April 8, 2004

El Encanto Hotel
c/o Tynan Group, Inc.
2927 De la Vina Street
Santa Barbara, California 93105

Attention: Mr. Cameron Carey

SUBJECT: GEOLOGIC HAZARDS REPORT
EL ENCANTO HOTEL RENOVATIONS
1900 LASUEN ROAD, SANTA BARBARA, CALIFORNIA

Dear Mr. Carey:

MNS Engineers, Inc. (MNS) is pleased to submit this Geologic Hazards Report as required by the City of Santa Barbara for the renovations at El Encanto Hotel. This report presents the results of our evaluation of the potential for geologic hazards to impact the site. This report was prepared in accordance with the scope of services presented in our proposal dated March 31, 2004, and authorized by the Tynan Group on April 1, 2004.

We appreciate the opportunity to provide our services on this project. Please contact the undersigned if you have questions regarding this report, or require additional information.

Sincerely,

MNS ENGINEERS, INC.

Roger C. Slayman, C.E.G. 1920
Principal Engineering Geologist

Copies: 3 - Addressee

EXHIBIT F

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1. Project Location and Description

The project generally consists of evaluating potential geologic hazards which may affect the site. The location of the site is shown on Figure 1, Vicinity Map. The general layout of the hotel facility is shown on Figure 2, Site Plan. For the purposes of this report, the site location was estimated to be approximately 34.4392° north latitude by 119.7038° west longitude.

The hotel is located in the Riviera Hills area of Santa Barbara at an approximate elevation of 480 to 580 feet, mean sea level (msl). The terrain in the site vicinity consists of a relatively gentle, south-facing slope. The hotel is bound on the south by Lasuen Road, on the west by Alvarado Place, on the north by Mission Ridge Road, and on the east by Lasuen, El Encanto, and San Carlos Road. We understand that the project will generally consist of interior and exterior remodels of some of the cottages, swimming pool and main building, relocation of some cottages, construction of new cottages, utility relocations and appurtenant landscaping. The location of the new and relocated cottages, along with the major main building renovations is shown on the attached Site Plan, Figure 2.

2. Purpose and Scope

The purpose of this report was to evaluate the potential for the site to be impacted by geologic hazards. A summary of the work performed to assist in this evaluation is summarized below:

- Reviewing selected published geologic documents, aerial photographs, project plans, and our in-house files as referenced in this report;
- Performing a visit to the site to observe the general site conditions;
- Evaluating the potential for geologic hazards, such as: surface fault rupture, ground shaking, liquefaction, seismically induced settlement, subsidence, ground lurching landslides, or flooding to impact the site; and
- Preparing this report summarizing the data obtained for the site, the results of our evaluation of the potential for geologic hazards to impact the site, a discussion of geologic hazards that should be mitigated for the site, and our conclusions and recommendations for the site development.

3. Geologic Setting

El Encanto is located in the foothills north of the Santa Barbara coastal plain and between the Pacific Ocean and the Santa Ynez Mountain Range. The Santa Ynez Range is an east-west trending mountain block within the Western Transverse Ranges of California. The Transverse Ranges extend continuously from Point Arguello eastward for approximately 75 miles into Ventura County. The Santa Ynez Mountains and adjacent lowlands are composed almost entirely of sedimentary rocks ranging in age from late Jurassic to Recent. The coastal plain and adjacent foothills are cut by a series of sub parallel, east west trending folds and faults. The geologic conditions in the site vicinity, as mapped by Dibblee (1986), are shown on the Regional Geologic Map, Figure 3.

3.1 Soil Conditions

Review of geologic maps and previous geotechnical investigations of the site (Dibblee 1986; Pacific Materials Lab, 2003) indicates that surficial sediment consisting of artificial fills, and Fanglomerate (Qog) deposits underlie the site. The artificial fill (Af) and surficial fanglomerate deposits typically consist of loose to medium dense sand, silty sand and silt with varying amounts of gravel, cobbles and boulders. The artificial fill materials and extend to depths of approximately 2 to 4 feet below the ground surface (bgs). Deeper artificial fill materials may have been created in association with the hotel development and the various additions.

Fanglomerate deposits underlie the surficial sediments. The fanglomerate is identified by its relatively dense nature and the presence of numerous boulders, cobbles and gravel layers. The older alluvium and fanglomerate generally consists of dense to very dense sand, clayey sand, and silty sand with interbedded layers of hard clay, silt, gravel, cobbles and boulders. The Monterey Formation (Tm) underlies the fanglomerate deposits, and consists of marine siltstone and shale.

3.2 Groundwater Conditions

Groundwater elevations recorded in water wells near the Mission (Staal, Gardner and Dunne, 1988) indicate that the depth to permanent groundwater is greater than at least 100 feet below the ground surface in the site vicinity. Groundwater was not encountered in the exploratory borings performed by Pacific Materials Lab (2003) to the total depth explored, approximately 15 feet bgs. Groundwater conditions will vary seasonally, due to storm runoff and groundwater pumping, as well as other factors.

3.3 Faulting

Regional compressive forces acting on the Santa Barbara coastal area have resulted in generally east-west trending folds and faults. Gurrola (1998) terms the region the Santa Barbara Fold Belt (SBFB). The SBFB is characterized by active folding, and buried, reverse faulting. The SBFB is formed on the south limb of the Santa Ynez anticlinorium. The Santa Ynez anticlinorium is postulated by Namson and Davis (1992) to be related to a low angle, north dipping ramp of a detachment or decollement at 10 to 12 kilometers in depth. A regional fault map for the site vicinity is presented on Figure 4.

Many of the faults are regionally extensive and are considered active. Some are shorter faults that could be potentially active or inactive. There are three sets of faults in the SBFB: 1) a primary set of east-west trending reverse faults that include the More Ranch-Mission Ridge-Arroyo Parida fault system, 2) a secondary set of northwest-striking reverse faults including the Sycamore, Eucalyptus Hill, Lagoon, Mesa, and Lavigia faults, and 3) a set of northeast-striking oblique slip faults including the Goleta Point, Fernald Point, and Rincon Point faults. Geomorphic, structural, and seismic evidence on the primary east-west faults indicates that slip is predominantly reverse with a minor component of strike-slip. These faults are considered potentially active (Olson 1982; Yerkes and Lee 1979, Gurrola 1998); and are classified as potentially active according to the City of Santa Barbara Geologic Hazards Study (1986) and the California Geological Survey (CGS, 1994). Subsidiary faults include northeast- and northwest-striking faults that may segment the principal east-west faults and are interpreted by most investigators to be potentially active or inactive.

The closest mapped significant fault trace to the site is the Mission Ridge fault. The Mission Ridge fault is mapped at differing locations by various investigators (Dibblee, 1986; Hoover, 1978; Olson, 1982; Gurrola, 2002; and the USGS, 2002). The Mission Ridge fault is mapped approximately 500 to 2,000 feet north of the site. The Mission Ridge fault is part of the More Ranch-Mission Ridge-Arroyo Parida fault system, which extends continuously from the Ellwood area eastward into Ventura County. The Mission Ridge fault strikes eastward from the intersection of the More Ranch and Mesa faults. The fault strikes parallel to bedding in the Riviera/Mission Ridge area. Olson (1982) indicates that the fault cuts pre-basin structure immediately east of the intersection with the Mesa and More Ranch faults (Loreto Plaza area). Water well and structural data indicate that the Mission Ridge fault extends eastward as the Arroyo Parida segment.

The Sycamore fault is mapped by Hoover (1978) trending east-southeast through the Riviera area of Santa Barbara. The Sycamore is mapped by Hoover approximately 1,500 feet north of the site. Hoover describes the Sycamore fault to be a south dipping, south side up fault that juxtaposes the Monterey Formation on the north against fanglomerate deposits on the south. It should be noted that Geologic Maps by Dibblee (1986), Olsen (1982), Gurrola (2002), and USGS (2003) does not map the Sycamore fault, and interpret the Sycamore fault to actually be an erosional contact between the fanglomerate and Monterey Formation. Fault trenches performed by Earth Systems (Gurrola, 2003) east of the site near Holmcrest Road indicated that the Sycamore fault in this area is actually an erosional unconformity related to erosion of the uplifted Monterey Formation, and subsequent deposition of the fanglomerate followed by slight folding of the fanglomerate/Monterey contact.

Other significant regional faults in the project area are the Santa Ynez fault, the offshore North Channel Slope, Santa Cruz Island, Santa Rosa Island, Anacapa-Dume, Channel Islands, Red Mountain and the Montalvo trend of the Oak Ridge fault. The San Andreas fault is mapped near the northeast corner of Santa Barbara County, approximately 46 miles northeast of the project site. The San Andreas, as well as some of the faults within the Santa Barbara Channel are considered active and are associated with significant historical earthquakes.

3.4 Historical Earthquakes

The site is within a seismically active region of southern California that has experienced ground motion in response to earthquakes in the historical past. The closest faults with reported historic seismic activity are associated with offshore faults within the Santa Barbara Channel. Earthquakes that have occurred in the Santa Barbara Channel include a M7.0 in 1812, M6.25 in 1883, M6.3 in 1925, M5.9 in 1941, and M5.1 in 1978. The Santa Barbara earthquake of 1925 damaged most of the buildings within a 36-block area and resulted in 13 deaths. In 1941 the earthquake resulted in several broken water mains and relatively minor structural damage. In 1978 the earthquake in resulted in a train derailment near Goleta and relatively minor structural damage. The project area has also been subjected to strong ground motion from the 1812, 1857, 1906, 1934, 1952, and 1966 earthquakes along the San Andreas fault. A map showing the locations of earthquake epicenters in the project area is shown on Figure 5.

4. Seismic Hazard Assessment

El Encanto Hotel is located in a seismically active region of southern California relatively close to mapped active and potentially active faults. Peak horizontal ground accelerations (PGAs) for the site were estimated using both deterministic seismic hazard analyses (DSHA), and probabilistic seismic hazard analyses (PSHA). The intent of our evaluation was to estimate the strong ground motion that could result from earthquakes occurring on active and potentially active faults mapped within a 100-kilometer radius of the site. The results of the deterministic and probabilistic seismic hazard analyses are described in the sections that follow.

4.1 Deterministic Analyses

The deterministic evaluation of PGA for the site was completed using the computer program EQFAULT (Blake 1995a) and the CGS (1996) southern California fault database. EQFAULT provides deterministic site parameters based on digitized fault data. The fault search found 32 active and potentially active mapped faults within the 100 km radius of the site. Summarized in Table 1 are the results for thirteen faults that were considered to be the most capable of producing the high ground motion at the site.

The mean (M) values of PGA shown in the table were estimated using the attenuation relationship proposed by Boore et al. (1993). All analyses completed using this relationship assumed randomly oriented components of peak acceleration as well as a site class "C" designation. A site class "C" designation, according to Boore et al. indicates that material in the upper 30 meters (100 feet) of the site has an average shear wave velocity ranging between 180 and 360 meters per second.

Table 1. Results of the Deterministic Seismic Hazard Analysis

Fault	Distance from Site (km)	Maximum Moment Magnitude (M_w)	Fault Length (km)	Slip Rate (mm/yr)	Peak Ground Acceleration Mean (g)
North Channel Slope	0	7.1	60	2.0 ± 2.0	0.79
M. Ridge – Arroyo Parida	1-2	6.7	65	0.4 ± 0.2	0.63
Red Mountain	4	6.8	39	2 ± 1	0.56
Santa Ynez (west)	6	6.9	65	2 ± 1	0.44
Santa Ynez (east)	8	7.9	68	2 ± 1	0.41
Channel Island Thrust	19	7.4	65	1.5 ± 1	0.35
Montalvo – Oak Ridge Trend	12	6.6	37	1 ± 1	0.32
Ventura – Pitas Point	18	6.8	41	1 ± 0.5	0.27
Oak Ridge (Blind Thrust)	30	6.9	37	3 ± 3	0.19
Anacapa – Dume	37	7.3	75	3 ± 2	0.20
Los Alamos – Baseline	39	6.8	28	0.7 ± 0.7	0.15
San Andreas (1857 rupture)	62	7.8	345	34 ± 5	0.14
Oak Ridge	50	6.9	50	4 ± 2	0.13

Note: All acceleration values are in units of g (9.81 m/s² or 32 ft/s²). 1 kilometer (km) = approximately 0.6 miles.

Minor faults in the Santa Barbara area that are not listed in Table 1 include the Sycamore, Mesa, Lavigia and San Jose faults, some of which are shown on the Regional Geologic Map, Figure 3. The North Channel Slope is mapped as a blind thrust fault that underlies the southern part of the city. The Mesa, Lavigia and San Jose faults are considered to be secondary faulting that has occurred in association with the deep blind thrust fault movements. The minor faults were therefore not considered as potential seismic sources for the deterministic analyses, or for the probabilistic analyses in the following section.

4.2 Probabilistic Analyses

The probabilistic evaluation performed to estimate the peak ground acceleration for the site was completed using the computer program FRISKSP (Blake 1995b) and the CGS (1996) southern California fault database. The program FRISKSP is based on FRISK (McGuire 1978) and has been modified for the probabilistic estimation of seismic hazards using three-dimensional earthquake sources. The program FRISKSP was used to estimate peak horizontal ground accelerations associated with the following earthquake ground motions:

- Design-Basis Earthquake Ground Motion: An earthquake having a 10 percent chance of being exceeded in 50 years (Statistical Return Period ≈ 475 Years).
- Upper-Bound Earthquake Ground Motion: An earthquake having a 10 percent chance of being exceeded in 100 years (Statistical Return Period ≈ 950 Years).

A summary of the probabilistic evaluation is presented in Table 2. These results were estimated through the analysis of 32 active and potentially active faults mapped within the 100-kilometer search radius of the site. A selected listing of the more significant fault data is included in Table 1. Additional information is provided in the CGS (1996) fault database. The probabilistic analyses were completed using the Boore et al. (1993) attenuation relationship assuming randomly oriented components of peak acceleration as well as the site class "C" designation.

Table 2. Results of the Probabilistic Seismic Hazard Analysis

Ground Motion Parameter	Design-Basis Earthquake (10% in 50 Years)	Upper-Bound earthquake (10% in 100 Years)
Peak Horizontal Ground Acceleration (PGA)	0.49	0.62

Note: All acceleration values in units of g (9.81 m/s^2 or 32 ft/s^2)

5. Geologic Hazards

The following geologic hazard assessment is based on review of published information on the regional and local geologic conditions and geotechnical data from Pacific Materials Lab (2003). Our assessment was performed in general accordance with the guidelines contained in California Geological Survey Note 48 and Special Publication 117.

5.1 Surface Fault Rupture

Fault rupture is the displacement of the ground surface created by movement along a fault plane during an earthquake. The site is not within a State of California Fault Hazards Zone. As discussed previously, the closest known active or potentially active faults are the Mission Ridge fault system, and the Sycamore fault which are mapped about 2,000 feet and 1,500 feet north of the site, respectively. Based on the distances between the site and the mapped faults, it is our opinion there is a low potential for surface fault rupture to affect the project.

5.2 Ground Motion

El Encanto Hotel is located in a seismically active region of southern California relatively close to mapped active and potentially active faults. The closest mapped fault that is believed to be active is the North Channel Slope blind thrust fault mapped beneath the Santa Barbara coast. Strong ground motion has likely affected the site in the historical past, such as from the 1925 Santa Barbara earthquake.

Peak horizontal ground accelerations for the site were estimated using both deterministic seismic hazard analyses and probabilistic seismic hazard analyses. Based on the probabilistic seismic hazard analysis, we estimate that strong ground motion having 10 percent probability of being exceeded during a 50-year and 100-year period is approximately 0.49g and 0.62g, respectively.

Based on the CGS (1996) fault database for southern California, the maximum moment magnitude for the North Channel Slope fault is M7.1. Using the Boore et al. (1993) attenuation relationship, we estimate that a M7.1 earthquake on the North Channel Slope fault could result in a nearly 1g peak ground acceleration at the site, for the mean plus one standard deviation value.

5.3 Liquefaction

Liquefaction is defined as the loss of soil strength due to an increase in soil pore water pressures that results from seismic ground shaking. In order for liquefaction to occur, three general geotechnical conditions need to occur: 1) groundwater is present within the potentially liquefiable material; 2) the soil is granular and meets a specific range of grain sizes; and 3) the soil is in a loose state of low relative density. If those conditions are present and strong ground motion occurs, portions of the soil column could liquefy, depending upon the intensity and duration of the strong ground motion.

The site is underlain by a relatively shallow thickness of surficial sediments consisting of loose to medium dense artificial fill materials and disturbed fanglomerate deposits. These layers are generally less than 4 feet thick, and appear to be discontinuous over the site. Existing foundations appear to be embedded into dense fanglomerate, and planned foundations will be embedded either into dense fanglomerate or compacted fill. Below the surficial sediments, the soils generally consist of fanglomerate deposits composed predominantly of dense to very dense sand, silty sand, and clayey with interbedded layers of stiff to hard clay, gravel, cobbles, and boulders. Static groundwater levels are reportedly deeper than 100 feet below the ground surface.

It is our opinion that as a result of the lack of groundwater within the upper 50 feet of the site, and the relatively dense nature of the foundation support materials (compacted fill, and fanglomerate), that the potential for liquefaction to impact the site is low.

5.4 Seismically Induced Settlement and Collapse

Seismically induced settlement or collapse can occur in soil that is loose, soft, or that is moderately dense but non-cemented. As discussed for liquefaction hazards, the site is underlain at depth by relatively stiff and dense fanglomerate. The foundation support material is generally comprised of well consolidated, and lightly cemented soils, that are not be expected to experience significant loss in strength or settlement in response to the estimated strong ground motion for the site. It is our opinion that there is a low potential for seismically induced settlement or collapse to impact the site.

5.5 Ground Lurching

Ground lurching occurs as the ground is accelerated during a seismic event. As evidenced by the Loma Prieta, Landers, and recent Northridge earthquakes, the effects of ground lurching can damage facilities and buried pipelines. Ground lurching occurs due to detachment of underlying stratigraphic units, allowing near-surface soil to move differentially from underlying soil. Because the project area is within a seismically active area, it is our opinion that there is a potential for ground lurching to affect the proposed project.

5.6 Landsliding

The site is located on relatively flat-lying to gently sloping terrain and is not in an area of known slope instability or landsliding. It is therefore our opinion that there is not a significant potential for landsliding or slope instability to impact the site.

5.7 Flooding, Tsunamis and Inundation

The site is not within a Federal Emergency Management Agency Flood Zone. The elevation of the site is approximately 480 to 580 feet above mean sea level, and approximately 2 miles inland from the coast. Therefore, it is our opinion that the site is not significantly exposed to tsunami hazards.

The site is not located downslope from any significant water bodies or reservoirs. It is therefore our opinion that the potential for the site to be impacted by dam inundation is not a consideration.

6. Conclusions and Recommendations

The conclusions and recommendations presented in this report are based on our understanding of the project as presently planned, the referenced previous geotechnical reports prepared for the site, review as-built plans, and our geologic evaluation and assessment of geologic hazards.

6.1 Summary of Geologic Hazards

The main geologic hazard that will likely impact El Encanto Hotel is seismic shaking in response to nearby or regional earthquakes. The site is not in area where there is a significant potential for liquefaction, landsliding or slope instability, flooding or inundation, or subsidence.

6.2 Seismic Design

The site is within Seismic Zone 4 based on the 1997 Uniform Building Code. We expect that the predominant seismic source for the site is a M7.1 earthquake on the North Channel Slope fault, a blind thrust fault that is interpreted to underlie the Santa Barbara region. The closest faults to the site are a Seismic Source Type B based on the fault conditions discussed in Section 3.3. On the basis of our characterization of the site seismicity, we recommend that the following values be used for seismic design:

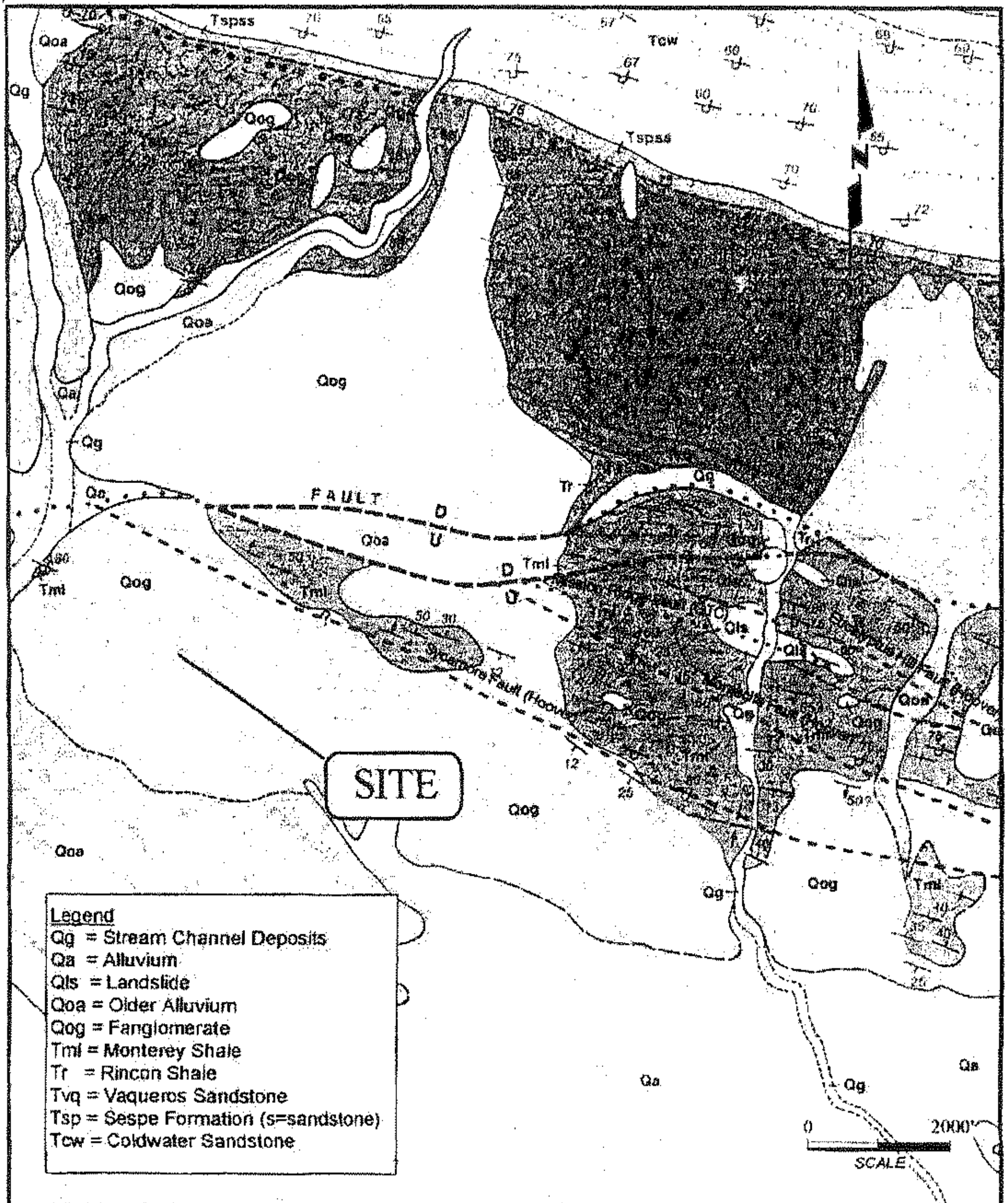
Table 3. Seismic Design

Uniform Building Code Chapter 16, Table Number	Seismic Parameter	Recommended Value
16-I	Seismic Zone Factor (Z)	0.40
16-J	Soil Profile Type	(S_D), Stiff Soil
16-Q	Seismic Coefficient (C_a)	$0.44N_a$
16-R	Seismic Coefficient (C_v)	$0.64N_v$
16-S	Near Source Factor (N_a)	1.3*
16-T	Near Source Factor (N_v)	1.6
16-U	Seismic Source Type	B

* Near source factor of 1.1 can be used if criteria listed in 1997 UBC Section 1629.4.2 are met.

7. Closure

The conclusions, recommendations, and professional opinions presented herein were prepared by MNS in accordance with generally accepted principles and practices of the geotechnical profession. This warranty is in lieu of all other warranties, either expressed or implied. This report has been prepared for use by El Encanto Hotel and their authorized agents only, and is not intended for use by other parties or for other uses. Subsurface conditions will vary between points of exploration and with time. If any changes are made to the project described in this report, this report should not be considered valid unless MNS reviews the changes and updates the report in writing.



Modified from Geologic Map of the Santa Barbara Quadrangle by T. W. Dibblee (1986)

MNS ENGINEERS INC 4141 State Street, Suite B-11 Santa Barbara, Ca. 93110 (805) 692-6921	REGIONAL GEOLOGIC MAP	El Encanto Hotel 1900 Lasuen Road Santa Barbara, California WO 12512 Figure 3