel (SC)g

Strength Parameters

	C (psf)	ϕ (°)
Peak	612.0	28.3
Ultimate	112.7	34.2

Normal Stress (kip/ft²)	1.000	2.000	3.000
Peak Shear Stress (kip/ft²)	● 1.119	■ 1.754	▲ 2.197
Shear Stress @ End of Test (ksf)	○ 0.799	□ 1.456	△ 2.157
Deformation Rate (in./min.)	0.0500	0.0500	0.0500
Initial Sample Height (in.)	1.000	1.000	1.000
Diameter (in.)	2.415	2.415	2.415
Initial Moisture Content (%)	9.48	9.48	9.48
Dry Density (pcf)	115.2	115.1	115.1
Saturation (%)	55.3	55.2	55.2
Soil Height Before Shearing (in.)	0.9981	0.9922	0.9860
Final Moisture Content (%)	16.2	14.9	15.0

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DIRECT SHEAR TEST RESULTS

Consolidated Undrained

Project No.: 10274.006

BHUSD/El Rodeo School/Geo

07-14

Leighton

DIRECT SHEAR TEST

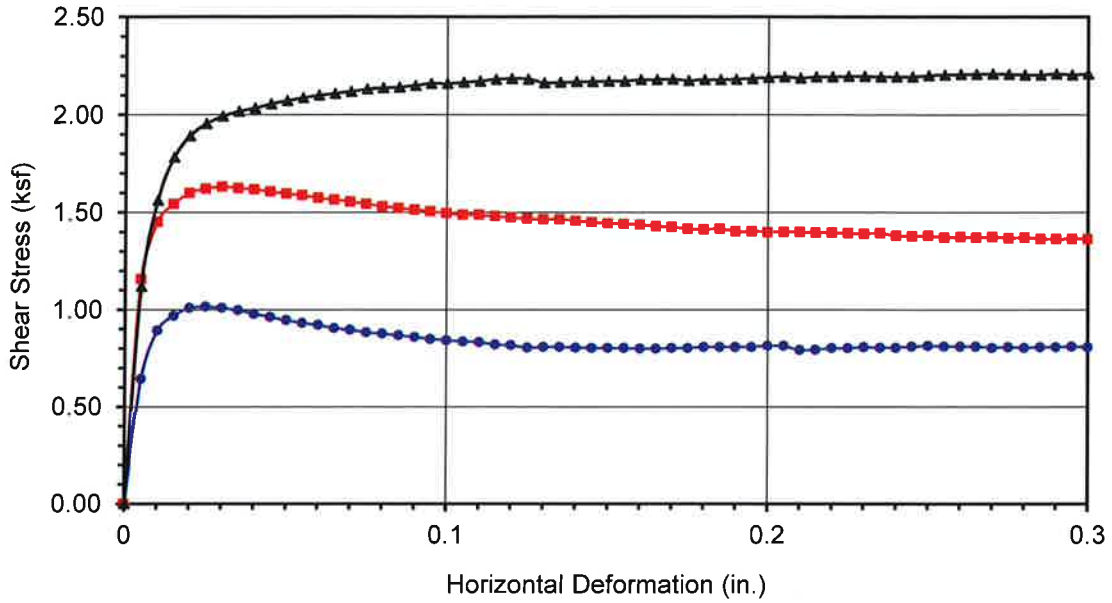
Consolidated Undrained

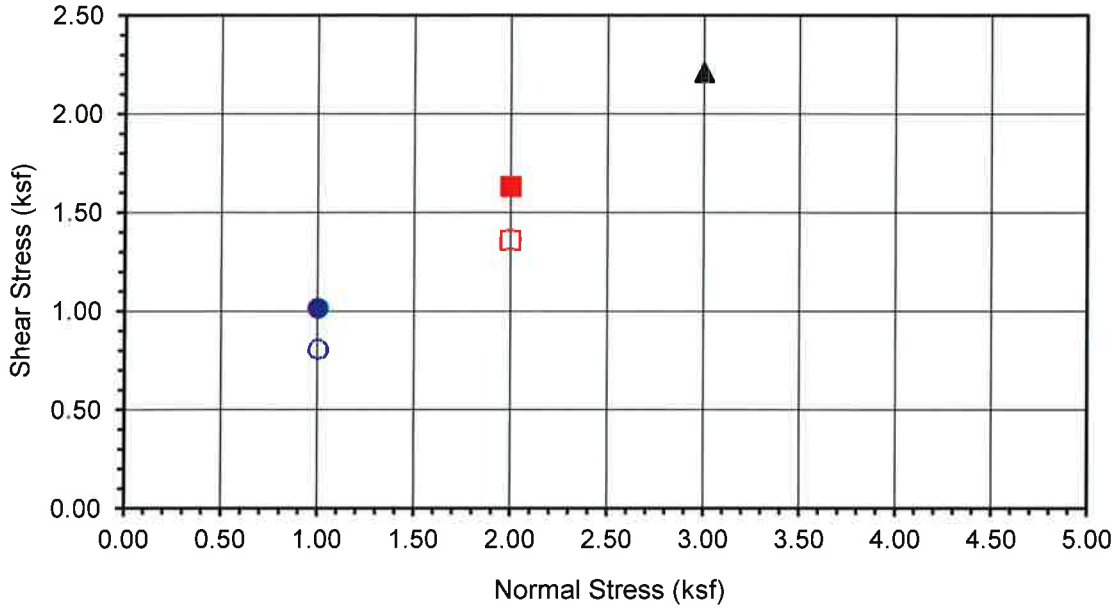
Project Name:	BHUSD/El Rodeo School/Geo	Tested By:	G. Bathala	Date:	07/24/14
Project No.:	10274.006	Checked By:	J. Ward		
Location:	Trench Backfill	Sample Type:	90% Remold		
Sample No.:	S-2	Depth (ft.):	N/A		

Soil Identification: Dark olive brown clayey sand with gravel (SC)g

Sample Diameter(in):	2.415	2.415	2.415
Sample Thickness(in.):	1.000	1.000	1.000
Weight of Sample + ring(gm):	192.03	193.90	194.96
Weight of Ring(gm):	42.68	42.48	42.81
Before Shearing			
Weight of Wet Sample+Cont.(gm):	272.42	272.42	272.42
Weight of Dry Sample+Cont.(gm):	254.49	254.49	254.49
Weight of Container(gm):	37.63	37.63	37.63
Vertical Rdg.(in): Initial	0.0000	0.2530	0.2642
Vertical Rdg.(in): Final	-0.0007	0.2587	0.2796
After Shearing			
Weight of Wet Sample+Cont.(gm):	195.21	198.37	196.40
Weight of Dry Sample+Cont.(gm):	174.17	177.87	176.67
Weight of Container(gm):	37.97	39.22	37.98
Specific Gravity (Assumed):	2.70	2.70	2.70
Water Density(pcf):	62.43	62.43	62.43

Note: Tests were performed on material passing sieve #4. Test samples were prepared to 90% relative compaction of the maximum dry density at optimum moisture content determined according to ASTM D1557 Procedure B, which includes material passing the 3/8-in sieve and retained on sieve #4.





Location	**Trench Backfill**
Sample No.	**S-2**
Sample Type: 90% Remold	
Soil Identification: Dark olive brown clayey sand with gravel (SC)g	

Normal Stress (kip/ft²)	1.000	2.000	3.000
Peak Shear Stress (kip/ft²)	● 1.015	■ 1.632	▲ 2.210
Shear Stress @ End of Test (ksf)	○ 0.808	□ 1.364	△ 2.210
Deformation Rate (in./min.)	0.0500	0.0500	0.0500
Initial Sample Height (in.)	1.000	1.000	1.000
Diameter (in.)	2.415	2.415	2.415
Initial Moisture Content (%)	8.27	8.27	8.27
Dry Density (pcf)	114.7	116.3	116.9
Saturation (%)	47.6	49.7	50.5
Soil Height Before Shearing (in.)	0.9993	0.9943	0.9846
Final Moisture Content (%)	15.4	14.8	14.2

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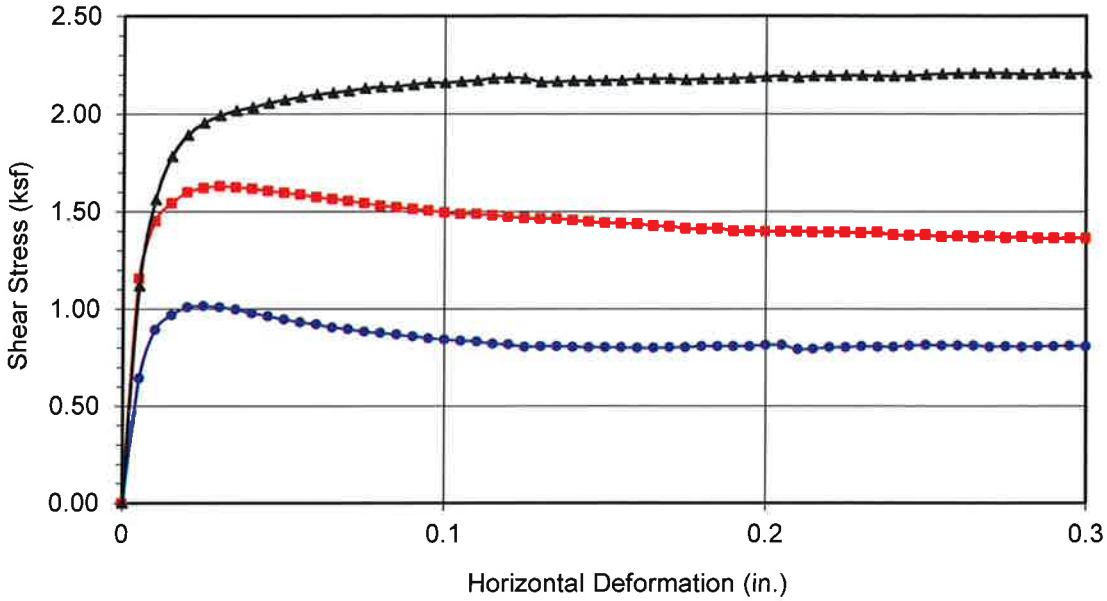
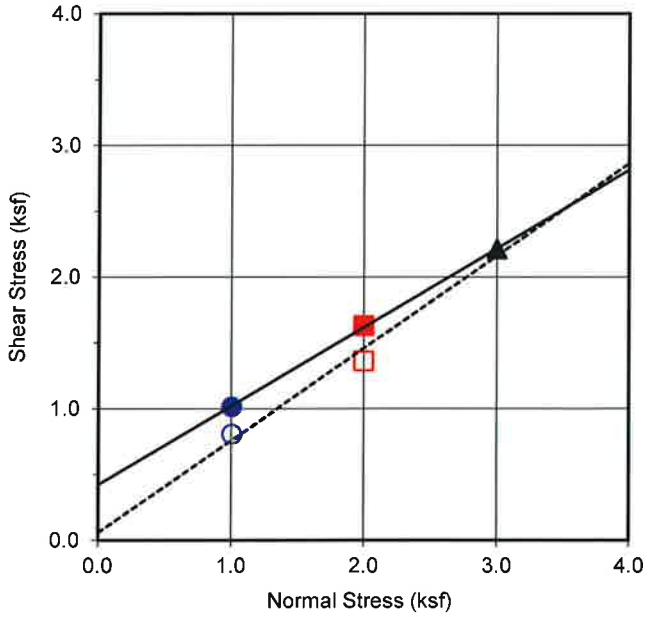
DIRECT SHEAR TEST RESULTS
Consolidated Undrained

Project No.: 10274.006

BHUSD/El Rodeo School/Geo

07-14





Location	Trench Backfill
Sample No.	**S-2**
Sample Type:	90% Remold
Soil Identification:	Dark olive brown clayey sand with gravel (SC)g

Strength Parameters

	C (psf)	ϕ (°)
Peak	424.0	30.9
Ultimate	58.7	35.0

Normal Stress (kip/ft²)	1.000	2.000	3.000
Peak Shear Stress (kip/ft²)	● 1.015	■ 1.632	▲ 2.210
Shear Stress @ End of Test (ksf)	○ 0.808	□ 1.364	△ 2.210
Deformation Rate (in./min.)	0.0500	0.0500	0.0500
Initial Sample Height (in.)	1.000	1.000	1.000
Diameter (in.)	2.415	2.415	2.415
Initial Moisture Content (%)	8.27	8.27	8.27
Dry Density (pcf)	114.7	116.3	116.9
Saturation (%)	47.6	49.7	50.5
Soil Height Before Shearing (in.)	0.9993	0.9943	0.9846
Final Moisture Content (%)	15.4	14.8	14.2

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DIRECT SHEAR TEST RESULTS

Consolidated Undrained

Project No.: 10274.006

BHUSD/El Rodeo School/Geo

07-14

APPENDIX C

ANALYTICAL LABORATORY TEST RESULTS

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SunStar Laboratories, Inc.
PROVIDING QUALITY ANALYTICAL SERVICES NATIONWIDE

25712 Commercentre Drive
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949.297.5027 Fax

28 July 2014

Cindy Johnson
Belshire Environmental
25971 Towne Centre Dr
Foothill Ranch, CA 92610

RE: BHUSD - El Rodeo Elementary

Enclosed are the results of analyses for samples received by the laboratory on 07/24/14 14:13. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Katherine RunningCrane

Katherine RunningCrane
Project Manager

SunStar Laboratories, Inc.
PROVIDING QUALITY ANALYTICAL SERVICES NATIONWIDE

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Lake Forest, California 92630
949.297.5020 Phone
949.297.5027 Fax

Belshire Environmental	Project: BHUSD - El Rodeo Elementary	
25971 Towne Centre Dr	Project Number: 242138	**Reported:**
Foothill Ranch CA, 92610	Project Manager: Cindy Johnson	07/28/14 17:20

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
COMP: DRUM 1,2,3	T141443-07	Soil	07/24/14 10:35	07/24/14 14:13
COMP: DRUM 4,5,6	T141443-08	Soil	07/24/14 10:35	07/24/14 14:13

DETECTIONS SUMMARY

Sample ID: COMP: DRUM 1,2,3 **Laboratory ID:** T141443-07

Analyte	Result	Reporting Limit	Units	Method	Notes
C29-C40 (MORO)	**42**	10	mg/kg	EPA 8015C	
Barium	**69**	1.0	mg/kg	EPA 6010B	
Chromium	**21**	2.0	mg/kg	EPA 6010B	
Cobalt	**7.4**	2.0	mg/kg	EPA 6010B	
Copper	**14**	1.0	mg/kg	EPA 6010B	
Lead	**4.6**	3.0	mg/kg	EPA 6010B	
Nickel	**16**	2.0	mg/kg	EPA 6010B	
Vanadium	**35**	5.0	mg/kg	EPA 6010B	
Zinc	**42**	1.0	mg/kg	EPA 6010B	

Sample ID: COMP: DRUM 4,5,6 **Laboratory ID:** T141443-08

Analyte	Result	Reporting Limit	Units	Method	Notes
C29-C40 (MORO)	**51**	10	mg/kg	EPA 8015C	
Barium	**83**	1.0	mg/kg	EPA 6010B	
Chromium	**23**	2.0	mg/kg	EPA 6010B	
Cobalt	**8.4**	2.0	mg/kg	EPA 6010B	
Copper	**16**	1.0	mg/kg	EPA 6010B	
Lead	**4.7**	3.0	mg/kg	EPA 6010B	
Nickel	**18**	2.0	mg/kg	EPA 6010B	
Vanadium	**41**	5.0	mg/kg	EPA 6010B	
Zinc	**45**	1.0	mg/kg	EPA 6010B	

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The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Katherine RunningCrane

Katherine RunningCrane, Project Manager

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Belshire Environmental	Project: BHUSD - El Rodeo Elementary	
25971 Towne Centre Dr	Project Number: 242138	**Reported:**
Foothill Ranch CA, 92610	Project Manager: Cindy Johnson	07/28/14 17:20

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Katherine RunningCrane, Project Manager

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Belshire Environmental	Project: BHUSD - El Rodeo Elementary	
25971 Towne Centre Dr	Project Number: 242138	**Reported:**
Foothill Ranch CA, 92610	Project Manager: Cindy Johnson	07/28/14 17:20

COMP: DRUM 1,2,3
T141443-07 (Soil)

SunStar Laboratories, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Extractable Petroleum Hydrocarbons by 8015C									
C6-C12 (GRO)	ND	10	mg/kg	1	4072410	07/24/14	07/28/14	EPA 8015C	
C13-C28 (DRO)	ND	10	"	"	"	"	"	"	
C29-C40 (MORO)	**42**	10	"	"	"	"	"	"	
Surrogate: p-Terphenyl		*96.1 %*	*65-135*		"	"	"	"	
Metals by EPA 6010B									
Antimony	ND	3.0	mg/kg	1	4072419	07/24/14	07/25/14	EPA 6010B	
Silver	ND	2.0	"	"	"	"	"	"	
Arsenic	ND	5.0	"	"	"	"	"	"	
Barium	**69**	1.0	"	"	"	"	"	"	
Beryllium	ND	1.0	"	"	"	"	"	"	
Cadmium	ND	2.0	"	"	"	"	"	"	
Chromium	**21**	2.0	"	"	"	"	"	"	
Cobalt	**7.4**	2.0	"	"	"	"	"	"	
Copper	**14**	1.0	"	"	"	"	"	"	
Lead	**4.6**	3.0	"	"	"	"	"	"	
Molybdenum	ND	5.0	"	"	"	"	"	"	
Nickel	**16**	2.0	"	"	"	"	"	"	
Selenium	ND	5.0	"	"	"	"	"	"	
Thallium	ND	2.0	"	"	"	"	"	"	
Vanadium	**35**	5.0	"	"	"	"	"	"	
Zinc	**42**	1.0	"	"	"	"	"	"	
Cold Vapor Extraction EPA 7470/7471									
Mercury	ND	0.10	mg/kg	1	4072420	07/24/14	07/25/14	EPA 7471A Soil	

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Katherine RunningCrane

Katherine RunningCrane, Project Manager

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949.297.5027 Fax

Belshire Environmental	Project: BHUSD - El Rodeo Elementary	
25971 Towne Centre Dr	Project Number: 242138	**Reported:**
Foothill Ranch CA, 92610	Project Manager: Cindy Johnson	07/28/14 17:20

COMP: DRUM 1,2,3

T141443-07 (Soil)

SunStar Laboratories, Inc.

Volatile Organic Compounds by EPA Method 8260B

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Bromobenzene	ND	5.0	ug/kg	1	4072414	07/24/14	07/25/14	EPA 8260B	
Bromochloromethane	ND	5.0	"	"	"	"	"	"	
Bromodichloromethane	ND	5.0	"	"	"	"	"	"	
Bromoform	ND	5.0	"	"	"	"	"	"	
Bromomethane	ND	5.0	"	"	"	"	"	"	
n-Butylbenzene	ND	5.0	"	"	"	"	"	"	
sec-Butylbenzene	ND	5.0	"	"	"	"	"	"	
tert-Butylbenzene	ND	5.0	"	"	"	"	"	"	
Carbon tetrachloride	ND	5.0	"	"	"	"	"	"	
Chlorobenzene	ND	5.0	"	"	"	"	"	"	
Chloroethane	ND	5.0	"	"	"	"	"	"	
Chloroform	ND	5.0	"	"	"	"	"	"	
Chloromethane	ND	5.0	"	"	"	"	"	"	
2-Chlorotoluene	ND	5.0	"	"	"	"	"	"	
4-Chlorotoluene	ND	5.0	"	"	"	"	"	"	
Dibromochloromethane	ND	5.0	"	"	"	"	"	"	
1,2-Dibromo-3-chloropropane	ND	10	"	"	"	"	"	"	
1,2-Dibromoethane (EDB)	ND	5.0	"	"	"	"	"	"	
Dibromomethane	ND	5.0	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	5.0	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	5.0	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	5.0	"	"	"	"	"	"	
Dichlorodifluoromethane	ND	5.0	"	"	"	"	"	"	
1,1-Dichloroethane	ND	5.0	"	"	"	"	"	"	
1,2-Dichloroethane	ND	5.0	"	"	"	"	"	"	
1,1-Dichloroethene	ND	5.0	"	"	"	"	"	"	
cis-1,2-Dichloroethene	ND	5.0	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	5.0	"	"	"	"	"	"	
1,2-Dichloropropane	ND	5.0	"	"	"	"	"	"	
1,3-Dichloropropane	ND	5.0	"	"	"	"	"	"	
2,2-Dichloropropane	ND	5.0	"	"	"	"	"	"	
1,1-Dichloropropene	ND	5.0	"	"	"	"	"	"	

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Katherine RunningCrane

Katherine RunningCrane, Project Manager

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Belshire Environmental	Project: BHUSD - El Rodeo Elementary	
25971 Towne Centre Dr	Project Number: 242138	**Reported:**
Foothill Ranch CA, 92610	Project Manager: Cindy Johnson	07/28/14 17:20

COMP: DRUM 1,2,3

T141443-07 (Soil)

SunStar Laboratories, Inc.

Volatile Organic Compounds by EPA Method 8260B

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
cis-1,3-Dichloropropene	ND	5.0	ug/kg	1	4072414	07/24/14	07/25/14	EPA 8260B	
trans-1,3-Dichloropropene	ND	5.0	"	"	"	"	"	"	
Hexachlorobutadiene	ND	5.0	"	"	"	"	"	"	
Isopropylbenzene	ND	5.0	"	"	"	"	"	"	
p-Isopropyltoluene	ND	5.0	"	"	"	"	"	"	
Methylene chloride	ND	5.0	"	"	"	"	"	"	
Naphthalene	ND	5.0	"	"	"	"	"	"	
n-Propylbenzene	ND	5.0	"	"	"	"	"	"	
Styrene	ND	5.0	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	5.0	"	"	"	"	"	"	
1,1,1,2-Tetrachloroethane	ND	5.0	"	"	"	"	"	"	
Tetrachloroethene	ND	5.0	"	"	"	"	"	"	
1,2,3-Trichlorobenzene	ND	5.0	"	"	"	"	"	"	
1,2,4-Trichlorobenzene	ND	5.0	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	5.0	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	5.0	"	"	"	"	"	"	
Trichloroethene	ND	5.0	"	"	"	"	"	"	
Trichlorofluoromethane	ND	5.0	"	"	"	"	"	"	
1,2,3-Trichloropropane	ND	5.0	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	5.0	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	5.0	"	"	"	"	"	"	
Vinyl chloride	ND	5.0	"	"	"	"	"	"	
Benzene	ND	5.0	"	"	"	"	"	"	
Toluene	ND	5.0	"	"	"	"	"	"	
Ethylbenzene	ND	5.0	"	"	"	"	"	"	
m,p-Xylene	ND	10	"	"	"	"	"	"	
o-Xylene	ND	5.0	"	"	"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*95.6 %*	*81.2-123*		"	"	"	"	
Surrogate: Dibromofluoromethane		*106 %*	*95.7-135*		"	"	"	"	
Surrogate: Toluene-d8		*90.6 %*	*85.5-116*		"	"	"	"	

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Katherine RunningCrane, Project Manager

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Belshire Environmental	Project: BHUSD - El Rodeo Elementary	
25971 Towne Centre Dr	Project Number: 242138	**Reported:**
Foothill Ranch CA, 92610	Project Manager: Cindy Johnson	07/28/14 17:20

COMP: DRUM 4,5,6

T141443-08 (Soil)

SunStar Laboratories, Inc.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Extractable Petroleum Hydrocarbons by 8015C									
C6-C12 (GRO)	ND	10	mg/kg	1	4072410	07/24/14	07/28/14	EPA 8015C	
C13-C28 (DRO)	ND	10	"	"	"	"	"	"	
C29-C40 (MORO)	**51**	10	"	"	"	"	"	"	
Surrogate: p-Terphenyl		*94.4 %*	*65-135*		"	"	"	"	
Metals by EPA 6010B									
Antimony	ND	3.0	mg/kg	1	4072419	07/24/14	07/25/14	EPA 6010B	
Silver	ND	2.0	"	"	"	"	"	"	
Arsenic	ND	5.0	"	"	"	"	"	"	
Barium	**83**	1.0	"	"	"	"	"	"	
Beryllium	ND	1.0	"	"	"	"	"	"	
Cadmium	ND	2.0	"	"	"	"	"	"	
Chromium	**23**	2.0	"	"	"	"	"	"	
Cobalt	**8.4**	2.0	"	"	"	"	"	"	
Copper	**16**	1.0	"	"	"	"	"	"	
Lead	**4.7**	3.0	"	"	"	"	"	"	
Molybdenum	ND	5.0	"	"	"	"	"	"	
Nickel	**18**	2.0	"	"	"	"	"	"	
Selenium	ND	5.0	"	"	"	"	"	"	
Thallium	ND	2.0	"	"	"	"	"	"	
Vanadium	**41**	5.0	"	"	"	"	"	"	
Zinc	**45**	1.0	"	"	"	"	"	"	
Cold Vapor Extraction EPA 7470/7471									
Mercury	ND	0.10	mg/kg	1	4072420	07/24/14	07/25/14	EPA 7471A Soil	

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Belshire Environmental	Project: BHUSD - El Rodeo Elementary	
25971 Towne Centre Dr	Project Number: 242138	**Reported:**
Foothill Ranch CA, 92610	Project Manager: Cindy Johnson	07/28/14 17:20

COMP: DRUM 4,5,6

T141443-08 (Soil)

SunStar Laboratories, Inc.

Volatile Organic Compounds by EPA Method 8260B

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Bromobenzene	ND	5.0	ug/kg	1	4072414	07/24/14	07/25/14	EPA 8260B	
Bromochloromethane	ND	5.0	"	"	"	"	"	"	
Bromodichloromethane	ND	5.0	"	"	"	"	"	"	
Bromoform	ND	5.0	"	"	"	"	"	"	
Bromomethane	ND	5.0	"	"	"	"	"	"	
n-Butylbenzene	ND	5.0	"	"	"	"	"	"	
sec-Butylbenzene	ND	5.0	"	"	"	"	"	"	
tert-Butylbenzene	ND	5.0	"	"	"	"	"	"	
Carbon tetrachloride	ND	5.0	"	"	"	"	"	"	
Chlorobenzene	ND	5.0	"	"	"	"	"	"	
Chloroethane	ND	5.0	"	"	"	"	"	"	
Chloroform	ND	5.0	"	"	"	"	"	"	
Chloromethane	ND	5.0	"	"	"	"	"	"	
2-Chlorotoluene	ND	5.0	"	"	"	"	"	"	
4-Chlorotoluene	ND	5.0	"	"	"	"	"	"	
Dibromochloromethane	ND	5.0	"	"	"	"	"	"	
1,2-Dibromo-3-chloropropane	ND	10	"	"	"	"	"	"	
1,2-Dibromoethane (EDB)	ND	5.0	"	"	"	"	"	"	
Dibromomethane	ND	5.0	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	5.0	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	5.0	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	5.0	"	"	"	"	"	"	
Dichlorodifluoromethane	ND	5.0	"	"	"	"	"	"	
1,1-Dichloroethane	ND	5.0	"	"	"	"	"	"	
1,2-Dichloroethane	ND	5.0	"	"	"	"	"	"	
1,1-Dichloroethene	ND	5.0	"	"	"	"	"	"	
cis-1,2-Dichloroethene	ND	5.0	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	5.0	"	"	"	"	"	"	
1,2-Dichloropropane	ND	5.0	"	"	"	"	"	"	
1,3-Dichloropropane	ND	5.0	"	"	"	"	"	"	
2,2-Dichloropropane	ND	5.0	"	"	"	"	"	"	
1,1-Dichloropropene	ND	5.0	"	"	"	"	"	"	

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Belshire Environmental	Project: BHUSD - El Rodeo Elementary	
25971 Towne Centre Dr	Project Number: 242138	**Reported:**
Foothill Ranch CA, 92610	Project Manager: Cindy Johnson	07/28/14 17:20

COMP: DRUM 4,5,6

T141443-08 (Soil)

SunStar Laboratories, Inc.

Volatile Organic Compounds by EPA Method 8260B

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
cis-1,3-Dichloropropene	ND	5.0	ug/kg	1	4072414	07/24/14	07/25/14	EPA 8260B	
trans-1,3-Dichloropropene	ND	5.0	"	"	"	"	"	"	
Hexachlorobutadiene	ND	5.0	"	"	"	"	"	"	
Isopropylbenzene	ND	5.0	"	"	"	"	"	"	
p-Isopropyltoluene	ND	5.0	"	"	"	"	"	"	
Methylene chloride	ND	5.0	"	"	"	"	"	"	
Naphthalene	ND	5.0	"	"	"	"	"	"	
n-Propylbenzene	ND	5.0	"	"	"	"	"	"	
Styrene	ND	5.0	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	5.0	"	"	"	"	"	"	
1,1,1,2-Tetrachloroethane	ND	5.0	"	"	"	"	"	"	
Tetrachloroethene	ND	5.0	"	"	"	"	"	"	
1,2,3-Trichlorobenzene	ND	5.0	"	"	"	"	"	"	
1,2,4-Trichlorobenzene	ND	5.0	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	5.0	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	5.0	"	"	"	"	"	"	
Trichloroethene	ND	5.0	"	"	"	"	"	"	
Trichlorofluoromethane	ND	5.0	"	"	"	"	"	"	
1,2,3-Trichloropropane	ND	5.0	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	5.0	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	5.0	"	"	"	"	"	"	
Vinyl chloride	ND	5.0	"	"	"	"	"	"	
Benzene	ND	5.0	"	"	"	"	"	"	
Toluene	ND	5.0	"	"	"	"	"	"	
Ethylbenzene	ND	5.0	"	"	"	"	"	"	
m,p-Xylene	ND	10	"	"	"	"	"	"	
o-Xylene	ND	5.0	"	"	"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*97.1 %*	*81.2-123*		"	"	"	"	
Surrogate: Dibromofluoromethane		*107 %*	*95.7-135*		"	"	"	"	
Surrogate: Toluene-d8		*92.4 %*	*85.5-116*		"	"	"	"	

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25971 Towne Centre Dr	Project Number: 242138	**Reported:**
Foothill Ranch CA, 92610	Project Manager: Cindy Johnson	07/28/14 17:20

Extractable Petroleum Hydrocarbons by 8015C - Quality Control

SunStar Laboratories, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 4072410 - EPA 3550B GC										
Blank (4072410-BLK1)				Prepared: 07/24/14 Analyzed: 07/28/14						
C6-C12 (GRO)	ND	10	mg/kg							
C13-C28 (DRO)	ND	10	"							
C29-C40 (MORO)	ND	10	"							
Surrogate: p-Terphenyl	*81.6*		*"*	*100*		*81.6*	*65-135*			
LCS (4072410-BS1)				Prepared: 07/24/14 Analyzed: 07/28/14						
C13-C28 (DRO)	430	10	mg/kg	500		86.5	75-125			
Surrogate: p-Terphenyl	*70.2*		*"*	*100*		*70.2*	*65-135*			
Matrix Spike (4072410-MS1)	**Source: T141437-01**			Prepared: 07/24/14 Analyzed: 07/28/14						
C13-C28 (DRO)	440	10	mg/kg	500	ND	87.1	75-125			
Surrogate: p-Terphenyl	*103*		*"*	*100*		*103*	*65-135*			
Matrix Spike Dup (4072410-MSD1)	**Source: T141437-01**			Prepared: 07/24/14 Analyzed: 07/28/14						
C13-C28 (DRO)	460	10	mg/kg	500	ND	91.6	75-125	4.98	20	
Surrogate: p-Terphenyl	*98.1*		*"*	*100*		*98.1*	*65-135*			

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25971 Towne Centre Dr	Project Number: 242138	**Reported:**
Foothill Ranch CA, 92610	Project Manager: Cindy Johnson	07/28/14 17:20

Metals by EPA 6010B - Quality Control

SunStar Laboratories, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 4072419 - EPA 3050B										
Blank (4072419-BLK1)				Prepared: 07/24/14 Analyzed: 07/25/14						
Antimony	ND	3.0	mg/kg							
Silver	ND	2.0	"							
Arsenic	ND	5.0	"							
Barium	ND	1.0	"							
Beryllium	ND	1.0	"							
Cadmium	ND	2.0	"							
Chromium	ND	2.0	"							
Cobalt	ND	2.0	"							
Copper	ND	1.0	"							
Lead	ND	3.0	"							
Molybdenum	ND	5.0	"							
Nickel	ND	2.0	"							
Selenium	ND	5.0	"							
Thallium	ND	2.0	"							
Vanadium	ND	5.0	"							
Zinc	ND	1.0	"							
LCS (4072419-BS1)				Prepared: 07/24/14 Analyzed: 07/25/14						
Arsenic	106	5.0	mg/kg	100		106	75-125			
Barium	108	1.0	"	100		108	75-125			
Cadmium	106	2.0	"	100		106	75-125			
Chromium	113	2.0	"	100		113	75-125			
Lead	109	3.0	"	100		109	75-125			
Matrix Spike (4072419-MS1)	**Source: T141443-07**			Prepared: 07/24/14 Analyzed: 07/25/14						
Arsenic	102	5.0	mg/kg	100	2.99	98.6	75-125			
Barium	196	1.0	"	100	68.9	127	75-125			QM-05
Cadmium	102	2.0	"	100	0.764	101	75-125			
Chromium	133	2.0	"	100	20.5	112	75-125			
Lead	105	3.0	"	100	4.61	100	75-125			

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Belshire Environmental	Project: BHUSD - El Rodeo Elementary	
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Foothill Ranch CA, 92610	Project Manager: Cindy Johnson	07/28/14 17:20

Metals by EPA 6010B - Quality Control

SunStar Laboratories, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 4072419 - EPA 3050B										
Matrix Spike Dup (4072419-MSD1)	**Source: T141443-07**			Prepared: 07/24/14		Analyzed: 07/25/14				
Arsenic	106	5.0	mg/kg	100	2.99	103	75-125	4.36	20	
Barium	196	1.0	"	100	68.9	127	75-125	0.257	20	QM-05
Cadmium	102	2.0	"	100	0.764	101	75-125	0.654	20	
Chromium	134	2.0	"	100	20.5	113	75-125	0.892	20	
Lead	109	3.0	"	100	4.61	104	75-125	3.99	20	

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25971 Towne Centre Dr	Project Number: 242138	**Reported:**
Foothill Ranch CA, 92610	Project Manager: Cindy Johnson	07/28/14 17:20

Cold Vapor Extraction EPA 7470/7471 - Quality Control

SunStar Laboratories, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 4072420 - EPA 7471A Soil										
Blank (4072420-BLK1)				Prepared: 07/24/14 Analyzed: 07/25/14						
Mercury	ND	0.10	mg/kg							
LCS (4072420-BS1)				Prepared: 07/24/14 Analyzed: 07/25/14						
Mercury	0.395	0.10	mg/kg	0.417		94.8	80-120			
Matrix Spike (4072420-MS1)	**Source: T141443-07**			Prepared: 07/24/14 Analyzed: 07/25/14						
Mercury	0.387	0.10	mg/kg	0.417	ND	92.8	75-125			
Matrix Spike Dup (4072420-MSD1)	**Source: T141443-07**			Prepared: 07/24/14 Analyzed: 07/25/14						
Mercury	0.382	0.10	mg/kg	0.417	ND	91.6	75-125	1.26	20	

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25971 Towne Centre Dr	Project Number: 242138	**Reported:**
Foothill Ranch CA, 92610	Project Manager: Cindy Johnson	07/28/14 17:20

Volatile Organic Compounds by EPA Method 8260B - Quality Control

SunStar Laboratories, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 4072414 - EPA 5030 GCMS										
Blank (4072414-BLK1)				Prepared & Analyzed: 07/24/14						
Bromobenzene	ND	5.0	ug/kg							
Bromochloromethane	ND	5.0	"							
Bromodichloromethane	ND	5.0	"							
Bromoform	ND	5.0	"							
Bromomethane	ND	5.0	"							
n-Butylbenzene	ND	5.0	"							
sec-Butylbenzene	ND	5.0	"							
tert-Butylbenzene	ND	5.0	"							
Carbon tetrachloride	ND	5.0	"							
Chlorobenzene	ND	5.0	"							
Chloroethane	ND	5.0	"							
Chloroform	ND	5.0	"							
Chloromethane	ND	5.0	"							
2-Chlorotoluene	ND	5.0	"							
4-Chlorotoluene	ND	5.0	"							
Dibromochloromethane	ND	5.0	"							
1,2-Dibromo-3-chloropropane	ND	10	"							
1,2-Dibromoethane (EDB)	ND	5.0	"							
Dibromomethane	ND	5.0	"							
1,2-Dichlorobenzene	ND	5.0	"							
1,3-Dichlorobenzene	ND	5.0	"							
1,4-Dichlorobenzene	ND	5.0	"							
Dichlorodifluoromethane	ND	5.0	"							
1,1-Dichloroethane	ND	5.0	"							
1,2-Dichloroethane	ND	5.0	"							
1,1-Dichloroethene	ND	5.0	"							
cis-1,2-Dichloroethene	ND	5.0	"							
trans-1,2-Dichloroethene	ND	5.0	"							
1,2-Dichloropropane	ND	5.0	"							
1,3-Dichloropropane	ND	5.0	"							
2,2-Dichloropropane	ND	5.0	"							
1,1-Dichloropropene	ND	5.0	"							
cis-1,3-Dichloropropene	ND	5.0	"							
trans-1,3-Dichloropropene	ND	5.0	"							
Hexachlorobutadiene	ND	5.0	"							
Isopropylbenzene	ND	5.0	"							

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Belshire Environmental	Project: BHUSD - El Rodeo Elementary	
25971 Towne Centre Dr	Project Number: 242138	**Reported:**
Foothill Ranch CA, 92610	Project Manager: Cindy Johnson	07/28/14 17:20

Volatile Organic Compounds by EPA Method 8260B - Quality Control

SunStar Laboratories, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 4072414 - EPA 5030 GCMS										
Blank (4072414-BLK1)				Prepared & Analyzed: 07/24/14						
p-Isopropyltoluene	ND	5.0	ug/kg							
Methylene chloride	ND	5.0	"							
Naphthalene	ND	5.0	"							
n-Propylbenzene	ND	5.0	"							
Styrene	ND	5.0	"							
1,1,2,2-Tetrachloroethane	ND	5.0	"							
1,1,1,2-Tetrachloroethane	ND	5.0	"							
Tetrachloroethene	ND	5.0	"							
1,2,3-Trichlorobenzene	ND	5.0	"							
1,2,4-Trichlorobenzene	ND	5.0	"							
1,1,2-Trichloroethane	ND	5.0	"							
1,1,1-Trichloroethane	ND	5.0	"							
Trichloroethene	ND	5.0	"							
Trichlorofluoromethane	ND	5.0	"							
1,2,3-Trichloropropane	ND	5.0	"							
1,3,5-Trimethylbenzene	ND	5.0	"							
1,2,4-Trimethylbenzene	ND	5.0	"							
Vinyl chloride	ND	5.0	"							
Benzene	ND	5.0	"							
Toluene	ND	5.0	"							
Ethylbenzene	ND	5.0	"							
m,p-Xylene	ND	10	"							
o-Xylene	ND	5.0	"							
Surrogate: 4-Bromofluorobenzene	*38.2*		"	*40.0*		*95.4*	*81.2-123*			
Surrogate: Dibromofluoromethane	*41.4*		"	*40.0*		*104*	*95.7-135*			
Surrogate: Toluene-d8	*39.0*		"	*40.0*		*97.5*	*85.5-116*			
LCS (4072414-BS1)				Prepared: 07/24/14 Analyzed: 07/25/14						
Chlorobenzene	88.6	5.0	ug/kg	100		88.6	75-125			
1,1-Dichloroethene	92.5	5.0	"	100		92.5	75-125			
Trichloroethene	92.0	5.0	"	100		92.0	75-125			
Benzene	81.3	5.0	"	100		81.3	75-125			
Toluene	90.1	5.0	"	100		90.1	75-125			
Surrogate: 4-Bromofluorobenzene	*37.4*		"	*40.0*		*93.5*	*81.2-123*			
Surrogate: Dibromofluoromethane	*46.6*		"	*40.0*		*116*	*95.7-135*			
Surrogate: Toluene-d8	*36.4*		"	*40.0*		*90.9*	*85.5-116*			

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Belshire Environmental	Project: BHUSD - El Rodeo Elementary	
25971 Towne Centre Dr	Project Number: 242138	**Reported:**
Foothill Ranch CA, 92610	Project Manager: Cindy Johnson	07/28/14 17:20

Volatile Organic Compounds by EPA Method 8260B - Quality Control

SunStar Laboratories, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 4072414 - EPA 5030 GCMS										
Matrix Spike (4072414-MS1)	**Source: T141437-01**			Prepared: 07/24/14		Analyzed: 07/25/14				
Chlorobenzene	87.2	5.0	ug/kg	100	ND	87.2	75-125			
1,1-Dichloroethene	90.8	5.0	"	100	ND	90.8	75-125			
Trichloroethene	89.5	5.0	"	100	ND	89.5	75-125			
Benzene	86.4	5.0	"	100	ND	86.4	75-125			
Toluene	83.5	5.0	"	100	ND	83.5	75-125			
Surrogate: 4-Bromofluorobenzene	*39.0*		"	*40.0*		*97.5*	*81.2-123*			
Surrogate: Dibromofluoromethane	*47.4*		"	*40.0*		*119*	*95.7-135*			
Surrogate: Toluene-d8	*36.0*		"	*40.0*		*89.9*	*85.5-116*			
Matrix Spike Dup (4072414-MSD1)	**Source: T141437-01**			Prepared: 07/24/14		Analyzed: 07/25/14				
Chlorobenzene	97.2	5.0	ug/kg	100	ND	97.2	75-125	10.7	20	
1,1-Dichloroethene	107	5.0	"	100	ND	107	75-125	16.4	20	
Trichloroethene	101	5.0	"	100	ND	101	75-125	11.7	20	
Benzene	82.6	5.0	"	100	ND	82.6	75-125	4.56	20	
Toluene	94.7	5.0	"	100	ND	94.7	75-125	12.6	20	
Surrogate: 4-Bromofluorobenzene	*37.6*		"	*40.0*		*94.0*	*81.2-123*			
Surrogate: Dibromofluoromethane	*50.6*		"	*40.0*		*126*	*95.7-135*			
Surrogate: Toluene-d8	*35.9*		"	*40.0*		*89.8*	*85.5-116*			

SunStar Laboratories, Inc.

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Katherine RunningCrane

Katherine RunningCrane, Project Manager

SunStar Laboratories, Inc.
PROVIDING QUALITY ANALYTICAL SERVICES NATIONWIDE

25712 Commercentre Drive
Lake Forest, California 92630
949.297.5020 Phone
949.297.5027 Fax

Belshire Environmental	Project: BHUSD - El Rodeo Elementary	
25971 Towne Centre Dr	Project Number: 242138	**Reported:**
Foothill Ranch CA, 92610	Project Manager: Cindy Johnson	07/28/14 17:20

Notes and Definitions

QM-05	The spike recovery was outside acceptance limits for the MS and/or MSD due to possible matrix interference. The LCS was within acceptance criteria. The data is acceptable as no negative impact on data is expected.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

SunStar Laboratories, Inc.
25712 Commercentre Dr
Lake Forest, CA 92630
949-297-5020

Chain of Custody Record

Client: BELSHIRE ENVIRONMENTAL SERVICES, INC
Address: 25971 TOWNE CENTER DRIVE, FOOTHILL RANCH
Phone: 949-460-5200 Fax: 949-460-5210
Project Manager:

Date: Page: 1 Of 1
Project Name: BUSD - El Rodeo Elementary
Collector: Thomas Buck Client Project #: 242138
Batch #: 774143 EDF #:

Sample ID	Date Sampled	Time	Sample Type	Container Type	8260	8260 + OXY	8260 BTEX, OXY only	8270	8021 BTEX	8015M (gasoline)	8015M (diesel)	8015M Ext./Carbon Chain	6010/7000 Title 22 Metals					Laboratory ID #	Comments/Preservative	Total # of containers
~~SAMPLE~~ DRUM 1	7-24-14	1035	SOIL	JAR	X							X	X					01		1
DRUM 2	7-24-14	1036	SOIL	JAR	X							X	X					02	COMPOSITE 1	1
DRUM 3	7-24-14	1035	SOIL	JAR	X							X	X					03		1
DRUM 4	7-24-14	1035	SOIL	JAR	X							X	X					04		1
DRUM 5	7-24-14	1035	SOIL	JAR	X							X	X					05	COMPOSITE 2	1
DRUM 6	7-24-14	1035	SOIL	JAR	X							X	X					06		1

Relinquished by: (signature)	Date / Time	Received by: (signature)	Date / Time 7/24/14 1463
Relinquished by: (signature)	Date / Time	Received by: (signature)	Date / Time
Relinquished by: (signature)	Date / Time	Received by: (signature)	Date / Time

Total # of containers	6
Chain of Custody seals Y/N/NA	N
Seals intact? Y/N/NA	NA
Received good condition/cold	Y
5.2°	

Turn around time:

Notes
2 DAY TAT

Sample disposal Instructions: Disposal @ $2.00 each ___ Return to client ___ Pickup ___

SunStar Laboratories, Inc.
PROVIDING QUALITY ANALYTICAL SERVICES NATIONWIDE

SAMPLE RECEIVING REVIEW SHEET

BATCH # T141443

Client Name: BELSHIRE Project: BHUSD - EL RODEO ELEMENTARY

Received by: DAN Date/Time Received: 7.24.14 / 14:13

Delivered by : ☐ Client ☒ SunStar Courier ☐ GSO ☐ FedEx ☐ Other _____

Total number of coolers received 0 **Temp criteria = 6°C > 0°C (no frozen containers)**

Temperature: cooler #1 5.4 °C +/- the CF (- 0.2°C) = 5.2 °C corrected temperature

cooler #2 _____ °C +/- the CF (- 0.2°C) = _____ °C corrected temperature

cooler #3 _____ °C +/- the CF (- 0.2°C) = _____ °C corrected temperature

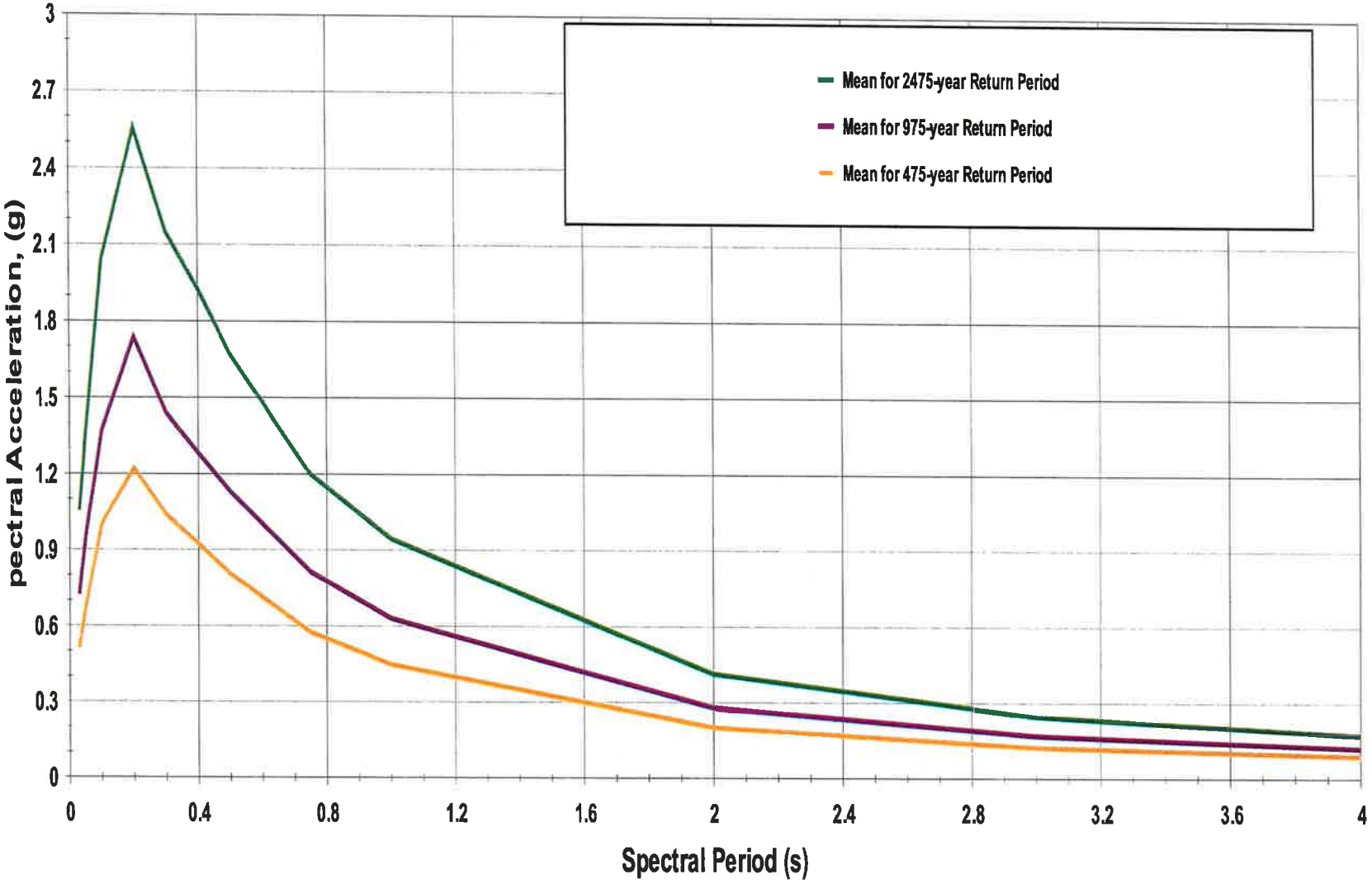
Samples outside temp. but received on ice, w/in 6 hours of final sampling.	☒Yes	☐No*	☐N/A
Custody Seals Intact on Cooler/Sample	☐Yes	☐No*	☒N/A
Sample Containers Intact	☒Yes	☐No*	
Sample labels match COC ID's	☒Yes	☐No*	
Total number of containers received match COC	☒Yes	☐No*	
Proper containers received for analyses requested on COC	☒Yes	☐No*	
Proper preservative indicated on COC/containers for analyses requested	☐Yes	☐No*	☒N/A

Complete shipment received in good condition with correct temperatures, containers, labels, volumes preservatives and within method specified holding times. ☒ **Yes** ☐**No***

* Complete Non-Conformance Receiving Sheet if checked Cooler/Sample Review - Initials and date SL 7.24.14

Comments:

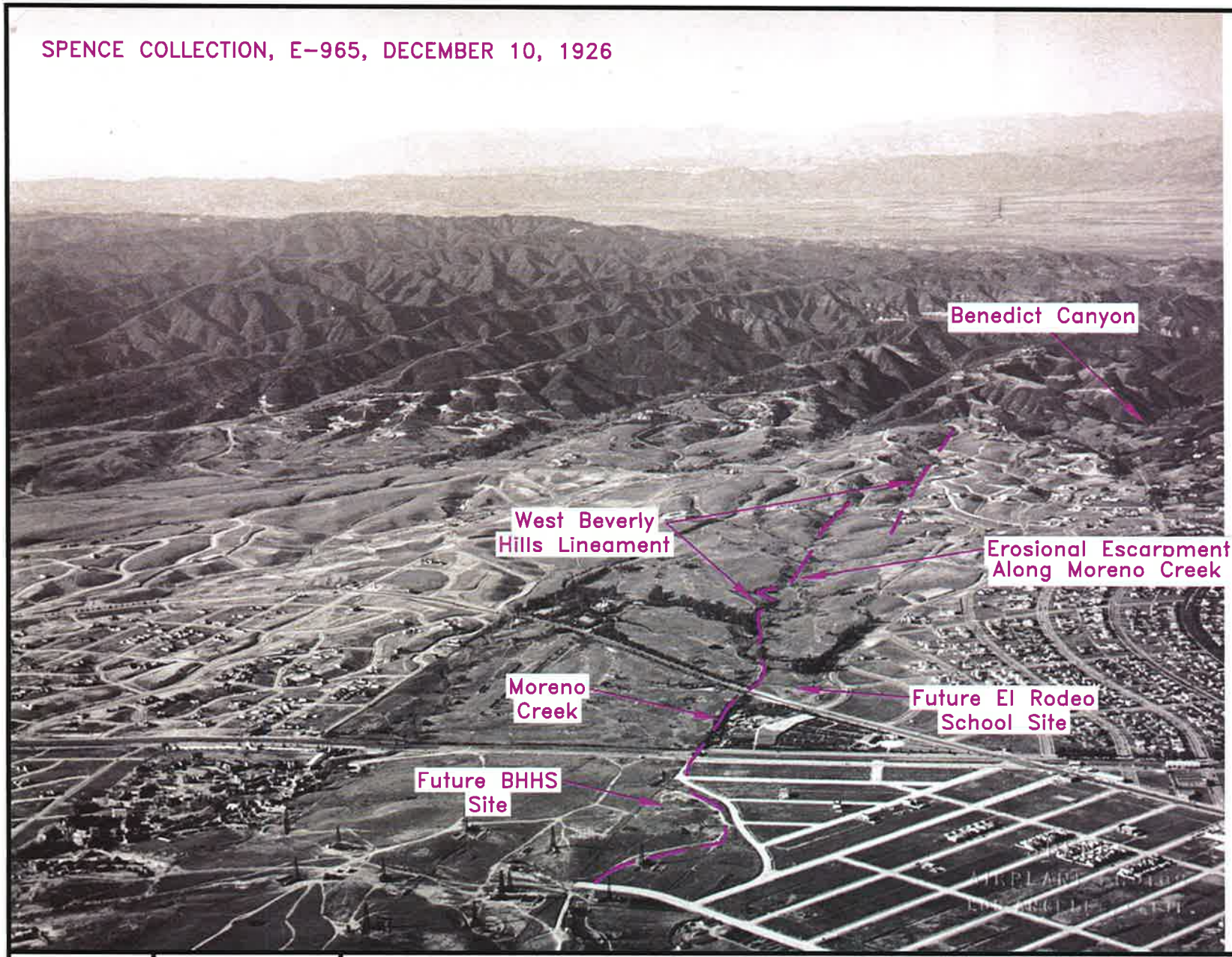
Uniform Hazard Spectra
Spectral Response @ 5% Damping - Maximum Rotated Horizontal Component



APPENDIX E

HISTORICAL AERIAL PHOTOGRAPHS

Leighton



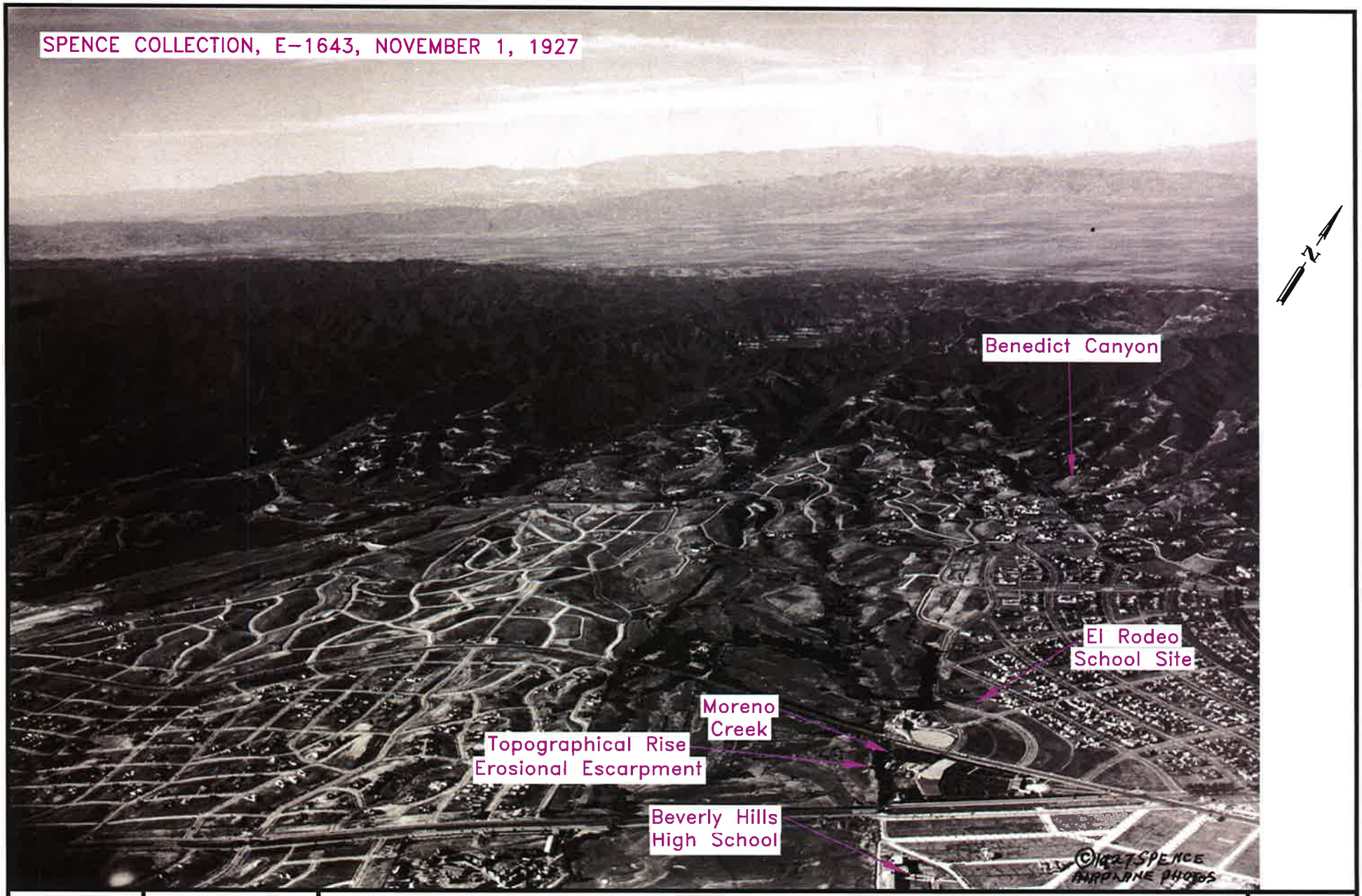
Proj: 10274.006	Eng/Geol: TCB/JAR
Scale: NTS	Date: February 2015
Reference:	

AERIAL PHOTO

El Rodeo K8
605 Whittier Drive
Beverly Hills, California

Figure E-1

Leighton



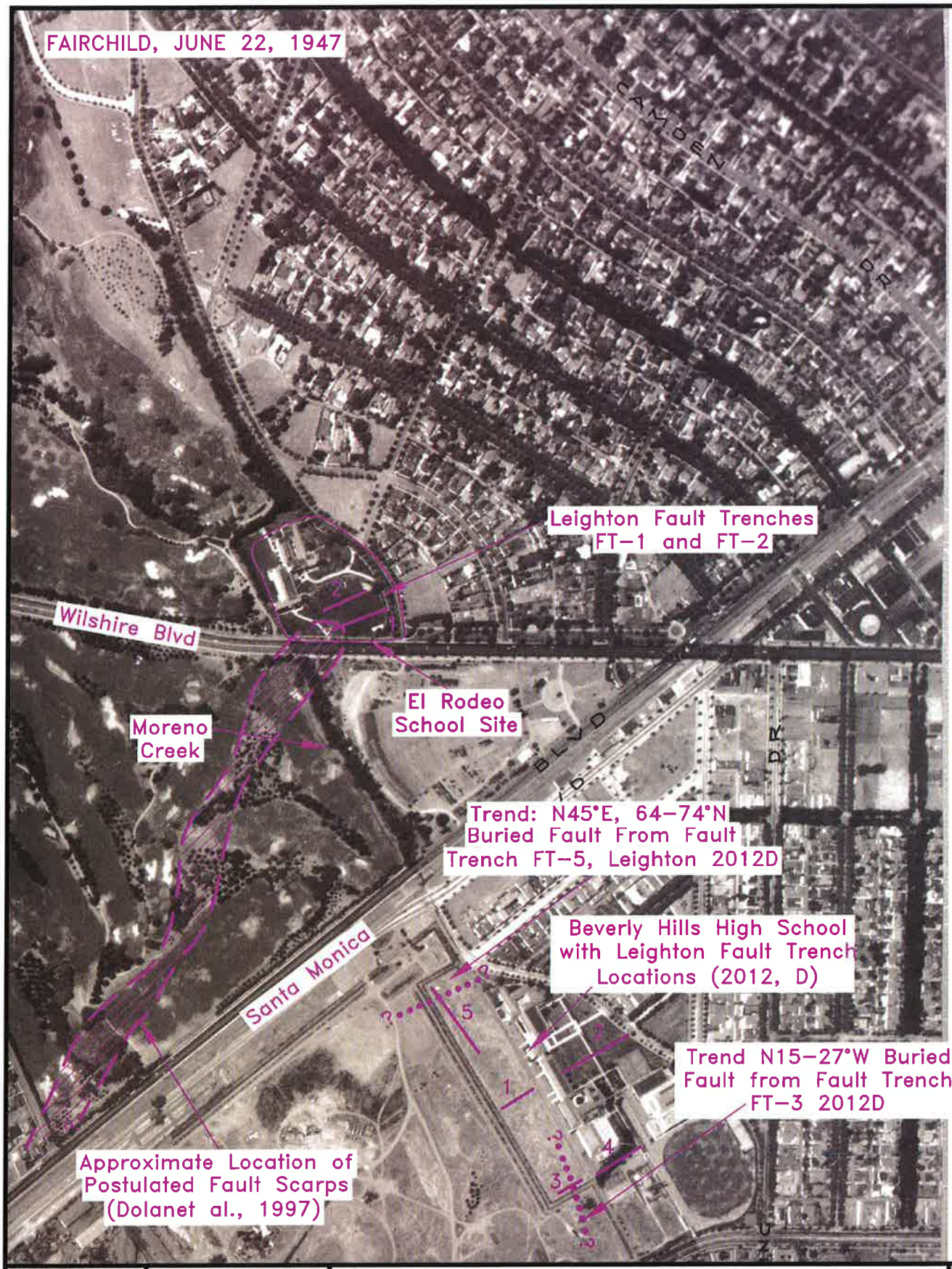
Proj: 10274.006	Eng/Geol: TCB/JAR
Scale: NTS	Date: February 2015
Reference:	

AERIAL PHOTO

El Rodeo K8
605 Whittier Drive
Beverly Hills, California

Figure E-2

Leighton



Proj: 10274.006	Eng/Geol: TCB/JAR
Scale: NTS	Date: February 2015
Reference:	

AERIAL PHOTO

El Rodeo K8
605 Whittier Drive
Beverly Hills, California

Figure E-3

Leighton

Important Information about Your

Geotechnical Engineering Report

Subsurface problems are a principal cause of construction delays, cost overruns, claims, and disputes.

While you cannot eliminate all such risks, you can manage them. The following information is provided to help.

Geotechnical Services Are Performed for Specific Purposes, Persons, and Projects

Geotechnical engineers structure their services to meet the specific needs of their clients. A geotechnical engineering study conducted for a civil engineer may not fulfill the needs of a construction contractor or even another civil engineer. Because each geotechnical engineering study is unique, each geotechnical engineering report is unique, prepared *solely* for the client. No one except you should rely on your geotechnical engineering report without first conferring with the geotechnical engineer who prepared it. *And no one — not even you* — should apply the report for any purpose or project except the one originally contemplated.

Read the Full Report

Serious problems have occurred because those relying on a geotechnical engineering report did not read it all. Do not rely on an executive summary. Do not read selected elements only.

A Geotechnical Engineering Report Is Based on A Unique Set of Project-Specific Factors

Geotechnical engineers consider a number of unique, project-specific factors when establishing the scope of a study. Typical factors include: the client's goals, objectives, and risk management preferences; the general nature of the structure involved, its size, and configuration; the location of the structure on the site; and other planned or existing site improvements, such as access roads, parking lots, and underground utilities. Unless the geotechnical engineer who conducted the study specifically indicates otherwise, do not rely on a geotechnical engineering report that was:

- not prepared for you,
- not prepared for your project,
- not prepared for the specific site explored, or
- completed before important project changes were made.

Typical changes that can erode the reliability of an existing geotechnical engineering report include those that affect:

- the function of the proposed structure, as when it's changed from a parking garage to an office building, or from a light industrial plant to a refrigerated warehouse,
- elevation, configuration, location, orientation, or weight of the proposed structure,
- composition of the design team, or
- project ownership.

As a general rule, *always* inform your geotechnical engineer of project changes—even minor ones—and request an assessment of their impact. *Geotechnical engineers cannot accept responsibility or liability for problems that occur because their reports do not consider developments of which they were not informed.*

Subsurface Conditions Can Change

A geotechnical engineering report is based on conditions that existed at the time the study was performed. *Do not rely on a geotechnical engineering report* whose adequacy may have been affected by: the passage of time; by man-made events, such as construction on or adjacent to the site; or by natural events, such as floods, earthquakes, or groundwater fluctuations. *Always* contact the geotechnical engineer before applying the report to determine if it is still reliable. A minor amount of additional testing or analysis could prevent major problems.

Most Geotechnical Findings Are Professional Opinions

Site exploration identifies subsurface conditions only at those points where subsurface tests are conducted or samples are taken. Geotechnical engineers review field and laboratory data and then apply their professional judgment to render an opinion about subsurface conditions throughout the site. Actual subsurface conditions may differ—sometimes significantly—from those indicated in your report. Retaining the geotechnical engineer who developed your report to provide construction observation is the most effective method of managing the risks associated with unanticipated conditions.

A Report's Recommendations Are *Not* Final

Do not overrely on the construction recommendations included in your report. *Those recommendations are not final,* because geotechnical engineers develop them principally from judgment and opinion. Geotechnical engineers can finalize their recommendations only by observing actual

subsurface conditions revealed during construction. *The geotechnical engineer who developed your report cannot assume responsibility or liability for the report's recommendations if that engineer does not perform construction observation.*

A Geotechnical Engineering Report Is Subject to Misinterpretation

Other design team members' misinterpretation of geotechnical engineering reports has resulted in costly problems. Lower that risk by having your geotechnical engineer confer with appropriate members of the design team after submitting the report. Also retain your geotechnical engineer to review pertinent elements of the design team's plans and specifications. Contractors can also misinterpret a geotechnical engineering report. Reduce that risk by having your geotechnical engineer participate in prebid and preconstruction conferences, and by providing construction observation.

Do Not Redraw the Engineer's Logs

Geotechnical engineers prepare final boring and testing logs based upon their interpretation of field logs and laboratory data. To prevent errors or omissions, the logs included in a geotechnical engineering report should *never* be redrawn for inclusion in architectural or other design drawings. Only photographic or electronic reproduction is acceptable, *but recognize that separating logs from the report can elevate risk.*

Give Contractors a Complete Report and Guidance

Some owners and design professionals mistakenly believe they can make contractors liable for unanticipated subsurface conditions by limiting what they provide for bid preparation. To help prevent costly problems, give contractors the complete geotechnical engineering report, *but* preface it with a clearly written letter of transmittal. In that letter, advise contractors that the report was not prepared for purposes of bid development and that the report's accuracy is limited; encourage them to confer with the geotechnical engineer who prepared the report (a modest fee may be required) and/or to conduct additional study to obtain the specific types of information they need or prefer. A prebid conference can also be valuable. *Be sure contractors have sufficient time* to perform additional study. Only then might you be in a position to give contractors the best information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions.

Read Responsibility Provisions Closely

Some clients, design professionals, and contractors do not recognize that geotechnical engineering is far less exact than other engineering disciplines. This lack of understanding has created unrealistic expectations that have led to disappointments, claims, and disputes. To help reduce the risk of such outcomes, geotechnical engineers commonly include a variety of explanatory provisions in their reports. Sometimes labeled "limitations" many of these provisions indicate where geotechnical engineers' responsibilities begin and end, to help others recognize their own responsibilities and risks. *Read these provisions closely.* Ask questions. Your geotechnical engineer should respond fully and frankly.

Geoenvironmental Concerns Are Not Covered

The equipment, techniques, and personnel used to perform a *geoenvironmental* study differ significantly from those used to perform a *geotechnical* study. For that reason, a geotechnical engineering report does not usually relate any geoenvironmental findings, conclusions, or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. *Unanticipated environmental problems have led to numerous project failures.* If you have not yet obtained your own geoenvironmental information, ask your geotechnical consultant for risk management guidance. *Do not rely on an environmental report prepared for someone else.*

Obtain Professional Assistance To Deal with Mold

Diverse strategies can be applied during building design, construction, operation, and maintenance to prevent significant amounts of mold from growing on indoor surfaces. To be effective, all such strategies should be devised for the *express purpose* of mold prevention, integrated into a comprehensive plan, and executed with diligent oversight by a professional mold prevention consultant. Because just a small amount of water or moisture can lead to the development of severe mold infestations, a number of mold prevention strategies focus on keeping building surfaces dry. While groundwater, water infiltration, and similar issues may have been addressed as part of the geotechnical engineering study whose findings are conveyed in this report, the geotechnical engineer in charge of this project is not a mold prevention consultant; ***none of the services performed in connection with the geotechnical engineer's study were designed or conducted for the purpose of mold prevention. Proper implementation of the recommendations conveyed in this report will not of itself be sufficient to prevent mold from growing in or on the structure involved.***

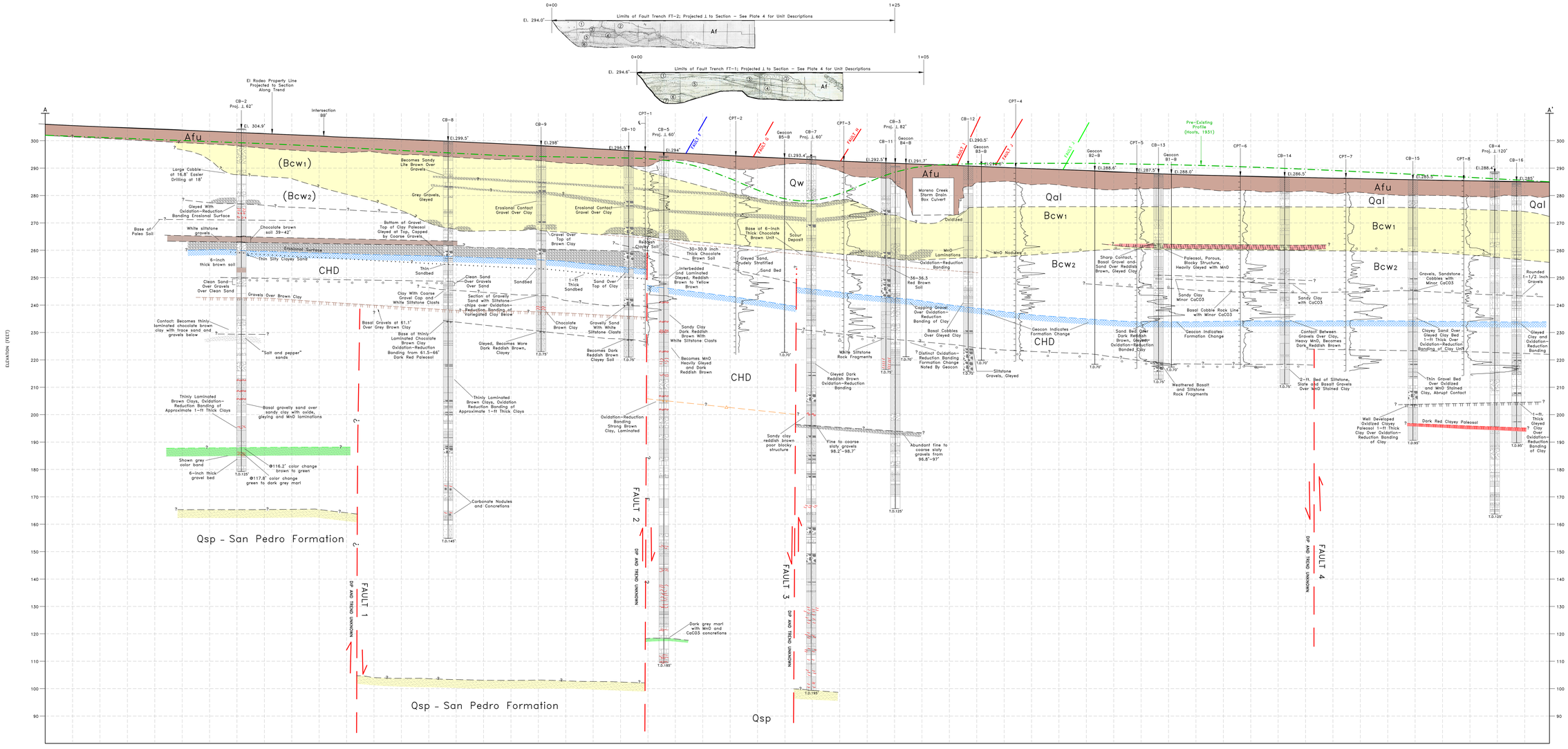
Rely, on Your ASFE-Member Geotechncial Engineer for Additional Assistance

Membership in ASFE/The Best People on Earth exposes geotechnical engineers to a wide array of risk management techniques that can be of genuine benefit for everyone involved with a construction project. Confer with you ASFE-member geotechnical engineer for more information.

ASFE
THE BEST PEOPLE ON EARTH

8811 Colesville Road/Suite G106, Silver Spring, MD 20910
Telephone: 301/565-2733 Facsimile: 301/589-2017
e-mail: info@asfe.org www.asfe.org

IIGER06075.0MRP



UNIT DESCRIPTIONS:

Artificial Fill, Undocumented (Afu): Locally derived sandy silt and silty sand, locally with clay and varying amounts of gravel and man-made debris. Abundant concrete rubble, in places exceeding 24-inches in diameter, observed in the backfill of Moreno Creek drainage in trenches FT-1 and FT-2. Localized seepage along root traces observed in backfill along southern sidewall of trench FT-1 and near storm drain inlet of trench FT-2. In Cross-Sections A-A' and B-B', this unit includes the section not logged from the auger spoils and the hand-augered section at the top of the CPTs.

Modern and Holocene Alluvium in Historical Channel of Moreno Creek (Qw): Silty sand to clayey sand grading to sand at depth, with minor gravel and thin gravel beds; light yellowish brown, brown to dark reddish brown; massive to crudely stratified; small fragments of asphalt observed locally in CB-3.

Holocene Alluvium of Benedict Canyon Wash (Qal): Sandy clay to clayey sand grading laterally to silty sand to sand with silt; coarsening downward near the thalweg of the channel to sand with gravel, sandy gravel or gravelly sand; brown, dark yellowish brown, dark brown to reddish brown; locally laminated; gravel consist of fine- to coarse-grained subangular to subrounded fragments of siltstone and slate; few to common manganese oxide and iron oxide stains; few roots.

Pleistocene Alluvium of Benedict Canyon Wash (BCW1): Sandy clay, clayey sand, sand with clay, and silty sand with clay, grading laterally to silty sand and sand with silt; near the channel centerline, deposit coarsens downward to gravelly sand to clayey sand with gravel; dark yellowish brown, brown, dark brown to reddish brown; mottled; locally gleyed; slightly moist to moist; massive to thinly laminated; few to many scattered gravel that consist of subangular to subrounded and tabular fragments of siltstone, slate and weathered basalt. Terrestrial deposit consisting of fluvial, alluvial fan, and mudflow sediments emanating from the Santa Monica Mountains via Benedict Canyon Wash and its tributaries.

Pleistocene Alluvium of Benedict Canyon Wash (BCW2): Sandy clay, clayey sand and silty clay grading laterally to silty sand to sand with silt; with lenses and interbeds of sandy gravel; coarsening downwards to a basal channel deposit of sand, gravelly sand and gravel; dark grayish brown, reddish brown, very dark brown, and dark yellowish brown; locally mottled and/or gleyed; oxidation-reduction banding; iron oxide and manganese oxide stains common on rock clasts and along basal channel contact; gravel consist of fine- to medium-grained subrounded to subangular fragments of siltstone, slate, basalt and quartz. Unit is characterized by moderate to well-developed paleosols with many moderately thick to thick clay films on ped faces and moderate to strong angular blocky soil structure. Distinctive erosional contact with underlying Chevrot Hills deposits.

Pleistocene Chevrot Hills Deposits (CHD): Sandy clay, clayey sand, and silty clay; with thin silty sand and gravel layers and beds; brown, reddish brown, brown, and grayish brown; locally gleyed; moist to wet along sand beds; manganese oxide stains, streaks and nodules; iron oxide stains on rock fragments, and forming oxidation-reduction banding; gravel consist of subrounded to subangular fragments of siltstone and slate. At depth, unit includes abundant calcium carbonate in the form of specks, filaments, horizontal layers, and coatings on ped faces; color changes to grayish brown, gray, and blue green reminiscent of the Lomita Marl; iron oxide staining along layers and locally on ped faces. Unit has been modified by soil-forming processes, with pedogenic characteristics, including clay films on ped faces and moderate to strong angular blocky soil structure, observed at several intervals, including directly at or below its contact with the overlying Benedict Canyon Wash deposits. Terrestrial deposit consisting of fluvial and alluvial sediments derived from the San Pedro Formation deposited over a long period of time, with depositional hiatuses that allowed for soil development. This unit was exposed at the surface for thousands of years before it was buried by the Pleistocene alluvium of Benedict Canyon Wash.

Quaternary San Pedro Formation (Qsp): Sand with scattered gravel; few silty to clayey laminations; yellow, olive brown to reddish orange brown; loose to hard; dry near upper contact, becoming moist to wet at depth; sand fraction consists of fine to coarse, well-rounded quartz grains; scattered bi-valve shell fragments. Transitional terrestrial to marine unit deposited in a wave-dominated (beach) environment.

EXPLANATION

- $CaCO_3$ stringers and along soil faces as vertical deposits
- $CaCO_3$ nodules
- Denotes poor to well developed soil structure
- Geologic contact, dashed where approximate, queried where uncertain
- Rock Clasts
- Fault contact, dashed where approximate, queried where uncertain, arrows denote inferred direction of movement, Trend Unknown
- CLAY with proportional amounts of silt and/or sand (CL, CL-ML)
- Clayey SAND (SC)
- SILT with proportional amounts of clay and sand (ML, ML-CL)
- Silty SAND (SM)
- SAND (SP)
- GRAVEL with varying proportions of silt and sand (GP-GM)
- GRAVEL with CLAY (GC)
- NO RECOVERY

GEOLOGIC CROSS SECTION A-A'

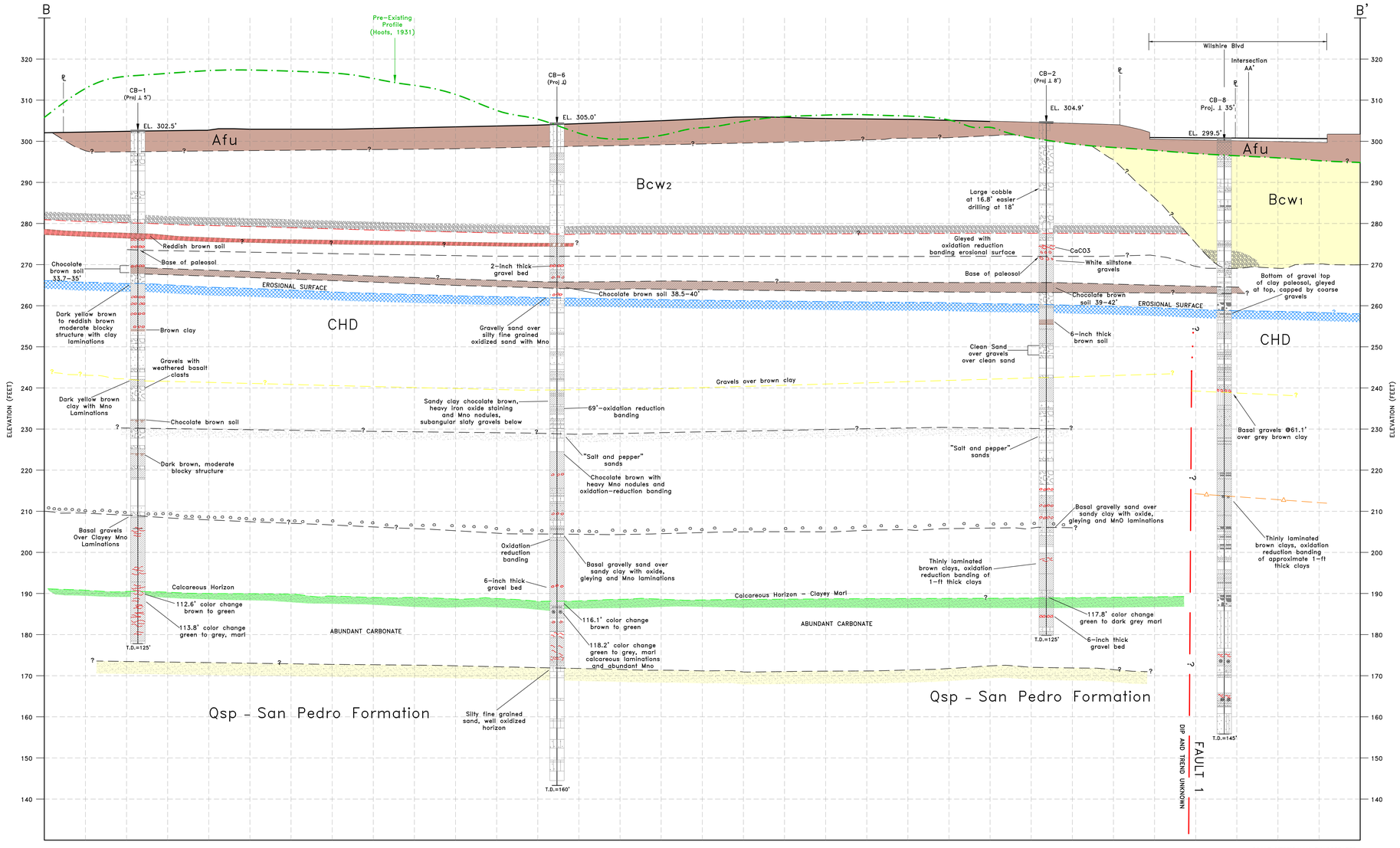
EL RODEO
605 WHITTIER DRIVE
BEVERLY HILLS, CALIFORNIA

PLATE 2

Proj: 10274.006	Eng/Geol: TCB/JAR
Scale: 1"=10'	Date: 02/2015

Drafted by: RJT | Checked by: RJT

Leighton



SCALE VERTICALLY EXAGGERATED
HORIZONTAL 1"=20'
VERTICAL 1"=10'

EXPLANATION

- $CaCO_3$ stringers and along soil faces as vertical deposits
- $CaCO_3$ nodules
- Denotes poor to well developed soil structure
- Geologic contact, dashed where approximate, querried where uncertain
- Rock Clasts
- Fault contact, dashed where approximate, querried where uncertain, arrows denote inferred direction of movement
- CLAY with proportional amounts of silt and/or sand (CL, CL-ML)
- CLAYEY SAND (SC)
- SILT with proportional amounts of clay and sand (ML, ML-CL)
- Silty SAND (SM)
- SAND (SP)
- GRAVEL with varying proportions of silt and sand (GP-GM)
- GRAVEL with CLAY (GC)
- No Recovery (N/R)

UNIT DESCRIPTIONS:

Artificial Fill, Undocumented (Afu): Locally derived sandy silt and silty sand, locally with clay and varying amounts of gravel and man-made debris. Abundant concrete rubble, in places exceeding 24-inches in diameter, observed in the backfill of Moreno Creek drainage in trenches FT-1 and FT-2. Localized seepage along root traces observed in backfill along southern sidewall of trench FT-1 and near storm drain inlet of trench FT-2. In Cross-Sections A-A' and B-B', this unit includes the section not logged from the auger spoils and the hand-augered section at the top of the CPTs.

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Pleistocene Cheviot Hills Deposits (CHD): Sandy clay, clayey sand, and silty clay; with thin silty sand and gravel layers and beds; brown, reddish brown, brown, and grayish brown; locally gleyed; moist to wet along sand beds; manganese oxide stains, streaks and nodules; iron oxide stains on rock fragments, and forming oxidation-reduction banding; gravel consist of subrounded to subangular fragments of siltstone and slate. At depth, unit includes abundant calcium carbonate in the form of specks, filaments, horizontal layers, and coatings on ped faces; color changes to grayish brown, gray, and blue green reminiscent of the Lomita Marl; iron oxide staining along layers and locally on ped faces. Unit has been modified by soil-forming processes, with pedogenic characteristics, including clay films on ped faces and moderate to strong angular blocky soil structure, observed at several intervals, including directly at or below its contact with the overlying Benedict Canyon Wash deposits. Terrestrial deposit consisting of fluvial and alluvial sediments derived from the San Pedro Formation deposited over a long period of time, with depositional hiatuses that allowed for soil development. This unit was exposed at the surface for thousands of years before it was buried by the Pleistocene alluvium of Benedict Canyon Wash.

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SCALE 0 20 40 FEET

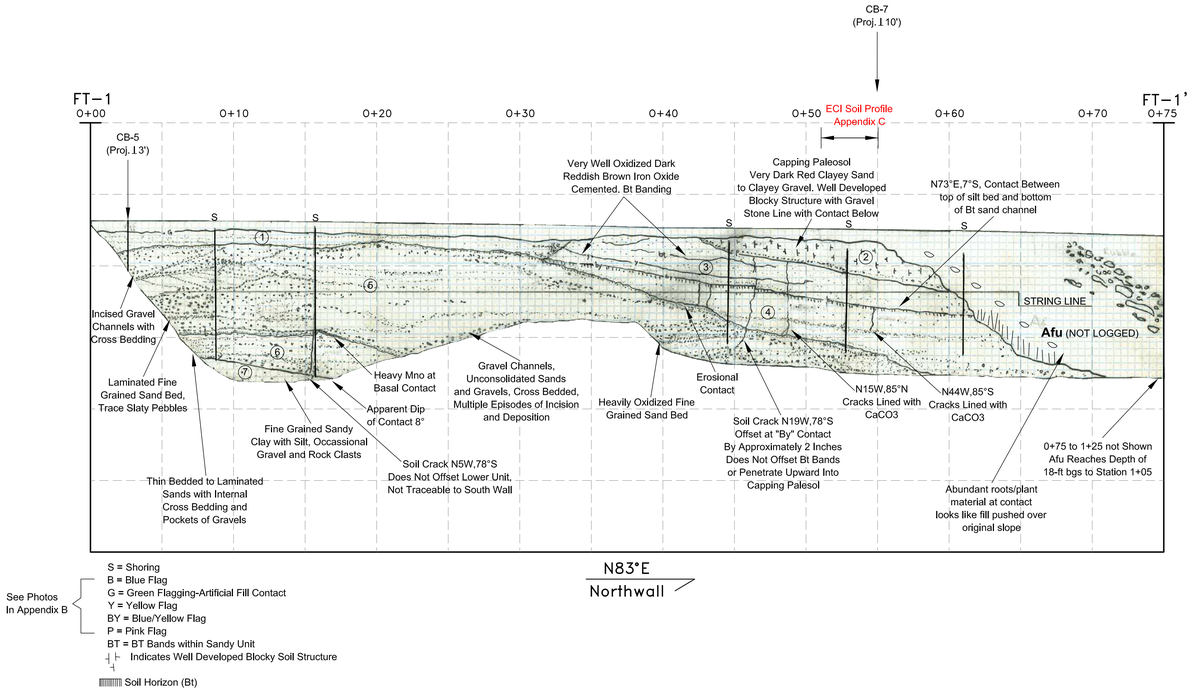
PLATE 3

Leighton

GEOLOGIC CROSS-SECTION B-B'
EL RODEO
605 WHITTIER DRIVE
BEVERLY HILLS, CALIFORNIA

Proj: 10274.006	Eng/Geol: TCB/JAR
Scale: Vertical: 1"=10' Horizontal: 1"=20'	Date: 02/2015

Drafted By: MAK | Checked By: | P:\SHAYTAG\10274\0004\CP_2015-02-04\10274-006-PLATE-3-SECTION.DWG 2015-02-23 9:53:10AM, Plotted by: mmosby



Earth Units-FT-1: Pleistocene Alluvium of Benedict Canyon Wash (BCW$_1$)

1-Silty SAND (SM) with clay, 10YR 4/4, dark yellowish brown, thinly bedded fine gravel to massive sandy matrix, predominately fine grained subangular frosted quartz sand grains, slaty fine pebbly gravel with oxidation rimming of flattened, tabular slate fragments.

2-Sandy CLAY to Clayey SAND (CL-SC), 7.5YR 4/3 to 10YR 3/4, brown to dark brown, very fine grained sand with slaty rock fragments, well developed ped faces, blocky structure, oxidized quartz sand grains and clay development along ped faces and in pores. Basal fine gravel line in sandy clay matrix. Calculated minimum age of 34k (ECI Appendix C), but estimated to be >100ka.

3-Silty SAND to SAND (SM-SP), 10YR 4/6, dark yellowish brown, fine grained subangular to subrounded quartz and slaty sand grains. Contains interbedded and oxidized sandy laminations cemented with iron oxide. Most quartz grains display frosted or oxidized surface, minor clear quartz sand size grains included.

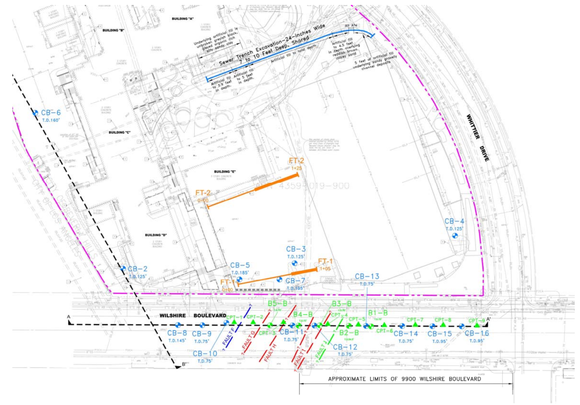
4-Sandy SILT to Silty SAND with Clay (ML-SM),10YR 5/4, yellowish brown to brown, windblown silt in upper portion, very fine grained massive subangular sand with secondary clay to fine gravely interbeds, iron oxide coating of quartz and grains and pores, lower portion becomes Gravelly SAND to Sandy GRAVEL (SP-GP), 10YR 3/4 to 10YR 5/4, dark yellowish brown to brown, fine to coarse grained, frosted to clear, subangular to subrounded quartz sand grains, fine to coarse weathered, flattened and tabular slaty gravels with highly weathered manganese oxide stained siltstone rock clasts.

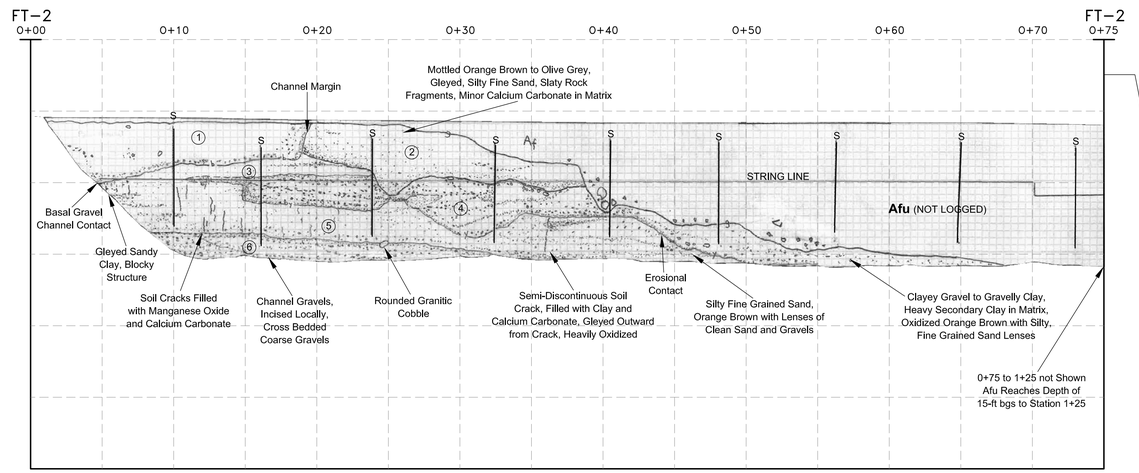
5-Silty GRAVEL to Sandy GRAVEL (GM-GP), 10YR 5/3 to 5/4, brown to yellowish brown, main channel deposit, interbedded gravel and sand, cross bedded to very fine laminations, fine to coarse grained clear to frosted quartz sand grains, fine to coarse flattened, tabular slaty and siltstone gravels, severely weathered basalt fragments, patchy manganese oxide rimming of siltstone rock fragments. Heavy manganese oxide development at basal contact with lower unit No. 6.

6-Silty SAND (SM) with clay, 10YR 4/3 to 7.5YR 4/3, brown to dark brown, very fine grained subangular to subrounded quartz sand grains and occasional slaty gravel, gleyed.

7-Sandy CLAY with Silt (CL-ML), 10YR 5/2, dark greyish brown to brown, fine grained subrounded to subangular quartz sand grains, occasional gravel and severely weathered slaty and siltstone rock clasts.

INDEX MAP





Earth Units-FT-2: Pleistocene Alluvium of Benedict Canyon Wash (BCW$_2$)

1-Sandy Silty GRAVEL (GP-GM), 10YR 4/1 to 10YR 4/5, grey to dark grey, fine to coarse grained, subrounded to subangular, heavily oxidized quartz sand grains, weathered slaty rock fragments, dull grey on weathered surface to dark greyish black on fresh, severely weathered siltstone displaying oxidation along interior laminations with oxide rimming of outer clast surfaces. Abundant secondary clay, gleying in matrix.

2-Sandy SILT with Clay (ML-CL), 2.5YR 5/3, olive brown, upper unit, very fine grained subangular to subrounded sand grains, gleying of matrix, lower unit becomes Silty SAND (SM), 10YR 5/6, dark yellowish brown, fine grained subrounded quartz sand, flattened and weathered siltstone and slaty sand grains, iron oxide coating of fine gravel sized siltstone clasts, trace of severely weathered and oxidized sand size basalt fragments.

3-Silty CLAY (CL), 10YR 5/3, brown, very fine grained sand, porous, 1-2mm voids with CaCO3 lined pores, gleyed along ped faces.

4- Sandy GRAVEL (GP-GM), 10YR 5/6 to 10YR 3/3, yellowish brown to dark brown, fine to coarse subrounded to subangular sandy matrix supporting subangular to subrounded fine to coarse gravels, severely weathered equigranular granitic clasts, oxidized and decomposing basalt fragments with silica veined slaty rock fragments in well defined channel. Contains small cobbles. Becomes clayey gravel to gravelly clay with increasing distance from main channel.

5-Sandy SILT with Clay (ML) to Sandy CLAY (CL), 10YR 3/3 to 5YR 3/4, dark brown sandy silt to dark reddish brown sandy clay, very fine grained, gleyed with subangular clear and oxidized quartz sand grains. Porous with manganese oxide lining of 1 to 3 mm pores and 80:1 Cracks.

6-Sandy GRAVEL with Clay (GC), 10YR 4/4, dark brown to dark yellowish brown, fine to medium grained subrounded siltstone and oxidized quartz sand grains, fine to coarse slaty, tabular gravels. Locally incised with cross bedded coarse gravels

FAULT TRENCH LOGS FT-1 AND FT-2

EL RODEO GEOHAZARDS

PLATE A-1

Proj: 10274.006	Eng/Geol: TCB/JAR
Scale: 1"=50'	Date: 02/2015

Drafted By: BQT | Checked By: BQT | P:\GRAFTBVG\10274\GEOCP_2015\Ed-04\10274e004PLATE4 FT.DWG (03Ed)-15 1/16/32PM, Plotted by: brian

Leighton