

## IV. MITIGATION MONITORING PLAN

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### 1. INTRODUCTION

Section 21081.6 of the Public Resources Code requires a Lead Agency to adopt a “reporting or monitoring program for changes to the project or conditions of project approval, adopted in order to mitigate or avoid significant effects on the environment.” In addition, Section 15097(a) of the *California Environmental Quality Act (CEQA) Guidelines* requires that:

*[I]n order to ensure that the mitigation measures and project revisions identified in the EIR or negative declaration are implemented, the public agency shall adopt a program for monitoring or reporting on the revisions which it has required in the project and measures it has imposed to mitigate or avoid significant environmental effects. A public agency may delegate reporting or monitoring responsibilities to another public agency or to a private entity which accepts the delegation; however, until mitigation measures have been completed the lead agency remains responsible for ensuring that implementation of the mitigation measures occurs in accordance with the program.*

The City of Los Angeles Department of City Planning has been designated as the Lead Agency for the proposed project at the project site.

A Draft EIR was prepared to address the potential environmental impacts of the project. Where appropriate, the Draft EIR identified project design features or recommended mitigation measures to avoid or to mitigate potential impacts identified to a level where not significant impact on the environment would occur. This Mitigation Monitoring Program (MMP) is designed to monitor implementation of the mitigation measures required for the Hidden Creeks Estates project.

The mitigation measures identified in the Draft EIR are categorized by environmental impact section. Following each mitigation measure is identification of the following:

- **Monitoring Phase:** The phase of the project during which the mitigation measure shall be monitored, such as: Pre-Construction, including the design phase; Construction; Prior to Issuance of a Building Permit; Prior to Issuance of a Certificate of Occupancy; Occupancy (post-construction).
- **Enforcement Agency:** The agency with the power to enforce the mitigation measure.
- **Monitoring Agency:** The agency to which reports involving feasibility, compliance, implementation and development are made.

The MMP for the Hidden Creeks Estates project will be in place throughout all phases of the project. The project applicant will be responsible for implementing all mitigation measures unless otherwise noted.

The applicant shall also be obligated to provide certification, as identified below, to the appropriate monitoring agency and the appropriate enforcement agency that compliance with the required mitigation measure has been implemented. The City's existing planning, engineering, review, and inspection processes will be used as the basic foundation for the MMP procedures and will also serve to provide the documentation for the reporting program.

The substance and timing of each certification report that is submitted to City Planning shall be at the discretion of City Planning. Generally, each report will be submitted to City Planning in a timely manner following completion/implementation of the applicable mitigation measure and shall include sufficient information to reasonably determine whether the intent of the measure has been satisfied. City Planning, in conjunction with the project applicant, shall assure that project construction occurs in accordance with the MMP. The South Coast Air Quality Management District (SCAQMD) shall be responsible for the implementation of corrective actions relative to violations of SCAQMD rules associated with mitigation. Departments listed below are all departments of the City of Los Angeles, unless otherwise noted.

## **2. MITIGATION FOR ENVIRONMENTAL IMPACTS**

### **IV.A.1. Aesthetics**

**MM-BIO-7** would mitigate potential impacts to aesthetics. See **Subsection IV.C Biological Resources**, below.

### **IV.A.2. Obstruction of Views**

No mitigation measures are required because the proposed project would not result in any significant impacts regarding obstruction of views.

### **IV.A.3. Nighttime Illumination**

**MM-NIGHT-1** The use of security lighting during project construction shall be limited to only those locations on the construction site requiring illumination.

|                            |                                                                       |
|----------------------------|-----------------------------------------------------------------------|
| <b>Monitoring Phase:</b>   | <b>Construction</b>                                                   |
| <b>Enforcement Agency:</b> | <b>Department of Building and Safety, Department of City Planning</b> |
| <b>Monitoring Agency:</b>  | <b>Department of Building and Safety, Department of City Planning</b> |

MM-NIGHT-2 All security lights shall be properly shielded and projected downwards during construction such that light is directed onto the project site only.

**Monitoring Phase:** Construction  
**Enforcement Agency:** Department of Building and Safety, Department of City Planning  
**Monitoring Agency:** Department of Building and Safety, Department of City Planning

MM-NIGHT-3 Prior to the issuance of a grading permit, the project applicant shall develop a lighting plan that shall be subject to approval by the City of Los Angeles Planning Department. In the plan, all lighting shall be downcast luminaries with light patterns shielded and directed away from adjacent open space areas. Mercury vapor and halide lighting shall not be used on the perimeter of the developed areas and in areas adjacent to undeveloped open space. Security lighting throughout the project shall be controlled by motion detectors, to limit light shine to necessary periods.

**Monitoring Phase:** Pre-Construction  
**Enforcement Agency:** Department of Building and Safety, Department of City Planning  
**Monitoring Agency:** Department of Building and Safety, Department of City Planning

MM-NIGHT-4 High pressure sodium and/or cut-off fixtures shall be used instead of typical mercury-vapor fixtures for outdoor lighting.

**Monitoring Phase:** Construction  
**Enforcement Agency:** Department of Building and Safety, Department of City Planning  
**Monitoring Agency:** Department of Building and Safety, Department of City Planning

MM-NIGHT-5 The lighting plan shall provide structural and/or vegetative screening from sensitive uses.

**Monitoring Phase:** Design  
**Enforcement Agency:** Department of Building and Safety, Department of City Planning  
**Monitoring Agency:** Department of Building and Safety, Department of City Planning

MM-NIGHT-6 The lighting plan shall design exterior lighting to conform illumination to the project site and/or to areas which do not include light-sensitive uses.

**Monitoring Phase:** Design  
**Enforcement Agency:** Department of Building and Safety, Department of City Planning  
**Monitoring Agency:** Department of Building and Safety, Department of City Planning

MM-NIGHT-7 The hours of operation of outdoor lighting at the equestrian facility shall be restricted to the hours of 6:00 AM to 10:00 PM. The hours of operations of outdoor lighting at the public park shall be restricted to the hours of 7:00 AM to 10:00 PM.

**Monitoring Phase:** Operation  
**Enforcement Agency:** Department of Building and Safety, Department of City Planning  
**Monitoring Agency:** Department of Building and Safety, Department of City Planning

#### **IV.B. Air Quality**

MM-AQ-1 The construction contractor shall develop a Construction Traffic Emission Management Plan to minimize emissions from vehicles including, but not limited to, scheduling truck deliveries to avoid peak hour traffic conditions, consolidating truck deliveries, and prohibiting truck idling in excess of 5 minutes.

**Monitoring Phase:** Construction  
**Enforcement Agency:** South Coast Air Quality Management District  
**Monitoring Agency:** South Coast Air Quality Management District

MM-AQ-2 The construction contractor shall ensure that the use of all construction equipment is suspended during first-stage smog alerts.

**Monitoring Phase:** Construction  
**Enforcement Agency:** South Coast Air Quality Management District, Department of Building and Safety  
**Monitoring Agency:** South Coast Air Quality Management District, Department of Building and Safety

MM-AQ-3 The construction contractor shall enforce the use electricity or alternate fuels for on-site mobile equipment instead of diesel equipment to the extent feasible.

**Monitoring Phase:** Construction  
**Enforcement Agency:** South Coast Air Quality Management District  
**Monitoring Agency:** South Coast Air Quality Management District

MM-AQ-4 The construction contractor shall ensure that all construction equipment is maintained by conducting regular tune-ups according to the manufacturers' recommendations.

**Monitoring Phase:** Construction  
**Enforcement Agency:** South Coast Air Quality Management District  
**Monitoring Agency:** South Coast Air Quality Management District

MM-AQ-5 The construction contractor shall ensure the use of electric welders to avoid emissions from gas or diesel welders, to the extent feasible.

**Monitoring Phase:** Construction  
**Enforcement Agency:** South Coast Air Quality Management District, Department of Building and Safety  
**Monitoring Agency:** South Coast Air Quality Management District, Department of Building and Safety

MM-AQ-6 The construction contractor shall ensure the use of on-site electricity or alternative fuels rather than diesel-powered or gasoline-powered generators to the extent feasible.

**Monitoring Phase:** Construction  
**Enforcement Agency:** South Coast Air Quality Management District  
**Monitoring Agency:** South Coast Air Quality Management District

MM-AQ-7 Prior to use in construction, the project applicant will evaluate the feasibility of retrofitting the large off-road construction equipment that will be operating for significant periods. Retrofit technologies such as particulate traps, selective catalytic reduction, oxidation catalysts, air enhancement technologies, etc., will be evaluated. These technologies will be required if they are verified by the Air Resources Board (ARB) and/or the US Environmental Protection Agency (EPA) and are commercially available and can feasibly be retrofitted onto construction equipment.

**Monitoring Phase:** Pre-Construction  
**Enforcement Agency:** South Coast Air Quality Management District  
**Monitoring Agency:** South Coast Air Quality Management District

MM-AQ-8 The construction contractor shall ensure that traffic speeds on all unpaved roads are reduced to 15 miles per hour or less.

**Monitoring Phase:** Construction  
**Enforcement Agency:** South Coast Air Quality Management District, Department of Building and Safety  
**Monitoring Agency:** South Coast Air Quality Management District, Department of Building and Safety

MM-AQ-9 The construction contractor shall ensure that active sites are watered at least three times daily during dry weather.

**Monitoring Phase:** Construction  
**Enforcement Agency:** South Coast Air Quality Management District, Department of Building and Safety  
**Monitoring Agency:** South Coast Air Quality Management District, Department of Building and Safety

MM-AQ-10 The construction contractor shall schedule all construction activities that affect traffic flow during off-peak hours (e.g., between 7:00 PM and 6:00 PM and between 10:00 AM and 3:00 PM).

**Monitoring Phase:** Construction  
**Enforcement Agency:** South Coast Air Quality Management District, Department of Building and Safety  
**Monitoring Agency:** South Coast Air Quality Management District, Department of Building and Safety

#### IV.C. Biological Resources

MM-BIO-1 To determine the presence of southwestern willow flycatcher and least Bell's vireo within 500 feet of proposed construction activities, which includes the Mason Avenue bridge across Mormon Canyon, the project applicant shall retain a qualified biologist(s) to conduct southwestern willow flycatcher surveys within suitable habitats, in accordance with USFWS protocols (USFWS 2000), and least Bell's vireo surveys within suitable habitats, in accordance with USFWS protocols (USFWS 2001) prior to grading or ground disturbing activities. If southwestern willow flycatcher and/or least Bell's vireo individuals or active nests are observed or detected during protocol surveys, construction activities in the area shall be halted/postponed, and the CDFG and USFWS shall be contacted and informed of the finding immediately. If surveys result in observation of nesting individuals, construction activities within a minimum of 500 feet of the nest shall not commence until the nest is vacated and juveniles have fledged and

there is no evidence of a second attempt at nesting, as determined by a qualified biologist and confirmed by the CDFG and USFWS.

In addition, if an active willow flycatcher and/or least Bell's vireo nest are found within 500 feet of proposed development and avoidance of habitat (within 500 feet of development) is not feasible, the project proponent must secure a California Incidental Take Permit before ground/vegetation disturbance activities commence. Within the Incidental Take Permit, the California Department of Fish and Game shall propose mitigation conditions for temporarily and/or permanent impacts. The applicant shall either re-create the impacted riparian habitat on the project site or shall secure purchase and conservation (through direct placement of a conservation easement over lands, or purchase of lands in a program that has already entered a conservation easement) of suitable riparian habitat for the nesting species. Such habitat shall contain Mixed Willow Riparian Woodland of a similar or better quality as that within which the active nest was found. The creation/purchase of such lands shall be carried out in coordination with the CDFG and USFWS, and on the basis of a minimum 3:1 ratio, or at a ratio determined to be appropriate by the wildlife agencies, for the acreage of nesting habitat determined to be impacted by the proposed project.

**Monitoring Phase:** Pre-construction/Construction  
**Enforcement Agency:** California Department of Fish and Game  
**Monitoring Agency:** California Department of Fish and Game

MM-BIO-2 To avoid impacts to nesting birds, the applicant shall retain a qualified biologist (with selection to be reviewed by the City of Los Angeles Planning Department) to conduct nest surveys within suitable nesting habitat within the project site prior to grading, construction, or site preparation activities. Specifically, within 30 days of initiation of ground disturbance activities associated with construction or grading, a qualified biologist shall conduct weekly surveys to determine if active nests of bird species protected by the Migratory Bird Treaty Act and/or the California Fish and Game Code are present in the construction zone or within 300 feet (500 for raptors) of the construction zone. Because many birds known to occur in the project area (including Cooper's hawk and several species of hummingbirds) may nest during the late winter, breeding bird surveys shall be carried out both during the typical nesting/breeding bird season (mid-March through September) and in January through early March. The surveys shall continue on a weekly basis, with the last survey being conducted no more than three days prior to initiation of clearance/construction work. If ground disturbance

activities are delayed, then additional pre-construction surveys will be conducted such that no more than three days will have elapsed between the last survey and the commencement of ground disturbance activities. Surveys shall include examination of trees, shrubs, and the ground within grassland for nesting birds, as several bird species known to the area are shrub or ground nesters, including mourning dove.

If active nests are found, clearing and construction activities within 300 feet of the nest (500 feet for raptors) shall be postponed or halted until the nest is vacated and juveniles have fledged, as determined by the biologist, and there is no evidence of a second attempt at nesting. Limits of construction to avoid an active nest shall be established in the field with flagging, fencing, or other appropriate barriers and construction personnel shall be instructed on the sensitivity of nest areas. The biologist shall serve as a construction monitor during those periods when construction activities will occur near active nest areas to ensure that no inadvertent impacts on these nests will occur. The results of the survey, and any avoidance measures taken, shall be submitted to the City of Los Angeles Planning Department within 30 days of completion of the pre-construction surveys and/or construction monitoring to document compliance with applicable state and federal laws pertaining to the protection of native birds.

**Monitoring Phase:** Pre-construction/Construction  
**Enforcement Agency:** California Department of Fish and Game, Department of City Planning  
**Monitoring Agency:** California Department of Fish and Game, Department of City Planning

MM-BIO-3 Prior to conducting pre-construction nesting bird surveys, the qualified biologist shall consult with the CDFG to identify possible relocation sites for captured individuals, and be in possession of a CDFG Scientific Collection Permit and CDFG Memorandum of Understanding prior to survey initiation. The biologist conducting the surveys shall examine on-site trees and other potential roosting habitat (as determined by the biologist) for evidence of roosting bats (western yellow bat and Yuma myotis), particularly during the breeding season of native bats (generally April 1 through August 31). Surveys should include examination of trees for roosting bats under bark, in trunks, and behind leaves, as feasible. Bats are known to use day roosts principally for extended rest periods and night roosts for eating and brief rest periods. Bats are generally active at night, exiting the roost at dusk to feed (Graham 1994); therefore, surveys should include review of woodland areas at dusk. If active roosts are found, construction shall be postponed within 300 feet

of the location until the roost is vacated and (if present) juveniles have fledged, as determined by the biologist.

**Monitoring Phase:** Design/Pre-construction  
**Enforcement Agency:** California Department of Fish and Game  
**Monitoring Agency:** California Department of Fish and Game

MM-BIO-4 The applicant shall retain a qualified biologist (approved by the City of Los Angeles Planning Department) to conduct pre-construction surveys on the project site in the proposed development areas and 500 feet beyond the grading limits for the presence of those special-status wildlife species with the potential to occur in on-site habitats that will be directly impacted by project activities. The qualified biologist shall possess a CDFG Scientific Collection Permit and obtain CDFG Memorandum of Understanding prior to the implementation of pre-construction surveys. The implementation of these aforementioned mitigation measures would reduce impacts to special-status species to below a significant level. Surveys shall include an examination of the on-site pool and the perennial areas of Mormon and Browns Canyon streams for two-striped garter snake and southwestern pond turtle, and on-site scrub, woodland, and grassland plant communities for silvery legless lizard, coast (San Diego) horned lizard, coastal western whiptail, San Bernardino ring-neck snake, San Diego black-tailed jackrabbit, and San Diego desert woodrat.

If one of the above special-status species is observed on the project site during clearance surveys, potential loss of individual animals shall be mitigated by: (1) ensuring that construction activities do not enter the specific area in which the individual was observed until the individual has been observed vacating the area and moving into habitat that will not be directly impacted by project activities (appropriate for highly mobile species, such as San Diego black-tailed jackrabbit), or (2) through active trapping and relocation program, conducted by a qualified biologist and in coordination with the CDFG, that will move individuals to suitable on-site habitat that will not be directly impacted by project implementation (appropriate for less mobile species, such as two-striped garter snake, coast horned lizard, or San Diego desert woodrat).

Silt fencing shall be placed at the limits of grading to prevent animals from moving onto the site following the pre-construction surveys. The bottom of the silt fence shall be back-filled to prevent animals from moving under the fence. During construction, the fence shall be monitored weekly and repairs shall be made immediately following inspection.

Silt fencing shall be removed following ground disturbing activities (e.g., vegetation clearing and grading).

**Monitoring Phase: Pre-Construction**

**Enforcement Agency: California Department of Fish and Game, Department of City Planning,**

**Monitoring Agency: California Department of Fish and Game, Department of City Planning**

MM-BIO-5 Because riparian corridors are ecologically sensitive areas, the applicant shall install fencing around the on-site riparian areas associated with Browns and Mormon canyon creeks, and post interpretive signs identifying such areas for residents. The fencing shall serve to discourage entrance of humans and domestic animals into riparian areas, in order to protect the sensitive plants, animals, habitat, and wildlife movement areas within riparian corridors. The interpretive signs shall include information regarding the high biological value of riparian corridors, including information about plant and wildlife species that are found in such habitat, wildlife movement through such corridors, and benefits to water quality provided by natural riparian habitat. Where existing trails serving as equestrian and hiking paths will remain in the riparian corridors as part of the proposed project, fencing and signage shall be placed on the outer limits of the trail edges, allowing continued recreational access. If a trail easement is provided to the permitting authority of the project, necessitating trail improvements, fencing and signage shall accommodate the improvements. The homeowners' association (HOA), or an acceptable land manager/agency, as approved by the City of Los Angeles Planning Department, shall be responsible for maintaining this program, including fencing and signs. This mitigation will also serve to keep off-road vehicles and recreational uses out of non-trail portions of Browns and Mormon canyons, which will reduce indirect impacts to local wildlife movement associated with operation of the proposed project.

**Monitoring Phase: Construction/Operation**

**Enforcement Agency: California Department of Fish and Game, Department of City Planning**

**Monitoring Agency: California Department of Fish and Game, Department of City Planning**

MM-BIO-6 To avoid direct impacts to the Bulrush-Cattail Wetland located approximately 125 feet to the west of the grading area associated with extension of Mason Avenue, the applicant shall retain a qualified biologist (approved by the City of Los Angeles Planning Department) to fence off protected areas associated with the wetland, and to periodically (for example, on a weekly basis) check in on the wetland to make sure no impacts have

occurred. Upon completion of grading and paving activities associated with Mason Avenue extension, the biologist shall submit a report regarding measures taken to protect the wetland and results to the City of Los Angeles Planning Department.

**Monitoring Phase:** Construction  
**Enforcement Agency:** California Department of Fish and Game, Department of City Planning  
**Monitoring Agency:** California Department of Fish and Game, Department of City Planning

MM-BIO-7 According to the Jurisdictional Delineation prepared for the subject site (attached as **Appendix IV.C**), the project site and off-site impact areas contain 4.46 acres of USACE protected wetlands or drainages, of which 1.47 acres would be impacted directly or indirectly by grading. To mitigate for this impact, the applicant shall either re-create the impacted USACE waters on the project site or shall secure purchase and conservation (through direct placement of a conservation easement over lands, or purchase of lands in a program that has already entered a conservation easement) of suitable USACE waters. As feasible, mitigation for USACE waters may be carried out in conjunction with mitigation for potential impacts to special-status, riparian wildlife species (MM-BIO-1), mitigation for impacts to RWQCB areas (MM-BIO-7), and mitigation for impacts to CDFG waters (MM-BIO-8). The creation/purchase of USACE waters shall be carried out in coordination with the USACE during submittal of the Jurisdictional Delineation to the USACE for review and certification, and on the basis of a minimum 2:1 ratio, or at a ratio determined to be appropriate by the USACE. Prior to the issuance of a grading permit, the resulting USACE certification shall be provided to the City of Los Angeles Planning Department. When the USACE permit is obtained, mitigation measures recommended by the USACE as part of the permitting process shall be implemented.

**Monitoring Phase:** Design/Construction  
**Enforcement Agency:** Army Corps of Engineers  
**Monitoring Agency:** Army Corps of Engineers

MM-BIO-8 Concurrent with the processing of the 404 permit, a RWQCB 401 Certification shall be obtained and mitigation measures recommended by the RWQCB as part of the permitting process shall be implemented.

**Monitoring Phase:** Design/Pre-construction  
**Enforcement Agency:** Los Angeles Regional Water Quality Control Board  
**Monitoring Agency:** Los Angeles Regional Water Quality Control Board

MM-BIO-9 According to the Jurisdictional Delineation, 27.76 acres of state-protected waters and associated vegetation falling under the jurisdiction of the CDFG occur on the project site or within Mason Avenue extension areas and up to 1.1 acres within the remedial grading areas, of which 9.54 acres of CDFG waters would be impacted by grading. To mitigate for this impact, the applicant shall either re-create the impacted CDFG waters on the project site or shall secure purchase and conservation (through direct placement of a conservation easement over lands, or purchase of lands in a program that has already entered a conservation easement) of suitable CDFG waters. As feasible, mitigation for CDFG waters may be carried out in conjunction with mitigation for potential impacts to special-status, riparian wildlife species (MM-BIO-1), mitigation for impacts to RWQCB areas (MM-BIO-7), and mitigation for impacts to USACE waters (MM-BIO-6). The creation/purchase of CDFG waters shall be carried out in coordination with the CDFG during submittal of the SAA to the CDFG for approval, and on the basis of a minimum 2:1 ratio, or at a ratio determined to be appropriate by the CDFG. Prior to the issuance of a grading permit, the resulting CDFG SAA shall be provided to the City of Los Angeles Planning Department. When the SAA is obtained, mitigation measures recommended by the CDFG as part of the SAA shall be implemented.

**Monitoring Phase:** Design/Pre-construction  
**Enforcement Agency:** California Department of Fish and Game  
**Monitoring Agency:** California Department of Fish and Game

MM-BIO-10 Any permits obtained for impacts to jurisdictional waters and/or wetlands shall be maintained on the project site during all construction activities.

**Monitoring Phase:** Construction  
**Enforcement Agency:** California Department of Fish and Game, Army Core of Engineers  
**Monitoring Agency:** California Department of Fish and Game, Army Core of Engineers

MM-BIO-11 A public awareness program shall be developed to educate residents of the Hidden Creeks Estates project about impacts to biological resources resulting from increased human and domestic animal presence in the area. This program shall include supplying educational information to future residents of the project site regarding the importance of preventing unleashed domestic animals from entering ecologically sensitive areas, such as riparian habitat areas and sensitive plant communities (including on-site California Walnut Woodland and Mixed Willow Riparian Woodland), and of prohibiting off-leash domestic animals from disturbing native wildlife species. In addition, the public

awareness program shall address the impact domestic cats have on local wildlife populations (especially birds and small mammals), to encourage pet owners to keep their cats indoors.

**Monitoring Phase:** Operation  
**Enforcement Agency:** Department of Animal Regulation, Department of City Planning  
**Monitoring Agency:** Department of Animal Regulation, Department of City Planning

MM-BIO-12 All dogs owned by future residents of the Hidden Creeks Estates project shall be contained within their property boundary, or shall be leashed while in designated open space areas. The HOA, or an acceptable land manager/agency, as approved by the City of Los Angeles Planning Department, shall add a prohibition to the covenants, conditions, and restrictions (CCRs) for the community against unleashed dogs in open space areas.

**Monitoring Phase:** Operation  
**Enforcement Agency:** Department of Animal Regulation, Los Angeles Planning Department  
**Monitoring Agency:** Department of Animal Regulation, Los Angeles Planning Department

MM-BIO-13 To reduce indirect impacts to wildlife remaining in the project area upon implementation of the Hidden Creeks Estates project, waste and recycling receptacles that discourage foraging by wildlife species adapted to urban environments shall be installed in common areas throughout the project site. The HOA, or an acceptable land manager/agency, as approved by the City of Los Angeles Planning Department, shall be responsible for maintaining these receptacles.

**Monitoring Phase:** Construction/Operation  
**Enforcement Agency:** Los Angeles Planning Department  
**Monitoring Agency:** Los Angeles Planning Department

MM-BIO-14 The HOA, or an acceptable land manager/agency, as approved by the City of Los Angeles Planning Department, shall supply educational information to future residents of the project site regarding the importance of not feeding wildlife, ensuring that trash containing food is not accessible to wildlife, and not leaving pet food outside.

**Monitoring Phase:** Operation  
**Enforcement Agency:** Los Angeles Planning Department  
**Monitoring Agency:** Los Angeles Planning Department

MM-BIO-15 Prior to the issuance of a grading permit, the project applicant shall develop a lighting plan that shall be subject to approval by the City of Los Angeles Planning Department. In the plan, all lighting shall be downcast luminaries with light patterns directed away from, and shielded so that light is not directed into adjacent open space areas. Mercury vapor and halide lighting shall not be used on the perimeter of the developed areas and in areas adjacent to undeveloped open space. Security lighting throughout the project shall be controlled by motion detectors, to limit light shine to necessary periods.

**Monitoring Phase:** Design  
**Enforcement Agency:** Department of Building and Safety, Los Angeles Planning Department  
**Monitoring Agency:** Department of Building and Safety, Los Angeles Planning Department

MM-BIO-16 To mitigate for the indirect effect to biological resources on the project site resulting from the increased presence of non-native plant species on the site, the applicant shall remove existing non-native plant species from open space areas that will not be developed as part of project implementation, including on-site drainages. Non-native plants will be removed from within riparian corridors associated with Browns Canyon and Mormon Canyon drainages. In addition, non-native plant species will be removed from upland portions of the site that will remain undeveloped. Non-native plant species that should be included in the removal plan include, but are not limited to, Peruvian pepper tree (*Schinus molle*), Italian thistle (*Carduus pycnocephalus*), and yellow star-thistle (*Centaurea solstitialis*). Castor bean (*Ricinus communis*) and arundo (*Arundo donax*) have not been observed on site, but if they are observed at any point during non-native plant removal efforts, individuals of these plant species shall also be removed. A certified biologist shall be hired to conduct/oversee the removal work. Invasive plant removal shall take place upon completion of grading activities, and shall continual on an annual basis for three years after grading, at which time a report documenting invasive plant removal methods shall be submitted to the City of Los Angeles Planning Department.

Invasive plant removal shall be carried out such that practical, currently accepted invasive weed management techniques approved by an invasive weed specialist are used to remove those plant species that are within control of the Hidden Creeks Estates property owners. Removal of invasive plant species whose continual introduction to the site from a limitless supply of seed bank on adjacent lands that are outside the control of Hidden Creeks property owners would not be considered feasible, for example. For those invasive annual grass species for which removal is considered feasible, it is recommended that biological control be considered, as other methods of removal (such

as hand pulling of invasive annual grasses) would not be considered practical, and others (such as use of fire for clearing large tracts of invasive grasses) would not be considered safe.

**Monitoring Phase:** Post-grading for three years  
**Enforcement Agency:** Department of Fish and Game, Los Angeles Planning Department  
**Monitoring Agency:** Department of Fish and Game, Los Angeles Planning Department

MM-BIO-17 Prior to the issuance of a grading permit, the applicant shall prepare a landscape plan for all common areas of the site. This plan shall be prepared by or approved by a qualified biologist and will be subject to review by the City of Los Angeles Planning Department. The plan shall include a plant palette composed of non-invasive species that are adapted to the conditions found on the project site, including the condition of a dry, low rainfall climate. The landscaping plan will also include a list of invasive plant species prohibited from being planted in the common areas of the project site. In addition, the landscaping plan should include as an attachment a copy of the Tree Preservation Program from the Preliminary Tree Report prepared by L. Newman Design Group and provided as an attachment to this document in Appendix IV.C (see the Draft EIR). The landscaper should be made aware that landscape planting, irrigation, and/or placement of utilities should not occur within the dripline (outermost edge of a tree's foliage) of any protected tree. The HOA, or an acceptable land manager/agency, as approved by the City of Los Angeles Planning Department, shall be responsible for providing the landscape plan to landscapers hired to install landscaping in common areas within the Hidden Creeks Estates project site.

A minimum of 0.8 acre of common area shall be vegetated with native purple needlegrass in order to mitigate for the loss of 0.4 acre of native purple needlegrass on site. This 0.8 acre area shall be depicted on the landscape plan.

**Monitoring Phase:** Design/Pre-construction/Operation  
**Enforcement Agency:** Department of Building and Safety, Urban Forestry Division of the Bureau of Street Services, Los Angeles Planning Department  
**Monitoring Agency:** Department of Building and Safety, Urban Forestry Division of the Bureau of Street Services, Los Angeles Planning Department

MM-BIO-18 The HOA, or an acceptable land manager/agency, as approved by the City of Los Angeles Planning Department, shall supply future residents of the project site with a list of invasive plant species prohibited from being planted on the project site and with

educational materials emphasizing the importance of planting non-invasive, drought-tolerant plants.

**Monitoring Phase:** Operation  
**Enforcement Agency:** California Department of Fish and Game, Los Angeles Planning Department  
**Monitoring Agency:** California Department of Fish and Game, Los Angeles Planning Department

MM-BIO-19 To mitigate for the removal of 0.3 acre of Mixed Willow Riparian Woodland during grading for Mason Avenue extension, the project applicant shall be responsible for hiring a qualified biologist to re-vegetate on-site areas with this vegetation type. If conditions are appropriate after construction of the Mason Avenue access road, on-site mitigation shall be carried out within Mormon Canyon drainage, near where existing Mixed Willow Riparian Woodland will be removed. If conditions are not appropriate within Mormon Canyon drainage where grading has occurred, re-vegetation shall take place in near-by downstream/upstream portions of Mormon Canyon drainage or Browns Canyon drainage. The mitigation shall be carried out on a minimum 2:1 basis (or as determined to be appropriate by CDFG), resulting in the creation of a minimum of 0.6 acre of this vegetation type. Re-vegetation shall be carried out through salvage of willow branches from the project site during/prior to grading. Salvaged willow branches shall be bundled and staked within Mormon Creek. In addition, native, riparian seed mix shall be applied to the re-vegetation area. Re-vegetation shall either take place just prior to the rainy season (October through April), or the re-vegetation area shall be watered for a minimum of one year (or as long as determined to be appropriate by the CDFG) to promote growth. The re-vegetation plan shall be prepared by a qualified biologist and approved by the CDFG prior to implementation. Because the Mixed Willow Riparian Woodland vegetation community occurs within areas determined to be likely jurisdictional waters of the CDFG/USACE, re-vegetation of this plant community shall be considered suitable mitigation for removal/fill of 0.3 acre of jurisdictional waters. Mitigation for impacts to jurisdictional waters is discussed under mitigation measure MM-BIO-4 above.

**Monitoring Phase:** Post-construction  
**Enforcement Agency:** Department of Building and Safety, Urban Forestry Division of the Bureau of Street Services, Los Angeles Planning Department California Department of Fish and Game  
**Monitoring Agency:** Department of Building and Safety, Urban Forestry Division of the Bureau of Street Services, Los Angeles Planning Department California Department of Fish and Game

MM-BIO-20 Prior to issuance of a grading permit, the applicant shall submit to the City of Los Angeles Board of Public Works a tree permit application, in accordance with City of Los Angeles Municipal Code, Section 46.00, Protected Tree Regulations. All conditions required by the tree permit shall be met prior to or concurrent with construction of the proposed project.

**Monitoring Phase:** Pre-construction  
**Enforcement Agency:** Urban Forestry Division of the Bureau of Street Services, Los Angeles Planning Department  
**Monitoring Agency:** Urban Forestry Division of the Bureau of Street Services, Los Angeles Planning Department

MM-BIO-21 Prior to commencement of ground clearing activities, protected trees on the project site or within 100 feet of the grading boundary shall be fenced at their dripline. Fencing around protected trees shall remain intact throughout all phases of construction, and shall not be moved or removed without approval of the project biologist. Construction activities, including grading, excavation, and storing of construction materials, shall not enter the fenced dripline of protected trees.

**Monitoring Phase:** Pre-construction  
**Enforcement Agency:** Urban Forestry Division of the Bureau of Street Services, Los Angeles Planning Department  
**Monitoring Agency:** Urban Forestry Division of the Bureau of Street Services, Los Angeles Planning Department

MM-BIO-22 The dust accumulation onto the foliage of protected trees from construction activities shall be hosed off periodically during construction; a certified arborist shall be contacted to determine how often dust accumulation should be hosed off. Dust accumulation on protected tree foliage shall be hosed off under the supervision of a certified arborist.

**Monitoring Phase:** Construction  
**Enforcement Agency:** Urban Forestry Division of the Bureau of Street Services, Los Angeles Planning Department  
**Monitoring Agency:** Urban Forestry Division of the Bureau of Street Services, Los Angeles Planning Department

MM-BIO-23 Copies of the Hidden Creeks Estates Tree Report by L. Newman Design Group and the City approved grading plans/tree removal permit shall be maintained on the project site during all construction activities.

**Monitoring Phase:** Construction  
**Enforcement Agency:** Urban Forestry Division of the Bureau of Street Services, Los Angeles Planning Department

**Monitoring Agency:** Urban Forestry Division of the Bureau of Street Services, Los Angeles Planning Department

MM-BIO-24 Prior to the issuance of a grading permit, the applicant shall prepare and submit a Native Woodland Mitigation Plan to the City of Los Angeles Urban Forestry Division for review and approval. As outlined in the tree report for the project site, 15-gallon trees shall be planted to replace the trees removed during construction activities, at a minimum of a 2:1 ratio. As such, the Tree Replacement Program should include a minimum of 690 15-gallon oak trees, 372 15-gallon black walnut trees, six 15-gallon western sycamores, and two 15-gallon valley oak trees. Additional trees affected by remedial grading will be replaced at the same ratios, totaling up to 104 coast live oak trees and 82 black walnut trees. The replacement trees shall be planted on the project site, and shall be incorporated into project design by a qualified restoration specialist. The Tree Replacement Program shall include the following planting specifications and guidelines, as recommended in the L. Newman Design Group tree report:

- The newly planted trees shall be planted high, as much as 1 inch above the new adjacent grade, so as not to bury the root collar;
- Amending the backfill soil with wood shavings, etc., is not recommended when existing soil is high in natural organic matter with a sandy loam texture;
- If backfill amendments (such as polymers) and drainage systems are to be used in tree replacement plantings, consultation with a certified arborist is recommended (based upon soil tests done for the project site to the satisfaction of the Urban Forestry Division);
- Replacement trees shall be properly maintained for a period of three years, and if trees die during that period, they shall be replaced by the project applicant;
- The irrigation system (dripline or comparable system) for replacement trees shall be compatible with the watering requirements oak trees indigenous to the project site; and
- The irrigation system maintenance program should water replacement trees for the first 2 - 3 years to establish the trees. Thereafter, watering should be done only in the winter months during periods of severe drought.

**Monitoring Phase:** Design/Pre-construction

**Enforcement Agency:** Department of Building and Safety, Urban Forestry Division of the Bureau of Street Services, Los Angeles Planning Department

**Monitoring Agency:** Department of Building and Safety, Urban Forestry Division of the Bureau of Street Services, Los Angeles Planning Department

MM-BIO-25 The Tree Preservation Program shall include the following specifications and guidelines for care, as recommended in the L. Newman Design Group tree report for the project site (except where otherwise noted):

- Any work within the driplines of protected trees that are to be preserved as part of project implementation shall be conducted by a certified arborist. This includes all dead wood removal and/or pruning.
- Landscape planting, irrigation, and/or placement of utilities shall be prohibited within the dripline (outermost edge of a tree's foliage) of any protected tree.
- The application of chemical herbicides shall be prohibited within the dripline of any protected tree.
- Any brush clearance within the dripline of protected trees shall be carried out by handwork only.
- Natural leaf mulch within the dripline of any protected tree should remain in-place, unless removal is absolutely necessary.
- Severe stubbing to branches of protected trees should be avoided. Stubbed trees are not only unsightly, but they respond with vigorous watersprout growth that is susceptible to mildew. Large pruning wounds are also more subject to decay.
- All pruned roots of protected trees shall consist of clean-cut surfaces at a 90-degree angle and shall not be sealed unless approved by a certified arborist.
- Climbing gaffs shall not be used on any preserved protected trees by a tree climber unless to reach an injured climber.
- The nailing of items (including grade stakes) to any protected native tree on the project site shall be prohibited.
- If it becomes necessary to treat on-site protected trees for disease or pests, treatment shall be conducted by a licensed Pest Control Applicator. A certified arborist shall supervise the work and shall submit documentation of the work to the City of Los Angeles Urban Forestry Division for approval.
- If bees are encountered within on-site protected trees and they become a problem, they shall be handled by a professional beekeeper.
- As reference material, any arborist conducting maintenance on native oak trees on the Hidden Creeks project site shall refer to the Los Angeles County Fire Department Forestry Division Oak Trees Care and Maintenance guide (Los Angeles County 2005).
- Mature oak trees seldom need extensive pruning; however, weak and dead branches should be removed from oak trees every year or two. Occasionally, a mature oak tree

may benefit from a light thinning (removal of 10 percent of the leaf area) of branches (cuts less than 2 inches in diameter) to reduce the weight of branches and to open foliage for deeper light penetration and reduce wind resistance. If pruning is necessary, oak trees should be pruned in the dry season (June and July are best) (California Oak Mortality Task Force 2004).

- On-site native oak trees should not be watered unless periods of extreme drought result in the need for supplemental irrigation. If necessary, supplemental irrigation shall occur in the winter or early spring, never during summer months. The irrigation shall consist of a deep watering, 1 to 2 feet, in the outer two-thirds of the root zone (California Oak Mortality Task Force 2004).
- Fertilizer is not recommended for native trees.

#### **Protective Fencing**

- Protective fencing not less than 4 feet in height shall be placed at the limits of the protective zone of any individual protected tree or dense stand of protected trees within 200 feet of the grading limits, and shall be inspected by the forester or City-approved arborist prior to commencement of any activity on the subject property, and shall remain in place until construction is completed.

#### **Grading Restrictions Near Protective Zones**

Care must be taken to limit grade changes near the protective zone of a protected tree. Grade changes can lead to plant stress from oxygen deprivation or root fungus at the root collar of protected tree species. Minor grade changes further from the trunk are not as critical but can negatively affect the health of the tree if not carefully monitored by a City-approved arborist.

- The grade shall not be lowered or raised around the trunks (i.e., within the protective zone) of any protected tree without the approval of the City of Los Angeles urban forester or a City-approved arborist. A City-approved arborist shall supervise all excavation or grading proposed within the protective zone of a tree.
- Trenching, excavation, or clearance of vegetation within the protective zone of a protected tree shall be accomplished by the use of hand tools or small hand-held power tools. Any major roots encountered shall be conserved to the greatest extent possible and treated as recommended by the City-approved arborist.
- Equipment damage to limbs, trunks, and roots of all remaining trees shall be avoided during project construction and development. Even slight trunk injuries can result in susceptibility to long-term pathogenic maladies.
- No utility trenches shall be routed within the protective zone of a protected tree unless no feasible alternative locations are available, and shall be approved by the City forester.

### **Equipment Storage**

- No storage of equipment, supplies, vehicles, or debris shall be permitted within the protective zone of a protected tree.
- No dumping of construction wastewater, paint, stucco, concrete, or any other clean-up waste shall occur within the protective zone of a protected tree.
- No temporary structures shall be placed within the protective zone of any remaining protected trees.

### **Maintenance**

Healthy trees, if not maintained, often grow beyond their ability to support themselves and fail at their naturally occurring weakest point. This is typically at a branch union at or near the main crotch of the tree. Weight-reduction pruning and/or cabling is important in any tree preservation program. Pruning of protected trees within residential neighborhoods is recommended every four to six years, based on a City-approved arborist's determination.

- Pruning of replacement protected trees and preserved protected trees shall include the removal of dead wood, stubs, and medium pruning of branches 2 inches in diameter or less.
- Pruning of replacement protected trees and preserved protected trees shall be in accordance with the guidelines published by the International Society of Arboriculture. In no case shall more than 20 percent of the tree canopy of any protected tree be removed. Cuts over 2 inches in diameter shall require a pruning permit from the City. After pruning, installation of support cables to prevent future main crotch failures may be necessary based on a City-approved arborist's determination.
- A two-year maintenance period shall begin upon the start of planting the replacement trees. All replacement trees failing to survive within this period shall be replaced. A new two-year maintenance period shall start for each tree that failed to survive and required a replacement tree to be planted.

### **Irrigation Schedule**

Each Los Angeles City protected tree has different watering requirements. For example, oak trees survive and thrive on annual rainfall alone and generally do not require supplemental irrigation except during periods of extreme drought. Additionally, care should be taken to avoid placing any irrigation devices within the protected zone of an oak tree, since too much moisture near the base of an oak tree is thought to be the leading

cause of oak root rot. Sycamores require a higher irrigation frequency and can tolerate more moisture within their protective zone. All newly planted trees must be irrigated regularly until established, even oak trees.

- Develop an irrigation schedule to determine irrigation duration and frequency for each replacement tree species. The irrigation schedule should be prepared by a qualified horticulturist or landscape installer.

#### **Control of Diseases and Pests**

Protected trees generally have an acceptable level of common insect pests. During the visual inspection of the trees assessed, no evidence of abnormal presence of fungi, disease, or bacteria were observed on the trees that were surveyed.

- A City-approved arborist shall periodically (about every five to seven years) evaluate the effects of pathogens and insect pests, and the overall health and structural integrity, of all preserved and replacement trees, to ensure longevity of remaining protected tree species.

#### **Construction Monitoring**

Damage to remaining trees must be avoided by workers and equipment during construction activities.

- A qualified biologist or City-approved arborist shall monitor on-site construction and grading activities occurring near protection zones and protected trees to ensure that damage to such trees does not occur.
- Prior to initiation of construction activities, the qualified biologist or City-approved arborist shall schedule a field meeting to inform personnel involved in construction where all protective zones are located and the importance of avoiding encroachment within the protective zones.

**Monitoring Phase:** Design

**Enforcement Agency:** Department of Building and Safety, Urban Forestry Division  
of the Bureau of Street Services, Los Angeles Planning  
Department

**Monitoring Agency:** Department of Building and Safety, Urban Forestry Division  
of the Bureau of Street Services, Los Angeles Planning  
Department

MM-BIO-26 The proposed fence to be located on the north side of the Mason Avenue extension, east of Mormon Creek shall be designed to allow wildlife movement at key points along the fence. A qualified biologist shall submit written approval of the fence design to the City prior to receiving grading permits.

**Monitoring Phase:** Design  
**Enforcement Agency:** California Department of Fish and Game, Los Angeles  
Planning Department  
**Monitoring Agency:** California Department of Fish and Game, Los Angeles  
Planning Department

#### IV.D. Cultural Resources

##### *Paleontological Resources*

MM-CR-1 Retention of Paleontologist. Prior to the initiation of earthmoving activities associated with development of the project site, the services of a qualified paleontologic consulting firm approved by the City and the Natural History Museum of Los Angeles County Vertebrate Paleontology Section (LACMVP) shall be retained by the developer of the project site to implement the mitigation program.

**Monitoring Phase:** Pre-construction  
**Enforcement Agency:** Department of Building and Safety, Department of City  
Planning  
**Monitoring Agency:** Department of Building and Safety, Department of City  
Planning

MM-CR-2 Museum Storage Agreement. The paleontologist shall develop a formal agreement with a recognized museum repository, such as the Natural History Museum of LACMVP and History Museum of Los Angeles County Invertebrate Paleontology Section (LACMIP), regarding final disposition and permanent storage and maintenance of any fossil remains that might be recovered as a result of the mitigation program, the archiving of associated specimen data and corresponding geologic and geographic site data, and the level of treatment (preparation, identification, curation, cataloguing) of the remains that would be required before the entire mitigation program fossil collection would be accepted by the repository for storage.

**Monitoring Phase:** Pre-construction  
**Enforcement Agency:** Department of Building and Safety, Department of City  
Planning  
**Monitoring Agency:** Department of Building and Safety, Department of City  
Planning

MM-CR-3 Preconstruction Coordination and Environmental Awareness Training. The paleontologist or another mitigation program staff member shall coordinate with appropriate construction contractor personnel to provide information regarding City (2006) requirements concerning the protection of paleontologic resources. Contractor

personnel, particularly heavy-equipment operators, shall also be briefed on procedures to be followed in the event that fossil remains and a currently unrecorded fossil site are encountered by earthmoving activities, particularly when the monitor is not on site. The briefing shall be presented to new contractor personnel as necessary. Names and telephone numbers of the monitor and other appropriate mitigation program personnel shall be provided to appropriate contractor personnel.

**Monitoring Phase:** Pre-construction  
**Enforcement Agency:** Department of Building and Safety, Department of City Planning  
**Monitoring Agency:** Department of Building and Safety, Department of City Planning

MM-CR-4 Paleontologic Monitoring and Fossil/Sample Recovery. Earthmoving activities shall be monitored by the monitor only in those areas of the project site where these activities will disturb previously undisturbed strata. Monitoring shall be conducted on a full-time basis in areas underlain by the Pico and Saugus Formations and on a half-time basis in areas underlain by older alluvium. Monitoring shall be conducted on a spot-check basis in areas underlain by younger alluvium and landslide deposits to determine when earthmoving activities have encountered an underlying rock unit. If fossil remains are encountered by earthmoving activities in an area underlain by older or younger alluvium and following approval from the City, monitoring shall be increased to full time, at least in the immediate vicinity of the fossil site. On the other hand, if very few or no fossil remains are found once 50 percent of earthmoving activities have been completed in an area underlain by a particular rock unit, monitoring can be reduced to half time in the remainder of the area underlain by the Pico and Saugus Formations, and to quarter time in an area underlain by older alluvium following approval from the City.

Monitoring shall consist of visually inspecting debris piles and freshly exposed strata to allow for the discovery and recovery of larger fossil remains, and periodically dry test screening rock, sediment, and debris to allow for the discovery and recovery of smaller fossil remains. As soon as practicable, the monitor shall recover all larger vertebrate fossil remains, a representative sample of invertebrate or plant fossil specimens, or any fossiliferous rock or sediment sample that can be recovered easily. If recovery of a large or unusually productive fossil occurrence is warranted, earthmoving activities shall be diverted temporarily around the fossil site and a recovery crew shall be mobilized as necessary to remove the occurrence as quickly as possible. If not on site when a fossil occurrence is uncovered by such activities, the activities shall be diverted temporarily

around the fossil site and the monitor called to the site to evaluate and, if warranted, recover the occurrence. If the fossil site is determined too unproductive or the fossil remains not worthy of recovery by the monitor, no further action will be taken to preserve the fossil site or remains, and earthmoving activities shall be allowed to proceed through the site immediately. The location and proper geologic context of any fossil occurrence or rock or sediment sample shall be documented, as appropriate.

Any recovered rock or sediment sample shall be processed to allow for the recovery of smaller fossil remains that normally are too small to be observed by the monitor. No more than 6,000 pounds (18,000 pounds total) of rock or sediment from either the Pico or Saugus Formation or from the older alluvium shall be processed.

**Monitoring Phase:** Construction  
**Enforcement Agency:** Department of Building and Safety, Department of City Planning  
**Monitoring Agency:** Department of Building and Safety, Department of City Planning

MM-CR-5 Final Laboratory Tasks. All fossil specimens recovered from the project site as a result of the mitigation program, including those recovered as the result of processing fossiliferous rock or sediment samples, will be treated (prepared, identified, curated, catalogued) in accordance with designated museum repository requirements. Rock or sediment samples will be submitted to commercial laboratories for microfossil, pollen, radiometric dating, or other analysis, as appropriate.

**Monitoring Phase:** Construction  
**Enforcement Agency:** Department of Building and Safety, Department of City Planning  
**Monitoring Agency:** Department of Building and Safety, Department of City Planning

MM-CR-6 Reporting. The monitor shall maintain daily monitoring logs that include the particular tasks accomplished, the earthmoving activity monitored, the location where monitoring was conducted, the rock unit(s) encountered, the fossil specimens recovered, and associated specimen data and corresponding geologic and geographic site data. A final technical report of results and findings shall be prepared by the paleontologist in accordance with any City requirements.

**Monitoring Phase:** Post-construction  
**Enforcement Agency:** Department of Building and Safety, Department of City Planning

**Monitoring Agency:** Department of Building and Safety, Department of City Planning

*Archaeological Resources*

MM-CR-7 In the event that archaeological resources are unearthed during project subsurface activities, all earth disturbing work within a 200-meter radius must be temporarily suspended or redirected until an archaeologist has evaluated the nature and significance of the find. Any artifacts uncovered shall be recorded and removed for storage at a location to be determined by the monitor. Construction on other parts of the project will be subject to Public Resources Code Section 21083.2(i). After the find has been appropriately mitigated, work in the area may resume.

**Monitoring Phase:** Construction

**Enforcement Agency:** Department of Building and Safety, Department of City Planning

**Monitoring Agency:** Department of Building and Safety, Department of City Planning

MM-CR-8 If human remains are unearthed, California Health and Safety Code Section 7050.5 requires that no further disturbance shall occur until the County coroner has made the necessary findings as to origin and disposition pursuant to Public Resources Code Section 5097.98. If the remains are determined to be of Native American descent, the coroner has 24 hours to notify the Native American Heritage Commission (NAHC). The NAHC will then contact the most likely descendant of the deceased Native American, who will then serve as consultant on how to proceed with the remains (i.e., avoid, reburial).

**Monitoring Phase:** Construction

**Enforcement Agency:** Department of Building and Safety, Department of City Planning

**Monitoring Agency:** Department of Building and Safety, Department of City Planning

**IV.E. Geology**

MM-GEO-1 All mitigation measures from GeoSoils Consultants, Inc., Preliminary Geologic and Geotechnical Engineering Study, Hidden Creeks, Tentative Tract 68724, Chatsworth, City of Los Angeles, California, April 12, 2007, for site preparation, foundation design, slabs-on-grade, and drainage shall be incorporated into final design and construction. All such work and design shall be in conformance with local governmental regulations or the

recommendations contained in the Geotechnical Engineering Study, whichever is more restrictive.

**Monitoring Phase:** Design/Construction  
**Enforcement Agency:** Department of Building and Safety  
**Monitoring Agency:** Department of Building and Safety

MM-GEO-2 All structures shall be designed in accordance with the California Building Code (CBC), Los Angeles Building Code (LABC) and the Structural Engineers Association of California (SEAOC) guidelines to ensure safety in the event of an earthquake.

**Monitoring Phase:** Design  
**Enforcement Agency:** Department of Building and Safety  
**Monitoring Agency:** Department of Building and Safety

MM-GEO-3 Prior to start of soil-disturbing activities at the site, a Notice of Intent (NOI) and SWPPP shall be prepared in accordance with, and in order to partially fulfill, the California State Water Resources Control Board Order No. 99-08-DWQ, National Pollutant Discharge Elimination System (NPDES) General Permit No. CAS000002 (General Construction Permit) and Chapter 6 Article 4.4, Stormwater and Urban Runoff Pollution Control from the Los Angeles Municipal Code. The Stormwater Pollution Prevention Plan (SWPPP) shall meet the applicable provisions of Sections 301 and 402 of the Clean Water Act (CWA) and Chapter 6, Article 4.4, Stormwater and Urban Runoff Pollution Control from the Los Angeles Municipal Code, by requiring controls of pollutant discharges that utilize best available technology economically achievable (BAT) and best conventional pollutant control technology (BCT) to reduce pollutants.

**Monitoring Phase:** Pre-construction  
**Enforcement Agency:** California State Water Resources Control Board  
**Monitoring Agency:** California State Water Resources Control Board

MM-GEO-4 The project Applicant shall implement dust control measures consistent with SCAQMD Rule 403 – Fugitive Dust, during the construction phases of new project development. The following actions are currently recommended to implement Rule 403 and have been quantified by the SCAQMD as being able to reduce dust generation between 30 and 85 percent depending on the source of the dust generation:

- Apply water and/or approved nontoxic chemical soil stabilizers according to manufacturer's specification to all inactive construction areas (previously graded areas that have been inactive for 10 or more days).

- Replace ground cover in disturbed areas as quickly as possible.
- Enclose, cover, water twice daily or apply approved chemical soil binders to exposed piles with 5 percent or greater silt content.
- Water active grading sites at least twice daily during construction activities.
- Suspend all excavating and grading operations when wind speeds (as instantaneous gusts) exceed 25 miles per hour over a 30-minute period.
- All trucks hauling dirt, sand, soil or other loose materials are to be covered or shall maintain at least 2 feet of freeboard (i.e., minimum vertical distance between top of the load and the top of the trailer), in accordance with Section 23114 of the California Vehicle Code.
- Sweep streets at the end of the day if visible soil material is carried over to adjacent roads.
- Install wheel washers or gravel construction entrances where vehicles enter and exit unpaved roads onto paved roads, or wash off trucks and any equipment leaving the site each trip.
- Post and enforce traffic speed limits of 15 miles per hour or less on all unpaved roads.

**Monitoring Phase:** Construction  
**Enforcement Agency:** Southern California Air Quality Management District  
**Monitoring Agency:** Southern California Air Quality Management District

### *Removals*

MM-GEO-5 Based on the results of the subsurface exploration, laboratory testing, and engineering analyses, removals of colluvium, alluvium, and recent landslide material will be required in areas of proposed grading. Removals shall extend into firm terrace deposits or bedrock of the Saugus Formation. Removals at the toe of fill slopes shall extend laterally beyond the toe at a distance equal to the depth of removal. In the deeper removal areas, removals may extend 100 feet or more outside the toe of proposed fill slopes, including the temporary cut necessary to make the removals.

**Monitoring Phase:** Construction  
**Enforcement Agency:** Department of Building and Safety  
**Monitoring Agency:** Department of Building and Safety

### *Cut Slopes*

MM-GEO-6 All cut slopes shall be planned at a gradient of 2:1 or less. Bedrock materials shall perform well at this gradient where geologic structure is favorable. Cut slopes in the terrace deposits shall not be affected by rock structure, as this material is rather massive, and bedding is only represented by variations of sand- to gravel-sized material. Stabilization of cut slopes underlain by terrace deposits may be required during grading if loose or cohesionless soil is exposed.

During grading, detailed mapping will be performed on all cut slopes. If conditions differ from those anticipated, or if weak bedding planes are exposed, additional recommendations will be provided. Adequate area exists on the site to stabilize or buttress any slope with adverse geology. Details for stabilization and buttress fills are presented on the “Typical Buttress Section Design” figure (Figure 2 from GeoSoils Consultants, Inc., *Preliminary Geologic and Geotechnical Engineering Study, Hidden Creeks, Tentative Tract 68724, Chatsworth, City of Los Angeles, California*, April 12, 2007) and “Typical Stabilization Fill Design” (Figure 3 from GeoSoils Consultants, Inc., *Preliminary Geologic and Geotechnical Engineering Study, Hidden Creeks, Tentative Tract 68724, Chatsworth, City of Los Angeles, California*, April 12, 2007).

**Monitoring Phase:** Construction  
**Enforcement Agency:** Department of Building and Safety  
**Monitoring Agency:** Department of Building and Safety

### *Fill Slopes*

MM-GEO-7 Fill slopes shall be constructed at slope ratios of 2:1 (horizontal: vertical) or flatter between benches. To maintain safety factors for surficial stability, intermediate drainage terraces are required for all fill slopes steeper than 5:1 with slope height greater than 30 feet. Fill slopes shall be built in accordance with recommendations included in the GeoSoils Consultants, Inc., *Preliminary Geologic and Geotechnical Engineering Study, Hidden Creeks, Tentative Tract 68724, Chatsworth, City of Los Angeles, California*, April 12, 2007. Fill over cut slopes shall be constructed in accordance with the “Typical Fill Over Cut Slope Design” detail (Figure 4 from GeoSoils Consultants, Inc., *Preliminary Geologic and Geotechnical Engineering Study, Hidden Creeks, Tentative Tract 68724, Chatsworth, City of Los Angeles, California*, April 12, 2007) and fill over natural slopes shall be in accordance with the “Typical Fill Over Natural Slope Design” detail (Figure 5 from GeoSoils Consultants,

Inc., *Preliminary Geologic and Geotechnical Engineering Study, Hidden Creeks, Tentative Tract 68724, Chatsworth, City of Los Angeles, California, April 12, 2007*).

Fill slopes to the maximum height proposed are considered to be stable based on the shear strengths for fill material and the 2:1 gradients proposed. However, selective grading will be required for fill slopes higher than 92 feet based on the gross stability analysis and the slope stability analyses for Geologic Cross-Section 28-28'. For fill slopes higher than 92 feet, selective grading will be required. Materials with a minimum cohesion of 250 pounds per cubic foot and an angle of friction of 33 degrees shall be used. Additional remolded shear testing may be required to verify proposed fill material meets the minimum criteria.

**Monitoring Phase:** Construction  
**Enforcement Agency:** Department of Building and Safety  
**Monitoring Agency:** Department of Building and Safety

#### *Natural Slopes*

MM-GEO-8 Based on the stability analyses presented in the GeoSoils Consultants, Inc., *Preliminary Geologic and Geotechnical Engineering Study, Hidden Creeks, Tentative Tract 68724, Chatsworth, City of Los Angeles, California, April 12, 2007*, and in the referenced reports, the natural slopes remaining above areas of proposed development are considered grossly stable. A slope stability analyses was performed on Cross-Section 29-29' (from GeoSoils Consultants, Inc., *Preliminary Geologic and Geotechnical Engineering Study, Hidden Creeks, Tentative Tract 68724, Chatsworth, City of Los Angeles, California, April 12, 2007*), and indicates a factor of safety above minimum code values for gross stability.

Steeper natural slope located at the southwestern and northern portions of the tract may be subject to surficial instability, even though the colluvium covering the slopes is relatively thin. Debris impact walls shall be required at the rear of Lots 83 to 94. See "Debris Device Control Methods" detail (Figure 6 from GeoSoils Consultants, Inc., *Preliminary Geologic and Geotechnical Engineering Study, Hidden Creeks, Tentative Tract 68724, Chatsworth, City of Los Angeles, California, April 12, 2007*). Debris walls shall be a minimum of 5 feet high. The actual location of the wall shall be determined during the 40-scale grading plan review stage and will be based on the thickness of colluvium and the location of proposed structures. Debris impact walls shall be designed to support an equivalent fluid pressure on 125 pounds per square foot (psf). Additional debris walls may be added during grading at the discretion of the project geologist.

**Monitoring Phase:** Design/Construction  
**Enforcement Agency:** Department of Building and Safety  
**Monitoring Agency:** Department of Building and Safety

*Landslide Stabilization/Removal*

MM-GEO-9 A landslide summary is provided below on the type of mitigation required.

**Landslide Summary**

Listed below are mitigation measures for each of the landslides on the Tentative Tract Map. A total of 28 landslides were mapped. The landslides are labeled with numbers on the Geologic Maps, Plates 1B and 1C from GeoSoils Consultants, Inc., *Preliminary Geologic and Geotechnical Engineering Study, Hidden Creeks, Tentative Tract 68724, Chatsworth, City of Los Angeles, California*, April 12, 2007. The landslide configurations shown on the geologic cross-sections for Landslides 23 through 28 are assumed based on site topography and experience with landslides. As mitigation measures consist of removal and recompaction of Landslides 23 through 28, stability analyses dependent on specific slide plane geometries were not preformed. Additional exploration shall be required in this area at the 40-scale grading plane review stage of the project.

All landslide removals shall be recompacted in accordance with GeoSoils Consultants' grading guidelines.

1. Older landslide (Qols). The landslide shall be removed and recompacted.
2. Most of this landslide will be removed as a part of the removals for Qols(1). The toe of this landslide is outside of the proposed development and most of this section will be removed as a part of the 1.5:1 temporary cut to the toe of the proposed shear key.
- 2A. This landslide shall follow the same requirements as Qls(2).
- 3.-4. These two surficial landslides shall be removed entirely.
5. The tract boundary crosses this landslide. The upper portion of this landslide will be removed as a part of the proposed removals for the Qols(1). The removals will be made at a 1.5:1 temporary cut gradient along the tract boundary to competent material.
6. Most of this landslide is outside the toe of the proposed 2:1 slope. The required removals will be done in accordance with Geologic Cross-Section 27-27'. Water seepages were observed in this area and groundwater may be a problem during excavation. The temporary cut shall be excavated at a gradient of 1.5:1.

7. The unsuitable materials as observed by an Engineering Geologist shall be removed. This landslide rests upon the older landslide (Qols (1)) that will be supported by shear keys.
8. This landslide crosses the tract boundary. The upper portion shall be removed as a temporary cut at a 1.5:1 gradient from the tract boundary.
9. This landslide shall follow the same requirements as Qls(7).
- 10.–11. These two landslides shall be removed entirely to expose competent material.
12. The toe of this landslide is outside of the proposed 2:1 fill slope. The removals shall be done in accordance with Geologic Cross-Section 1-1'. The entire landslide shall be removed from the 1.5:1 temporary cut.
- 13.–15. These three landslides shall be removed entirely to competent materials.
16. This landslide shall be removed entirely to the tract boundary with a 1.5:1 temporary cut along the tract boundary. Boring B-13 shows this landslide to be 74 feet below existing grade and may be deeper along the tract boundary.
17. This landslide is a failure of portion of Qls (16). This landslide shall be removed entirely with a 1.5:1 temporary cut along the tract boundary.
- 18, 18A & 19. All three of these landslides appear to be stacked landslides where sliding occurred on previous landslides. These landslides shall be removed entirely.
20. Most of this landslide is north of the tract boundary. Grading has been permitted to grade off site along the tract boundary, as a number of tops of cut slopes are north of the tract boundary. As illustrated on Geologic Cross-Section 30-30', removals shall be made at a 1:1 projection northward from tops of cut slopes or the tract boundary with a 1.5:1 temporary cut.
21. This landslide is along the west side of Mormon Canyon. Portions of this landslide may not be able to be removed as it falls within CDFG jurisdiction. A 1.5:1 temporary cut shall be performed along the tract boundary or along boundary as agreed by CDFG. The most ideal recommendations would be to restore the canyon upon completion of removals and recompaction.
22. The removals at this landslide shall be done using the same requirements given for Qls(20).
23. This landslide appears to be a secondary failure of Qls(26). The landslide shall be removed entirely to provide support for the proposed access road to the subject tract. The lower portion of the slide may not be able to be removed due to CDFG. A 1.5:1 temporary cut shall be made along the designated CDFG line or removal and restoration of the canyon.

24.-25. These two landslides affect the stability of the proposed cut slope for the proposed access road to the subject tract. These landslides shall be removed with a shear key of a minimum of 260 feet wide with a temporary tow cut through QIs(24). The upper portion of QIs(24) and the entire QIs(25) shall be removed to competent material. The Civil Engineer shall configure a 2:1 fill slope for the final grading plan prior to site development.

26. This landslide shall be removed entirely and may have the same removal restrictions as QIs(23).

27.-28. Both of these landslides shall be removed entirely.

For all of the landslides where removals encroach into natural ungraded areas, the Civil Engineer shall design fill slopes to best fit in those areas. Fill slopes shall not exceed a 2:1 gradient.

**Monitoring Phase:** Construction  
**Enforcement Agency:** Department of Building and Safety  
**Monitoring Agency:** Department of Building and Safety

#### ***Subdrains***

MM-GEO-10 Subdrain systems shall be provided in all canyon bottoms, stabilization fills, and shear keys prior to fill placement, (see Figure 7 from GeoSoils Consultants, Inc., *Preliminary Geologic and Geotechnical Engineering Study, Hidden Creeks, Tentative Tract 68724, Chatsworth, City of Los Angeles, California, April 12, 2007, "Canyon Subdrain Design and Construction Methods"*).

Filter material shall be Class 2 permeable filter, or No. 2 and No. 3 concrete aggregate gradations per standard specifications for Public Works Construction, or approved equivalent, inspected and tested to verify its suitability. The filter shall be clean with a wide range of sizes.

Subdrain pipe shall consist of Schedule 40 or equivalent and shall be a minimum of 6 inches in diameter for lengths up to 500 feet. For lengths over 500, 8-inch diameter pipe shall be used and for lengths over 1,000 feet, two 8-inch pipes shall be used.

During grading, the Engineering Geologist shall evaluate the necessity of placing additional subdrains. The Engineering Geologist and Geotechnical Engineer shall inspect all subdrain systems prior to cover with compacted fill.

**Monitoring Phase:** Design/Construction

**Enforcement Agency:** Department of Building and Safety  
**Monitoring Agency:** Department of Building and Safety

***Lot Fill Caps***

MM-GEO-11 All cut and transition lots on the site shall be over-excavated a minimum of 5 feet and provided with a compacted fill blanket. The project surveyors shall verify the fill cap. The purpose of the cap is to provide a uniform bearing material for foundation support and to mitigate potential differential expansion. Deeper fill caps may be required if higher expansive materials are exposed. In addition, deeper fill caps may be required to mitigate large differential fill thicknesses across lots. The final fill cap thicknesses shall be determined during the 40-scale review stage and confirmed grading.

**Monitoring Phase:** Construction  
**Enforcement Agency:** Department of Building and Safety  
**Monitoring Agency:** Department of Building and Safety

***Rock Hardness***

MM-GEO-12 The results of the exploratory borings and test pits indicate that the bedrock material is rippable with heavy duty grading equipment. Deeper cuts within the bedrock material may encounter hard bedrock that may be difficult to rip; however, blasting is not anticipated to be necessary. The grading contractor shall perform additional studies on the deeper cut areas to verify rippability, as hard rock layer may have been missed during GeoSoils, Consultants' explorations. GeoSoils Consultants, Inc., is not responsible for variations in rock hardness during grading.

**Monitoring Phase:** Pre-construction  
**Enforcement Agency:** Department of Building and Safety  
**Monitoring Agency:** Department of Building and Safety

***Hydroconsolidation***

MM-GEO-13 All soil subject to excessive consolidation shall be removed and recompacted.

**Monitoring Phase:** Construction  
**Enforcement Agency:** Department of Building and Safety  
**Monitoring Agency:** Department of Building and Safety

### Setback Requirements

MM-GEO-14 Setback requirements, as established by the 1997 Uniform Building Code, Section 1806.4, require that structures constructed near the top of descending slopes or the toe of ascending slopes steeper than 3:1 (Horizontal:Vertical), meet structural setbacks. The setback for a building or structure foundation shall be located a distance of one-third of the vertical height of the slope, with a minimum of 5 feet and a maximum of 40 feet, measured horizontally from the slope surface to the lower edge of the footing. See “Required Slope Setback Design” diagram (Figure 8 from GeoSoils Consultants, Inc., *Preliminary Geologic and Geotechnical Engineering Study, Hidden Creeks, Tentative Tract 68724, Chatsworth, City of Los Angeles, California*, April 12, 2007). Final structure locations shall be reviewed by GeoSoils Consultants, Inc., at the 40-scale review stage.

**Monitoring Phase:** Design  
**Enforcement Agency:** Department of Building and Safety  
**Monitoring Agency:** Department of Building and Safety

### Grading

MM-GEO-15 The grading shall involve the removal and recompaction of colluvium, alluvium and landslide material, in addition to the mass-excavation. Site grading shall create cut and fill slopes to a maximum height on the order of 310 and 150 feet, respectively.

**Monitoring Phase:** Construction  
**Enforcement Agency:** Department of Building and Safety  
**Monitoring Agency:** Department of Building and Safety

### Earthwork Grading

#### General

MM-GEO-16 Monitoring: All earthwork (i.e., clearing, site preparation, fill placement, etc.) shall be conducted with engineering control under observation and testing by the Geotechnical Engineer and in accordance with mitigation measures MM-GEO-40 through MM-GEO-43 related to grading.

**Monitoring Phase:** Construction  
**Enforcement Agency:** Department of Building and Safety  
**Monitoring Agency:** Department of Building and Safety

- MM-GEO-17 Job Site Safety: At all times, safety shall have precedence over production work. If an unsafe job condition is observed, it shall be brought to the attention of the grading contractor or the developer's representative. Once this condition is noted, it shall be corrected as soon as possible, or work related to the unsafe condition shall be terminated.

The contractor for the project shall realize that services provided by GeoSoils Consultants, Inc., do not include supervision or direction of the actual work performed by the contractor, his employees, or agents. GeoSoils Consultants, Inc., shall use accepted geotechnical engineering and testing procedures; however, GeoSoils Consultants, Inc., testing and observations shall not relieve the contractor of his primary responsibility to produce a completed project conforming to the project plans and specifications. Furthermore, GeoSoils Consultants, Inc., shall not be responsible for job or site safety on this project, as this is the responsibility of the contractor.

**Monitoring Phase:** Construction  
**Enforcement Agency:** Department of Building and Safety  
**Monitoring Agency:** Department of Building and Safety

#### *Site Preparation*

- MM-GEO-18 Existing Structure Location: The General Contractor shall locate all surface and subsurface structures on the site or on the approved grading plan prior to preparing the ground surface.

**Monitoring Phase:** Design/Pre-construction  
**Enforcement Agency:** Department of Building and Safety  
**Monitoring Agency:** Department of Building and Safety

- MM-GEO-19 Existing Structure Removal: Any existing underground structures (e.g., septic tanks, wells, pipelines, foundations, utilities, etc.) that have not been located prior to grading, shall be removed or treated in a manner required by the Geotechnical Engineer.

**Monitoring Phase:** Construction  
**Enforcement Agency:** Department of Building and Safety  
**Monitoring Agency:** Department of Building and Safety

- MM-GEO-20 Clearing and Stripping: The construction areas shall be cleared and stripped of all vegetation, trees, bushes, sod, topsoil, artificial fill, debris, asphalt, concrete, and other deleterious material prior to fill placement.

**Monitoring Phase:** Construction  
**Enforcement Agency:** Department of Building and Safety  
**Monitoring Agency:** Department of Building and Safety

- MM-GEO-21 Subgrade Preparation: The subgrade for foundations, pavement areas, over-excavations, and for those areas receiving any additional fill shall be prepared by scarifying the upper 12 inches and moisture conditioning, as required to obtain at least optimum moisture, but not greater than 120 percent of optimum. The scarified areas shall be compacted to at least 90 percent of the maximum laboratory density, as determined by ASTM D-1557-02 compaction method. All areas to receive fill shall be observed by the Geotechnical Engineer prior to fill placement.

**Monitoring Phase:** Construction  
**Enforcement Agency:** Department of Building and Safety  
**Monitoring Agency:** Department of Building and Safety

- MM-GEO-22 Subgrade Inspection: Prior to placing fill, the ground surface to receive fill shall be observed, tested, and approved by the Geotechnical Engineer.

**Monitoring Phase:** Construction  
**Enforcement Agency:** Department of Building and Safety  
**Monitoring Agency:** Department of Building and Safety

#### ***Fill Placement***

- MM-GEO-23 Laboratory Testing: Representative samples of materials to be utilized as compacted fill shall be analyzed in a laboratory to determine their physical properties. If any material other than that previously tested is encountered during grading, the appropriate analysis of this material shall be conducted.

**Monitoring Phase:** Construction  
**Enforcement Agency:** Department of Building and Safety  
**Monitoring Agency:** Department of Building and Safety

- MM-GEO-24 On-Site Fill Material: The on-site soils are adequate for re-use in controlled fills provided the soils do not contain any organic matter, debris, or any individual particles greater than 6 inches in diameter.

**Monitoring Phase:** Construction  
**Enforcement Agency:** Department of Building and Safety  
**Monitoring Agency:** Department of Building and Safety

MM-GEO-25 Import Fill Material: All imported fill shall not contain any organic matter, debris, or any individual particles greater than 6 inches in diameter. The imported fill shall consist of a granular material with a non-expansive or a low expansive potential (plasticity index less than 15 percent). All imported fill materials shall be approved by the Geotechnical Engineer prior to use in controlled areas.

**Monitoring Phase:** Construction  
**Enforcement Agency:** Department of Building and Safety  
**Monitoring Agency:** Department of Building and Safety

MM-GEO-26 Rock Fragments: Rock fragments less than 6 inches in diameter may be utilized in the fill, provided they are not placed in concentrated pockets, surrounded with fine grained material, and the distribution of the rocks is supervised by the Geotechnical Engineer. Rocks greater than 6 inches in diameter shall be taken off site, placed in fill areas designated as suitable for rock disposal, or placed in accordance with the requirements of the Geotechnical Engineer.

**Monitoring Phase:** Construction  
**Enforcement Agency:** Department of Building and Safety  
**Monitoring Agency:** Department of Building and Safety

MM-GEO-27 Subgrade Verification and Compaction Testing: Regardless of material or location, all fill material shall be placed over properly compacted subgrades in accordance with the **Site Preparation** section of this report. The condition of all subgrades shall be verified by the Geotechnical Engineer before fill placement or earthwork grading begins. Earthwork monitoring and field density testing shall be performed during grading to provide a basis for opinions concerning the degree of soil compaction attained.

**Monitoring Phase:** Construction  
**Enforcement Agency:** Department of Building and Safety  
**Monitoring Agency:** Department of Building and Safety

MM-GEO-28 Fill Placement: Approved on-site or imported fill material shall be evenly placed, watered, processed, and compacted in controlled horizontal layers not exceeding 8 inches in loose thickness, and each layer shall be thoroughly compacted with approved equipment. All fill material shall be moisture conditioned, as required to obtain at least optimum moisture, but not greater than 120 percent of optimum moisture content. The fill shall be placed and compacted in horizontal layers, unless otherwise required by the Geotechnical Engineer.

**Monitoring Phase:** Construction  
**Enforcement Agency:** Department of Building and Safety  
**Monitoring Agency:** Department of Building and Safety

- MM-GEO-29 Compaction Criteria – Shallow Fills: For fills less than 40 feet in vertical thickness, each layer shall be compacted to at least 90 percent of the maximum laboratory density for material used as determined by ASTM D-1557-02. The field density shall be determined by the ASTM D-1556-00 method or equivalent. Where moisture content of the fill or density testing yields compaction results less than 90 percent, additional compaction effort and/or moisture conditioning, as necessary, shall be performed, until the fill material is in accordance with the requirements of the Geotechnical Engineer.

**Monitoring Phase:** Construction  
**Enforcement Agency:** Department of Building and Safety  
**Monitoring Agency:** Department of Building and Safety

- MM-GEO-30 Compaction Criteria – Deep Fills: For all fills greater than 40 feet in vertical thickness, the portion of the fill below a depth of 40 feet shall be placed at a minimum relative compaction of at least 95 percent. If compaction to a lesser percentage is authorized by the controlling governmental agency because of a specific land use or expansive geotechnical conditions, the area to receive fill compacted to less than 90 percent shall either be delineated on the grading plan or appropriate reference made to the area in the geotechnical report. Where moisture content of the fill or density testing yields compaction results less than 95 percent, additional compaction effort and/or moisture conditioning, as necessary, shall be performed, until the fill material is in accordance with the requirements of the Geotechnical Engineer.

**Monitoring Phase:** Construction  
**Enforcement Agency:** Department of Building and Safety  
**Monitoring Agency:** Department of Building and Safety

- MM-GEO-31 Fill Material – Moisture Content: All fill material placed must be moisture conditioned, as required to obtain at least optimum moisture, but not greater than 120 percent. If excessive moisture in the fill results in failing results or an unacceptable “pumping” condition, then the fill shall be allowed to dry until the moisture content is within the necessary range to meet the required compaction requirements or reworked until acceptable conditions are obtained.

**Monitoring Phase:** Construction  
**Enforcement Agency:** Department of Building and Safety  
**Monitoring Agency:** Department of Building and Safety

MM-GEO-32 Keying and Benching: All fills shall be keyed and benched through all topsoil, slopewash, alluvium or creep material, into sound bedrock or firm material where the slope receiving fill is steeper than 5:1 (horizontal:vertical) or as determined by Geotechnical Engineer. The standard acceptable bench height is 4 feet into suitable material. The key for side hill fills shall be a minimum of 15 feet within bedrock or firm materials, with a minimum toe embankment of 2 feet into bedrock, unless otherwise specified by the Geotechnical Engineer. The required design is shown on the "Typical Fill Over Natural Slope Design" plan (Figure 5 from GeoSoils Consultants, Inc., *Preliminary Geologic and Geotechnical Engineering Study, Hidden Creeks, Tentative Tract 68724, Chatsworth, City of Los Angeles, California*, April 12, 2007).

**Monitoring Phase:** Construction  
**Enforcement Agency:** Department of Building and Safety  
**Monitoring Agency:** Department of Building and Safety

MM-GEO-33 Drainage Devices: Drainage terraces and subdrain devices shall be constructed in compliance with the ordinances of the controlling governmental agency, or with the requirements of the Geotechnical Engineer and Engineering Geologist.

**Monitoring Phase:** Construction  
**Enforcement Agency:** Department of Building and Safety  
**Monitoring Agency:** Department of Building and Safety

MM-GEO-34 Slope Face – Compaction Criteria: The Contractor shall be required to obtain a minimum relative compaction of 90 percent out to the finish slope face of fill slopes, buttresses and stabilization fills. This may be achieved by either overbuilding the slope a minimum of 5 feet, or cutting back to the compacted core, or by direct compaction of the slope face with suitable equipment, or by any other procedure which produces the required compaction. If the method of achieving the required slope compaction selected by the Contractor fails to produce the necessary results, the Contractor shall rework or rebuild such slopes until the required degree of compaction is obtained, at no additional cost to the owner or Geotechnical Engineer. Slope testing shall include testing the outer 6 inches to 3 feet of the slopeface during and after placement of the fill. In addition, during grading, density tests shall be taken periodically on the flat surface of the fill 3 to 5 feet horizontally from the face of the slope.

**Monitoring Phase:** Construction  
**Enforcement Agency:** Department of Building and Safety  
**Monitoring Agency:** Department of Building and Safety

MM-GEO-35 Cut-Fill Transition: Where a cut-fill transition is present beneath planned structures, the cut area shall be over-excavated 3 feet below the bottom of proposed footings and the excavated material shall be replaced as compacted fill to reduce the transition condition. These guidelines shall also be followed in areas where lots are underlain by soils or rock with differential expansion potential and also for lots located above descending buttress and stabilization fills. In addition, where the sloped natural contact between the bedrock and the fill is steep, the upper portion of the natural slope may need to be laid back to further soften transition condition, or the fill cap thickness increased.

**Monitoring Phase:** Construction  
**Enforcement Agency:** Department of Building and Safety  
**Monitoring Agency:** Department of Building and Safety

MM-GEO-36 Slope Face – Contractor's Responsibility: The Contractor shall prepare a written detailed description of the method or methods he would employ to obtain the required slope compaction. Such documents shall be submitted to the Geotechnical Engineer for review and comments prior to the start of grading.

**Monitoring Phase:** Pre-construction  
**Enforcement Agency:** Department of Building and Safety  
**Monitoring Agency:** Department of Building and Safety

MM-GEO-37 Slope Face – Vegetation: All fill slopes shall be planted or protected from erosion by methods specified in the geotechnical report, or required by the controlling governmental agency.

**Monitoring Phase:** Construction  
**Enforcement Agency:** Department of Building and Safety  
**Monitoring Agency:** Department of Building and Safety

#### *Grading Control*

MM-GEO-38 Grading Inspection: Earthwork monitoring and field density testing shall be performed by the Geotechnical Engineer during grading to provide a basis for opinions concerning the degree of soil compaction attained. The Contractor shall receive a copy of the Geotechnical Engineer's Daily Field Engineering Report, which will indicate the results of field density tests for that day. Where failing tests occur or other field problems arise, the Contractor shall be notified of such conditions by written communication from the Geotechnical Engineer in the form of a conference memorandum, to avoid any misunderstanding arising from oral communication.

**Monitoring Phase:** Construction  
**Enforcement Agency:** Department of Building and Safety  
**Monitoring Agency:** Department of Building and Safety

- MM-GEO-39 Subgrade Inspection: All processed ground to receive fill and over-excavations shall be inspected and approved by the Geotechnical Engineer prior to placing any fill. The Contractor shall be responsible for notifying the Geotechnical Engineer when such areas are ready for inspection. Inspection of the subgrade may also be required by the controlling governmental agency within the respective jurisdictions.

**Monitoring Phase:** Construction  
**Enforcement Agency:** Department of Building and Safety  
**Monitoring Agency:** Department of Building and Safety

- MM-GEO-40 Subgrade Testing: Density tests shall also be made on the prepared subgrade to receive fill, as required by the Geotechnical Engineer.

**Monitoring Phase:** Construction  
**Enforcement Agency:** Department of Building and Safety  
**Monitoring Agency:** Department of Building and Safety

- MM-GEO-41 Density Testing Intervals: In general, density tests shall be conducted at minimum intervals of 2 feet of fill height or every 500 cubic yards. Due to the variability that can occur in fill placement and different fill material characteristics, a higher number of density tests may be warranted to verify that the required compaction is being achieved.

**Monitoring Phase:** Construction  
**Enforcement Agency:** Department of Building and Safety  
**Monitoring Agency:** Department of Building and Safety

#### *Cut Slopes*

- MM-GEO-42 Observation: The Engineering Geologist shall observe all cut slopes. Additional requirements may be provided at the 40-scale grading plan review stage.

**Monitoring Phase:** Construction  
**Enforcement Agency:** Department of Building and Safety  
**Monitoring Agency:** Department of Building and Safety

- MM-GEO-43 Change of Conditions: If any conditions not anticipated in the preliminary report such as perched water, seepage, lenticular or confined strata of a potentially adverse nature, unfavorably inclined bedding, joints or faults planes, or areas of unstable material are encountered during grading, these conditions shall be analyzed by the Engineering

Geologist and Geotechnical Engineer, and requirements shall be made to treat these problems.

**Monitoring Phase:** Construction  
**Enforcement Agency:** Department of Building and Safety  
**Monitoring Agency:** Department of Building and Safety

MM-GEO-44 Protection: Cut slopes that face in the same direction as the prevailing drainage shall be protected from slopewash by a non-erosive interceptor swale placed at the top of the slope.

**Monitoring Phase:** Construction  
**Enforcement Agency:** Department of Building and Safety  
**Monitoring Agency:** Department of Building and Safety

MM-GEO-45 Criteria: Unless otherwise specified in the geotechnical and geological report, no cut slopes shall be excavated higher or steeper than that allowed by the ordinances of controlling governmental agencies.

**Monitoring Phase:** Construction  
**Enforcement Agency:** Department of Building and Safety  
**Monitoring Agency:** Department of Building and Safety

MM-GEO-46 Drainage Devices: Drainage terraces shall be constructed in compliance with the ordinances of controlling governmental agencies, or with the requirements of the Geotechnical Engineer or Engineering Geologist.

**Monitoring Phase:** Construction  
**Enforcement Agency:** Department of Building and Safety  
**Monitoring Agency:** Department of Building and Safety

#### *Utility Trenching and Backfill*

MM-GEO-47 Utility Trenching: Open excavations and excavations that are shored shall conform to all applicable federal, state, and local regulations.

**Monitoring Phase:** Construction  
**Enforcement Agency:** Department of Building and Safety  
**Monitoring Agency:** Department of Building and Safety

MM-GEO-48 Backfill Placement: Approved on-site or imported fill material shall be evenly placed, watered, processed, and compacted in controlled horizontal layers not exceeding 8 inches in loose thickness, and each layer shall be thoroughly compacted with approved

equipment. All fill material shall be moisture conditioned, as required to obtain at least optimum moisture, but not greater than 120 percent of optimum moisture content. The fill shall be placed and compacted on a horizontal plane, unless otherwise required by the Geotechnical Engineer.

**Monitoring Phase:** Construction  
**Enforcement Agency:** Department of Building and Safety  
**Monitoring Agency:** Department of Building and Safety

- MM-GEO-49 Backfill Compaction Criteria: Each layer of utility trench backfill shall be compacted to at least 90 percent of the maximum laboratory density determined by ASTM D-1557-02. The field density shall be determined by the ASTM D-1556-00 method or equivalent. Where moisture content of the fill or density testing yields compaction results less than 90 percent, additional compaction effort and/or moisture conditioning, as necessary, shall be performed, until the compaction criteria is reached.

**Monitoring Phase:** Construction  
**Enforcement Agency:** Department of Building and Safety  
**Monitoring Agency:** Department of Building and Safety

- MM-GEO-50 Exterior Trenches Adjacent to Footings: Exterior trenches, paralleling a footing and extending below a 1:1 (horizontal:vertical) plane projected from the outside bottom edge of the footing shall be compacted to 90 percent of the laboratory standard. Sand backfill, unless it is similar to the in-place fill, shall not be allowed in these trench backfill areas. Density testing, along with probing, shall be accomplished to verify the desired results.

**Monitoring Phase:** Construction  
**Enforcement Agency:** Department of Building and Safety  
**Monitoring Agency:** Department of Building and Safety

- MM-GEO-51 Pipe Bedding: A minimum of 6 inches of bedding material shall be placed in the bottom of the utility trench. All bedding materials shall extend at least 4 inches above the bottom of utilities which require protection during subsequent trench backfilling. All trenches shall be wide enough to allow for compaction around the haunches of the pipe or materials, such as pea gravel, or controlled density fill (CDF) shall be used below the spring line of the pipes to eliminate the need for mechanical compaction in this portion of the trenches.

**Monitoring Phase:** Construction  
**Enforcement Agency:** Department of Building and Safety  
**Monitoring Agency:** Department of Building and Safety

MM-GEO-52 Groundwater Migration: Backfilled utility trenches may act as French drains to some extent, and considerable groundwater flow along utility bedding and backfill shall be expected. Wherever buried utilities, or structures which they may intersect, could be adversely affected by such drainage, provisions shall be made to collect groundwater migrating along the trench lines. These situations include where buried utilities enter buildings, particularly where they enter below grade mechanical rooms, and where buried utilities enter junction boxes or switching stations that are intended to remain dry. Mitigation measures include, but are not limited to, placement of perforated drain pipes below and continuous with bedding materials, and placement of seepage barriers such as lean mix concrete or CDF.

**Monitoring Phase:** Construction  
**Enforcement Agency:** Department of Building and Safety  
**Monitoring Agency:** Department of Building and Safety

*Construction Considerations*

MM-GEO-53 Erosion Control: Erosion control measures, when necessary, shall be provided by the Contractor during grading and prior to the completion and construction of permanent drainage controls.

**Monitoring Phase:** Construction  
**Enforcement Agency:** Department of Building and Safety  
**Monitoring Agency:** Department of Building and Safety

MM-GEO-54 Compaction Equipment: It is the Contractor's responsibility to have suitable and sufficient compaction equipment on the project site to handle the amount of fill being placed and the type of fill material to be compacted. If necessary, excavation equipment shall be shut down to permit completion of compaction in accordance with the requirements contained in the GeoSoils Consultants, Inc., *Preliminary Geologic and Geotechnical Engineering Study, Hidden Creeks, Tentative Tract 68724, Chatsworth, City of Los Angeles, California*, April 12, 2007. Sufficient watering devices/equipment shall also be provided by the Contractor to achieve optimum moisture content in the fill material.

**Monitoring Phase:** Construction  
**Enforcement Agency:** Department of Building and Safety  
**Monitoring Agency:** Department of Building and Safety

MM-GEO-55 Final Grading Considerations: Care shall be taken by the Contractor during final grading to preserve any berms, drainage terraces, interceptor swales, or other devices of a permanent nature on or adjacent to the property.

**Monitoring Phase:** Construction  
**Enforcement Agency:** Department of Building and Safety  
**Monitoring Agency:** Department of Building and Safety

MM-GEO-56 Surficial Soils and Expansion Considerations: Due to the variability of surficial soil throughout the site and the extensive grading that will be performed, the final foundation design for the proposed structure shall be based on expansion index tests performed at the completion of grading. Surficial soil samples obtained for expansion index testing shall be obtained from various locations within the actual building pad.

**Monitoring Phase:** Construction  
**Enforcement Agency:** Department of Building and Safety  
**Monitoring Agency:** Department of Building and Safety

MM-GEO-57 Sulfate Content of Surficial Site Soils: The concrete design shall be determined by a structural engineer based on sulfate tests performed at the completion of grading and at a minimum, Type II or Type V cement shall be used in construction.

**Monitoring Phase:** Construction  
**Enforcement Agency:** Department of Building and Safety  
**Monitoring Agency:** Department of Building and Safety

#### *Foundation Design Requirements*

MM-GEO-58 In order to minimize the potential effects of seismic activity, expansive soils, and/or hydroconsolidation, either a post-tensioned slab foundation and/or mat foundation system shall be utilized for the proposed structures. Conventional foundation system consisting of spread footings and slab-on-grade floors are also provided as an alternative.

**Monitoring Phase:** Construction  
**Enforcement Agency:** Department of Building and Safety  
**Monitoring Agency:** Department of Building and Safety

#### *Post-Tension Slab Foundation*

MM-GEO-59 Post-tensioned slabs shall be designed in accordance with the recommendations of either the California Foundation Slab Method or Post-Tensioning Institute. The slabs shall be designed for at least 2 inches of surficial differential movement (i.e., at least 2 inches in a

30-foot span) for low-expansion-index (EI) soil, 2.5 inches for medium-EI soil, and at least 3 inches of surficial differential movement for high-EI soil. Based on review of laboratory data for the on-site materials, the average soil modulus of subgrade reaction K, to be used for design is 100 pounds per cubic inch. A surface bearing value of 1,000 pounds per square foot may be used for design.

**Monitoring Phase:** Design  
**Enforcement Agency:** Department of Building and Safety  
**Monitoring Agency:** Department of Building and Safety

***California Foundation Slab Method***

MM-GEO-60 Slab Sectioning: This method recommends that slabs be designed for a free span of 10 feet for low-expansion-index (EI) soil, 15 feet for medium-EI soil and 18 feet for high-EI soil.

**Monitoring Phase:** Design  
**Enforcement Agency:** Department of Building and Safety  
**Monitoring Agency:** Department of Building and Safety

MM-GEO-61 Subgrade Preparation: Post-tension slabs often develop a “dishing” or “arching” characteristic due to the fluctuation of soil moisture content underlying the perimeter and center of the slab. All areas to receive concrete shall be presaturated to a depth of 18 inches, such that the soil within this zone is approximately at optimum moisture to not more than 4 percent above optimum moisture content. The Geotechnical Engineer shall verify all subgrades that are pre-soaked within 24 hours of concrete placement.

**Monitoring Phase:** Construction  
**Enforcement Agency:** Department of Building and Safety  
**Monitoring Agency:** Department of Building and Safety

MM-GEO-62 Cut-Off Wall: A continuous perimeter curtain wall shall extend to a depth of at least 12 inches below exterior grade for low-EI soil, 18 inches for medium-EI soil, and 24 inches for high-EI soil to preserve existing moisture conditions below the slab. The cut-off walls may be integrated into the slab design or independent of the slab and shall be a minimum of 6 inches wide.

**Monitoring Phase:** Construction  
**Enforcement Agency:** Department of Building and Safety  
**Monitoring Agency:** Department of Building and Safety

MM-GEO-63 Moisture Barrier: Concrete slabs shall be underlain with a minimum 6 mil polyvinyl chloride membrane vapor barrier with a minimum overlap of 12 inches in all directions. This membrane shall be sandwiched between two, 2-inch layers of sand.

**Monitoring Phase:** Construction  
**Enforcement Agency:** Department of Building and Safety  
**Monitoring Agency:** Department of Building and Safety

#### *Post-Tensioning Institute Method*

MM-GEO-64 Slab Stiffness: Post-tensioned slabs shall have sufficient stiffness to resist differential movement of the corner, edge, or center of slab due to non-uniform swell and shrinkage of subgrade soils and fluctuation of subgrade soil moisture content. Based on the specifications of the Post-Tensioning Institute, which are included in the 1997 Uniform Building Code Section 1816, the potential for differential movement can be evaluated. **Table IV.E-1** presents suggested minimum coefficients to be used in the Post-Tensioning Institute design method.

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**Table IV.E-1**  
**Post-Tensioning Institute Method**  
**Suggested Coefficients**

|                                  |           |
|----------------------------------|-----------|
| Thornthwaite Moisture Index      | -20 in/yr |
| Correction Factor for Irrigation | 20 in/yr  |
| Depth to Constant Soil Suction   | 5 (feet)  |
| Constant Soil Suction            | 3.6 (pf)  |

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**Monitoring Phase:** Design  
**Enforcement Agency:** Department of Building and Safety  
**Monitoring Agency:** Department of Building and Safety

MM-GEO-65 Coefficient Applicability: The coefficients are considered minimums and may not be adequate to represent worst-case conditions such as adverse drainage and/or improper landscaping and maintenance. The above parameters are applicable provided structures have gutters and downspouts and positive drainage is maintained away from structures.

**Monitoring Phase:** Design  
**Enforcement Agency:** Department of Building and Safety  
**Monitoring Agency:** Department of Building and Safety

MM-GEO-66 Design Parameters: Based on the above parameters, the values presented in **Table IV.E-2** were obtained from 1997 Uniform Building Code Section 1816, Division III. The values may not account for possible differential settlement of the slab due to other factors. If a stiffer slab is desired, higher values of  $Y_m$  may be warranted.

**Table IV.E-2**  
**Post-Tensioning Institute Method**  
**Design Parameters**

| <b>Expansion Index of Soil Subgrade</b> | <b>Low<br/>Expansion Index</b> | <b>Medium<br/>Expansion Index</b> | <b>High<br/>Expansion Index</b> |
|-----------------------------------------|--------------------------------|-----------------------------------|---------------------------------|
| $e_m$ center lift                       | 5.0 feet                       | 5.5 feet                          | 5.5 feet                        |
| $e_m$ edge lift                         | 2.5 feet                       | 2.7 feet                          | 3.0 feet                        |
| $Y_m$ center lift                       | 1.1 inch                       | 2.0 inch                          | 2.5 inch                        |
| $Y_m$ edge lift                         | 0.35 inch                      | 0.50 inch                         | 0.75 inch                       |
| Differential Settlement                 | 2.0 inch                       | 2.5 inch                          | 3.0 inch                        |

**Monitoring Phase:** Design  
**Enforcement Agency:** Department of Building and Safety  
**Monitoring Agency:** Department of Building and Safety

MM-GEO-67 Deepened Footings/Edges: Deepened footings/edges around the slab perimeter must be used to minimize non-uniform surface moisture migration (from an outside source) beneath the slab. An edge depth of at least 12 inches shall be considered for low-EI soil, 18 inches for medium-EI soil, and 24 inches for high-EI soil. The bottom of the deepened footing/edge shall be designed to resist tension, using cable or reinforcement per the Structural Engineer.

**Monitoring Phase:** Construction  
**Enforcement Agency:** Department of Building and Safety  
**Monitoring Agency:** Department of Building and Safety

MM-GEO-68 Design and Construction: Other applicable mitigations measures presented in the **Conventional Slab-on-Grade** and the **California Foundation Slab Method** sections of this report shall be incorporated into the design and construction.

**Monitoring Phase:** Design/Construction  
**Enforcement Agency:** Department of Building and Safety  
**Monitoring Agency:** Department of Building and Safety

**Mat Foundation**

MM-GEO-69     Mat foundation could either be designed as a beam on an elastic foundation or using the method of static equilibrium. The static equilibrium method assumes the mat moves as a rigid body when the loads are applied and that the reaction pressures are distributed linearly across the bottom of the mat. For mat foundation, the criteria under post-tensioned slab may be used for design.

**Monitoring Phase:**     Design  
**Enforcement Agency:**     Department of Building and Safety  
**Monitoring Agency:**     Department of Building and Safety

**Conventional Spread Footings**

MM-GEO-70     Bearing Subgrades: All footings shall be constructed on firm, unyielding compacted fill. All compacted fill shall be compacted to at least 90 percent of the Modified Proctor maximum laboratory density, as determined by ASTM D-1557-07 compaction method.

**Monitoring Phase:**     Construction  
**Enforcement Agency:**     Department of Building and Safety  
**Monitoring Agency:**     Department of Building and Safety

MM-GEO-71     Subgrade Preparation: Pre-moistening of all areas to receive concrete is required. The moisture content of the subgrade soils shall be equal to or greater than optimum moisture, and verified by the Geotechnical Engineer to a depth of 18 inches below adjacent grade in the footing areas within 48 hours of concrete placement.

**Monitoring Phase:**     Construction  
**Enforcement Agency:**     Department of Building and Safety  
**Monitoring Agency:**     Department of Building and Safety

MM-GEO-72     Subgrade Verification: All footing subgrades shall consist of firm, unyielding compacted fill. Under no circumstances shall footings be cast atop loose, soft or slough debris, existing artificial fill, unprocessed alluvium, or surfaces covered by standing water. The condition of all subgrades shall be verified by the Geotechnical Engineer before any concrete is placed.

**Monitoring Phase:**     Construction  
**Enforcement Agency:**     Department of Building and Safety  
**Monitoring Agency:**     Department of Building and Safety

MM-GEO-73 Footings Depth and Width: Footings shall be continuous and be founded at a minimum depth of 18 inches and 24 inches below the lowest adjacent ground surface for one- and two-story structures, respectively, and shall have a minimum width of 18 inches. Footings shall be reinforced according to structural design.

**Monitoring Phase:** Construction  
**Enforcement Agency:** Department of Building and Safety  
**Monitoring Agency:** Department of Building and Safety

MM-GEO-74 Bearing Pressures: The allowable bearing capacity values shown in **Table IV.E-3** include dead and live loads and may be used for design of footings and foundations. All foundations shall be founded in firm, unyielding certified compacted fill and shall be reinforced according to structural design. The bearing values may be increased by one-third when considering short duration loading conditions, such as seismic or wind loads.

**Table IV.E-3**  
**Bearing Capacity Values**

| Bearing Subgrade | Minimum Embedment Depth (inches) | Allowable Bearing Capacity (psf) | Bearing Capacity Increase per Foot Deeper (%) | Bearing Capacity Increase per Foot Wider (%) | Maximum Allowable Bearing Capacity (psf) |
|------------------|----------------------------------|----------------------------------|-----------------------------------------------|----------------------------------------------|------------------------------------------|
| Compacted Fill   | 18                               | 1,500                            | 20                                            | 10                                           | 3,000                                    |

**Monitoring Phase:** Construction  
**Enforcement Agency:** Department of Building and Safety  
**Monitoring Agency:** Department of Building and Safety

MM-GEO-75 Lateral Capacity: To resist lateral loads, the allowable passive earth pressures shown in **Table IV.E-4**, expressed as an equivalent fluid pressure, may be used on that portion of shallow foundations which have a minimum embedment as previously required. When combining passive pressure and frictional resistance, the passive pressure component shall be reduced by one-third.

**Table IV.E-4  
Lateral Bearing Pressure Values**

| <b>Soil Type</b> | <b>Allowable Passive Pressure(pcf)</b> | <b>Maximum Allowable Passive Pressure(psf)</b> | <b>Coefficient of Friction (Concrete/Soil)</b> |
|------------------|----------------------------------------|------------------------------------------------|------------------------------------------------|
| Compacted Fill   | 250                                    | 3,000                                          | 0.35                                           |

**Monitoring Phase:** Design/Construction  
**Enforcement Agency:** Department of Building and Safety  
**Monitoring Agency:** Department of Building and Safety

*Conventional Slab-On-Grade Floor*

MM-GEO-76 Reinforcement: Concrete slabs shall be reinforced with at least No. 4 rebar at 16 inches on-center in both directions. All slab reinforcement shall be properly positioned at mid-height in the slab during placement of concrete.

**Monitoring Phase:** Construction  
**Enforcement Agency:** Department of Building and Safety  
**Monitoring Agency:** Department of Building and Safety

MM-GEO-77 Thickness: The design engineer shall determine the actual thickness of the slabs based on proposed loadings and use. However, minimum slab thickness of 4 inches is required.

**Monitoring Phase:** Design  
**Enforcement Agency:** Department of Building and Safety  
**Monitoring Agency:** Department of Building and Safety

MM-GEO-78 Moisture Barrier: Concrete slabs shall be underlain with a minimum 6 millimeter polyvinyl-chloride membrane vapor barrier with a minimum overlap of 12 inches in all directions. This membrane shall be sandwiched between two 2-inch layers of sand.

**Monitoring Phase:** Construction  
**Enforcement Agency:** Department of Building and Safety  
**Monitoring Agency:** Department of Building and Safety

MM-GEO-79 Slab Sectioning: To minimize transgression of shrinkage cracks, slabs shall not exceed 20-foot sections. Sectioning can be performed by expansion joints, plastic joints, saw cutting, or proper tooling during concrete placement. Slabs shall not be tied structurally to heavily loaded walls or columns, until most of the dead loads are in place to permit minor differential settlement.

**Monitoring Phase:** Construction  
**Enforcement Agency:** Department of Building and Safety  
**Monitoring Agency:** Department of Building and Safety

MM-GEO-80 Subgrade Preparation: All areas to receive concrete shall be presaturated to a depth of 18 inches, such that the soil within this zone is approximately at optimum moisture to not more than 4 percent above optimum moisture content. The Geotechnical Engineer shall verify all subgrades that are pre-soaked within 24 hours of concrete placement.

**Monitoring Phase:** Construction  
**Enforcement Agency:** Department of Building and Safety  
**Monitoring Agency:** Department of Building and Safety

#### **Settlement**

MM-GEO-81 Assuming the foundation elements are founded in the required bearing soils, total static settlement is not anticipated to exceed 0.75 inch, with differential settlements on the order of one-half the total settlement. The majority of the settlement will most likely occur during the initial loading of the foundation; however, if any disturbed, loose, yielding, or soft soils are left within the footing area prior to concrete placement, settlements greater than predicted in the GeoSoils Consultants, Inc., *Preliminary Geologic and Geotechnical Engineering Study, Hidden Creeks, Tentative Tract 68724, Chatsworth, City of Los Angeles, California*, April 12, 2007, may be realized.

**Monitoring Phase:** Construction  
**Enforcement Agency:** Department of Building and Safety  
**Monitoring Agency:** Department of Building and Safety

MM-GEO-82 Additional foundation settlement can also occur due to leakage from any appurtenant plumbing; therefore, it is imperative that all underground plumbing fixtures be *absolutely* leak-free.

**Monitoring Phase:** Construction  
**Enforcement Agency:** Department of Building and Safety  
**Monitoring Agency:** Department of Building and Safety

- MM-GEO-83 Once foundation plans are available which include loading details of total dead and real live loads, the plans shall be reviewed by the Geotechnical Engineer to ensure that total and/or differential settlements are within tolerable limits.

**Monitoring Phase:** Design  
**Enforcement Agency:** Department of Building and Safety  
**Monitoring Agency:** Department of Building and Safety

***Backfilled Retaining Walls***

- MM-GEO-84 Backfilled concrete retaining walls shall be used around the below-grade portions of the on-site structure or to support proposed cuts and fills for heights up to 12 feet or a stacked wall design of two 10-foot retaining walls.

**Monitoring Phase:** Construction  
**Enforcement Agency:** Department of Building and Safety  
**Monitoring Agency:** Department of Building and Safety

- MM-GEO-85 Footing Depths: The retaining walls shall have a minimum embedment depth of 18 inches and a minimum width of 18 inches.

**Monitoring Phase:** Construction  
**Enforcement Agency:** Department of Building and Safety  
**Monitoring Agency:** Department of Building and Safety

- MM-GEO-86 Foundation Subgrade: All retaining wall foundation subgrades shall consist of firm, unyielding certified fill material or competent bedrock. Under no circumstances shall footings be cast atop loose or soft soil, slough, debris, existing uncontrolled fill, or surfaces covered by standing water. The condition of all subgrades shall be verified by the Geotechnical Engineer prior to concrete placement.

**Monitoring Phase:** Construction  
**Enforcement Agency:** Department of Building and Safety  
**Monitoring Agency:** Department of Building and Safety

- MM-GEO-87 Wall Drainage: To preclude the build-up of hydrostatic pressure, a 4-inch-diameter perforated drain pipe shall be installed behind the heel of the wall and a curtain drain shall be placed behind the entire wall. This curtain drain shall consist of pea gravel, washed rock, or a mixture of these materials wrapped in approved filter material, extending outward at least 1 foot from the wall and extending from the footing drain upward to within approximately 3 feet of the ground surface. The enclosed "Retaining Wall Backfill and Subdrain Detail" (Figure 9 from GeoSoils Consultants, Inc., *Preliminary*

*Geologic and Geotechnical Engineering Study, Hidden Creeks, Tentative Tract 68724, Chatsworth, City of Los Angeles, California, April 12, 2007)* illustrates the required drainage detail behind backfilled retaining walls. In areas where the foundation is founded in undisturbed bedrock, a subdrain shall be provided. The backside of all subterranean walls shall be waterproofed.

**Monitoring Phase:** Construction  
**Enforcement Agency:** Department of Building and Safety  
**Monitoring Agency:** Department of Building and Safety

MM-GEO-88 Backfill Soil: To allow the dissipation of potential hydrostatic pressure behind the retaining wall, all retaining wall backfill placed behind the curtain drain shall consist of clean, free-draining, granular material. On-site granular soils can be used for this purpose provided their moisture content is near optimum. In the latter case, a geotextile shall be placed between the curtain drain and backfill to prevent fines infiltration into the drainage rock.

**Monitoring Phase:** Construction  
**Enforcement Agency:** Department of Building and Safety  
**Monitoring Agency:** Department of Building and Safety

MM-GEO-89 Backfill Compaction: To prevent the build-up of lateral soil pressures in excess of the required design pressures, overcompaction of the fill behind the wall shall be avoided; however, a lesser degree of compaction may permit excessive post-construction settlements. Backfill above a 45-degree plane projected upward from the base shall be placed in horizontal lifts not exceeding 8 inches in loose depth and compacted by small, hand-operated compaction equipment.

**Monitoring Phase:** Construction  
**Enforcement Agency:** Department of Building and Safety  
**Monitoring Agency:** Department of Building and Safety

MM-GEO-90 Grading and Capping: To retard the infiltration of surface water into the wall backfill soils, the backfill surface of exterior walls shall be adequately sloped to drain away from the wall. The backfill surface directly behind the wall shall be capped with asphalt, concrete, or 3 feet of low-permeability soil.

**Monitoring Phase:** Construction  
**Enforcement Agency:** Department of Building and Safety  
**Monitoring Agency:** Department of Building and Safety

MM-GEO-91 Applied Loads: Overturning and sliding loads applied to retaining walls can be classified as active, at-rest, surcharge, and hydrostatic pressures. The required methods of calculating design pressures are presented graphically on the enclosed "Lateral Earth Pressure" diagram (Figure 10 from GeoSoils Consultants, Inc., *Preliminary Geologic and Geotechnical Engineering Study, Hidden Creeks, Tentative Tract 68724, Chatsworth, City of Los Angeles, California*, April 12, 2007) and are discussed in the following paragraphs.

- Active and At-Rest Pressures: Yielding (cantilever) retaining walls shall be designed to withstand an appropriate *active* lateral earth pressure, whereas non-yielding (restrained) walls shall be designed to withstand an appropriate *at-rest* lateral earth pressure. These pressures act over the entire back of the wall and vary with the backslope inclination. For retaining walls up to 15 feet in height with various backslope angles, the active and at-rest pressures (given as equivalent fluid unit weights) provided in **Table IV.E-5** shall be used.

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**Table IV.E-5**  
**Retaining Pressure Up to 15 Feet in Height**

| Backslope Angle | Static Active Pressure<br>(pcf) | Static At-Rest Pressure<br>(pcf) |
|-----------------|---------------------------------|----------------------------------|
| Level           | 30                              | 45                               |
| 5H:1V           | 33                              | 50                               |
| 4H:1V           | 35                              | 55                               |
| 3H:1V           | 38                              | 60                               |
| 2H:1V           | 43                              | 67                               |
| 1.5H:1V         | 55                              | 85                               |

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- Seismic Pressures: Static lateral earth pressures acting on a retaining wall shall be increased to account for seismic loadings. These pressures act over the entire back of the wall and vary with the backslope inclination, the seismic acceleration, and the wall height. For a design acceleration coefficient of 0.4 and a wall height of "H" feet, uniform horizontal active and at-rest seismic pressures provided in **Table IV.E-6** shall be used.

**Table IV.E-6  
Seismic Pressures**

| <b>Backslope Angle</b> | <b>Dynamic Active Uniform Pressure (psf)</b> | <b>Dynamic At-Rest Uniform Pressure (psf)</b> |
|------------------------|----------------------------------------------|-----------------------------------------------|
| Level                  | 6H                                           | 18H                                           |
| 5H:1V                  | 6H                                           | 18H                                           |
| 4H:1V                  | 7H                                           | 21H                                           |
| 3H:1V                  | 8H                                           | 24H                                           |
| 2H:1V                  | 10H                                          | 30H                                           |
| 1.5H:1V                | 12H                                          | 36H                                           |

- Surcharge Pressures: Any anticipated, superimposed loading (i.e., upper retaining walls, traffic surcharge or other structures, etc.) within a 45-degree plane projected upward from the wall bottom, except retained earth, shall be considered as surcharge and provided for in the design. For a uniformly distributed load behind the wall, a corresponding uniform distributed lateral soil pressure equal to 30 percent of the surcharge shall be added to the equivalent fluid pressure. A vertical component equal to one-third of the horizontal force so obtained may be assumed at the plane of application of the force.
- Hydrostatic Pressures: If groundwater is allowed to saturate the backfill soils, hydrostatic pressures will act against a retaining wall. However, if an adequate drainage system is included with each retaining wall, hydrostatic pressures are *not* expected to develop.

**Monitoring Phase:** Design

**Enforcement Agency:** Department of Building and Safety

**Monitoring Agency:** Department of Building and Safety

MM-GEO-92 Resisting Forces: Active pressures, at-rest pressures, dynamic pressures, and surcharge pressures for conventional retaining wall foundations are resisted by a combination of passive lateral earth pressure, base friction, and subgrade bearing capacity. Passive pressure acts over the embedded front of the wall (neglecting the upper 1 foot for paved foreslopes, or the upper 2 feet for soil foreslopes) and varies with the foreslope inclination, whereas base friction and bearing capacity act along the bottom of the footings. For retaining walls with a level foreslope and zero hydrostatic pressure behind the wall, the resisting design values presented in **Table IV.E-7** shall be used.

**Table IV.E-7  
Required Resisting Forces**

| Design Parameters         | Allowable Value |           |
|---------------------------|-----------------|-----------|
|                           | Compacted Fill  | Bedrock   |
| Bearing Capacity          | 1,500 psf       | 2,500 psf |
| Maximum Bearing Capacity  | 3,000 psf       | 5,000 psf |
| Passive Pressure          | 250 pcf         | 350 pcf   |
| Base Friction Coefficient | 0.35            | 0.40      |

The required bearing capacities in the table above may be increased by 20 percent for each additional foot of depth deeper than the minimum required depth of 18 inches, plus 10 percent for each additional foot of width wider than the minimum required width of 18 inches.

**Monitoring Phase:** Design  
**Enforcement Agency:** Department of Building and Safety  
**Monitoring Agency:** Department of Building and Safety

#### *Temporary and Permanent Slopes and Excavations*

MM-GEO-93 Safety: Temporary excavation slope stability is a function of many factors including soil type, density, cut inclination, depth, the presence of groundwater, and the length of time that the cut is to remain open. As the cut is deepened, or as the length of time an excavation is open, the likelihood of bank failure increases. For this reason, maintenance of safe slopes and worker safety shall remain the responsibility of the contractor, who is present at the site, able to observe changes in the soil conditions, and monitor the performance of the excavation.

**Monitoring Phase:** Construction  
**Enforcement Agency:** Department of Building and Safety  
**Monitoring Agency:** Department of Building and Safety

MM-GEO-94 Maintenance: If seepage or surface runoff is not controlled, flatter temporary slopes would be necessary. Larger cobbles and boulders shall be scaled from the excavation sidewalls prior to worker entry to prevent injury to workmen from falling rocks. In all cases, cut slopes and any excavation shoring shall conform to applicable federal, state, and/or local safety guidelines.

**Monitoring Phase:** Construction  
**Enforcement Agency:** Department of Building and Safety  
**Monitoring Agency:** Department of Building and Safety

MM-GEO-95 Cut/Fill Slopes: Temporary and permanent cut and fill slopes in natural soil, bedrock and compacted fill soils shall not exceed the inclinations shown in **Table IV.E-8**.

**Table IV.E-8**  
**Maximum Slope Inclinations**

| Soil Type                   | Maximum Inclination<br>(Horizontal: Vertical) |           |
|-----------------------------|-----------------------------------------------|-----------|
|                             | Temporary*                                    | Permanent |
| Natural Soil/Compacted Fill | 1H:1V*                                        | 2H:1V     |
| Bedrock                     | 1H:1V*                                        | 2H:1V     |

*\* or as shown on the geologic cross-sections from GeoSoils Consultants, Inc., Preliminary Geologic and Geotechnical Engineering Study, Hidden Creeks, Tentative Tract 68724, Chatsworth, City of Los Angeles, California, April 12, 2007.*

**Monitoring Phase:** Design/Construction  
**Enforcement Agency:** Department of Building and Safety  
**Monitoring Agency:** Department of Building and Safety

MM-GEO-96 Excavations: Shallow excavations used for construction that are less than 4 feet in depth and are made in properly engineered fill or firm native soils shall stand with vertical sides. Excavations deeper than 4 feet shall be sloped at angles provided in **Table IV.E-8**, or shored. All open excavations and excavations that are shored shall conform to all applicable federal, state and local regulations.

**Monitoring Phase:** Construction  
**Enforcement Agency:** Department of Building and Safety  
**Monitoring Agency:** Department of Building and Safety

MM-GEO-97 Surcharge: Surcharge loads shall be setback from the top of temporary excavations a minimum horizontal distance of 10 feet.

**Monitoring Phase:** Construction  
**Enforcement Agency:** Department of Building and Safety  
**Monitoring Agency:** Department of Building and Safety

MM-GEO-98 Excavation Inspection: The soils exposed in temporary excavation slopes shall be observed by the Geotechnical Engineer so that modifications of the slopes can be made if variations in soil conditions occur.

**Monitoring Phase:** Construction  
**Enforcement Agency:** Department of Building and Safety  
**Monitoring Agency:** Department of Building and Safety

MM-GEO-99 Limitations: The values listed in **Table IV.E-8** assume that the slopes will be protected from erosion and that significant drainage will not occur over the face of the slope. It is further assumed that no loads will be imposed above the slope within one half the slope height from the slope face. The temporary cut/fill slopes shall be stabilized and/or supported within three weeks. In no conditions shall the temporary excavations exceed those shown on the geologic cross-sections.

**Monitoring Phase:** Construction  
**Enforcement Agency:** Department of Building and Safety  
**Monitoring Agency:** Department of Building and Safety

#### *On-Site Drainage*

MM-GEO-100 Seasonal precipitation and/or landscape water shall not be allowed to pond within the site, especially next to slopes and foundations of any structures. Surface runoff shall be collected and disposed of in such a manner as to prevent concentrated erosion. Roof gutters and yard drains shall be provided. All pad drainage shall be directed toward the street or an approved water course area swale via non-erosive channel, pipe and/or dispersion devices. All planters proposed adjacent to structures shall be self-contained, provided with a subdrain system, and/or allowed to have positive drainage away from structures to drain excess landscape water.

**Monitoring Phase:** Construction  
**Enforcement Agency:** Department of Building and Safety  
**Monitoring Agency:** Department of Building and Safety

MM-GEO-101 Lot drainage shall be verified after house construction and notices shall be posted cautioning homeowners not to modify drainage in any way without approval by the City of Los Angeles Grading Department. At no time shall drainage be directed toward any descending slope or allowed to pond. All slope or fill backdrains shall continue to remain unobstructed and be allowed to drain freely.

**Monitoring Phase:** Operation  
**Enforcement Agency:** Department of Building and Safety  
**Monitoring Agency:** Department of Building and Safety

MM-GEO-102 Leakage from any of the appurtenant plumbing will create an artificial groundwater condition which could likely render settlement or slope stability problems; therefore, it is imperative that all underground plumbing fixtures shall remain entirely leak-free.

**Monitoring Phase:** Construction/Operation  
**Enforcement Agency:** Department of Building and Safety  
**Monitoring Agency:** Department of Building and Safety

#### **Bridge Requirements**

MM-GEO-103 The bridge across Mormon Canyon at the northeast part of the site shall be built upon a deepened pile foundation system that derives support from the underlying bedrock, and will have a clear span across Mormon Canyon. Additional subsurface exploration shall be performed in the area of the proposed bridge foundation prior to pile driving activities. Final requirements shall be determined based on the results of that exploration.

**Monitoring Phase:** Construction  
**Enforcement Agency:** Department of Building and Safety  
**Monitoring Agency:** Department of Building and Safety

#### **IV.F. Hazards and Hazardous Materials**

Mitigation measures **MM-FIRE-1** through **MM-FIRE-17** would reduce potentially significant emergency access and emergency response hazards to a less than significant level. See **Section IV.K.2, Fire Protection and Emergency Medical Services**, below.

#### **IV.G. Water Resources**

MM-WR-1 Wetland flora shall be planted in the retention basin to help remove nitrogen, phosphorus, and other contaminants from the surface water before it is discharged into the Browns Canyon Wash or absorbed into the ground. Non-invasive weed species shall be researched and prohibited from the retention basin. Vegetated swales and infiltration trenches shall be incorporated into the design of the retention basin. See **MM-WR-7** for implementation of infiltration trenches in conjunction of the retention basin. Vegetated swales are open, shallow channels with vegetation covering the side slopes and bottom that collect and slowly convey runoff to downstream discharge points. Vegetated swales

can serve as part of a stormwater drainage system and can replace curbs, gutters, and storm sewer systems.

**Monitoring Phase:** Construction  
**Enforcement Agency:** Department of Building and Safety, Bureaus of Engineering and Sanitation, Los Angeles Regional Water Quality Control Board  
**Monitoring Agency:** Department of Building and Safety, Bureaus of Engineering and Sanitation, Los Angeles Regional Water Quality Control Board

MM-WR-2 Appropriate landscape planning methodologies shall be integrated and incorporated into the project design to minimize surface and groundwater contamination from stormwater.

**Monitoring Phase:** Design  
**Enforcement Agency:** Los Angeles Regional Water Quality Control Board  
**Monitoring Agency:** Los Angeles Regional Water Quality Control Board

MM-WR-3 The project design shall incorporate various roof runoff controls to address stormwater that drains off rooftops. The objective is to reduce the total volume and rate of runoff from individual lots, and retain the pollutants from roofing materials and atmospheric deposition on site. Roof runoff controls consist of directing the roof runoff away from paved areas and mitigating flow to the storm drain system through cisterns or rain barrels, dry wells or infiltration trenches and pop-up emitters, which require that roof runoff be contained in a gutter and downspout system, foundation planting, which requires a vegetated strip under the drip line of the roof, and other general approaches.

**Monitoring Phase:** Design  
**Enforcement Agency:** Department of Building and Safety, Bureaus of Engineering and Sanitation, Los Angeles Regional Water Quality Control Board  
**Monitoring Agency:** Department of Building and Safety, Bureaus of Engineering and Sanitation, Los Angeles Regional Water Quality Control Board

MM-WR-4 Efficient irrigation systems, including drip irrigation lines, shall be installed to reduce excess irrigation water from entering the stormwater drainage systems.

**Monitoring Phase:** Construction  
**Enforcement Agency:** Department of Building and Safety, Bureaus of Engineering and Sanitation, Los Angeles Regional Water Quality Control Board  
**Monitoring Agency:** Department of Building and Safety, Bureaus of Engineering and Sanitation, Los Angeles Regional Water Quality Control Board

MM-WR-5 Notices regarding discharge prohibitions at storm drain inlets shall be placed adjacent to storm drain inlets to reduce the amount of illegal dumping. Waste materials dumped into storm drain inlets can have severe impacts on receiving and ground waters.

**Monitoring Phase:** Operation  
**Enforcement Agency:** Los Angeles Regional Water Quality Control Board  
**Monitoring Agency:** Los Angeles Regional Water Quality Control Board

MM-WR-6 Alternative building materials shall be used instead of conventional materials for new construction and renovation when feasible. For example, recycled plastic fencing and stucco walls require less paint and staining than wood-based materials. These materials reduce potential sources of pollutants in stormwater runoff by eliminating compounds that can leach into runoff, reducing the need for pesticide application, reducing the need for painting and other maintenance, or by reducing the volume runoff.

**Monitoring Phase:** Construction  
**Enforcement Agency:** Department of Building and Safety, Los Angeles Regional Water Quality Control Board  
**Monitoring Agency:** Department of Building and Safety, Los Angeles Regional Water Quality Control Board

MM-WR-7 The project design shall incorporate an infiltration trench, which is a long, narrow, rock-filled trench with no outlet that receives stormwater runoff. Runoff is stored in the void space between the stones and infiltrates through the bottom and into the soil matrix. Infiltration trenches perform well for removal of fine sediment and associated pollutants. Pretreatment using buffer strips, swales, or detention basins is important for limiting amounts of coarse sediment entering the trench which can clog and render the trench ineffective.

**Monitoring Phase:** Design  
**Enforcement Agency:** Department of Building and Safety, Bureaus of Engineering and Sanitation, Los Angeles Regional Water Quality Control Board  
**Monitoring Agency:** Department of Building and Safety, Bureaus of Engineering and Sanitation, Los Angeles Regional Water Quality Control Board

MM-WR-8 Grassed buffer strips (vegetated filter strips, filter strips, and grassed filters) shall be implemented into the project design. Grassed buffer strips are vegetated surfaces that are designed to treat sheet flow from adjacent surfaces. Filter strips function by slowing runoff velocities and allowing sediment and other pollutants to settle and by providing some infiltration into underlying soils. With proper design and maintenance, filter strips can provide relatively high pollutant removal and enhance landscaping features.

**Monitoring Phase:** Design  
**Enforcement Agency:** Department of Building and Safety, Bureaus of Engineering and Sanitation, Los Angeles Regional Water Quality Control Board  
**Monitoring Agency:** Department of Building and Safety, Bureaus of Engineering and Sanitation, Los Angeles Regional Water Quality Control Board

MM-WR-9 Drain inserts shall be used where appropriate. Drain inserts are manufactured filters or fabric placed in a drop inlet to remove sediment and debris. Inserts of various shapes and configurations are available, typically falling into one of three different groups: socks, boxes, and trays. The sock consists of a fabric, usually constructed of polypropylene. Socks are meant for vertical (drop) inlets. Boxes are constructed of plastic or wire mesh. Typically a polypropylene “bag” is placed in the wire mesh box. Some products consist of one or more trays or mesh grates. The trays may hold different types of media. Filtration media vary by manufacturer. Types include polypropylene, porous polymer, treated cellulose, and activated carbon.

**Monitoring Phase:** Construction  
**Enforcement Agency:** Department of Building and Safety, Bureaus of Engineering and Sanitation  
**Monitoring Agency:** Department of Building and Safety, Bureaus of Engineering and Sanitation

MM-WR-10 The Hidden Creeks Estates Homeowner’s Association shall promote efficient and safe housekeeping practices (storage, use, and cleanup) when handling potentially harmful materials such as fertilizers, pesticides, cleaning solutions, paint products, automotive products, and swimming pool chemicals.

**Monitoring Phase:** Operation  
**Enforcement Agency:** Bureaus of Engineering and Sanitation, Los Angeles Regional Water Quality Control Board  
**Monitoring Agency:** Bureaus of Engineering and Sanitation

MM-WR-11 Pursuant to Section 402 of the Clean Water Act, the project applicant shall obtain a NPDES stormwater discharge permit and prepare a SWPPP prior to the start of construction. The SWPPP shall identify BMPs to prevent or reduce the potential for erosion, sedimentation and contamination on the project site during construction. The BMPs shall also identify procedures for clean up in the event of contamination from construction-related substances such as fuel, oil, grease, lubricants, paint, and construction debris.

**Monitoring Phase:** Pre-construction

**Enforcement Agency:** Department of Building and Safety, Bureaus of Engineering and Sanitation, Los Angeles Regional Water Quality Control Board

**Monitoring Agency:** Department of Building and Safety, Bureaus of Engineering and Sanitation

#### **IV.H. Land Use**

No mitigation measures are required because the proposed project would not result in any significant land use impacts.

#### **IV.I. Noise**

MM-NOISE-1 As per Section 41.40 of the City of Los Angeles Noise Ordinance, construction operations shall be limited to the hours of 7:00 AM to 6:00 PM Monday through Friday and 8:00 AM to 6:00 PM on Saturdays and holidays. No construction operations shall be permitted on Sundays.

**Monitoring Phase:** Construction

**Enforcement Agency:** Department of City Planning

**Monitoring Agency:** Department of City Planning

MM-NOISE-2 As per Section 112.05 of the City of Los Angeles Noise Ordinance, all technically feasible measures shall be implemented to reduce noise levels of construction equipment operating within 500 feet of residential areas in cases where noise levels exceed 75 dB(A) at 50 feet from the noise source. Technically feasible measures include, but are not limited to, changing the location of stationary construction equipment, shutting off idling equipment, notifying adjacent land uses in advance of construction work, ensuring that construction equipment is fitted with modern sound-reduction equipment, and installing temporary acoustic barriers around stationary construction noise sources.

**Monitoring Phase:** Construction

**Enforcement Agency:** Department of City Planning  
**Monitoring Agency:** Department of City Planning

- MM-NOISE-3 Equipment used for project construction shall be hydraulically or electrically powered impact tools (e.g., jack hammers) wherever possible to avoid noise associated with compressed air exhaust from pneumatically powered tools. Where use of pneumatically powered tools is unavoidable, an exhaust muffler on the compressed air exhaust shall be used. A muffler could lower noise levels from the exhaust by up to about 10 dB(A). External jackets on the tools themselves shall be used where feasible; this could achieve a reduction of 5 dB(A). Quieter procedures shall be used (such as drilling rather than impact equipment) wherever feasible. The project applicant shall require construction contractors to ensure that construction equipment is fitted with sound reduction equipment, per manufacturer's specifications.

**Monitoring Phase:** Construction  
**Enforcement Agency:** Department of City Planning  
**Monitoring Agency:** Department of City Planning

- MM-NOISE-4 Signs shall be posted prior to construction activities with a phone number for residents to call with noise complaints.

**Monitoring Phase:** Pre-construction  
**Enforcement Agency:** Department of Building and Safety, Department of City Planning  
**Monitoring Agency:** Department of Building and Safety, Department of City Planning

- MM-NOISE-5 Prior to construction of the portion of the project site near Subarea B of the Porter Ranch Specific Plan, a temporary sound barrier (e.g., solid fence or similar barrier) shall be erected 500 feet from the nearest residences such that the line of sight from the residences to the construction area is blocked. This fence shall be maintained until completion of the construction activity.

**Monitoring Phase:** Pre-construction/Construction  
**Enforcement Agency:** Department of Building and Safety, Department of City Planning  
**Monitoring Agency:** Department of Building and Safety, Department of City Planning

#### IV.J. Population and Housing

No mitigation measures are required because the proposed project would not result in any significant population or housing growth impacts.

#### IV.K.1. Police Protection

MM-PP-1 A construction traffic routing plan shall be prepared per Los Angeles Department of Transportation (LADOT) requirements that would facilitate the movement of construction vehicles. In addition, access on to the project site shall remain clear and unobstructed; proposed roadway modifications shall assure adequate access to the proposed project site and adjacent areas; security features shall be incorporated on the construction site, such as fencing and locked entrances; and construction equipment, tools and material shall be secured by locking or placing them within sheds and/or other inaccessible areas while not in use.

**Monitoring Phase:** Pre-construction  
**Enforcement Agency:** Los Angeles Police Department  
**Monitoring Agency:** Los Angeles Police Department

MM-PP-2 The project applicant shall contact LAPD'S CPU to incorporate appropriate crime prevention features into the project design. Examples of crime prevention design features include the following.<sup>1</sup>

- Housing units can be designed so as to allow neighbors to "self-patrol" their environments.
- Fences around housing developments can be designed in ways that avoid creating hiding places for criminals.
- Vines or planted coverings may be placed on walls to deter graffiti.

**Monitoring Phase:** Design  
**Enforcement Agency:** Los Angeles Police Department  
**Monitoring Agency:** Los Angeles Police Department

MM-PP-3 During project construction, a designated parking area with a security officer shall be provided for the construction workers.

**Monitoring Phase:** Construction

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<sup>1</sup> Los Angeles Police Department. "Design Out Crime. City of Los Angeles." Retrieved from [http://www.lapdonline.org/prevent\\_crime/content\\_basic\\_view/8852](http://www.lapdonline.org/prevent_crime/content_basic_view/8852) on February 7, 2007.

**Enforcement Agency:** Los Angeles Police Department  
**Monitoring Agency:** Los Angeles Police Department

MM-PP-4 Upon completion of the project a diagram of each portion of the property, including access routes and any additional information that might facilitate police response, the diagram shall be submitted to the Devonshire area commanding officer.

**Monitoring Phase:** Pre-construction  
**Enforcement Agency:** Los Angeles Police Department  
**Monitoring Agency:** Los Angeles Police Department

#### **IV.K.2. Fire Protection**

MM-FIRE-1 The use of construction and design features, which reduces fire potential and/or promotes containment, including increased spacing between buildings, noncombustible roofs, fire-resistant landscaping, and special irrigation facilities, shall be implemented. Design features shall be reviewed and approved by the Fire Chief prior to project approval.

**Monitoring Phase:** Design  
**Enforcement Agency:** Los Angeles Fire Department  
**Monitoring Agency:** Los Angeles Fire Department

MM-FIRE-2 Upon completion of project construction, a diagram of each portion of the property, including access routes and any additional information that might facilitate fire and emergency medical response, shall be submitted to the City of Los Angeles Fire Marshall.

**Monitoring Phase:** Pre-construction  
**Enforcement Agency:** Los Angeles Fire Department  
**Monitoring Agency:** Los Angeles Fire Department

MM-FIRE-3 During project construction, the contractor shall ensure that roads and alleyways remain unobstructed to provide for emergency access at all times.

**Monitoring Phase:** Construction  
**Enforcement Agency:** Los Angeles Fire Department  
**Monitoring Agency:** Los Angeles Fire Department

MM-FIRE-4 The project applicant shall coordinate with the LAFD to design and implement fire hydrants in compliance with the LAFD Fire Code for low-density residential developments prior to project approval. All fire hydrants must be 2.5-inches-by-4-inches double hydrants and be placed adjacent to structures in the project site. Two fire

hydrants shall be installed at the fire department staging area to be located at the southern portion of the project site adjacent to the equestrian center and one additional hydrant shall be located at the intersection of Browns Canyon Road with the project access road.

**Monitoring Phase:** Design  
**Enforcement Agency:** Los Angeles Fire Department and Los Angeles County Fire Department  
**Monitoring Agency:** Los Angeles Fire Department and Los Angeles County Fire Department

MM-FIRE-5 Recreational areas and parks proposed by the project shall be consistent with fire safety recommendations set in the Chatsworth-Porter Ranch Community Plan. Design plans shall be reviewed and approved by the Fire Marshall prior to project approval.

**Monitoring Phase:** Design  
**Enforcement Agency:** Los Angeles Fire Department  
**Monitoring Agency:** Los Angeles Fire Department

MM-FIRE-6 The Hidden Creeks Estates HOA will report annually to the City of Los Angeles Fire Marshall that Hidden Creeks Estates development is in compliance with requirements set forth in the Fire/Vegetation Management Plan and Wildfire Risk Analysis and all mitigation measures included below no later than May 1 each year.

**Monitoring Phase:** Operation  
**Enforcement Agency:** Los Angeles Fire Department  
**Monitoring Agency:** Los Angeles Fire Department

MM-FIRE-7 The Hidden Creeks Estates HOA shall ensure that a 200-foot-minimum fuel management zone is in place, and cleared annually, around each structure on the project site. The 200-foot fuel management zone shall be divided as follows:

- **Zone A:** Zone A will begin at the structure and extend out 50 feet from the structure. The zone must be irrigated, tree spacing will be 30 feet between canopies, shrub spacing will be 15 feet between canopies, lawn, or low-lying plants will be used as ground cover, and areas beneath oak trees need not be irrigated.
- **Zone B:** Zone B will begin at the 51-foot mark of Zone A and extend out to 100 feet from structure. The zone may be irrigated, shrubs will not exceed 18 inches in height, tree spacing will be 30 feet between canopies, and shrub spacing will be 15 feet between canopies.
- **Zone C:** Zone C will begin at the 101-foot mark of Zone B and extend out to 200 feet from structure. All natural vegetation will be thinned out by 70 percent and all dead vegetation including grass will be maintained at less than 4 inches in height. If the

zone is not irrigated, the area may be covered with chipped biomass 4 inches deep. No tree limb shall be within 10 feet of a chimney, including outdoor barbeques. Trees must be maintained free of dead branches. Trees must be limbed up 4 feet or one-third the height of the tree. Trees over driveways or roads must be limbed up to 15 feet. The shrub height limit is 2 feet.

**Monitoring Phase:** Design  
**Enforcement Agency:** Los Angeles Fire Department  
**Monitoring Agency:** Los Angeles Fire Department

MM-FIRE-8 The following shrubs and trees are highly flammable and will not be planted within the project area:

- Sage Species – *Salvia* spp.
- Pampas grass – *Cortaderia* spp.
- Cypress – *Cupressus* spp.
- Eucalyptus – *Eucalyptus* spp.
- Juniper – *Juniperus* spp.
- Pine – *Pinus* spp.
- Cedar – *Cedrus* spp.

The following shrubs and trees will be used for general landscaping and will undergo annual maintenance, as overseen by the Hidden Creeks Estates HOA:

- Coastal live oak – *Quercus* spp.
- California Sycamore – *Plantus racemosa*
- Cottonwood – *Populus fremontii*
- Willow – *Salix* spp.
- Mule Fat – *Baccharis viminea*
- California Bay – *Umbellularia californica*
- California Black Walnut – *Juglans californica*
- Liquidamber – *Liquidamber styraciflua*
- *Ceanothus* spp.
- Toyon – *Heteromeles arbutifolias*

- Mountain Mahogany – *Cercocarpus betuloides*
- Holly leaf cherry – *P. ilicifolia*
- Dwarf periwinkle – *Vinca minor*
- Grass – *Stipa* spp.

**Monitoring Phase:** Design/Operation  
**Enforcement Agency:** Los Angeles Fire Department  
**Monitoring Agency:** Los Angeles Fire Department

MM-FIRE-9 The Hidden Creeks Estates HOA shall ensure annually that all roads and driveways provide a 15-foot clearance on each side. The clearance must comply with Fuel Management Zone A requirements, with trees set back so the canopy is kept 15 feet above the road bed to allow sufficient fire equipment access.

**Monitoring Phase:** Design/Operation  
**Enforcement Agency:** Los Angeles Fire Department  
**Monitoring Agency:** Los Angeles Fire Department

MM-FIRE-10 The Hidden Creeks Estates developer and HOA shall ensure that any wood fencing chosen for fencing wildland/open space areas shall be made of heavy timber, at least 2 inches thick or greater, and set back 5 feet from the wildland/open space area. Chipped biomass, rock, and gravel or bare ground shall be maintained for at least 5 feet on each side of the wooden fence.

**Monitoring Phase:** Design  
**Enforcement Agency:** Los Angeles Fire Department  
**Monitoring Agency:** Los Angeles Fire Department

MM-FIRE-11 The Hidden Creeks Estates developer and HOA shall ensure that in all planted areas outside of the “wet” zones, the uniform spacing of shrubs may be modified by the clustering of smaller shrubs thereby creating drifts of them as long as such clustering does not result in an average spacing less than 15 feet on center.

**Monitoring Phase:** Design  
**Enforcement Agency:** Los Angeles Fire Department  
**Monitoring Agency:** Los Angeles Fire Department

MM-FIRE-12 In order to mitigate the inadequacy of fire protection due to travel distance and response time, sprinkler systems shall be required throughout any structure to be built in accordance with the Los Angeles Municipal Code, Section 57.09.07.

**Monitoring Phase:** Design  
**Enforcement Agency:** Los Angeles Fire Department  
**Monitoring Agency:** Los Angeles Fire Department

MM-FIRE-13 The Hidden Creeks Estates HOA shall ensure annual weed abatement and brush clearance meeting Los Angeles County Fire Department standards along Browns Canyon Road from its intersection with the project access road southerly to De Soto Boulevard.

**Monitoring Phase:** Operation  
**Enforcement Agency:** Los Angeles Fire Department  
**Monitoring Agency:** Los Angeles Fire Department

MM-FIRE-14 The Hidden Creeks Estates HOA shall make all necessary pavement repairs, including repair of potholes, on an as needed basis to Browns Canyon Road from its intersection with the project access road southerly to De Soto Boulevard to maintain this section of Browns Canyon Road as an all-weather access meeting Los Angeles County Fire Department standard. The HOA shall maintain records of all repairs and provide these records on request.

**Monitoring Phase:** Operation  
**Enforcement Agency:** Los Angeles Fire Department  
**Monitoring Agency:** Los Angeles Fire Department

MM-FIRE-15 The firefighting helistop to be provided within the public park shall be designed to meet both Los Angeles City and County Fire Department standards.

**Monitoring Phase:** Design  
**Enforcement Agency:** Los Angeles Fire Department and Los Angeles County Fire Department  
**Monitoring Agency:** Los Angeles Fire Department and Los Angeles County Fire Department

MM-FIRE-16 An emergency access gate shall be provided on the project access road at the north end of the equestrian center with approved locking devices for both Los Angeles City and County fire departments on both sides of the gate. Signs shall be provided on the project access road at the equestrian center that states "Dead End, No Turnaround Ahead."

**Monitoring Phase:** Design  
**Enforcement Agency:** Los Angeles Fire Department and Los Angeles County Fire Department  
**Monitoring Agency:** Los Angeles Fire Department and Los Angeles County Fire Department

MM-FIRE-17 The project water tank shall be designed to provide one million gallons of additional water storage for firefighting purposes.

**Monitoring Phase:** Design  
**Enforcement Agency:** Los Angeles Fire Department and Los Angeles County Fire Department  
**Monitoring Agency:** Los Angeles Fire Department and Los Angeles County Fire Department

#### V.K.3. Public Schools

MM-SCH-1 As authorized by Senate Bill 50, the project applicant shall pay school impact fees to the LAUSD prior to the issuance of building permits. The current fee schedule for residential development is \$3.96 per square foot.

**Monitoring Phase:** Pre-construction  
**Enforcement Agency:** Los Angeles Unified School District  
**Monitoring Agency:** Los Angeles Unified School District

#### IV.K.4. Recreation and Parks

No mitigation measures are required because the proposed project would not result in any significant recreation and parks impacts.

#### IV.K.5. Libraries

MM-LIB-1 The LAPL requires that the project applicant pay a fee of \$200 per capita, based on the projected population of the development. The funds will be used for books, computers and other library materials.

**Monitoring Phase:** Pre-construction  
**Enforcement Agency:** Los Angeles Public Library  
**Monitoring Agency:** Los Angeles Public Library

#### IV.L Transportation

MM-TRAF-1 Prior to the issuance of demolition permits, the project applicant shall require a Construction Traffic Management Plan to be prepared and submitted to LADOT for review and approval and this plan shall be implemented by the construction contractor during project construction.

**Monitoring Phase:** Pre-construction  
**Enforcement Agency:** Los Angeles Department of Transportation  
**Monitoring Agency:** Los Angeles Department of Transportation

MM-TRAF-2 The project would contribute its fair share to fund the installation of the City's Automated Traffic Surveillance and Control (ATSAC) system plus Adaptive Traffic Control System (ATCS) at the intersection of Mason Avenue and Rinaldi Street. The new ATSAC plus ATCS enhances an intersection's capacity by adjusting its signal timing in real time while monitoring the traffic flow from adjacent intersections with ATSAC plus ATCS.

**Monitoring Phase: Pre-construction**

**Enforcement Agency: Los Angeles Department of Transportation**

**Monitoring Agency: Los Angeles Department of Transportation**

#### IV.M.1. Water

MM-WATER-1 Prior to recordation of the tract map, the project applicant shall enter into a Water Supply Agreement with LADWP to ensure adequate water supplies are available for the project. This agreement will include measures approved by LADWP to minimize the amount of water used by the project and provide for new water supplies to offset the increase in water demand from the project. This agreement shall include the following:

##### Water Use Efficiency

- The Project will adhere to all plumbing codes and ordinances regarding water efficiency.
- The Project will include all current City of Los Angeles water conservation devices and measures.
- The developer shall incorporate in the subdivision recordation a covenant that runs with the land which incorporates elements of drought-tolerant and native landscaping.

##### Water Supply Agreement

The developer will provide new water supplies to meet the project water demands through one or a combination of the following:

- Purchase or lease water supply acceptable to LADWP from an existing available source and convey this water to the LADWP water distribution system.
- Retrofit plumbing fixtures in existing public buildings to provide verifiable annual conservation savings.
- Retrofit existing public landscaping or parks to provide permanent conservation savings.

- Continue to use water from the existing on-site wells for non-potable uses subject to an approved License Agreement from LADWP.

**Monitoring Phase:** Prior to Recordation of Tract Map  
**Enforcement Agency:** Los Angeles Department of Transportation  
**Monitoring Agency:** Los Angeles Department of Transportation

#### IV.M.2. Wastewater

MM-WW-1 The project applicant, in conjunction with the Bureau of Sanitation, shall incorporate required upgrades based on the result of the gauging being done by Los Angeles Department of Public Works (LADPW), Bureau of Sanitation.

**Monitoring Phase:** Design  
**Enforcement Agency:** Los Angeles Department of Public Works  
**Monitoring Agency:** Los Angeles Department of Public Works

#### IV.M.3. Solid Waste

MM-SW-1 At the newly constructed equestrian facility and on the residential equestrian lots, adequate runoff containment shall be provided to ensure that manure generated by the 25 residential equestrian lots and equestrian facility does not washout into neighboring streams, canyons or storm drains. Brown bins with appropriate manure disposal instructions shall be supplied to all equestrian lots for collection of the manure.

**Monitoring Phase:** Design/Operation  
**Enforcement Agency:** Department of Public Works, Bureau of Sanitation  
**Monitoring Agency:** Department of Public Works, Bureau of Sanitation

MM-SW-2 The collection of green material and horse manure from the equestrian center shall be provided at a cost based on tonnage generated and frequency of collection.

**Monitoring Phase:** Operation  
**Enforcement Agency:** Department of Public Works, Bureau of Sanitation  
**Monitoring Agency:** Department of Public Works, Bureau of Sanitation

MM-SW-3 At least two months prior to project occupation, notice of project occupancy shall be provided to the Bureau of Sanitation. During this time, the new solid waste collection route shall be prepared and be incorporated into the Bureau of Sanitation's Geographical Information System (GIS) collection routing system.

**Monitoring Phase:** Pre-operation  
**Enforcement Agency:** Department of Public Works, Bureau of Sanitation  
**Monitoring Agency:** Department of Public Works, Bureau of Sanitation

MM-SW-4 The Bureau of Sanitation shall hold a meeting with the Hidden Creeks Estates HOA at least twice per year to promote the importance of proper recycling, contamination reduction in the recycling bin and greenwaste bin, and the source reduction of waste.

**Monitoring Phase:** Operation  
**Enforcement Agency:** Department of Public Works, Bureau of Sanitation  
**Monitoring Agency:** Department of Public Works, Bureau of Sanitation

#### IV.M.4 Energy

##### *Electricity*

MM-ENG-1 Prior to submittal of final plans, the project applicant shall consult with LADWP to determine the exact specifications for additional facilities supplying electricity to the project site. Upon finalizing the specifications for electricity infrastructure planned for the project site, the project applicant shall fund the cost of infrastructure installation.

**Monitoring Phase:** Design  
**Enforcement Agency:** Department of City Planning, Department of Building and Safety, Department of Water and Power  
**Monitoring Agency:** Department of City Planning, Department of Building and Safety, Department of Water and Power

MM-ENG-2 Prior to submittal of final plans, the project applicant shall consult with LADWP's Energy Solutions Group regarding possible energy efficiency measures. Additionally, the project applicant shall submit plans to the City's Building and Safety Department for review and approval demonstrating that each building complies with the state Energy Conservation Standards for New Residential Buildings (Title 24, part 6, Article 2, California Administrative Code).

**Monitoring Phase:** Design  
**Enforcement Agency:** Department of City Planning, Department of Building and Safety, Department of Water and Power  
**Monitoring Agency:** Department of City Planning, Department of Building and Safety, Department of Water and Power

*Gas*

MM-ENG-3 As part of the submittal of final plans, the applicant shall incorporate the exact specifications of necessary alterations to the natural gas distribution system as required by the Gas Company. Upon finalizing the specifications for natural gas infrastructure planned along the Mason Avenue extension alignment for the project site, the project applicant shall fund the cost of infrastructure installation.

**Monitoring Phase:** Design  
**Enforcement Agency:** Department of City Planning, Department of Building and Safety, Department of Water and Power  
**Monitoring Agency:** Department of City Planning, Department of Building and Safety, Department of Water and Power

MM-ENG-4 The project applicant shall consult with the Gas Company regarding the incorporation of feasible energy conservation measures into the project design and construction. Additionally, the project applicant shall submit plans for review and approval to the City's Building and Safety Department demonstrating that each building complies with the state Energy Conservation Standards for New Residential Buildings (Title 24, part 6, Article 2, California Administrative Code).

**Monitoring Phase:** Design  
**Enforcement Agency:** Department of City Planning, Department of Building and Safety, Department of Water and Power  
**Monitoring Agency:** Department of City Planning, Department of Building and Safety, Department of Water and Power

*Cumulative*

MM-ENG-5 The project applicant shall pay a fair-share contribution towards the construction of a new distribution station that LADWP may need in order to provide adequate service to the proposed project and related projects in addition to existing loads within the project's service area.

**Monitoring Phase:** Pre-construction  
**Enforcement Agency:** Department of City Planning, Department of Building and Safety, Department of Water and Power  
**Monitoring Agency:** Department of City Planning, Department of Building and Safety, Department of Water and Power