

**CALIFORNIA COASTAL COMMISSION**

45 Fremont, Suite 2000  
San Francisco, CA 94105-2219  
Voice and TDD (415) 904-5200  
Fax (415) 904-5400

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Commission Action:



**T 9b**

**STAFF REPORT: REGULAR CALENDAR**

**APPLICATION NO.:** 4-05-052

**APPLICANT:** California Department of Parks and Recreation, attn: Gail Sevrens

**PROJECT LOCATION:** Mulholland Highway approximately 500 feet west of Las Virgenes Road (Malibu Creek State Park), Santa Monica Mountains, Los Angeles County

**PROJECT DESCRIPTION:** Restoration of Sepulveda Adobe, including interior remodel of the adobe and construction of ADA compliant improvements to the structure, restoration of accessory structures including a cistern, tank house, and historic well, installation of benches, picnic tables, and interpretive displays, removal of an existing stone barbecue, planting of historic trees, planting of an orchard containing approximately 20 fruit trees and an approximately 2,000 sq. ft. kitchen garden with irrigation system, removal of fencing from around the adobe and the old property line, and construction of symbolic fencing around the historic area, construction of 260 linear ft. of a 24-ft. wide permeable material access road from Mulholland Highway, construction of a 455-ft. long, 3-ft. wide permeable trail segment near the access road, construction of 625 linear ft. of 2 in. PVC water line, installation of entrance and trail crossing signage, and approximately 255 cu. yds. of grading (136.5 cu. yds. cut, 118 cu. yds. fill). The proposed project is a portion of a larger project, the remainder of which is located outside of the Coastal Zone.

**APPROVALS RECEIVED:** State Water Resources Control Board Receipt of Notice of Intent, WDID No. 4 19C337276, dated October 19, 2005; Department of Fish and Game Streambed Alteration Agreement No. 1600-2005-0322-R5.

**SUBSTANTIVE FILE DOCUMENTS:** "Geologic Reconnaissance, Sepulveda Adobe Restoration Project," Kleinfelder, May 24, 2006; "Study Phase Archaeological Investigations at Sepulveda Adobe (CA-LAN-1426/H) in Malibu Creek State Park, 2001-2003, Michael Sampson and Sarah Jenkins, California State Parks, June 2003; Draft Initial Study / Mitigated Negative Declaration, Restore Sepulveda Adobe, Malibu State Park, California State Parks, October 2004.

**SUMMARY OF STAFF RECOMMENDATION**

Staff recommends **approval** of the proposed development with **six (6) Special Conditions** regarding (1) landscaping and erosion control plans, (2) wildfire waiver, (3) drainage and polluted runoff control plan, (4) cultural/archaeological resource monitoring, (5) removal of excess excavated material, and (6) revised plans. The standard of review for the proposed project is the Chapter Three policies of the Coastal Act. In addition, the policies of the certified Malibu – Santa Monica Mountains Land Use Plan (LUP) serve as guidance. As conditioned, the proposed project is consistent with all applicable Chapter Three policies of the Coastal Act.

**STAFF RECOMMENDATION:**

The staff recommends that the Commission adopt the following resolution:

**I. Approval with Conditions**

**A. STAFF RECOMMENDATION**

**MOTION:**        *I move that the Commission approve Coastal Development Permit No 4-05-052 pursuant to the staff recommendation.*

**STAFF RECOMMENDATION OF APPROVAL:**

Staff recommends a **YES** vote. Passage of this motion will result in approval of the permit as conditioned and adoption of the following resolution and findings. The motion passes only by affirmative vote of a majority of the Commissioners present.

**RESOLUTION TO APPROVE THE PERMITS:**

The Commission hereby approves the Coastal Development Permit for the proposed development and adopts the findings set forth below on grounds that the development as conditioned will be in conformity with the policies of Chapter 3 of the Coastal Act and will not prejudice the ability of the local government having jurisdiction over the area to prepare a Local Coastal Program conforming to the provisions of Chapter 3. Approval of the permits complies with the California Environmental Quality Act because either 1) feasible mitigation measures and/or alternatives have been incorporated to substantially lessen any significant adverse effects of the development on the environment, or 2) there are no further feasible mitigation measures or alternatives that would substantially lessen any significant adverse impacts of the development on the environment.

## II. Standard Conditions

1. **Notice of Receipt and Acknowledgment.** The permit is not valid and development shall not commence until a copy of the permit, signed by the permittee or authorized agent, acknowledging receipt of the permit and acceptance of the terms and conditions, is returned to the Commission office.
2. **Expiration.** If development has not commenced, the permit will expire two years from the date on which the Commission voted on the application. Development shall be pursued in a diligent manner and completed in a reasonable period of time. Application for extension of the permit must be made prior to the expiration date.
3. **Interpretation.** Any questions of intent or interpretation of any condition will be resolved by the Executive Director or the Commission.
4. **Assignment.** The permit may be assigned to any qualified person, provided assignee files with the Commission an affidavit accepting all terms and conditions of the permit.
5. **Terms and Conditions Run with the Land.** These terms and conditions shall be perpetual, and it is the intention of the Commission and the permittee to bind all future owners and possessors of the subject property to the terms and conditions.

## III. Special Conditions

### 1. Landscaping and Erosion Control Plans

***Prior to issuance of the coastal development permit,*** the applicant shall submit landscaping and erosion control plans, prepared by a landscape architect or a qualified resource specialist, for review and approval by the Executive Director. The plans shall incorporate the criteria set forth below. All development shall conform to the approved landscaping and erosion control plans:

#### A) Landscaping Plan

- 1) All graded & disturbed areas on the subject site shall be planted and maintained for erosion control purposes within (60) days of receipt of the completion of grading. To minimize the need for irrigation all landscaping shall consist primarily of native/drought resistant plants as listed by the California Native Plant Society, Santa Monica Mountains Chapter, in their document entitled Recommended List of Plants for Landscaping in the Santa Monica Mountains, dated October 4, 1994. No plant species listed as problematic and/or invasive by the California Native Plant Society, the California Exotic Pest Plant Council, or by the State of California shall be employed or allowed to naturalize or persist on the site. No plant species listed as a

'noxious weed' by the State of California or the U.S. Federal Government shall be utilized or maintained within the property.

- 2) All cut and fill slopes shall be stabilized with planting at the completion of final grading. Planting should be of native plant species indigenous to the Santa Monica Mountains using accepted planting procedures, consistent with fire safety requirements. Such planting shall be adequate to provide 90 percent coverage within two (2) years, and this requirement shall apply to all disturbed soils.
- 3) Plantings will be maintained in good growing condition throughout the life of the project and, whenever necessary, shall be replaced with new plant materials to ensure continued compliance with applicable landscape requirements.
- 4) The Permittee shall undertake development in accordance with the final approved plan. Any proposed changes to the approved final plan shall be reported to the Executive Director. No changes to the approved final plan shall occur without a Coastal Commission - approved amendment to the coastal development permit, unless the Executive Director determines that no amendment is required.
- 5) Rodenticides containing any anticoagulant compounds (including, but not limited to, Warfarin, Brodifacoum, Bromadiolone or Diphacinone) shall not be used.
- 6) Herbicides or pesticides shall not be used in the orchard or kitchen garden areas.

**B) Interim Erosion Control Plan**

- 1) The plan shall delineate the areas to be disturbed by grading or construction activities and shall include any temporary access roads, staging areas, and stockpile areas. The natural areas on the sites shall be clearly delineated on the project site with fencing or survey flags.
- 2) The plan shall specify that grading shall take place only during the dry season (April 1 – October 31). This period may be extended for a limited period of time if the situation warrants such a limited extension, if approved by the Executive Director. The applicant shall install or construct temporary sediment basins (including debris basins, desilting basins, or silt traps), temporary drains and swales, sand bag barriers, silt fencing, and shall stabilize any stockpiled fill with geofabric covers or other appropriate cover, install geotextiles or mats on all cut or fill slopes, and close and stabilize open trenches as soon as possible. These erosion control measures shall be required on the project site prior to or concurrent with the initial grading operations and maintained throughout the development process to minimize erosion and sediment from runoff waters during construction. All sediment should be retained on-site, unless removed to an appropriate, approved dumping location either outside of the coastal zone or within the coastal zone to a site permitted to receive fill.

- 3) The plan shall also include temporary erosion control measures should grading or site preparation cease for a period of more than thirty (30) days, including but not limited to: stabilization of all stockpiled fill, access roads, disturbed soils, and cut and fill slopes with geotextiles and/or mats, sand bag barriers, silt fencing; temporary drains and swales and sediment basins. The plans shall also specify that all disturbed areas shall be seeded with native grass species and include the technical specifications for seeding the disturbed areas. These temporary erosion control measures shall be monitored and maintained until grading or construction operations resume.

### **C. Monitoring**

Five (5) years from the date of completion of the proposed development, the applicant shall submit for the review and approval of the Executive Director a landscape monitoring report, prepared by a licensed Landscape Architect or qualified Resource Specialist, that certifies the on-site landscaping is in conformance with the landscape plan approved pursuant to this special condition. The monitoring report shall include photographic documentation of plant species and plant coverage.

If the landscape monitoring report indicates the landscaping is not in conformance with or has failed to meet the performance standards specified in the landscaping plan approved pursuant to these permits, the applicant, or successors in interest, shall submit a revised or supplemental landscape plan for the review and approval of the Executive Director. The revised landscaping plan must be prepared by a licensed landscape architect or qualified resource specialist and shall specify measures to remediate those portions of the original plan that have failed or are not in conformance with the original approved plan.

### **2. Wildfire Waiver of Liability**

***Prior to the issuance of the coastal development permit***, the applicant shall submit a signed document which shall indemnify and hold harmless the California Coastal Commission, its officers, agents, and employees against any and all claims, demands, damages, costs, and expenses of liability arising out of the acquisition, design, construction, operation, maintenance, existence, or failure of the permitted project in an area where an extraordinary potential for damage or destruction from wildfire exists as an inherent risk to life and property.

### **3. Drainage and Polluted Runoff Control Plan**

***Prior to the issuance of the coastal development permit***, the applicant shall submit for the review and approval of the Executive Director, final drainage and runoff control plans, including supporting calculations. The plan shall be prepared by a licensed

engineer and shall incorporate structural and non-structural Best Management Practices (BMPs) designed to control the volume, velocity, and pollutant load of stormwater leaving the developed site. The plan shall be reviewed and approved by the consulting engineering geologist to ensure the plan is in conformance with geologist's recommendations. In addition to the specifications above, the plan shall be in substantial conformance with the following requirements:

- (a) Selected BMPs (or suites of BMPs) shall be designed to treat, infiltrate or filter stormwater from each runoff event, up to and including the 85<sup>th</sup> percentile, 24-hour runoff event for volume-based BMPs, and/or the 85<sup>th</sup> percentile, 1-hour runoff event, with an appropriate safety factor, for flow-based BMPs.
- (b) Runoff shall be conveyed off site in a non-erosive manner.
- (c) Energy dissipating measures shall be installed at the terminus of outflow drains.
- (d) The plan shall include provisions for maintaining the drainage system, including structural BMPs, in a functional condition throughout the life of the approved development. Such maintenance shall include the following: (1) BMPs shall be inspected, cleaned and repaired when necessary prior to the onset of the storm season, no later than September 30<sup>th</sup> each year and (2) should any of the project's surface or subsurface drainage/filtration structures or other BMPs fail or result in increased erosion, the applicant/landowner or successor-in-interest shall be responsible for any necessary repairs to the drainage/filtration system or BMPs and restoration of the eroded area. Should repairs or restoration become necessary, prior to the commencement of such repair or restoration work, the applicant shall submit a repair and restoration plan to the Executive Director to determine if amendment(s) or new Coastal Development Permit(s) are required to authorize such work.

#### **4. Cultural/Archaeological Resource Monitoring**

By acceptance of this permit, the applicant agrees to have a qualified archaeologist(s) and appropriate Native American consultant(s) present on-site during all activities that involve grading, excavation or other subsurface work. The number of monitors shall be adequate to observe the activities of each piece of active earth moving equipment. Specifically, the earth moving operations on the project site shall be controlled and monitored by the archaeologist(s) and Native American consultant(s) with the purpose of locating, recording and collecting any archaeological materials. In the event that any significant archaeological resources are discovered during operations, grading work in this area shall be halted and an appropriate data recovery strategy be developed, subject to review and approval of the Executive Director, by the applicant's archaeologist and Native American consultant consistent with CEQA guidelines.

## **5. Removal of Excess Excavated Material**

Prior to the issuance of the coastal development permit, the applicant shall provide evidence to the Executive Director of the location of the disposal site for all excess excavated material from the site. If the disposal site is located in the Coastal Zone, the disposal site must have a valid coastal development permit for the disposal of fill material. If the disposal site does not have a coastal permit, such a permit will be required prior to the disposal of the material.

## **6. Revised Plans**

Prior to issuance of the coastal development permit, the applicant shall submit, for the review and approval of the Executive Director, two sets of revised plans that show the following:

- 1) The proposed access road shall be located a minimum of 100 feet from the edge of the riparian canopy of the unnamed blue-line stream on the subject site, as shown in Exhibit 4.
- 2) The proposed orchard and kitchen garden shall be located only within the area fifty feet from the exterior of the adobe structure, shown in Exhibit 4.

The revised plans may include planting of native trees, or other native vegetation compatible with the existing native riparian vegetation, within 100 feet of the riparian canopies.

## **IV. Findings and Declarations**

The Commission hereby finds and declares:

### **A. Project Description and Background**

The applicant proposes to restore the site of the Sepulveda Adobe, the last remaining adobe building of the historic 19<sup>th</sup> century settlement in the Las Virgenes Valley. The proposed project includes restoration of the adobe and other structures on the site, restoration of historic landscape features, and construction of facilities, including a road and parking area, to support public visitation to the site. Specifically, the project includes interior remodel of the adobe and construction of ADA compliant improvements to the structure, restoration of accessory structures including a cistern, tank house, and historic well, installation of benches, picnic tables, and interpretive displays, removal of an existing stone barbecue, planting of historic trees, planting of an orchard containing approximately 20 fruit trees and an approximately 2,000 sq. ft. kitchen garden with irrigation system, removal of fencing from around the adobe and the old property line,

and construction of symbolic fencing around the historic area, construction of 260 linear ft. of a 24-ft. wide permeable material access road from Mulholland Highway, construction of a 455-ft. long, 3-ft. wide permeable trail segment near the access road, construction of 625 linear ft. of 2 in. PVC water line, installation of entrance and trail crossing signage, and approximately 255 cu. yds. of grading (136.5 cu. yds. cut, 118 cu. yds. fill). The proposed project is a portion of a larger project, the remainder of which is located outside of the Coastal Zone (**Exhibits 3 - 12**).

The proposed project is located within Malibu Creek State Park, on Mulholland Highway approximately 500 feet west of Las Virgenes Road in the Santa Monica Mountains (**Exhibit 2**). Two streams cross the subject site: an unnamed U.S.G.S. designated blue-line stream that crosses the site, and Las Virgenes Creek, also a U.S.G.S. designated blue-line stream, which is immediately adjacent to the site. These streams converge south of the project site. The unnamed stream supports disturbed riparian and alluvial scrub vegetation on the site, and more well developed riparian oak woodland canopies upstream and downstream. Las Virgenes Creek supports well developed southern coast live oak riparian woodland. The 1987 certified Malibu/Santa Monica Mountains Land Use Plan designates Las Virgenes Creek and its associated riparian woodland as ESHA. In addition, although the riparian canopy of the unnamed creek is not as well-developed and extensive as that surrounding Las Virgenes Creek, due to the extreme importance and rarity of riparian habitat in the Santa Monica Mountains, and the fact that the canopy does contain significant native riparian vegetation, including trees and understory species, the unnamed creek and its surrounding riparian canopy is also ESHA.

The Sepulveda Adobe, which was first constructed in 1863, is a recognized historic site that is listed in the California Register of Historic Resources as a resource eligible for inclusion in the National Register of Historic Places. The adobe's historical significance derives from its association with the 18<sup>th</sup> and 19<sup>th</sup> century rural community in the Las Virgenes Valley and its adobe vernacular architecture. In addition, prehistoric archaeological resources are found on the subject site and in nearby along Las Virgenes Creek. Therefore, the applicant proposes to perform cultural/archaeological resource monitoring as part of the proposed project.

## **B. Geology & Hazards**

The proposed development is located in the Malibu/Santa Monica Mountains area, an area that is generally considered to be subject to an unusually high amount of natural hazards. Geologic hazards common to the Santa Monica Mountains area include landslides, erosion, and flooding. In addition, fire is an inherent threat to the indigenous chaparral community of the coastal mountains. Wildfires often denude hillsides in the Santa Monica Mountains of all existing vegetation, thereby contributing to an increased potential for erosion and landslides on property.

Section 30253 of the Coastal Act states, in pertinent part, that new development shall:



- (1) *Minimize risks to life and property in areas of high geologic, flood, and fire hazard.*
- (2) *Assure stability and structural integrity, and neither create nor contribute significantly to erosion, instability, or destruction of the site or surrounding area or in any way require the construction of protective devices that would substantially alter natural landforms along bluffs and cliffs.*

## **Geology**

Section 30253 of the Coastal Act mandates that new development be sited and designed to provide geologic stability and structural integrity, and minimize risks to life and property in areas of high geologic, flood, and fire hazard.

The applicant has submitted a geologic report ("Geologic Reconnaissance, Sepulveda Adobe Restoration Project," Kleinfelder, May 24, 2006) that evaluates the geologic stability of the subject site in relation to the proposed development. Based on their evaluation of the site's geology and the proposed development the consultants have found that the project site is suitable for the proposed project. The project's geotechnical consultants state in their May 24, 2006 report:

*It is our professional opinion that the proposed grading for the subject project will not adversely affect the site with respect to hazards from future settlement, slippage, or landslide. It is also our opinion that the proposed grading for the subject project will not adversely affect the geologic stability of adjacent properties.*

The geotechnical engineering consultants conclude that the proposed development is feasible and will be free from geologic hazard. Therefore, with regard to geologic stability, the Commission finds the proposed project consistent with Section 30253 of the Coastal Act.

## **Wild Fire**

The proposed project is located in the Santa Monica Mountains, an area subject to an extraordinary potential for damage or destruction from wild fire. Typical vegetation in the Santa Monica Mountains consists mostly of coastal sage scrub and chaparral. Many plant species common to these communities produce and store terpenes, which are highly flammable substances (Mooney in Barbour, Terrestrial Vegetation of California, 1988). Chaparral and sage scrub communities have evolved in concert with, and continue to produce the potential for, frequent wild fires. The typical warm, dry summer conditions of the Mediterranean climate combine with the natural characteristics of the native vegetation to pose a risk of wild fire damage to development that cannot be completely avoided or mitigated.

Due to the fact that the proposed projects are located in an area subject to an extraordinary potential for damage or destruction from wild fire, the Commission can only approve the project if the applicant assumes the liability from these associated risks. Through **Special Condition Two (2)**, the wildfire waiver of liability, the applicant

acknowledges the nature of the fire hazard which exists on the site and which may affect the safety of the proposed development. Moreover, through acceptance of Special Condition 2, the applicant also agrees to indemnify the Commission, its officers, agents and employees against any and all expenses or liability arising out of the acquisition, design, construction, operation, maintenance, existence, or failure of the permitted projects.

For the reasons set forth above, the Commission finds that, as conditioned, the proposed project is consistent with Section 30253 of the Coastal Act.

**C. Environmentally Sensitive Habitat**

Section 30231 states:

***The biological productivity and the quality of coastal waters, streams, wetlands, estuaries, and lakes appropriate to maintain optimum populations of marine organisms and for the protection of human health shall be maintained and, where feasible, restored through, among other means, minimizing adverse effects of waste water discharges and entrainment, controlling runoff, preventing depletion of ground water supplies and substantial interference with surface water flow, encouraging waste water reclamation, maintaining natural vegetation buffer areas that protect riparian habitats, and minimizing alteration of natural streams.***

Section 30240 states:

***(a) Environmentally sensitive habitat areas shall be protected against any significant disruption of habitat values, and only uses dependent on such resources shall be allowed within such areas.***

***(b) Development in areas adjacent to environmentally sensitive habitat areas and parks and recreation areas shall be sited and designed to prevent impacts which would significantly degrade such areas, and shall be compatible with the continuance of such habitat areas.***

Section 30107.5 of the Coastal Act, defines an environmentally sensitive area as:

***"Environmentally sensitive area" means any area in which plant or animal life or their habitats are either rare or especially valuable because of their special nature or role in an ecosystem and which could be easily disturbed or degraded by human activities and developments.***

Section 30231 of the Coastal Act requires that the biological productivity and the quality of coastal waters and streams be maintained and, where feasible, restored through, among other means, controlling runoff, preventing depletion of ground water supplies and substantial interference with surface water flows, maintaining natural buffer areas that protect riparian habitats, and minimizing alteration of natural streams. In addition, Sections 30107.5 and 30240 of the Coastal Act state that environmentally sensitive

habitat areas must be protected against disruption of habitat values. When considering any area, such as the Santa Monica Mountains, with regard to an ESHA determination one must focus on three main questions:

- 1) Is a habitat or species rare?
- 2) Is the habitat or species especially valuable because of its special nature or role in the ecosystem?
- 3) Is the habitat or species easily disturbed or degraded by human activities and developments?

The Coastal Commission has found that the Mediterranean Ecosystem in the Santa Monica Mountains is itself rare, and valuable because of its relatively pristine character, physical complexity, and resultant biological diversity. Therefore, habitat areas that provide important roles in that ecosystem are especially valuable and meet the second criterion for the ESHA designation.

Riparian woodlands occur along both perennial and intermittent streams in nutrient-rich soils. Partly because of its multi-layered vegetation, the riparian community contains the greatest overall biodiversity of all the plant communities in the area<sup>1</sup>. Four types of riparian communities are discernable in the Malibu area: walnut riparian areas, mulefat-dominated riparian areas, willow riparian areas and sycamore riparian woodlands. Of these, the sycamore riparian woodland is the most diverse riparian community in the area. In these habitats, the dominant plant species include arroyo willow, California black walnut, sycamore, coast live oak, Mexican elderberry, California bay laurel, and mule fat. Wildlife species that have been observed in this community include least Bell's vireo (a State and federally listed species), American goldfinches, black phoebes, warbling vireos, bank swallows (State listed threatened species), song sparrows, belted kingfishers, raccoons, and California and Pacific tree frogs.

Riparian communities are the most species-rich to be found in the Malibu area. Because of their multi-layered vegetation, available water supply, vegetative cover and adjacency to shrubland habitats, they are attractive to many native wildlife species, and provide essential functions in their lifecycles<sup>2</sup>. During the long dry summers in this Mediterranean climate, these communities are an essential refuge and oasis for much of the areas' wildlife.

Riparian habitats and their associated streams form a central connecting link between all the habitats in the Malibu area. These habitats connect all of the biological communities from the highest elevation chaparral to the sea with a unidirectional flowing water system, one function of which is to carry nutrients through the ecosystem to the benefit of many different species along the way.

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<sup>1</sup> National Park Service. 2000. Draft: General Management Plan & Environmental Impact Statement, Santa Monica Mountains National Recreation Area, US Dept. of Interior, National Park Service, December 2000.

<sup>2</sup> Walter, Hartmut. Bird use of Mediterranean habitats in the Santa Monica Mountains, Coastal Commission Workshop on the Significance of Native Habitats in the Santa Monica Mountains. CCC Hearing, June 13, 2002, Queen Mary Hotel.

Riparian habitats in California have suffered serious losses and such habitats in southern California are currently very rare and seriously threatened. In 1989, Faber estimated that 95-97% of riparian habitat in southern California was already lost<sup>3</sup>. Writing at the same time as Faber, Bowler asserted that, “[t]here is no question that riparian habitat in southern California is endangered.”<sup>4</sup> In the intervening 13 years, there have been continuing losses of the small amount of riparian woodlands that remain. Today these habitats are, along with native grasslands and wetlands, among the most threatened in California.

Therefore, because of the essential role that riparian plant communities play in maintaining the biodiversity of the Santa Monica Mountains, and because of the historical losses and current rarity of these habitats in southern California, the Commission has consistently considered riparian woodlands to meet the definition of environmentally sensitive habitat area.

The proposed project site is located in the Malibu Creek Watershed, within Malibu Creek State Park. The watershed for Malibu Creek is a 109-square mile area that extends from Ventura County, through Los Angeles County and outletting in Malibu Lagoon. The subject site contains two streams that are tributary to Malibu Creek: an unnamed U.S.G.S. designated blue-line stream that crosses the project site, and Las Virgenes Creek, also a U.S.G.S. designated blue-line stream, which is immediately adjacent to the project site. The two streams converge south of the project site.

The applicant has submitted a Draft Initial Study/Mitigated Negative Declaration (IS/MND), dated October 2004, indicating that both creeks support riparian vegetation. According to the IS/MND, the unnamed stream supports disturbed riparian and alluvial scrub vegetation on the site, including native trees and shrubs such as elderberry (*Sambucus mexicana*), arroyo willow (*Salix sp.*), valley oak (*Quercus lobata*), coast live oak (*Quercus agrifolia*), coffee berry (*Rhamnus californica*) and mulefat (*Baccharis salicifolia*), as well as non-native and invasive species such as black mustard (*Brassica nigra*) tree of heaven (*Ailanthus altissima*). Upstream and downstream of the project site, the unnamed stream supports more well developed riparian oak woodland canopies. Las Virgenes Creek supports southern coast live oak riparian woodland dominated by coast live oak (*Quercus agrifolia*), valley oak (*Quercus lobata*), willow (*Salix sp.*), and California walnut (*Juglans californica*), with an understory dominated by native riparian species, with some invasive species such as fennel (*Foeniculum vulgare*).

The IS/MND states that the project site also contains remnant valley oak woodland, which is thought to have once occupied the majority of the site that now contains annual

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<sup>3</sup> Faber, P.A., E. Keller, A. Sands and B.M. Massey. 1989. The ecology of riparian habitats of the southern California coastal region: a community profile. U.S. Fish and Wildlife Service Biological Report 85(7.27) 152pp.

<sup>4</sup> Bowler, P.A. 1989. Riparian woodland: An endangered habitat in southern California. Pp 80-97 in Schoenherr, A.A. (ed.) Endangered plant communities of southern California. Botanists Special Publication No. 3.

grasslands. Valley oaks are found in the two riparian corridors and along Mulholland Highway on the project site, and on adjacent hillsides. The remainder of the areas upslope of the creeks support only annual grasses, with the exception of a small area of coastal sage scrub northwest of the project site.

The 1987 certified Malibu/Santa Monica Mountains Land Use Plan designates Las Virgenes Creek and its associated riparian woodland as ESHA. The LUP does not designate the unnamed tributary to Las Virgenes Creek as ESHA. However, as provided under Policy 57 of the Malibu/Santa Monica Mountains LUP: “any undesignated areas which meet the criteria and are identified through the biotic review process or other means...” are also designated as ESHA. Although the riparian canopy of the unnamed creek is not as well-developed and extensive as that surrounding Las Virgenes Creek, due to the extreme importance and rarity of riparian habitat in the Santa Monica Mountains, and the fact that the canopy does contain significant native riparian vegetation, including trees and understory species, the Commission finds (based on the site specific biological analysis) that the unnamed creek and its surrounding riparian canopy meets the criteria and is therefore designated as ESHA

The Commission has consistently, through permit actions, required new structures to be sited and designed to minimize impacts to ESHA. Only resource dependent uses may be allowed within ESHA and development adjacent to ESHA must provide adequate buffers to serve as transitional habitat, to provide distance and separation from human intrusion. The Commission has required a buffer of a minimum of 100 feet between new structures and riparian woodland ESHA. The project, as proposed, does not provide the required 100 foot buffer. Specifically, the restoration of the adobe and the tank house, are located within 100 feet of the riparian canopies of both streams. However, this aspect of the project involves restoration of existing historic structures only and the proposed improvements do not measurably expand the footprint of the existing structures. As such, this restoration would not be expected to adversely impact the riparian ESHA.

Additionally, portions of the proposed new access road are located approximately 70-100 feet from the riparian canopy of the unnamed creek. The road is proposed to be comprised of pervious surface, which will serve to reduce the potential impacts of runoff from the road on stream morphology. However, grading and other construction activities can adversely impact the stream and riparian vegetation, particularly if such activities are close to the riparian canopy. Further, oil, grease, brake dust, and other pollutants from vehicular use of the proposed road can adversely impact water quality. Such impacts are best minimized by the provision of an adequate buffer area where runoff can be infiltrated and filtered before it enters the stream. In order to minimize impacts to ESHA and water quality from the proposed road, the Commission finds it necessary to require the applicant to redesign the portion of the road within the Coastal Zone area such that there is at least a 100-foot buffer provided between the road and the riparian corridor of the unnamed blue-line stream. Review of photos of the site indicates that there are feasible alternative road alignments located further west on the site that would allow for the provision of the 100-foot buffer.

Further, the proposed orchard is located immediately adjacent to (and partially within) the riparian canopy of Las Virgenes Creek, and approximately 30 feet from the riparian canopy and/or the top of bank of the unnamed creek, and the proposed kitchen garden is located approximately 60 feet from the riparian canopy of Las Virgenes Creek. While these uses are not structures and would be permeable area, the planting of non-native vegetation for agricultural purposes can have impacts on water quality because of the use of pesticides, herbicides, fertilizers and other soil amendments. The discharge of these pollutants to coastal waters can cause cumulative impacts such as: eutrophication and anoxic conditions resulting in fish kills and diseases and the alteration of aquatic habitat, including adverse changes to species composition and size; excess nutrients causing algae blooms and sedimentation increasing turbidity which both reduce the penetration of sunlight needed by aquatic vegetation which provide food and cover for aquatic species; disruptions to the reproductive cycle of aquatic species; and acute and sublethal toxicity in marine organisms leading to adverse changes in reproduction and feeding behavior. These impacts reduce the biological productivity and the quality of coastal waters, streams, wetlands, estuaries, and lakes and reduce optimum populations of marine organisms and have adverse impacts on human health. Again, such impacts can be minimized by providing an adequate buffer area around streams and riparian corridors that can serve to infiltrate and filter runoff before it enters the stream. In this case, it would be difficult to provide the 100-foot buffer for the proposed orchard and garden areas directly adjacent to the existing adobe structure, given the proximity of the two blue-line streams to each other and to the adobe.

The Commission has recognized, in past permit actions, that approved or existing structures are typically required to provide up to fifty feet of irrigated fuel modification area (as part of an overall fuel modification plan) which includes the planting of only low fuel, often exotic plant species. Although the California Department of Parks and Recreation would not be subject to the fuel modification requirement of the Los Angeles County Fire Department, the applicant will likely incorporate similar provisions to protect the adobe structure from the hazard of wildfire. In cases where applicants have proposed the planting of orchards, vineyards, or other similar agricultural uses in conjunction with residential development located in or adjacent to ESHA, the Commission has approved such uses only within the required irrigated fuel modification zone(s), with restrictions on the use of pesticides and herbicides. Such approvals have recognized that the ESHA impacts from agricultural use would be similar to those resulting from the required irrigated fuel modification.

In this case, the area within 50 feet of the existing adobe structure contains gentle slopes vegetated primarily with annual grasses. Planting of fruit trees and/or a kitchen garden within this zone, with a prohibition on the use of pesticides or herbicides, will minimize impacts to ESHA, consistent with past Commission actions. However, the garden and orchard, as proposed, extend beyond the 50 foot area, and in the case of the orchard, right up to the riparian canopy of Las Virgenes Creek. In order to minimize the ESHA and water quality impacts from the proposed agricultural uses, the Commission finds it necessary to require the applicant to redesign the orchard and

kitchen garden such that both uses are located within the area fifty feet from the adobe structure. While this requirement will reduce the area that the applicant has proposed for the development of such uses, staff notes that there are alternative sites available further north on the site where orchard or garden uses could be developed while providing the 100-foot ESHA buffer.

Therefore, in order to find the proposed development consistent with the ESHA and water quality protection policies of the Coastal Act, **Special Condition Six (6)** requires the applicant to submit, for the review and approval of the Executive Director, two sets of revised plans that show: 1) that the proposed access road is located a minimum of 100 feet from the edge of the riparian canopy of the unnamed blue-line stream on the subject site; and 2) that the proposed orchard and kitchen garden are located only within the area fifty feet from the exterior of the adobe structure, as shown in Exhibit 4. The revised plans may include planting of native trees, or other native vegetation compatible with the existing native riparian vegetation, within 100 feet of the riparian canopies.

The Commission has determined that in conjunction with siting new development to minimize impacts to ESHA, additional actions can be taken to minimize adverse impacts to ESHA. The Commission finds that the use of non-native and/or invasive plant species for landscaping results in both direct and indirect adverse effects to native plants species indigenous to the Malibu/Santa Monica Mountains area. Adverse effects from such landscaping result from the direct occupation or displacement of native plant communities by new development and associated non-native landscaping. Indirect adverse effects include offsite migration and colonization of native plant habitat by non-native/invasive plant species (which tend to outcompete native species) adjacent to new development. The Commission notes that the use of exotic plant species for residential landscaping has already resulted in significant adverse effects to native plant communities in the Malibu/Santa Monica Mountains area. Therefore, in order to minimize adverse effects to the indigenous plant communities of the Malibu/Santa Monica Mountains area, **Special Condition One (1)** requires that all landscaping consist primarily of native plant species and that invasive plant species shall not be used.

The Commission notes that streams and drainages, such as Las Virgenes Creek and the unnamed blue-line stream on the project site, provide important habitat for wetland and riparian plant and animal species. Section 30231 of the Coastal Act provides that the quality of coastal waters and streams shall be maintained and restored whenever feasible through means such as: controlling runoff, preventing interference with surface water flows and alteration of natural streams, and by maintaining natural vegetation buffer areas. In past permit actions the Commission has found that new development adjacent to coastal streams and natural drainages results in potential adverse impacts to riparian habitat and marine resources from increased erosion, contaminated storm runoff, introduction of non-native and invasive plant species, disturbance of wildlife, and loss of riparian plant and animal habitat. As such, the Commission finds that potential adverse effects of the proposed development on riparian habitat of the stream may be

further minimized through the implementation of a drainage and polluted runoff control plan, which will ensure that erosion is minimized and polluted run-off from the site is controlled and filtered before it reaches natural drainage courses within the watershed. Therefore, the Commission requires **Special Condition Three (3)**, the Drainage and Polluted Run-off Control Plan, which requires the applicant to incorporate appropriate drainage devices and Best Management Practices (BMPs) to ensure that run-off from the proposed structures, impervious surfaces, and building pad area is conveyed off-site in a non-erosive manner and is treated/filtered to reduce pollutant load before it reaches coastal waterways.

In addition, to ensure that excess excavated material is moved off site so as not to contribute to unnecessary landform alteration and to minimize erosion and sedimentation from stockpiled excavated soil, the Commission finds it necessary to require the applicant to dispose of the material at a appropriate disposal site or to a site that has been approved to accept fill material, as specified in **Special Condition Five (5)**.

For the reasons set forth above, the Commission finds that the proposed project, as conditioned, is consistent with Sections 30230, 30231, and 30240 of the Coastal Act.

#### **D. Archaeological Resources**

Section **30244** of the Coastal Act states that:

***Where development would adversely impact archaeological or paleontological resources as identified by the State Historic Preservation Officer, reasonable mitigation measures shall be required.***

Archaeological resources are significant to an understanding of cultural, environmental, biological, and geological history. The proposed development is located in a region of the Santa Monica Mountains which contains one of the most significant concentrations of archaeological sites in southern California. The Coastal Act requires the protection of such resources to reduce the potential adverse impacts through the use of reasonable mitigation measures.

Degradation of archaeological or cultural resources can occur if a project is not properly monitored and managed during earth moving activities and construction. In this case, the project site consists of the Sepulveda Adobe and surrounding historic and prehistoric archaeological sites jointly designated by the South Central Coast Information Center as CA-LAN-1426/H. In addition, five other pre-contact archaeological sites are located along Las Virgenes Creek near the project site. As such, the potential exists for the proposed project to impact cultural/archaeological resources.

Therefore, the Commission finds that for the potential adverse effects which may occur to those resources as a result of the proposed development, reasonable mitigation measures should be required pursuant to Section 30244 of the Coastal Act. In past



permit actions regarding development on sites containing potential cultural resources the Commission has required that a qualified archaeologist and appropriate Native American consultant be present on-site during all grading, excavation, and site preparation that involve earth moving operations in order to ensure that adverse effects to archaeological resources are minimized. The applicant proposes to perform cultural/archaeological resource monitoring as part of the proposed project. In addition to the recruitment of a qualified archaeologist to perform monitoring, the applicant proposes to make a request for a Native American monitor prior to all subsurface work in the project area.

In order to ensure that the applicant's cultural resource monitoring proposal is implemented, **Special Condition Four (4)** requires the applicant to have a qualified archaeologist(s) and appropriate Native American consultant(s) present on-site during all grading, excavation or other subsurface work. In addition, if any significant archaeological resources are discovered during construction, work shall be stopped and an appropriate data recovery strategy shall be developed by the applicant's archaeologist and Native American consultant consistent with California Environmental Quality Act (CEQA) guidelines.

The Commission finds that the proposed development, as conditioned, will minimize impacts to cultural resources and includes appropriate mitigation measures, consistent with Section 30244 of the Coastal Act.

#### **E. Local Coastal Program**

Section 30604 of the Coastal Act states:

*a) Prior to certification of the local coastal program, a coastal development permit shall be issued if the issuing agency, or the commission on appeal, finds that the proposed development is in conformity with the provisions of Chapter 3 (commencing with Section 30200) of this division and that the permitted development will not prejudice the ability of the local government to prepare a local program that is in conformity with the provisions of Chapter 3 (commencing with Section 30200).*

Section 30604(a) of the Coastal Act provides that the Commission shall issue a Coastal Development Permit only if the project will not prejudice the ability of the local government having jurisdiction to prepare a Local Coastal Program which conforms with Chapter 3 policies of the Coastal Act. The preceding sections provide findings that the proposed project will be in conformity with the provisions of Chapter 3 if certain conditions are incorporated into the project and are accepted by the applicant. As conditioned, the proposed development will not create adverse impacts and is found to be consistent with the applicable policies contained in Chapter 3. Therefore, the Commission finds that approval of the proposed development, as conditioned, will not prejudice the County of Los Angeles' ability to prepare a Local Coastal Program for this area which is also consistent with the policies of Chapter 3 of the Coastal Act, as required by Section 30604(a).

**F. CEQA**

Section 13096(a) of the Commission's administrative regulations requires Commission approval of a Coastal Development Permit application to be supported by a finding showing the application, as conditioned by any conditions of approval, to be consistent with any applicable requirements of the California Environmental Quality Act (CEQA). Section 21080.5(d)(2)(A) of CEQA prohibits a proposed development from being approved if there are feasible alternatives or feasible mitigation measures available which would substantially lessen any significant adverse effect that the activity may have on the environment.

The Commission incorporates its findings on Coastal Act consistency at this point as if set forth in full. These findings address and respond to all public comments regarding potential significant adverse environmental effects of the project that were received prior to preparation of the staff report. As discussed above, the proposed development, as conditioned, is consistent with the policies of the Coastal Act. Feasible mitigation measures which will minimize all adverse environmental impacts have been required as special conditions. As conditioned, there are no feasible alternatives or feasible mitigation measures available, beyond those required, which would substantially lessen any significant adverse impact that the activity may have on the environment. The Commission finds that, the proposed project, as conditioned, will not have any significant adverse effects on the environment, within the meaning of the California Environmental Quality Act of 1970. Therefore, the proposed project, as conditioned, has been adequately mitigated and is determined to be consistent with CEQA and the policies of the Coastal Act.

**CALIFORNIA COASTAL COMMISSION**

45 Fremont, Suite 2000  
San Francisco, CA 94105-2219  
Voice and TDD (415) 904-5200  
Fax (415) 904-5400

**MEMORANDUM**

FROM: John Dixon, Ph.D.  
Ecologist / Wetland Coordinator

TO: Ventura Staff

SUBJECT: Designation of ESHA in the Santa Monica Mountains

DATE: March 25, 2003

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In the context of the Malibu LCP, the Commission found that the Mediterranean Ecosystem in the Santa Mountains is rare, and especially valuable because of its relatively pristine character, physical complexity, and resultant biological diversity. Therefore, areas of undeveloped native habitat in the Santa Monica Mountains that are large and relatively unfragmented may meet the definition of ESHA by virtue of their valuable roles in that ecosystem, regardless of their relative rarity throughout the state. This is the only place in the coastal zone where the Commission has recognized chaparral as meeting the definition of ESHA. The scientific background presented herein for ESHA analysis in the Santa Monica Mountains is adapted from the Revised Findings for the Malibu LCP that the Commission adopted on February 6, 2003.

For habitats in the Santa Monica Mountains, particularly coastal sage scrub and chaparral, there are three site-specific tests to determine whether an area is ESHA because of its especially valuable role in the ecosystem. First, is the habitat properly identified, for example as coastal sage scrub or chaparral? The requisite information for this test generally should be provided by a site-specific biological assessment. Second, is the habitat largely undeveloped and otherwise relatively pristine? Third, is the habitat part of a large, contiguous block of relatively pristine native vegetation? This should be documented with an aerial photograph from our mapping unit (with the site delineated) and should be attached as an exhibit to the staff report. For those habitats that are absolutely rare or that support individual rare species, it is not necessary to find that they are relatively pristine, and are neither isolated nor fragmented.

**Designation of Environmentally Sensitive Habitat  
in the Santa Monica Mountains**

The Coastal Act provides a definition of “environmentally sensitive area” as: “Any area in which plant or animal life or their habitats are either rare or especially valuable because of their special nature or role in an ecosystem and which could be easily disturbed or degraded by human activities and developments” (Section 30107.5).

Exhibit 1 CDP 4-05-052 ESHA Memo
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There are three important elements to the definition of ESHA. First, a geographic area can be designated ESHA either because of the presence of individual species of plants or animals or because of the presence of a particular habitat. Second, in order for an area to be designated as ESHA, the species or habitat must be either rare or it must be especially valuable. Finally, the area must be easily disturbed or degraded by human activities.

The first test of ESHA is whether a habitat or species is rare. Rarity can take several forms, each of which is important. Within the Santa Monica Mountains, rare species and habitats often fall within one of two common categories. Many rare species or habitats are globally rare, but locally abundant. They have suffered severe historical declines in overall abundance and currently are reduced to a small fraction of their original range, but where present may occur in relatively large numbers or cover large local areas. This is probably the most common form of rarity for both species and habitats in California and is characteristic of coastal sage scrub, for example. Some other habitats are geographically widespread, but occur everywhere in low abundance. California's native perennial grasslands fall within this category.

A second test for ESHA is whether a habitat or species is especially valuable. Areas may be valuable because of their "special nature," such as being an unusually pristine example of a habitat type, containing an unusual mix of species, supporting species at the edge of their range, or containing species with extreme variation. For example, reproducing populations of valley oaks are not only increasingly rare, but their southernmost occurrence is in the Santa Monica Mountains. Generally, however, habitats or species are considered valuable because of their special "role in the ecosystem." For example, many areas within the Santa Monica Mountains may meet this test because they provide habitat for endangered species, protect water quality, provide essential corridors linking one sensitive habitat to another, or provide critical ecological linkages such as the provision of pollinators or crucial trophic connections. Of course, all species play a role in their ecosystem that is arguably "special." However, the Coastal Act requires that this role be "especially valuable." This test is met for relatively pristine areas that are integral parts of the Santa Monica Mountains Mediterranean ecosystem because of the demonstrably rare and extraordinarily special nature of that ecosystem as detailed below.

Finally, ESHAs are those areas that could be easily disturbed or degraded by human activities and developments. Within the Santa Monica Mountains, as in most areas of southern California affected by urbanization, all natural habitats are in grave danger of direct loss or significant degradation as a result of many factors related to anthropogenic changes.

### *Ecosystem Context of the Habitats of the Santa Monica Mountains*

The Santa Monica Mountains comprise the largest, most pristine, and ecologically complex example of a Mediterranean ecosystem in coastal southern California. California's coastal sage scrub, chaparral, oak woodlands, and associated riparian

areas have analogues in just a few areas of the world with similar climate. Mediterranean ecosystems with their wet winters and warm dry summers are only found in five localities (the Mediterranean coast, California, Chile, South Africa, and south and southwest Australia). Throughout the world, this ecosystem with its specially adapted vegetation and wildlife has suffered severe loss and degradation from human development. Worldwide, only 18 percent of the Mediterranean community type remains undisturbed<sup>5</sup>. However, within the Santa Monica Mountains, this ecosystem is remarkably intact despite the fact that it is closely surrounded by some 17 million people. For example, the 150,000 acres of the Santa Monica Mountains National Recreation Area, which encompasses most of the Santa Monica Mountains, was estimated to be 90 percent free of development in 2000<sup>6</sup>. Therefore, this relatively pristine area is both large and mostly unfragmented, which fulfills a fundamental tenet of conservation biology<sup>7</sup>. The need for large contiguous areas of natural habitat in order to maintain critical ecological processes has been emphasized by many conservation biologists<sup>8</sup>.

In addition to being a large single expanse of land, the Santa Monica Mountains ecosystem is still connected, albeit somewhat tenuously, to adjacent, more inland ecosystems<sup>9</sup>. Connectivity among habitats within an ecosystem and connectivity among ecosystems is very important for the preservation of species and ecosystem integrity. In a recent statewide report, the California Resources Agency<sup>10</sup> identified wildlife corridors and habitat connectivity as the top conservation priority. In a letter to governor Gray Davis, sixty leading environmental scientists have endorsed the

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<sup>5</sup> National Park Service. 2000. Draft general management plan & environmental impact statement. Santa Monica Mountains National Recreation Area – California.

<sup>6</sup> Ibid.

<sup>7</sup> Harris, L. D. 1988. Edge effects and conservation of biotic diversity. *Conserv. Biol.* 330-332. Soule, M. E, D. T. Bolger, A. C. Alberts, J. Wright, M. Sorice and S. Hill. 1988. Reconstructed dynamics of rapid extinctions of chaparral-requiring birds in urban habitat islands. *Conserv. Biol.* 2: 75-92. Yahner, R. H. 1988. Changes in wildlife communities near edges. *Conserv. Biol.* 2:333-339. Murphy, D. D. 1989. Conservation and confusion: Wrong species, wrong scale, wrong conclusions. *Conservation Biol.* 3:82-84.

<sup>8</sup> Crooks, K. 2000. Mammalian carnivores as target species for conservation in Southern California. p. 105-112 in: Keeley, J. E., M. Baer-Keeley and C. J. Fotheringham (eds), 2<sup>nd</sup> Interface Between Ecology and Land Development in California, U.S. Geological Survey Open-File Report 00-62. Sauvajot, R. M., E. C. York, T. K. Fuller, H. Sharon Kim, D. A. Kamradt and R. K. Wayne. 2000. Distribution and status of carnivores in the Santa Monica Mountains, California: Preliminary results from radio telemetry and remote camera surveys. p 113-123 in: Keeley, J. E., M. Baer-Keeley and C. J. Fotheringham (eds), 2<sup>nd</sup> Interface Between Ecology and Land Development in California, U.S. Geological Survey Open-File Report 00-62. Beier, P. and R. F. Noss. 1998. Do habitat corridors provide connectivity? *Conserv. Biol.* 12:1241-1252. Beier, P. 1996. Metapopulation models, tenacious tracking and cougar conservation. In: *Metapopulations and Wildlife Conservation*, ed. D. R. McCullough. Island Press, Covelo, California, 429p.

<sup>9</sup> The SMM area is linked to larger natural inland areas to the north through two narrow corridors: 1) the Conejo Grade connection at the west end of the Mountains and 2) the Simi Hills connection in the central region of the SMM (from Malibu Creek State Park to the Santa Susanna Mountains).

<sup>10</sup> California Resources Agency. 2001. Missing Linkages: Restoring Connectivity to the California Landscape. California Wilderness Coalition, Calif. Dept of Parks & Recreation, USGS, San Diego Zoo and The Nature Conservancy. Available at: <http://www.calwild.org/pubs/reports/linkages/index.htm>

conclusions of that report<sup>11</sup>. The chief of natural resources at the California Department of Parks and Recreation has identified the Santa Monica Mountains as an area where maintaining connectivity is particularly important<sup>12</sup>.

The species most directly affected by large scale connectivity are those that require large areas or a variety of habitats, e.g., gray fox, cougar, bobcat, badger, steelhead trout, and mule deer<sup>13</sup>. Large terrestrial predators are particularly good indicators of habitat connectivity and of the general health of the ecosystem<sup>14</sup>. Recent studies show that the mountain lion, or cougar, is the most sensitive indicator species of habitat fragmentation, followed by the spotted skunk and the bobcat<sup>15</sup>. Sightings of cougars in both inland and coastal areas of the Santa Monica Mountains<sup>16</sup> demonstrate their continued presence. Like the “canary in the mineshaft,” an indicator species like this is good evidence that habitat connectivity and large scale ecological function remains in the Santa Monica Mountains ecosystem.

The habitat integrity and connectivity that is still evident within the Santa Monica Mountains is extremely important to maintain, because both theory and experiments over 75 years in ecology confirm that large spatially connected habitats tend to be more stable and have less frequent extinctions than habitats without extended spatial structure<sup>17</sup>. Beyond simply destabilizing the ecosystem, fragmentation and disturbance

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<sup>11</sup> Letters received and included in the September 2002 staff report for the Malibu LCP.

<sup>12</sup> Schoch, D. 2001. Survey lists 300 pathways as vital to state wildlife. Los Angeles Times. August 7, 2001.

<sup>13</sup> Martin, G. 2001. Linking habitat areas called vital for survival of state's wildlife Scientists map main migration corridors. San Francisco Chronicle, August 7, 2001.

<sup>14</sup> Noss, R. F., H. B. Quigley, M. G. Hornocker, T. Merrill and P. C. Paquet. 1996. Conservation biology and carnivore conservation in the Rocky Mountains. *Conserv. Biol.* 10: 949-963. Noss, R. F. 1995. Maintaining ecological integrity in representative reserve networks. World Wildlife Fund Canada.

<sup>15</sup> Sauvajot, R. M., E. C. York, T. K. Fuller, H. Sharon Kim, D. A. Kamradt and R. K. Wayne. 2000. Distribution and status of carnivores in the Santa Monica Mountains, California: Preliminary results from radio telemetry and remote camera surveys. p 113-123 in: Keeley, J. E., M. Baer-Keeley and C. J. Fotheringham (eds), 2nd Interface Between Ecology and Land Development in California, U.S. Geological Survey Open-File Report 00-62.

Beier, P. 1996. Metapopulation models, tenacious tracking and cougar conservation. In: *Metapopulations and Wildlife Conservation*, ed. D. R. McCullough. Island Press, Covelo, California, 429p.

<sup>16</sup> Recent sightings of mountain lions include: Temescal Canyon (pers. com., Peter Brown, Facilities Manager, Calvary Church), Topanga Canyon (pers. com., Marti Witter, NPS), Encinal and Trancas Canyons (pers. com., Pat Healy), Stump Ranch Research Center (pers. com., Dr. Robert Wayne, Dept. of Biology, UCLA). In May of 2002, the NPS *photographed* a mountain lion at a trip camera on the Back Bone Trail near Castro Crest – Seth Riley, Eric York and Dr. Ray Sauvajot, National Park Service, SMMNRA.

<sup>17</sup> Gause, G. F. 1934. The struggle for existence. Baltimore, William and Wilkins 163 p. (also reprinted by Hafner, N.Y. 1964). Gause, G. F., N. P. Smaragdova and A. A. Witt. 1936. Further studies of interaction between predators and their prey. *J. Anim. Ecol.* 5:1-18. Huffaker, C. B. 1958. Experimental studies on predation: dispersion factors and predator-prey oscillations. *Hilgardia* 27:343-383. Luckinbill, L. S. 1973. Coexistence in laboratory populations of *Paramecium aurelia* and its predator *Didinium nasutum*. *Ecology* 54:1320-1327. Allen, J. C., C. C. Brewster and D. H. Slone. 2001. Spatially explicit ecological models: A spatial convolution approach. *Chaos, Solitons and Fractals.* 12:333-347.

can even cause unexpected and irreversible changes to new and completely different kinds of ecosystems (habitat conversion)<sup>18</sup>.

As a result of the pristine nature of large areas of the Santa Monica Mountains and the existence of large, unfragmented and interconnected blocks of habitat, this ecosystem continues to support an extremely diverse flora and fauna. The observed diversity is probably a function of the diversity of physical habitats. The Santa Monica Mountains have the greatest geological diversity of all major mountain ranges within the transverse range province. According to the National Park Service, the Santa Monica Mountains contain 40 separate watersheds and over 170 major streams with 49 coastal outlets<sup>19</sup>. These streams are somewhat unique along the California coast because of their topographic setting. As a “transverse” range, the Santa Monica Mountains are oriented in an east-west direction. As a result, the south-facing riparian habitats have more variable sun exposure than the east-west riparian corridors of other sections of the coast. This creates a more diverse moisture environment and contributes to the higher biodiversity of the region. The many different physical habitats of the Santa Monica Mountains support at least 17 native vegetation types<sup>20</sup> including the following habitats considered sensitive by the California Department of Fish and Game: native perennial grassland, coastal sage scrub, red-shank chaparral, valley oak woodland, walnut woodland, southern willow scrub, southern cottonwood-willow riparian forest, sycamore-alder woodland, oak riparian forest, coastal salt marsh, and freshwater marsh. Over 400 species of birds, 35 species of reptiles and amphibians, and more than 40 species of mammals have been documented in this diverse ecosystem. More than 80 sensitive species of plants and animals (listed, proposed for listing, or species of concern) are known to occur or have the potential to occur within the Santa Monica Mountains Mediterranean ecosystem.

The Santa Monica Mountains are also important in a larger regional context. Several recent studies have concluded that the area of southern California that includes the Santa Monica Mountains is among the most sensitive in the world in terms of the number of rare endemic species, endangered species and habitat loss. These studies have designated the area to be a local hot-spot of endangerment in need of special protection<sup>21</sup>.

Therefore, the Commission finds that the Santa Monica Mountains ecosystem is itself rare and especially valuable because of its special nature as the largest, most pristine,

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<sup>18</sup> Scheffer, M., S. Carpenter, J. A. Foley, C. Folke and B. Walker. 2001. Catastrophic shifts in ecosystems. *Nature* 413:591-596.

<sup>19</sup> NPS. 2000. op.cit.

<sup>20</sup> From the NPS report ( 2000 op. cit.) that is based on the older Holland system of subjective classification. The data-driven system of Sawyer and Keeler-Wolf results in a much larger number of distinct “alliances” or vegetation types.

<sup>21</sup> Myers, N. 1990. The biodiversity challenge: Expanded hot-spots analysis. *Environmentalist* 10:243-256. Myers, N., R. A. Mittermeier, C. G. Mittermeier, G. A. B. da Fonseca and J. A. Kent. 2000. Biodiversity hot-spots for conservation priorities. *Nature* 403:853-858. Dobson, A. P., J. P. Rodriguez, W. M. Roberts and D. S. Wilcove. 1997. Geographic distribution of endangered species in the United States. *Science* 275:550-553.

physically complex, and biologically diverse example of a Mediterranean ecosystem in coastal southern California. The Commission further finds that because of the rare and special nature of the Santa Monica Mountains ecosystem, the ecosystem roles of substantially intact areas of the constituent plant communities discussed below are “especially valuable” under the Coastal Act.

### Major Habitats within the Santa Monica Mountains

The most recent vegetation map that is available for the Santa Monica Mountains is the map that was produced for the National Park Service in the mid-1990s using 1993 satellite imagery supplemented with color and color infrared aerial imagery from 1984, 1988, and 1994 and field review<sup>22</sup>. The minimum mapping unit was 5 acres. For that map, the vegetation was mapped in very broad categories, generally following a vegetation classification scheme developed by Holland<sup>23</sup>. Because of the mapping methods used the degree of plant community complexity in the landscape is not represented. For example, the various types of “ceanothus chaparral” that have been documented were lumped under one vegetation type referred to as “northern mixed chaparral.” Dr. Todd Keeler-Wolf of the California Department of Fish and Game is currently conducting a more detailed, quantitative vegetation survey of the Santa Monica Mountains.

The National Park Service map can be used to characterize broadly the types of plant communities present. The main generic plant communities present in the Santa Monica Mountains<sup>24</sup> are: coastal sage scrub, chaparral, riparian woodland, coast live oak woodland, and grasslands.

### Riparian Woodland

Some 49 streams connect inland areas with the coast, and there are many smaller drainages as well, many of which are “blue line.” Riparian woodlands occur along both perennial and intermittent streams in nutrient-rich soils. Partly because of its multi-layered vegetation, the riparian community contains the greatest overall biodiversity of all the plant communities in the area<sup>25</sup>. At least four types of riparian communities are

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<sup>22</sup> Franklin, J. 1997. Forest Service Southern California Mapping Project, Santa Monica Mountains National Recreation Area, Task 11 Description and Results, Final Report. June 13, 1997, Dept. of Geography, San Diego State University, USFS Contract No. 53-91S8-3-TM45.

<sup>23</sup> Holland R. F. 1986. Preliminary Descriptions of the Terrestrial Natural Communities of California. State of California, The Resources Agency, Dept. of Fish and Game, Natural Heritage Division, Sacramento, CA. 95814.

<sup>24</sup> National Park Service. 2000. Draft: General Management Plan & Environmental Impact Statement, Santa Monica Mountains National Recreation Area, US Dept. of Interior, National Park Service, December 2000. (Fig. 11 in this document.)

<sup>25</sup> Ibid.



discernable in the Santa Monica Mountains: walnut riparian areas, mulefat-dominated riparian areas, willow riparian areas and sycamore riparian woodlands. Of these, the sycamore riparian woodland is the most diverse riparian community in the area. In these habitats, the dominant plant species include arroyo willow, California black walnut, sycamore, coast live oak, Mexican elderberry, California bay laurel, and mule fat. Wildlife species that have been observed in this community include least Bell's vireo (a State and federally listed species), American goldfinches, black phoebes, warbling vireos, bank swallows (State listed threatened species), song sparrows, belted kingfishers, raccoons, and California and Pacific tree frogs.

Riparian communities are the most species-rich to be found in the Santa Monica Mountains. Because of their multi-layered vegetation, available water supply, vegetative cover and adjacency to shrubland habitats, they are attractive to many native wildlife species, and provide essential functions in their lifecycles<sup>26</sup>. During the long dry summers in this Mediterranean climate, these communities are an essential refuge and oasis for much of the areas' wildlife.

Riparian habitats and their associated streams form important connecting links in the Santa Monica Mountains. These habitats connect all of the biological communities from the highest elevation chaparral to the sea with a unidirectional flowing water system, one function of which is to carry nutrients through the ecosystem to the benefit of many different species along the way.

The streams themselves provide refuge for sensitive species including: the coast range newt, the Pacific pond turtle, and the steelhead trout. The coast range newt and the Pacific pond turtle are California Species of Special Concern and are proposed for federal listing<sup>27</sup>, and the steelhead trout is federally endangered. The health of the streams is dependent on the ecological functions provided by the associated riparian woodlands. These functions include the provision of large woody debris for habitat, shading that controls water temperature, and input of leaves that provide the foundation of the stream-based trophic structure.

The importance of the connectivity between riparian areas and adjacent habitats is illustrated by the Pacific pond turtle and the coast range newt, both of which are sensitive and both of which require this connectivity for their survival. The life history of the Pacific pond turtle demonstrates the importance of riparian areas and their associated watersheds for this species. These turtles require the stream habitat during

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<sup>26</sup> Walter, Hartmut. Bird use of Mediterranean habitats in the Santa Monica Mountains, Coastal Commission Workshop on the Significance of Native Habitats in the Santa Monica Mountains. CCC Hearing, June 13, 2002, Queen Mary Hotel.

<sup>27</sup> USFWS. 1989. Endangered and threatened wildlife and plants; animal notice of review. Fed. Reg. 54:554-579. USFWS. 1993. Endangered and threatened wildlife and plants; notice of 1-year petition finding on the western pond turtle. Fed. Reg. 58:42717-42718.

the wet season. However, recent radio tracking work<sup>28</sup> has found that although the Pacific pond turtle spends the wet season in streams, it also requires upland habitat for refuge during the dry season. Thus, in coastal southern California, the Pacific pond turtle requires both streams and intact adjacent upland habitats such as coastal sage scrub, woodlands or chaparral as part of their normal life cycle. The turtles spend about four months of the year in upland refuge sites located an average distance of 50 m (but up to 280 m) from the edge of the creek bed. Similarly, nesting sites where the females lay eggs are also located in upland habitats an average of 30 m (but up to 170 m) from the creek. Occasionally, these turtles move up to 2 miles across upland habitat<sup>29</sup>. Like many species, the pond turtle requires both stream habitats and the upland habitats of the watershed to complete its normal annual cycle of behavior. Similarly, the coast range newt has been observed to travel hundreds of meters into upland habitat and spend about ten months of the year far from the riparian streambed<sup>30</sup>. They return to the stream to breed in the wet season, and they are therefore another species that requires both riparian habitat and adjacent uplands for their survival.

Riparian habitats in California have suffered serious losses and such habitats in southern California are currently very rare and seriously threatened. In 1989, Faber estimated that 95-97% of riparian habitat in southern California was already lost<sup>31</sup>. Writing at the same time as Faber, Bowler asserted that, "[t]here is no question that riparian habitat in southern California is endangered."<sup>32</sup> In the intervening 13 years, there have been continuing losses of the small amount of riparian woodlands that remain. Today these habitats are, along with native grasslands and wetlands, among the most threatened in California.

In addition to direct habitat loss, streams and riparian areas have been degraded by the effects of development. For example, the coast range newt, a California Species of Special Concern has suffered a variety of impacts from human-related disturbances<sup>33</sup>. Human-caused increased fire frequency has resulted in increased sedimentation rates, which exacerbates the cannibalistic predation of adult newts on the larval stages.<sup>34</sup> In

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<sup>28</sup> Rathbun, G.B., N.J. Scott and T.G. Murphy. 2002. Terrestrial habitat use by Pacific pond turtle in a Mediterranean climate. *Southwestern Naturalist*. (in Press).

<sup>29</sup> Testimony by R. Dagit, Resource Conservation District of the Santa Monica Mountains at the CCC Habitat Workshop on June 13, 2002.

<sup>30</sup> Dr. Lee Kats, Pepperdine University, personal communication to Dr J. Allen, CCC.

<sup>31</sup> Faber, P.A., E. Keller, A. Sands and B.M. Massey. 1989. The ecology of riparian habitats of the southern California coastal region: a community profile. U.S. Fish and Wildlife Service Biological Report 85(7.27) 152pp.

<sup>32</sup> Bowler, P.A. 1989. Riparian woodland: An endangered habitat in southern California. Pp 80-97 in Schoenherr, A.A. (ed.) *Endangered plant communities of southern California*. Botanists Special Publication No. 3.

<sup>33</sup> Gamradt, S.C., L.B. Kats and C.B. Anzalone. 1997. Aggression by non-native crayfish deters breeding in California newts. *Conservation Biology* 11(3):793-796.

<sup>34</sup> Kerby, L.J., and L.B. Kats. 1998. Modified interactions between salamander life stages caused by wildfire-induced sedimentation. *Ecology* 79(2):740-745.

addition impacts from non-native species of crayfish and mosquito fish have also been documented. When these non-native predators are introduced, native prey organisms are exposed to new mortality pressures for which they are not adapted. Coast range newts that breed in the Santa Monica Mountain streams do not appear to have adaptations that permit co-occurrence with introduced mosquito fish and crayfish<sup>35</sup>. These introduced predators have eliminated the newts from streams where they previously occurred by both direct predation and suppression of breeding.

Therefore, because of the essential role that riparian plant communities play in maintaining the biodiversity of the Santa Monica Mountains, because of the historical losses and current rarity of these habitats in southern California, and because of their extreme sensitivity to disturbance, the native riparian habitats in the Santa Monica Mountains meet the definition of ESHA under the Coastal Act.

### Coastal Sage Scrub and Chaparral

Coastal sage scrub and chaparral are often lumped together as “shrublands” because of their roughly similar appearance and occurrence in similar and often adjacent physical habitats. In earlier literature, these vegetation associations were often called soft chaparral and hard chaparral, respectively. “Soft” and “hard” refers to differences in their foliage associated with different adaptations to summer drought. Coastal sage scrub is dominated by soft-leaved, generally low-growing aromatic shrubs that die back and drop their leaves in response to drought. Chaparral is dominated by taller, deeper-rooted evergreen shrubs with hard, waxy leaves that minimize water loss during drought.

The two vegetation types are often found interspersed with each other. Under some circumstances, coastal sage scrub may even be successional to chaparral, meaning that after disturbance, a site may first be covered by coastal sage scrub, which is then replaced with chaparral over long periods of time.<sup>36</sup> The existing mosaic of coastal sage scrub and chaparral is the result of a dynamic process that is a function of fire history, recent climatic conditions, soil differences, slope, aspect and moisture regime, and the two habitats should not be thought of as completely separate and unrelated entities but as different phases of the same process<sup>37</sup>. The spatial pattern of these vegetation stands at any given time thus depends on both local site conditions and on history (e.g., fire), and is influenced by both natural and human factors.

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<sup>35</sup> Gamradt, S.C. and L.B. Kats. 1996. Effect of introduced crayfish and mosquitofish on California newts. *Conservation Biology* 10(4):1155-1162.

<sup>36</sup> Cooper, W.S. 1922. *The broad-sclerophyll vegetation of California*. Carnegie Institution of Washington Publication 319. 124 pp.

<sup>37</sup> Longcore, T and C. Rich. 2002. Protection of environmentally sensitive habitat areas in proposed local coastal plan for the Santa Monica Mountains. The Urban Wildlands Group, Inc., P.O. Box 24020 Los Angeles, CA 90024. (See attached comment document in Appendix).

In lower elevation areas with high fire frequency, chaparral and coastal sage scrub may be in a state of flux, leading one researcher to describe the mix as a “coastal sage-chaparral subclimax.”<sup>38</sup> Several other researchers have noted the replacement of chaparral by coastal sage scrub, or coastal sage scrub by chaparral depending on fire history.<sup>39</sup> In transitional and other settings, the mosaic of chaparral and coastal sage scrub enriches the seasonal plant resource base and provides additional habitat variability and seasonality for the many species that inhabit the area.

### Relationships Among Coastal Sage Scrub, Chaparral and Riparian Communities

Although the constituent communities of the Santa Monica Mountains Mediterranean ecosystem can be defined and distinguished based on species composition, growth habits, and the physical habitats they characteristically occupy, they are not independent entities ecologically. Many species of plants, such as black sage, and laurel sumac, occur in more than one plant community and many animals rely on the predictable mix of communities found in undisturbed Mediterranean ecosystems to sustain them through the seasons and during different portions of their life histories.

Strong evidence for the interconnectedness between chaparral, coastal scrub and other habitats is provided by “opportunistic foragers” (animals that follow the growth and flowering cycles across these habitats). Coastal scrub and chaparral flowering and growth cycles differ in a complimentary and sequential way that many animals have evolved to exploit. Whereas coastal sage scrub is shallow-rooted and responds quickly to seasonal rains, chaparral plants are typically deep-rooted having most of their flowering and growth later in the rainy season after the deeper soil layers have been saturated<sup>40</sup>. New growth of chaparral evergreen shrubs takes place about four months later than coastal sage scrub plants and it continues later into the summer<sup>41</sup>. For example, in coastal sage scrub, California sagebrush flowers and grows from August to February and coyote bush flowers from August to November<sup>42</sup>. In contrast, chamise

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<sup>38</sup> Hanes, T.L. 1965. Ecological studies on two closely related chaparral shrubs in southern California. *Ecological Monographs* 41:27-52.

<sup>39</sup> Gray, K.L. 1983. Competition for light and dynamic boundary between chaparral and coastal sage scrub. *Madrono* 30(1):43-49. Zedler, P.H., C.R. Gautier and G.S. McMaster. 1983. Vegetation change in response to extreme events: The effect of a short interval between fires in California chaparral and coastal sage scrub. *Ecology* 64(4): 809-818.

<sup>40</sup> DeSimone, S. 2000. California's coastal sage scrub. *Fremontia* 23(4):3-8. Mooney, H.A. 1988. Southern coastal scrub. Chap. 13 *in* Barbour, M.G. and J. Majors; Eds. 1988. *Terrestrial vegetation of California*, 2<sup>nd</sup> Edition. Calif. Native Plant Soc. Spec. Publ. #9.

<sup>41</sup> Schoenherr, A. A. 1992. *A natural history of California*. University of California Press, Berkeley. 772p.

<sup>42</sup> Dale, N. 2000. *Flowering plants of the Santa Monica Mountains*. California Native Plant Society, 1722 J Street, Suite 17, Sacramento, CA 95814.

chaparral and bigpod ceanothus flower from April to June, buck brush ceanothus flowers from February to April, and hoaryleaf ceanothus flowers from March to April.

Many groups of animals exploit these seasonal differences in growth and blooming period. The opportunistic foraging insect community (e.g., honeybees, butterflies and moths) tends to follow these cycles of flowering and new growth, moving from coastal sage scrub in the early rainy season to chaparral in the spring<sup>43</sup>. The insects in turn are followed by insectivorous birds such as the blue-gray gnatcatcher<sup>44</sup>, bushtit, cactus wren, Bewick's wren and California towhee. At night bats take over the role of daytime insectivores. At least 12 species of bats (all of which are considered sensitive) occur in the Santa Monica Mountains<sup>45</sup>. Five species of hummingbirds also follow the flowering cycle<sup>46</sup>.

Many species of 'opportunistic foragers', which utilize several different community types, perform important ecological roles during their seasonal movements. The scrub jay is a good example of such a species. The scrub jay is an omnivore and forages in coastal sage scrub, chaparral, and oak woodlands for insects, berries and notably acorns. Its foraging behavior includes the habit of burying acorns, usually at sites away from the parent tree canopy. Buried acorns have a much better chance of successful germination (about two-fold) than exposed acorns because they are protected from desiccation and predators. One scrub jay will bury approximately 5000 acorns in a year. The scrub jay therefore performs the function of greatly increasing recruitment and regeneration of oak woodland, a valuable and sensitive habitat type<sup>47</sup>.

Like the scrub jay, most of the species of birds that inhabit the Mediterranean ecosystem in the Santa Monica Mountains require more than one community type in order to flourish. Many species include several community types in their daily activities. Other species tend to move from one community to another seasonally. The importance of maintaining the integrity of the multi-community ecosystem is clear in the following observations of Dr. Hartmut Walter of the University of California at Los Angeles:

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<sup>43</sup> Ballmer, G. R. 1995. What's bugging coastal sage scrub. *Fremontia* 23(4):17-26.

<sup>44</sup> Root, R. B. 1967. The niche exploitation pattern of the blue-gray gnatcatcher. *Ecol. Monog.* 37:317-350.

<sup>45</sup> Letter from Dr. Marti Witter, NPS, dated Sept. 13, 2001, in letters received and included in the September 2002 staff report for the Malibu LCP.

<sup>46</sup> National Park Service. 1993. A checklist of the birds of the Santa Monica Mountains National Recreation Area. Southwest Parks and Monuments Assoc., 221 N. Court, Tucson, AZ. 85701

<sup>47</sup> Borchert, M. I., F. W. Davis, J. Michaelsen and L. D. Oyler. 1989. Interactions of factors affecting seedling recruitment of blue oak (*Quercus douglasii*) in California. *Ecology* 70:389-404. Bossema, I. 1979. Jays and oaks: An eco-ethological study of a symbiosis. *Behavior* 70:1-118. Schoenherr, A. A. 1992. A natural history of California. University of California Press, Berkeley. 772p.

**“Bird diversity is directly related to the habitat mosaic and topographic diversity of the Santa Monicas. Most bird species in this bio-landscape require more than one habitat for survival and reproduction.” “A significant proportion of the avifauna breeds in the wooded canyons of the Santa Monicas. Most of the canyon breeders forage every day in the brush- and grass-covered slopes, ridges and mesas. They would not breed in the canyons in the absence of the surrounding shrublands. Hawks, owls, falcons, orioles, flycatchers, woodpeckers, warblers, hummingbirds, etc. belong to this group. Conversely, some of the characteristic chaparral birds such as thrashers, quails, and wrentits need the canyons for access to shelter, protection from fire, and water. The regular and massive movement of birds between riparian corridors and adjacent shrublands has been demonstrated by qualitative and quantitative observations by several UCLA students<sup>48</sup>.”**

Thus, the Mediterranean ecosystem of the Santa Monica Mountains is a mosaic of vegetation types linked together ecologically. The high biodiversity of the area results from both the diversity and the interconnected nature of this mosaic. Most raptor species, for example, require large areas and will often require different habitats for perching, nesting and foraging. Fourteen species of raptors (13 of which are considered sensitive) are reported from the Santa Monica Mountains. These species utilize a variety of habitats including rock outcrops, oak woodlands, riparian areas, grasslands, chaparral, coastal sage scrub, estuaries and freshwater lakes<sup>49</sup>.

When the community mosaic is disrupted and fragmented by development, many chaparral-associated native bird species are impacted. In a study of landscape-level fragmentation in the Santa Monica Mountains, Stralberg<sup>50</sup> found that the ash-throated flycatcher, Bewick’s wren, wrentit, blue-gray gnatcatcher, California thrasher, orange-crowned warbler, rufous-crowned sparrow, spotted towhee, and California towhee all decreased in numbers as a result of urbanization. Soule<sup>51</sup> observed similar effects of fragmentation on chaparral and coastal sage scrub birds in the San Diego area.

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<sup>48</sup> Walter, Hartmut. Bird use of Mediterranean habitats in the Santa Monica Mountains, Coastal Commission Workshop on the Significance of Native Habitats in the Santa Monica Mountains. CCC Hearing, June 13, 2002, Queen Mary Hotel.

<sup>49</sup> National Park Service. 1993. A checklist of the birds of the Santa Monica Mountains National Recreation Area. Southwest Parks and Monuments Assoc., 221 N. Court, Tucson, AZ. 85701. *and* Letter from Dr. Marti Witter, NPS, Dated Sept. 13, 2001, in letters received and included in the September 2002 staff report for the Malibu LCP.

<sup>50</sup> Stralberg, D. 2000. Landscape-level urbanization effects on chaparral birds: A Santa Monica Mountains case study. p 125-136 *in*: Keeley, J. E., M. Baer-Keeley and C. J. Fotheringham (eds), 2<sup>nd</sup> Interface Between Ecology and Land Development in California, U.S. Geological Survey Open-File Report 00-62.

<sup>51</sup> Soule, M. E., D. T. Bolger, A. C. Alberts, J. Wright, M. Sorice and S. Hill. 1988. Reconstructed dynamics of rapid extinctions of chaparral-requiring birds in urban habitat islands. *Conserv. Biol.* 2: 75-92.

In summary, all of the vegetation types in this ecosystem are strongly linked by animal movement and foraging. Whereas classification and mapping of vegetation types may suggest a snapshot view of the system, the seasonal movements and foraging of animals across these habitats illustrates the dynamic nature and vital connections that are crucial to the survival of this ecosystem.

### Coastal Sage Scrub

“Coastal sage scrub” is a generic vegetation type that is inclusive of several subtypes<sup>52</sup>. In the Santa Monica Mountains, coastal sage scrub is mostly of the type termed “Venturan Coastal Sage Scrub.” In general, coastal sage scrub is comprised of dominant species that are semi-woody and low-growing, with shallow, dense roots that enable them to respond quickly to rainfall. Under the moist conditions of winter and spring, they grow quickly, flower, and produce light, wind-dispersed seeds, making them good colonizers following disturbance. These species cope with summer drought by dying back, dropping their leaves or producing a smaller summer leaf in order to reduce water loss. Stands of coastal sage scrub are much more open than chaparral and contain a greater admixture of herbaceous species. Coastal sage scrub is generally restricted to drier sites, such as low foothills, south-facing slopes, and shallow soils at higher elevations.

The species composition and structure of individual stands of coastal sage scrub depend on moisture conditions that derive from slope, aspect, elevation and soil type. Drier sites are dominated by more drought-resistant species (e.g., California sagebrush, coast buckwheat, and *Opuntia* cactus). Where more moisture is available (e.g., north-facing slopes), larger evergreen species such as toyon, laurel sumac, lemonade berry, and sugar bush are common. As a result, there is more cover for wildlife, and movement of large animals from chaparral into coastal sage scrub is facilitated in these areas. Characteristic wildlife in this community includes Anna’s hummingbirds, rufous-sided towhees, California quail, greater roadrunners, Bewick’s wrens, coyotes, and coast horned lizards<sup>53</sup>, but most of these species move between coastal sage scrub and chaparral during their daily activities or on a seasonal basis.

Of the many important ecosystem roles performed by the coastal sage scrub community, five are particularly important in the Santa Monica Mountains. Coastal sage scrub provides critical linkages between riparian corridors, provides essential habitat for species that require several habitat types during the course of their life histories, provides essential habitat for local endemics, supports rare species that are in danger of extinction, and reduces erosion, thereby protecting the water quality of coastal streams.

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<sup>52</sup> Kirkpatrick, J.B. and C.F. Hutchinson. 1977. The community composition of Californian coastal sage scrub. *Vegetatio* 35:21-33; Holland, 1986. op.cit.; Sawyer and Keeler-Wolf, 1995, op.cit.

<sup>53</sup> National Park Service. 2000. Draft: General Management Plan & Environmental Impact Statement, Santa Monica Mountains National Recreation Area, US Dept. of Interior, National Park Service, December 2000.

Riparian woodlands are primary contributors to the high biodiversity of the Santa Monica Mountains. The ecological integrity of those riparian habitats not only requires wildlife dispersal along the streams, but also depends on the ability of animals to move from one riparian area to another. Such movement requires that the riparian corridors be connected by suitable habitat. In the Santa Monica Mountains, coastal sage scrub and chaparral provide that function. Significant development in coastal sage scrub would reduce the riparian corridors to linear islands of habitat with severe edge effects<sup>54</sup>, reduced diversity, and lower productivity.

Most wildlife species and many species of plants utilize several types of habitat. Many species of animals endemic to Mediterranean habitats move among several plant communities during their daily activities and many are reliant on different communities either seasonally or during different stages of their life cycle. Without an intact mosaic of coastal sage scrub, chaparral, and riparian community types, many species will not thrive. Specific examples of the importance of interconnected communities, or habitats, were provided in the discussion above. This is an essential ecosystem role of coastal sage scrub.

A characteristic of the coastal sage scrub vegetation type is a high degree of endemism. This is consonant with Westman's observation that 44 percent of the species he sampled in coastal sage scrub occurred at only one of his 67 sites, which were distributed from the San Francisco Bay area to Mexico<sup>55</sup>. Species with restricted distributions are by nature more susceptible to loss or degradation of their habitat. Westman said of this unique and local aspect of coastal sage scrub species in California:

“While there are about 50 widespread sage scrub species, more than half of the 375 species encountered in the present study of the sage scrub flora are rare in occurrence within the habitat range. In view of the reduction of the area of coastal sage scrub in California to 10-15% of its former extent and the limited extent of preserves, measures to conserve the diversity of the flora are needed.”<sup>56</sup>

Coastal sage scrub in southern California provides habitat for about 100 rare species<sup>57</sup>, many of which are also endemic to limited geographic regions<sup>58</sup>. In the Santa Monica

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<sup>54</sup> Environmental impacts are particularly severe at the interface between development and natural habitats. The greater the amount of this “edge” relative to the area of natural habitat, the worse the impact.

<sup>55</sup> Westman, W.E. 1981. Diversity relations and succession in Californian coastal sage scrub. *Ecology* 62:170-184.

<sup>56</sup> *Ibid.*

<sup>57</sup> Atwood, J. L. 1993. California gnatcatchers and coastal sage scrub: The biological basis for endangered species listing. pp.149-166 *In: Interface Between Ecology and Land Development in California*. Ed. J. E. Keeley, So. Calif. Acad. of Sci., Los Angeles.



Mountains, rare animals that inhabit coastal sage scrub<sup>59</sup> include the Santa Monica shieldback katydid, silvery legless lizard, coastal cactus wren, Bell's sparrow, San Diego desert woodrat, southern California rufous-crowned sparrow, coastal western whiptail, and San Diego horned lizard. Some of these species are also found in chaparral<sup>60</sup>. Rare plants found in coastal sage scrub in the Santa Monica Mountains include Santa Susana tarplant, Coulter's saltbush, Blockman's dudleya, Braunton's milkvetch, Parry's spineflower, and Plummer's mariposa lily<sup>61</sup>. A total of 32 sensitive species of reptiles, birds and mammals have been identified in this community by the National Park Service.<sup>62</sup>

One of the most important ecological functions of coastal sage scrub in the Santa Monica Mountains is to protect water quality in coastal streams by reducing erosion in the watershed. Although shallow rooted, the shrubs that define coastal sage scrub have dense root masses that hold the surface soils much more effectively than the exotic annual grasses and forbs that tend to dominate in disturbed areas. The native shrubs of this community are resistant not only to drought, as discussed above, but well adapted to fire. Most of the semi-woody shrubs have some ability to crown sprout after fire. Several CSS species (e.g., *Eriogonum cinereum*) in the Santa Monica Mountains and adjacent areas resprout vigorously and other species growing near the coast demonstrate this characteristic more strongly than do individuals of the same species growing at inland sites in Riverside County.<sup>63</sup> These shrub species also tend to recolonize rapidly from seed following fire. As a result they provide persistent cover that reduces erosion.

In addition to performing extremely important roles in the Mediterranean ecosystem, the coastal sage scrub community type has been drastically reduced in area by habitat loss to development. In the early 1980's it was estimated that 85 to 90 percent of the

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California Department of Fish and Game (CDFG). 1993. The Southern California Coastal Sage Scrub (CSS) Natural Communities Conservation Plan (NCCP). CDFG and Calif. Resources Agency, 1416 9<sup>th</sup> St., Sacramento, CA 95814.

<sup>58</sup> Westman, W.E. 1981. op. cit.

<sup>59</sup> Biological Resources Assessment of the Proposed Santa Monica Mountains Significant Ecological Area. Nov. 2000. Los Angeles Co., Dept. of Regional Planning, 320 West Temple St., Rm. 1383, Los Angeles, CA 90012.

<sup>60</sup> O'Leary J.F., S.A. DeSimone, D.D. Murphy, P.F. Brussard, M.S. Gilpin, and R.F. Noss. 1994. Bibliographies on coastal sage scrub and related malacophyllous shrublands of other Mediterranean-type climates. *California Wildlife Conservation Bulletin* 10:1-51.

<sup>61</sup> Biological Resources Assessment of the Proposed Santa Monica Mountains Significant Ecological Area. Nov. 2000. Los Angeles Co., Dept. of Regional Planning, 320 West Temple St., Rm. 1383, Los Angeles, CA 90012.

<sup>62</sup> NPS, 2000, op cit.

<sup>63</sup> Dr. John O'Leary, SDSU, personal communication to Dr. John Dixon, CCC, July 2, 2002

original extent of coastal sage scrub in California had already been destroyed.<sup>64</sup> Losses since that time have been significant and particularly severe in the coastal zone.

Therefore, because of its increasing rarity, its important role in the functioning of the Santa Monica Mountains Mediterranean ecosystem, and its extreme vulnerability to development, coastal sage scrub within the Santa Monica Mountains meets the definition of ESHA under the Coastal Act.

### Chaparral

Another shrub community in the Santa Monica Mountain Mediterranean ecosystem is chaparral. Like “coastal sage scrub,” this is a generic category of vegetation. Chaparral species have deep roots (10s of ft) and hard waxy leaves, adaptations to drought that increase water supply and decrease water loss at the leaf surface. Some chaparral species cope more effectively with drought conditions than do desert plants<sup>65</sup>. Chaparral plants vary from about one to four meters tall and form dense, intertwining stands with nearly 100 percent ground cover. As a result, there are few herbaceous species present in mature stands. Chaparral is well adapted to fire. Many species regenerate mainly by crown sprouting; others rely on seeds which are stimulated to germinate by the heat and ash from fires. Over 100 evergreen shrubs may be found in chaparral<sup>66</sup>. On average, chaparral is found in wetter habitats than coastal sage scrub, being more common at higher elevations and on north facing slopes.

The broad category “northern mixed chaparral” is the major type of chaparral shown in the National Park Service map of the Santa Monica Mountains. However, northern mixed chaparral can be variously dominated by chamise, scrub oak or one of several species of manzanita or by ceanothus. In addition, it commonly contains woody vines and large shrubs such as mountain mahogany, toyon, hollyleaf redberry, and sugarbush<sup>67</sup>. The rare red shank chaparral plant community also occurs in the Santa Monica Mountains. Although included within the category “northern mixed chaparral” in the vegetation map, several types of ceanothus chaparral are reported in the Santa Monica Mountains. Ceanothus chaparral occurs on stable slopes and ridges, and may be dominated by bigpod ceanothus, buck brush ceanothus, hoaryleaf ceanothus, or greenbark ceanothus. In addition to ceanothus, other species that are usually present in varying amounts are chamise, black sage, holly-leaf redberry, sugarbush, and coast golden bush<sup>68</sup>.

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<sup>64</sup> Westman, W.E. 1981. op. cit.

<sup>65</sup> Dr. Stephen Davis, Pepperdine University. Presentation at the CCC workshop on the significance of native habitats in the Santa Monica Mountains. June 13, 2002.

<sup>66</sup> Keely, J.E. and S.C. Keeley. Chaparral. Pages 166-207 in M.G. Barbour and W.D. Billings, eds. North American Terrestrial Vegetation. New York, Cambridge University Press.

<sup>67</sup> Ibid.

<sup>68</sup> Ibid.

Several sensitive plant species that occur in the chaparral of the Santa Monica Mountains area are: Santa Susana tarplant, Lyon's pentachaeta, marcescent dudleya, Santa Monica Mountains dudleya, Braunton's milk vetch and salt spring checkerbloom<sup>69</sup>. Several occurring or potentially occurring sensitive animal species in chaparral from the area are: Santa Monica shieldback katydid, western spadefoot toad, silvery legless lizard, San Bernardino ring-neck snake, San Diego mountain kingsnake, coast patch-nosed snake, sharp-shinned hawk, southern California rufous-crowned sparrow, Bell's sparrow, yellow warbler, pallid bat, long-legged myotis bat, western mastiff bat, and San Diego desert woodrat.<sup>70</sup>

Coastal sage scrub and chaparral are the predominant generic community types of the Santa Monica Mountains and provide the living matrix within which rarer habitats like riparian woodlands exist. These two shrub communities share many important ecosystem roles. Like coastal sage scrub, chaparral within the Santa Monica Mountains provides critical linkages among riparian corridors, provides essential habitat for species that require several habitat types during the course of their life histories, provides essential habitat for sensitive species, and stabilizes steep slopes and reduces erosion, thereby protecting the water quality of coastal streams.

Many species of animals in Mediterranean habitats characteristically move among several plant communities during their daily activities, and many are reliant on different communities either seasonally or during different stages of their life cycle. The importance of an intact mosaic of coastal sage scrub, chaparral, and riparian community types is perhaps most critical for birds. However, the same principles apply to other taxonomic groups. For example, whereas coastal sage scrub supports a higher diversity of native ant species than chaparral, chaparral habitat is necessary for the coast horned lizard, an ant specialist<sup>71</sup>. Additional examples of the importance of an interconnected communities, or habitats, were provided in the discussion of coastal sage scrub above. This is an extremely important ecosystem role of chaparral in the Santa Monica Mountains.

Chaparral is also remarkably adapted to control erosion, especially on steep slopes. The root systems of chaparral plants are very deep, extending far below the surface and penetrating the bedrock below<sup>72</sup>, so chaparral literally holds the hillsides together and

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<sup>69</sup> Biological Resources Assessment of the Proposed Santa Monica Mountains Significant Ecological Area. Nov. 2000. Los Angeles Co., Dept. of Regional Planning, 320 West Temple St., Rm. 1383, Los Angeles, CA 90012.

<sup>70</sup> Ibid.

<sup>71</sup> A.V. Suarez. Ants and lizards in coastal sage scrub and chaparral. A presentation at the CCC workshop on the significance of native habitats in the Santa Monica Mountains. June 13, 2002.

<sup>72</sup> Helmers, H., J.S. Horton, G. Juhren and J. O'Keefe. 1955. Root systems of some chaparral plants in southern California. *Ecology* 36(4):667-678. Kummerow, J. and W. Jow. 1977. Root systems of chaparral shrubs. *Oecologia* 29:163-177.

prevents slippage.<sup>73</sup> In addition, the direct soil erosion from precipitation is also greatly reduced by 1) water interception on the leaves and above ground foliage and plant structures, and 2) slowing the runoff of water across the soil surface and providing greater soil infiltration. Chaparral plants are extremely resistant to drought, which enables them to persist on steep slopes even during long periods of adverse conditions. Many other species die under such conditions, leaving the slopes unprotected when rains return. Since chaparral plants recover rapidly from fire, they quickly re-exert their ground stabilizing influence following burns. The effectiveness of chaparral for erosion control after fire increases rapidly with time<sup>74</sup>. Thus, the erosion from a 2-inch rain-day event drops from 5 yd<sup>3</sup>/acre of soil one year after a fire to 1 yd<sup>3</sup>/acre after 4 years.<sup>75</sup> The following table illustrates the strong protective effect of chaparral in preventing erosion.

Soil erosion as a function of 24-hour precipitation and chaparral age.

Years Since Fire	Erosion (yd <sup>3</sup> /acre) at Maximum 24-hr Precipitation of:		
	2 inches	5 inches	11 inches
1	5	20	180
4	1	12	140
17	0	1	28
50+	0	0	3

Therefore, because of its important roles in the functioning of the Santa Monica Mountains Mediterranean ecosystem, and its extreme vulnerability to development, chaparral within the Santa Monica Mountains meets the definition of ESHA under the Coastal Act.

*Oak Woodland and Savanna*

Coast live oak woodland occurs mostly on north slopes, shaded ravines and canyon bottoms. Besides the coast live oak, this plant community includes hollyleaf cherry, California bay laurel, coffeeberry, and poison oak. Coast live oak woodland is more tolerant of salt-laden fog than other oaks and is generally found nearer the coast<sup>76</sup>. Coast live oak also occurs as a riparian corridor species within the Santa Monica Mountains.

<sup>73</sup> Radtke, K. 1983. *Living more safely in the chaparral-urban interface*. General Technical Report PSW-67. U.S. Department of Agriculture, Forest Service, Pacific Southwest Research Station, Berkeley, California. 51 pp.

<sup>74</sup> Kittredge, J. 1973. *Forest influences — the effects of woody vegetation on climate, water, and soil*. Dover Publications, New York. 394 pp. Longcore, T and C. Rich. 2002. Protection of environmentally sensitive habitat areas in proposed local coastal plan for the Santa Monica Mountains. (Table 1). The Urban Wildlands Group, Inc., P.O. Box 24020 Los Angeles, CA 90024. Vicars, M. (ed.) 1999. *FireSmart: protecting your community from wildfire*. Partners in Protection, Edmonton, Alberta.

<sup>75</sup> Ibid.

<sup>76</sup> NPS 2000. op. cit.

Valley oaks are endemic to California and reach their southern most extent in the Santa Monica Mountains. Valley oaks were once widely distributed throughout California's perennial grasslands in central and coastal valleys. Individuals of this species may survive 400-600 years. Over the past 150 years, valley oak savanna habitat has been drastically reduced and altered due to agricultural and residential development. The understory is now dominated by annual grasses and recruitment of seedlings is generally poor. This is a very threatened habitat.

The important ecosystem functions of oak woodlands and savanna are widely recognized<sup>77</sup>. These habitats support a high diversity of birds<sup>78</sup>, and provide refuge for many species of sensitive bats<sup>79</sup>. Typical wildlife in this habitat includes acorn woodpeckers, scrub jays, plain titmice, northern flickers, cooper's hawks, western screech owls, mule deer, gray foxes, ground squirrels, jackrabbits and several species of sensitive bats.

Therefore, because of their important ecosystem functions and vulnerability to development, oak woodlands and savanna within the Santa Monica Mountains met the definition of ESHA under the Coastal Act.

### Grasslands

Grasslands consist of low herbaceous vegetation that is dominated by grass species but may also harbor native or non-native forbs.

### **California Perennial Grassland**

Native grassland within the Santa Monica Mountains consists of perennial native needlegrasses: purple needlegrass, (*Nassella pulchra*), foothills needlegrass, (*Nassella lepida*) and nodding needlegrass (*Nassella cernua*). These grasses may occur in the same general area but they do not typically mix, tending to segregate based on slope and substrate factors<sup>80</sup>. Mixed with these native needlegrasses are many non-native

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<sup>77</sup> Block, W.M., M.L. Morrison, and J. Verner. 1990. Wildlife and oak-woodland interdependency. *Fremontia* 18(3):72-76. Pavlik, B.M., P.C. Muick, S. Johnson, and M. Popper. 1991. *Oaks of California*. Cachuma Press and California Oak Foundation, Los Olivos, California. 184 pp.

<sup>78</sup> Cody, M.L. 1977. Birds. Pp. 223-231 in Thrower, N.J.W., and D.E. Bradbury (eds.). *Chile-California Mediterranean scrub atlas*. US/IBP Synthesis Series 2. Dowden, Hutchinson & Ross, Stroudsburg, Pennsylvania. National Park Service. 1993. A checklist of the birds of the Santa Monica Mountains National Recreation Area. Southwest Parks and Monuments Assoc., 221 N. Court, Tucson, AZ. 85701

<sup>79</sup> Miner, K.L., and D.C. Stokes. 2000. Status, conservation issues, and research needs for bats in the south coast bioregion. Paper presented at *Planning for biodiversity: bringing research and management together*, February 29, California State University, Pomona, California.

<sup>80</sup> Sawyer, J. O. and T. Keeler-Wolf. 1995. A manual of California vegetation. California Native Plant Society, 1722 J St., Suite 17, Sacramento, CA 95814.

annual species that are characteristic of California annual grassland<sup>81</sup>. Native perennial grasslands are now exceedingly rare<sup>82</sup>. In California, native grasslands once covered nearly 20 percent of the land area, but today are reduced to less than 0.1 percent<sup>83</sup>. The California Natural Diversity Database (CNDDDB) lists purple needlegrass habitat as a community needing priority monitoring and restoration. The CNDDDB considers grasslands with 10 percent or more cover by purple needlegrass to be significant, and recommends that these be protected as remnants of original California prairie. Patches of this sensitive habitat occur throughout the Santa Monica Mountains where they are intermingled with coastal sage scrub, chaparral and oak woodlands.

Many of the raptors that inhabit the Santa Monica Mountains make use of grasslands for foraging because they provide essential habitat for small mammals and other prey. Grasslands adjacent to woodlands are particularly attractive to these birds of prey since they simultaneously offer perching and foraging habitat. Particularly noteworthy in this regard are the white-tailed kite, northern harrier, sharp-shinned hawk, Cooper's hawk, red-shouldered hawk, red-tailed hawk, golden eagle, American kestrel, merlin, and prairie falcon<sup>84</sup>.

Therefore, because of their extreme rarity, important ecosystem functions, and vulnerability to development, California native perennial grasslands within the Santa Monica Mountains meet the definition of ESHA under the Coastal Act.

### **California Annual Grassland**

The term "California annual grassland" has been proposed to recognize the fact that non-native annual grasses should now be considered naturalized and a permanent feature of the California landscape and should be acknowledged as providing important ecological functions. These habitats support large populations of small mammals and provide essential foraging habitat for many species of birds of prey. California annual grassland generally consists of dominant invasive annual grasses that are primarily of Mediterranean origin. The dominant species in this community include common wild oats (*Avena fatua*), slender oat (*Avena barbata*), red brome (*Bromus madritensis* ssp. *Rubens*), ripgut brome, (*Bromus diandrus*), and herbs such as black mustard (*Brassica nigra*), wild radish (*Raphanus sativus*) and sweet fennel (*Foeniculum vulgare*). Annual grasslands are located in patches throughout the Santa Monica Mountains in previously disturbed areas, cattle pastures, valley bottoms and along roadsides. While many of these patches are dominated by invasive non-native species, it would be premature to

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<sup>81</sup> Biological Resources Assessment of the Proposed Santa Monica Mountains Significant Ecological Area. Nov. 2000. Los Angeles Co., Dept. of Regional Planning, 320 West Temple St., Rm. 1383, Los Angeles, CA 90012.

<sup>82</sup> Noss, R.F., E.T. LaRoe III and J.M. Scott. 1995. Endangered ecosystems of the United States: a preliminary assessment of loss and degradation. Biological Report 28. National Biological Service, U.S. Dept. of Interior.

<sup>83</sup> NPS 2000. op. cit.

<sup>84</sup> NPS 2000. op. cit.

say that they are never sensitive or do not harbor valuable annual native species. A large number of native forbs also may be present in these habitats<sup>85</sup>, and many native wildflowers occur primarily in annual grasslands. In addition, annual grasslands are primary foraging areas for many sensitive raptor species in the area.

Inspection of California annual grasslands should be done prior to any impacts to determine if any rare native species are present or if any rare wildlife rely on the habitat and to determine if the site meets the Coastal Act ESHA criteria.

### Effects of Human Activities and Development on Habitats within the Santa Monica Mountains

The natural habitats of the Santa Monica Mountains are highly threatened by current development pressure, fragmentation and impacts from the surrounding megalopolis. The developed portions of the Santa Monica Mountains represents the extension of this urbanization into natural areas. About 54% of the undeveloped Santa Monica Mountains are in private ownership<sup>86</sup>, and computer simulation studies of the development patterns over the next 25 years predict a serious increase in habitat fragmentation<sup>87</sup>. Development and associated human activities have many well-documented deleterious effects on natural communities. These environmental impacts may be both direct and indirect and include the effects of increased fire frequency, of fire clearance, of introduction of exotic species, and of night lighting.

#### Increased Fire Frequency

Since 1925, all the major fires in the Santa Monica Mountains have been caused by human activities<sup>88</sup>. Increased fire frequency alters plant communities by creating conditions that select for some species over others. Strong resprouting plant species such as laurel sumac, are favored while non-sprouters like bigpod ceanothus, are at a disadvantage. Frequent fire recurrence before the non-sprouters can develop and reestablish a seed bank is detrimental, so that with each fire their chances for propagation are further reduced. Resprouters can be sending up new shoots quickly, and so they are favored in an increased fire frequency regime. Also favored are weedy and invasive species. Dr. Steven Davis in his abstract for a Coastal Commission

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<sup>85</sup> Holstein, G. 2001. Pre-agricultural grassland in Central California. *Madrono* 48(4):253-264. Stromberg, M.R., P. Kephart and V. Yadon. 2001. Composition, invasibility and diversity of coastal California grasslands. *Madrono* 48(4):236-252.

<sup>86</sup> National Park Service. 2000. Draft: General Management Plan & Environmental Impact Statement, Santa Monica Mountains National Recreation Area, US Dept. of Interior, National Park Service, December 2000.

<sup>87</sup> Swenson, J. J., and J. Franklin. 2000. The effects of future urban development on habitat fragmentation in the Santa Monica Mountains. *Landscape Ecol.* 15:713-730.

<sup>88</sup> NPS, 2000, op. cit.

Workshop stated<sup>89</sup> “We have evidence that recent increases in fire frequency has eliminated drought-hardy non-sprouters from chaparral communities near Malibu, facilitating the invasion of exotic grasses and forbs that further exacerbate fire frequency.” Thus, simply increasing fire frequency from about once every 22 years (the historical frequency) to about once every 12 years (the current frequency) can completely change the vegetation community. This has cascading effects throughout the ecosystem.

### Fuel Clearance

The removal of vegetation for fire protection in the Santa Monica Mountains is required by law in “Very High Fire Hazard Severity Zones”<sup>90</sup>. Fuel removal is reinforced by insurance carriers<sup>91</sup>. Generally, the Santa Monica Mountains are considered to be a high fire hazard severity zone. In such high fire hazard areas, homeowners must often resort to the California FAIR Plan to obtain insurance. Because of the high risk, all homes in “brush areas” are assessed an insurance surcharge if they have less than the recommended 200-foot fuel modification zone<sup>92</sup> around the home. The combination of insurance incentives and regulation assures that the 200-foot clearance zone will be applied universally<sup>93</sup>. While it is not required that all of this zone be cleared of vegetation, the common practice is simply to disk this zone, essentially removing or highly modifying all native vegetation. For a new structure not adjacent to existing structures, this results in the removal or modification of a minimum of three acres of vegetation<sup>94</sup>. While the directly impacted area is large, the effects of fuel modification extend beyond the 200-foot clearance area.

### Effects of Fuel Clearance on Bird Communities

The impacts of fuel clearance on bird communities was studied by Stralberg who identified three ecological categories of birds in the Santa Monica Mountains: 1) local and long distance migrators (ash-throated flycatcher, Pacific-slope flycatcher, phainopepla, black-headed grosbeak), 2) chaparral-associated species (Bewick’s wren, wrentit, blue-gray gnatcatcher, California thrasher, orange-crowned warbler, rufous-crowned sparrow, spotted towhee, California towhee) and 3) urban-associated species

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<sup>89</sup> Davis, Steven. Effects of fire and other factors on patterns of chaparral in the Santa Monica Mountains, Coastal Commission Workshop on the Significance of Native Habitats in the Santa Monica Mountains. CCC Hearing, June 13, 2002, Queen Mary Hotel.

<sup>90</sup> 1996 Los Angeles County Fire Code Section 1117.2.1

<sup>91</sup> Longcore, T and C. Rich. 2002. Protection of environmentally sensitive habitat areas in proposed local coastal plan for the Santa Monica Mountains. The Urban Wildlands Group, Inc., P.O. Box 24020 Los Angeles, CA 90024. Vicars, M. (ed.) 1999. FireSmart: protecting your community from wildfire. Partners in Protection, Edmonton, Alberta.

<sup>92</sup> Fuel Modification Plan Guidelines. Co. of Los Angeles Fire Department, Fuel Modification Unit, Prevention Bureau, Forestry Division, Brush Clearance Section, January 1998.

<sup>93</sup> Longcore, T and C. Rich. 2002. Protection of environmentally sensitive habitat areas in proposed local coastal plan for the Santa Monica Mountains. The Urban Wildlands Group, Inc., P.O. Box 24020 Los Angeles, CA 90024.

<sup>94</sup> Ibid.



(mourning dove, American crow, Western scrub-jay, Northern mockingbird)<sup>95</sup>. It was found in this study that the number of migrators and chaparral-associated species decreased due to habitat fragmentation while the abundance of urban-associated species increased. The impact of fuel clearance is to greatly increase this edge-effect of fragmentation by expanding the amount of cleared area and “edge” many-fold. Similar results of decreases in fragmentation-sensitive bird species are reported from the work of Bolger et al. in southern California chaparral<sup>96</sup>.

### Effects of Fuel Clearance on Arthropod Communities

Fuel clearance and habitat modification may also disrupt native arthropod communities, and this can have surprising effects far beyond the cleared area on species seemingly unrelated to the direct impacts. A particularly interesting and well-documented example with ants and lizards illustrates this point. When non-native landscaping with intensive irrigation is introduced, the area becomes favorable for the invasive and non-native Argentine ant. This ant forms “super colonies” that can forage more than 650 feet out into the surrounding native chaparral or coastal sage scrub around the landscaped area<sup>97</sup>. The Argentine ant competes with native harvester ants and carpenter ants displacing them from the habitat<sup>98</sup>. These native ants are the primary food resource for the native coast horned lizard, a California “Species of Special Concern.” As a result of Argentine ant invasion, the coast horned lizard and its native ant food resources are diminished in areas near landscaped and irrigated developments<sup>99</sup>. In addition to specific effects on the coast horned lizard, there are other Mediterranean habitat ecosystem processes that are impacted by Argentine ant invasion through impacts on long-evolved native ant-plant mutualisms<sup>100</sup>. The composition of the whole arthropod

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<sup>95</sup> Stralberg, D. 2000. Landscape-level urbanization effects on chaparral birds: a Santa Monica Mountains case study. Pp. 125–136 in Keeley, J.E., M. Baer-Keeley, and C.J. Fotheringham (eds.). *2nd interface between ecology and land development in California*. U.S. Geological Survey, Sacramento, California.

<sup>96</sup> Bolger, D. T., T. A. Scott and J. T. Rotenberry. 1997. Breeding bird abundance in an urbanizing landscape in coastal Southern California. *Conserv. Biol.* 11:406-421.

<sup>97</sup> Suarez, A.V., D.T. Bolger and T.J. Case. 1998. Effects of fragmentation and invasion on native ant communities in coastal southern California. *Ecology* 79(6):2041-2056.

<sup>98</sup> Holway, D.A. 1995. The distribution of the Argentine ant (*Linepithema humile*) in central California: a twenty-year record of invasion. *Conservation Biology* 9:1634-1637.

Human, K.G. and D.M. Gordon. 1996. Exploitation and interference competition between the invasive Argentine ant, (*Linepithema humile*), and native ant species. *Oecologia* 105:405-412.

<sup>99</sup> Fisher, R.N., A.V. Suarez and T.J. Case. 2002. Spatial patterns in the abundance of the coastal horned lizard. *Conservation Biology* 16(1):205-215. Suarez, A.V. J.Q. Richmond and T.J. Case. 2000. Prey selection in horned lizards following the invasion of Argentine ants in southern California. *Ecological Applications* 10(3):711-725.

<sup>100</sup> Suarez, A.V., D.T. Bolger and T.J. Case. 1998. Effects of fragmentation and invasion on native ant communities in coastal southern California. *Ecology* 79(6):2041-2056. Bond, W. and P. Slingsby. Collapse of an Ant-Plant Mutualism: The Argentine Ant (*Iridomyrmex humilis*) and Myrmecochorous Proteaceae. *Ecology* 65(4):1031-1037.

community changes and biodiversity decreases when habitats are subjected to fuel modification. In coastal sage scrub disturbed by fuel modification, fewer arthropod predator species are seen and more exotic arthropod species are present than in undisturbed habitats<sup>101</sup>.

Studies in the Mediterranean vegetation of South Africa (equivalent to California shrubland with similar plant species) have shown how the invasive Argentine ant can disrupt the whole ecosystem.<sup>102</sup> In South Africa the Argentine ant displaces native ants as they do in California. Because the native ants are no longer present to collect and bury seeds, the seeds of the native plants are exposed to predation, and consumed by seed eating insects, birds and mammals. When this habitat burns after Argentine ant invasion the large-seeded plants that were protected by the native ants all but disappear. So the invasion of a non-native ant species drives out native ants, and this can cause a dramatic change in the species composition of the plant community by disrupting long-established seed dispersal mutualisms. In California, some insect eggs are adapted to being buried by native ants in a manner similar to plant seeds<sup>103</sup>.

### Artificial Night Lighting

One of the more recently recognized human impacts on ecosystem function is that of artificial night lighting as it effects the behavior and function of many different types of organisms<sup>104</sup>. For literally billions of years the only nighttime sources of light were the moon and stars, and living things have adapted to this previously immutable standard and often depend upon it for their survival. A review of lighting impacts suggests that whereas some species are unaffected by artificial night lighting, many others are severely impacted. Overall, most impacts are negative ones or ones whose outcome is unknown. Research to date has found negative impacts to plants, aquatic and terrestrial invertebrates, amphibians, fish, birds and mammals, and a detailed literature review can be found in the report by Longcore and Rich<sup>105</sup>.

### Summary

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<sup>101</sup> Longcore, T.R. 1999. Terrestrial arthropods as indicators of restoration success in coastal sage scrub. Ph.D. Dissertation, University of California, Los Angeles.

<sup>102</sup> Christian, C. 2001. Consequences of a biological invasion reveal the importance of mutualism for plant communities. *Nature* 413:635-639.

<sup>103</sup> Hughes, L. and M. Westoby. 1992. Capitula on stick insect eggs and elaiosomes on seeds: convergent adaptations for burial by ants. *Functional Ecology* 6:642-648.

<sup>104</sup> . Longcore, T and C. Rich. 2002. Protection of environmentally sensitive habitat areas in proposed local coastal plan for the Santa Monica Mountains. The Urban Wildlands Group, Inc., P.O. Box 24020 Los Angeles, CA 90024.

<sup>105</sup> Ibid, and Ecological Consequences of Artificial Night Lighting, Conference, February 23-24, 2002, UCLA Los Angeles, California.

In a past action, the Coastal Commission found<sup>106</sup> that the Santa Monica Mountains Mediterranean Ecosystem, which includes the undeveloped native habitats of the Santa Monica Mountains, is rare and especially valuable because of its relatively pristine character, physical complexity, and resultant biological diversity. The undeveloped native habitats within the Santa Monica Mountains that are discussed above are ESHA because of their valuable roles in that ecosystem, including providing a critical mosaic of habitats required by many species of birds, mammals and other groups of wildlife, providing the opportunity for unrestricted wildlife movement among habitats, supporting populations of rare species, and preventing the erosion of steep slopes and thereby protecting riparian corridors, streams and, ultimately, shallow marine waters.

The importance the native habitats in the Santa Monica Mountains was emphasized nearly 20 years ago by the California Department of Fish and Game<sup>107</sup>. Commenting on a Draft Land Use Plan for the City of Malibu, the Regional Manager wrote that, "It is essential that large areas of land be reclassified to reflect their true status as ESHAs. One of the major needs of the Malibu LUP is that it should provide protection for entire drainages and not just stream bottoms." These conclusions were supported by the following observations:

***"It is a fact that many of the wildlife species of the Santa Monica Mountains, such as mountain lion, deer, and raccoon, have established access routes through the mountains. They often travel to and from riparian zones and development such as high density residential may adversely affect a wildlife corridor."***

Most animal species that exist in riparian areas will, as part of their life histories, also be found in other habitat types, including chaparral (sic) or grassland. For example, hawks nest and roost in riparian areas, but are dependent on large open areas for foraging. For the survival of many species, particularly those high on the food chain, survival will depend upon the presence of such areas. Such areas in the Santa Monica Mountains include grassland and coastal sage scrub communities, which have been documented in the SEA studies as supporting a wide diversity of plant and animal life."

This analysis by the Department of Fish and Game is consonant with the findings of the Commission in the case of the Malibu LCP, and with the conclusion that large contiguous areas of relatively pristine native habitat in the Santa Monica Mountains meet the definition of ESHA under the Coastal Act.

[Link to the rest of Exhibits](#)

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<sup>106</sup> Revised Findings for the City of Malibu Local Coastal Program (as adopted on September 13, 2002) adopted on February 6, 2003.

<sup>107</sup> Letter from F. A. Worthley, Jr. (CDFG) to N. Lucast (CCC) re Land Use Plan for Malibu dated March 22, 1983.

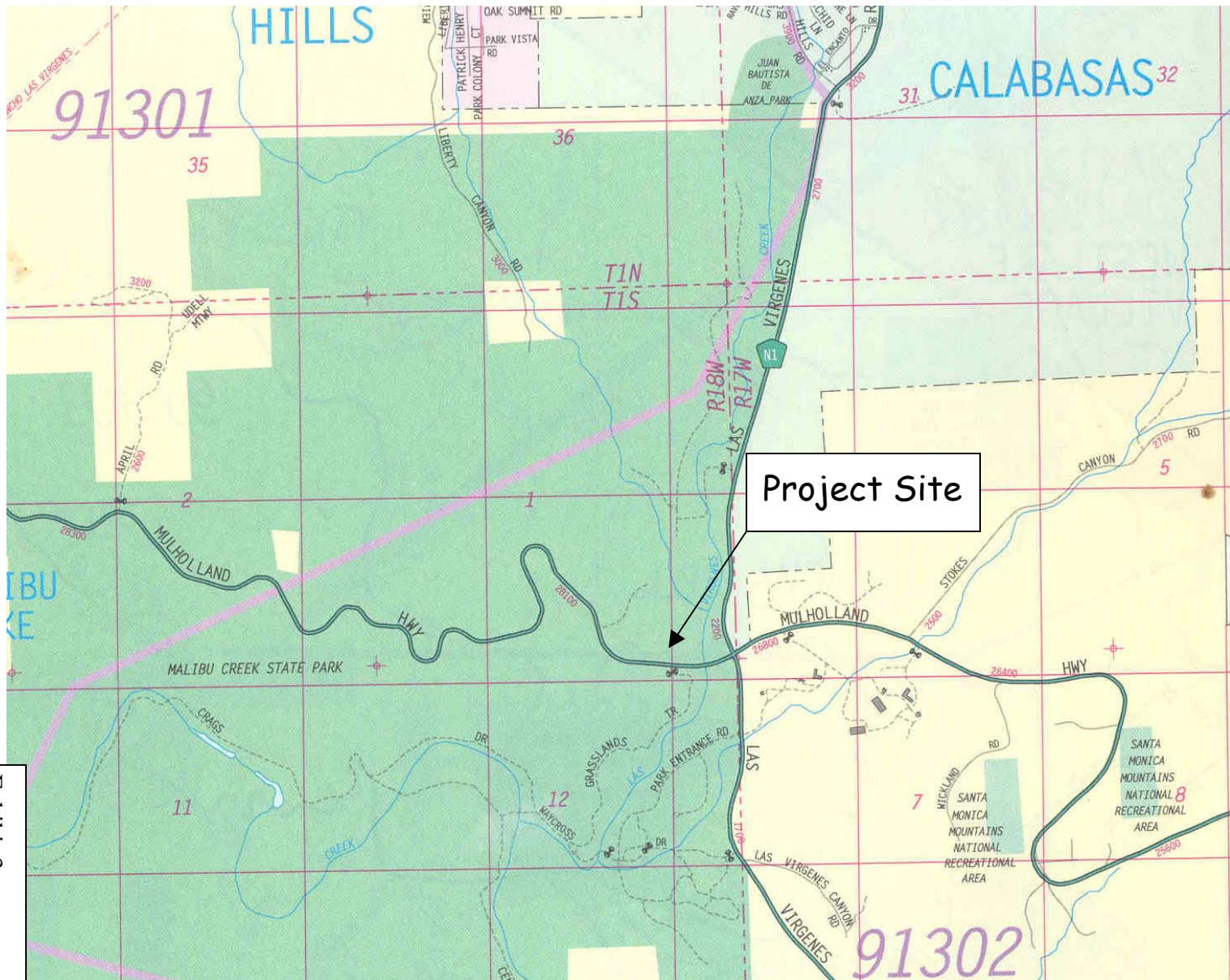


Exhibit 3  
 CDP No. 4-05-052  
 Vicinity Map







SOUTHERN SERVICE CENTER  
 885 RIO SAN DIEGO DRIVE SUITE 270  
 SAN DIEGO, CA 92118  
 PHONE 619-220-5308  
 FAX 619-220-5400

DESIGNED: JFA  
 DRAWN: JFA  
 CHECKED: PR  
 DATE: 4/8/2005

CALIFORNIA STATE PARKS (APPROVED)  
 Approval of this plan does not authorize or indicate any provision of services from applicable regulations. Final approval is subject to field inspection. One set of approved plans shall be available on the project site at all times.

DATE: \_\_\_\_\_  
 SIGNATURE: \_\_\_\_\_

DESIGNED BY: JFA  
 ACCESSIBILITY REVIEW: \_\_\_\_\_

DATE: \_\_\_\_\_  
 SIGNATURE: \_\_\_\_\_

NO.	REVISIONS	DATE
1		

RESTORE SEPULVEDA ADOBE  
 MALIBU CREEK STATE PARK  
 SITE IMPROVEMENTS,  
 GRADING AND DRAINAGE PLAN

PROJECT NUMBER  
 915-527-7845

SHEET NO.  
**C-1**  
 X OF X

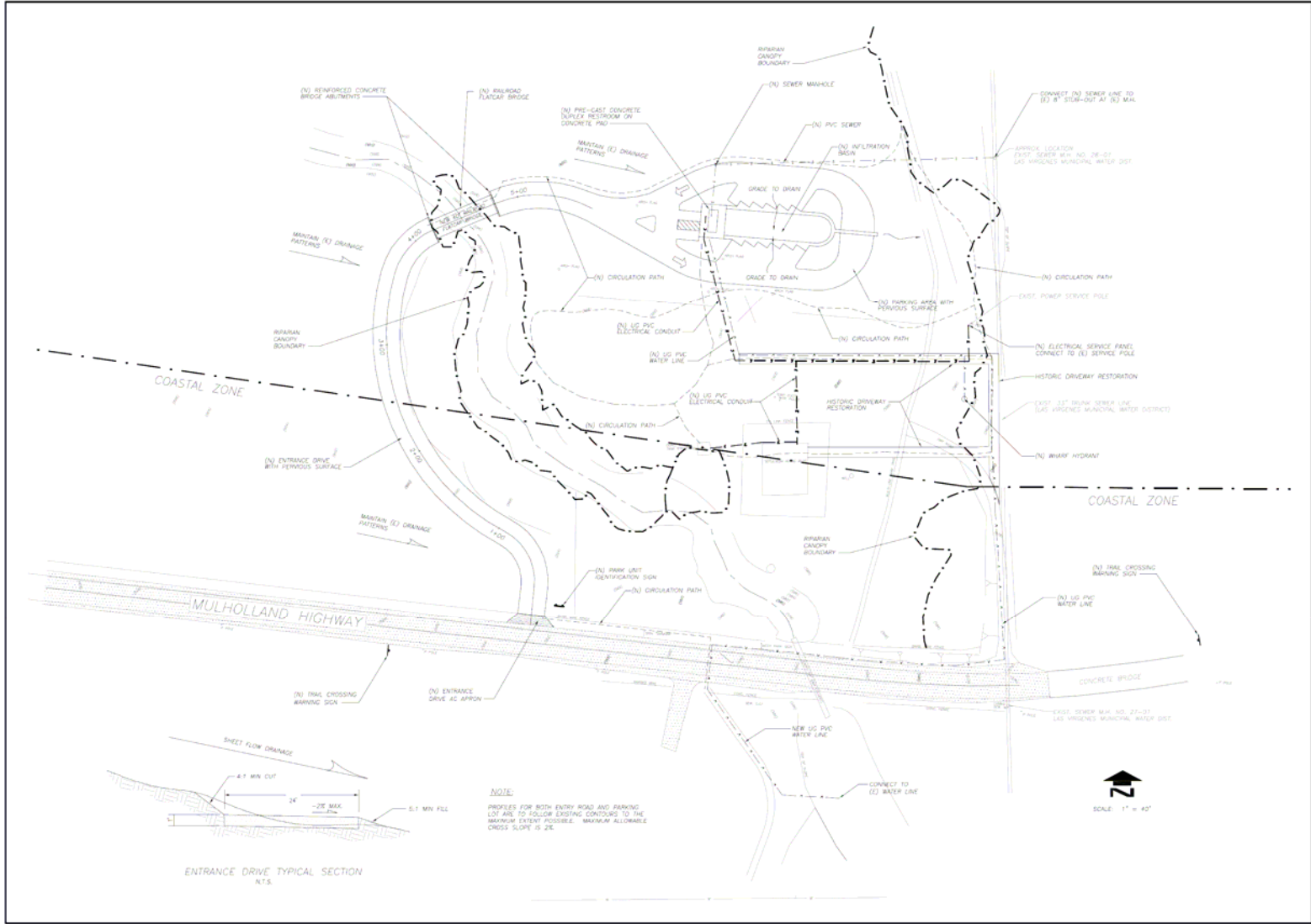
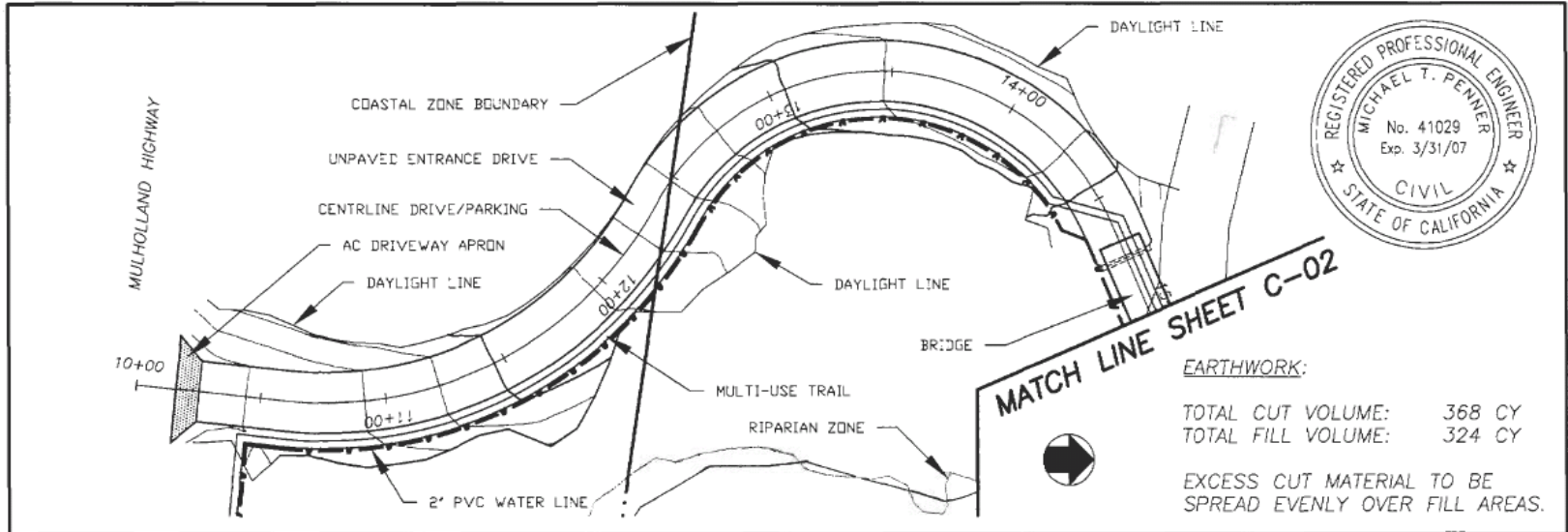
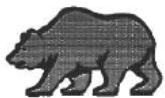
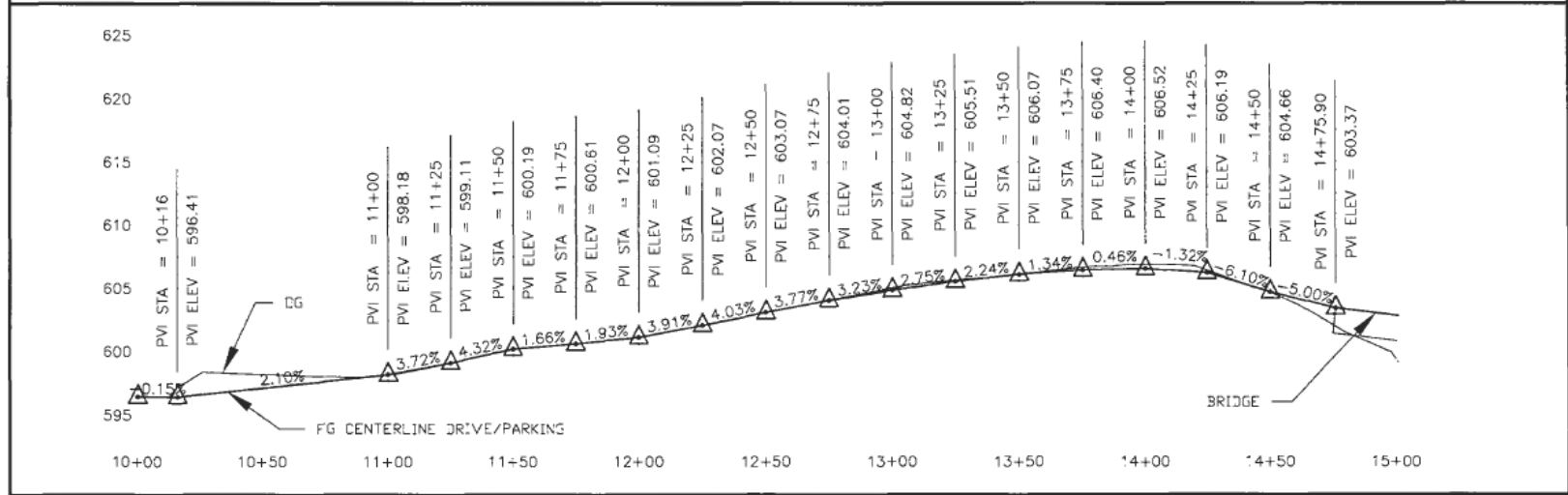


Exhibit 5  
 CDP No. 4-05-052  
 Grading and Drainage Plan



**EARTHWORK:**  
 TOTAL CUT VOLUME: 368 CY  
 TOTAL FILL VOLUME: 324 CY  
 EXCESS CUT MATERIAL TO BE SPREAD EVENLY OVER FILL AREAS.



RESOURCES AGENCY OF CALIFORNIA  
 DEPARTMENT OF PARKS AND RECREATION  
 SOUTHERN SERVICE CENTER

PROJECT NAME:  
**MALIBU CREEK SP**  
**RESTORE SEPULVEDA ADOBE**

SHEET TITLE:  
**PLAN AND PROFILE**

PROJECT NO.  
 915-537-7845  
 DATE 10/5/05  
 SCALE 1" = 60'

**C2.0**





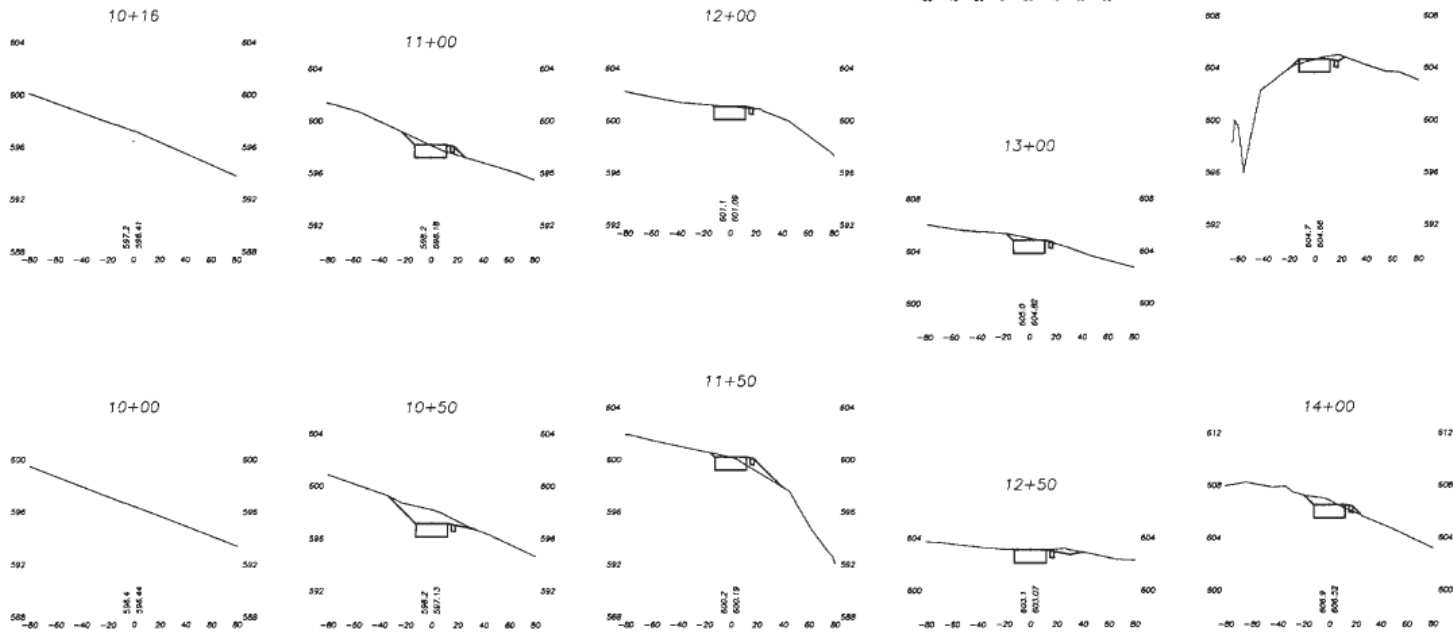
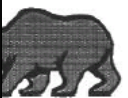


Exhibit 7  
 CDP No. 4-05-052  
 Road Grading Sections



RESOURCES AGENCY OF CALIFORNIA  
 DEPARTMENT OF PARKS AND RECREATION  
 SOUTHERN SERVICE CENTER

PROJECT NAME:  
**MALIBU CREEK SP**  
**RESTORE SEPULVEDA ADOBE**

SHEET TITLE:  
**CROSS SECTIONS**

PROJECT NO.  
 915-537-7845  
 DATE 10/5/05  
 SCALE 1" = 120'

**C4.0**  
 SHEET 4 OF 5



SOUTHERN SERVICE CENTER  
 885 RIO SAN DIEGO DRIVE SUITE #270  
 SAN DIEGO, CA 92108  
 PHONE 619 220-5300  
 FAX 619 220-5480

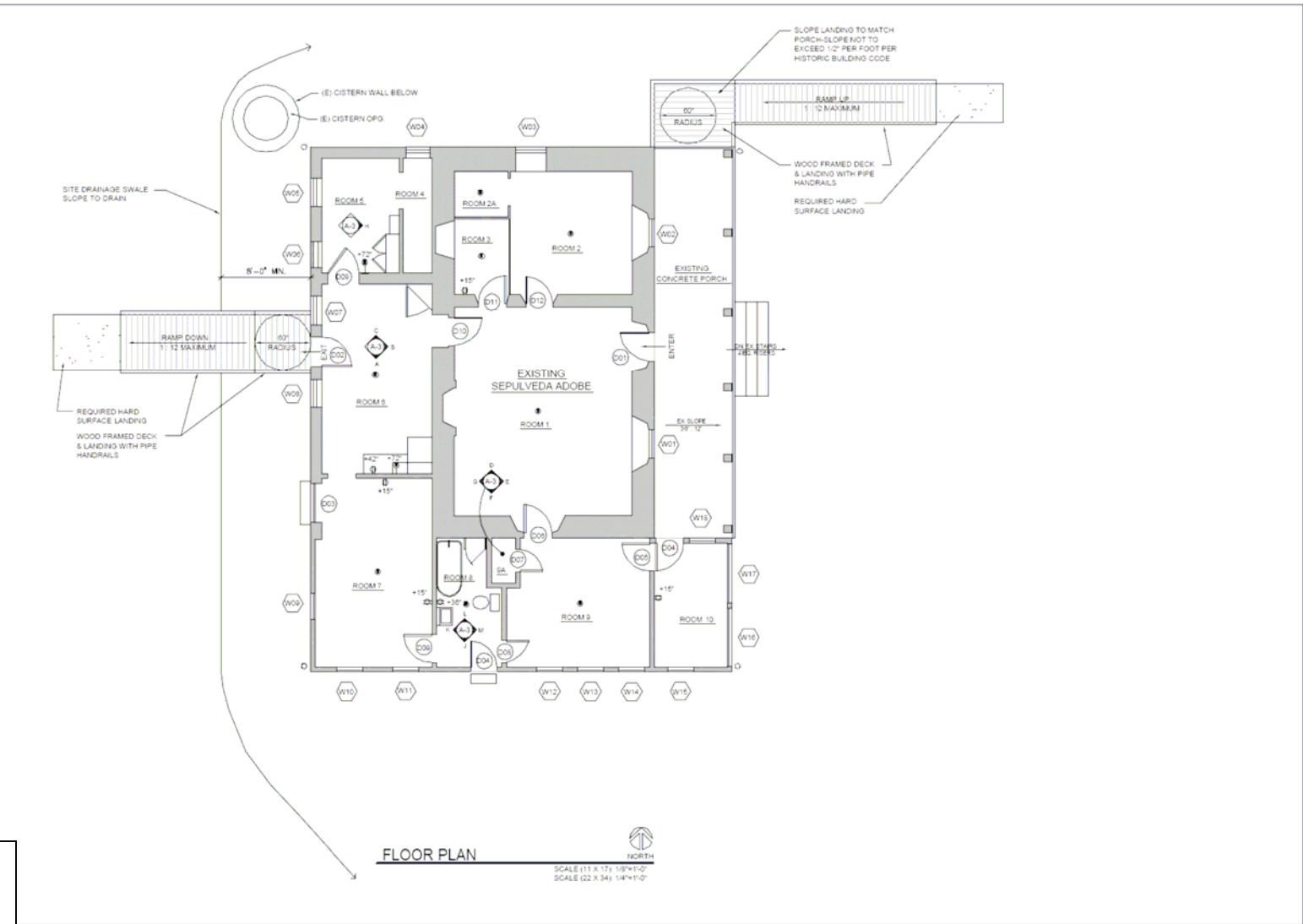
DESIGNED VCD  
 DRAWN VCD  
 CHECKED VCD  
 DATE 12/18/04

RESTORE SEPULVEDA ADOBE  
 MALIBU CREEK STATE PARK  
 ADOBE  
 FLOOR PLAN

REVISIONS	DATE

PROJECT NUMBER  
 915-537-7845

SHEET NO.  
**A-1**  
 5 OF 14



FLOOR PLAN  
 NORTH  
 SCALE (11" X 17") 1/8"=1'-0"  
 SCALE (22" X 34") 1/4"=1'-0"

Exhibit 8  
 CDP No. 4-05-052  
 Adobe Floor Plan



**SOUTH ELEVATION**

SCALE (11 X 17): 1/8"=1'-0"  
SCALE (22 X 34): 1/4"=1'-0"



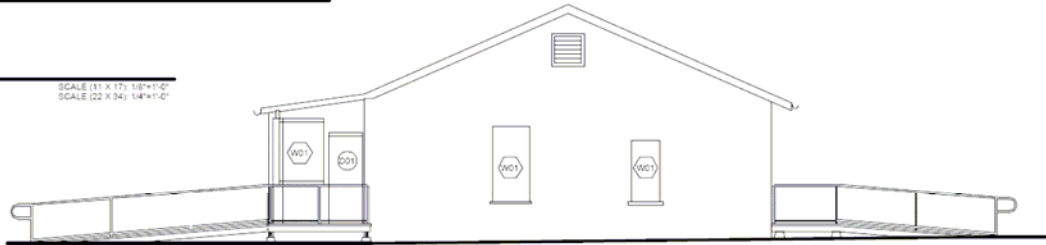
**WEST ELEVATION**

SCALE (11 X 17): 1/8"=1'-0"  
SCALE (22 X 34): 1/4"=1'-0"



**EAST ELEVATION**

SCALE (11 X 17): 1/8"=1'-0"  
SCALE (22 X 34): 1/4"=1'-0"



**NORTH ELEVATION**

SCALE (11 X 17): 1/8"=1'-0"  
SCALE (22 X 34): 1/4"=1'-0"



SOUTHERN SERVICE CENTER  
8855 RIO SAN DIEGO DRIVE SUITE # 270  
SAN DIEGO, CA 92118  
PHONE 619 220-5300  
FAX 619 220-5400

DESIGNED	VCD
DRAWN	VCD
CHECKED	VCD
DATE	12/18/04

REVISIONS

NO.	DATE	DESCRIPTION

RESTORE SEPULVEDA ADOBE  
MALIBU CREEK STATE PARK  
ADOBE  
EXTERIOR ELEVATIONS

PROJECT NUMBER  
915-537-7845

SHEET NO.  
**A-2**  
7 OF 14

Exhibit 9  
CDP No. 4-05-052  
Adobe Elevations



SOUTHERN  
SERVICE CENTER  
8855 RIO SAN DIEGO  
DRIVE SUITE # 270  
SAN DIEGO, CA 92108  
PHONE 619 220-5300  
FAX 619 220-5400

DESIGNED VCD  
DRAWN VCD  
CHECKED VCD  
DATE 12/16/04

Approval of the date and address of  
this project is hereby certified by the  
Professional Engineer. This approval is  
subject to the requirements of the  
Professional Code of Ethics and the  
Professional Code of Practice.

DESCRIPTION: SEE  
ARCHITECTURAL RECORDS

CERTIFICATION

Prepared by: Date

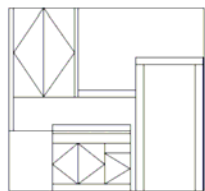
REVISIONS

NO.	DATE

RESTORE SEPULVEDA ADOBE  
MALIBU CREEK STATE PARK  
ADOBE  
INTERIOR ELEVATIONS

PROJECT NUMBER  
915-537-7845

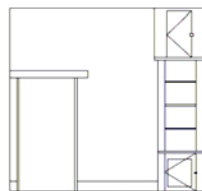
SHEET NO  
**A-3**  
8 OF 14



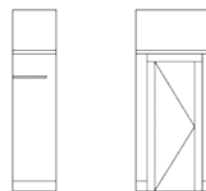
A



B



C



D



E



F



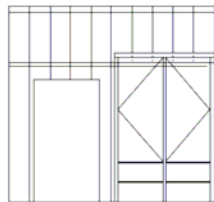
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ROOM 6

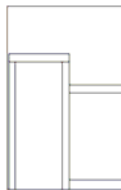
SCALE (11 X 17): 1/8"=1'-0"  
SCALE (22 X 34): 1/4"=1'-0"

ROOM 9A

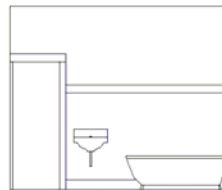
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SCALE (22 X 34): 1/4"=1'-0"



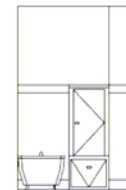
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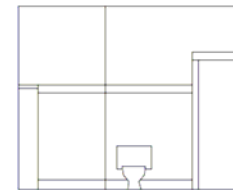
I



J



K



L

ROOM 5

SCALE (11 X 17): 1/8"=1'-0"  
SCALE (22 X 34): 1/4"=1'-0"

ROOM 8

SCALE (11 X 17): 1/8"=1'-0"  
SCALE (22 X 34): 1/4"=1'-0"

Exhibit 10  
CDP No. 4-05-052  
Adobe Interior Elevations



SOUTHERN SERVICE CENTER  
 885 RIO SAN DIEGO DRIVE SUITE #279  
 SAN DIEGO, CA 92108  
 PHONE 619 220-5300  
 FAX 619 220-5400

DESIGNED VCD  
 DRAWN VCD  
 CHECKED VCD  
 DATE 12/15/04

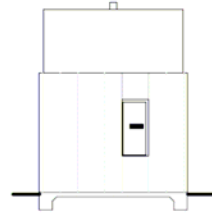
Approval of this plan does not constitute or imply any endorsement or approval by the State of California of the project or the quality of the work shown on the project plan or drawings.  
 Drawn by: VCD  
 Checked by: VCD  
 Date: 12/15/04

REVISIONS	
NO.	DATE

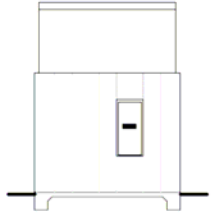
RESTORE SEPULVEDA ADOBE  
 MALIBU CREEK STATE PARK  
 TANK HOUSE  
 PLANS, SECTIONS AND  
 EXTERIOR ELEVATIONS

PROJECT NUMBER  
 915-537-7845

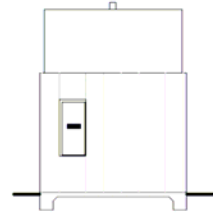
SHEET NO  
**A-7**  
 12 OF 14



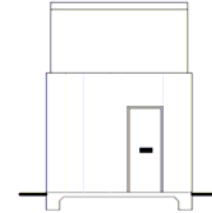
**WEST ELEVATION**  
 SCALE (11 X 17): 1/8"=1'-0"  
 SCALE (22 X 34): 1/4"=1'-0"



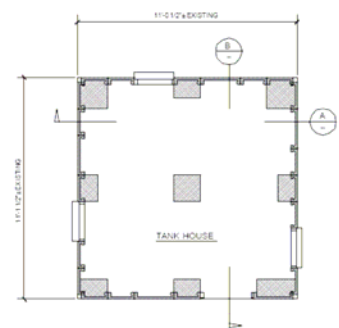
**NORTH ELEVATION**  
 SCALE (11 X 17): 1/8"=1'-0"  
 SCALE (22 X 34): 1/4"=1'-0"



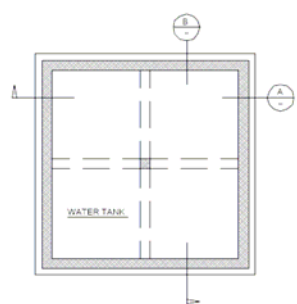
**EAST ELEVATION**  
 SCALE (11 X 17): 1/8"=1'-0"  
 SCALE (22 X 34): 1/4"=1'-0"



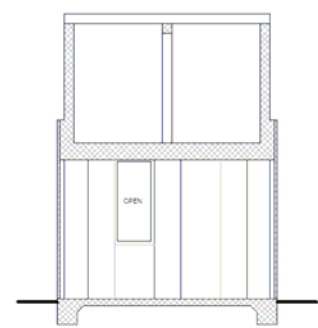
**SOUTH ELEVATION**  
 SCALE (11 X 17): 1/8"=1'-0"  
 SCALE (22 X 34): 1/4"=1'-0"



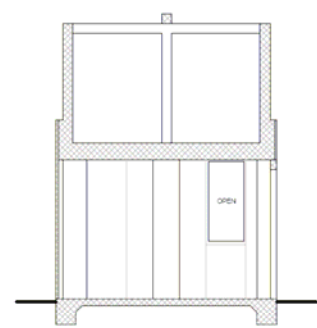
**LOWER PLAN VIEW**  
 SCALE (11 X 17): 3/16"=1'-0"  
 SCALE (22 X 34): 3/8"=1'-0"



**UPPER PLAN VIEW**  
 SCALE (11 X 17): 3/16"=1'-0"  
 SCALE (22 X 34): 3/8"=1'-0"



**SECTION "A"**  
 SCALE (11 X 17): 3/16"=1'-0"  
 SCALE (22 X 34): 3/8"=1'-0"

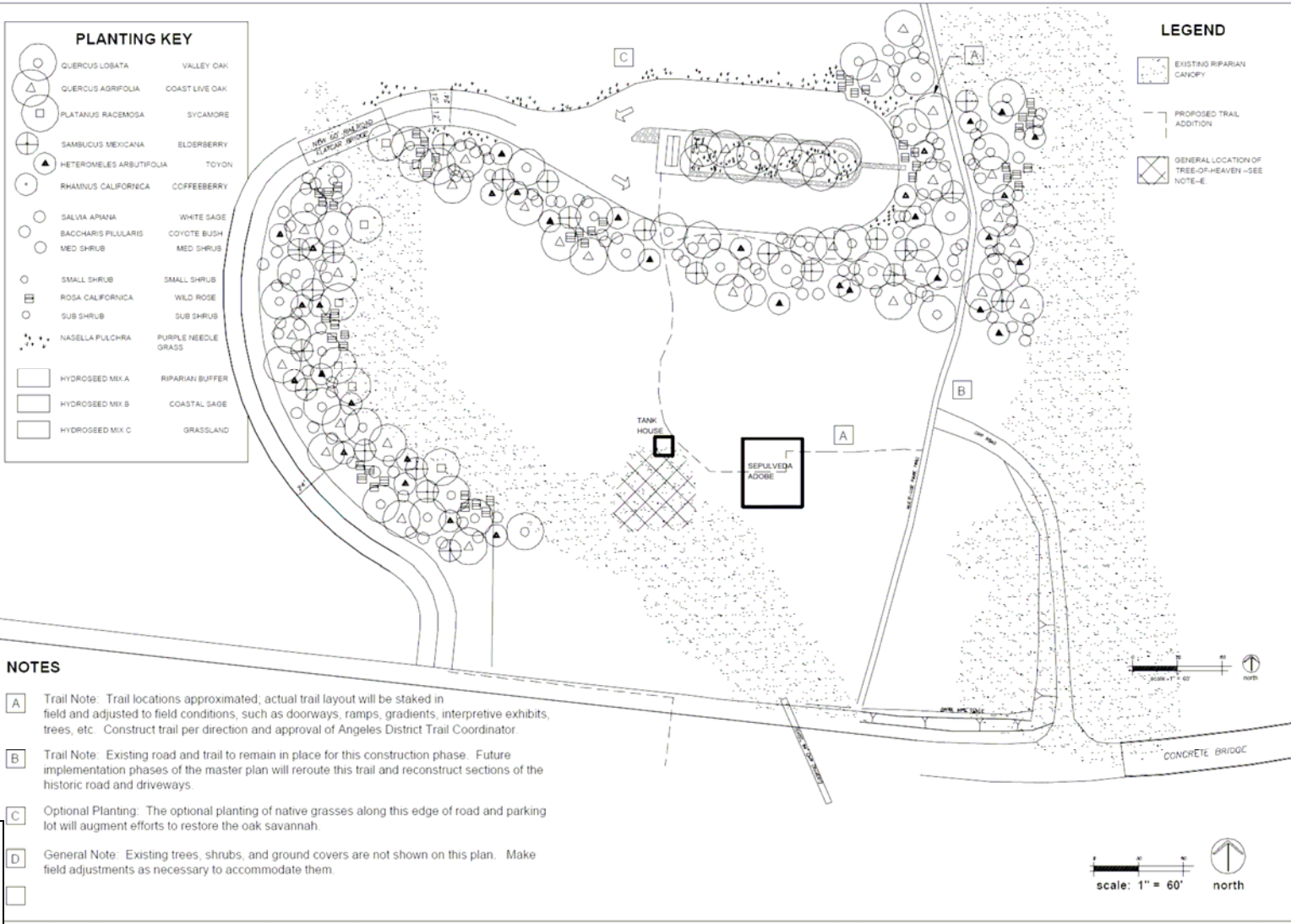


**SECTION "B"**  
 SCALE (11 X 17): 3/16"=1'-0"  
 SCALE (22 X 34): 3/8"=1'-0"

**Exhibit 11**  
**CDP No. 4-05-052**  
**Tank House Plans**

PLANTING KEY	
	QUERCUS LOBATA VALLEY OAK
	QUERCUS AGRIFOLIA COAST LIVE OAK
	PLATANUS RACEMOSA SYCAMORE
	SAMBUCUS MEXICANA ELDERBERRY
	HETEROMELES ARBUTIFOLIA TOYON
	RHAMNUS CALIFORNICA COFFEEBERRY
	SALVIA ARIANA WHITE SAGE
	BACCHARIS PILLULARIS COYOTE BUSH
	MED SHRUB MED SHRUB
	SMALL SHRUB SMALL SHRUB
	ROSA CALIFORNICA WILD ROSE
	SUB SHRUB SUB SHRUB
	NASELLA PULCHRA PURPLE NEEDLE GRASS
	HYDROSEED MIX A RIPARIAN BUFFER
	HYDROSEED MIX B COASTAL SAGE
	HYDROSEED MIX C GRASSLAND

LEGEND	
	EXISTING RIPARIAN CANOPY
	PROPOSED TRAIL ADDITION
	GENERAL LOCATION OF TREE-OF-HEAVEN - SEE NOTE-E



- NOTES**
- A** Trail Note: Trail locations approximated; actual trail layout will be staked in field and adjusted to field conditions, such as doorways, ramps, gradients, interpretive exhibits, trees, etc. Construct trail per direction and approval of Angeles District Trail Coordinator.
  - B** Trail Note: Existing road and trail to remain in place for this construction phase. Future implementation phases of the master plan will reroute this trail and reconstruct sections of the historic road and driveways.
  - C** Optional Planting: The optional planting of native grasses along this edge of road and parking lot will augment efforts to restore the oak savannah.
  - D** General Note: Existing trees, shrubs, and ground covers are not shown on this plan. Make field adjustments as necessary to accommodate them.



SOUTHERN SERVICE CENTER  
 8885 RIO SAN DIEGO DRIVE SUITE # 270  
 SAN DIEGO, CA 92108  
 PHONE 619 220-5300  
 FAX 619 220-5400

DESIGNED	K. ADAMS
DRAWN	K. ADAMS
CHECKED	
DATE	12/15/04

REVISIONS	

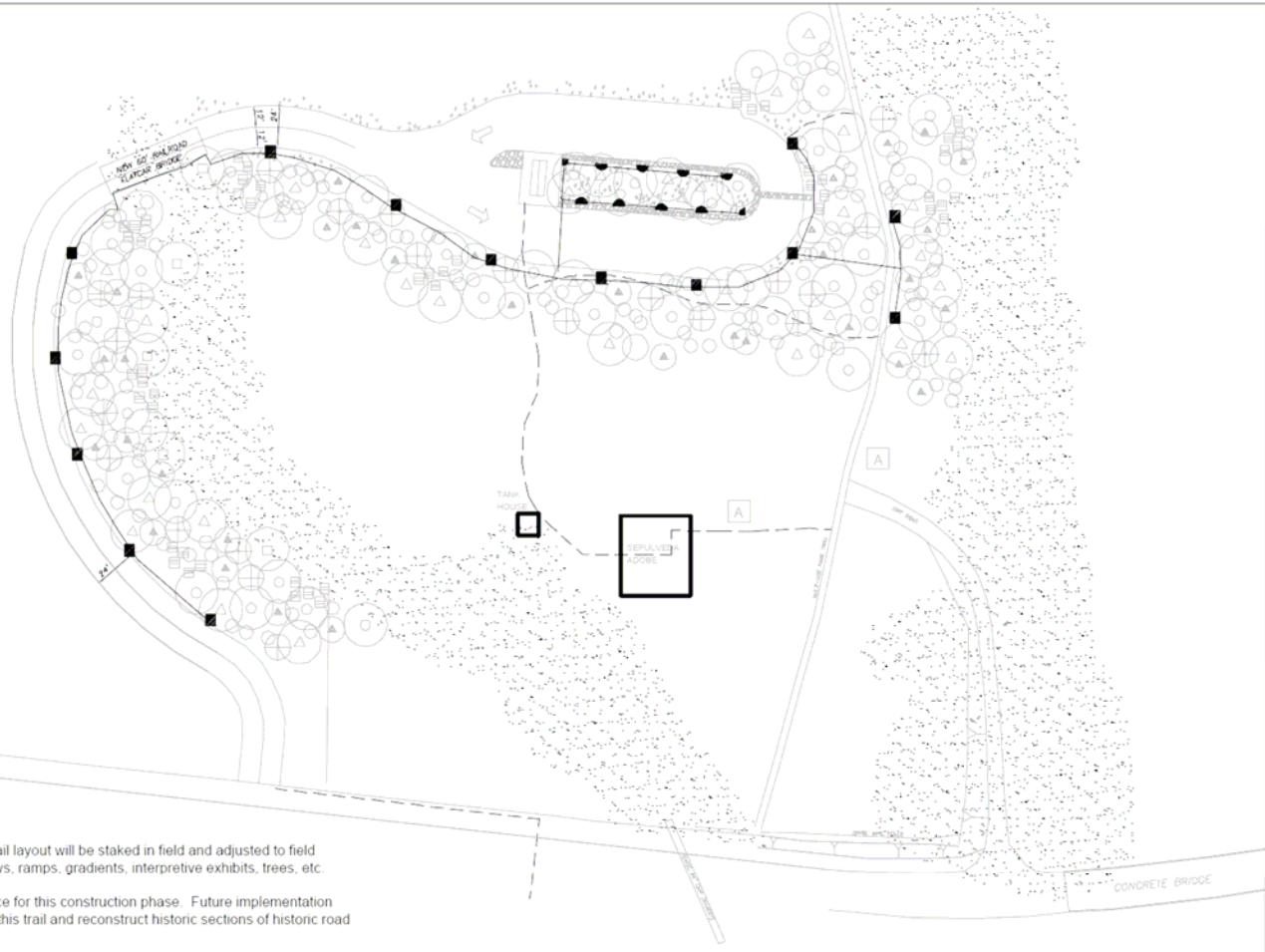
MALIBU CREEK STATE PARK  
 SEPULVEDA ADOBE  
 PHASE I PLANTING & TRAIL PLAN

PROJECT NUMBER  
915-537-7845

SHEET NO  
**L-1**  
13 OF 14

Exhibit 12  
 CDP No. 4-05-052  
 Planting and Trail Plan

IRRIGATION KEY



NOTES

Trail locations approximated; actual trail layout will be staked in field and adjusted to field conditions, which may include doorways, ramps, gradients, interpretive exhibits, trees, etc.

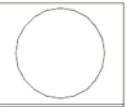
Existing road and trail to remain in place for this construction phase. Future implementation phases of the master plan will reroute this trail and reconstruct historic sections of historic road and driveways.

SCALE: 1"=17' 1"=80'  
24X36 1"=30'



SOUTHERN SERVICE CENTER  
885 RIO SAN DIEGO DRIVE SUITE #270  
SAN DIEGO, CA 92108  
PHONE 619 220-5300  
FAX 619 220-5400

DESIGNED BY	K. ADAMS
DRAWN BY	K. ADAMS
CHECKED BY	
DATE	12/18/04



Approval of this plan does not constitute approval of any other part of the construction. The contractor is responsible for obtaining all necessary permits and for compliance with all applicable laws, codes and regulations. The contractor shall be responsible for the proper use of all laws.

REVISIONS

MALIBU CREEK STATE PARK  
SEPUVEDA ADOBE  
PHASE I IRRIGATION PLAN

PROJECT NUMBER  
915-537-7845

SHEET NO.  
L-2  
14 OF 14

Exhibit 13  
CDP No. 4-05-052  
Irrigation Plan





Exhibit 14  
 CDP No. 4-05-052  
 Aerial Site Plan



RESOURCES AGENCY OF CALIFORNIA  
 DEPARTMENT OF PARKS AND RECREATION  
 SOUTHERN SERVICE CENTER

PROJECT NAME:  
**MALIBU CREEK SP**  
**RESTORE SEPULVEDA ADOBE**

SHEET TITLE:  
**SITE PLAN**

PROJECT NO.  
 915-537-7845

DATE 10/5/06  
 SCALE 1" = 150'

**C1.0**

SHEET 1 OF 5

@ 11" x 17"