

APPENDIX H-2  
***Biological Concept Mitigation/  
Restoration Plan(s)***

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## MEMORANDUM

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**To:** Troy White  
**From:** Michael Sweesy  
**Subject:** Malibu Parks Public Access Enhancement Plan – Habitat Mitigation Program  
**Date:** January 27, 2010  
**Attachment(s):** Figures 1–6

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### PROGRAM BACKGROUND

This memorandum provides the framework for a habitat restoration program for the Malibu Parks Public Access Enhancement Plan. Pursuant to Section 30605 of the California Coastal Act (Coastal Act), the Malibu Parks Public Access Enhancement Plan – Public Works Plan (the Plan) has been developed to serve as the facilities plan for lands subject to the Malibu Parks Public Access Enhancement Plan Overlay, as defined by Section 3.4.2 of the County's Santa Monica Mountains Coastal Land Use Plan (LUP). The Plan is being pursued as a joint effort between the Santa Monica Mountains Conservancy (SMMC) and the Mountains Recreation and Conservation Authority (MRCA). The Plan also addresses facilities planning for specific park and recreation areas located within lands adjacent to the Malibu Parks Public Access Enhancement Plan Overlay in unincorporated Los Angeles County (County). These areas are collectively referred to as the "Plan area."

The Plan would enhance public access and recreation opportunities by completing the following tasks:

- By developing an interconnected system of trails, parks, open space, and habitats
- By improving alternative methods of transportation between parklands
- By identifying and completing recreational facility and program improvements for the park properties to support existing recreational demand and to facilitate an increased level of accessibility for visitors with disabilities.

A full description of the proposed project is included in the *Draft Environmental Impact Report (EIR) for the Malibu Parks Public Access Enhancement Plan-Public Works Plan* (Santa Monica Mountains Conservancy/Mountains Recreation and Conservation Authority 2009).

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The public access enhancement tasks include new camp facilities, trails, appurtenant structures, and camp amenities. Fire buffers around the camp facilities are a required element of the project design for public safety. A variety of upland and wetlands habitat types will be impacted as a result of this project. Upland habitats to be impacted include various associations of California sagebrush, chaparral, and purple needlegrass grasslands. Wetlands habitat impacts affect southern willow scrub. Sycamore-Coast Live Oak woodlands are also impacted. Table 1 summarizes anticipated project impacts and mitigation as required by resource agencies with jurisdiction over these habitat types.

**Table 1**  
**Summary of Proposed Mitigation for Direct Sensitive Habitat Impacts**

Vegetation Community	Total Impacts (Acres)	Mitigation Ratio	Acreage
<i>Sage Scrub and Chaparral</i>			
California Sagebrush Scrub	8.87	3:1	26.61
Disturbed California Sagebrush Scrub	3.32	3:1	9.96
Chaparral	3.71	3:1	11.13
Disturbed Chaparral	2.14	3:1	6.42
<i>Subtotal</i>	<i>18.04</i>	—	<i>54.12</i>
<i>Native Grassland</i>			
Purple Needlegrass Grassland	0.04	3:1	0.12
<i>Riparian and Bottomland Habitats</i>			
Southern Willow Scrub	0.08	3:1	0.24
California Sycamore – Coast Live Oak	0.85	3:1	2.55
<i>Subtotal</i>	<i>0.93</i>	—	<i>2.79</i>
<b>Total</b>	<b>19.01*</b>	---	<b>57.03</b>

\*This number excludes impacts to broad leaved upland tree-dominated habitats

Based on a mitigation ratio of 3:1 (3 acres of mitigation for each acre of impact), the mitigation program will establish 57.03 acres of native habitat. All impacts occur within the Coastal Zone jurisdiction of the California Coastal Commission and therefore, mitigation must be located within the Coastal Zone. This mitigation program achieves this requirement.

Uplands mitigation will be achieved at selected sites through appropriate weed control, soil preparation, and seed and/or plant installation with and without temporary supplement irrigation, as available. Wetlands mitigation includes 0.08 acre of wetlands restoration that will have to be confirmed through a jurisdictional wetlands delineation. An additional 0.16 acre of existing wetlands will be enhanced to fully mitigate project impacts.

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Habitat restoration will be conducted at four sites: Malibu Bluffs, Corral Canyon, Tuna/Las Flores Canyon, and King Gillette Ranch (Figure 2). Table 2 summarizes the location of each mitigation site and shows where the mitigation requirements defined in Table 1 will be achieved by this mitigation program. This memo addresses the existing conditions and restoration implementation strategies, and the rationale for success. The restoration program incorporates performance criteria that are designed to indicate when habitat functions and values have been created on each mitigation site to fully mitigate Plan impacts.

**Table 2**  
**Summary of Proposed Mitigation Program**

<b>Vegetation Community</b>	<b>Total Mitigation Requirement</b>	<b>Malibu Bluffs (Acres)</b>	<b>Corral Canyon (Acres)</b>	<b>Tuna / Las Flores Canyon (Acres)</b>	<b>King Gillette Ranch (Acres)</b>
<i>Sage Scrub and Chaparral</i>					
California Sagebrush Scrub	26.61	23.11	1.45	2.05	—
Disturbed California Sagebrush Scrub	9.96	—	9.96	—	—
Chaparral	11.13	—	—	11.13	—
Disturbed Chaparral	6.42	—	—	6.42	—
<i>Subtotal</i>	<i>54.12</i>	<i>23.11</i>	<i>11.41</i>	<i>19.60</i>	<i>—</i>
<i>Native Grassland</i>					
Purple Needlegrass Grassland	0.12	—	0.12	—	—
<i>Riparian and Bottomland Habitats</i>					
Southern Willow Scrub	0.24	—	—	—	0.24
California Sycamore – Coast Live Oak	2.55	—	—	—	2.55
<i>Subtotal</i>	<i>2.79</i>	<i>—</i>	<i>—</i>	<i>—</i>	<i>2.79</i>
<b>Total</b>	<b>57.03</b>	<b>23.11</b>	<b>11.53</b>	<b>19.60</b>	<b>2.79</b>

**PROJECT SCHEDULE**

The project Environmental Impact report (EIR) analyzes project-wide impacts and mitigation for California Environmental Quality Act (CEQA) compliance. However, project implementation is more likely to occur through smaller discrete projects that are implemented over multiple years. Implementation of this mitigation program will align with the construction schedule of the project elements. As individual park projects are brought forward, a corresponding mitigation plan will be prepared in support of project specific resource agency permit applications. These site-specific conceptual plans will be consistent with this framework mitigation program, but will be prepared in a format consistent with resource agency format requirements and additional details of project implementation, monitoring, and maintenance.

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## **MITIGATION GOALS**

Mitigation is typically proportional to the resource being impacted. In cases where high quality habitat is being impacted, mitigation must replace the like-kind ecological function through the establishment of similar high quality habitat. Similarly, when disturbed habitats are impacted, mitigation is required to replace those functions to the degree these are present.

This mitigation program intends to replace all impacted vegetation with high functioning replacement habitats. However, mitigation for disturbed habitat impacts has been designated in areas that are more challenged and therefore may result in habitat that is not as high functioning as other mitigation areas. For example, the Corral Canyon mitigation site has a significant infestation of Geraldton carnation weed (*Euphorbia terracina*), an invasive, persistent exotic species. Given the tenacity of this species and the extent of the population in the region, it is likely that complete eradication of the species from the area is not possible. However, the mitigation program proposes to aggressively pre-treat the population before site installation of native species and throughout the 5-year maintenance and monitoring to reduce the population to the greatest extent practicable.

To demonstrate that appropriate mitigation will occur that fully mitigates project impacts, the following mitigation goals are established and will be achieved by the end of the monitoring period.

### **Malibu Bluffs**

The California sagebrush (CSB) to be restored at Malibu Bluffs will be fully functioning habitat. The established habitat will provide high native cover that is sufficient to resist future non-native invasion. Non-native species will have low representation within the restored native CSB habitat. The habitat will be highly diverse with representative species of CSB from the local area including California sagebrush (*Artemisia californica*) and laurel sumac (*Rhus laurina*) vegetation associations with ashy leaf buckwheat (*Eriogonum cinereum*), purple sage (*Salvia leucophylla*), black sage (*Salvia mellifera*), and California encelia (*Encelia californica*). Sensitive species such as bulbs will not be highly represented in the restored habitat because the growth rate of these species is slow and the supply of bulbs is extremely limited. Performance criteria are provided in Table 3.

### **Corral Canyon**

CSB at Corral Canyon has a different character than the CSB found at Malibu Bluffs. Corral Canyon CSB vegetation will be highly diverse, however, the habitat will be dominated and/or

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have a significant representation of purple sage. Purple sage vegetation associations with coyotebush (*Baccharis pilularis*), California sagebrush, and ashy leaf buckwheat will provide the majority of native cover. In addition to CSB vegetation, native purple needlegrass (*Nassella pulchra*) grasslands will be restored and enhanced on this site. Native grassland species, especially *N. pulchra*, will be a component of the CSB as well as the dominant species within native grassland areas. The native grasslands will intergrade into the surrounding CSB habitat.

### **Tuna/Las Flores Canyon**

The mitigation goal at the Tuna/Las Flores Canyon site is to create chaparral vegetation associations that are compatible with adjacent habitat without irrigation. In addition, there will be smaller areas of CSB habitat established on south-facing slopes that are compatible with existing vegetation distribution within the area. Mitigation at this site will knit together existing chaparral habitat to enhance habitat continuity, reduce non-native vegetation within the disturbed site, and stabilize soils to reduce erosion.

### **King Gillette Ranch**

A wetlands habitat and native woodlands vegetation complex is planned for restoration at the old King Gillette Ranch. Wetlands will be created along an existing creek through grading to widen the creek at an existing sharp bend. Self-sustaining southern willow scrub vegetation will be established at this creation site and enhanced along a selected adjacent existing creek section that does not presently support native wetlands habitat. Sycamore-Coast Live Oak woodlands will be established in a grove distribution adjacent to the creek restoration and enhancement areas. The intent of this arrangement is to create a complex of mutually supportive vegetation communities that result in long-term vegetation stability within this mitigation site with connections to adjacent oak woodlands.

### **Performance Criteria**

Performance criteria are established to create a timetable of habitat development that is consistent with the normal progress of each habitat type to a self-sustaining state. These criteria not only serve as the measure of success at the end of the monitoring period, but also provide milestone habitat development objectives that trigger maintenance actions, if criteria are not achieved. This monitoring and adaptive feedback process enhances the likelihood for successful habitat restoration. Performance criteria do not necessarily lead to mature habitat as this process can often exceed the 5-year monitoring period. However, appropriate interim and final performance criteria can usher along habitat on a development trajectory that will lead to mature

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habitat after the end of the 5-year monitoring period. Table 3 provides interim annual and final performance criteria for each mitigation site and habitat type. Vegetation cover is expressed as percent absolute cover for native and non-native vegetation. For native cover, the percentages listed shall be the minimum attained to be considered successful, and for non-native cover, the percentages listed shall not be exceeded.

**Table 3**  
**Mitigation Program Performance Criteria**

Mitigation Site	Habitat Type	Year 1 (%)	Year 2 (%)	Year 3 (%)	Year 4 (%)	Year 5 (%)
Malibu Bluffs	California sagebrush	15	30	50	65	75
	Perennial exotic cover	5	5	5	5	5
Corral Canyon	California sagebrush	15	25	40	50	65
	Perennial exotic cover	30	20	10	10	10
	Native Grasslands	10	20	35	45	55
	Perennial exotic cover	30	20	10	10	10
Tuna/Las Flores Canyon	Chaparral/ California sagebrush	15	25	40	50	65
	Perennial exotic cover	5	5	5	5	5
King Gillette Ranch	Southern willow scrub	20	35	50	65	80
	Sycamore-Coast live oak woodland	15	25	35	55	75
	Perennial exotic cover	5	5	5	5	5

Non-native cover thresholds apply only to perennial or biennial invasive exotic species. Annual exotic species (mainly European grasses) will be controlled to the greatest extent practicable, but a specific performance standard cannot be specified because of the highly efficient reproductive capabilities and wide distribution of these species. While the presence of these species is not desirable on a mitigation site, this type of non-native vegetation is not a short-term or long-term threat to the overall habitat persistence. The best management approach for annual species control in the short term is establishment of native shrub cover that can suppress annual seed germination through shading, allelopathy, and resource competition. Over the long term, established native vegetation will build up an in-situ seed bank that can overwhelm the annual seed bank. This important shift promotes native recruitment over non-native recruitment when localized disturbance removes the shrub cover. In these instances, if the native seed bank is of sufficient volume and diversity, the habitat can recruit new seedlings within the opening and self-heal the shrub canopy, overcoming the threat of a dominant emergent non-native annual population.

In addition to native cover criteria, habitat types with vertical structure must meet the following tree height criteria. The criteria are intended to provide an indicator of canopy potential as habitat

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continues to develop and mature. Achievement of these criteria indicates that canopy species are present and vigorous, with a growth rate that will result in appropriate vertical stratification over time.

**Table 4**  
**Tree Height Performance Criteria**

Species Name	Tree Height Performance Criteria (feet)				
	Year 1	Year 2	Year 3	Year 4	Year 5
<i>Platanus racemosa</i>	—	4	6	7	8
<i>Quercus agrifolia</i>	—	2	3	4	5
<i>Salix lasiolepis</i>	—	4	6	8	10

**EXISTING CONDITIONS**

Existing conditions provide the basis for determining the appropriate habitat that can be supported by the mitigation sites and inform the restoration implementation process that will lead to successful establishment of functional, self-sustaining habitat. The preparation of this habitat mitigation program involved the evaluation of 10 separate potential mitigation sites for uplands and wetlands mitigation. These sites were assessed and evaluated for appropriateness for the intended mitigation acreage and target habitat types. Selection criteria included soil type, hydrology, historic vegetation, non-native vegetation and native habitat adjacency, land use, site accessibility, and water source availability.

Through the mitigation site selection, this mitigation program attempts to consolidate uplands and wetlands/riparian habitat mitigation types on the sites that present the best opportunity to successfully establish the target habitat types in perpetuity. This consolidation results in larger, more focused mitigation projects with less edge effects that might otherwise compromise mitigation results on smaller sites. The ecological benefits of these larger sites is greater than providing mitigation through smaller, geographically dispersed site that have greater edge effects and therefore more uncertain future when in perpetuity management is considered.

A more detailed description of the biological resources found on the Malibu Bluffs and Corral Canyon mitigation sites can be found in the *Biological Resources Technical Report for the Malibu Parks Public Access Enhancement Plan* (Dudek 2010)

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## **Malibu Bluffs Mitigation Site**

The Malibu Bluffs mitigation site consists of gently to moderately sloping coastal terraces. These terrace areas have been disturbed by past land use and presently support non-native California grasslands. The site is roughly bisected by a localized drainage that supports some wetlands vegetation and side slopes of undisturbed California sagebrush vegetation. Soils on site are deep, well-drained, clay loam with a clay subsoil. These soils have a high water-holding capacity that is well suited to support sage scrub vegetation communities.

The coastal terraces are planned for public park improvements including campsites, trails, and support facilities. However, a significant portion of the site (23.11 acres) is available for sage scrub restoration. Restoration areas do not encroach upon a 10-foot-wide buffer around trails and a fire buffer designated around each campsite. Soils in this area are appropriate for sage scrub habitats and adjacent undisturbed areas provide evidence of greater past sage scrub cover on the coastal terraces. Undisturbed sage scrub in this area includes California sagebrush-ashy leaf buckwheat, California sagebrush-black sage, Laurel sumac-black sage, and Laurel sumac-California sagebrush. A water supply will be available from adjacent park facilities. Site access will be via existing unpaved roads and the future park trail system.

## **Corral Canyon Mitigation**

The Corral Canyon mitigation site also occupies gently sloping coastal terraces that begin to rise up to high ridgelines. New campsites and trails are planned for the area. However, a significant portion of the site is available for sage scrub and grassland restoration. Restoration areas are planned for the areas surrounding the new park facilities but avoid overlapping the 10-foot-wide trail buffer and campsite fire buffers. Soils are conducive to support native bunchgrass grasslands as evidenced by three existing patches of purple needlegrass grasslands. Sage scrub in this area is typified by purple sage as the dominant shrub species. A population of Geraldton carnation weed (*Euphorbia terracina*) is present on site and will be a major challenge to successful habitat restoration. A water supply will be available from adjacent park facilities. Site access will be via existing unpaved roads and the future park trail system. The eastern portion of the mitigation area will be access via an old road bed that crosses an existing local drainage that separates the west and east portions of the mitigation site.

An existing cultural resource site is present within the mitigation area that requires protection from mitigation activities. Within the resource site, not excavations greater than 6 inches will be allowed. This may preclude the installation of container plants. However, the area is relatively small and isolated when compared to the overall mitigation site acreage. With an emphasis on

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seed to establish the majority of vegetation, these restrictions are not considered an impediment to successful habitat restoration. A qualified Archaeologist shall be consulted during the final construction design and prior to all construction.

### **Las Flores Canyon/Tuna Mitigation Site**

The Tuna/Las Flores Canyon mitigation site is situated on a ridge top that was cleared as a temporary fire break sometime prior to 1989 and more recently in 2007. The firebreak is approximately 120 feet wide on a gently sloping ridgeline. The steep slopes flanking the ridgeline are east and west facing with some northern exposures. These slopes support mature chaparral vegetation and some isolated coast live oak. Chaparral species adjacent to the mitigation area include chamise (*Adenostema fasciculatum*), greenbark ceanothus (*Ceanothus spinosus*), laurel sumac (*Malosma laurina*), and scrub oak (*Quercus berberidifolia*). South facing slopes support a matrix of California sagebrush scrub habitat and chaparral.

There is a strong desire to re-establish this disturbed area to a native habitat condition and there are no plans to maintain the fuel break. Although the site is beginning to show signs of natural recruitment and resprouting from few surviving root crowns, the area is generally disturbed and lacking the former chaparral vegetation. The unpaved Big Rock Mountainway traverses the length of this site and provides ready access for equipment and maintenance activities. A hiking trail is planned to follow the Hurst Tank Mountainway and along the Big Rock Mountainway to the Big Rock Lateral until it descends the ridgeline to Las Flores Canyon. These unpaved roads will be maintained through the mitigation site to provide maintenance and through access for Park rangers and other management personnel. The nearest paved access is Tuna Canyon Road.

### **King Gillette Ranch Mitigation Site**

The wetlands and sycamore-coast live oak woodlands planned for the King Gillette Ranch mitigation site are associated with an existing drainage that supports patchy willow scrub vegetation and non-native grasses. Adjacent existing pastureland and valley bottoms support isolated coast live oak and coast live oak groves, respectively. Understory vegetation is typically non-native grasses. The soils on this site are deep Botella Loam soils that are appropriate for woodlands vegetation communities. There is no land use conflict with the mitigation project because the pastureland will be abandoned.

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## **RESTORATION APPROACH AND IMPLEMENTATION STRATEGIES**

Restoration approaches and implementation strategies have been developed in response to site-specific conditions at each mitigation site. This section provides a brief overview of the approach to achieve target vegetation types and interim annual and final performance criteria.

### **Malibu Bluffs Mitigation Site**

Restoration of the Malibu Bluffs mitigation site involves the conversion of non-native California grasslands to various associations of coastal sage scrub (Figure 3). Mitigation areas are located around proposed campsites and trail. The mitigation areas are located outside of the designated fire and trail buffer that surround these new facilities. However, restoration treatments and vegetation establishment will extend up to the edge of designated trails even though no mitigation credit will be allowed. This approach will reduce the area where weeds can persist and established coastal sage scrub vegetation will define the trail edges, keeping park users on authorized trail facilities.

Mitigation site access restrictions may be required due to the close proximity of mitigation areas to campsites and trails. Signs shall be posted indicating that the area is undergoing habitat restoration and requesting that people and dogs stay out of the area. No permanent fence is proposed to be installed during or after the 5-year vegetation establishment period. Temporary fence consisting of single strand of yellow nylon rope attached to T-bar posts will be used to demarcate the mitigation site boundary where campsites and trails are in close proximity. Permanent fence may be installed as a management action in areas where unauthorized entry and habitat degradation is observed. This post-occupancy approach will provide a better indication of actual public use of the site that anticipating such activity and will limit fence installation to only those areas of greatest need.

Soil preparation will include thatch clearing to expose mineral soils, incorporation of any needed soil amendments, and cross ripping to prepare the soil for planting. A grow and kill weed eradication program will be implemented where spray irrigation is installed to reduce the weed seed bank that is present in the soil.

Several composite soil samples shall be collected from the mitigation areas and sent to a soil testing laboratory for agricultural suitability testing. Test results will determine the need for any pre-planting and post-planting amendments and/or fertilizer.

The flatter portions of the site and trails/roads to be abandoned will be cross-ripped to a depth of at least 6 inches in two directions to loosen compacted soil, incorporate any recommended soil

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amendments and/or fertilizers, and prepare the surface for seeding. Slopes steeper than 3:1 shall not be ripped. Mycorrhizal inoculants are not expected to be necessary because they are expected to be present. Native perennial grasses such as needlegrass (*Nassella* sp.), and some shrubs such as lemonadeberry (*Rhus integrifolia*) are obligate mycotrophs and require mycorrhizae to become established. Most coastal sage scrub species, however, are either non-mycorrhizal, such as sticky monkeyflower (*Mimulus aurantiacus*) and black sage (*Salvia mellifera*), or facultative mycotrophs, such as California sagebrush, coyote brush (*Baccharis pilularis*), California buckwheat (*Eriogonum fasciculatum*), and deerweed (*Lotus scoparius*).

To the extent practical, existing native volunteer plants will be preserved during soil preparation. Prior to cross ripping, amendments and pre-plant fertilizer will be spread on the surface to be incorporated, including 20 pounds of agricultural gypsum per 1,000 square feet and 15 pounds of 6-20-20-XB fertilizer per 1,000 square feet. Soil test results may modify the pre-plant fertilizer and/or amendment type and application rate. The area will then be cross-ripped to a depth of at least 6 inches to loosen compacted soil and incorporate the amendments.

Restoration areas will be spray irrigated where it is deemed necessary to support habitat development. Irrigation may be used as a contingency measure that would be installed a year after initial seed installation. This will allow for the initial expression of habitat establishment under a natural rainfall regime. Areas where seed does not germinate due to lack of moisture would be candidate areas for irrigation and reseeded. Vegetation introduction will be achieved mainly through the application of a native seed mix (Table 5). Species that are not available in seed or that do not perform well from seed will be introduced with container plant installations (Table 6). Species installed from nursery containers include coast prickly pear, wishbone plant, and laurel sumac.

**Table 5**  
**Coastal Sage Scrub Container Plant Palette, All Areas (36.63 Acres)<sup>1</sup>**

Botanical Name	Common Name	Percent Composition	Quantity	Container Size	Average Spacing
<i>Hesperoyucca whipplei</i>	Our lord's candle	1	997	1 gallon	4 feet
<i>Leymus condensatus</i>	Giant wild rye	2	886	1 gallon	6 feet
<i>Malosma laurina</i>	Laurel sumac	10	1,108	1 gallon	12 feet
<i>Mirabilis laevis</i> var. <i>crassifolia</i>	Wishbone bush	2	1,995	1 gallon	4 feet
<i>Opuntia littoralis</i>	Coastal prickly-pear	3	2,992	1 gallon	4 feet
<i>Rhus integrifolia</i>	Lemonadeberry	2	222	1 gallon	12 feet
<b>Total</b>			<b>8,200</b>	<b>1 gallon</b>	<b>—</b>

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<sup>1</sup> Final plant quantities and percent composition will be determined for each site, or portion thereof that is being restored as each park facility is implemented. Final conceptual mitigation packages may vary to address site-specific vegetation composition.

**Table 6**  
**Malibu Bluffs Site - Coastal Sage Scrub Plant Palette**

Botanical Name	Common Name	Hydroseed Mixture	
		% Purity / % Germination	Pounds Per Acre
<i>Artemisia californica</i>	California sagebrush	15/50	4
<i>Bromus carinatus</i>	California brome	95/80	2
<i>Encelia californica</i>	California encelia	40/60	4
<i>Eriogonum cinereum</i>	Ashy leaf buckwheat	50/10	3
<i>Eriophyllum confertifolium</i>	Golden yarrow	98/75	0.5
<i>Eschscholzia californica</i>	California poppy	98/80	1
<i>Gnaphalium bicolor</i>	California everlasting	5/40	0.5
<i>Hazardia squarrosus</i> var. <i>grindelioides</i>	Saw-tooth goldenbush	15/20	3
<i>Lasthenia californica</i>	Goldfields	70/50	0.5
<i>Lotus scoparius</i> var. <i>scoparius</i>	Deerweed	95/80	3
<i>Lupine bicolor</i>	Miniature lupine	98/85	3
<i>L. hirsutissimus</i>	Stinging lupine	90/80	1
<i>Melica imperfecta</i>	Coast range melic	90/60	3
<i>Nassella pulchra</i> *	Purple needlegrass	90/80	6
<i>Phacelia parryi</i>	Parry's phacelia	95/70	2
<i>Salvia leucophylla</i>	Purple sage	80/40	3
<i>Salvia mellifera</i>	Black sage	70/50	3
<i>Sisyrinchium bellum</i>	Blue-eyed grass	95/75	1
<b>Total</b>			<b>43.5</b>

\* Deawned seed only

### **Corral Canyon Mitigation**

Corral Canyon restoration will establish California sagebrush and purple needlegrass grasslands on coastal terraces located immediately above the Pacific Coast Highway (Figure 4). Due to the presence of a substantial infestation of Geraldton carnation weed, the proposed habitat restoration project will begin with a 12-month weed eradication program to reduce the non-native seed bank prior to introduction of a native seed mix and container plants. To maximize the benefit of this process, the entire mitigation area is recommended to be irrigated with a spray system. This will allow for continual grow and kill cycles that stimulate non-native seed germination and follow-up with chemical treatment. The temporary irrigation system will be used to establish native vegetation.

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During this initial period, site preparation work as described above for Malibu Bluffs will be implemented at Corral Canyon. Site access to the eastern restoration area will be via an old road bed that crosses the drainage separating the west and east terrace areas.

Vegetation to be established on site via native seed mixes includes California sagebrush scrub associations with purple sage as the dominant species and purple needlegrass grasslands (Table 7). Container plants from Table 5 will also be installed on this site to increase species diversity within the mitigation site.

**Table 7  
Coastal Sage Scrub Plant Palette, Sites Inland of Pacific Coast Highway<sup>1</sup>**

Botanical Name	Common Name	Hydroseed Mixture	
		% Purity / % Germination	Pounds Per Acre
<i>Artemisia californica</i>	California sagebrush	15/50	4
<i>Bromus carinatus</i>	California brome	95/80	2
<i>Encelia californica</i>	California encelia	40/60	3
<i>Eriogonum cinereum</i>	Ashy leaf buckwheat	50/10	2
<i>Eriogonum fasciculatum</i> var. <i>foliolosum</i>	California buckwheat	50/20	3
<i>Eriophyllum confertifolium</i>	Golden yarrow	98/75	0.5
<i>Eschscholzia californica</i>	California poppy	98/80	1
<i>Gnaphalium bicolor</i>	California everlasting	5/40	0.5
<i>Isocoma menziesii</i> ssp. <i>menziesii</i>	White flowered goldenbush	40/30	3
<i>Lasthenia californica</i>	Goldfields	70/50	0.5
<i>Lotus scoparius</i> var. <i>scoparius</i>	Deerweed	95/80	3
<i>Lupine bicolor</i>	Miniature lupine	98/85	3
<i>L. hirsutissimus</i>	Stinging lupine	90/80	1
<i>Melica imperfecta</i>	Coast range melic	90/60	3
<i>Mimulus aurantiacus</i>	Coast monkey flower	2/60	1
<i>Nassella pulchra</i> <sup>2</sup>	Purple needlegrass	90/80	6
<i>Phacelia parryi</i>	Parry's phacelia	95/70	2
<i>Salvia leucophylla</i>	Purple sage	80/40	3
<i>Salvia mellifera</i>	Black sage	70/50	2
<i>Sisyrinchium bellum</i>	Blue-eyed grass	95/75	1
<b>Total</b>			<b>44.5</b>

<sup>1</sup> Final seed application rates will be determined for each site, or portion thereof that is being restored as each park facility is implemented. Final conceptual mitigation packages may vary to address site-specific vegetation composition.

<sup>2</sup> Deawned seed only

Native grasslands will be enhanced and created through the application of a native seed mix (Table 8). In addition, liners of purple needlegrass shall be installed in both the existing

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grasslands and grassland creation site to increase bunchgrass density. The density of these container plantings shall be determined in the final conceptual mitigation plan.

**Table 8  
Native Bunchgrass Grasslands Plant Palette**

Botanical Name	Common Name	Hydroseed Mixture	
		% Purity / % Germination	Pounds Per Acre
<i>Achillea millefolium</i>	Yarrow	98/85	0.5
<i>Artemisia californica</i>	California sagebrush	15/50	1
<i>Bromus carinatus</i>	California brome	95/80	4
<i>Eriogonum cinereum</i>	Ashy leaf buckwheat	50/10	1
<i>Gnaphalium californicum</i>	California everlasting	5/40	0.5
<i>Hazardia squarrosus</i> var. <i>grindelioides</i>	Saw-tooth goldenbush	15/20	1
<i>Lasthenia californica</i>	Goldfields	70/50	0.5
<i>Lotus scoparius</i>	Deerweed	90/60	3
<i>Lupine bicolor</i>	Miniature lupine	98/85	3
<i>Lupinus succulentus</i>	Arroyo lupine	98/85	2
<i>Malocothamnus fasciculatus</i>	Chaparral bushmallow	15/60	1
<i>Malosma laurina</i>	Laurel sumac	98/70	1
<i>Melica californica</i>	California melic	90/60	3
<i>Nassella lepida</i> *	Foothill needlegrass	70/60	2
<i>Nassella pulchra</i> *	Purple needlegrass	90/80	6
<i>Phacelia parryi</i>	Parry's phacelia	95/70	2
<i>Salvia leucophylla</i>	Purple sage	80/40	1
<i>Sisyrinchium bellum</i>	Blue-eyed grass	95/75	2
<b>Total</b>			<b>34.5</b>

\* Deawned seed only

Similar to the Malibu Bluffs site, site access restrictions may be required due to the close proximity of mitigation areas to camp sites and trails. Signs shall be posted indicating that the area is undergoing habitat restoration and requesting that people and dogs please stay out of the area. No permanent fence is proposed to be installed during the 5-year vegetation establishment period. Temporary fence consisting of single strand of yellow nylon rope attached to T-bar posts will be used to demarcate the mitigation site boundary where campsites and trails are in close proximity. Permanent fence may be installed as a management action in areas where unauthorized entry and habitat degradation is observed. This post-occupancy approach will provide a better indication of actual public use of the site that anticipating such activity and will limit fence installation to only those areas of greatest need.

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### Tuna /Las Flores Canyon Mitigation Site

This ridgeline restoration site is surrounded by existing mature chaparral vegetation. The site will be restored to chaparral vegetation while maintaining the Big Rock Mountainway and Big Rock Lateral access roads (Figure 5). Chaparral is a difficult vegetation community to establish because of the thick seed coat that is typical of chaparral species. This fire adaptation requires fire scarification of seeds prior to widespread germination to ensure appropriate site conditions are present that most favor seedling establishment. In addition, container plants of chaparral species are extremely sensitive to moisture, especially from irrigation, leading to high plant mortality. These factors make chaparral one of the most difficult vegetation communities to restore.

Given these constraints, the most common approach to chaparral restoration is to establish a native seral vegetation community that will give way to chaparral species over time, leading to chaparral vegetation that is considered the climax community where it is dominant. Coastal sage scrub is planned to be established as the placeholder for chaparral in this case. Table 9 provides the plant palette for establishing California sagebrush and chaparral species.

**Table 9**  
**Chaparral Plant Palette (17.58 Acres)**

Botanical Name	Common Name	Hydroseed mixture	
		% Purity / % Germination	Pounds Per Acre
<i>Achillea millefolium</i>	Yarrow	98/85	0.5
<i>Adenostoma fasciculatum</i>	Chamise	50/20	2
<i>Artemisia californica</i>	California sagebrush	15/50	3
<i>Bromus carinatus</i>	California brome	95/80	4
<i>Ceanothus spinosus</i>	Greenbark ceanothus	98/70	2
<i>Cercocarpus betuloides</i> var. <i>betuloides</i>	Birch-leaf mountain-mahogany	50/70	2
<i>Eriogonum fasciculatum</i> var. <i>foliolosum</i>	California buckwheat	50/20	3
<i>Eriophyllum confertifolium</i>	Golden yarrow	30/70	0.5
<i>Eschscholzia californica</i>	California poppy	98/80	1
<i>Gnaphalium californicum</i>	California everlasting	5/40	0.5
<i>Isocoma menziesii</i> ssp. <i>menziesii</i>	White flowered goldenbush	40/30	3
<i>Leymus condensatus</i>	Giant wild rye	80/80	2
<i>Lotus scoparius</i>	Deerweed	95/80	5
<i>Lupine bicolor</i>	Miniature lupine	98/85	3
<i>L. hirsutissimus</i>	Stinging lupine	90/80	1
<i>Malocothamnus fasciculatus</i>	Chaparral bushmallow	15/60	2

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**Table 9 (Continued)**

Botanical Name	Common Name	Hydroseed mixture	
		% Purity / % Germination	Pounds Per Acre
<i>Malosma laurina</i>	Laurel sumac	98/70	1
<i>Melica californica</i>	California melic	90/60	3
<i>Mimulus aurantiacus</i>	Coast monkey flower	2/60	1
<i>Nassella lepida</i> *	Foothill needlegrass	90/60	6
<i>Nassella pulchra</i> *	Purple needlegrass	90/80	6
<i>Phacelia grandiflora</i>	Large-flowered phacelia	98/80	2
<i>Rhus ovata</i>	Sugar bush	90/60	4
<i>Salvia leucophylla</i>	Purple sage	80/40	3
<i>Salvia mellifera</i>	Black sage	70/50	3
<b>Total</b>			<b>63.5</b>

\* Deawned seed only

In addition to hydroseeding the chaparral revegetation area, 2 acres will be planted with locally collected acorns from Coast live oak (*Quercus agrifolia* var. *agrifolia*) and scrub oak (*Quercus berberidifolia*). Planting pits 1 foot deep and 1 foot in diameter will be excavated to loosen the soil and amended with one cup of agricultural gypsum. Three viable acorns will be placed in each planting pit approximately 1 to 2 inches deep, along with one Agriform 21-gram 20-10-5 planting tablet or one Best Pak 20-10-5 planting packet, or approved equal, placed approximately 6 inches deep. A wire-planting cage 18 inches in diameter and 3 feet tall will be anchored to the ground around each planting pit at the time of planting to help limit herbivory. Oaks will be clustered near areas where oaks are already growing in the adjacent habitat at the rate of 15 coast live oak planting pits per acre and 200 scrub oaks per acre.

### King Gillette Ranch Mitigation Site

Implementation of southern willow scrub and sycamore-coast live oak woodlands is intended to complement existing vegetation communities that are present on lands adjacent to the mitigation site. The configuration of habitat types is also intended to act as a vegetation complex of mutually supportive vegetation.

Wetlands creation will be achieved through grading an area of existing pastureland to the flow line of the adjacent creek (Figure 6). At the flow line elevation, this area will receive creek flows that can establish and support southern willow scrub habitat. A section of existing creek immediately downstream of the creation area will be enhanced by the removal of non-native grass thatch and establishment of south willow scrub species.

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Soil preparation will include thatch clearing to expose mineral soils, incorporation of any needed soil amendments, and cross ripping to prepare the soil for planting. A grow and kill weed eradication program will be implemented where spray irrigation is installed to reduce the weed seed bank that is present in the soil.

Several composite soil samples shall be collected from the mitigation areas and sent to a soil-testing laboratory for agricultural suitability testing. Test results will determine the need for any pre-planting and post-planting amendments and/or fertilizer.

Temporary irrigation will be used to support native understory and tree canopy establishment. The system will be a combination of spray and drip irrigation, as suitable for seed and container trees.

The planting plan for this site includes southern willow scrub to be located in the channel bottom (Table 10). The sycamore-coast live oak plant palette (Table 11) will be located on the transition slope and pasture land. Sycamore will be located closer to the creek while oaks will be located in the old pasture area. Coast live oak and sycamore trees shall be installed in wire mesh cages to protect their root system from gophers and other burrowing animals. Aboveground cages might also be required to protect these trees from deer browse.

**Table 10**  
**Southern Willow Scrub Plant Palette**

Botanical Name	Common Name	Percent Composition	Number	Container Size	Average Spacing
<i>Canopy and Understory Container Plants</i>					
<i>Baccharis salicifolia</i>	Mulefat	10	16	1 gallon	8 feet
<i>Muhlenbergia rigens</i>	Deergrass	10	65	1 gallon	4 feet
<i>Rubus ursinus</i>	California blackberry	10	29	1 gallon	6 feet
<i>Salix lasiolepis</i>	Arroyo willow	70	73	1 gallon	10 feet
<b>Total</b>			<b>183</b>	<b>1 gallon</b>	—
<b>Hydroseed mixture</b>		<b>% Purity / % Germination</b>		<b>Pounds Per Acre</b>	
<i>Ambrosia psyllostachya</i>	Western ragweed	20/30		1	
<i>Amsinckia menziesii</i>	Common fiddleneck	40/60		0.5	
<i>Artemisia douglasiana</i>	Mugwort	15/50		2	
<i>Hazardia squarrosus</i> var. <i>grindelioides</i>	Saw-tooth goldenbush	15/20		3	
<i>Lupine bicolor</i>	Miniature lupine	98/85		3	
<b>Total</b>				<b>9.5</b>	

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**Table 11**  
**Sycamore – Coast Live Oak Woodland Plant Palette**

Botanical Name	Common Name	Percent Composition	Number	Container Size	Average Spacing
<i>Container Plants</i>					
<i>Baccharis salicifolia</i>	Mulefat	10	174	1 gallon	8 feet
<i>Heteromeles arbutifolia</i>	Toyon	5	87	1 gallon	8 feet
<i>Platanus racemosa</i>	Western sycamore	50	139	5 gallon	20 feet
<i>Quercus agrifolia</i> var. <i>agrifolia</i>	Coast live oak	30	53	5 gallon	25 feet
<i>Sambucus nigra</i> ssp. <i>canadensis</i>	Blue elderberry	5	22	1 gallon	16 feet
			<b>Total</b>	<b>283</b>	—
				<b>192</b>	
<b>Hydroseed mixture</b>		<b>% Purity / % Germination</b>		<b>Pounds Per Acre</b>	
<i>Artemisia douglasiana</i>	Mugwort	10/50		2	
<i>Baccharis pilularis</i>	Coyote brush	2/40		4	
<i>Bromus carinatus</i>	California brome	95/80		5	
<i>Galium angustifolium</i>	Narrow-leaved bedstraw	80/30		0.5	
<i>Gnaphalium californicum</i>	California everlasting	10/25		0.5	
<i>Hazardia squarrosus</i> var. <i>grindelioides</i>	Saw-tooth goldenbush	15/20		3	
<i>Muhlenbergia rigens</i>	Deergrass	80/70		1	
<i>Nassella lepida</i> *	Foothill needlegrass	90/60		2	
<i>Nassella pulchra</i> *	Purple needlegrass	70/60		6	
<i>Phacelia cicutaria</i>	Caterpillar phacelia	95/80		2	
			<b>Total</b>	<b>26</b>	

\* Deawned seed only

**MAINTENANCE AND MONITORING PROGRAM**

A 5-year maintenance and monitoring program will be implemented on all mitigation sites to ensure successful implementation of the habitat mitigation program. A landscape maintenance contractor with experience in habitat restoration shall be hired to provide maintenance services at the project sites throughout the 5-year maintenance period. Maintenance shall consist of controlling weeds and other pests, irrigation system operation and repairs and/or hand watering (if used), trash removal, erosion control, access control, remedial planting and seeding, etc.

The habitat restoration specialist shall visit the project site on the same schedule as the landscape maintenance contractor to inspect the contractor's work and determine the need for any additional remedial measures, using an adaptive management approach. Adaptive management will be implemented in the event of unforeseen or unpredictable circumstances. Adaptive

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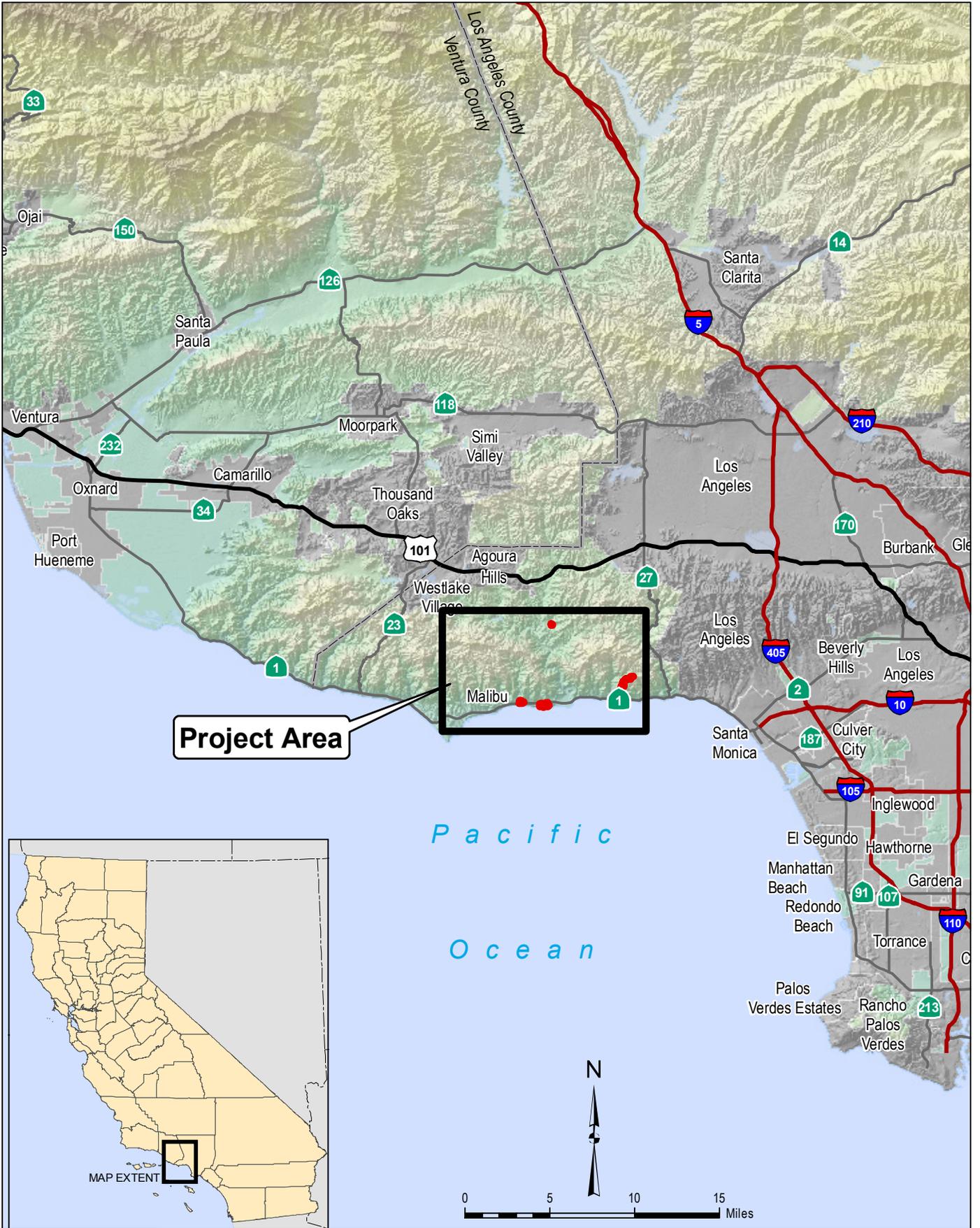
*Date: January 27, 2010*

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management will include the utilization of regular qualitative assessments and rapid quantitative assessment data gathered in the field prior to and during the mitigation effort to assess the health and vigor of vegetation communities within the mitigation areas. Achieving the key goals of mitigation completion and establishment of self-sustaining native vegetation communities will be the focus of all adaptive management decisions.

The habitat restoration specialist shall be responsible for implementing the biological monitoring program in accordance with the final approved habitat restoration plan(s) and any permit conditions specified by the resource agencies. Monitoring shall be both qualitative and quantitative in nature. Photo documentation shall be used to help document site development. Permanent photo viewpoints shall be established to document vegetation development over time. The Habitat Restoration Specialist shall document and measure habitat development each year and prepare annual reports presenting the results and recommend remedial measures, as needed, to address any deficiencies noted.

Once the mitigation area has completed its 5-year maintenance and monitoring period, and if the ultimate performance criteria have been achieved, the resource agencies will be notified that the mitigation has been successfully completed, request a site visit, and ask for final project sign-off. Should the project not meet its success criteria, the maintenance and monitoring period shall be extended and/or other mitigation measures negotiated to fulfill the mitigation requirements.



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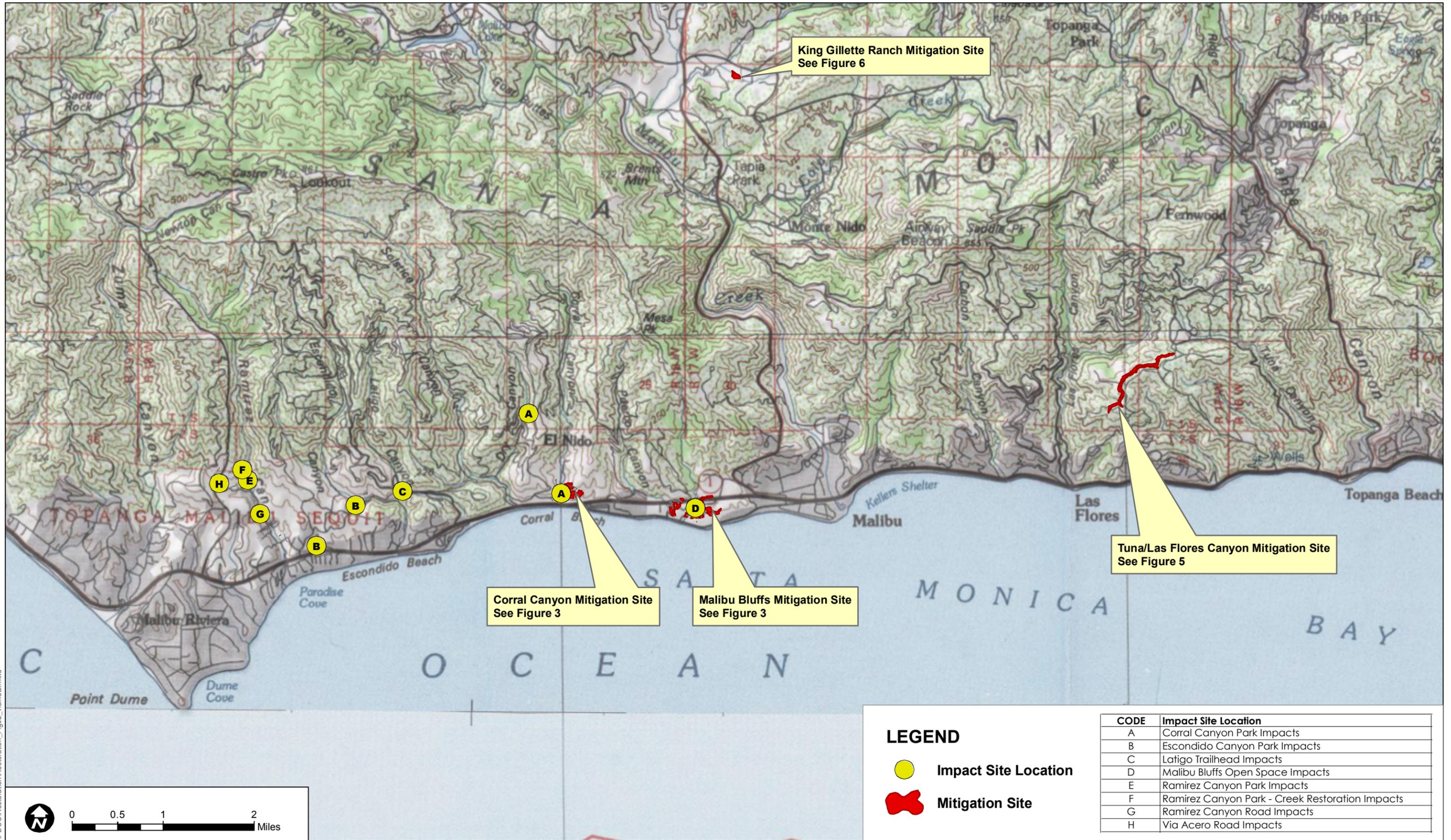
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Malibu Parks Restoration Plan

**FIGURE 1**  
**Regional Map**

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Tuna/Las Flores Canyon Mitigation Site  
See Figure 5

King Gillette Ranch Mitigation Site  
See Figure 6

Corral Canyon Mitigation Site  
See Figure 3

Malibu Bluffs Mitigation Site  
See Figure 3

**LEGEND**

● Impact Site Location

✶ Mitigation Site

CODE	Impact Site Location
A	Corral Canyon Park Impacts
B	Escondido Canyon Park Impacts
C	Lafigo Trailhead Impacts
D	Malibu Bluffs Open Space Impacts
E	Ramirez Canyon Park Impacts
F	Ramirez Canyon Park - Creek Restoration Impacts
G	Ramirez Canyon Road Impacts
H	Via Acero Road Impacts

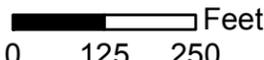
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**Legend**

**Mitigation Areas**

-  Coastal Sage Scrub
-  Impact Facilities

  Feet  
 0 125 250

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**Legend**

 Impact Facilities

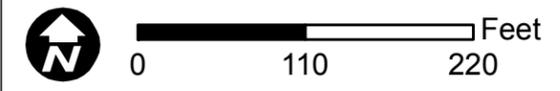
**Mitigation Areas**

 Coastal Sage Scrub

 Native Grassland



Old Road Bed  
Access for Construction,  
Maintenance & Monitoring



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**FIGURE 4**  
**Corral Canyon Coastal Sage Scrub/Native Grassland Mitigation Site**

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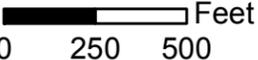
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**Legend**

**Mitigation Areas**

-  Coastal Sage Scrub
-  Chaparral

  Feet

0 250 500

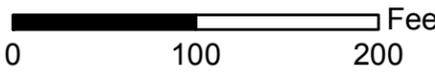
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**Legend**

**Mitigation Areas**

-  Southern Willow Scrub Creation
-  Southern Willow Scrub Enhancement
-  Sycamore/Oak Woodland

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