IV. ENVIRONMENTAL IMPACT ANALYSIS

E. SOILS AND GEOLOGY

Geotechnical and seismic investigations were performed for separate parcels within the project site by Subsurface Designs, Inc. and presented in their report dated November 29, 2004. The report, which documented existing subsurface conditions, evaluated potential seismic hazards and identified construction recommendations, is provided in its entirety in Appendix G of this Draft EIR.

EXISTING CONDITIONS

SITE OVERVIEW

As described by the City of Los Angeles General Plan Framework EIR, "[t]he SR-118 freeway alignment provides a general division between geologic formations consisting primarily of bedrock formations on the north and surficial deposits on the south."[1] As with much of the San Fernando Valley, the Chatsworth community is an area of known and potential geologic and seismic hazards. The northern portion of Chatsworth is located within a City of Los Angeles Fault Rupture Study Area and includes the project site (see subsequent Existing Conditions discussion for Seismic Conditions).

The project site itself is a partially developed, irregularly shaped, 4.89 net acre parcel situated along the west side of Lurline Avenue, approximately 800 feet south of the I-118 Freeway. Existing improvements to the northern portion of the site consist of a large two-story single-family residence with a detached garage, swimming pool, pool house and various other hardscape and landscape improvements. The property slopes gently to the south from the northern property line with a minimum and maximum elevation of 1,080 feet at Nashville Avenue and 1,145 feet at the highest point along the northern boundary. Access to the existing residence is via a paved driveway that extends from Lurline Avenue several hundred feet west to the structure. Slope areas are covered with a sparse to moderate growth of weeds, scattered shrubs and moderate to large size ornamental trees. Drainage within the site is essentially comprised of sheet flow runoff of precipitation derived primarily within property boundaries.

EARTH MATERIALS

Earth fill materials were encountered throughout much of the northern portion of the site. Fill was encountered at depths of up to eight and one-half feet and consisted of a brown to dark brown, loosely to moderately compact, slightly moist to moist, silty sand (SM) to Clayey Sand (SC). Natural soils were also encountered within the northern portion of the site (Site 1) ranging from three to six feet in thickness and at depths from three to six feet, and consisted of dark brown, moist to slightly moist, moderately dense, porous, clayey sand (SC) to sandy clay (CL).

The project site and surrounding areas have been mapped (Dibblee, 1992) as underlain by older alluvial deposits (Qoa) of Pleistocene geologic age, although mapping also depicts the level southern portion of the property as being underlain by younger alluvial deposits. Site

[1] Los Angeles General Plan Framework EIR (Envicom Corp, 1995), Chapter 2.17, Geologic/Seismic Conditions Northwest Valley Subregion (Source: Maulchin and Jones, 1990, Caltrans).

investigations encountered alluvial deposits consisting of a light reddish-brown to yellowish-brown, moist, moderately dense to dense, clayey sand (SC), slightly silty sand (SM), gravelly sand (SP) and sandy gravel (GP). The gravel layers were found to be generally discontinuous, subhorizontal, and range from 12 to 18 inches in thickness.

SLOPE STABILITY

According to the City of Los Angeles Safety Element, the project site is located within a City of Los Angeles designated Hillside Area. The Safety Element has not identified the site as subject to shallow surficial landslides, or within a probable bedrock landslide site.[2] No surficial failures were observed on or adjacent to the site as part of the geotechnical investigations for the property. Further review of geologic maps indicates no known landslide structures exist within or immediately adjacent to the site. Additionally, stereoscopic examination of aerial photographs indicates no topographic anomalies suggesting that the site has been affected by landslide activity.

GROUNDWATER

Groundwater was not encountered to the maximum depth of site explorations (5 to 12 feet on the northern portion of the site and 16 to 41 feet on the southern portion of the site). However, historic high groundwater data is available from the State of California Division of Mines and Geology, which indicates that depth to the historic high groundwater level approximately 0.5 mile to the south, is approximately 80 feet below the ground surface.[3] It should be noted that fluctuations in the level of the groundwater may occur. Groundwater levels may rise or fall as a result of climatic conditions (high or low precipitation) and/or alterations in the existing groundwater recharge area (i.e. changes in landscaping irrigation rates, surface drainage and surface water infiltration conditions).

SEISMIC CONDITIONS

Regional Overview

The project site is located in the seismically active Southern California region where earthquakes with a magnitude of 5.0 and greater have occurred throughout historic time. The potential exists throughout Southern California for strong ground motion similar to that which occurred during the 1994 Northridge Earthquake and there are a number of faults that have proven to be active and are considered capable of causing earthquakes of significant magnitude. Strong ground shaking from a moderate to major earthquake can be expected during the lifetime of any structure in Southern California. This may result in significant damage to the structure, hardscape and adjacent slopes. Since there are so many variables associated with ground movement during an intense earthquake, it is almost impossible to predict the impact of a seismic event to a particular site. However, given the extensive urbanization of the Los Angeles Basin, a large magnitude earthquake (6.9 or greater) could be potentially devastating.

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[2] Source: City of Los Angeles Safety Element, adopted November 26, 1996, Exhibit C.

[3] Source: Seismic Hazard Evaluation of the Oat Mountain Quadrangle, Seismic Hazard Zone Report 005, dated 1997 (Revised 2001), State of California Division of Mines and Geology.

Local and State Seismic Designations

The project site is not located within the Area of Influence of an Earthquake Fault Zone (formerly referred to as the Alquist-Priolo Earthquake Fault Zone). An Earthquake Fault Zone is delineated by the California Division of Mines and Geology and depicts active faults, within which special earthquake studies are required prior to construction of habitable structures. Although the site is not located within a state designated Earthquake Fault Zone, it is located in an active seismic region where large numbers of earthquakes occur each year.

For planning purposes, the City of Los Angeles General Seismic Safety Element designates the subject site within a Fault Rupture Study Area. These zones are approximately 0.5 mile wide and extend along identified active faults, in which surface displacement has occurred within Holocene time (the last 11,000 years); and potentially active faults, in which surface displacement of Quatenary Age deposits has occurred (the last 1.6 million years). The subject site has been placed within the Fault Rupture Study Area due to its close proximity to the Northridge Hills Fault Zone (NHFZ). The NHFZ extends in a northwest-southeast direction across the northern portion of the San Fernando Valley. The little-studied fault appears to become a series of imbricate faults in the vicinity of Northridge in the western San Fernando Valley and then turns nearly due east and disappears under thick alluvium in the east-central valley. Subsurface data strongly suggests that the Northridge Hills fault was subjected to post-Miocene fault slippage and seismic events with activity continuing during the Pleistocene (10,000 - 1.8 million years old). The fault has offset Saugus Formation beds of Quaternary age, yet there is no evidence suggesting that more recent beds of Holocene age (<11,000 years old) have been displaced nor is there any evidence of <u>surface</u> fault rupture. Therefore, the fault is not considered to be active. However, seismic data indicates that the fault should be considered "potentially active". Considering the variety of interpretations as to whether the fault is a single fault rupture or a multiple plane fault, and to its length (12 miles to 30 ± miles), the fault appears capable of producing a seismic event of magnitude 6.5 or greater with a probable upper limit of 7.5

Recent Seismic Activity

A computer search of historic earthquakes (from 1800 to 2000) of significant magnitude (4.5 Richter magnitude or greater) close enough to the project site (within 50 miles) to cause significant groundshaking was undertaken by Subsurface Designs, Inc. The detailed results of the computer search are provided in Appendix G of this Draft EIR. The largest recent earthquake affecting the site was the Northridge Earthquake. This event had a 6.7 magnitude and occurred on January 17, 1994 at 4:31 a.m., PST. The Northridge Earthquake created strong ground shaking for approximately 10 seconds in the Los Angeles area resulting in widespread, random damage. The earthquake occurred along a previously unrecognized south dipping thrust fault known as the Frew Fault (the Northridge earthquake did not occur on the Northridge Hills Fault). The causative fault, as defined by a pattern of aftershocks, moved under an area roughly 19 miles across its front (approximately east-west in orientation) and 13 miles from front to back (approximately north-south in orientation). Although the slip magnitude was approximately nine to 10 feet, surface rupture along the causative fault did not occur as a result of the earthquake. The epicenter of the Northridge Earthquake was located approximately 4.8 miles east of the project site and produced an estimated repeatable high ground acceleration of 0.466g on the property.

Active Faults Within Close Proximity to the Site

Malibu Coast Fault Zone

The Malibu Coast Fault, which is considered to be potentially active to active, is situated approximately 15.5 miles south of the site and has a maximum probable event magnitude of 6.9. The Malibu Coast Fault Zone (MCFZ) parallels the coast and forms a zone of folding and complex faulting varying in width up to approximately 2,300 feet. The MCFZ extends in an east-west direction for approximately 48 miles along the Malibu coastline and is the western extension of the Hollywood-Santa Monica Fault. The zone may be as wide as 1.0 mile and dips to the north between 30^{o} and 70^{o}.

San Gabriel Fault

The San Gabriel Fault zone transects the northeastern part of the Ventura basin and can be traced from the Frazier Mountains area, about 30 miles northwest of Saugus, to the eastern part of the San Gabriel Mountains, a distance of roughly 90 miles. The San Gabriel Fault Zone is located approximately 11 miles to the northeast of the site and has a maximum probable event magnitude of 7.0. The San Gabriel fault is a high-angle right-lateral strike-slip fault, which extends about 46 miles north, westward across Los Angeles County. The western half consists of a single fault and the eastern half consists of two branches that split near Big Tujunga Ranger Station.

Santa Monica-Hollywood Fault

The Hollywood fault is a complex zone of faulting that includes several inactive, moderately to steeply dipping secondary faults that impact the older alluvial apron but do not extend upward into the younger sediments. In addition to these inactive north dipping structures, the fault zone locally includes south-dipping secondary normal faults within the hanging wall that may still be active. Although these types of faults have been identified within the Hollywood Fault Zone, their location and extent have yet to be resolved. The Hollywood fault is the eastern one to four kilometer long segment of the Santa Monica-Hollywood fault system that forms the southern margin of the Santa Monica Mountains. The fault traverses the cities of Beverly Hills, West Hollywood and Hollywood, where the Santa Monica Mountains are referred to as the Hollywood Hills. Movement on the Hollywood fault over geologic time is thought to be responsible for the growth of the mountains. In 1997, Dolan et al. (1997) inferred two traces of the fault. The first of these inferred traces was located north of Sunset Boulevard, near the contact between the bedrock and the alluvium, where there is a sharp break in the slope. The second fault trace inferred by Dolan et al., (1997), was located approximately 500 to 700 feet south of the Sunset Boulevard and Doheny Drive intersection. This southern fault is interpreted as the main strand of the Hollywood fault in the area. In a more recent evaluation of the Hollywood fault (Dolan et at., 2000), the northern inferred trace is not shown and several recent investigations along Sunset Boulevard indicate that the fault is not located at the base of the bedrock outcrops along Sunset Boulevard, but rather to the south.

The Santa Monica-Hollywood fault system has not produced any damaging historical earthquakes. Subsurface study of the main fault by Dolan et al. (2000) suggests that this fault moves infrequently. Based on its length, the Hollywood fault is thought capable of generating a magnitude 6.6 earthquake. However, if it breaks together with the Santa Monica fault to the west, larger magnitude earthquakes can be expected. Given the extensive urbanization of this portion of the Los Angeles Basin, an earthquake in this fault has the potential to be devastating to Southern California infrastructure and populations.

Raymond Hill Fault

The Raymond Hill Fault forms the boundary between the Raymond (groundwater) basin and the San Gabriel Valley. The fault trends generally in an east-west direction through an intensely urbanized area. Urbanization has altered most of the geologic features, making it difficult to assess the degree of hazard posed by the fault. The Raymond Hill Fault Zone is located approximately 23 miles to the southeast and has a maximum probable event magnitude of 6.5.

Active Faults with Historic Surface Rupture

San Andreas Fault

The San Andreas Fault extends in a northwest-southeast direction for over 600 miles through California. The main trace of the fault is situated approximately 29 miles north of the project site. The 1857 Fort Tejon Earthquake (8.3 magnitude) occurred along a portion of the San Andreas Fault Zone north of San Bernardino. At that time, the fault moved laterally approximately 18 to 30 feet. Numerous magnitude 7.0± earthquakes have occurred at the rate of approximately one every 10 years along the fault system south of San Bernardino. Recurrence rates along the fault indicate that a large magnitude event, similar to the 1857 Fort Tejon Earthquake, occurs on the average of every 105 to 132 years. A large magnitude earthquake along the San Andreas Fault System is anticipated to have a magnitude on the order of 8± and result in one to three minutes of ground shaking.

Sierra Madre Fault Zone

The San Fernando Fault Zone (SFFZ) is the western extension of the Sierra Madre Fault Zone located further to the east. The site is situated approximately 7.5 miles southwest of the SFFZ, which has a maximum probable event magnitude of 7.0. The Sierra Madre Fault is considered to be the nearest active fault and the closest fault to have known surface rupture during Holocene time (the last 11,000 years). The Sierra Madre Fault Zone consists of a fault complex, which is located along the southeasterly margin of the transverse ranges province. The complex extends approximately 75 miles along the southern front of the San Gabriel Mountains from Cajon Pass to San Fernando and along a portion of the Santa Susana Mountains. This province is characterized by west-trending structural features, unlike the majority of Southern California, which is dominated by northwest trending features. The 1971 San Fernando Earthquake (6.4 magnitude) occurred along the SFFZ and demonstrated the activity of the western portion of the fault system. Since 1971, several investigations along the southern flank of the San Gabriel mountains have exposed granitic bedrock thrust over alluvium within the Sierra Madre Fault Zone, which demonstrates Quaternary thrust faulting (fault activity which has displayed movement within the last 2 to 3 million years). Historic activity on the Sierra Madre Fault system has been limited to the 1971 San Fernando earthquake on the west and the recently noted micro-seismic activity on the eastern portion. With the exception of the central portion of the fault system, these segments of the fault zone have been included within the state-designated Earthquake Fault Zone. Recent exploration indicates that the fault is detectable and may be identified by direct observation and subsurface exploration as Holocene (less than 11,000 years old). Surface displacement is evident along portions of the fault. Therefore, it appears that the State Geologist requirements for including the fault in an Earthquake Fault Zone are met for the majority of the Sierra Madre Fault system.

Activity along the Sierra Madre Fault Zone has been a subject of controversy since the San Fernando earthquake of 1971. The non-inclusion of the majority of the fault zone within an Earthquake Fault Zone and the controversy over its activity has led to a wide variation of geotechnical investigations on properties near the fault zone. Whether the Sierra Madre Fault is potentially active or active, as recent work tends to reflect, it should be recognized as a potential hazard.

Newport-Inglewood Structural Zone

The Newport-Inglewood Structural Zone, located 21 miles south of the subject site, is one of several large predominantly right-lateral strike-slip fault zones that parallel the San Andreas Fault in Southern California. Very little geologic evidence of surface faulting has been found within the zone and very few instances of documentation of surface faulting exist. However, the 1933 Long Beach Earthquake (6.3 magnitude) occurred along the Newport-Inglewood Fault Zone. Even following the 1933 Long Beach Earthquake, no evidence of surface faulting was found or reported. Recent work along the north branch of the Newport-Inglewood Zone in the west Newport Mesa area suggests that recent geologic units have been offset within the man-made fill, a condition indicating that surface faulting occurred very recently, probably during the 1933 earthquake. Therefore, the Newport-Inglewood Structural Zone is classified as active and appears to be capable of creating a maximum probable event magnitude of 6.9.

Mapping of Liquefaction and Other Hazards

Liquefaction refers to the momentary loss of sheer strength. The necessary components for liquefaction include a shallow groundwater condition, relatively loose soils, fine grain sands and silty sands and repeated cyclic loading. During an earthquake, cyclic loading occurs, allowing pore pressures to increase as a result of individual soil grain particles that realign themselves. This realignment allows water to completely separate and surround the grains. As cyclic loading continues, the shear resistance of the soil decreases until the pore pressures equal the confining pressures. The result of the increases in the pore pressure and the decrease in the shear resistance is termed "liquefaction." An earthquake-induced landslide area is an area where previous occurrence of landslide movement, or local topographic, geological, geotechnical and subsurface water conditions indicate a potential for permanent ground displacements.

The Seismic Hazards Map of the Oat Mountain Quadrangle[4] shows that the site is not located within an area of study for earthquake-induced liquefaction (areas where historic occurrence of liquefaction, or local geological or geotechnical and groundwater conditions indicate a potential for permanent displacements such that mitigation as defined by Public Resources Code 26939(c) would be required) or within an area subject to earthquake-induced landsliding (areas where previous occurrence of landslide movement, or local topographic, geologic, geotechnical and subsurface water conditions indicate a potential for permanent ground displacements such that mitigation as defined by Public Resources Code 2693(c) would be required).[5] As stated on the Division of Mines and Geology Seismic Hazards Map, "[l]iquefaction zones may also contain areas susceptible to the effects of earthquake induced landslides. This situation typically exists at or near the toe of existing landslides, downslope from rockfall or debris flow source areas, or adjacent stream beds."[6] None of these conditions are present on the property and there are no

[4] Op. Cit., State of California Division of Mines and Geology.
[5] Op. Cit., State of California Division of Mines and Geology.
[6] Op. Cit., State of California Division of Mines and Geology.

topographic anomalies that suggest the site has been affected by landslide activity. Similarly, the City of Los Angeles Safety Element does not show that the site is located within a potentially liquefiable area (recent alluvial deposits, groundwater 30 to 50 feet deep) or in a liquefiable area (recent alluvial deposits, groundwater less than 30 feet deep).[7] Earth materials encountered during site investigation consisted of dense older alluvial deposits not considered a hazard to the property.

Inundation and Tsunamis

The City of Los Angeles Safety Element (Exhibit G) shows that the site is not located in a low-lying coastal area subject to tsunami hazards, nor located within the boundaries of potential inundation due to the failure of a specific flood control facility. The site is approximately 16 miles inland with the Santa Monica Mountains situated between the ocean and the site. The project site is located approximately 4 miles east of the potential inundation area below the Los Angeles Reservoir immediately northwest of the San Diego Freeway (I-405)/Golden State Freeway (I-5) junction.

The west portion of the school site is directly to the south of a buried and concrete reinforced water tank. The tank was constructed and is owned and maintained by the City of Los Angeles Department of Water and Power. Given that the tank is buried to nearly its full height, inundation of the project site from the tank is considered remote and there has been no previous history of any such event.

ENVIRONMENTAL IMPACTS

THRESHOLD OF SIGNIFICANCE

Appendix G of the CEQA Guidelines, as amended through January 1, 2004, provides criteria under which a project could have a significant impact. Specifically, the project is considered to have a significant impact if it meets any of the following criteria and cannot be adequately mitigated:

- The project exposes people or structures to the risk of loss, injury or death involving rupture of a known earthquake fault as delineated by an Alquist-Priolo zone map, strong seismic groundshaking, seismically related ground failure including liquefaction or landslides;
- The project results in substantial soil erosion or the loss of topsoil;
- The project is located on a geologic unit that is unstable, or that would become unstable as a result of the project, and potentially result in an on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse; or
- The project would be located on expansive soil creating substantial risks to life or property.

Additionally, the Draft City of Los Angeles CEQA Thresholds Guide provides thresholds not encompassed by the CEQA Guidelines. These thresholds state that a significant impact would result if:

[7] Source: City of Los Angeles Safety Element, adopted November 26, 1996, Exhibit B.

- A project would cause or accelerate geologic hazards which would result in substantial damage to structures or infrastructure, or expose people to substantial risk of injury;

- The project constitutes a geologic hazard to other properties by causing or accelerating instability from erosion or would accelerate natural processes of wind and water erosion and sedimentation, resulting in sediment runoff or deposition which would not be contained or controlled on-site; or

- The project would destroy, permanently cover or materially and adversely modify one or more distinct and prominent geologic or topographic features. Such features may include, but are not limited to, hilltops, ridges, hillslopes, canyons, ravines, rock outcrops, water bodies streambeds and wetlands;

For purposes of this Draft EIR, the project is considered to have a significant impact if it exceeds any of the above thresholds as stated by Appendix G of the CEQA Guidelines or the Draft City of Los Angeles CEQA Thresholds Guide.

PROJECT IMPACTS

Project Grading

The project would develop the existing 4.89 net acre site with a 550-student secondary school campus. Four campus structures would be built, with two of the structures located above an at-grade parking level. New structures would be built to a maximum of three stories. All existing improvements on the site, including the single-family residence, would be removed to accommodate the project. An initial construction phase would grade and prepare the lower (southern) part of the site and provide temporary classroom structures on the upper part of the site where the residential lot is currently located.

Given the sloping nature of the middle of the property, significant grading would be required to provide level building sites and transitions. Approximately 19,800 cubic yards of materials would be excavated to prepare the site for construction. Approximately 10,500 cubic yards of material would be exported after accounting for soil shrinkage. Proposed grading would consist of excavating (removals) natural soils to establish desired elevations, temporary cuts for the retaining walls, backfilling retaining walls, and the removal and replacement of existing earth fills as compacted fill. In addition, foundation excavations would be made for the support of new structures and retaining walls.

Foundations and Retaining Walls

All earth materials derived from the excavations of foundations would be removed from the site or placed as certified compacted fill. Fill temporarily stockpiled on-site would be placed in a stable area, away from slopes, excavations and improvements and will not be cast over any descending slopes in an uncontrolled manner.

Specific engineering stability of proposed retaining walls has been analyzed by the geotechnical investigations of the site completed to date. Any supplemental investigation will be undertaken as required by the City of Los Angeles Department of Building and Safety in connection with issuance of a grading permit. All permanent retaining walls will be designed by the registered structural engineer in accordance with all applicable City of Los Angeles Building and Safety

Code requirements. Nevertheless, mitigation is warranted to ensure that any impacts would be reduced to a less than significant level, or to the fullest extent feasible

Site Stability

No evidence of geologic instability was encountered during the geotechnical investigations for the site and construction of the school structures is considered feasible. Building foundations would be supported on dense older alluvium The older alluvium and/or compacted fill should possess sufficient strength to support the proposed classroom building, performing arts center, athletics building, administration building and aquatics center, parking level and retaining walls and compacted fill pad for the swimming pool. Floor slabs may be supported on either alluvium or compacted fill. However, artificial fill and natural soils deposits are not considered suitable for foundation support as the materials possess adverse deformational characteristics requiring engineering mitigation. Therefore, such impacts would be considered significant prior to implementation of mitigation measures.

Soil Creep and Expansion

The fill materials encountered at the site may be subject to creep. Creep is the very slow movement of clayey fills, natural soils and weathered bedrock that takes place in the near surface portions of slopes. Typically, the zone of active creep is considered to be above a 3:1 plane projected up from the toe of the slope, or, a plane projected from the toe of slope to about 20 feet back from the top of slope. Creep rates are very slow with no distinct failure surfaces. The slow rate of deformation can have serious effects on buried utilities, drainage structures, roadways, slabs, fences walls, and similar structures and warrant mitigation. Site soils are considered to possess a low potential for expansion. However, slopes would be eliminated by the project, thus, creep is not expected to have any impact on the proposed development.

Settlement

Settlement of the proposed structures would occur. Typical settlements of ½" to ¾" between walls, within 20 feet or less of each other and under similar loading conditions, are considered normal. Total settlement on the order of ¾" should be anticipated. Differential settlement of the proposed structures is not expected to exceed ¾" and additional future settlement due to long term deformation and natural occurrences is still possible. Therefore, appropriate drainage and maintenance mitigation is warranted to reduce the risk of future structural hazards. Such impacts would be considered significant prior to implementation of proposed mitigation measures.

Seismic Hazards

Groundshaking

No known active faults, or faults that could result in ground rupture, traverse the site. Therefore, no significant impacts would occur on the site from potential surface fault rupture. As previously discussed in this Draft EIR section, there are a number of faults in the Southern California region that have proven to be active and are considered capable of causing earthquakes of significant magnitude. Consequently, the project site, as with the rest of the region, could experience significant groundshaking that could result in property damage or loss of life. Earthquake intensity is influenced by site conditions as well as proximity to earthquake epicenters or causative faults. Amplitudes of seismic waves tend to be amplified by passage through soft sediments overlying hard rock. To some extent, attenuation relationships used to calculate peak accelerations account for that tendency. Specifically, the geotechnical investigation for the project found that the ground acceleration expected for the site would be 0.469g, which could occur with a 6.6 magnitude along the potentially active Santa Susana Fault. For active faults, the maximum acceleration at the site is estimated to be 0.469g resulting from a magnitude 6.7 event along the Sierra Madre (San Fernando) Fault. **Table IV.E-1, Maximum Probable Earthquake Events**, depicts the peak ground accelerations that could be experienced on the site from 32 regional faults up to 50 miles from the site. The probability of occurrence of strong shaking diminishes markedly as estimated intensity increases. The probability that a maximum credible earthquake will occur at a minimum credible distance from the project site during the time the proposed structure will exist on the site is incredibly low. Furthermore, estimates of peak acceleration represent a force only momentarily imposed and not repeated during any earthquake. It is reasonable to design structures to resist peak accelerations due to maximum probable earthquakes.

Potential impacts from groundshaking will be reduced through proper engineering design and conformance with current City and State seismic, building and development code requirements. Specifically, the project will be designed to meet seismic safety standards and requirements as set forth in the City of Los Angeles Building Code, subject to the determination and approval of the City of Los Angeles Department of Building and Safety and other responsible agencies. Furthermore, as a private school, the proposed project is subject to specific earthquake safety requirements under the provisions of the Private Schools Building Safety Act of 1986 to ensure that children attending private schools are afforded equivalent earthquake safety as afforded public school students. The Act regulates the design and structure of private schools and provides for inspections by an enforcement agency. Under the Act, the governing board of each private school must establish an earthquake emergency procedure system in every private school building having an occupant capacity of 50 or more pupils or more than one classroom. The earthquake emergency procedure system must include: 1) a school building disaster plan; b) a drop procedure; 3) protective measures to be taken before, during, and following an earthquake; and 4) a program to ensure students and staff are trained in the earthquake emergency procedure system.[8] The project will be required to comply with these provisions. Consequently, no significant impacts from groundshaking would occur as a result of the proposed project.

Other Seismic Hazards

As addressed in the Existing Conditions discussion of this Draft EIR section, the likelihood of other geologic hazards impacting the site, such as liquefaction, seismically induced landsliding, flooding, inundation, tsunamis, or seiches, is considered low and no significant impacts to the project would be expected.

[8] Source: United States Department of Education, *State Regulation of Private Schools - June 2000, California. See* http://www.ed.gov/pubs/RegPrivSchl/californ.html

TABLE IV.E-1[1]
MAXIMUM PROBABLE EARTHQUAKE EVENTS

Abbreviated Fault Name	Approx. Distance (Miles)	Maximum Magnitude	RHGA Site Acceler.	Site Intensity MM
ACTIVE				
Sierra Madre (San Fernando)	7.5	6.7	0.469	X
Verdugo	10.6	6.7	0.360	IX
San Gabriel	10.7	7.0	0.264	IX
Malibu Coast	15.5	6.9	0.300	IX
Hollywood	15.5	6.4	0.225	IX
San Cayetano	16.4	6.8	0.268	IX
Sierra Madre	16.7	7.0	0.294	IX
Newport-Inglewood (L.A. Basin)	20.5	6.9	0.211	VIII
Palos Verdes	20.8	7.1	0.237	IX
Raymond	22.9	6.5	0.155	VIII
San Andreas – Mojave	28.9	7.1	0.171	VIII
San Andreas – 1857 Rupture	28.9	7.8	0.274	IX
San Andreas – Carrizo	30.1	7.2	0.176	VIII
Ventura – Pitas Point	32.5	6.8	0.125	VII
Whittier	37.9	6.8	0.100	VII
Red Mountain	41.8	6.8	0.089	VII
Garlock (West)	42.7	7.1	0.112	VII
Cucamonga	46.3	7.0	0.065	VI
POTENTIALLY ACTIVE				
Santa Susana	4.9	6.6	0.469	X
Northridge (E. Oak Ridge)	5.7	6.9	0.463	X
Holser	9.4	6.5	0.266	IX
Oak Ridge (Onshore)	11.4	6.9	0.270	IX
Simi-Santa Rosa	12.7	6.7	0.330	IX
Santa Monica	15.8	6.6	0.249	IX
Santa Ynez (East)	28.1	7.0	0.164	VIII
Clamshell-Sawpit	30.0	6.5	0.111	VII
M. Ridge-Arroyo Parida-Santa Ana	36.7	6.7	0.098	VII
Oak Ridge (Blind Thrust Offshore)	39.2	6.9	0.105	VII
Channel Island Thrust (Eastern)	39.8	7.4	0.145	VIII
San Jose	42.4	6.5	0.069	VI
Big Pine	44.7	6.7	0.074	VII
Chino-Central Ave. (Elsinore)	49.2	6.7	0.065	VI

1 Subsurface Designs, Inc., Limited Soils Engineering Investigation, Proposed Gymnasium & Parking Areas, 11023 Lurline Avenue, dated March 13, 2003, page A-IV-8.

MITIGATION MEASURES

Extensive site-specific mitigation measures have been identified by the geotechnical investigations for the proposed project. These measures address the site conditions identified in this Draft EIR section. Unless otherwise so specified by the City of Los Angeles, the following measures shall be incorporated into the project's design:

GRADING AND EARTHWORK

Hillside

IV.E-1 Prior to commencement of work, a pre-grading meeting shall be held. Participants at this meeting will be the contractor, the owner or his representative, and the soils engineer. The purpose of this meeting is to avoid any misunderstanding of any recommendations set forth in the geotechnical investigations that could cause delays in the project.

IV.E-2 Prior to the commencement of grading a surveyor should be retained to layout proposed grading. This should, as a minimum, consist of locating all proposed keys, tops of cuts, toe of fills, stability fills, setbacks, easements and areas requiring over excavation of the cut portions of any building pads. All staking shall be setback from the proposed grading area at least five feet.

IV.E-3 Sidehill fills should have a key placed at the toe of the proposed fill slope. This key should be cut a minimum of three feet into the older alluvium. The base of the key shall be sloped back into the hill. The key should be a minimum of twelve feet wide. Where slopes are steeper than 5:1, horizontal benches shall be cut into older alluvium in order to provide both lateral and vertical stability.

IV.E-4 Sidehill fills shall have backdrains installed at the compacted fill/older alluvium contact to prevent future porewater pressure buildup. Backdrains shall be placed in accordance with the subsequent "Backdrains" mitigation measures specifications.

IV.E-5 All areas to receive compacted fill, including all removal areas, keys, and benches, shall be reviewed and approved by the soils engineer or his representative prior to placing compacted fill.

IV.E-6 The grade that is determined to be satisfactory for the support of the filled ground shall then be scarified to a depth of at least six inches and moistened as required. The scarified ground should be compacted to at least 90 percent of the maximum laboratory density.

IV.E-7 Materials excavated uphill from where fills are to be placed, shall not be cast over the slope into the fill area. Materials shall be channeled down a ramp to the area to receive compacted fill and then spread in horizontal layers. As compacted fills are placed, this ramp will be trimmed out to expose the dense, tight materials approved by the soils engineer. The minimum vertical height of bench in approved materials shall be three feet. This will maintain the proper benching, as fill is placed up the slope. The ramp will be shifted periodically during the grading operations to allow for complete removal of the loose fill materials and for the proper benching.

IV.E-8 The fill soils shall consist of select materials approved by the project soils engineer or his or her representative. These materials may be obtained from the excavation areas and any other approved sources, and by blending soils from one or more sources. The material used shall be free from organic vegetable matter and other deleterious substances, and shall not contain rocks greater than eight inches in diameter nor of a quantity sufficient to make compaction difficult.

IV.E-9 The suitable fill material shall be placed in approximately level layers six inches thick, and moistened as required. Each layer shall be thoroughly mixed to ensure uniformity of moisture in each layer. When the moisture content of the fill is three percent or more below the optimum moisture content, as specified by the soils engineer, water shall be added and thoroughly mixed in until the moisture content is within three percent of the optimum moisture content. When the moisture content of the fill is three percent or more above the optimum moisture content, as specified by the soils engineer, the fill material shall be aerated by scarifying or shall be blended with additional materials and thoroughly mixed until the moisture content is within three percent or less of the optimum moisture content. Each layer shall be compacted to 90 percent of the maximum density, as determined by the latest version of ASTM D 1557, using approved compaction equipment.

IV.E-10 Review of the fill placement should be provided by the soils engineer or his representative during the progress of grading. In general, density tests will be made at intervals not exceeding two feet of fill height or every 500 cubic yards of fill placed.

IV.E-11 The contractor shall be required to obtain a minimum compaction of 90 percent out to the finish face of 2:1 fill slopes. Compaction on slopes may be achieved by over building the slope and cutting back to the compacted core or by direct compaction of the slope face with suitable equipment. Direct compaction on the slope faces shall be accomplished by back-rolling the slopes in three foot to four foot increments of elevation gain.

IV.E-12 During the inclement part of the year, or during periods when rain is threatening, all fill that has been spread and awaits compaction shall be compacted before stopping work for the day or before stopping because of inclement weather. These fills, once compacted, shall have the surfaces sloped to drain to an area where water can be removed. Work may start again, after the rainy period, once the site has been reviewed by the soils engineer and he has given his authorization to resume. Loose materials not compacted prior to the rain shall be removed and aerated so that the moisture content of these fills will be within three percent of the optimum moisture content. Surface materials previously compacted before the rain shall be scarified, brought to the proper moisture content and recompacted prior to placing additional fill, if deemed necessary by the soils engineer.

Backdrains

IV.E-13 To minimize the potential for future porewater pressure buildup behind the proposed compacted fill backdrains shall be installed at the compacted fill/older alluvium contact. Backdrains shall consist of four inch perforated pipes; placed with perforations down. The pipe should be encased with at least one foot of gravel around the pipe. The minimum cover on the pipe should be one foot. The gravel should consist of threequarter inch to one inch crushed rock. The first drain shall be placed no higher than three feet above the front cut of the key excavation. Additional backdrains shall be placed at intervals roughly equivalent to five feet of vertical rise in elevation or where deemed necessary by the project soils engineer.

Each drain shall be placed into a trench excavated along the back of a horizontal bench at the compacted fill/older alluvium contact. The trench bottom shall slope downward to each exit drain with a minimum gradient of two percent. The exit pipe shall consist of a four-inch diameter non-perforated pipe. This pipe need not be encased in gravel. It shall exit at a minimum gradient of two percent to the finish face of the fill slope. Exist drains shall be placed at intervals not exceeding one hundred feet. A cutoff wall consisting of concrete or soil cement shall be placed at the junction of the perforated pipe and the exit drains to stop seepage and force the water being removed into the perforated pipe.

Flatland

In addition to implementation of Mitigation Measures IV.E-1 through IV.E-13 for all parts of the property, the following measures are required for flatland areas within the site:

IV.E-14 Prior to placement of fill, all vegetation, rubbish, and other deleterious material shall be disposed of off site. The proposed structures shall be staked out in the field by a surveyor. This staking shall, as a minimum, include areas for over-excavation, toes of slopes, tops of cuts, setbacks, and easements. All staking shall be offset from the proposed grading area at least five feet.

IV.E-15 Proposed construction areas shall be excavated down to the older alluvium.

IV.E-16 The natural ground, which is determined to be satisfactory for the support of the filled ground, shall then be scarified to a depth of at least six inches (6") and moistened as required. The scarified ground should be compacted to at least 90 percent of the maximum laboratory density.

Foundations

IV.E-17 It is recommended that the proposed structures and retaining walls be supported by foundations extending into the older alluvium.

IV.E-18 All earth materials derived from the excavations of foundations shall be removed from the site or placed as certified compacted fill. Fill temporarily stockpiled on-site should be placed in a stable, away from slopes excavations and improvements. Earth materials shall not cast over any descending slopes in an uncontrolled manner.

Conventional

IV.E-19 The minimum continuous footing size is 12 inches wide for one-story structures, 15 inches wide for two-story structures and 18 inches for three-story structures. Pad foundations shall be a minimum of 24 inches square. All depths of embedment for footings are to be measured from the lowest adjacent grade or into the specified bearing material. All footings shall be designed to meet the foundation design values specified by Subsurface Design Inc.'s geotechnical investigations for the property dated

November 29, 2004 (and contained in this Draft EIR as Appendix G), unless otherwise so specified by the City of Los Angeles Department of Building and Safety.

IV.E-20 All continuous footings shall be reinforced with a minimum of four #4 bars, two placed near the top and two near the bottom. Reinforcing recommendations are minimums and may be revised by the structural engineer.

V.E.-21 Lateral loads may be resisted by friction at the base of the foundations and by passive resistance within the older alluvium. For the gymnasium , the coefficient of friction shall be used between the base of the foundation and the recommended bearing material. When combining passive and friction for resistance of lateral loads, the passive component should be reduced by one-third. For isolated poles, the allowable passive earth pressure may be doubled. For the educations building, a coefficient of friction of 0.35 may be used between the foundations and the recommended bearing material. The passive resistance may be assumed to act as a fluid with a density of 300 recommended bearing material. The passive resistance may be assumed to act as a fluid with a density of 300 pounds per cubic foot. A maximum passive pressure of 2,500 pounds per square foot may be assumed.

IV.E-22 All footing excavation depths will be measured from the lowest adjacent grade of recommended bearing material. Footing depths will not be measured from any proposed elevations or grades. Any foundation excavations that are not the recommended depth into the recommended bearing materials will not be acceptable to project geotechnical engineer.

FLOOR SLABS

IV.E-23 For the gymnasium, floor slabs should be reinforced with minimum #3 reinforcing bars, placed at 16 inches on center each way. Floor slabs may be supported directly on the older alluvium. Although precautions can be taken, the recommendations are not intended to stop movement, only to reduce cracking as a result of expansion and contraction of the soil.

IV.E-24 For the education building, pursuant to the City of Los Angeles Ordinance No. 171,939, floor slabs placed on compacted fill should be reinforced with minimum #4 reinforcing bars, placed at 16 inches on center each way. In addition, floor slabs should be underlain y four inches of crusher-run base, compacted into place by mechanical means, supported directly on the certified compacted fill.

IV.E-25 For crack control in secondary concrete slabs, the maximum control joint spacing should be eight feet. A closer control joint spacing would provide greater crack control. Additional control joints at curves and angle points are recommended.

IV.E-26 Where there are floors which may be affected by moisture, they should be protected by a polyethylene plastic vapor retarder. This retarder should be covered with a one inch layer of sand to prevent punctures in the vapor retarder and to aid in the cure of the concrete. It should be noted that this type of barrier will not preclude moisture damage to wood floors or vapor sensitive flooring. Further, if this type of vapor retarder is used, the minimum thickness should be 10 millimeters.

IV.E-27 Prior to the placement of concrete slabs, the expansive soils encountered on the subject property shall be pre-moistened until the moisture content reaches at least 120 percent of the optimum moisture content to a depth of 12 inches. The pre-moistened soils should be tested, and verified to be 120 percent of optimum moisture content, prior to the placement of the sub-grade. Following our testing and verification of moisture content, the sub-grade, polyethylene plastic, and sand must be placed within one day.

IV.E-28 Footing trench spoils should either be removed from the slab areas or compacted into place by mechanical means and tested for compaction.

EXCAVATION EROSION CONTROL

During inclement periods of the year, when rain is threatening (between November 1, and April 15, per the Los Angeles Building Code, Sec. 7002.), an erosion control plan shall be implemented and approved by the City of Los Angeles, to reduce the potential of site erosion. The following measures are recommendations for the plan that are valid for any time of the year that rain threatens an excavation:

Open Excavations

IV.E-29 All open excavations shall be protected from inclement weather. This is required to keep the surface of the open excavation from becoming saturated during rainfall. Saturation of the excavation may result in a relaxation of the soils which may result in failures.

Hillside Excavations

IV.E-30 All hillside excavations shall be covered during the rainy seasons. Stakes, ropes, and sandbags, along with plastic may be employed to help facilitate the coverage of the excavations. Coverage of the open excavations shall over-extend from the edges of the excavations in all directions.

IV.E-31 The project Civil Engineer shall be consulted for the limits of coverage. If possible, slopes around the open excavations shall be trimmed to slope away from the open excavation, so water runoff will not drain into the excavation. Any trees or planters that might cause failure around the open excavations, due to the saturated hillside, shall be anchored safely.

IV.E-32 After the rain has ceased, the excavations shall be reviewed by the project soil engineer and geologist for safety prior to recommencement of work.

Open Trenches

IV.E-33 No water shall be allowed to pond or saturate open trenches. All open trenches shall be covered with plastic and sandbags. Areas around trenches shall be sloped in such a way that water will not runoff into the trenches. After the rain has ceased, trenches shall be reviewed by project soil engineer for safety prior to recommencing work. All footing excavations must be reviewed by the project soil engineer again, prior to pouring concrete.

Grading in Progress

IV.E-34 During the inclement part of the year, or during periods when rain is threatening, all fill that has been spread and awaits compaction shall be compacted before stopping work for the day or before stopping because of inclement weather. These fills, once compacted, shall have the surfaces sloped to drain to one area where water may be removed.

IV.E-35 Work may start again, after the rainy period, once the site has been reviewed by the project soils engineer. Loose materials not compacted prior to the rain shall be removed and aerated so that the moisture content of these fills will be within three percent (3 percent) of the optimum moisture content.

IV.E-36 Surface materials previously compacted before the rain, shall be scarified, brought to the proper moisture content, and re-compacted prior to placing additional fill, if deemed necessary by the Soils Engineer.

IV.E-37 Additionally, it is suggested that all stock-piled loose fill materials, not compacted prior to anticipated rainfall, shall be covered with plastic. This action will keep the loose fill from being saturated with water, and will allow the grading to resume when the rain stops. It is always easier and less time consuming to increase moisture content of the fill than to aerate the fill to achieve optimum moisture.

IV.E-38 All of the above recommendations shall be considered as part of the erosion control plan for the subject property. However, these recommendations shall and will not supersede, nor limit any erosion control plans produced by the Project Civil Engineer.

EXCAVATIONS

IV.E-39 Excavations that are higher than ten feet in height, and all loose surficial material, shall be trimmed back at a gradient of 1:1. This should be verified by the geotechnical engineer and the Department of Building and Safety during construction so that modifications can be made if variations in the soil occur.

IV.E-40 Soil exposed in the proposed cuts should be kept moist, but not saturated, to reduce the potential for raveling and sloughing that may occur during construction.

IV.E-41 All excavations should be stabilized within 15 days of initial excavation. If this time is exceeded, the project soils engineer must be notified, and modifications, such as shoring or slope trimming may be required. Water should not be allowed to pond on top of the excavation, nor to flow toward it. All excavations should be protected from inclement weather. The top of the excavations should be barricaded to ensure that no vehicular surcharge be allowed within five feet of the top of cut.

IV.E-42 Construction methods shall meet the requirements of the Construction and General Industry Safety Orders, the Occupational Safety and Health Act, California OSHA in addition to other public agencies having jurisdiction.

RETAINING WALLS

Cantilever Walls

IV.E-43 Retaining walls shall be designed to resist an active earth pressure such as that exerted by compacted backfill. Retaining walls should be designed to resist an active earth pressure such as that exerted by compacted backfill. Retaining walls should be designed to resist an active earth pressure such as that exerted by compacted backfill or retained alluvium. Retaining walls up to fifteen feet in height may be designed (per assumptions identified in the geotechnical investigation dated November 29, 2004, prepared by Subsurface Designs, Inc. and included as Appendix G to this Draft EIR).

IV.E-44 All excavations shall be reviewed by the geotechnical engineer to ascertain if there are any conditions encountered that are different from those observed in explorations and modeled by the engineer's calculations. If changes are observed, additional recommendations will be made at that time. All excavations must be stabilized within 15 days or less.

IV.E-45 All loose material shall be cleaned from foundation excavations. Water shall not be allowed to pond or drain into or through the footing trench excavations. Proper compaction of the backfill is recommended to provide lateral support to adjacent properties.

Basement Walls

IV.E-46 Basement (restrained) walls for the proposed parking level should be designed to resist a trapezoidal distribution of lateral earth pressure. The lateral active earth pressure for the basement wall will be similar to that recommended for braced excavations. The "at rest" lateral earth pressure will be 65 pounds per cubic foot. Further, the maximum pressure developed should be taken as 29H. In addition to lateral earth pressure, this wall should be designed to resist the surcharge imposed by the proposed structures, footings, any adjacent buildings, or by adjacent traffic surcharge.

IV.E-47 All required backfill adjacent to basement (restrained) walls should be compacted to at least 90 percent of the maximum density or backfilled with gravel. Proper compaction of the backfill is recommended to provide lateral support to adjacent properties. Even with proper compaction of required backfill, settlement of the backfill may occur because of the significant depth of the backfill. Accordingly, utility lines, footings, or false work should be planned and designed to accommodate such potential settlements. All drainage requirements listed in the RETAINING WALL section of the above referenced report shall apply.

Wall Backfill

IV.E-48 Walls to be backfilled must be reviewed by the project Soils Engineer prior to commencement of the backfilling operation or placement of the wall backdrain system.

IV.E-49 After the wall backdrain system has been placed and the back side of the wall has been waterproofed, fill may be placed, if sufficient room allows, in layers not exceeding four inches in thickness and compacted to 90 percent of the maximum density, as determined by the latest version of ASTM D 1557.

IV.E-50 If the wall backfill consists of a granular free-draining material, a vertical gravel blanket at the face of the wall, or similar vertical drainage system, will not be required.

IV.E-51 If the onsite soils are used for wall backfill, and they have an expansion index of 30 or greater, a vertical gravel drain blanket, six inches (6") thick along the back side of the wall from top to bottom, shall be required.

IV.E-52 Where space does not permit compaction of material behind the wall, a granular backfill shall be used. This granular backfill shall consist of (½ inch to ¾ inch of crushed rock.

IV.E-53 All granular free-draining wall backfills shall be capped with a clayey compacted soil within the upper two feet of the wall for a depth of two feet. This compacted material should start below the required wall freeboard.

IV.E-54 Where slopes are steeper than 5:1 benching shall be required into competent materials as determined by the geotechnical engineer and the Department of Building and Safety in the field at the time of grading.

DRAINAGE AND MAINTENANCE

A comprehensive drainage system must be designed and incorporated into the final plans. In addition, any pads must be maintained and planted in a way that will allow this drainage system to function as intended. The following are specific drainage, maintenance, and landscaping recommendations that should be incorporated into the plan:

Pad Drainage

IV.E-56 Positive pad drainage shall be incorporated into the final plans. All drainage from the roof and pad shall be directed so that water does not pond adjacent to the foundations or flow toward them. All drainage from the site shall be collected and directed via non-erosive devices to a location approved by the building official. No alteration of this system shall be allowed.

Planters should not be placed adjacent to the structures. However, if planters are placed adjacent to the structure they shall be designed to drain away from the structure. All planters shall have a sufficient number of area drains to collect water and transferring it away from the foundation. Care should be taken to not saturate the soils, i.e. leaking irrigation lines or excessive landscape watering.

Landscaping (Planting)

IV.E-57 A landscape architect shall be consulted regarding planting adjacent to the development. Plants surrounding the development shall be of a variety that requires a minimum of watering. It will be the responsibility of the property owner to maintain the planting. Alterations of planting schemes shall be reviewed by the landscape architect.

Irrigation

IV.E-58 An adequate irrigation system will be required to sustain landscaping. Any leaks or defective sprinklers shall be repaired immediately. To mitigate erosion and saturation, automatic sprinkling systems shall be adjusted for rainy seasons. A landscape irrigation specialist should be consulted to determine the best times for landscape watering and the maximum amount of water usage.

Rodent Control

IV.E-59 The property owner must undertake and maintain a program which eliminates or controls burrowing animals. This must be an ongoing program in order to provide protection to the slope's stability. The uncontrolled burrowing by rodents has proven to be one of the major causes for surficial slope stability problems.

PAVING FOR PRIVATE DRIVEWAYS AND PARKING AREAS

IV.E-60 Existing grade and/or fill soils shall be removed and recompacted to a depth specified by the geotechnical engineer. Soils should be brought to optimum moisture content and recompacted to 90 percent of the maximum density as determined by the latest version of ASTM D1557, unless otherwise so specified by the geotechnical engineer.

IV.E-61 Paving sections shall meet the preliminary design criteria called for by the geotechnical investigations dated November 29, 3004, prepared by Subsurface Designs, Inc. (included as Appendix G to this Draft EIR), unless otherwise so specified by the City of Los Angeles Department of Building and Safety.

IV.E-62 Base course should consist of crusher-run base or decomposed granite. The base course should be brought to optimum moisture content and re-compacted to 95 percent of the maximum density as determined by the latest version of ASTM D 1557.

IV.E-63 Additional field and laboratory testing will be required, near the completion of grading, to determine the engineering characteristics of the material located at grade in the areas to receive paving. The results of this work, along with the required paving sections shall be provided in letter form.

CUMULATIVE IMPACTS

As with the proposed project, the impacts of related projects are site-specific, with each project subject to individual detailed review by the City of Los Angeles, Department of Building and Safety and other responsible agencies. Site specific conditions and mitigation measures will be imposed upon each related project thereby minimizing any potentially significant cumulative impacts that could result from concurrent development of the proposed project and known related projects. Of the identified related projects, two projects are proximate to the project site. Related Project No. 3 is a 7-unit single-family subdivision adjacent to the Rinaldi Street extension right-of-way on the south/east. The second neighboring project is Related Project No. 11, a 40-unit subdivision located immediately northeast of the site. Both of these related projects would be separated from the school site by the Rinaldi Street extension (and 104-foot existing right-of-way), which will be built by the City of Los Angeles to the City's design and engineering specifications. Neither project shares contiguous property with the proposed school site that could be impacted by concurrent development and grading. With respect to seismic hazards, the proposed project and all related projects could be subject to severe groundshaking in the event of a major earthquake, and thus expose an increased population and structures to an existing regional seismic hazard. Similarly, as with the proposed project, many of the related projects are located within the Chatsworth area in a City of Los Angeles fault rupture study area.

Each of these developments would be designed to conform to applicable seismic safety standards established by the City and State Building and Grading Codes, and site-specific recommendations identified by the Department of Building and Safety for each project. Any additional site-specific investigation that could be required of these sites would occur regardless of whether the proposed school is built and all of these projects would be subject to the same exhaustive engineering requirements imposed by the City of Los Angeles. Potential impacts from development of the proposed and related projects are therefore considered to be cumulatively adverse, but not significant, as they do not present hazards greater than those experienced by the region as a whole, would not create additional hazards and can be effectively mitigated. Consequently, no significant unmitigated cumulative impacts are anticipated.

LEVEL OF SIGNIFICANCE AFTER MITIGATION

Any potential hazards from underlying soil and seismic conditions would be mitigated through implementation of the identified mitigation measures. After mitigation, the proposed project would not expose people or structures to any unstable geologic conditions or seismically related geologic hazards, nor would it accelerate an existing hazard or create a new hazard. Mitigation would also provide for a thorough erosion control plan and prevent any potential erosion from creating new instability. No significant prominent geologic or topographic features would be altered by the project, as the site is neither uniquely situated nor prominent in its topography. Compliance with these mitigation measures would ensure that all engineering practices are soundly employed and meet accepted public safety standards. Although the project site could be subject to severe groundshaking in the event of a major earthquake, any risks from such hazards would not be greater than those present throughout the Chatsworth community and the Southern California region as a whole.