NEWPORT BANNING RANCH
MASTER DEVELOPMENT PLAN
APPENDICES
AUGUST 2011

NEWPORT BANNING RANCH
MASTER DEVELOPMENT PLAN
APPENDICES

APPLICANT

Newport Banning Ranch LLC

1300 Quail Street, Suite 100
Newport Beach, CA 92660

- Michael A. Mohler, Managing Director
  Tel: (949) 833-0222

DESIGN TEAM

- **FORMA Design**
  Planners & Landscape Architects
- **FUSCOE Engineering**
  Civil & Water Quality Engineers
- **Glenn Lukos Associates**
  Terrestrial & Wetlands Biologists
- **Robert Hidey Architects**
  Building Architects
- **Bassenian-Lagoni Architects**
  Building Architects
- **Studio SA**
  Green & LEED Consultants
- **CTG Energetics, Inc.**
  Green & Sustainable Solutions
- **LSA Associates, Inc.**
  Traffic Engineering & Cultural Resources
- **Geosyntec Consultants**
  Oil Site Remediation
- **Firesafe Planning**
  Fire Safety Solutions

AUGUST 2011

NEWPORT BANNING RANCH
MASTER DEVELOPMENT PLAN

APPENDICES

Submitted to:
City of Newport Beach
Planning Department
3300 Newport Boulevard
Newport Beach, California 92658

AUGUST 2011

Submitted by:
Newport Banning Ranch LLC

APPLICANT

Newport Banning Ranch LLC
1300 Quail Street, Suite 100
Newport Beach, CA 92660

Michael A. Mohler, Managing Director
Tel: (949) 833-0222

DESIGN TEAM

FORMA Design
Planners & Landscape Architects

Fuscoe Engineering
Civil and Water Quality Engineers

Glenn Lukos Associates
Terrestrial and Wetlands Biologists

Robert Hidey Architects
Building Architects

Bassenian-Lagoni Architects
Building Architects

Studio SA
Green & LEED Consultants

CTG Energetics, Inc.
Green & Sustainable Solutions

LSA Associates, Inc.
Traffic Engineers & Cultural Resources

Geosyntec Consultants
Oil Site Remediation

Firesafe Planning
Fire Safety Solutions

NEWPORT BANNING RANCH
MASTER DEVELOPMENT PLAN

APPENDICES

Submitted to:
City of Newport Beach
Planning Department
3300 Newport Boulevard
Newport Beach, California 92658

AUGUST 2011

Submitted by:
Newport Banning Ranch LLC

A. NBR Habitat Restoration Plan (HRP)

B. NBR Fire and Life Safety Program (FLSP)

C. NBR Plant Palette

D. NBR Green and Sustainable Program (GSP)

E. Tentative Tract Map No. 17308

PROPOSED
HABITAT RESTORATION PLAN FOR
MITIGATION AND PROJECT DESIGN FEATURES
FOR THE
NEWPORT BANNING RANCH PROPERTY
NEWPORT BEACH, CALIFORNIA

Prepared for:

Newport Banning Ranch LLC
Contact: Mike Mohler
1300 Quail Street
Newport Beach, CA 92660
Telephone: (949) 833-0222

Prepared by:

Glenn Lukos Associates, Inc.
29 Orchard
Lake Forest, California 92630
Contact: Tony Bomkamp
Telephone: (949) 837-0404
Fax (949) 837-5834

DRAFT

TABLE OF CONTENTS

TABLE OF CONTENTS

(continued) **Page**

TABLE OF CONTENTS

(continued) **Page**

TABLE OF CONTENTS

(continued) **Page**

TABLE OF CONTENTS

(continued) **Page**

Exhibits

INTRODUCTION

This Habitat Restoration Plan ("HRP" or "Plan") is a component of the Newport Banning Ranch ("NBR") project proposal and is designed to be an implementation measure of the proposed project to address the potential impacts to habitat areas from development of the NBR project. The HRP provides a comprehensive approach to habitat restoration on the NBR property that provides for the highest level of habitat function for the special-status and common species that utilize the site.

The Plan establishes the process of providing for restoration of the ecosystem that has been impacted or degraded by more than 70 years of oil operations. The Plan identifies impacts proposed by the project and identifies appropriate candidate areas where impacts to habitats affected by the development are avoided where possible, and can be mitigated with restoration, enhancement and preservation to less than significant in a manner that optimizes the long-term conservation values on the site.

The HRP identifies the habitat areas existing on site, the impacts to those areas from development of the NBR project, and the measures that will be taken by the project to create, restore, and permanently protect sensitive habitat areas, including long term funding and property management measures. The Plan is comprehensive and includes many areas that, while avoided by the proposed development activities, will still be restored as part of project mitigation or third-party reserve because of the long term impacts of more than 70 years of oil operations.

Existing oil operations include approximately 489 oil well sites and buildings and oil facility infrastructure, including oil processing facilities, pipelines, storage tanks, utility poles, and machinery. Related facilities include graded roads and equipment areas surfaced with gravel, asphalt, crude oil, or crude oil tank sediments, as well as old sumps which held produced oil and fluids in in-ground surface impoundments. Oil operations occur in both the Upland and Lowland areas. Existing oil operations are permitted pursuant to California Coastal Commission Exemption No. E-7-27-73-144. Because the Project site is privately-owned and in light of the ongoing oil operations on the Project site, there is no public access for safety, liability, and security reasons.

Implementation of this Plan in coordination with the proposed NBR Project will result in an improved environment for habitat and species. This coordination will provide capital and commitment to address the pressing site needs for:

- Oil Facilities Clean Up
- Comprehensive Approach to Mitigation and Protection
- Long Term Operations and Maintenance, Ongoing Custody and Control

Activities will include the following: oil operations clean-up with removal of non-native and invasive species and other "factors" that impact the site and restoring natural processes to the area, including reintroducing native species from onsite and local seed banks. The goals and

methods of achieving the above will be defined in the following text, along with the commitment and basis for monitoring, measuring success and ongoing maintenance.

EXECUTIVE SUMMARY

The Newport Banning Ranch site (Site) covers approximately 400 acres and is located in unincorporated Orange County and the City of Newport Beach. The Site is located north of Pacific Coast Highway, east of the Santa Ana River, south of 19th Street and Talbert Regional Park, and west of existing residential and commercial areas. The site has been degraded by oil extraction operations for decades. The property is divided into two distinct areas, an upper mesa area bisected by canyons and a "lowland" area covering approximately 110 acres at the northwest corner of the site.

The project has been designed to avoid or minimize impacts to biological resources; nevertheless, impacts associated with the footprint of the Proposed Project have been identified including:

Wetland and Riparian Areas

- 0.32 acre of permanent and 3.93 acres of temporary impacts to U.S. Army Corps of Engineers (Corps) jurisdiction;
- 1.87 acres permanent and 0.05 acre of temporary impacts to (California Department of Fish and Game) CDFG jurisdiction;
- 2.47 acres of permanent impact to California Coastal Act (CCA)-defined wetlands and riparian habitat, and 6.48 acres of temporary impacts to CCA wetlands and riparian habitat;

The project will impact non-wetland and non-riparian disturbed willow scrub and mulefat scrub and disturbed mulefat scrub that is outside the jurisdiction of the Corps, CDFG and California Coastal Commission (CCC) with total impacts that are inclusive of the those referenced in the three bullet points above as summarized in Table ES-1. The overall mitigation requirement for these habitats exceeds mitigation requirements required by the resource agencies listed above.

Non-Native Grassland/Raptor Foraging Areas

The Project will impact areas of non-native grassland and ruderal areas used by foraging raptors including 97.26 acres of permanent and 2.87 acres of temporary impacts to raptor foraging habitat as summarized by Table ES-2.

Coastal Scrub Habitats

The Project will also impact areas of native Maritime Succulent Scrub (MSS), Southern Coastal Bluff Scrub (SCBS) and Coastal Sage Scrub (CSS) as well as areas of disturbed MSS, SCBS, and CSS[1] as summarized by Table ES-3. The Project will result in permanent impacts to 10.89 acres of non-disturbed upland scrub habitat (MSS, SCBS, CSS and other coastal scrub habitats) and 9.64 acres of disturbed upland scrub habitat consisting of fragments of highly disturbed habitats of MSS, SCBS and CSS, and other disturbed coastal scrub habitats. The Project will also result in

[1] Several other coastal scrub habitats and disturbed coastal scrub habitats would be impacted by the Project and are included in this category, such as California sagebrush scrub, coyote brush scrub, coyote brush/mulefat scrub, goldenbush scrub, southern cactus scrub, saltbush scrub, and disturbed areas of the aforementioned habitats.

temporary impacts to 1.03 acres of non-disturbed MSS, SCBS and CSS and 1.55 acres of disturbed MSS, SCBS and CSS

Vernal Pool Watershed/Seasonally Ponded Features

Finally, the project will avoid vernal pool habitat on the site occupied by the San Diego fairy shrimp. However, the seasonally ponded Feature I (0.03 acre) and Feature J (0.09 acre), which support San Diego fairy shrimp, will be impacted. Additionally, a portion of the vernal pool watershed (0.35-acre) will be temporarily impacted by the project with the vernal pool watershed increased by a net 0.68 acre, following site remediation and project grading.

TABLE ES-1: RIPARIAN IMPACTS	**Impact (Acres)**
Permanent Impacts	
Willow Scrub/Willow Riparian Forest	1.42
Disturbed Willow Scrub/Disturbed Willow Riparian Forest	0.03
Mule Fat Scrub	0.47
Disturbed Mule Fat Scrub	4.60
Marsh	0.10
Temporary Impacts	
Willow Scrub/Willow Riparian Forest	0.59
Disturbed Willow Scrub/Disturbed Willow Riparian Forest	0.70
Mule Fat Scrub	0.20
Disturbed Mule Fat Scrub	4.07
Marsh	2.35
Total	***14.53***

TABLE ES-2: NON-NATIVE GRASSLAND/RAPTOR FORAGING IMPACTS	**Impact (Acres)**
Permanent Impacts	
Non-native Grassland	79.60
Non-native Grassland/Ruderal	6.07
Ruderal	11.59
Temporary Impacts	
Non-native Grassland	0.49
Non-native Grassland/Ruderal	0.44
Ruderal	1.94
Total	***100.13***

TABLE ES-3: COASTAL SCRUB IMPACTS	Impact (Acres)
Permanent Impacts	
Coastal Scrub (MSS, SCBS, and CSS)	10.89
Disturbed Coastal Scrub (MSS, SCBS, and CSS)	9.64
Temporary Impacts	
Coastal Scrub (MSS, SCBS, and CSS)	1.03
Disturbed Coastal Scrub (MSS, SCBS, and CSS)	1.55
Total	***23.11***

Mitigation for each of these impacts will be provided through on-site habitat creation or restoration as follows:

- 50.07 acres of native grassland and alkali meadow for permanent raptor foraging impacts, with temporary impacts mitigated through revegetation, with the alkali meadow within the vernal pool complex providing mitigation for both the raptor foraging impacts and the vernal pool watershed impacts;
- 17.57 acres of riparian and wetland habitat associated with restoration of the Middle Arroyo (Drainage B), Large Arroyo (Drainage C), and portions of the lowlands jurisdictional areas;
- 44.89 acres of MSS and SCBS to compensate for impacts to scrub (with impacts to Non-disturbed scrub at 3:1, and impacts to disturbed scrub at 1:1 in accordance with the CLUP).

Finally, the project includes an additional 2.87 acres of mitigation in the lowlands to satisfy a deferred restoration obligation with the Regional Water Quality Control Board – Santa Ana Region.

SECTION 1. OVERVIEW OF RESTORATION PROGRAM

PROJECT DESCRIPTION and SUMMARY

The Project Site is currently, and has historically been, used for oil extraction. The project consists of a development that includes at least 50-percent of the site preserved as open space, a residential village, commercial development, a coastal inn, and local and community park uses on an approximately 400-acre site. There are two project alternatives. The Proposed Project includes, in addition to the previously described development, a connector road from 17th Street to 19th Street that would cross though a large portion of project open space containing areas of ESHA. The alternative would not include the 17th/19th connector road. In total, approximately 130 acres are proposed for residential and commercial development, with an additional area impacted by construction of the 17th/19th connector associated with the Proposed project. Both project alternatives will provide over 260 acres of open space uses including habitat preservation and restoration, public access trails around preserved wetland habitat and the vernal pool complex, and a community park. This HRP addresses only the Proposed Project, as the impacts and mitigation associated with the Alternative Project are less.

A. Location of Project

The Newport Banning Ranch property covers approximately 401 acres and is located in unincorporated Orange County and the City of Newport Beach (City) [Exhibit 1]. The Site is located north of Pacific Coast Highway, east of the Santa Ana River, south of 19th Street and Talbert Regional Park, and west of existing residential and commercial areas [Exhibit 2]. No blue-line drainages occur on site; however, one tidal channel occurs near the southwest corner of the site as depicted on the U.S. Geological Survey (USGS) topographic map Newport Beach, California [dated 1965 and photorevised in 1981]. The project footprint and open spaces are depicted on Exhibit 3.

B. Responsible Parties

Applicant: Newport Banning Ranch LLC
Contact: Michael A. Mohler
1300 Quail Street, Suite 100
Newport Beach, CA 92660
Telephone: (949) 833-0222

Preparer of Mitigation Plan: Glenn Lukos Associates, Inc.
Contact: Tony Bomkamp
29 Orchard
Lake Forest, California 92630-8300
Telephone: (949) 837-0404

C. Overview of Habitat Restoration Program

The proposed project will result in significant impacts to wetlands, riparian habitat, raptor foraging habitat, and areas of upland scrub and alkali meadow, which will require mitigation in the form of on-site restoration and enhancement in conjunction with preservation/dedication of substantial areas of open space.

1. Wetland and Riparian Habitats (Includes Areas within Corps, CDFG and CCC Jurisdiction and Non-Jurisdictional Mulefat and Willow Scrub)

Compensatory mitigation for impacts to areas of ephemeral streambed and/or riparian habitat within Drainages A, B, C, and D, as well as riparian/wetland habitat in the lowlands subject to the jurisdiction of the U.S. Army Corps of Engineers (Corps), the California Department of Fish and Game (CDFG), and/or the California Coastal Commission (CCC) (see Section E-1 immediately below for breakdown by agency jurisdiction) includes restoration of riparian habitat in Drainages B and C, and additional restoration of wetland and riparian habitat in the lowlands.

In addition to the jurisdictional impacts described above, the proposed Project will result in impacts to non-jurisdictional areas of riparian vegetation associations (mostly subassociations with mulefat scrub as a component). In total, mitigation for impacts to wetland and riparian habitats total 17.57 acres as summarized in Table 1-1.

TABLE 1-1: RIPARIAN AND WETLAND MITIGATION

	Impact (Acres)	Mitigation Ratio	Mitigation (Acres)
Permanent Impact			
Willow Scrub/Willow Riparian Forest	1.42	3:1	**4.26**
Disturbed Willow Scrub/Disturbed Willow Riparian Forest	0.03	1:0	**0.03**
Mule Fat Scrub	0.47	1:0	**0.47**
Disturbed Mule Fat Scrub	4.60	1:0	**4.60**
Marsh	0.10	3:1	**0.30**
Temporary Impact			
Willow Scrub/Willow Riparian Forest	0.59	1:0	**0.59**
Disturbed Willow Scrub/Disturbed Willow Riparian Forest	0.70	1:0	**0.70**
Mule Fat Scrub	0.20	1:0	**0.20**
Disturbed Mule Fat Scrub	4.07	1:0	**4.07**
Marsh	2.35	1:0	**2.35**
Total	***14.44***		***17.57***

2. Grassland/Raptor Foraging

Compensatory mitigation for permanent impacts to 97.26 acres and 2.87 acres of temporary impacts to non-native grassland and ruderal habitat that represent potentially suitable habitat for foraging raptors will be mitigated at a 0.5:1 ratio with a combination of alkali meadow and native grassland for a total of 50.07 acres of mitigation. This 50.07-acre raptor foraging mitigation includes the vernal pool complex. Also included is an additional 2.87 acres of alkali mitigation in the lowlands to satisfy a deferred restoration obligation with the Regional Water Quality Control Board – Santa Ana Region.

3. Upland Coastal Scrub Habitats

The proposed project will result in permanent impacts to 10.89 acres of non-disturbed upland scrub habitat (MSS, SCBS and CSS) and 9.64 acres of disturbed upland scrub habitat consisting of fragments of highly disturbed habitats of MSS, SCBS and CSS. Impacts to the non-disturbed MSS, SCBS and CSS will be mitigated onsite at a 3:1 ratio. Impacts to the disturbed MSS, SCBS and CSS will be mitigated onsite at a 1:1 ratio. The project will also result in temporary impacts to 1.03 acres of non-disturbed MSS, SCBS and CSS and 1.55 acres of disturbed MSS, SCBS and CSS, both of which will be mitigated at a 1:1 ratio. Total mitigation for MSS, SCBS and CSS at 3:1 for non-disturbed and 1:1 for disturbed habitat is 44.89 acres onsite.

4. Vernal Pool Watershed

As a component of the proposed project, the vernal pool watershed will be enlarged and the entire pool complex will be restored. A portion of the eastern edge of the watershed area within San Diego fairy shrimp critical habitat as designated by US Fish and Wildlife Service (USFWS) will be impacted by the project, but the western edge of the existing watershed will be expanded with the watershed having a net gain of 0.68 acre. The entire 3.58-acre watershed and pool complex will be restored to native grassland habitat, and the vernal pools will be enhanced by removal of non-native species and native plants that are not characteristic vernal pool species. The watershed enhancement acreage will also provide mitigation for raptor foraging and is included as a component of the 50.07 acres of raptor foraging mitigation for permanent impacts.

The vernal pool restoration will also provide mitigation for impacts to Feature I (0.03 acre) and Feature J (0.09 acre) that support San Diego fairy shrimp.

Finally, the proposed project will include water quality basins planted with native emergent marsh and riparian species, and native buffer trees on the perimeter of the oil consolidation areas.

This plan includes four sections that address habitat restoration in lowland areas, habitat restoration in upland areas, and habitat restoration of the vernal pool complex on site. Through implementation of this plan, the Project will be consistent with the City's CLUP. Table 1-2 below provides an overview of mitigation acreage.

Table 1-2. Summary of Mitigation Habitat Types Proposed for Permanent Impacts

TABLE 1-1 SUMMARY OF MITIGATION FOR PERMANENT AND TEMPORARY IMPACTS		
Habitat	**Type**	**Acres**
Riparian/Wetland in drainages and lowlands and non-jurisdictional non-wetland riparian habitat	Mitigation (Restoration)	17.57
Alkali meadow for raptor foraging (includes vernal pool complex)	Mitigation (Creation/Restoration)	25.24
Upland grassland for raptor foraging	Mitigation (Creation/Restoration)	24.83
Maritime succulent scrub	Mitigation (Restoration)	38.81
Southern coastal bluff scrub	Mitigation (Restoration)	6.08
Total		**112.53**

D. Overview of Open Space Dedication Program and Future Mitigation Banking Opportunities[2]

Following receipt of all required agency permits and approvals required for the project, Irrevocable Offers of Dedication shall be recorded to the City of Newport Beach, County of Orange, State or Federal agency/entity, or qualified non-profit organization for up to 278 acres of Lowland and Upland Open Space, some of which is to be restored as set forth by this Habitat Restoration Plan, and the remainder of which would be available for future restoration, enhancement, and mitigation banking. In addition, approximately 19 acres of land designated for consolidated oil facilities operations will be deed restricted for open space use at the cessation of oil operations.

The Landowner/Master Developer has designated an area within the Project of approximately 75 acres, exclusive of public interpretive trails within the Lowland Areas, which could be used as a third-party mitigation reserve.

E. Impacts and Areas to be Restored for Mitigation by Habitat Type

1. Corps, CDFG, and CCC Wetlands/Riparian to be Restored

Corps Jurisdiction

The Project will permanently impact 0.32 acre of Corps jurisdictional waters and wetlands, and will temporarily impact 3.93 acres of Corps jurisdictional waters and wetlands, for a total of 4.25 acres. Compensatory mitigation for permanent impacts to jurisdictional waters will consist of restoration within Drainages B, C, and the Lowland portions of the site and will total 17.57 acres

[2] For a more detailed discussion of the open space dedication please refer to the Technical Appendix entitled *Open Space Clean-up, Improvement, and Dedication Program.*

for a ratio of 4.1:1 for all impacts. The locations of wetland and riparian mitigation areas are depicted on Exhibit 4.

CDFG Jurisdiction
The Project will permanently impact 1.87 acres of CDFG jurisdiction, and will temporarily impact 0.05 acre of CDFG jurisdiction, for a total of 1.92 acres. Compensatory mitigation for impacts to CDFG jurisdiction will consist of riparian restoration within Drainages B, C and Lowland portions of the site totaling 17.57 acres for a 9.2:1 ratio). The location of candidate mitigation areas is depicted on Exhibit 4.

CCC Jurisdiction
The Project will permanently impact 2.47 acres of wetlands and riparian habitat areas as defined by the Coastal Act, and will temporarily impact an additional 6.48 acres of wetland and riparian habitat areas as defined by the Coastal Act, for a total of 8.95 acres. Compensatory mitigation for impacts to CCA-defined wetland and riparian areas will consist of riparian restoration within Drainages B, C and Lowland portions of the site totaling 17.57 acres for a 2:1 ratio. The location of candidate mitigation areas is depicted on Exhibit 4.

2. Raptor Foraging Habitat

A total of to 97.26 acres of potentially suitable raptor foraging habitat will be permanently impacted and 2.87 acres of potentially suitable raptor foraging will be temporarily impacted by the project. In accordance with recommendations by CDFG and the CCC, which typically require a mitigation ratio of 0.5:1 for impacts to non-native grassland and ruderal areas, the permanently and temporary impacted foraging habitat will be mitigated through restoration of 50.07 acres of grassland (24.83 acres) and alkali meadow (25.24 acres) foraging habitat within both the upland and lowland portions of the site. The locations of the mitigation areas on site were specifically chosen in order to enhance habitat value and connectivity at both the local and regional scale. Exhibit 4 depicts the location of candidate raptor foraging habitat proposed for mitigation.

3. Maritime Succulent Scrub (MSS) and Southern Coastal Bluff Scrub (SCBS)

The proposed project will result in permanent impacts to 10.89 acres of non-disturbed upland scrub habitat (MSS, SCBS and CSS) and 9.64 acres of disturbed upland scrub habitat consisting of fragments of highly disturbed habitats of MSS, SCBS and CSS. Impacts to the non-disturbed MSS, SCBS and CSS mitigated onsite at a 3:1 ratio. Impacts to the disturbed MSS, SCBS and CSS mitigated onsite at a 1:1 ratio. The project will also result in temporary impacts to 1.03 acres of non-disturbed MSS, SCBS and CSS and 1.55 acres of disturbed MSS, SCBS and CSS, both of which will be mitigated at a 1:1 ratio. Total mitigation for MSS, SCBS and CSS will cover 44.89 acres onsite.

In total, as compensation for direct permanent impacts to 20.53 acres of MSS, SCBS, and CSS and 2.58 acres of temporary impacts to MSS, SCBS, and CSS, the Proposed Project will restore or create 44.89 acres of MSS, SCBS, and CSS, resulting in a net gain of 24.36 acres of scrub

cover types suitable for breeding, foraging and dispersing coastal California gnatcatchers on site. Exhibit 4 depicts the location of candidate MSS and SCBS restoration areas.

4. Vernal Pool Complex

As a component of the proposed project, the vernal pool watershed will be enlarged and the entire pool complex will be restored. A 0.35-acre portion of the eastern edge of the watershed area within San Diego fairy shrimp critical habitat as designated by US Fish and Wildlife Service (USFWS) will be impacted by the project, but the western edge of the existing watershed will be expanded by 1.03 acres, with the watershed having a net gain of 0.68 acre. The expanded 2.91-acre watershed will be restored to native grassland habitat with a small component of native scrub, such as goldenbush scrub, and the vernal pools will be enhanced by removal of non-native species and native plants that are not characteristic vernal pool species. The proposed project would impact two additional grassland depression features designated Features I and J covering 0.03 and 0.09 acres respectively that support the San Diego fairy shrimp. Impacts to these features would be mitigated through creation of seasonal pond habitat within the 3.58-acre vernal pool complex. The watershed enhancement acreage will also provide mitigation for raptor foraging and is included in the 50.07 acres of raptor foraging mitigation. Exhibit 4 depicts the location of proposed vernal pool complex restoration.

F. Type(s), Functions, and Values of the Areas to be Restored

All of the areas that are to be restored currently support either all non-native species or a mixture of predominantly non-native species and some natives with limited value to native wildlife. Some areas are completely dominated by non-native invasive species. For example, the riparian restoration site within the Middle Arroyo/Drainage B, which is to be preserved and restored, supports a significant amount of pampas grass (*Cortaderia selloana*), giant reed (*Arundo donax*), Brazilian pepper (*Schinus molle*), and Sydney golden wattle (*Acacia longifolia*). These species are detrimental to native habitats as they can easily outcompete native vegetation, creating large areas that have little if any value to native wildlife. The lowland areas on site that represent suitable foraging habitat for raptors and are to be restored and preserved include ruderal areas that are dominated by poison hemlock (*Conium maculatum*) and five-hook bassia (*Bassia hyssopifolia*). The upland areas on site that represent suitable foraging habitat for raptors and are to be restored and preserved are substantially disturbed and support a mixture of native and non-native vegetation.

G. Implementation Schedule

The mitigation and restoration program will be implemented concurrent with the construction of the development portions of the project. Site preparation will occur during grading of the development areas, and planting will be implemented during the appropriate planting period. The Project Biologist will supervise and provide biological monitoring during project construction, site preparation, installation of plant materials, and maintenance.

SECTION 2. RIPARIAN & ALKALI MEADOW RAPTOR FORAGING

I. GOAL of RESTORATION: Riparian and Lowland Alkali Meadow

As noted in Section 1, the project will have limited albeit significant impacts to areas subject to the jurisdiction of the Corps, CDFG, and CCC. Impacts will occur in Drainage B (Middle Arroyo), which is highly degraded by woody non-native invasive species including Sydney golden wattle, Brazilian pepper, giant reed, and pampas grass, and in Drainages A, C, and D, as well as the Lowlands (most lowland impacts are associated with remediation of the oilfield and are necessary for the singular purpose of restoring the Lowlands). The goal of the Riparian and Lowland Restoration is to remove oilfield infrastructure, eliminate non-native invasive species for the purpose of restoring the Riparian and Lowland areas to a mosaic of native habitats capable of supporting a variety of special-status plants and animals.

Permanent impacts to 97.26 acres and temporary impacts to 2.87 acres of non-native grassland and ruderal habitat that represent suitable raptor foraging habitat will be partially mitigated through creation of 25.24 acres of alkali meadow in the Lowland portions of the site that are currently occupied by roads, pads, or non-native invasive plants including poison hemlock and five-hook bassia (additional raptor foraging habitat mitigation addressed in Section 3 will ensure full mitigation for grassland/raptor foraging impacts). During focused biological surveys on the site, raptor foraging was generally concentrated in the lowlands, making restoration of the lowlands particularly important in compensating for losses in the upland portions of the site.

This section (i.e., Section 2) addresses restoration riparian habitat in Drainages B and C and the lowlands for mitigation, restoration/creation of lowland alkali meadow to mitigate for wetland impacts, and restoration of 25.24 acres of alkali meadow for raptor foraging mitigation.

A. Type(s) of Habitat to be Restored for Mitigation

As noted above, the riparian restoration within Drainages B and C will consist of southern willow scrub, and the lowland meadow restoration areas will consist of alkali meadow dominated by saltgrass (*Distichlis spicata*), alkali rye (*Leymus triticoides*), and alkali sacaton (*Sporobolus airoides*).

B. Time Lapse

Grading in Drainages B and C necessary to remove the non-native invasive species will occur in advance of or concurrently with grading associated with development areas. Shaping and planting of the channel will occur immediately following removal of the non-native invasive species.

Implementation of the lowland alkali meadow and riparian restoration will begin concurrent with project grading associated with the development component of the project.

II. FINAL SUCCESS CRITERIA

A. Target Functions and Values

Restoration efforts will increase biological productivity of the preserved open space and provide enhanced habitat for wildlife in the riparian and lowland alkali meadow habitats.

Specifically, restoration of southern willow scrub in Drainages B and C will provide habitat for a variety of common riparian-dependent avian species and special-status species such as least Bell's vireo (*Vireo bellii pusillus*), yellow warbler (*Dendroica petechia*), and yellow-breasted chat (*Icteria virens*). The riparian wetland will also provide nesting habitat for raptors such as Cooper's hawk (*Accipiter cooperi*), which currently nests in riparian habitat in the lowland.

Restoration of alkali meadow in the lowland will provide foraging habitat for a suite of raptors including white-tailed kite (*Elanus leucurus*), Cooper's hawk, red-tailed hawk (*Buteo jamaicensis*), northern harrier (*Circus cyaneus*), Loggerhead shrike (*Lanius ludovicianus*), long-eared owl (*Asio otus*), American kestrel (*Falco sparverius*), ferruginous hawk (*Buteo regalis*), American peregrine falcon (*Falco peregrinus anatum*), and merlin (*Falco columbarius*). In addition, the lowland alkali meadow will provide nesting and foraging habitat for short-eared owl (*Asio flammeus*). Suitable habitat for short-eared owl has become rare in Orange County; thus, the proposed restoration of alkali meadow habitat in the lowlands represents a significantly important mitigation measure for the owl in Orange County.

B. Target Acreages for Riparian and Wetland Habitat

A total of 17.57 acres of riparian and wetland habitat will be restored in Drainages B and C, and Lowland portions of the site as necessary to compensate for impacts to both jurisdictional and non-jurisdictional areas of riparian habitat and jurisdictional wetlands. An additional 25.24 acres of lowland alkali meadow will be restored as mitigation for raptor foraging habitat within preserved open space areas.

III. PROPOSED RESTORATION SITES

A. Location and Size of Mitigation Areas

The 17.57 acres of riparian and wetland habitat will be restored for mitigation in Drainages B and C and the lowlands to provide native riparian and wetland habitat. Candidate restoration areas are depicted by Exhibit 4.

The candidate alkali meadow and riparian restoration areas are depicted on Exhibit 4.

B. Ownership Status

The property is currently managed by Newport Banning Ranch LLC, who is also the Applicant.

C. Present and Proposed Uses of Mitigation Areas

The restoration sites are presently subject to oil field operations, providing limited value to wildlife. If left unrestored, the proposed riparian and lowland alkali meadow restoration areas would continue to function as limited wildlife habitat. Upon completion of the riparian and lowland alkali meadow restoration program, the mitigation areas will provide enhanced wildlife habitat functions to riparian-dependent birds and foraging raptors, including nesting and foraging short-eared owls.

To ensure permanent protection of the restoration areas, the applicant will record a restrictive covenant in the form of a conservation easement and/or deed restriction that will prevent development of the areas proposed for restoration.

D. Present and Proposed Uses of All Adjacent Areas

The surrounding land uses for the riparian areas associated with the Middle Arroyo and Large Arroyo are open space with the exception of existing residential development at the eastern boundary. The lowland restoration area is and will be completely surrounded by open space.

IV. IMPLEMENTATION PLAN

A. Rationale for Expecting Implementation Success

The mitigation program will be implemented in advance of or concurrently with impacts to riparian and alkali meadow habitats. The specific rationale for expecting success in the implementation of the components of the mitigation program is provided below.

Riparian Habitat

The proposed riparian habitat mitigation sites are a good candidate for habitat establishment and will result in an increase in habitat function within the open space for several reasons. First, native riparian vegetation in the three arroyos, including Drainages B and C, and in the portions of the lowlands that support woody riparian vegetation, indicate that the hydrological conditions are conducive to establishing riparian wetland species in Drainages B and C and the lowlands. Second, the proposed plant palettes consist of species that occur on site and are known to perform well in local riparian habitat restoration programs. Third, the mitigation site is in close proximity to existing riparian habitat in the lowlands that has been occupied by riparian-dependent avian species including least Bell's vireo, yellow warbler, and yellow-breasted chat over the survey period. Finally, a qualified habitat restoration specialist or other individual knowledgeable in native plant revegetation, hereinafter referred to as the Project Biologist, will supervise the implementation, maintenance, and five-year monitoring of the mitigation plan.

Lowland Alkali Meadow Raptor Foraging Habitat and Wetland Habitat
The proposed alkali meadow mitigation sites are good candidates for habitat establishment and will result in an increase in habitat function within the open space for several reasons. First, native alkali meadow habitat is present in adjacent areas on site, indicating that the environmental conditions, including hydrology, are conducive to establishing alkali meadow species in the lowland mitigation areas. Second, the proposed plant palettes consist of species that occur on-site and are known to perform well in habitat restoration programs. Third, raptors have been observed during biological surveys foraging over the existing alkali meadow in the lowland that is adjacent to the mitigation sites. Finally, a qualified habitat restoration specialist or other individual knowledgeable in native plant revegetation, hereinafter referred to as the Project Biologist, will supervise the implementation, maintenance, and five-year monitoring of the mitigation plan.

B. Responsible Parties

The Applicant will be responsible for the implementation of the mitigation project.

Applicant: Newport Banning Ranch LLC
1300 Quail Street, Suite 100
Newport Beach, CA 92660
Contact: Michael A. Mohler
Telephone: (949) 833-0222
Fax: (949) 833-1960

Plan Prepared by: Glenn Lukos Associates, Inc.
Contact: Tony Bomkamp
29 Orchard
Lake Forest, California 92630-8300
Telephone: (949) 837-0404

C. Site Preparation

Site preparation for Drainages B and C shall include the of use of heavy equipment to remove the areas of dense woody non-native invasive species, followed by grading to establish an appropriate low-flow channel, terraces, and positive drainage to the lowlands. To implement the riparian habitat restoration, Drainages B and C will be subject to removal of the high densities of non-native vegetation and then will be re-contoured, followed by planting.

Preparation of the alkali meadow areas and lowland woody riparian areas will primarily be implementation of a grow-and-kill program to remove the monocultural stands of poison hemlock and other non-native species. Preparation may also include the use of heavy equipment to remove non-native trees such as myoporum. Restoration of these habitat types will be implemented during the appropriate planting period and will be performed in advance of or concurrently with grading of the development areas.

Ongoing Exotic Vegetation Control

The predominance of non-native, invasive weed species throughout California has presented a challenge to most native revegetation projects. Weedy species are opportunistic, rapidly colonizing disturbed sites such as revegetation sites. This can lead to the displacement of native species if the weedy species are not properly treated. Several of these invasive species are capable of out-competing most native understory and herbaceous plants; Pampas grass and giant reed can out-compete and even displace existing native vegetation as is evidenced by the dominance of these species in all of the arroyos and large portions of the lowland areas on the site.

One of the largest obstacles to the successful revegetation of a site is the exotic seed bank residing in the soil. This seed bank can persist for several years or even decades and poses one of the major threats to restoration programs. Undesirable exotic plants will be eradicated either during initial site grading or prior to site preparation. If grading precedes planting by more than a few months, it will be necessary to eradicate undesirable exotic plants that have become established prior to planting and seeding of the mitigation sites. If deemed necessary, a "grow-and-kill" cycle will be established during that period. "Grow and kill" is a cycle of applying water, germinating the non-native, invasive species, and spraying with the appropriate chemical. This allows a large portion of the seed bank currently present in the soil to be removed. Eliminating or substantially reducing the competition from non-native exotics early in the life cycle of native plants helps to ensure more rapid growth and cover by the native species.

When necessary, the initial eradication of pest plants shall be performed by hand, by the use of pesticides, or by other methods approved by the Project Biologist. Weed control will be maintained throughout the monitoring period. Weeds will be controlled before their setting of seed. Ongoing weed control will be accomplished manually by the use of a hoe or other tool to uproot the entire plant, a mower or weed whip to cut plants, or by herbicide application.
The type, quantity, and method of herbicide application will be determined by a California licensed Pest Control Advisor (PCA) who will inspect the site and write project recommendations and submit the recommendations to the Project Biologist for approval. Pesticide recommendations shall include, but are not limited to, the pesticides to be used, rates of application, methods of application, and areas to which pesticides are to be applied.
A licensed Pest Control Operator (PCO) may work under the supervision of the PCA who will employ best management practices regarding the timing, quantity, and type of herbicide for each species. The PCA will determine both immediate and follow-up herbicide application for each species.

Weed species identified as invasive, particularly tenacious, or those with wind-borne seed will be subject to the earliest control efforts. The Project Biologist will direct the contractor regarding the selection of target weed species, their location, and the timing of weed control operations to ensure that native plants are avoided to the extent possible. A summary of weed removal methods are provided in Table 2-1.

Contractor Education
All aspects of the Mitigation Plan concerning permit requirements, site protection, maintenance inspections, landscape procedures, and monitoring will be reviewed with the appropriate contractors prior to the commencement of grading or any construction work.

All contractors, subcontractors, and project supervisors will be notified of the Corps Authorization, CDFG Streambed Alteration Agreement, Regional Board Water Quality Certification, and Coastal Development Permit. Copies of the permits shall be kept on-site at all times during periods of active work and must be presented to any agency personnel upon demand.

D. Planting Plan

Riparian vegetation and lowland alkali meadow will be established within the candidate mitigation areas depicted on Exhibit 4.

The habitat components were selected based on surveys conducted during various biological survey visits including vegetation mapping, jurisdictional delineation, and subsequent site visits to further evaluate the mitigation and restoration sites for suitability. The riparian habitat components are conducive for supporting the least Bell's vireo, and potentially, the southwestern willow flycatcher. The lowland alkali meadow components are conducive for supporting a variety of foraging raptors. No planting shall be done in any area until the area concerned has been prepared in accordance with the plans and presents an appearance satisfactory to the Project Biologist.

TABLE 2-1
ERADICATION METHODS FOR INVASIVE PLANTS

Method	Application Method	Time	Equipment	Advantage	Disadvantage
Manual	-Best on isolated individual patches	-Remove late summer to early fall	-Shovel -Weed wacker -Loppers -Brush cutters	-No herbicide use -Low soil disturbance	-Low effectiveness -Resprouting likely to occur
Foliar Spray	-Small or moderate stands of pure invasive	-Spray late summer to early fall	-Sprayer (backpack or mounted) -Glyphosate Herbicide	-Low soil disturbance -Relatively effective	-Use of herbicide -Drift spray on non-target plants -Leave above ground biomass
Cut Stem/Stump Spray	-Large pure stands of invasive stands near or mixed with native vegetation	-Cut & Spray late summer to early fall	-Weed wacker -Loppers -Brush cutters -Wand applicator -Glyphosate Herbicide	-Reduction of overspray on non-target -Can remove above ground biomass	-Resprouting likely to occur -Cost of removing biomass off site if necessary
Cut, Resprout, & Spray	-Large pure stands of invasive	-Cut in spring - Spray resprouts late summer to early fall	-Weed wacker -Loppers -brush cutters -Sprayer (backpack or mounted) -Glyphosate Herbicide	-Reduction of overspray on non-target -Can remove above ground biomass	-Resprouting likely to occur -Cost of removing biomass off site if necessary
Mechanical	-Large pure stands of invasive	-Cut or mow canes outside of nesting season -Excavate in dry season	-Specialized excavator	-Root/ rhizome removal	-High soil disturbance -Some resprouting likely to occur if all roots are not removed

Plant Palette

The mitigation sites will be vegetated with plant species native to the Orange County coast including southern willow scrub and alkali or alkali meadow as described by the former Orange County Environmental Management Agency[3], with additions from the associations described by Sawyer and Keeler-Wolf[4] and modifications based on site-specific conditions. The proposed plant palettes for the mitigation and restoration habitat types are designated below in Tables 2-2 and 2-3. The plant palette includes recommendations for plant species composition based on other restoration programs. Plant quantities, spacing, stock type, and distribution shall be determined in consultation with the CDFG.

TABLE 2-2
RIPARIAN HABITAT PLANT PALETTE
2.62 ACRES DRAINAGES B AND C
14.86 ACRES IN LOWLANDS

Botanic Name	**Common Name**
Canopy and Shrub Species	
Salix exigua	Sandbar Willow
Salix lasiolepis	Arroyo Willow
Salix laevigeta	Red Willow
Baccharis salicifolia	Mulefat
Baccharis douglasii	Douglas' Baccharis
Baccharis emoryi	Emory's Baccharis
Artemisia douglasiana	Mugwort
Rubus ursinus	California blackberry
Rosa Californica	California rose
Herbaceous Understory	
Frankenia salina	Alkali Heath
Distichlis spicata	Saltgrass
Heliotropum curassivicum	Seaside Heliotrope
Malvella leprosa	Alkali sida
Pluchea odorata	Saltmarsh fleabane
Epilobium ciliatum	Willowherb
Ambrosia psilostachya	Western Ragweed

[3] County of Orange Environmental Management Agency, Department of Planning. 1992. Habitat Classification System, Natural Resources Geographic Information System (GIS) project. By John Gray, Ph.D. and David Bramlet. Santa Ana, California

[4] Sawyer, J. O., and T. Keeler-Wolf. 1995. A Manual of California Vegetation. California Native Plant Society, Sacramento, California; the approximately equivalent vegetation series for maritime succulent scrub is coast prickly-pear series in this manual, and the approximately equivalent vegetation series for southern coastal bluff scrub is California encelia series in this manual.

TABLE 2-3 LOWLAND ALKALI MEADOW PLANT PALETTE 25.24 ACRES RAPTOR FORAGING MITIGATION	
Botanic Name	**Common Name**
Frankenia salina	Alkali Heath
Distichlis spicata	Saltgrass
Heliotropum curassivicum	Seaside Heliotrope
Juncus mexicanus	Mexican Rush
Pluchea odorata	Saltmarsh fleabane
Epilobium ciliatum	Willowherb
Sporobolus airoides	Alkali Sacaton
Leymus triticoides	Alkali rye
Cressa truxillensis	Alkali weed
Spergularia marina	Saltmarsh sand spurrey

Source of Plant Materials

It is preferred that the source of all propagules and seed used at the mitigation and restoration sites be from the site or adjacent areas. If not available, the remainder of propagules and seed required will be from wild sources within Central Orange County and collected as close to the mitigation site as possible to preserve regional genetic integrity.

Contract Growing

Contract growing of all container plants shall be by a local experienced native plant nursery. Substitution of plant material at the time of planting depends solely upon the discretion of the Project Biologist. Any substitutions that are approved will be documented in the As-Built Plans.

Container Plants

One-gallon container stock, rosepots, and liners shall be utilized for container stock production in order to develop vertical heterogeneity (strata). All plant materials will be inspected by the Project Biologist and approved as healthy, disease free, and of proper size prior to planting. Overgrown, root-bound container stock will be rejected.

Mycorrhizal Fungi

Mycorrhizae are specialized fungi found on plant roots. A symbiotic relationship exists between plant roots and mycorrhizae wherein the plants benefit from the increased ability to take up nutrients and withstand drought when mycorrhizae are present. This relationship is essential to the growth rate, well-being, and longevity of native plant communities. Plant utilization of mycorrhizal fungi markedly increases the success of revegetation on disturbed or degraded lands. All appropriate container-grown plants, except those know to be non-host species, shall be inoculated with mycorrhizal fungi prior to delivery to the job site.

Plant Placement
Container stock will be laid out in such a manner that mimics natural plant distribution (i.e., in clusters and islands) to emulate regional reference sites. The Project Biologist will monitor and confirm that trees and shrubs have been placed at the designed elevation relative to the water source supporting them, such as ground water.

Planting Method for Rose Pot and/or Liner Plant Stock
Rose pot and/or liner plant stock will be placed in a hole measuring at least twice the diameter and depth of the container. The root structure will be examined and excess root material removed. The top of the rootball will be set slightly above finish grade. The planting hole will be backfilled with native soil. Fertilizer, watering basins, and mulch are not required for this planting method.

Planting Method for Container Stock
One-gallon container stock will be planted in a hole measuring at least twice the diameter of the container and twice the depth. Container stock will be thoroughly watered the day before planting. One teaspoon (0.3 oz.) of Osmocote 14-14-14 (or equal) will be placed one inch below the root zone and backfilled with native soil to proper planting depth. The container will be upended into the palm of the hand to avoid damage to the root structure and placed in the planting hole. The top of the root ball will be set one inch above finish grade. The planting hole will be backfilled with native soil.

A three-inch high, hand-compacted earth berm, approximately 36 inches in diameter, will then be constructed around each container plant. This watering basin will be maintained until the plants are no longer irrigated. Mulch will be applied as a top dressing, 2 to 3 inches thick, but must not come in contact with the stem of the plant. Container stock will be watered immediately after installation.

Pruning and Staking
There will be no pruning or staking of any vegetation. Diseased or insect-damaged foliage, if sufficient to require pruning, will serve as a benchmark for rejection of plant material.

E. Irrigation Plan

Supplemental irrigation may be used solely for the purpose of establishing the plants at the mitigation and restoration sites and is of a temporary nature. The goal of the irrigation program is to obtain germination and growth with the least amount of irrigation. Frequent irrigation encourages weed invasion and leaches nutrients from the soil.

The mitigation and restoration sites will be initially supported by a short-term automatic irrigation system as well as from existing water sources. Drip irrigation may be provided for trees and shrubs planted on the slopes. The container stock will be irrigated as long as necessary to establish the root systems in the native soils, as directed by the Project Biologist. The main line will be installed below-grade. All lateral lines will be installed above-grade for ease of

removal and inspection. Alternatively, lateral lines may be installed below-grade and abandoned in place after project conclusion.

The critical period for irrigation is during the first winter and early spring following planting. During this time, roots are not well established and an unseasonable drought can cause high mortality. During dry periods after plant installation, the Project Biologist and the maintenance contractor will regularly inspect soil moisture. Watering during the summer dry season will occur as frequently as required.

After the initial plant establishment period, water will be applied infrequently and only as required to prevent the mortality of plants and seedlings. The irrigation methods employed will attempt to mimic wet rainfall years by incorporating evenly spaced, infrequent, deep applications of water.

When the plantings are sufficiently established and no longer require supplemental irrigation, the Project Biologist shall notify the landscape contractor to remove all above-grade irrigation system components from the mitigation and restoration sites.

F. As-Built Conditions

Once the implementation of the mitigation and restoration sites has been completed, the Applicant will submit "As-Built" drawings to the City, Corps, CDFG, CCC and U.S. Fish and Wildlife Service (USFWS) within 45 days after completion of construction. The drawings will identify the date installation was completed and if there were any deviations from the approved mitigation plan.

V. MAINTENANCE DURING THE MONITORING PERIOD

A. Maintenance Activities

The purpose of this program is to ensure the success of the mitigation and restoration plantings. Maintenance will occur over the Monitoring Period. The Project Biologist will monitor all aspects of the revegetation in an effort to detect any problems at an early state. Potential problems could arise from irrigation failure, erosion, vandalism, competition from weeds and invasive species, and unacceptable levels of disease and predation.

These maintenance guidelines are specifically tailored for native plant establishment. The maintenance personnel will be fully informed regarding the habitat establishment program so they understand the goals of the effort and the maintenance requirements. A landscape contractor with experience and knowledge in native plant habitat restoration will supervise all maintenance personnel.

For a period of 120 days following completion of the planting installation, the initial landscape contractor will be responsible for the care of the plantings. The purpose of the 120-day establishment period is to ensure continuity between the installation of the plant material and its

short-term maintenance. The contractor's presence during this period is proven to increase project success. The contractor will control the spread of weed species and identify any efforts necessary to ensure the health and survival of the plantings.

Following the 120-day establishment period the project will be evaluated for health of plant material, and if judged satisfactory by the Project Biologist, the establishment period will be considered concluded and the long-term habitat maintenance program will begin. A different landscape contractor may implement this period of maintenance; however, the Project Biologist will continue to review the project's success.

Damage to plants, irrigation systems, and other facilities occurring as a result of unusual weather or vandalism will be repaired or replaced as soon as practicable.

General Maintenance
The Contractor will perform the following tasks as general maintenance duties:

- Plant Inspection
- Weed control
- Irrigation water volume and frequency
- General maintenance of irrigation system
- Trash and debris removal
- Pest control
- Plant replacement

Plant Inspection
After initial planting, the Project Biologist will check the mitigation site on a monthly basis through the 18th month. The plants shall be inspected on a quarterly basis thereafter.

Weed Control
The mitigation site shall be maintained free of weeds during the monitoring period. Weed eradication will minimize competition that could prevent the establishment of native species. All maintenance personnel will be trained to distinguish weed species from native vegetation to ensure only weedy species are removed or sprayed with herbicide.

As weeds become evident, they should be immediately removed by hand or controlled with an appropriate herbicide as determined by a licensed Pest Control Advisor (PCA). Weed debris shall be removed from the project area as accumulated and disposed of as permitted by law.

Weeds shall be manually removed before they can attain a height of three-inches (3") at intervals of not more than 30 days for the first two years of the project. All portions of the plant will be removed, including the roots. The Project Biologist shall direct the contractor regarding the selection of target weed species, their location, and the timing of weed control operations to ensure that native plants are avoided to the extent possible. Pulled weeds will be placed on a "mantilla" or other type of tarp to prevent the seeds from coming in contact with the ground.

A cleared space, 18 inches from the base of the plant, will be maintained around each container plant to minimize competition from other plant species. Mulch, two-inches thick within the watering basin, will be maintained throughout the monitoring period. Leaf and branch drop, and organic debris of native species, shall be left in place.

Irrigation Water Volume and Frequency

The contractor shall be responsible for applying sufficient irrigation water to adequately establish new plant materials and germinate and establish the applied seed. Irrigation water shall be applied in such a way as to encourage deep root growth (periodic deep irrigation versus frequent light irrigation). The contractor will allow soil to dry down to approximately 50- to 60-percent of field capacity (in the top six or ten inches after germination and during seedling establishment) before the next irrigation cycle. Wetting of the full root zone and drying of the soil between irrigation events is essential to the maintenance of the plants and the promotion of a deep root zone that will support the vegetation in the years after establishment. Systems may need to be on for as long as six to eight hours at a time in order to get complete water penetration to the lower soil horizons to encourage deep root growth. A soil probe or shovel shall be used to directly examine soil moisture and rooting depth.

General Maintenance of Irrigation System

The contractor will be responsible for the regular maintenance and repair of all aspects of the irrigation system. Poorly functioning or non-functioning parts shall be replaced immediately so as to not endanger the plantings.

General system checks shall be conducted no less than weekly for the first month after installation to ensure the system is functioning correctly and monthly thereafter, except during periods when the irrigation system is not in operation as recommended by the Project Biologist.

Any erosion or slippage of soil caused by the contractor's inadequate maintenance or operation of irrigation facilities shall be repaired by the contractor at his/her expense.

Trash and Debris Removal

The mitigation site shall be well maintained in order to deter vandalism and dumping of trash. The contractor is responsible for avoiding impacts to plantings during trash removal activities. Contractor shall, during daily routine maintenance, manually remove weeds, litter, trash, and debris from the mitigation site and dispose of off-site as permitted by law. Dead limbs and tree fall shall be left in place in the revegetation areas.

Pest Control

Young trees and shrubs will be monitored for signs of disease, insect and/or predator damage, and treated as necessary. Badly damaged plants will be pruned to prevent spreading of the pestilence or replaced in kind if removed. Excessive foraging by predators may necessitate protective screening around plants and/or poison baiting of the predators. The Project Biologist will be consulted on any pest control measures to be implemented.

The contractor shall be responsible for maintaining a rodent-free project. All measures to eradicate rodents must be as directed by a licensed pest control consultant.

Plant Replacement
The installation contractor will be responsible for replacing all container stock plants terminally diseased or dead for 120 days after plant installation. The long-term maintenance contractor will thereafter replace all dead and/or declining plants in the winter months as recommended by the Project Biologist. Replacement plants shall be furnished and planted by the contractor at his/her expense.

Replacement plants shall conform to the species, size requirements, and spacing as specified for the plants being replaced. The replacement plants shall be purchased from inventory at the same native plant nursery as were the contract-grown plant stock.

Fertilization
If nutrient deficiencies are observed during site monitoring, the Project Biologist may specify applications of slow-release pellet fertilizer or soil amendments to speed initial growth or as a remedial measure. These applications shall occur at the onset of the rainy season following the manufacturer's recommendations. Fertilizer will not be applied other than under the direction of the Project Biologist.

Pruning
No pruning is necessary unless otherwise specified by the Project Biologist. Dead wood shall be left on trees or where it has fallen as it plays an important role in habitat creation and soil formation.

Staking of Trees
Staking of trees is to be avoided unless determined necessary by the Project Biologist. All stakes shall be removed at the completion of the five-year monitoring period, or earlier as determined by the Project Biologist. All stakes shall be removed by the contractor and disposed of off-site in a legal manner.

B. Responsible Parties

The Applicant will be responsible for financing and carrying out maintenance activities.

Newport Banning Ranch LLC
1300 Quail Street, Suite 100
Newport Beach, CA 92660
Contact: Michael A. Mohler
Telephone: (949) 833-0222
Fax: (949) 833-1960

C. Maintenance Schedule

The mitigation and restoration maintenance and monitoring program will begin with the construction process and continue during the Monitoring Period. Table 2-4 below indicates the schedule of maintenance inspections.

TABLE 2-4
MAINTENANCE SCHEDULE

Maintenance Task	Year				
	1	2	3	4	5
Plant Inspection	Monthly first 12 months	Monthly through 18th month; quarterly thereafter	Quarterly	Quarterly	Quarterly
Irrigation System Inspection	Monthly or more frequently if required	Monthly	As Required	N/A	N/A
Trash and Debris Removal	Monthly	Quarterly	Quarterly	Quarterly	Quarterly
Weed Control	Minimum of Monthly	Monthly	Quarterly	Quarterly	Quarterly
Pest Control	Monthly	Bi-monthly	Quarterly	Quarterly	Quarterly
Plant Replacement	Annually	Annually	Annually	Annually	Annually
Fertilization (if necessary)	Annually	Annually	N/A	N/A	N/A

VI. MONITORING PLAN

A. Initial Monitoring Effort

The mitigation and restoration sites will be monitored immediately following establishment and 30 days thereafter. The initial biological and ecological status of the mitigation and restoration sites will be established and the as-built condition of the site will be documented. Long-term monitoring of the mitigation and restoration sites will begin following this initial assessment.

B. Performance Criteria

The success of habitat restoration is defined as the restoration of a functional ecosystem. Success is usually measured by percent coverage by target species. Natural habitats rarely exhibit 100-percent coverage but rather include a considerable proportion of open spaces. While this monitoring program uses percent coverage criteria, it is noted that determination of successful coverage is expected to be relative to other similar native habitats typical of the region. Undisturbed riparian wetland habitat and relatively undisturbed alkali meadow habitat is available on-site and will be used as references on site.

The means of determining successful enhancement for this site will be through series of measurements for species composition, exotic species cover, and cover by native species. All of these, except non-native species cover, should increase over time. Cover by non-native species should be the opposite; it should decrease with time, particularly because one of the primary goals of the project is to substantially reduce or eliminate non-native species from the restoration site. After the initial non-native species eradication and associated planting effort has been completed, the restoration site will be monitored by the project monitor on a monthly basis for the 12 months and quarterly for the remainder of the monitoring period. Qualitative surveys, consisting of a general site walkover and habitat characterization, will be completed during each monitoring visit. General observations, such as fitness and health of the planted species, pest problems, weed persistence/establishment, mortality, and drought stress, will be noted in each site walkover. The Project Monitor will determine remedial measures necessary to facilitate compliance with performance standards.

Data regarding wildlife usage will be collected during each visit. Quantitative vegetation data will be collected annually using accepted vegetative sampling methods in order to evaluate survivorship, species coverage, and species composition.

In the event that plantings should fail to meet the specified requirements, compliance will be ensured by the performance of either or both of the following remedial procedures by the contractor on an as-needed basis as directed by the Project Monitor: (1) replacing unsuccessful plantings with appropriate-sized stock or seed mixes to meet stated cover or survival requirements and /or (2) performing maintenance procedures to ensure the site conditions are appropriate (e.g., non-native species removal). Remedial actions in planting areas shall be based on detailed investigations (such as soil tests and excavations of failed plantings to examine root development) to determine causes of failure.
Standard Vegetation Monitoring procedures will be as follows:

First-Year Monitoring

Success Standard: 40-percent coverage of native species, relative to the reference site (<5-percent deviation allowed);
At least 80-percent of the planted species will be represented in the restoration site;
No more than 10-percent coverage by non-native shrubs species; and
No more than 20-percent coverage by non-native annual species

Second-Year Monitoring

Success Standard: 50-percent coverage of native species, relative to the reference site (<5-percent deviation allowed);
At least 80-percent of the planted species will be represented in the restoration site;
No more than 5-percent coverage by non-native shrubs species; and
No more than 15-percent coverage by non-native annual species

Third-Year Monitoring

Success Standard: 65-percent coverage of native species, relative to the reference site (<5-percent deviation allowed);
At least 80-percent of the planted species will each attain at least 5-percent cover of the total native cover;
No more than 5-percent coverage by non-native shrubs species; and
No more than 15-percent coverage by non-native annual species

Fourth-Year Monitoring

Success Standard: 75-percent coverage of native species, relative to the reference site (<5-percent deviation allowed);
At least 80-percent of the planted species will each attain at least 5-percent cover of the total native cover;
No more than 5-percent coverage by non-native shrub species; and
No more than 10-percent coverage by non-native annual species

Fifth-Year Monitoring

Success Standard: 80-percent coverage of native species, relative to the reference site (<5-percent deviation allowed); or utilized by nesting California gnatcatchers
At least 80-percent of the planted species will each attain at least 5-percent cover of the total native cover;
No more than 5-percent coverage by non-native shrub species; and
No more than 10-percent coverage by non-native annual species

C. Monitoring Methods

Monitoring will assess the attainment of annual and final success criteria and identify the need to implement contingency measures in the event of failure. Monitoring methods include an annual tally of dead and/or declining plant stock and visual estimates of cover as well as field sampling techniques that are based in accordance with the methodology developed by the California Native Plant Society (CNPS).[5] Please refer to *A Manual of California Vegetation* for further details on this sampling method.

Sampling Techniques

Quantitative sampling within the restoration site will be performed using one-meter quadrats that will be placed randomly throughout the site. Placement of quadrats will be determined using random numbers tables to provide two coordinates – one that indicates the distance along a longitudinal centerline bisecting the site and one that determines the distance form the line. Plots will be placed on alternating sides of the centerline and perpendicular to the centerline. Vegetative cover will be visually estimated within the quadrat for each species present and recorded on a data sheet. Any species observed during the sampling that does not fall within a quadrat will be recorded and included on the list of species for the restoration site. At least 30

[5] Sawyer, John O. and Todd Keeler-Wolf. 1995. *A Manual of California Vegetation*. California Native Plant Society.

replicates will be initially sampled. Sample variance from data collection in years one through three will be used to determine if 30 samples is adequate. If a power analysis indicates that more than 30 samples are required, additional transects or quadrats will be added. If power analysis indicates that fewer than 30 samples are required, the number of quadrats will be reduced. Sampling will be conducted with sufficient replication to detect a 10% difference in absolute ground cover between the mean of the restoration and the success standard with 90% power at an alpha level of 0.10. The mean native cover for the restoration site will be compared to the performance criteria at the end of five years using an appropriate inferential test such as a single-sample t-test. The mean cover for the restoration site will be considered to meet the performance criteria if the resulting alpha level is greater than 0.10.

Photo-Documentation

Permanent stations for photo-documentation will be established during the first annual monitoring event. Photos shall be taken each monitoring period from the same vantage point and in the same direction each year and shall reflect material discussed in the annual monitoring report.

Qualified habitat restoration specialists, biologists, or horticulturists with appropriate credentials and experience in native habitat restoration shall perform monitoring. Continuity within the personnel and methodology of monitoring shall be maintained insofar as possible to ensure comparable assessments.

Monitoring Period

The Monitoring Period shall last until whichever of the following occurs first: (a) five years from the installation of a mitigation site or (b) until the Project Biologist has determined, with resource agency concurrence, that the fifth-year success standard has been achieved for specific mitigation areas and, additionally, that such areas are self-sustaining in the absence of irrigation for a minimum of three years.

Qualitative Monitoring

The Project Biologist will conduct qualitative monitoring surveys on a monthly basis for the first 18 months and quarterly thereafter for the remainder of the monitoring period. Qualitative surveys, consisting of a general site walkover and habitat characterization, will be completed during each monitoring visit. General observations, such as fitness and health of the planted species, pest problems, weed establishment, mortality, and drought stress, will be noted in each site walkover. The Project Biologist will also note observations on wildlife use and native plant recruitment for the purpose of later discussion in the annual reports. Records will be kept of mortality and other problems such as insect damage, weed infestation, and soil loss. The Project Biologist will determine remedial measures necessary to facilitate compliance with performance standards.

D. Annual Reports

At the end of each of the growing seasons during the Monitoring Period an annual report will be prepared. These reports will be "cumulative" including the results from previous annual reports and will assess both attainment of yearly target criteria and progress toward final success criteria. These reports will include the following:

- a list of names, titles, and companies of all persons who prepared the content of the annual report and participated in monitoring activities for that year;
- an analysis of all qualitative monitoring data;
- copies of monitoring photographs;
- maps identifying monitoring areas, transects, and planting zones; and
- copies of previous reports

E. Schedule

Annual Reports will be submitted to the appropriate agencies by December 31 of each year for the year in which quantitative sampling was performed.

VII. COMPLETION OF MITIGATION

Upon completion of the Monitoring Period for the mitigation sites, the Applicant will notify the City, Corps, CDFG, CCC, and USFWS by submitting a Final Monitoring Report that documents this completion. Following receipt of the final report, the Applicant will, at the request of the City, Corps, CDFG, CCC, and USFWS, provide access and guidance through the mitigation and restoration sites to confirm the adequate completion of the mitigation.

VIII. CONTINGENCY MEASURES

A. Initiating Procedures

If a performance standard is not met for any mitigation site or sites in any year or if the approved success criteria are not met, the Project Biologist will prepare an analysis of the cause(s) of failure and, if determined necessary by the City, Corps, CDFG, CCC, and USFWS, propose remedial actions for approval. If any mitigation site has not met one or more of the success criteria or performance standards by the end of the Monitoring Period, the responsible party's maintenance and monitoring obligations shall continue until the above-referenced agencies each gives final approval that the mitigation obligations have been satisfied. It is therefore incumbent upon the Project Biologist to foresee project deficiencies as part of the monitoring program and take appropriate steps to address the situation.

B. Funding Mechanism

The Applicant will fund planning, implementation, maintenance, and monitoring of any contingency measures that may be required to achieve performance criteria.

C. Responsible Parties

The Applicant will be responsible for implementing, maintaining, and monitoring any contingency procedures.

Newport Banning Ranch LLC
1300 Quail Street, Suite 100
Newport Beach, CA 92660
Contact: Michael A. Mohler
Phone: (949) 833-0222
Fax: (949) 833-1960

SECTION 3. GRASSLAND RAPTOR FORAGING & SCRUB

I. GOAL of RESTORATION: Upland Grassland and MSS & SCBS

As noted in Section 1, impacts to non-native grassland that represents suitable raptor foraging habitat will be mitigated through creation of upland native needlegrass grasslands in portions of the site that are currently occupied by roads, pads, or non-native invasive plants (in conjunction with the alkali restoration described in Section 3). During focused biological surveys on the site, some raptor foraging was observed and two wintering burrowing owls (*Athene cunicularia*) were observed in upland non-native grassland areas[6]. No burrowing owls were observed during subsequent breeding season surveys.

This section addresses restoration of 24.83 acres of upland grassland for mitigation and restoration of 38.81 acres of MSS and 6.08 acres of SCBS.

A. Type(s) of Habitat to be Restored

As noted above, restoration of the upland grassland habitat mitigation within preserved areas will consist of native needlegrasses such as purple needlegrass (*Nassella pulchra*), foothill needlegrass (*Nassella lepida*) and Coast Range Melica (*Melica imperfecta*). In addition, upland grassland habitat will be created within a 50-foot wide buffer that is set back from the proposed development by a native fuel modification zone that is also predominately native grassland.

For the upland scrub mitigation, restored MSS habitat will consist of MSS dominated by California sunflower (*Encelia californica*) and bladderpod (*Isomeris arborea*) with intermittent large patches of cactus species (*Opuntia* spp.). Similarly, the proposed restoration of SCBS habitat will be located on the west facing bluff depicted on Exhibit 4 and will consist of SCBS including California sunflower and the special status California box-thorn (*Lycium californicum*), cliff spurge (*Euphorbia misera*), woolly seablite (*Suaeda californica*), and wishbone bush (*Mirabilis californica*). This location is particularly suitable for these species because the topography and soils are similar to another bluff location immediately south that currently supports these same special status plant species (Exhibit 5).

B. Time Lapse

Implementation of the upland grassland and MSS and SCBS mitigation will begin in advance of or concurrent with project grading associated with the development component of the project.

[6] An additional burrowing owl was also observed on an adjacent property during wintering owl surveys.

II. FINAL SUCCESS CRITERIA

A. Target Functions and Values

Restoration efforts will increase biological productivity of the preserved open space and provide enhanced habitat for wildlife in the upland needlegrass grassland and MSS and SCBS habitats.

The upland needlegrass grassland will provide foraging habitat for a variety of small mammal species that will in turn provide forage for a variety of potential raptors such as white-tailed kite, Cooper's hawk, red-tailed hawk, northern harrier, Loggerhead shrike, Long-eared owl, American kestrel, ferruginous hawk, American peregrine falcon, and merlin. In addition, portions of the upland grassland will provide wintering habitat for burrowing owl (*Athene cunicularia*).

The MSS and SCBS will provide suitable habitat for a variety of avian species such as California towhee (*Pipilo crissalis*), Bewick's wren (*Thryomanes bewickii*), coastal California gnatcatcher (*Polioptila californica*), coastal cactus wren (*Campylorhynchus brunneicapillus*), bushtit (*Psaltriparus minimus*), black phoebe (*Sayornis nigricans*), white-crowned sparrow (*Zonotrichia leucophrys*), wrentit (*Chamaea fasciata*), and yellow-rumped warbler (*Dendroica coronata*). The MSS will also provide cover for mammal species such as cottontail rabbit (*Sylvilagus auduboni*).

B. Target Acreages for Upland Needlegrass Grassland and MSS & SCBS

Upland grassland restoration for raptor foraging will total 24.83 acres and will be restored within preserved open space and areas of the 50-foot buffer zone adjacent to open space areas. A total of 38.81 acre of MSS and 6.08 acres of SCBS will be created/restored for mitigation.

III. PROPOSED RESTORATION SITES

A. Location and Size of Mitigation and Project Design Feature Areas

The locations of the onsite habitat restoration areas were specifically chosen in order to enhance habitat value and connectivity at both the local and regional scale. The 24.83 acres of upland grassland habitat will be created and restored at various locations including the northeast corner of the property, select locations near Drainage C, and within the 50-foot buffer zone.

The 38.81 acres of MSS habitat will be restored within the north-central portion of the mesa, along the edge of Drainage C (the large arroyo), in the northeast corner of the site, and in the lowlands, as indicated on Exhibit 4. In addition, 6.08 acres of highly degraded SCBS along the west-facing bluff overlooking Newport Shores will be restored as SCBS. All of the restored MSS and SCBS habitat will provide potential nesting and foraging habitat for the CAGN, as well as local and regional connectivity, which is critical for dispersal of CAGN.

B. Ownership Status

The property is currently managed by Newport Banning Ranch LLC, who is also the Applicant.

C. Present and Proposed Uses Mitigation and Project Design Feature Areas

The restoration sites are presently subject to oil field operations, providing limited value to wildlife. If left undisturbed, the proposed grassland and MSS and SCBS restoration areas would continue to function as limited wildlife habitat. Upon completion of the grassland restoration program, the mitigation areas will provide enhanced wildlife habitat functions to scrub-associated birds including the coastal cactus wren and the coastal California gnatcatcher.

To ensure permanent protection of the restoration areas, the Applicant will record a restrictive covenant in the form of a conservation easement and/or deed restriction that will prevent development of the areas proposed for restoration.

D. Present and Proposed Uses of All Adjacent Areas

The surrounding land use includes developed areas. The restoration areas will generally be separated from developed land uses by a buffer of at least 100 feet that will include native fuel modification areas. Within this 100-foot buffer, a 50-foot "no-touch" buffer will extend from open space areas to the beginning of the 50-foot fuel modification zone and will include native needlegrass vegetation that is included in the raptor foraging habitat mitigation acreage. For those portions of the grassland within the 50-foot buffer, there will be a 50-foot setback from development from the fuel modification zone.

IV. IMPLEMENTATION PLAN

A. Rationale for Expecting Implementation Success

Compensatory mitigation will be implemented in advance of or concurrent with impacts to upland grassland and scrub habitats. The specific rationale for expecting success in the implementation of the various components of the mitigation program is provided below.

Upland Needlegrass Grassland Raptor Foraging Habitat
The proposed grassland mitigation sites are good candidates for habitat establishment and will result in an increase in habitat function within the open space for several reasons. First, native grassland vegetation in very limited areas and is presumed to have been more common on the site prior to disturbance indicating that the environmental conditions are conducive to establishing upland needlegrass grassland species in the mitigation sites. Second, the proposed plant palettes consist of species that occur on-site and are known to perform well in local needlegrass grassland habitat restoration programs. Finally, qualified habitat restoration specialist or other individual knowledgeable in native plant revegetation, hereinafter referred to as the Project Biologist, will supervise the implementation, maintenance, and five-year monitoring of the mitigation plan.

MSS and SCBS Habitat

The MSS and SCBS mitigation sites are good candidates for habitat establishment. First, existing patches of native MSS and SCBS near the proposed sites indicate that the environmental conditions are conducive to establishing scrub species. Second, the proposed plant palettes consist of species that occur on-site and are known to perform well in nearby MSS and SCBS habitat restoration programs. Third, the mitigation sites are in close proximity to existing MSS and SCBS habitat in the vicinity of Drainage C that has been consistently occupied by scrub birds including the coastal California gnatcatcher and coastal cactus wren over the survey period. Finally, a qualified habitat restoration specialist or other individual knowledgeable in native plant revegetation, hereinafter referred to as the Project Biologist, will supervise the implementation, maintenance, and five-year monitoring of the restoration plan.

B. Responsible Parties

The Applicant will be responsible for the implementation of the mitigation project.

Applicant: Newport Banning Ranch LLC
1300 Quail Street, Suite 100
Newport Beach, CA 92660
Contact: Michael A. Mohler
Telephone: (949) 833-0222
Fax: (949) 833-1960

Plan Prepared by: Glenn Lukos Associates, Inc.
Contact: Tony Bomkamp
29 Orchard
Lake Forest, California 92630-8300
Telephone: (949) 837-0404

C. Site Preparation

Site preparation shall consist of excavation and grading, clearing and controlling exotic plants, trenching and installation of underground irrigation components, removing trash and debris, preparing planting holes, and doing any other work necessary to make ready the area for planting. In order to ensure that salvage of cactus occurs, prior to clearing, the project biologist will map and flag areas of cactus suitable for salvage. These areas will be preserved in place until salvage activities occur. Once salvage is begun, the salvaged cactus will be stored in protected areas on clean soil.

Exotic Vegetation Control

The predominance of non-native, invasive weed species throughout California has presented a challenge to most native revegetation projects. Weedy species are opportunistic, rapidly colonizing disturbed sites such as revegetation sites. This can lead to the displacement of native species if the weedy species are not properly treated. Several of these invasive species are

capable of out-competing most native understory and herbaceous plants; Pampas grass and giant reed can out-compete and even displace existing native vegetation as is evidenced by the dominance of these species in all of the arroyos and large portions of the lowland areas on the site.

One of the largest obstacles to the successful revegetation of a site is the exotic seed bank residing in the soil. This seed bank can persist for several years or even decades and poses one of the major threats to restoration programs. Undesirable exotic plants will be eradicated either during initial site grading or prior to site preparation. If grading precedes planting by more than a few months, it will be necessary to eradicate undesirable exotic plants that have become established prior to planting and seeding of the mitigation sites. If deemed necessary, a "grow-and-kill" cycle will be established during that period. "Grow and kill" is a cycle of applying water, germinating the non-native, invasive species, and spraying with the appropriate chemical. This allows a large portion of the seed bank currently present in the soil to be removed. Eliminating or substantially reducing the competition from non-native exotics early in the life cycle of native plants helps to ensure more rapid growth and cover by the native species.

When necessary, the initial eradication of pest plants shall be performed by hand, by the use of pesticides, or by other methods approved by the Project Biologist. Weed control will be maintained throughout the monitoring period. Weeds will be controlled before their setting of seed. Ongoing weed control will be accomplished manually by the use of a hoe or other tool to uproot the entire plant, a mower or weed whip to cut plants, or by herbicide application.

The type, quantity, and method of herbicide application will be determined by a California-licensed Pest Control Advisor (PCA) who will inspect the site, write project recommendations, and submit same to the Project Biologist for approval. Pesticide recommendations shall include, but are not limited to, the pesticides to be used, rates of application, methods of application, and areas to which pesticides are to be applied.

A licensed Pest Control Operator (PCO) may work under the supervision of the PCA who will employ best management practices regarding the timing, quantity, and type of herbicide for each species. The PCA will determine both immediate and follow-up herbicide application for each species.

Weed species identified as invasive, particularly tenacious, or those with wind-borne seed will be subject to the earliest control efforts. The Project Biologist will direct the contractor regarding the selection of target weed species, their location, and the timing of weed control operations to ensure that native plants are avoided to the extent possible. A summary of weed removal methods are provided in Table 3-1.

TABLE 3-1
ERADICATION METHODS FOR INVASIVE PLANTS

Method	Application Method	Time	Equipment	Advantage	Disadvantage
Manual	-Best on isolated individual patches	-Remove late summer to early fall	-Shovel -Weed wacker -Loppers -Brush cutters	-No herbicide use -Low soil disturbance	-Low effectiveness -Resprouting likely to occur
Foliar Spray	-Small or moderate stands of pure invasive	-Spray late summer to early fall	-Sprayer (backpack or mounted) -Glyphosate herbicide	-Low soil disturbance -Relatively effective	-Use of herbicide -Drift spray on non-target plants -Leave above ground biomass
Cut Stem/Stump Spray	-Large pure stands of invasive stands near or mixed with native vegetation	-Cut & Spray late summer to early fall	-Weed wacker -Loppers -Brush cutters -Wand applicator -Glyphosate herbicide	-Reduction of overspray on non-target -Can remove above ground biomass	-Resprouting likely to occur -Cost of removing biomass off site if necessary
Cut, Resprout, & Spray	-Large pure stands of invasive	-Cut in spring -Spray resprouts late summer to early fall	-Weed wacker -Loppers -Brush cutters -Sprayer (backpack or mounted) -Glyphosate herbicide	-Reduction of overspray on non-target -Can remove above ground biomass	-Resprouting likely to occur -Cost of removing biomass off site if necessary
Mechanical	-Large pure stands of invasive	-Cut or mow canes outside of nesting season -Excavate in dry season	-Specialized excavator	-Root/ rhizome removal	-High soil disturbance -Some resprouting likely to occur if all roots are not removed

Contractor Education

All aspects of the Mitigation Plan concerning permit requirements, site protection, maintenance inspections, landscape procedures, and monitoring will be reviewed with the appropriate contractors prior to the commencement of grading or any construction work.

All contractors, subcontractors, and project supervisors will be notified of the Corps Authorization, the CDFG Streambed Alteration Agreement, and the CCC Coastal Development Permit. Copies of the permits shall be kept on site at all times during periods of active work and must be presented to any agency personnel upon demand.

D. Planting Plan

Upland grassland will be established within the proposed mitigation areas, and MSS and SCBS will be established within the proposed mitigation areas.

The habitat components were selected based on surveys conducted during various biological survey visits including vegetation mapping, jurisdictional delineation, and subsequent site visits to further evaluate the mitigation sites for suitability. The upland grassland components are conducive for supporting foraging raptors, and the MSS and SCBS is conducive to supporting the coastal California gnatcatcher and coastal cactus wren. No planting shall be done in any area until the area concerned has been prepared in accordance with the plans and presents an appearance satisfactory to the Project Biologist.

Plant Palette

The mitigation sites will be vegetated with plant species native to the Orange County coast including maritime succulent scrub, and southern coastal bluff scrub as described by the Orange County Environmental Management Agency[7], with additions from the associations described by Sawyer and Keeler-Wolf[8]. The proposed plant palettes for the mitigation habitat types are designated below in Tables 3-2 through 3-4. The plant palette includes recommendations for plant species composition based on other restoration programs. Plant quantities, spacing, stock type, and distribution shall be determined in consultation with the CDFG and CCC prior to planting.

Source of Plant Materials

It is preferred that the source of all propagules and seed used at the mitigation sites be from the site or adjacent areas. If not available, the remainder of propagules and seed required will be from wild sources within Central Orange County and collected as close to the mitigation site as possible to preserve regional genetic integrity.

Contract Growing

Contract growing of all container plants shall be by a local experienced native plant nursery. Substitution of plant material at the time of planting depends solely upon the discretion of the Project Biologist. Any substitutions that are approved will be documented in the As-Built Plans.

Container Plants

One-gallon container stock, rosepots, and liners shall be utilized for container stock production in order to develop vertical heterogeneity (strata). All plant materials will be inspected by the Project Biologist and approved as healthy, disease free, and of proper size prior to planting. Overgrown, root-bound container stock will be rejected.

---

[7] County of Orange Environmental Management Agency, Department of Planning. 1992. Habitat Classification System, Natural Resources Geographic Information System (GIS) project. By John Gray, Ph.D. and David Bramlet. Santa Ana, California

[8] Sawyer, J. O., and T. Keeler-Wolf. 1995. A Manual of California Vegetation. California Native Plant Society, Sacramento, California; the approximately equivalent vegetation series for maritime succulent scrub is coast prickly-pear series in this manual, and the approximately equivalent vegetation series for southern coastal bluff scrub is California encelia series in this manual.

TABLE 3-2 UPLAND GRASSLAND PLANT PALETTE 24.83 ACRES	
Botanic Name	**Common Name**
Melica imperfecta	Coast Range Melica
Nassella pulchra	Purple needlegrass
Nassella lepida	Foothill Needlegrass
Bothriochloa barbinodis	Beardgrass
Distichlis spicata	Saltgrass
Lasthenia californica	California goldfields

TABLE 3-3 MARITIME SUCCULENT SCRUB PLANT PALETTE 38.81 ACRE MITIGATION	
Botanic Name	**Common Name**
Canopy Layer	
Encelia californica	California sunflower
Isomeris arborea	Bladderpod
Opuntia prolifera	Coastal Cholla
Opuntia littoralis	Coast Prickly Pear
Eriophyllum confertiflorum	Golden Yarrow
Euphorbia misera	Cliff Spurge
Atriplex lentiformis breweri	Brewer's saltbush
Lycium californicum	California box-thorn
Ground Cover/Herbaceous Layer	
Dudleya lanceolata	Lance-leaved Dudleya
Melica imperfecta	Coast Range Melica
Nassella pulchra	Purple needlegrass
Nassella lepida	Foothill Needlegrass
Bothriochloa barbinodis	Beardgrass
Distichlis spicata	Saltgrass
Corethrogyne filaginifolia	Common sand aster

TABLE 3-4 COASTAL BLUFF SCRUB PLANT PALETTE 6.08 ACRES	
Botanic Name	**Common Name**
Canopy Layer	
Encelia californica	California sunflower
Isomeris arborea	Bladderpod
Lycium californicum	California box-thorn
Mirabilis californica	Wishbone bush
Eriophyllum confertiflorum	Golden Yarrow
Euphorbia misera	Cliff Spurge
Atriplex lentiformis breweri	Brewer's saltbush
Suaeda californica	Woolly Seablite
Ground Cover/Herbaceous Layer	
Dudleya lanceolata	Lance-leaved Dudleya
Bothriochloa barbinodis	Beardgrass
Distichlis spicata	Saltgrass
Corethrogyne filaginifolia	Common sand aster

Mycorrhizal Fungi

Mycorrhizae are specialized fungi found on plant roots. A symbiotic relationship exists between plant roots and mycorrhizae wherein the plants benefit from the increased ability to take up nutrients and withstand drought when mycorrhizae are present. This relationship is essential to the growth rate, well-being, and longevity of native plant communities. Plant utilization of mycorrhizal fungi markedly increases the success of revegetation on disturbed or degraded lands. All appropriate container-grown plants, except those know to be non-host species, shall be inoculated with mycorrhizal fungi prior to delivery to the job site.

Plant Placement

Container stock will be laid out in such a manner that mimics natural plant distribution (i.e., in clusters and islands) to emulate regional reference sites. The Project Biologist will monitor and confirm that trees and shrubs have been placed at the designed elevation relative to the water source supporting them, such as ground water.

Planting Method for Rose Pot and/or Liner Plant Stock

Rose pot and/or liner plant stock will be placed in a hole measuring at least twice the diameter and depth of the container. The root structure will be examined and excess root material removed. The top of the rootball will be set slightly above finish grade. The planting hole will be backfilled with native soil. Fertilizer, watering basins, and mulch are not required for this planting method.

Planting Method for Container Stock
One-gallon container stock will be planted in a hole measuring at least twice the diameter of the container and twice the depth. Container stock will be thoroughly watered the day before planting. One teaspoon (0.3 oz.) of Osmocote 14-14-14 (or equal) will be placed one inch below the root zone and backfilled with native soil to proper planting depth. The container will be upended into the palm of the hand to avoid damage to the root structure and placed in the planting hole. The top of the root ball will be set one inch above finish grade. The planting hole will be backfilled with native soil.

A three-inch high, hand-compacted earth berm, approximately 36 inches in diameter, will then be constructed around each container plant. This watering basin will be maintained until the plants are no longer irrigated. Mulch will be applied as a top dressing, two to three inches thick but must not come in contact with the stem of the plant. Container stock will be watered immediately after installation.

Pruning and Staking
There will be no pruning or staking of any vegetation. Diseased or insect-damaged foliage, if sufficient to require pruning, will serve as a benchmark for rejection of plant material.

E. Irrigation Plan

Supplemental irrigation may be used solely for the purpose of establishing the plants at the mitigation sites and is of a temporary nature. The goal of the irrigation program is to obtain germination and growth with the least amount of irrigation. Frequent irrigation encourages weed invasion and leaches nutrients from the soil.

The mitigation sites will be initially supported by a short-term automatic irrigation system as well as from existing water sources. Drip irrigation may be provided for trees and shrubs planted on the slopes. The container stock will be irrigated as long as necessary to establish the root systems in the native soils, as directed by the Project Biologist. The main line will be installed below-grade. All lateral lines will be installed above-grade for ease of removal and inspection. Alternatively, lateral lines may be installed below-grade and abandoned in place after project conclusion.

The critical period for irrigation is during the first winter and early spring following planting. During this time, roots are not well established and an unseasonable drought can cause high mortality. During dry periods after plant installation, the Project Biologist and the maintenance contractor will regularly inspect soil moisture. Watering during the summer dry season will occur as frequently as required.

After the initial plant establishment period, water will be applied infrequently and only as required to prevent the mortality of plants and seedlings. The irrigation methods employed will attempt to mimic wet rainfall years by incorporating evenly spaced, infrequent, deep applications of water.

When the plantings are sufficiently established and no longer require supplemental irrigation, the Project Biologist shall notify the landscape contractor to remove all above-grade irrigation system components from the mitigation sites.

F. As-Built Conditions

Once the implementation of the mitigation has been completed, the Applicant will submit "As-Built" drawings to the USFWS within 45 days after completion of construction. The drawings will identify the date installation was completed and if there were any deviations from the approved mitigation plan.

V. MAINTENANCE ACTIVITIES DURING THE MONITORING PERIOD

A. Maintenance Activities

The purpose of this program is to ensure the success of the mitigation plantings. Maintenance will occur over the Monitoring Period. The Project Biologist will monitor all aspects of the revegetation in an effort to detect any problems at an early state. Potential problems could arise from irrigation failure, erosion, vandalism, competition from weeds and invasive species, and unacceptable levels of disease and predation.

These maintenance guidelines are specifically tailored for native plant establishment. The maintenance personnel will be fully informed regarding the habitat establishment program so they understand the goals of the effort and the maintenance requirements. A landscape contractor with experience and knowledge in native plant habitat restoration will supervise all maintenance personnel.

For a period of 120 days following completion of the planting installation, the initial landscape contractor will be responsible for the care of the plantings. The purpose of the 120-day establishment period is to ensure continuity between the installation of the plant material and its short-term maintenance. The contractor’s presence during this period is proven to increase project success. The contractor will control the spread of weed species and identify any efforts necessary to ensure the health and survival of the plantings.

Following the 120-day establishment period the project will be evaluated for health of plant material, and if judged satisfactory by the Project Biologist, the establishment period will be considered concluded and the long-term habitat maintenance program will begin. A different landscape contractor may implement this period of maintenance; however, the Project Biologist will continue to review the project’s success.

Damage to plants, irrigation systems, and other facilities occurring as a result of unusual weather or vandalism will be repaired or replaced as soon as practicable.

General Maintenance
The Contractor will perform the following tasks as general maintenance duties:

- Plant Inspection
- Weed control
- Irrigation water volume and frequency
- General maintenance of irrigation system
- Trash and debris removal
- Pest control
- Plant replacement

Plant Inspection
After initial planting, the Project Biologist will check the mitigation site on a monthly basis through the 18th month. The plants shall be inspected on a quarterly basis thereafter.

Weed Control
The mitigation site shall be maintained free of weeds during the monitoring period. Weed eradication will minimize competition that could prevent the establishment of native species. All maintenance personnel will be trained to distinguish weed species from native vegetation to ensure only weedy species are removed or sprayed with herbicide.

As weeds become evident, they should be immediately removed by hand or controlled with an appropriate herbicide as determined by a licensed Pest Control Advisor (PCA). Weed debris shall be removed from the project area as accumulated and disposed of as permitted by law.

Weeds shall be manually removed before they can attain a height of three-inches (3") at intervals of not more than 30 days for the first two years of the project. All portions of the plant will be removed, including the roots. The Project Biologist shall direct the contractor regarding the selection of target weed species, their location, and the timing of weed control operations to ensure that native plants are avoided to the extent possible. Pulled weeds will be placed on a "mantilla" or other type of tarp to prevent the seeds from coming in contact with the ground.

A cleared space, 18 inches from the base of the plant, will be maintained around each container plant to minimize competition from other plant species. Mulch, two-inches thick within the watering basin, will be maintained throughout the monitoring period. Leaf and branch drop and organic debris of native species shall be left in place.

Irrigation Water Volume and Frequency
The contractor shall be responsible for applying sufficient irrigation water to adequately establish new plant materials, and germinate and establish the applied seed. Irrigation water shall be applied in such a way as to encourage deep root growth (periodic deep irrigation versus frequent light irrigation). The contractor will allow soil to dry down to approximately 50- to 60-percent of field capacity (in the top six or ten inches after germination and during seedling establishment) before the next irrigation cycle. Wetting of the full root zone and drying of the soil between irrigation events is essential to the maintenance of the plants and the promotion of a deep root zone that will support the vegetation in the years after establishment. Systems may need to be on

for as long as six to eight hours at a time in order to get complete water penetration to the lower soil horizons to encourage deep root growth. A soil probe or shovel shall be used to directly examine soil moisture and rooting depth.

General Maintenance of Irrigation System
The contractor will be responsible for the regular maintenance and repair of all aspects of the irrigation system. Poorly functioning or non-functioning parts shall be replaced immediately so as to not endanger the plantings.

General system checks shall be conducted no less than weekly for the first month after installation to ensure the system is functioning correctly and monthly thereafter, except during periods when the irrigation system is not in operation as recommended by the Project Biologist.

Any erosion or slippage of soil caused by the contractor's inadequate maintenance or operation of irrigation facilities, shall be repaired by the contractor at his/her expense.

Trash and Debris Removal
The mitigation site shall be well maintained in order to deter vandalism and dumping of trash. The contractor is responsible for avoiding impacts to plantings during trash removal activities. Contractor shall, during daily routine maintenance, manually remove weeds, litter, trash, and debris from the mitigation site and dispose of off site as permitted by law. Dead limbs and tree fall shall be left in place in the revegetation areas.

Pest Control
Young trees and shrubs will be monitored for signs of disease, insect and/or predator damage, and treated as necessary. Badly damaged plants will be pruned to prevent spreading of the pestilence or replaced in kind if removed. Excessive foraging by predators may necessitate protective screening around plants and/or poison baiting of the predators. The Project Biologist will be consulted on any pest control measures to be implemented.

The contractor shall be responsible for maintaining a rodent-free project. All measures to eradicate rodents must be as directed by a licensed pest control consultant.

Plant Replacement
The installation contractor will be responsible for replacing all container stock plants terminally diseased or dead for 120 days after plant installation. The long-term maintenance contractor will thereafter replace all dead and/or declining plants in the winter months as recommended by the Project Biologist. Replacement plants shall be furnished and planted by the contractor at his/her expense.

Replacement plants shall conform to the species, size requirements, and spacing as specified for the plants being replaced. The replacement plants shall be purchased from inventory at the same native plant nursery as were the contract-grown plant stock.

Fertilization
If nutrient deficiencies are observed during site monitoring, the Project Biologist may specify applications of slow-release pellet fertilizer or soil amendments to speed initial growth or as a remedial measure. These applications shall occur at the onset of the rainy season following the manufacturer's recommendations. Fertilizer will not be applied other than under the direction of the Project Biologist.

Pruning
No pruning is necessary unless otherwise specified by the Project Biologist. Dead wood shall be left on trees or where it has fallen as it plays an important role in habitat creation and soil formation.

Staking of Trees
Staking of trees is to be avoided unless determined necessary by the Project Biologist. All stakes shall be removed at the completion of the five-year monitoring period, or earlier as determined by the Project Biologist. All stakes shall be removed by the contractor and disposed of off-site in a legal manner.

B. Responsible Parties

The Applicant will be responsible for financing and carrying out maintenance activities.

Newport Banning Ranch LLC
1300 Quail Street, Suite 100
Newport Beach, CA 92660
Contact: Michael A. Mohler
Telephone: (949) 833-0222
Fax: (949) 833-1960

C. Maintenance Schedule

The mitigation and restoration maintenance and monitoring program will begin with the construction process and continue during the Monitoring Period. Table 3-5 below indicates the schedule of maintenance inspections.

TABLE 3- 5
MAINTENANCE SCHEDULE

Maintenance Task	Year				
	1	2	3	4	5
Plant Inspection	Monthly first 12 months	Monthly through 18th month; quarterly thereafter	Quarterly	Quarterly	Quarterly
Irrigation System Inspection	Monthly, or more frequently if required	Monthly	As Required	N/A	N/A
Trash and Debris Removal	Monthly	Quarterly	Quarterly	Quarterly	Quarterly
Weed Control	Minimum of Monthly	Monthly	Quarterly	Quarterly	Quarterly
Pest Control	Monthly	Bi-monthly	Quarterly	Quarterly	Quarterly
Plant Replacement	Annually	Annually	Annually	Annually	Annually
Fertilization (if necessary)	Annually	Annually	N/A	N/A	N/A

VI. MONITORING PLAN

A. Initial Monitoring Effort

The mitigation sites will be monitored immediately following establishment and 30 days thereafter. The initial biological and ecological status of the mitigation sites will be established and the as-built condition of the site will be documented. Long-term monitoring of the mitigation sites will begin following this initial assessment.

B. Performance Criteria

The success of habitat restoration is defined as the restoration of a functional ecosystem. Success is usually measured by percent coverage by target species. Natural habitats rarely exhibit 100-percent coverage, but rather include a considerable proportion of open spaces. While this monitoring program uses percent coverage criteria, it is noted that determination of successful coverage is expected to be relative to other similar native habitats typical of the region. Since no undisturbed coastal sage scrub habitat is available on site to act as a reference, a publicly accessible off site relatively undisturbed reference site will be identified prior to the beginning of installation of the coastal sage scrub.

The means of determining successful enhancement for this site will be through series of measurements for species composition, exotic species cover, and cover by native species. All of these, except non-native species cover, should increase over time. Cover by non-native species should be the opposite; it should decrease with time, particularly because one of the primary goals of the project is to substantially reduce or eliminate non-native species from the restoration site. After the initial non-native species eradication and associated planting effort has been completed, the restoration site will be monitored by the project monitor on a monthly basis for the 12 months and quarterly for the remainder of the monitoring period. Qualitative surveys, consisting of a general site walkover and habitat characterization, will be completed during each monitoring visit. General observations, such as fitness and health of the planted species, pest problems, weed persistence/establishment, mortality, and drought stress, will be noted in each site walkover. The Project Monitor will determine remedial measures necessary to facilitate compliance with performance standards.

Data regarding wildlife usage will be collected during each visit.

Quantitative vegetation data will be collected annually using accepted vegetative sampling methods in order to evaluate survivorship, species coverage, and species composition.
In the event that plantings should fail to meet the specified requirements, compliance will be ensured by the performance of either or both of the following remedial procedures by the contractor on an as-needed basis as directed by the Project Monitor: (1) replacing unsuccessful plantings with appropriate-sized stock or seed mixes to meet stated cover or survival requirements and /or (2) performing maintenance procedures to ensure the site conditions are appropriate (e.g., non-native species removal). Remedial actions in planting areas shall be based on detailed investigations (such

as soil tests and excavations of failed plantings to examine root development) to determine causes of failure.

Standard Vegetation Monitoring procedures will be as follows:

First-Year Monitoring

Success Standard: 40-percent coverage of native species, relative to the reference site (<5-percent deviation allowed);
At least 80-percent of the planted species will be represented in the restoration site;
No more than 10-percent coverage by non-native shrubs species; and
No more than 20-percent coverage by non-native annual species

Second-Year Monitoring

Success Standard: 50-percent coverage of native species, relative to the reference site (<5-percent deviation allowed);
At least 80-percent of the planted species will be represented in the restoration site;
No more than 5-percent coverage by non-native shrubs species; and
No more than 15-percent coverage by non-native annual species

Third-Year Monitoring

Success Standard: 65-percent coverage of native species, relative to the reference site (<5-percent deviation allowed);
At least 80-percent of the planted species will each attain at least 5-percent cover of the total native cover;
No more than 5-percent coverage by non-native shrubs species; and
No more than 15-percent coverage by non-native annual species

Fourth-Year Monitoring

Success Standard: 75-percent coverage of native species, relative to the reference site (<5-percent deviation allowed);
At least 80-percent of the planted species will each attain at least 5-percent cover of the total native cover;
No more than 5-percent coverage by non-native shrub species; and
No more than 10-percent coverage by non-native annual species

Fifth-Year Monitoring

Success Standard: 80-percent coverage of native species, relative to the reference site (<5-percent deviation allowed); or utilized by nesting California gnatcatchers;
At least 80-percent of the planted species will each attain at least 5-percent cover of the total native cover;
No more than 5-percent coverage by non-native shrub species; and
No more than 10-percent coverage by non-native annual species

C. Monitoring Methods

Monitoring will assess the attainment of annual and final success criteria and identify the need to implement contingency measures in the event of failure. Monitoring methods include an annual tally of dead and/or declining plant stock and visual estimates of cover as well as field sampling techniques that are based in accordance with the methodology developed by the California Native Plant Society (CNPS).[9] Please refer to *A Manual of California Vegetation* for further details on this sampling method.

Sampling Techniques
Quantitative sampling within the restoration site will be performed using one-meter quadrats that will be placed randomly throughout the site. Placement of quadrats will be determined using random numbers tables to provide two coordinates one that indicates the distance along a longitudinal centerline bisecting the site and one that determines the distance form the line. Plots will be placed on alternating sides of the centerline and perpendicular to the centerline. Vegetative cover will be visually estimated within the quadrat for each species present and recorded on a data sheet. Any species observed during the sampling that does not fall within a quadrat will be recorded and included on the list of species for the restoration site. At least 30 replicates will be initially sampled. Sample variance from data collection in years one through three will be used to determine if 30 samples is adequate. If a power analysis indicates that more than 30 samples are required, additional transects or quadrats will be added. If power analysis indicates that fewer than 30 samples are required, the number of quadrats will be reduced. Sampling will be conducted with sufficient replication to detect a 10% difference in absolute ground cover between the mean of the restoration and the success standard with 90% power at an alpha level of 0.10. The mean native cover for the restoration site will be compared to the performance criteria at the end of five years using an appropriate inferential test such as a single-sample t-test. The mean cover for the restoration site will be considered to meet the performance criteria if the resulting alpha level is greater than 0.10.

Photo-Documentation
Permanent stations for photo-documentation will be established during the first annual monitoring event. Photos shall be taken each monitoring period from the same vantage point and in the same direction each year and shall reflect material discussed in the annual monitoring report.

Qualified habitat restoration specialists, biologists, or horticulturists with appropriate credentials and experience in native habitat restoration shall perform monitoring. Continuity within the personnel and methodology of monitoring shall be maintained insofar as possible to ensure comparable assessments.

Monitoring Period
The Monitoring Period shall last until whichever of the following occurs first: (a) five years from the installation of a mitigation site or (b) until the Project Biologist has determined, with resource agency concurrence, that the fourth-year success standard has been met as to a mitigation site and,

[9] Sawyer, John O. and Todd Keeler-Wolf. 1995. *A Manual of California Vegetation*. California Native Plant Society.

additionally, that such site (i) is self-sustaining in the absence of irrigation, (ii) is occupied by nesting gnatcatchers and/or cactus wrens, as appropriate, and (iii) has the structure, composition, and functionality of naturally occurring coastal sage scrub or southern cactus scrub, as appropriate.

Qualitative Monitoring

The Project Biologist will conduct qualitative monitoring surveys on a monthly basis for the first 18 months and quarterly thereafter for the remainder of the monitoring period. Qualitative surveys, consisting of a general site walkover and habitat characterization will be completed during each monitoring visit. General observations such as fitness and health of the planted species, pest problems, weed establishment, mortality, and drought stress, will be noted in each site walkover. The Project Biologist will also note observations on wildlife use and native plant recruitment for the purpose of later discussion in the annual reports. Records will be kept of mortality and other problems such as insect damage, weed infestation, and soil loss. The Project Biologist will determine remedial measures necessary to facilitate compliance with performance standards.

D. Annual Reports

At the end of each of the growing seasons during the Monitoring Period, an annual report will be prepared. These reports will be "cumulative" including the results from previous annual reports and will assess both attainment of yearly target criteria and progress toward final success criteria. These reports will include the following:

- a list of names, titles, and companies of all persons who prepared the content of the annual report and participated in monitoring activities for that year;
- an analysis of all qualitative monitoring data;
- copies of monitoring photographs;
- maps identifying monitoring areas, transects, and planting zones; and copies of previous reports.

E. Schedule

Annual Reports will be submitted to the appropriate agencies by December 31 of each year for the year in which quantitative sampling was performed.

VII. COMPLETION of MITIGATION

Upon completion of the Monitoring Period for the mitigation sites, the Applicant will notify the City, Corps, CDFG, CCC, and USFWS by submitting a Final Monitoring Report that documents this completion. Following receipt of the final report, the Applicant will, at the request of the City, Corps, CDFG, CCC, and USFWS, provide access and guidance through the mitigation sites to confirm the adequate completion of the mitigation.

VIII. CONTINGENCY MEASURES

A. Initiating Procedures

If a performance standard is not met for any mitigation site or sites in any year or if the approved success criteria are not met, the Project Biologist will prepare an analysis of the cause(s) of failure and, if determined necessary by the City, Corps, CDFG, CCC and USFWS, propose remedial actions for approval. If any mitigation site has not met one or more of the success criteria or performance standards by the end of the Monitoring Period, the responsible party's maintenance and monitoring obligations shall continue until the above-referenced agencies each gives final approval that the mitigation obligations have been satisfied. It is therefore incumbent upon the Project Biologist to foresee project deficiencies as part of the monitoring program and take appropriate steps to address the situation.

B. Funding Mechanism

The Applicant will fund planning, implementation, maintenance and monitoring of any contingency measures that may be required to achieve performance criteria.

C. Responsible Parties

The Applicant will be responsible for implementing, maintaining, and monitoring any contingency procedures.

Newport Banning Ranch LLC
1300 Quail Street, Suite 100
Newport Beach, CA 92660
Contact: Michael A. Mohler
Phone: (949) 833-0222
Fax: (949) 833-1960

SECTION 4. VERNAL POOL COMPLEX

I. GOAL of RESTORATION: Vernal Pool Complex

As one component of the project, the Vernal Pool Complex located in the east central portion of the Property at 17th street extended, which supports the federally-listed San Diego fairy shrimp (*Branchinecta sandiegonensis*) and is located within US Fish and Wildlife Service-designated critical habitat for San Diego fairy shrimp, will be restored and preserved. The pools support a mix of herbaceous perennial hydrophytes including creeping spikerush (*Eleocharis macrostachya*) and saltgrass (*Distichlis spicata*) along with annuals that are indicative of vernal pool habitats in southern California including woolly marbles (*Psilocarphus brevissimus*) and waterfern (*Marsilea vestita*). Mulefat (*Baccharis salicifolia*) has colonized the pool and now accounts for a substantial component of the vegetative cover. Restoration would include removing the mulefat and non-native species along with oil field infrastructure (mostly pipelines that traverse the pool, resulting in a temporary impact to 0.02 acre of vernal pool habitat).[10] Additionally, the vernal pool watershed will be expanded to the north and west of the pools in order to mitigate for impacts to 0.35 acre of watershed within San Diego fairy shrimp critical habitat east of the vernal pools in order to accommodate a proposed road alignment, resulting in a net increase of 0.71 acre of vernal pool watershed.[11] Although the vernal pools themselves will not be permanently impacted, the pools will be restored in order to improve habitat values. It should be noted, however, that the work will occur entirely outside of the rainy season, and as such no temporal loss of vernal pool watershed or San Diego fairy shrimp habitat will occur.

This section (i.e., Section 1) addresses restoration of 0.32 acre of vernal pool habitat, expansion of 0.71 acre of vernal pool watershed for mitigation, and enhancement of the entire vernal pool complex, including the watershed and pool areas, through non-native removal and revegetation.

Please note that the total acreage of the vernal pool restoration area is included in the 25.24 acres of native alkali meadow raptor foraging mitigation discussed in Section 2; however, restoration of the vernal pool complex is being described separately from the raptor foraging mitigation.

A. Type(s) of Habitat to be Restored for Mitigation

As noted above, vernal pool restoration will consist of removing mulefat and non-native species, and the vernal pool watershed expansion will consist of grading the new watershed area such that

[10] As clearly noted, the project has been designed to avoid direct impacts to the vernal pools that are occupied by the San Diego fairy shrimp; nevertheless, because of the artificial nature of the pools and the ongoing oil field uses, the pools are highly degraded and in need of rehabilitation. GLA is currently coordinating with vernal pool specialists at USFWS to determine appropriate methods for implementing a long-term restoration program that would provide for the removal of the oil field infrastructure and woody vegetation while ensuring the long-term viability of the pools and persistence of the San Diego fairy shrimp.

[11] Detailed watershed studies by GLA, which included "real-time" observations of the watershed during heavy rainfall events, determined that the contributing watershed is approximately 2.0 acres and that the majority of water that reaches the pool is from direct rainfall. As such, the expansion of the watershed will result in enhanced conditions and higher quality habitat for the San Diego fairy shrimp.

rainfall will drain into the pools. In addition, the watershed will be enhanced through removal of mulefat and non-native species and revegetation with native alkali meadow dominated by alkali heath (*Frankenia salina*), saltgrass (*Distichlis spicata*), seaside heliotrope (*Heliotropum curassivicum*), alkali weed (*Cressa truxillensis*), saltmarsh sand spurrey (*Spergularia marina*), alkali sida (*Malvella leprosa*), miniature lupine (*Lupinus bicolor*), western plantain (*Plantago erecta*), and California goldfields (*Lasthenia californica*).

B. Time Lapse

Grading to expand the vernal pool watershed will occur in advance of or concurrently with grading associated with road construction. Shaping and planting of the watershed and removal of mulefat and non-native species within the pools will occur concurrently will or immediately following grading of the watershed. Additional grading and planting will occur outside the rainy season to ensure that the watershed is fully functioning at the start of the first rainy season following expansion and enhancement of the watershed.

II. FINAL SUCCESS CRITERIA

A. Target Functions and Values

Restoration efforts will increase biological productivity of the preserved open space and provide enhanced habitat for wildlife in the vernal pool complex.

Specifically, expansion of the watershed by 0.71 acre will increase hydrological input to the pools, which will promote longer-term ponding for San Diego fairy shrimp to complete its life cycle. Restoration of the pools by removing mulefat and non-native species will restore the pools to characteristic vernal pool habitat, as vernal pools do not typically support woody vegetation such as mulefat. The restoration program will also provide increased wildlife habitat function for migratory birds that use the pools as a migration stopover, and the increased watershed area will be planted with native alkali meadow favorable for raptor foraging.

B. Target Acreages for Vernal Pool Restoration and Watershed Expansion/Enhancement

A total of 0.32 acre of vernal pool habitat will be restored, and the vernal pool watershed will be expanded by 1.03 acres to offset impacts to 0.35 acre of watershed within San Diego fairy shrimp critical habitat and 0.03 acre of watershed outside of San Diego fairy shrimp critical habitat, for a net expansion of 0.68 acre. The entire 3.58-acre vernal pool complex will be subject to non-native species removal and enhancement with native alkali meadow species. It should be noted that this vernal pool mitigation/restoration acreage total is included in the 25.24 acres of alkali meadow raptor foraging mitigation.

III. PROPOSED RESTORATION SITES

A. Location and Size of Mitigation Areas

The 0.32 acre of vernal pool restoration will occur within the existing vernal pool complex, and the 1.03 acres of vernal pool watershed expansion will occur north and west of the existing watershed. Enhancement will occur over the entire 3.58-acre vernal pool complex following grading for expansion [Exhibit 3].

B. Ownership Status

The property is currently managed by Newport Banning Ranch LLC, who is also the Applicant.

C. Present and Proposed Uses of Mitigation Areas

The vernal pools and watershed are presently subject to oil field operations, providing limited value to wildlife. If left undisturbed, the vernal pool complex would continue to function as limited wildlife habitat. Upon completion of the vernal pool restoration program, the vernal pool complex will provide enhanced wildlife habitat functions for San Diego fairy shrimp and migratory birds that use the vernal pools as a migration stopover.

To ensure permanent protection of the restoration areas, the applicant will record a restrictive covenant in the form of a conservation easement and/or deed restriction that will prevent development of the areas proposed for restoration.

D. Present and Proposed Uses of All Adjacent Areas

The surrounding land uses for the vernal pool complex is oilfield operations and earthen access roads for oilfield operations. Following construction of the proposed development, the vernal pool complex will be bordered by development to the east, west, and south. To the north, the pool complex will be immediately bordered by an access road, and open space beyond the road. The access road to the north will be constructed with a culverted wildlife crossing to provide open space connectivity.

IV. IMPLEMENTATION PLAN

A. Rationale for Expecting Implementation Success

The mitigation program will be implemented in advance of or concurrently with impacts to the vernal pool watershed. The specific rationale for expecting success in the implementation of the components of the mitigation program is provided below.

Although the vernal pool habitat is artificial and is generally not vegetated with species characteristic of southern California vernal pools, it nevertheless supports a dense population of San Diego fairy shrimp. The goal of this program is to enhance the habitat functions, which will

in turn increase the likelihood of long-term persistence of San Diego fairy shrimp. The restoration program will accomplish this goal by implementing the following: expansion of the watershed, thereby improving hydrologic function of the pools, and enhancement of the watershed area with species that occur on-site and are known to perform well in habitat restoration programs. A qualified habitat restoration specialist or other individual knowledgeable in native plant revegetation, hereinafter referred to as the Project Biologist, will supervise the implementation, maintenance, and five-year monitoring of the mitigation plan.

B. Responsible Parties

The Applicant will be responsible for the implementation of the mitigation project.

Applicant: Newport Banning Ranch LLC
1300 Quail Street, Suite 100
Newport Beach, CA 92660
Contact: Michael A. Mohler
Telephone: (949) 833-0222
Fax: (949) 833-1960

Plan Prepared by: Glenn Lukos Associates, Inc.
Contact: Tony Bomkamp
29 Orchard
Lake Forest, California 92630-8300
Telephone: (949) 837-0404

C. Site Preparation

Site preparation for the vernal pool complex shall include the use of hand crews to selectively remove mulefat and non-native vegetation from the vernal pools. Site preparation for the vernal pool watershed expansion/enhancement area shall include removing pipes and/or other oil field infrastructure from the pools and watershed enhancement/expansion area, grading with heavy equipment to establish positive flow into the vernal pools, and planting with native alkali meadow vegetation. Restoration will be implemented during the appropriate planting period and will be performed in advance of or concurrently with grading of the development areas. All work will be performed outside of the rainy season.

Ongoing Exotic Vegetation Control

The predominance of non-native, invasive weed species throughout California has presented a challenge to most native revegetation projects. Weedy species are opportunistic, rapidly colonizing disturbed sites such as revegetation sites. This can lead to the displacement of native species if the weedy species are not properly treated. Several of these invasive species are capable of out-competing most native understory and herbaceous plants.

One of the largest obstacles to the successful revegetation of a site is the exotic seed bank residing in the soil. This seed bank can persist for several years or even decades and poses one of

the major threats to restoration programs. Undesirable exotic plants will be eradicated either during initial site grading or prior to site preparation. If grading of the watershed precedes planting by more than a few months, it will be necessary to eradicate undesirable exotic plants that have become established prior to planting and seeding of the mitigation sites. If deemed necessary, a "grow-and-kill" cycle will be established during that period. "Grow and kill" is a cycle of applying water, germinating the non-native, invasive species, and spraying with the appropriate chemical. This allows a large portion of the seed bank currently present in the soil to be removed. Eliminating or substantially reducing the competition from non-native exotics early in the life cycle of native plants helps to ensure more rapid growth and cover by the native species. However, the “grow and kill” cycle will not be implemented in the 0.32-acre vernal pool area, as application of irrigation water to the vernal pools is undesirable due to the potential to impact San Diego fairy shrimp. Therefore, if irrigation water is used for a “grow and kill” cycle, it shall only be implemented within the watershed area, and irrigation water will be prevented from entering the vernal pools through the use of barriers such as sandbags and by limiting the water flow so that it does not pond and/or flow into the pools under the direction of the Project Biologist.

When necessary, the initial eradication of pest plants shall be performed by hand, by the use of pesticides, or by other methods approved by the Project Biologist. Weed control will be maintained throughout the monitoring period. Weeds will be controlled before their setting of seed. Ongoing weed control will be accomplished manually by the use of a hoe or other tool to uproot the entire plant, a mower or weed whip to cut plants, or by herbicide application.
The type, quantity, and method of herbicide application will be determined by a California licensed Pest Control Advisor (PCA) who will inspect the site and write project recommendations and submit the recommendations to the Project Biologist for approval. Pesticide recommendations shall include, but are not limited to, the pesticides to be used, rates of application, methods of application, and areas to which pesticides are to be applied.
A licensed Pest Control Operator (PCO) may work under the supervision of the PCA who will employ best management practices regarding the timing, quantity, and type of herbicide for each species. The PCA will determine both immediate and follow-up herbicide application for each species.

Weed species identified as invasive, particularly tenacious, or those with wind-borne seed will be subject to the earliest control efforts. The Project Biologist will direct the contractor regarding the selection of target weed species, their location, and the timing of weed control operations to ensure that native plants are avoided to the extent possible. A summary of weed removal methods is provided in Table 4-1 below.

TABLE 4-1
ERADICATION METHODS FOR INVASIVE PLANTS

Method	Application Method	Time	Equipment	Advantage	Disadvantage
Manual	-Best on isolated individual patches	-Remove late summer to early fall	-Shovel -Weed wacker -Loppers -Brush cutters	-No herbicide use -Low soil disturbance	-Low effectiveness -Resprouting likely to occur
Foliar Spray	-Small or moderate stands of pure invasive	-Spray late summer to early fall	-Sprayer (backpack or mounted) -Glyphosate Herbicide	-Low soil disturbance -Relatively effective	-Use of herbicide -Drift spray on non-target plants -Leave above ground biomass
Cut Stem/Stump Spray	-Large pure stands of invasive stands near or mixed with native vegetation	-Cut & Spray late summer to early fall	-Weed wacker -Loppers -Brush cutters -Wand applicator -Glyphosate Herbicide	-Reduction of overspray on non-target -Can remove above ground biomass	-Resprouting likely to occur -Cost of removing biomass off site if necessary
Cut, Resprout, & Spray	-Large pure stands of invasive	-Cut in spring - Spray resprouts late summer to early fall	-Weed wacker -Loppers -brush cutters -Sprayer (backpack or mounted) -Glyphosate Herbicide	-Reduction of overspray on non-target -Can remove above ground biomass	-Resprouting likely to occur -Cost of removing biomass off site if necessary
Mechanical	-Large pure stands of invasive	-Cut or mow canes outside of nesting season -Excavate in dry season	-Specialized excavator	-Root/ rhizome removal	-High soil disturbance -Some resprouting likely to occur if all roots are not removed

Contractor Education

All aspects of the Mitigation Plan concerning permit requirements, site protection, maintenance inspections, landscape procedures, and monitoring will be reviewed with the appropriate contractors prior to the commencement of grading or any construction work.

All contractors, subcontractors, and project supervisors will be notified of the Corps Authorization and the CDFG Streambed Alteration Agreement. Copies of the permits shall be kept on-site at all times during periods of active work and must be presented to any agency personnel upon demand.

D. Planting Plan

Vernal pool restoration and vernal pool watershed expansion will be established within the proposed mitigation areas depicted on Exhibit 3.

The habitat components were selected based on surveys conducted during various biological survey visits including vegetation mapping, jurisdictional delineation, and subsequent site visits to further evaluate the mitigation and restoration sites for suitability. The native alkali meadow within the expanded watershed is suitable for the watershed function, and is conducive for supporting a variety of foraging raptors. No planting shall be done in any area until the area concerned has been prepared in accordance with the plans and presents an appearance satisfactory to the Project Biologist.

Plant Palette

The mitigation sites will be vegetated with plant species native to the Orange County coast including alkali meadow as described by the former Orange County Environmental Management Agency[12], with additions from the associations described by Sawyer and Keeler-Wolf[13] and modifications based on site-specific conditions. The proposed plant palettes for the mitigation and restoration habitat types are designated below in Table 4-2. The plant palette includes recommendations for plant species composition based on other restoration programs.

TABLE 4-2
PLANT PALETTE – VERNAL POOL COMPLEX ENHANCEMENT AREA
3.58 ACRES

Botanic Name	Common Name
Cressa truxillensis	Alkali weed
Distichlis spicata	Saltgrass
Frankenia salina	Alkali heath
Heliotropum curassivicum	Seaside heliotrope
Lasthenia californica	California goldfields
Lupinus bicolor	Miniature lupine
Malvella leprosa	Alkali sida
Plantago erecta	Western plantain
Spergularia marina	Saltmarsh sand spurrey

[12] County of Orange Environmental Management Agency, Department of Planning. 1992. Habitat Classification System, Natural Resources Geographic Information System (GIS) project. By John Gray, Ph.D. and David Bramlet. Santa Ana, California

[13] Sawyer, J. O., and T. Keeler-Wolf. 1995. A Manual of California Vegetation. California Native Plant Society, Sacramento, California; the approximately equivalent vegetation series for maritime succulent scrub is coast prickly-pear series in this manual, and the approximately equivalent vegetation series for southern coastal bluff scrub is California encelia series in this manual.

Source of Plant Materials
It is preferred that the source of all propagules and seed used at the mitigation and restoration sites be from the site or adjacent areas. If not available, the remainder of propagules and seed required will be from wild sources within Central Orange County and collected as close to the mitigation site as possible to preserve regional genetic integrity.

Contract Growing
Contract growing of all container plants shall be by a local experienced native plant nursery. Substitution of plant material at the time of planting depends solely upon the discretion of the Project Biologist. Any substitutions that are approved will be documented in the As-Built Plans.

Container Plants
One-gallon container stock, rosepots, and liners shall be utilized for container stock production in order to develop vertical heterogeneity (strata). All plant materials will be inspected by the Project Biologist and approved as healthy, disease free, and of proper size prior to planting. Overgrown, root-bound container stock will be rejected.

Mycorrhizal Fungi
Mycorrhizae are specialized fungi found on plant roots. A symbiotic relationship exists between plant roots and mycorrhizae wherein the plants benefit from the increased ability to take up nutrients and withstand drought when mycorrhizae are present. This relationship is essential to the growth rate, well-being, and longevity of native plant communities. Plant utilization of mycorrhizal fungi markedly increases the success of revegetation on disturbed or degraded lands. All appropriate container-grown plants, except those know to be non-host species, shall be inoculated with mycorrhizal fungi prior to delivery to the job site.

Plant Placement
Container stock will be laid out in such a manner that mimics natural plant distribution (i.e., in clusters and islands) to emulate regional reference sites. The Project Biologist will monitor and confirm that shrubs have been placed at the designed elevation relative to the water source supporting them, such as ground water.

Planting Method for Rose Pot and/or Liner Plant Stock
Rose pot and/or liner plant stock will be placed in a hole measuring at least twice the diameter and depth of the container. The root structure will be examined and excess root material removed. The top of the rootball will be set slightly above finish grade. The planting hole will be backfilled with native soil. Fertilizer, watering basins, and mulch are not required for this planting method.

Planting Method for Container Stock
One-gallon container stock will be planted in a hole measuring at least twice the diameter of the container and twice the depth. Container stock will be thoroughly watered the day before planting. One teaspoon (0.3 oz.) of Osmocote 14-14-14 (or equal) will be placed one inch below the root zone and backfilled with native soil to proper planting depth. The container will be upended into the palm of the hand to avoid damage to the root structure and placed in the

planting hole. The top of the root ball will be set one inch above finish grade. The planting hole will be backfilled with native soil.

A three-inch high, hand-compacted earth berm, approximately 36 inches in diameter, will then be constructed around each container plant. This watering basin will be maintained until the plants are no longer irrigated. Mulch will be applied as a top dressing, 2 to 3 inches thick, but must not come in contact with the stem of the plant. Container stock will be watered immediately after installation.

Pruning and Staking
There will be no pruning or staking of any vegetation. Diseased or insect-damaged foliage, if sufficient to require pruning, will serve as a benchmark for rejection of plant material.

E. Irrigation Plan

Supplemental irrigation may be used solely for the purpose of establishing the plants at the vernal pool watershed expansion site and is of a temporary nature. Irrigation water will not be applied to the 0.32-acre vernal pool restoration area, and barriers such as sandbags will be used under the direction of the Project Biologist to prevent irrigation water from entering the vernal pools. The goal of the irrigation program is to obtain germination and growth with the least amount of irrigation. Frequent irrigation encourages weed invasion and leaches nutrients from the soil.

The vernal pool watershed expansion area will be initially supported by a short-term automatic irrigation system as well as from existing water sources. The container stock will be irrigated as long as necessary to establish the root systems in the native soils, as directed by the Project Biologist. The main line will be installed below-grade. All lateral lines will be installed above-grade for ease of removal and inspection. Alternatively, lateral lines may be installed below-grade and abandoned in place after project conclusion.

The critical period for irrigation is during the first winter and early spring following planting. During this time, roots are not well established and an unseasonable drought can cause high mortality. During dry periods after plant installation, the Project Biologist and the maintenance contractor will regularly inspect soil moisture. Watering during the summer dry season will occur as frequently as required.

After the initial plant establishment period, water will be applied infrequently and only as required to prevent the mortality of plants and seedlings. The irrigation methods employed will attempt to mimic wet rainfall years by incorporating evenly spaced, infrequent, deep applications of water.

When the plantings are sufficiently established and no longer require supplemental irrigation, the Project Biologist shall notify the landscape contractor to remove all above-grade irrigation system components from the mitigation and restoration sites.

As-Built Conditions

Once the implementation of the mitigation and restoration sites has been completed, the Applicant will submit "As-Built" drawings to the City, Corps, CDFG, CCC and U.S. Fish and Wildlife Service (USFWS) within 45 days after completion of construction. The drawings will identify the date installation was completed and if there were any deviations from the approved mitigation plan.

V. MAINTENANCE DURING THE MONITORING PERIOD

A. Maintenance Activities

The purpose of this program is to ensure the success of the mitigation and restoration plantings. Maintenance will occur over the Monitoring Period. The Project Biologist will monitor all aspects of the revegetation in an effort to detect any problems at an early state. Potential problems could arise from irrigation failure, erosion, vandalism, competition from weeds and invasive species, and unacceptable levels of disease and predation.

These maintenance guidelines are specifically tailored for native plant establishment. The maintenance personnel will be fully informed regarding the habitat establishment program so they understand the goals of the effort and the maintenance requirements. A landscape contractor with experience and knowledge in native plant habitat restoration will supervise all maintenance personnel.

For a period of 120 days following completion of the planting installation, the initial landscape contractor will be responsible for the care of the plantings. The purpose of the 120-day establishment period is to ensure continuity between the installation of the plant material and its short-term maintenance. The contractor's presence during this period is proven to increase project success. The contractor will control the spread of weed species and identify any efforts necessary to ensure the health and survival of the plantings.

Following the 120-day establishment period the project will be evaluated for health of plant material, and if judged satisfactory by the Project Biologist, the establishment period will be considered concluded and the long-term habitat maintenance program will begin. A different landscape contractor may implement this period of maintenance; however, the Project Biologist will continue to review the project's success.

Damage to plants, irrigation systems, and other facilities occurring as a result of unusual weather or vandalism will be repaired or replaced as soon as practicable.

General Maintenance

The Contractor will perform the following tasks as general maintenance duties:

- Plant Inspection
- Weed control
- Irrigation water volume and frequency

- General maintenance of irrigation system
- Trash and debris removal
- Pest control
- Plant replacement

Plant Inspection
After initial planting, the Project Biologist will check the mitigation site on a monthly basis through the 18th month. The plants shall be inspected on a quarterly basis thereafter.

Weed Control
The mitigation site shall be maintained free of weeds during the monitoring period. Weed eradication will minimize competition that could prevent the establishment of native species. All maintenance personnel will be trained to distinguish weed species from native vegetation to ensure only weedy species are removed or sprayed with herbicide.

As weeds become evident, they should be immediately removed by hand or controlled with an appropriate herbicide as determined by a licensed Pest Control Advisor (PCA). Weed debris shall be removed from the project area as accumulated and disposed of as permitted by law.

Weeds shall be manually removed before they can attain a height of three-inches (3") at intervals of not more than 30 days for the first two years of the project. All portions of the plant will be removed, including the roots. The Project Biologist shall direct the contractor regarding the selection of target weed species, their location, and the timing of weed control operations to ensure that native plants are avoided to the extent possible. Pulled weeds will be placed on a "mantilla" or other type of tarp to prevent the seeds from coming in contact with the ground.

A cleared space, 18 inches from the base of the plant, will be maintained around each container plant to minimize competition from other plant species. Mulch, two-inches thick within the watering basin, will be maintained throughout the monitoring period. Leaf and branch drop, and organic debris of native species, shall be left in place.

Irrigation Water Volume and Frequency
The contractor shall be responsible for applying sufficient irrigation water to adequately establish new plant materials and germinate and establish the applied seed. Irrigation water shall be applied in such a way as to encourage deep root growth (periodic deep irrigation versus frequent light irrigation). The contractor will allow soil to dry down to approximately 50- to 60-percent of field capacity (in the top six or ten inches after germination and during seedling establishment) before the next irrigation cycle. Wetting of the full root zone and drying of the soil between irrigation events is essential to the maintenance of the plants and the promotion of a deep root zone that will support the vegetation in the years after establishment. Systems may need to be on for as long as six to eight hours at a time in order to get complete water penetration to the lower soil horizons to encourage deep root growth. A soil probe or shovel shall be used to directly examine soil moisture and rooting depth.

General Maintenance of Irrigation System
The contractor will be responsible for the regular maintenance and repair of all aspects of the irrigation system. Poorly functioning or non-functioning parts shall be replaced immediately so as to not endanger the plantings.

General system checks shall be conducted no less than weekly for the first month after installation to ensure the system is functioning correctly and monthly thereafter, except during periods when the irrigation system is not in operation as recommended by the Project Biologist.

Any erosion or slippage of soil caused by the contractor's inadequate maintenance or operation of irrigation facilities shall be repaired by the contractor at his/her expense.

Trash and Debris Removal
The mitigation site shall be well maintained in order to deter vandalism and dumping of trash. The contractor is responsible for avoiding impacts to plantings during trash removal activities. Contractor shall, during daily routine maintenance, manually remove weeds, litter, trash, and debris from the mitigation site and dispose of off-site as permitted by law. Dead limbs and tree fall shall be left in place in the revegetation areas.

Pest Control
Young trees and shrubs will be monitored for signs of disease, insect and/or predator damage, and treated as necessary. Badly damaged plants will be pruned to prevent spreading of the pestilence or replaced in kind if removed. Excessive foraging by predators may necessitate protective screening around plants and/or poison baiting of the predators. The Project Biologist will be consulted on any pest control measures to be implemented.

The contractor shall be responsible for maintaining a rodent-free project. All measures to eradicate rodents must be as directed by a licensed pest control consultant.

Plant Replacement
The installation contractor will be responsible for replacing all container stock plants terminally diseased or dead for 120 days after plant installation. The long-term maintenance contractor will thereafter replace all dead and/or declining plants in the winter months as recommended by the Project Biologist. Replacement plants shall be furnished and planted by the contractor at his/her expense.

Replacement plants shall conform to the species, size requirements, and spacing as specified for the plants being replaced. The replacement plants shall be purchased from inventory at the same native plant nursery as were the contract-grown plant stock.

Fertilization
If nutrient deficiencies are observed during site monitoring, the Project Biologist may specify applications of slow-release pellet fertilizer or soil amendments to speed initial growth or as a remedial measure. These applications shall occur at the onset of the rainy season following the

manufacturer's recommendations. Fertilizer will not be applied other than under the direction of the Project Biologist.

B. Responsible Parties

The Applicant will be responsible for financing and carrying out maintenance activities.

Newport Banning Ranch LLC
1300 Quail Street, Suite 100
Newport Beach, CA 92660
Contact: Michael A. Mohler
Telephone: (949) 833-0222
Fax: (949) 833-1960

C. Maintenance Schedule

The mitigation and restoration maintenance and monitoring program will begin with the construction process and continue during the Monitoring Period. Table 4-3 below indicates the schedule of maintenance inspections.

TABLE 4-3
MAINTENANCE SCHEDULE

Maintenance Task	Year				
	1	2	3	4	5
Plant Inspection	Monthly first 12 months	Monthly through 18th month; quarterly thereafter	Quarterly	Quarterly	Quarterly
Irrigation System Inspection	Monthly or more frequently if required	Monthly	As Required	N/A	N/A
Trash and Debris Removal	Monthly	Quarterly	Quarterly	Quarterly	Quarterly
Weed Control	Minimum of Monthly	Monthly	Quarterly	Quarterly	Quarterly
Pest Control	Monthly	Bi-monthly	Quarterly	Quarterly	Quarterly
Plant Replacement	Annually	Annually	Annually	Annually	Annually
Fertilization (if necessary)	Annually	Annually	N/A	N/A	N/A

VI. MONITORING PLAN

A. Initial Monitoring Effort

The vernal pool watershed expansion/enhancement site and the vernal pool restoration site will be monitored immediately following establishment and 30 days thereafter. The initial biological and ecological status of the mitigation and restoration sites will be established and the as-built condition of the site will be documented. Long-term monitoring of the mitigation and restoration sites will begin following this initial assessment.

B. Performance Criteria

The success of habitat restoration is defined as the restoration of a functional ecosystem. Success is usually measured by percent coverage by target species. Natural habitats rarely exhibit 100-percent coverage but rather include a considerable proportion of open spaces. While this monitoring program uses percent coverage criteria, it is noted that determination of successful coverage is expected to be relative to other similar native habitats typical of the region.

As the vernal pool watershed expansion and enhancement program is intended to mitigate for the loss of existing vernal pool watershed and will be revegetated with native alkali meadow species, the area will be subject to quantitative monitoring and performance criteria. The vernal pool restoration area, however, will be subject to qualitative monitoring only to ensure eradication of mulefat and non-native species within the pool. Quantitative monitoring will not be conducted within the vernal pools and the vegetative cover will not be subject to performance criteria.

The means of determining successful enhancement for the vernal pool watershed expansion site will be through series of measurements for species composition, exotic species cover, and cover by native species. All of these, except non-native species cover, should increase over time. Cover by non-native species should be the opposite; it should decrease with time, particularly because one of the primary goals of the project is to substantially reduce or eliminate non-native species from the restoration site.

After the initial non-native species eradication and associated planting effort has been completed, the vernal pool watershed expansion site and vernal pool restoration site will be monitored by the project monitor on a monthly basis for the 12 months and quarterly for the remainder of the monitoring period. Qualitative surveys, consisting of a general site walkover and habitat characterization, will be completed during each monitoring visit. General observations, such as fitness and health of the planted species, pest problems, weed persistence/establishment, mortality, and drought stress, will be noted in each site walkover. The Project Monitor will determine remedial measures necessary to facilitate compliance with performance standards.

Data regarding wildlife usage will be collected during each visit.

Quantitative vegetation data for the vernal pool watershed expansion area will be collected annually using accepted vegetative sampling methods in order to evaluate survivorship, species coverage, and species composition.

In the event that plantings should fail to meet the specified requirements, compliance will be ensured by the performance of either or both of the following remedial procedures by the contractor on an as-needed basis as directed by the Project Monitor: (1) replacing unsuccessful plantings with appropriate-sized stock or seed mixes to meet stated cover or survival requirements and /or (2) performing maintenance procedures to ensure the site conditions are appropriate (e.g., non-native species removal). Remedial actions in planting areas shall be based on detailed investigations (such as soil tests and excavations of failed plantings to examine root development) to determine causes of failure.

Performance criteria for the vernal pool watershed expansion and enhancement area will be as follows:

First-Year Monitoring

Success Standard: 40-percent coverage of native species (<5-percent deviation allowed);
At least 80-percent of the planted species will be represented in the restoration site;
No more than 10-percent coverage by non-native shrubs species; and
No more than 20-percent coverage by non-native annual species

Second-Year Monitoring

Success Standard: 50-percent coverage of native species, (<5-percent deviation allowed);
At least 80-percent of the planted species will be represented in the restoration site;
No more than 5-percent coverage by non-native shrubs species; and
No more than 15-percent coverage by non-native annual species

Third-Year Monitoring

Success Standard: 65-percent coverage of native species, (<5-percent deviation allowed);
At least 80-percent of the planted species will each attain at least 5-percent cover of the total native cover;
No more than 5-percent coverage by non-native shrubs species; and
No more than 15-percent coverage by non-native annual species

Fourth-Year Monitoring

Success Standard: 75-percent coverage of native species, (<5-percent deviation allowed);
At least 80-percent of the planted species will each attain at least 5-percent cover of the total native cover;
No more than 5-percent coverage by non-native shrub species; and
No more than 10-percent coverage by non-native annual species

Fifth-Year Monitoring

Success Standard: 80-percent coverage of native species, (<5-percent deviation allowed);
At least 80-percent of the planted species will each attain at least 5-percent cover of the total native cover;
No more than 5-percent coverage by non-native shrub species; and
No more than 10-percent coverage by non-native annual species

C. Monitoring Methods

Monitoring will assess the attainment of annual and final success criteria and identify the need to implement contingency measures in the event of failure. Monitoring methods include an annual tally of dead and/or declining plant stock and visual estimates of cover as well as field sampling techniques that are based in accordance with the methodology developed by the California Native Plant Society (CNPS).[14] Please refer to *A Manual of California Vegetation* for further details on this sampling method.

Sampling Techniques

Quantitative sampling within the vernal pool watershed expansion/enhancement site will be performed using one-meter quadrats that will be placed randomly throughout the site. Placement of quadrats will be determined using random numbers tables to provide two coordinates – one that indicates the distance along a longitudinal centerline bisecting the site and one that determines the distance form the line. Plots will be placed on alternating sides of the centerline and perpendicular to the centerline. Vegetative cover will be visually estimated within the quadrat for each species present and recorded on a data sheet. Any species observed during the sampling that does not fall within a quadrat will be recorded and included on the list of species for the restoration site. At least 30 replicates will be initially sampled. Sample variance from data collection in years one through three will be used to determine if 30 samples are adequate. If a power analysis indicates that more than 30 samples are required, additional transects or quadrats will be added. If power analysis indicates that fewer than 30 samples are required, the number of quadrats will be reduced. Sampling will be conducted with sufficient replication to detect a 10% difference in absolute ground cover between the mean of the restoration and the success standard with 90% power at an alpha level of 0.10. The mean native cover for the restoration site will be compared to the performance criteria at the end of five years using an appropriate inferential test such as a single-sample t-test. The mean cover for the restoration site will be considered to meet the performance criteria if the resulting alpha level is greater than 0.10.

Photo-Documentation

Permanent stations for photo-documentation will be established during the first annual monitoring event. Photos shall be taken each monitoring period from the same vantage point and in the same direction each year and shall reflect material discussed in the annual monitoring report.

[14] Sawyer, John O. and Todd Keeler-Wolf. 1995. *A Manual of California Vegetation*. California Native Plant Society.

Qualified habitat restoration specialists, biologists, or horticulturists with appropriate credentials and experience in native habitat restoration shall perform monitoring. Continuity within the personnel and methodology of monitoring shall be maintained insofar as possible to ensure comparable assessments.

Monitoring Period
The Monitoring Period shall last until whichever of the following occurs first: (a) five years from the installation of a mitigation site or (b) until the Project Biologist has determined, with resource agency concurrence, that the fifth-year success standard has been achieved for specific mitigation areas and, additionally, that such areas are self-sustaining in the absence of irrigation for a minimum of three years.

Qualitative Monitoring
The Project Biologist will conduct qualitative monitoring surveys on a monthly basis for the first 18 months and quarterly thereafter for the remainder of the monitoring period. Qualitative surveys, consisting of a general site walkover and habitat characterization, will be completed during each monitoring visit. General observations, such as fitness and health of the planted species, pest problems, weed establishment, mortality, and drought stress, will be noted in each site walkover. The Project Biologist will also note observations on wildlife use and native plant recruitment for the purpose of later discussion in the annual reports. Records will be kept of mortality and other problems such as insect damage, weed infestation, and soil loss. The Project Biologist will determine remedial measures necessary to facilitate compliance with performance standards.

D. Annual Reports

At the end of each of the growing seasons during the Monitoring Period an annual report will be prepared. These reports will be "cumulative" including the results from previous annual reports and will assess both attainment of yearly target criteria and progress toward final success criteria. These reports will include the following:

- a list of names, titles, and companies of all persons who prepared the content of the annual report and participated in monitoring activities for that year;
- an analysis of all qualitative monitoring data;
- copies of monitoring photographs;
- maps identifying monitoring areas, transects, and planting zones; and
- copies of previous reports

E. Schedule

Annual Reports will be submitted to the appropriate agencies by December 31 of each year for the year in which quantitative sampling was performed.

VII. COMPLETION OF MITIGATION

Upon completion of the Monitoring Period for the mitigation sites, the Applicant will notify the City, Corps, CDFG, CCC, and USFWS by submitting a Final Monitoring Report that documents this completion. Following receipt of the final report, the Applicant will, at the request of the City, Corps, CDFG, CCC, and USFWS, provide access and guidance through the mitigation and restoration sites to confirm the adequate completion of the mitigation.

VIII. CONTINGENCY MEASURES

A. Initiating Procedures

If a performance standard is not met for any mitigation site or sites in any year or if the approved success criteria are not met, the Project Biologist will prepare an analysis of the cause(s) of failure and, if determined necessary by the City, Corps, CDFG, CCC, and USFWS, propose remedial actions for approval. If any mitigation site has not met one or more of the success criteria or performance standards by the end of the Monitoring Period, the responsible party's maintenance and monitoring obligations shall continue until the above-referenced agencies each gives final approval that the mitigation obligations have been satisfied. It is therefore incumbent upon the Project Biologist to foresee project deficiencies as part of the monitoring program and take appropriate steps to address the situation.

B. Funding Mechanism

The Applicant will fund planning, implementation, maintenance, and monitoring of any contingency measures that may be required to achieve performance criteria.

C. Responsible Parties

The Applicant will be responsible for implementing, maintaining, and monitoring any contingency procedures.

Newport Banning Ranch LLC
1300 Quail Street, Suite 100
Newport Beach, CA 92660
Contact: Michael A. Mohler
Phone: (949) 833-0222
Fax: (949) 833-1960

SECTION 5. OIL FACILITIES BUFFER AND WATER QUALITY BASIN PLANTINGS

I. PROPOSED PLANTINGS

As part of development of the project, the existing oil facilities on site, which now cover much of the lowland and upland areas, will be consolidated into two small areas in the lowlands. The perimeter of the oil consolidation areas will be planted with native screening trees such as Fremont cottonwood (*Populus fremontii*) and willow (*Salix* sp.). The final plant palette for the oil consolidation buffers will be developed in consultation with and subject to the approval of the project biologist.

The proposed project includes three water quality basins. One of the basins will be located at the top of the large arroyo, and the other two basins will be located in the lowlands. All three of the basins will be designed to provide riparian habitat function in addition to wetland and riparian areas being created/restored for mitigation. The basins will be vegetated with a mix of emergent marsh species in the wetter parts of the basin and facultative species in the drier parts of the basins, including the slopes, depending on the expected hydrological regime of each basin. The final plant palette for the water quality basins will be developed in consultation with and subject to the approval of the project biologist. Table 5-1 below lists plants that may be used in the water quality basins.

TABLE 5-1
POTENTIAL WATER QUALITY BASIN PLANT PALETTE

Botanic Name	**Common Name**
Bolboschoenus maritimus	Alkali bulrush
Schoenoplectus americanus	Olney's bulrush
Juncus mexicanus	Mexican rush
Juncus acutus	Southwestern spiny rush
Eleocharis macrostachya	Creeping spikerush
Baccharis douglasii	Douglas' Baccharis
Baccharis emoryi	Emory's Baccharis
Artemisia douglasiana	Mugwort
Rubus ursinus	California blackberry
Rosa californica	California rose
Frankenia salina	Alkali Heath
Distichlis spicata	Saltgrass
Heliotropum curassivicum	Seaside Heliotrope
Malvella leprosa	Alkali sida
Pluchea odorata	Saltmarsh fleabane
Epilobium ciliatum	Willowherb
Ambrosia psilostachya	Western Ragweed

MONITORING SHEET - QUALITATIVE EVALUATION

Project Name: _____

Date: _____

Recorders: _____

Plant Health - General

Are there visible signs of nutrient/water deficiencies? If yes, then describe:

Are there signs of regeneration/reseeding?

Is vandalism harming plant health or project success?

Are there any signs of herbivory?:

Other:

Container Stock

Provide visual estimation percent survival of container stock:

Are watering basins intact?:

Is mulch from original installation still present? Is there litter development?:

Seeded Species

Are all intended native species present? If not, then what is missing?:

Are there any occurrences of volunteer native species?:

Are there any unvegetated areas? Should these be remediated?:

Weeds

Is excessive competition from weeds affecting desired species?:

Is there adequate maintenance/weed clearing?:

Other:

Soils

Are there any signs of soil development?:

Other:

Irrigation System

Are irrigation heads functioning properly?:

Are there any signs of rodent damage to irrigation system?:

Are there any signs of vandalism to the irrigation system/controller box?:

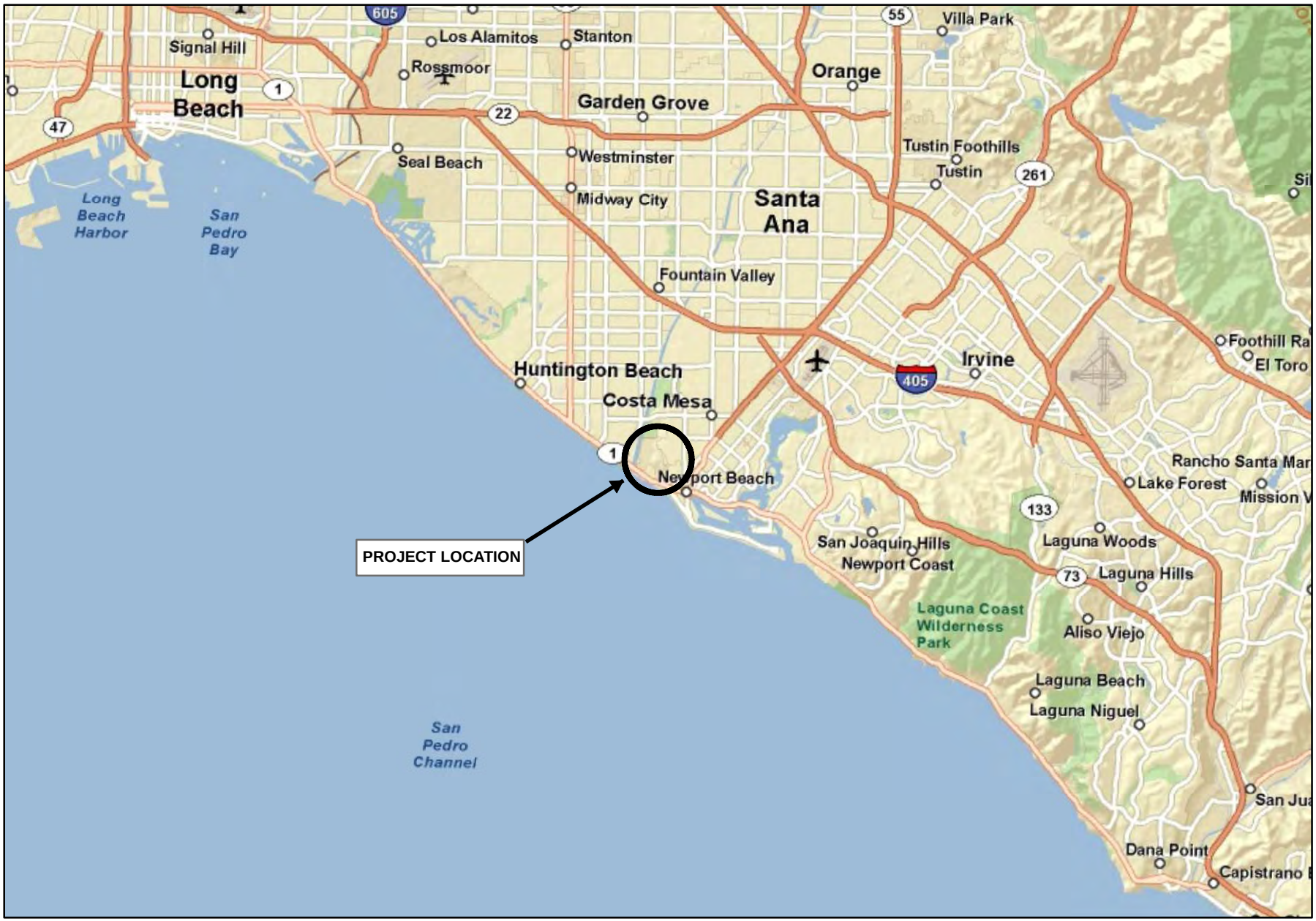
Are there any signs of excessive runoff?:

Does irrigation frequency and volume require adjustment?

Other:

Is there any indication that wildlife is using the site?:

Recommendations for Remediation:



Source: ESRI World Street Map

NORTH

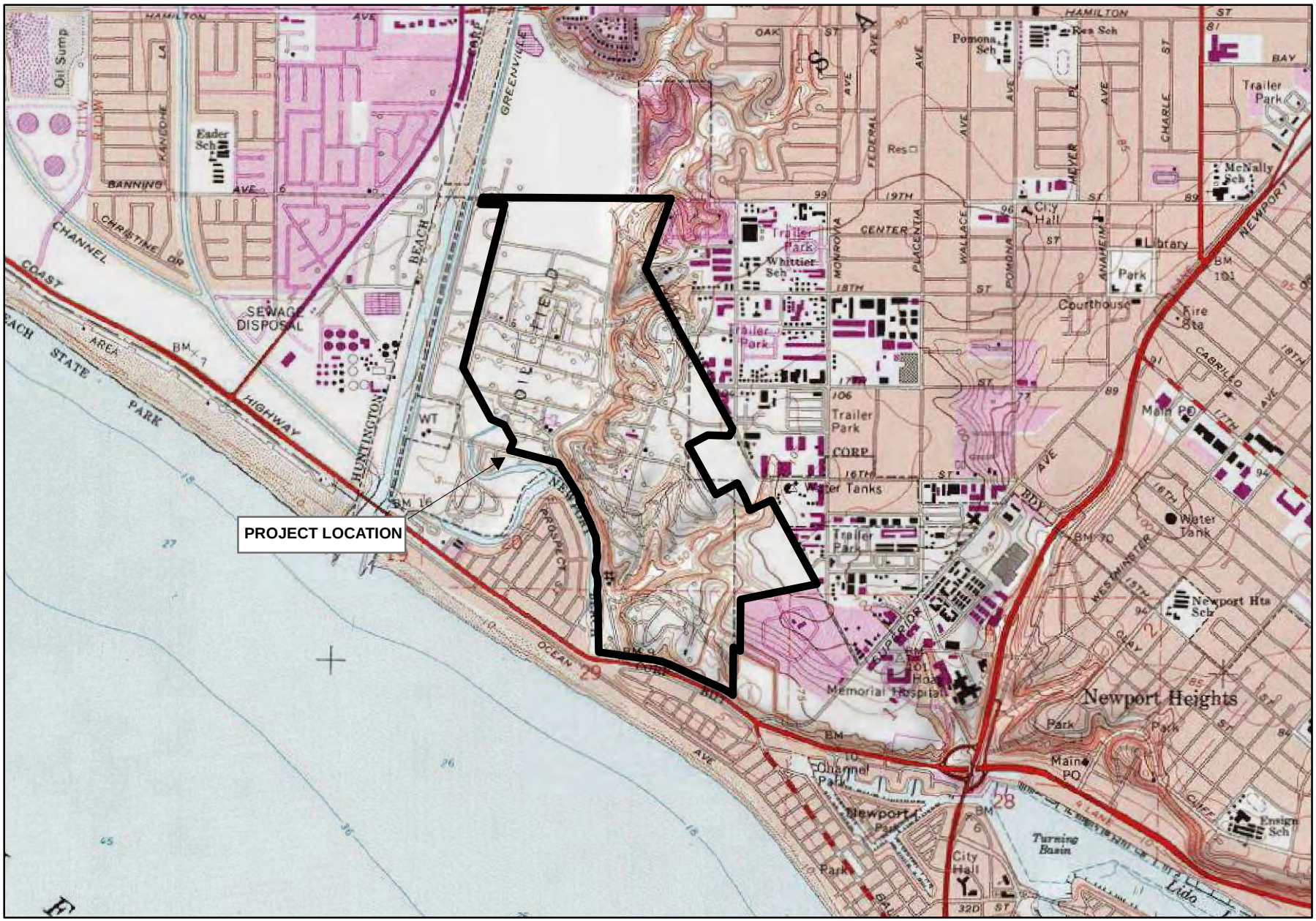
0 2 4 8 Miles

NEWPORT BANNING RANCH

Regional Map

GLENN LUKOS ASSOCIATES

Exhibit 1



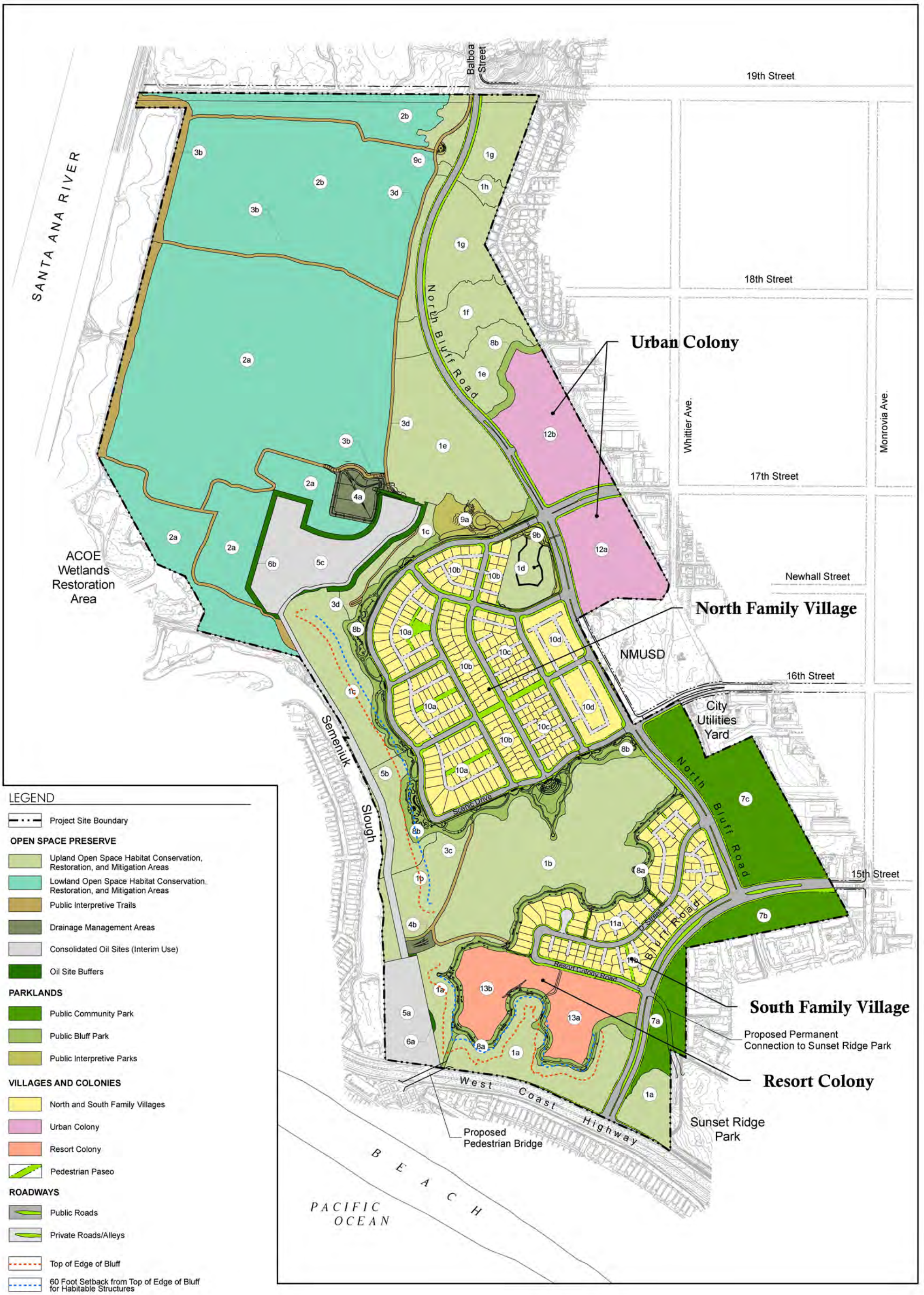
Adapted from USGS Newport Beach, CA quadrangle

NEWPORT BANNING RANCH

Vicinity Map

GLENN LUKOS ASSOCIATES

Exhibit 2



NEWPORT BANNING RANCH

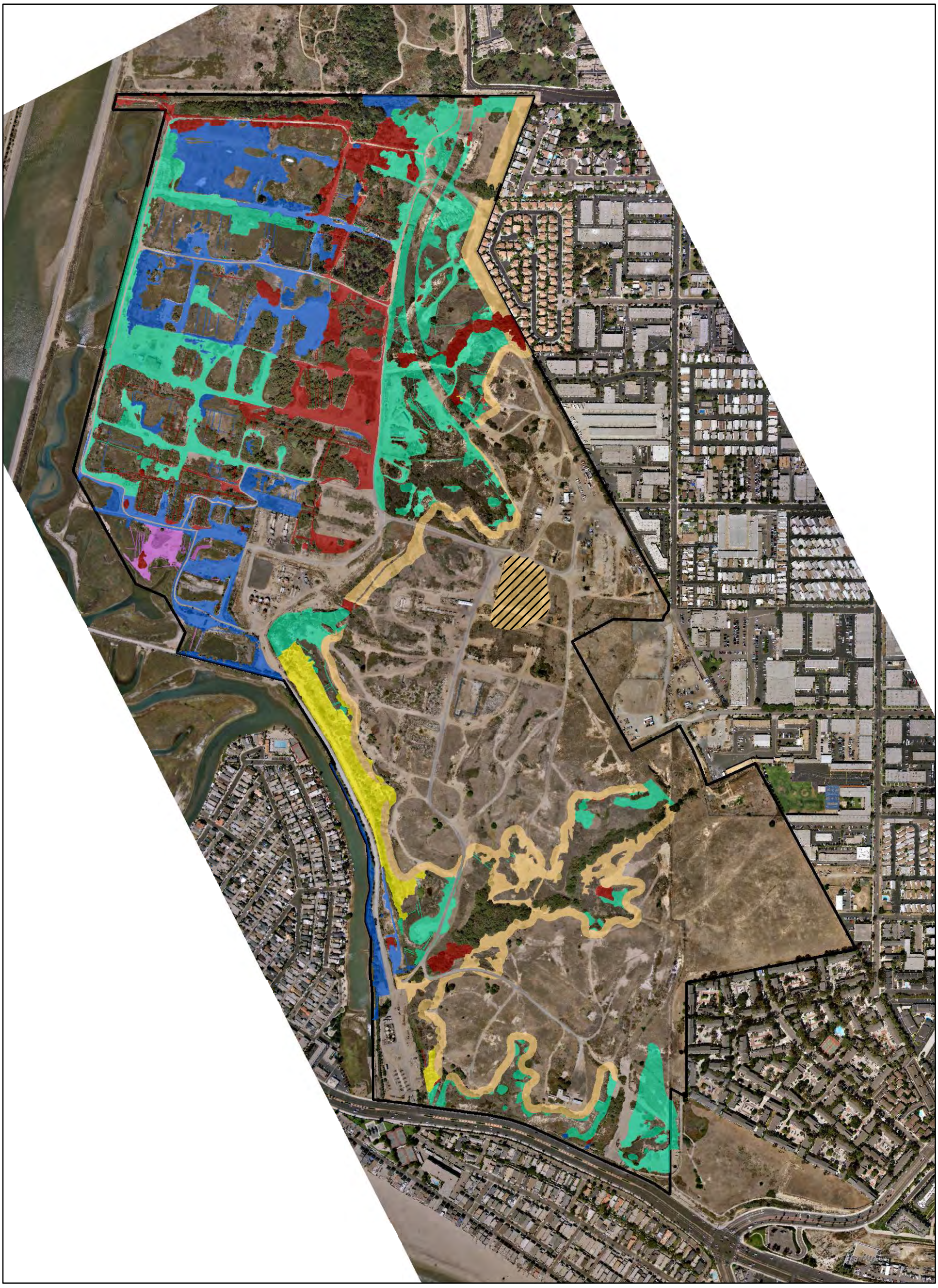
MASTER DEVELOPMENT PLAN
City of Newport Beach - California

Exhibit 3
Master Development Plan

0 600 1,200

GLENN LUKOS ASSOCIATES | FUSCOE | FORMA
06 • 13 • 2011

S:\clients\brooks_street_1729\1729001\08_gis\products\master_site_plan\mxds\ch3\mdp_11x17_fs110613.mxd



Legend

- Vernal Pool/Grassland
- Alkali Meadow
- Coastal Bluff Scrub
- Grassland
- Maritime Succulent Scrub
- Riparian
- Southern Coastal Salt Marsh

N

0 300 600 1,200

Feet

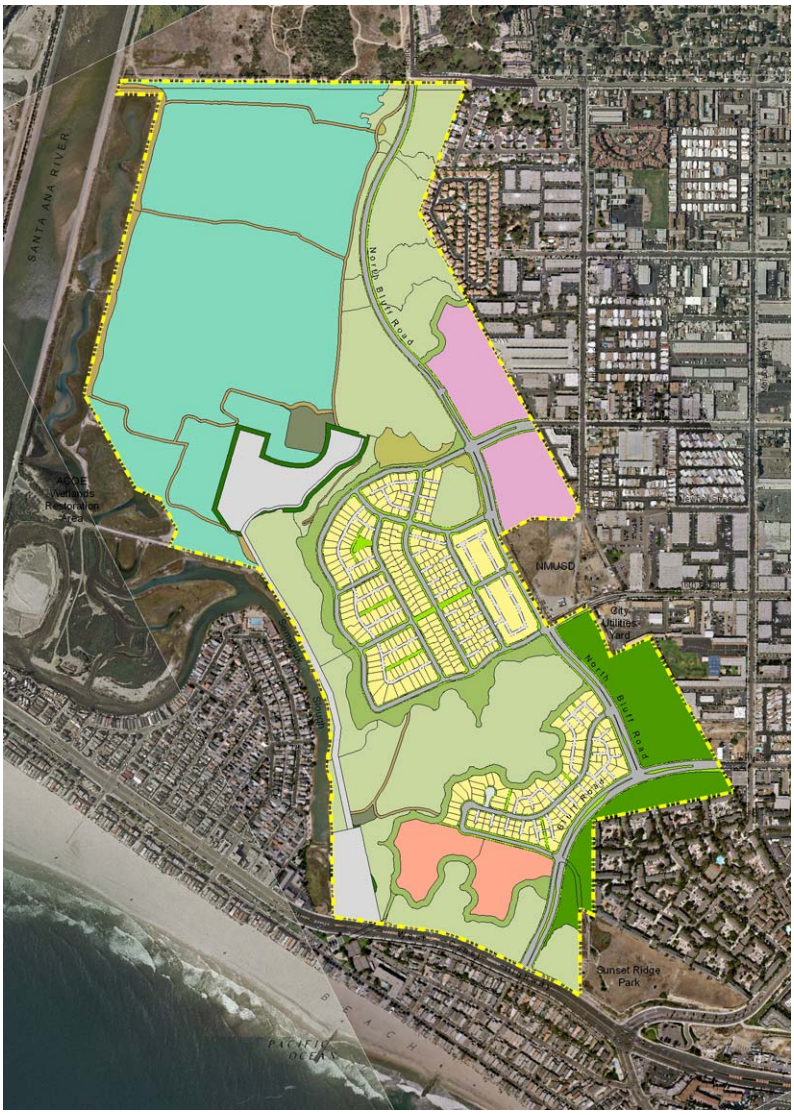
NEWPORT BANNING RANCH

Habitat Mitigation and Restoration Map

GLENN LUKOS ASSOCIATES

Exhibit 4

Fire and Life Safety Program



Newport Banning Ranch

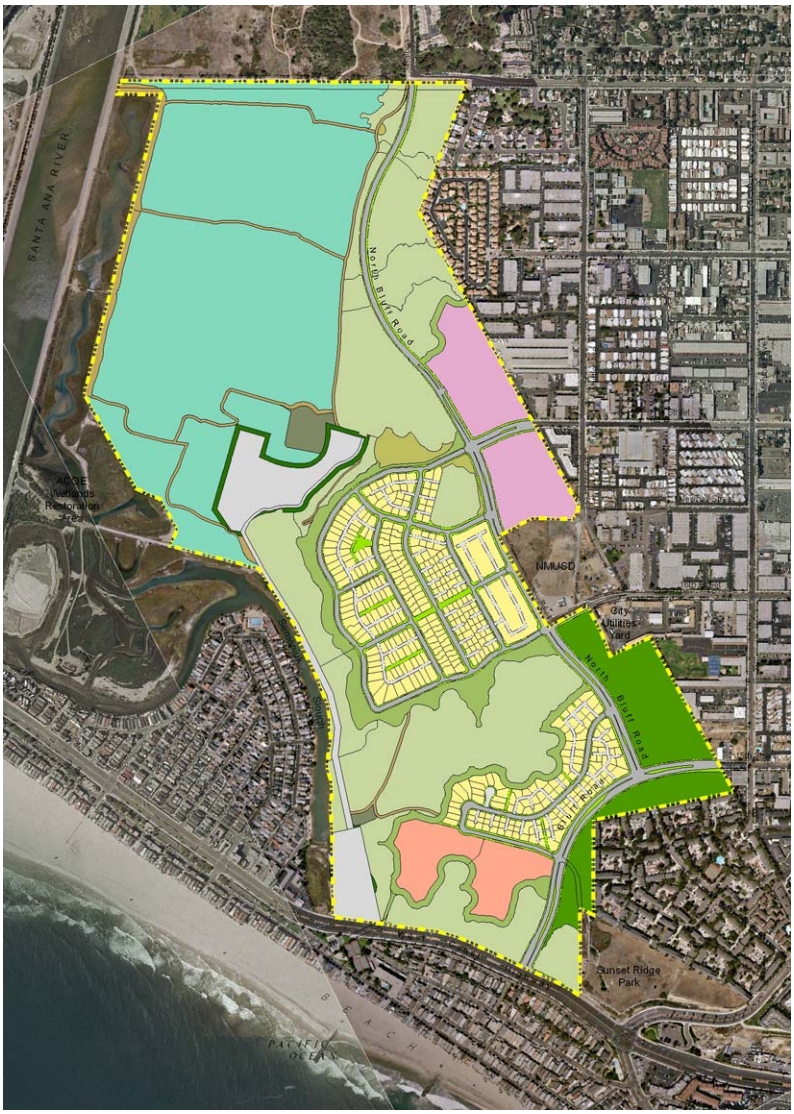
Newport Beach, California

July 2011

Prepared by:

firesafe
::PLANNING SOLUTIONS

Fire and Life Safety Program



Newport Banning Ranch

Newport Beach, California

July 2011

Fire and Life Safety Program

Table of Contents

List of Exhibits

Attachments

1 PURPOSE AND INTENT

This Fire and Life Safety Program (F&LSP or Program) was prepared for the proposed Newport Banning Ranch community to analyze and mitigate for potential wildland fire hazards. This Program, prepared by Firesafe Planning Solutions in cooperation with the Newport Beach Fire Department, establishes fuel management requirements for publicly- and privately-maintained landscape, fire access requirements, fire sprinkler requirements, and enhanced construction requirements for structures both bordering and further removed from native vegetation areas.

The purpose and intent of the Program is to significantly reduce the potential risk to lives, homes, and personal property if and when wildfires occur, while allowing the development of well-planned public parks, homesites, and resort areas adjacent to fully-functional habitat areas, which are an important resource to the City and the California Coastal Commission.

This Fire and Life Safety Program sets forth the site planning, design, and administrative requirements for the Newport Banning Ranch community. The Program is based on adherence to the City of Newport Beach Fire Code (including amendments to State Codes) and to Fire Department Guidelines, as well as planning and review meetings with the City of Newport Beach Fire Department.

This Program establishes:

1.1 **Fuel Management Zones** – provide protection for homes and other uses adjoining the natural open space areas;

1.2 **Fire Access** – provide access to and through all structures and areas in the Project for both maintenance and all emergency needs; and

1.3 **Fire Safety Requirements for Structures** – provide an enhanced construction zone adjacent to the Fuel Management Zone and provide automatic fire sprinkler systems for all habitable structures within the Project.

2 BASIS FOR FIRE AND LIFE SAFETY PROGRAM

This Fire and Life Safety Program consolidates standards and summarizes requirements from a variety of sources:

2.1 City Municipal Fire Code/Fire Department Guidelines

This Fire and Life Safety Program is intended to meet or exceed the requirements set forth in the City of Newport Beach Fire Code and all its amendments to the 2007 California Building Code, 2007 California Fire Code, and the International Fire Code, 2006 Edition.

Attachment 1a provides the proposed plant palettes for the Fuel Management Zones that are used in the Fuel Management Plan described below. These proposed plant palettes are based on the City Fire Department's Fire Resistive Plant List, provided as Attachment 1b, with selective additions of less common but nonetheless fire resistive plants. Attachment 1c contains the City's list of undesirable (combustible) List of Plant Species requiring mandatory removal from Fuel Management Zones.

2.2 Wildland Urban Interface (WUI)

Newport Banning Ranch lies within a Special Fire Protection Area, as defined in the Newport Beach Fire Code Section 9.04.030 (as adopted). The State of California classifies the Project Site as a "moderate" and "high" fire hazard area, but not a very high fire hazard area.

Attachment 2a contains California Fire Code Chapter 47, Requirements for Wildland-Urban Interface Fire Areas. Attachment 2b contains California Building Code Chapter 7A, Materials and Construction Methods for Exterior Wildfire Exposure.

2.3 Newport Banning Ranch Fuel Management and Maintenance Program Analysis

This Fire and Life Safety Program incorporates the key provisions and standards from the Newport Banning Ranch Fuel Management and Maintenance Program Analysis drafted for the Newport Beach Fire Department by Firesafe Planning Solutions, a recognized wildland and fire and life safety consulting firm, specifically for the Newport Banning Ranch Project.

The Fuel Management Plan described below in Section 3 incorporates the findings of a fire behavior analysis performed with BEHAVE PLUS fire behavior prediction software. The BEHAVE PLUS program calculates a "worst case" fire behavior result with inputs for plant type, topography, weather, humidity and distance to predict fire behavior, size, and flame lengths. With these results, the fuel management zones can be designed to protect the community in the potential "worst case" fire.

Attachment 3 provides the Fuel Management and Maintenance Program Analysis for the Newport Banning Ranch.

3 FUEL MANAGEMENT PLAN (NEWPORT BANNING RANCH DEVELOPMENT PLAN)

Fire protection in landscape areas will be achieved by avoiding and reducing highly flammable plant material in open space areas adjacent to development. This will be accomplished by revegetation with low-fuel-volume plantings, removal or pruning and thinning of certain native plants, and/or selective irrigation.

Generally, Fuel Management Areas are a composite of three (3) to four (4) successive fuel management zones, which progressively provide an increasing amount of fire protection as they become closer to the homes or other habitable buildings that need to be protected.

This Fire and Life Safety Program establishes three (3) Fuel Management Zones: Zone "A", Zone "B", and Zone "C". These zones are described below in Section 3.1. For the Community's wildland development edge, a 120-foot minimum combined width of Fuel Management Zones will be provided, composed of a minimum 20-foot Zone "A", a minimum 50-foot Zone "B", and a minimum 50-foot Zone "C".

The Fuel Management Plan is illustrated on Exhibit 1. This plan locates and defines the three (3) Fuel Management Zones "A", "B", and "C". It also:

1. Locates cross-sections through the fuel management areas, which are provided as Exhibits 2 through 14 and illustrate the range of fuel management edge conditions within Newport Banning Ranch and how they will be addressed by the Project;

2. Locates firefighter and maintenance access points, and fuel management zone markers within the community; and

3. Locates an Enhanced Construction Zone within the development areas of the community, which requires increased architectural protections for all habitable structures.

3.1 Fuel Management Zones (FMZ) and Maintenance Responsibilities

Fuel management programs vary in complexity and design, depending upon the type and spacing of native vegetation as well as topography, weather conditions, and the placement of structures. The Newport Banning Ranch Fuel Management and Maintenance Program Analysis, based on BEHAVE PLUS fire behavior modeling, establishes that 120 feet of Fuel Management will exceed the protection required for this Project for the WUI areas.

The three (3) Fuel Management Zones illustrated on Exhibit 1 shall be installed and maintained within the Newport Banning Ranch as described below. The cross-sections located on Exhibit 1 are provided as Exhibits 2 through 14.

Zone "A"

Zone "A" is generally a minimum 20-foot-wide flat or level-grade defensible space consisting of irrigated landscape and/or hardscape. Zone "A" will be located on private lots, within the Bluff Park, and/or within road rights-of-way. As shown on Exhibit 1, Zone "A" is considerably wider in some areas than the minimum 20-foot width. In the North Bluff Park it varies considerably, in some cases being over 100 feet wide. This additional width provides greater flexibility in planting and designing the park for public recreational use and enjoyment.

Combustible structures are prohibited within Zone "A". Vegetation shall be consistent with the permitted plant palette and densities for Zone "A" shown in Attachment 1a. Plants determined by the Fire Department to be highly combustible or otherwise undesirable shall be removed during regular maintenance (see Attachment 1c for "undesirable" plant list).

Depending upon the land use, Zone "A" shall be maintained by individual property owners, a Homeowners Association or similar community entity, or (for public roadways) by the City. There are no sensitive habitats within or adjacent to Zone "A", and thinning and/or removal of non-approved landscape shall be permitted throughout the year.

Zone “B”

Zone “B” is generally a minimum 50-foot-wide space adjacent to Zone “A” and closer to the native habitat areas. It consists of trails, hardscape, and/or irrigated low-fuel volume native vegetation within the portion of the Bluff Park adjacent to the Open Space Site Planning Areas. The irrigation system shall be designed to mimic normal/average rainfall and to provide the necessary moisture to the plants during dry periods or seasons.

As in Zone A, combustible structures are prohibited within Zone “B”. Vegetation within Zone “B” shall be consistent with the permitted plant palette and densities for Zone “B” shown in Attachment 1a. Plants determined by the Fire Department to be highly combustible or otherwise undesirable shall be removed during regular maintenance (see Attachment 1c for the “undesirable” plant list).

Zone “B” shall be maintained by a Homeowners Association or similar community entity. There are no sensitive habitats within Zone “B”, and thinning and/or removal of non-approved landscape will be permitted throughout the year.

Zone “C”

Zone “C” is a minimum 50-foot-wide space between Zone “B” and existing or proposed native habitat. Zone “C” is itself part of the native habitat restoration area proposed by the Newport Banning Ranch Habitat Restoration Plan (HRP).

As in Zones “A” and “B”, combustible structures and construction are not permitted within Zone “C”. Zone “C” will be composed of a mosaic pattern of non-irrigated low grasses, succulents, cactus, and other low height/fuel volume native plants, as described for the Zone “C” plant palette in Attachment 1a. Existing non-native plants and species not approved by the HRP for this area, including those on the Fire Department’s “undesirable” plant list contained in Attachment 1c, will be removed prior to restoration planting.

In the Upland Open Space Area north of the Urban Colony and west of the City of Costa Mesa, a 100-foot-wide Zone “C” will be created adjacent to existing neighborhoods, including California Seabreeze. Unmanaged vegetation currently comes up to the rear yards of the off-Project homes in this area. Newport Banning Ranch will provide an especially wide Fuel Management Zone “C” in this area as a component of the Habitat Restoration Plan. The Zone “C” plant palette for the 30 feet of this Zone “C” closest to the homes will be more limited than usual to specified grasses, cacti, succulents, and open rock areas as noted in the Zone “C” plant palette. Existing wetland vegetation within two arroyos that cross this Zone C area does not contribute to fire fuel load and will not require fuel management beyond the periodic removal of dead plant material.

It is anticipated that Zone “C“ will be maintained by the Newport Banning Ranch Conservation Group, yet to be determined. Maintenance by a Homeowners Association or similar community entity may be proposed in certain locations.

Maintenance within Zone “C” will include removal of non-native/invasive species, removal of dead plant material, and removal of species inconsistent with the HRP, including those on the Fire Department’s “undesirable” plant list. Maintenance within Zone “C” will not include the pruning, thinning, or removing of living HRP-approved native vegetation.

3.2 FMZ Identification Markers

As shown on Exhibit 1, permanent identification markers shall be installed to identify the limits of Fuel Management Zones "B" and "C" so that workers can undertake maintenance activities, knowing the limits of each zone. Minimum marker design shall be a 2"-diameter x 8'-long galvanized metal pipe, embedded a minimum 2'-6" into solid ground. The top 6" of the pipe shall be stenciled with a Letter B and/or C. The pipe shall be exposed a minimum 2'-0" above vegetation height.

Other FMZ identification marker systems (e.g., large boulders, decorative park elements, etc.) may be proposed and approved by the Newport Beach Fire Department, provided they are of equal permanence and clarity.

4 VERNAL POOL RESTORATION AND EDGES

An existing vernal pool southwest of the intersection of Bluff Road and 17th Street restoration will be restored as part of Project's Habitat Restoration Plan (HRP). The HRP will protect and restore the degraded habitat within the pool boundary and provide an open space buffer around the pool.

As shown below, the plant palettes for the Vernal Pool Restoration Area and for the Vernal Pool Watershed Area (surrounding the Pool) have both been designed as low-growing suites of native plant species that will provide appropriate habitat consistent with the habitat mitigation objectives for the Project.

The Vernal Pool Restoration and Watershed Areas are adjoined by the vernal pool interpretive park and adjacent public streets, including Bluff Road and Scenic Drive. One edge of the Vernal Pool Watershed Area will be developed with homes. A six-foot-high radiant heat wall shall be constructed along this residential edge.[1] This wall, in conjunction with plant heights of 12 inches or less, will provide protection for the homes from a fire originating in that area. The precise design and location of the radiant heat wall will be shown in the final Fire Master Plan (see Section 10).

PLANT PALETTE – VERNAL POOL RESTORATION AREA

Botanic Name	Common Name	Plant Height
Cressa truxillensis	Alkali weed	2 to 6 inches
Distichlis spicata	Saltgrass	4 to 8 inches
Frankenia salina	Alkali heath	4 to 8 inches
Heliotropum curassivicum	Seaside heliotrope	4 to 8 inches
Lasthenia californica	California goldfields	4 to 8 inches
Lupinus bicolor	Miniature lupine	4 to 8 inches
Malvella leprosa	Alkali side	2 to 6 in
Plantago erecta	Western plantain	3 to 6 inches
Spergularia marina	Saltmarsh sand spurrey	1 to 4 inches

[1] A radiant heat wall is typically a six-foot-high solid masonry wall. Certain types of insulated glass products may be incorporated into radiant heat walls to provide a "view wall." For example, Superlite II-XL, Pyrostop, Pyrobel, Contraflam, and Swissflam are glazing products rated 60-minute plus to ASTME119, limit temperature rise to 250F degrees, and reduce radiant heat flux to 0 kilowatts per square meter.

PLANT PALETTE – VERNAL POOL WATERSHED AREA

Botanic Name	Common Name	Plant Height
Cressa truxillensis	Alkali weed	2 to 6 inches
Distichlis spicata	Saltgrass	4 to 8 inches
Dudleya lanceolata (succulent)	Lance-leaved dudleya	12 inches
Dudleya pulverulenta (succulent)	Chalk dudleya	12 inches
Frankenia salina	Alkali seaheath	4 to 8 inches
Lasthenia californica	Dwarf goldfields	4 to 8 inches
Lupinus bicolor	Miniature lupine	4 to 8 inches
Malvella leprosa	Alkali side	2 to 6 inches
Melica imperfecta	Coast range melic	16 inches
Nassella pulchra	Purple needlegrass	18 inches
Opuntia littoralis (succulent)	Coast prickly-pear	36 inches
Opuntia prolifera (succulent)	Coast cholla	48 inches
Plantago erecta	Western plantain	3 to 6 inches
Suaeda taxifolia (succulent)	Wooly sea-blite	12 inches

5 ACCESS FOR FIRE FIGHTERS AND FUEL MANAGEMENT MAINTENANCE CREWS

As shown on Exhibit 1, fire and emergency access points from development areas to the Fuel Management Areas will be provided at maximum 500-foot intervals along the Fuel Management Edge. The access locations may be provided from streets, paseos, parks, easements within the Resort Colony and Urban Colony, and potentially in other locations as approved by the Newport Beach Fire Department. These access points will also provide access locations for the permitted and required maintenance of the Fuel Management Zones.

5.1 Emergency Ingress and Egress

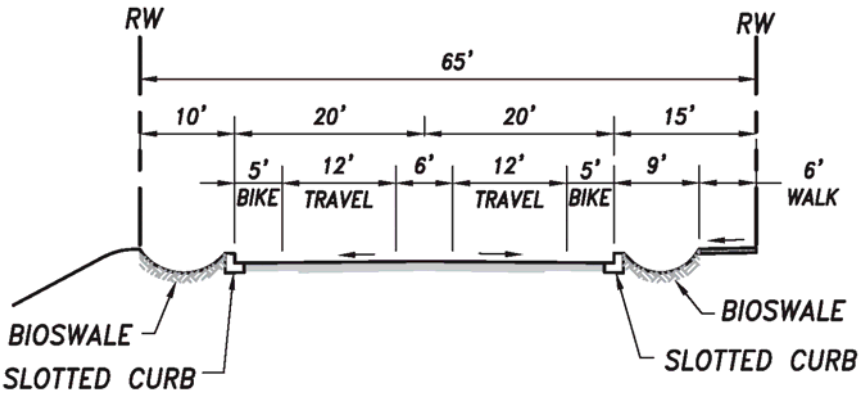
There will be two (2) primary and three (3) secondary ingress and egress routes into the Newport Banning Ranch Community.

Primary access will be at the southern end of the Project from West Coast Highway to Bluff Road, and from the northern end of the Project from 19th Street to North Bluff Road.

All three (3) secondary accesses will be from the east side of the Project, from 15th Street, 16th Street, and 17th Street, all which connect to Bluff Road. None of the secondary access points are in the vicinity of a UWI Area; however, both primary access points border a Fuel Management Area.

5.2 Roadside Clearance along North Bluff Road

A minimum 10 feet of roadside clearance shall be provided from the two travel lanes along North Bluff Road (north of 17 Street) to facilitate movement by fire fighters, residents, and visitors to and from 19th Street in the case of wildfire. Such clearance may be composed of street pavement, sidewalks/trails, and/or irrigated planting within the public right-of-way. The typical cross-section is shown below:



The preliminary plant palette for the bioswale adjacent to North Bluff Road is shown below. A final plant palette shall be provided as part of the Fire Master Plan required by Section 10.

PRELIMINARY PLANT PALETTE – NORTH BLUFF ROAD

Botanic Name	Common Name	Plant Height
Cressa truxillensis	Alkali weed	2 to 6 inches
Distichlis spicata	Saltgrass	4 to 8 inches
Frankenia salina	Alkali seaheath	4 to 8 inches
Malvella leprosa	Alkali side	2 to 6 inches
Spergularia marina	Saltmarsh sand spurrey	1 to 4 inches

5.3 Emergency Access Design Standards / Access Roads

All streets and cul-de-sacs, as well as arterial and collector road widths and grades, will comply with cross-sections and details shown in the Newport Banning Ranch Master Development Plan and Tentative Tract Map No. 17308.

Generally, the minimum width of a fire access road shall be 20 feet, with no vehicle parking allowed. The width will be increased to 26 feet within 30 feet of a hydrant, with no vehicle parking allowed. Parking on one (1) side will be permitted on 28-foot-wide streets. Parking on two (2) sides will be permitted on 36-foot-wide streets when approved by the City's Fire Code Official.

Roads must be constructed of a material that provides an all-weather driving surface capable of withstanding a vehicle weight of 72,000 pounds. Alternative road surfaces may be used in lieu of conventional asphalt and/or concrete.

6 FIRE SAFETY REQUIREMENTS FOR ALL STRUCTURES

Structures within Newport Banning Ranch shall conform to the following requirements:

6.1 Construction Zones

a. Enhanced Construction Zone

All structures on lots within 100' of the interior Fuel Management edge (i.e., FMZ "A") shall receive enhanced construction on all four (4) sides per 2007 California Building Code Chapter 7A and the 2007 California Fire Code Chapter 47 as locally amended by the City of Newport Beach. (CBC Chapter 7A and CFC Chapter 47 are provided as Attachments 2a and 2b, respectively, to this Fire and Life Safety Program.)

b. Open Landscape Structures

Open landscape structures such as gazebos and trellises within scenic lookouts and viewpoints within the Bluff Park and similar parks, which are decorative elements not habitable buildings, will be exempt from Enhanced Construction Zone requirements.

6.2 Sprinkler Systems

All single-family and multi-family homes shall be constructed with an approved modified NFPA 13D Automatic Fire Sprinkler System installed by a licensed fire sprinkler contractor. All commercial use buildings shall be constructed with an approved full NFPA 13R Automatic Fire Sprinkler System installed by a licensed fire sprinkler contractor. Separate plans shall be submitted to the Fire Department for approval prior to installation.

6.3 Agreement to Fire Restrictions in CC&Rs

All potential property owners shall be required to agree to the rules related to fire protection features, which shall be established in the CC&Rs, prior to purchase of property within Newport Banning Ranch.

6.4 Fire Apparatus Travel Time

All habitable structures shall be located within four (4) minutes of fire apparatus travel time from the closest Newport Beach Fire Station or mutual aid fire station, as determined by the City's Fire Code Official.

7 WATER SUPPLY / FIRE FLOW

The Water Division of the City of Newport Beach Utilities Department will serve the Newport Banning Ranch Project.

All underground fire flow water systems, mains, and water pressures within the Project shall be designed to fully comply with City of Newport Beach Fire Code Requirements, as well as with City of Newport Beach Public Works requirements.

8 HYDRANTS AND UTILITIES

All fire hydrants and all-weather access roads shall be approved and installed, leading to and in the specific building area where combustible materials will be delivered.

A temporary access plan may be designed and considered for approval of temporary access and hydrants.

Hydrants shall be spaced no greater than 500 feet from hydrant to hydrant, and 250 feet from the end of a cul-de-sac/street (dead-end) within the community. Hydrant spacing will be no greater than 1,000 feet from hydrant to hydrant on backbone streets not directly serving any habitable structures.

9 FIRE APPARATUS HOSE PULLS

The 2007 California Fire Code (CFC) states that fire apparatus access roads shall be provided for every building or portion of a building constructed when any portion of the building is located more than 150 feet from the fire apparatus access measured by an approved route around the exterior of the building. CFC Section 503.1.1 provides that the City's Fire Code Official is authorized to increase the dimension of 150' in certain instances. Any proposal to increase the dimension of 150' shall be included and justified in the final Fire Master Plan described in Section 10. The final decision on the required distances will be made by the Newport Beach Fire Department, which may or may not approve such a proposal.

10 FIRE MASTER PLAN

10.1 Requirement to Prepare

A final Fire Master Plan shall be prepared in conjunction with construction-level Site Development Plans for each phase of development, showing all fire access and life safety elements for the Project. The standards set forth in this Fire and Life Safety Program will be included as part of the Fire Master Plan.

10.2 Detailed Planting/Irrigation Plans

The Final Fuel Management Plan shall include detailed planting and irrigation plans at 1"=30' or larger scale for review by the Newport Beach Fire Department. The detailed plans shall include the pattern of native plants within FMZ "C" (e.g., the layout of grasses, cacti/succulents, and fire-resistive shrub species).

10.3 Alternative Design Standards/Means and Methods

Alternative Design Standards to the FMZ widths and plant palettes described in this Fire and Life Safety Program may be proposed as part of the Final Fuel Management Plan based on construction-level design and engineering information; more detailed micro-modeling of topography, fire fuels, and fire behavior, and/or Alternative Means and Methods (AM&Ms) that may be proposed at the time the Fire Master Plan is prepared for City Fire Department review and approval.

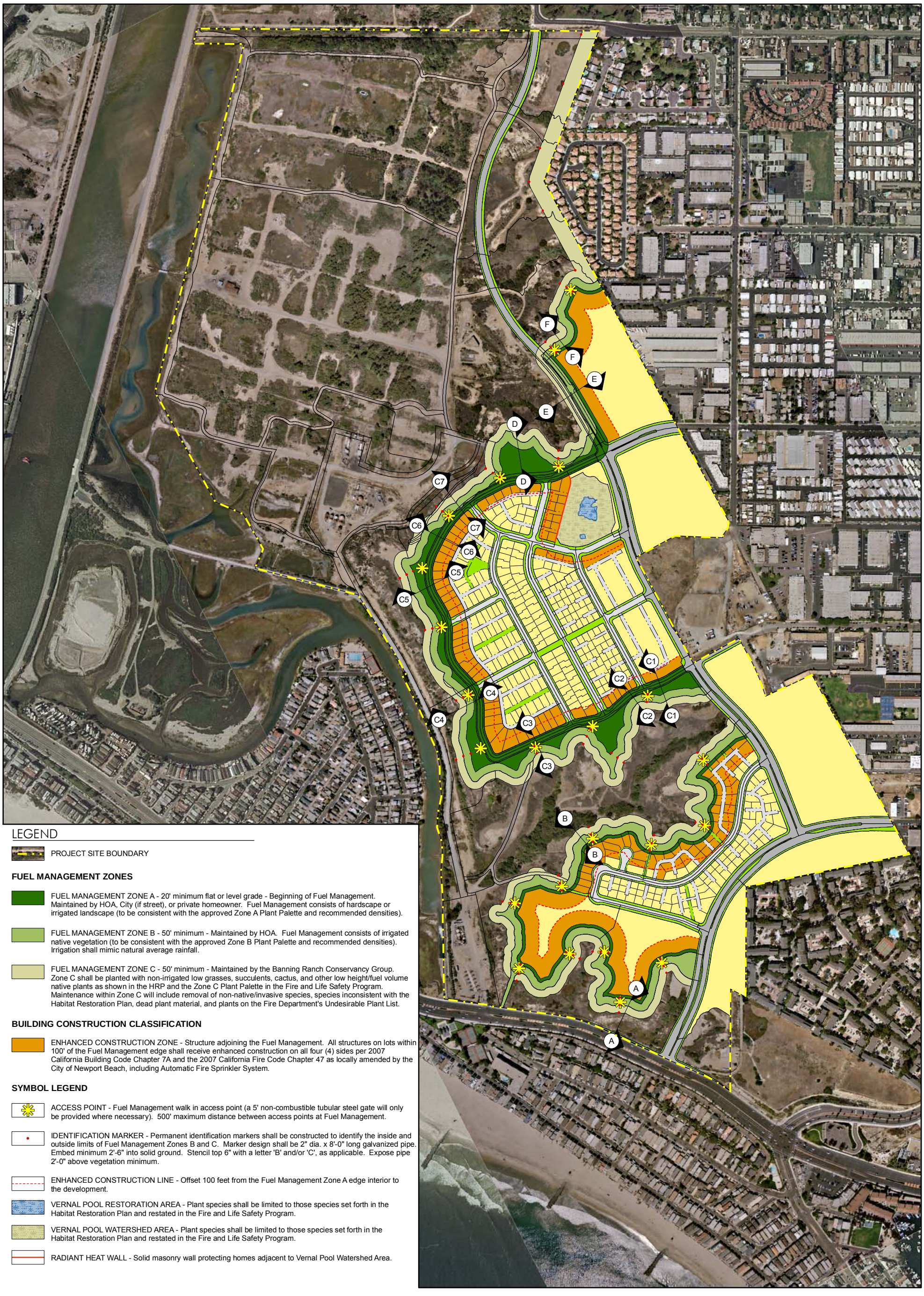
11 FIRE DEPARTMENT REFINEMENTS AND MODIFICATIONS OVER TIME

The Newport Beach Fire Department may refine or modify the requirements set forth in this Newport Banning Ranch Fire and Life Safety Program and subsequent Fire Master Plan and Final Fuel Management Plan to conform with City Ordinances, Fire Department Guidelines, and/or State Regulations as they may change in the future to better protect public health and safety. The Newport Beach Fire Department is empowered to interpret and clarify this Fire and Life Safety Program as necessary to protect public health and safety.

12 USE OF FIRE AND LIFE SAFETY PROGRAM

FMZ requirements, fire-resistant building requirements, and other fire protection measures shall be provided to the Landowner/Master Developer, project developers, builders, architects, landscape architects, Newport Banning Ranch Homeowners Associations (HOAs), and Newport Banning Ranch Conservancy Group to ensure all structures in the Newport Banning Ranch Project will be constructed and will remain over time reasonably safe from future wildland fires.

The information in this Fire and Life Safety Program shall also be provided to future individual homeowners, either as a stand-alone document or as part of a larger educational handout for Newport Banning Ranch residents.



LEGEND

PROJECT SITE BOUNDARY

FUEL MANAGEMENT ZONES

FUEL MANAGEMENT ZONE A - 20' minimum flat or level grade - Beginning of Fuel Management. Maintained by HOA, City (if street), or private homeowner. Fuel Management consists of hardscape or irrigated landscape (to be consistent with the approved Zone A Plant Palette and recommended densities).

FUEL MANAGEMENT ZONE B - 50' minimum - Maintained by HOA. Fuel Management consists of irrigated native vegetation (to be consistent with the approved Zone B Plant Palette and recommended densities). Irrigation shall mimic natural average rainfall.

FUEL MANAGEMENT ZONE C - 50' minimum - Maintained by the Banning Ranch Conservancy Group. Zone C shall be planted with non-irrigated low grasses, succulents, cactus, and other low height/fuel volume native plants as shown in the HRP and the Zone C Plant Palette in the Fire and Life Safety Program. Maintenance within Zone C will include removal of non-native/invasive species, species inconsistent with the Habitat Restoration Plan, dead plant material, and plants on the Fire Department's Undesirable Plant List.

BUILDING CONSTRUCTION CLASSIFICATION

ENHANCED CONSTRUCTION ZONE - Structure adjoining the Fuel Management. All structures on lots within 100' of the Fuel Management edge shall receive enhanced construction on all four (4) sides per 2007 California Building Code Chapter 7A and the 2007 California Fire Code Chapter 47 as locally amended by the City of Newport Beach, including Automatic Fire Sprinkler System.

SYMBOL LEGEND

ACCESS POINT - Fuel Management walk in access point (a 5' non-combustible tubular steel gate will only be provided where necessary). 500' maximum distance between access points at Fuel Management.

IDENTIFICATION MARKER - Permanent identification markers shall be constructed to identify the inside and outside limits of Fuel Management Zones B and C. Marker design shall be 2" dia. x 8'-0" long galvanized pipe. Embed minimum 2'-6" into solid ground. Stencil top 6" with a letter 'B' and/or 'C', as applicable. Expose pipe 2'-0" above vegetation minimum.

ENHANCED CONSTRUCTION LINE - Offset 100 feet from the Fuel Management Zone A edge interior to the development.

VERNAL POOL RESTORATION AREA - Plant species shall be limited to those species set forth in the Habitat Restoration Plan and restated in the Fire and Life Safety Program.

VERNAL POOL WATERSHED AREA - Plant species shall be limited to those species set forth in the Habitat Restoration Plan and restated in the Fire and Life Safety Program.

RADIANT HEAT WALL - Solid masonry wall protecting homes adjacent to Vernal Pool Watershed Area.

NEWPORT BANNING RANCH

Exhibit 1

Fuel Management Zones Map

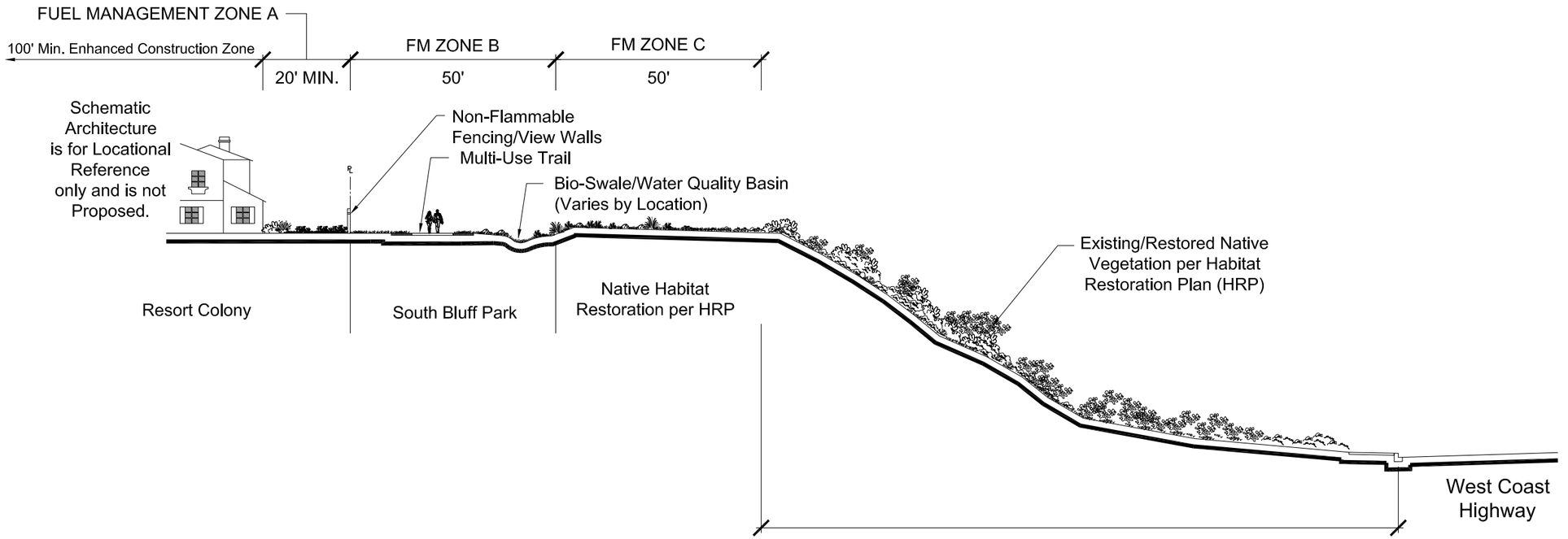
FIRE AND LIFE SAFETY PROGRAM

City of Newport Beach - California

0 600 1,200

firesafe PLANNING SOLUTIONS · GLENN LUKOS ASSOCIATES · FUSCOE · FORMA

06 • 28 • 2011



FM Zone	Minimum Dimension
FM Zone A	20'
FM Zone B	50'
FM Zone C	50'

CROSS-SECTION A-A

NEWPORT BANNING RANCH

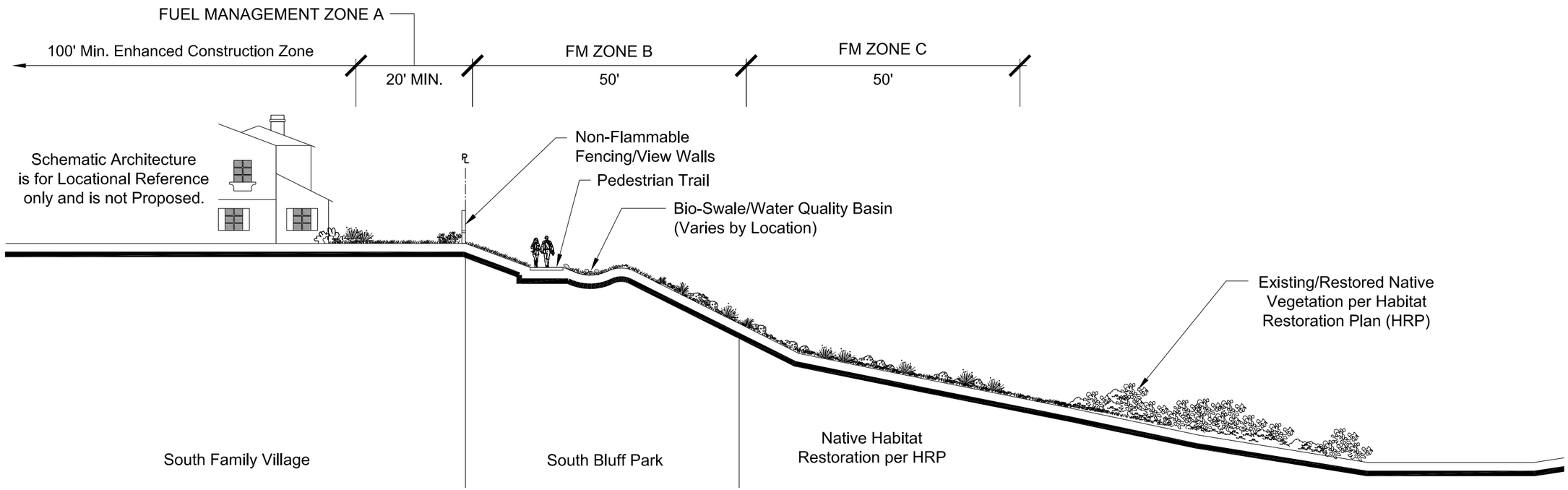
FIRE AND LIFE SAFETY PROGRAM
City of Newport Beach - California

Exhibit 2
Fuel Management Zone Cross-Section A-A

0 15 30 60

firesafe PLANNING SOLUTIONS | GLENN LUKOS ASSOCIATES Regulatory Services | FUSCOE Engineering | FORMA 2011·01·04

S:\clients\brooks_street_1729\1729001\07_planning_cad\products\fire_program\working\fuel_mod_sections.dwg



FM Zone	Minimum Dimension
FM Zone A	20'
FM Zone B	50'
FM Zone C	50'

CROSS-SECTION B-B

NEWPORT BANNING RANCH

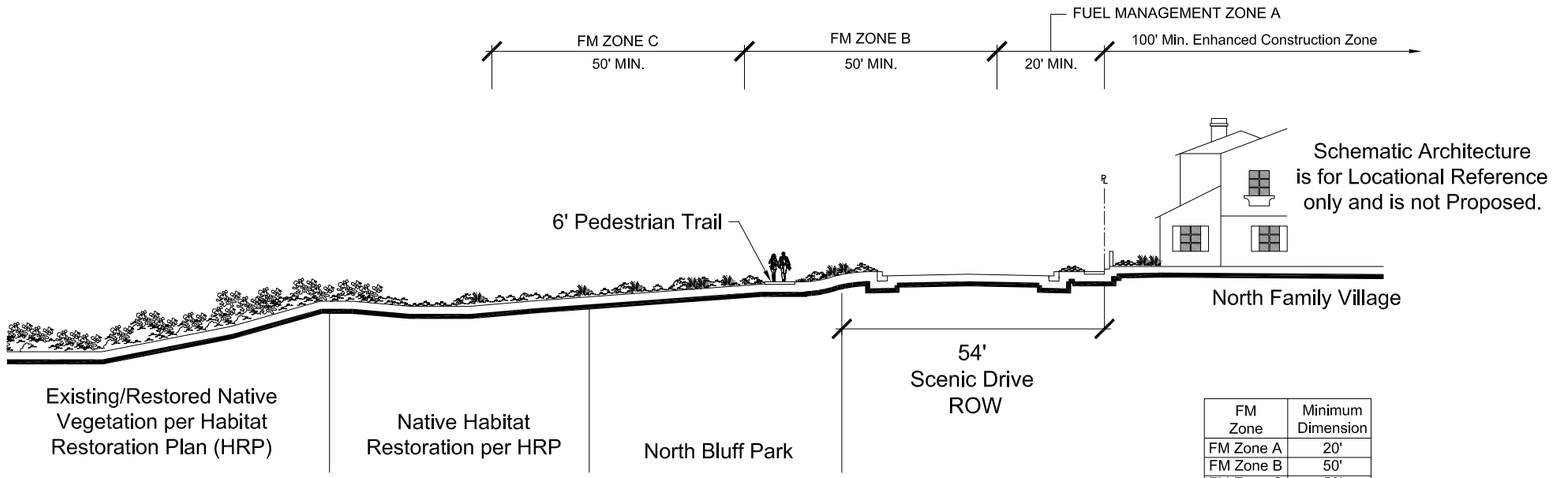
FIRE AND LIFE SAFETY PROGRAM
City of Newport Beach - California

Exhibit 3
Fuel Management Zone Cross-Section B-B

0 10 20 40

firesafe PLANNING SOLUTIONS | GLENN LUKOS ASSOCIATES Regulatory Services | FUSCOE Engineering | FORMA 2011·01·04

S:\clients\brooks_street_1729\1729001\07_planning_cad\products\fire_program\working\fuel_mod_sections.dwg



FM Zone	Minimum Dimension
FM Zone A	20'
FM Zone B	50'
FM Zone C	50'

MINIMUM DIMENSIONS FOR NORTH FAMILY VILLAGE FUEL MANAGEMENT ZONES

NOTE:
The dimensions shown above for FM Zones A, B, and C are minimums for the North Family Village adjacent to Scenic Drive and Bluff Park.
The actual dimensions for each location identified on the Fuel Management Zones Map as Cross-Section C1-C1 through C7-C7 are larger.

Exhibit 4

Minimum Dimensions for North Family Village Fuel Management Zones

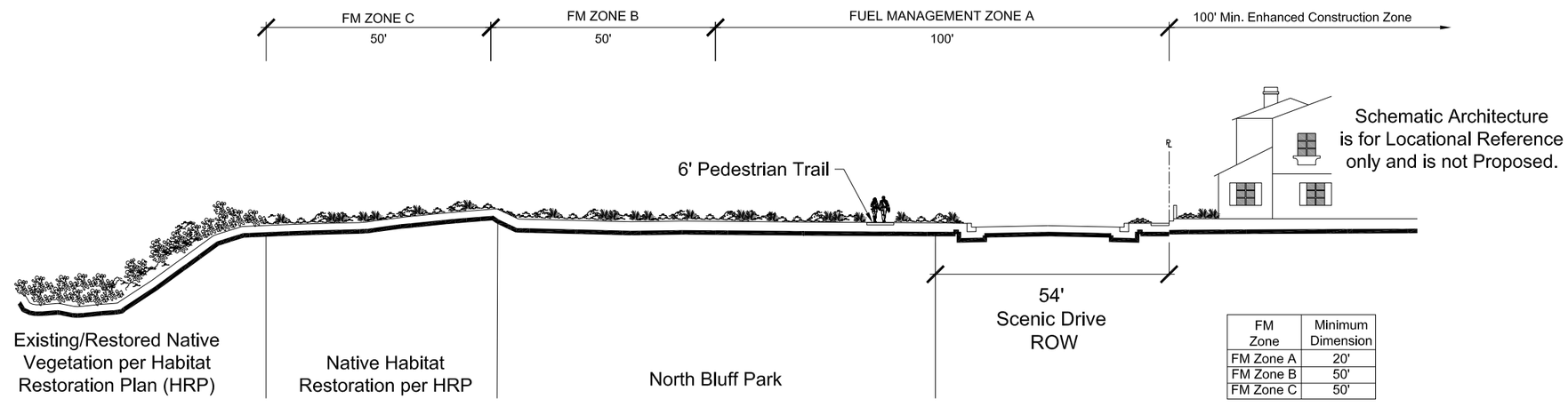
NEWPORT BANNING RANCH

FIRE AND LIFE SAFETY PROGRAM
City of Newport Beach - California

0 15 30 60

firesafe PLANNING SOLUTIONS | GLENN LUKOS ASSOCIATES Regulatory Services | FUSCOE | FORMA 2011·01·04

S:\clients\brooks_street_1729\1729001\07_planning_cad\products\fire_program\working\fuel_mod_sections.dwg



FM Zone	Minimum Dimension
FM Zone A	20'
FM Zone B	50'
FM Zone C	50'

CROSS-SECTION C1-C1

NEWPORT BANNING RANCH

FIRE AND LIFE SAFETY PROGRAM
City of Newport Beach - California

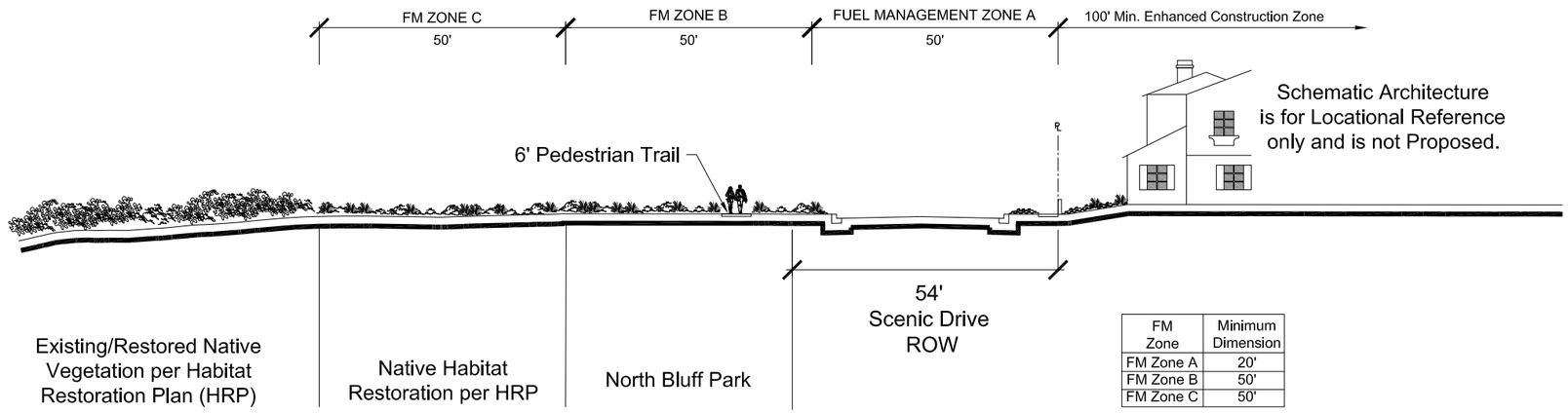
Exhibit 5

Fuel Management Zone Cross-Section C1-C1

0 15 30 60

firesafe PLANNING SOLUTIONS | GLENN LUKOS ASSOCIATES Regulatory Services | FUSCOE Engineering | FORMA 2011·01·04

S:\clients\brooks_street_1729\1729001\07_planning_cad\products\fire_program\working\fuel_mod_sections.dwg



FM Zone	Minimum Dimension
FM Zone A	20'
FM Zone B	50'
FM Zone C	50'

CROSS-SECTION C2-C2

NEWPORT BANNING RANCH

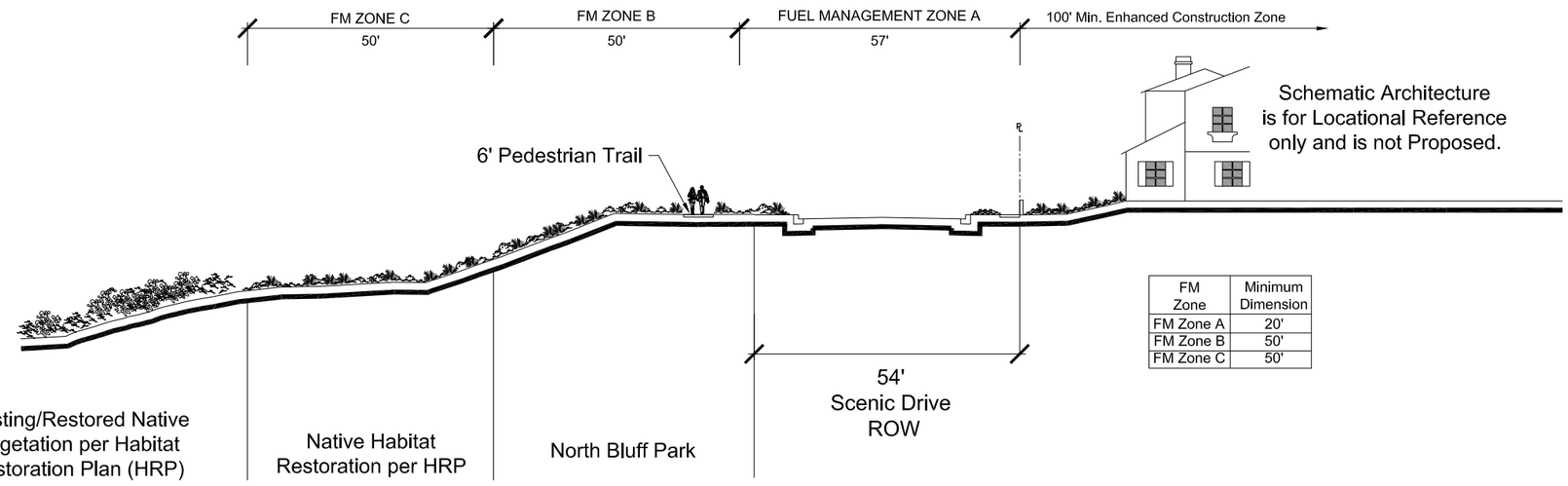
FIRE AND LIFE SAFETY PROGRAM
City of Newport Beach - California

Exhibit 6
Fuel Management Zone Cross-Section C2-C2

0 15 30 60

firesafe PLANNING SOLUTIONS | GLENN LUKOS ASSOCIATES Regulatory Services | FUSCOE | FORMA 2011·01·04

S:\clients\brooks_street_1729\1729001\07_planning_cad\products\fire_program\working\fuel_mod_sections.dwg



FM Zone	Minimum Dimension
FM Zone A	20'
FM Zone B	50'
FM Zone C	50'

CROSS-SECTION C3-C3

NEWPORT BANNING RANCH

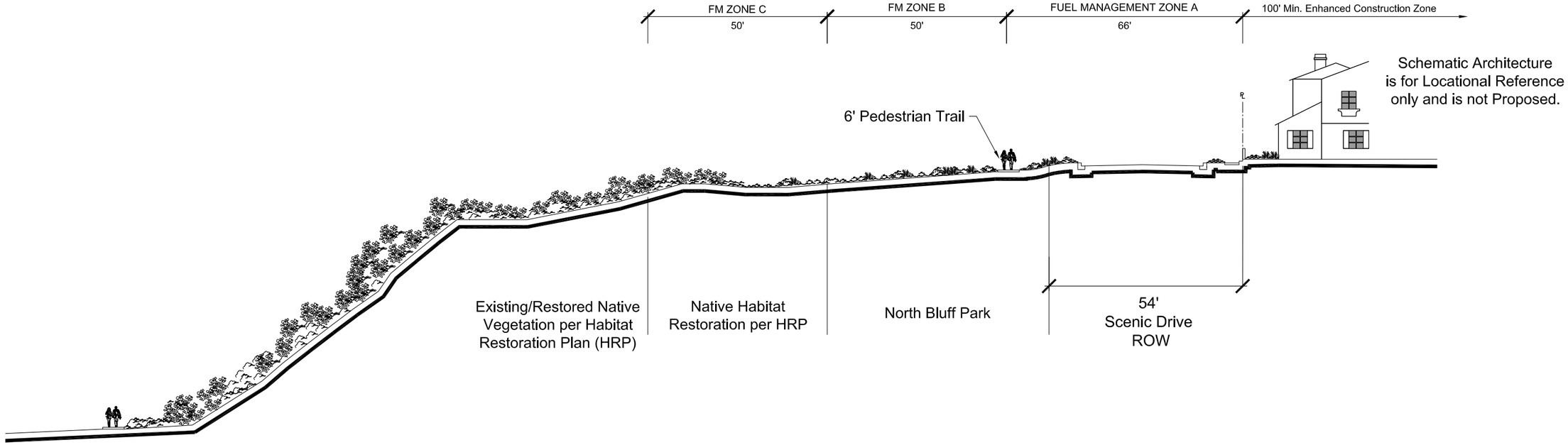
FIRE AND LIFE SAFETY PROGRAM
City of Newport Beach - California

Exhibit 7
Fuel Management Zone Cross-Section C3-C3

0 15 30 60

firesafe PLANNING SOLUTIONS | GLENN LUKOS ASSOCIATES Regulatory Services | FUSCOE | FORMA 2011·01·04

S:\clients\brooks_street_1729\1729001\07_planning_cad\products\fire_program\working\fuel_mod_sections.dwg



CROSS-SECTION C4-C4

NEWPORT BANNING RANCH

FIRE AND LIFE SAFETY PROGRAM
City of Newport Beach - California

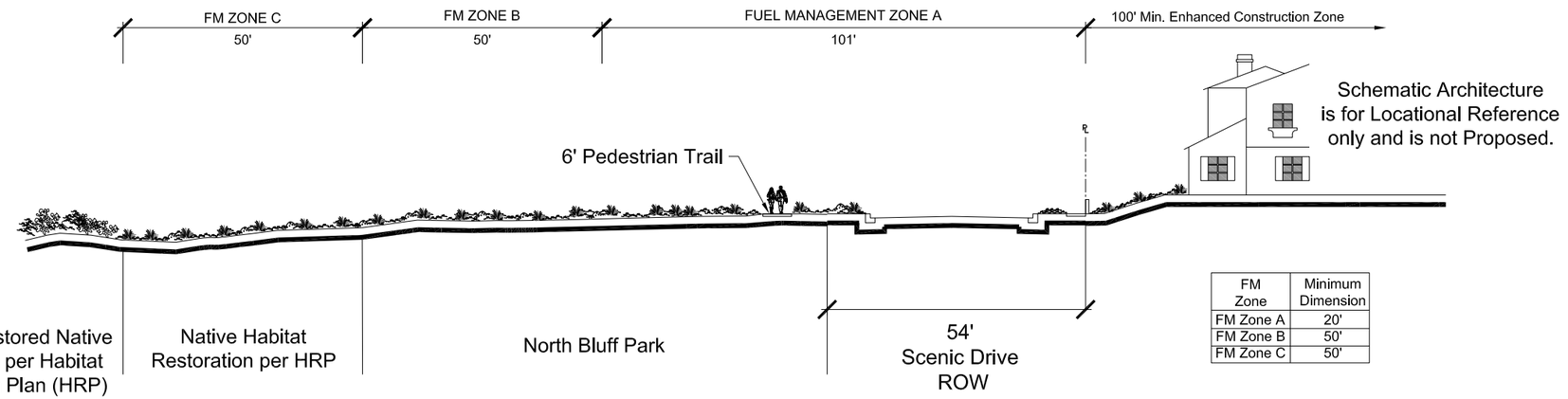
Exhibit 8

Fuel Management Zone Cross-Section C4-C4

0 15 30 60

firesafe PLANNING SOLUTIONS | GLENN LUKOS ASSOCIATES Regulatory Services | FUSCOE Engineering | FORMA 2011·01·04

S:\clients\brooks_street_1729\1729001\07_planning_cad\products\fire_program\working\fuel_mod_sections.dwg



FM Zone	Minimum Dimension
FM Zone A	20'
FM Zone B	50'
FM Zone C	50'

CROSS-SECTION C5-C5

NEWPORT BANNING RANCH

FIRE AND LIFE SAFETY PROGRAM
City of Newport Beach - California

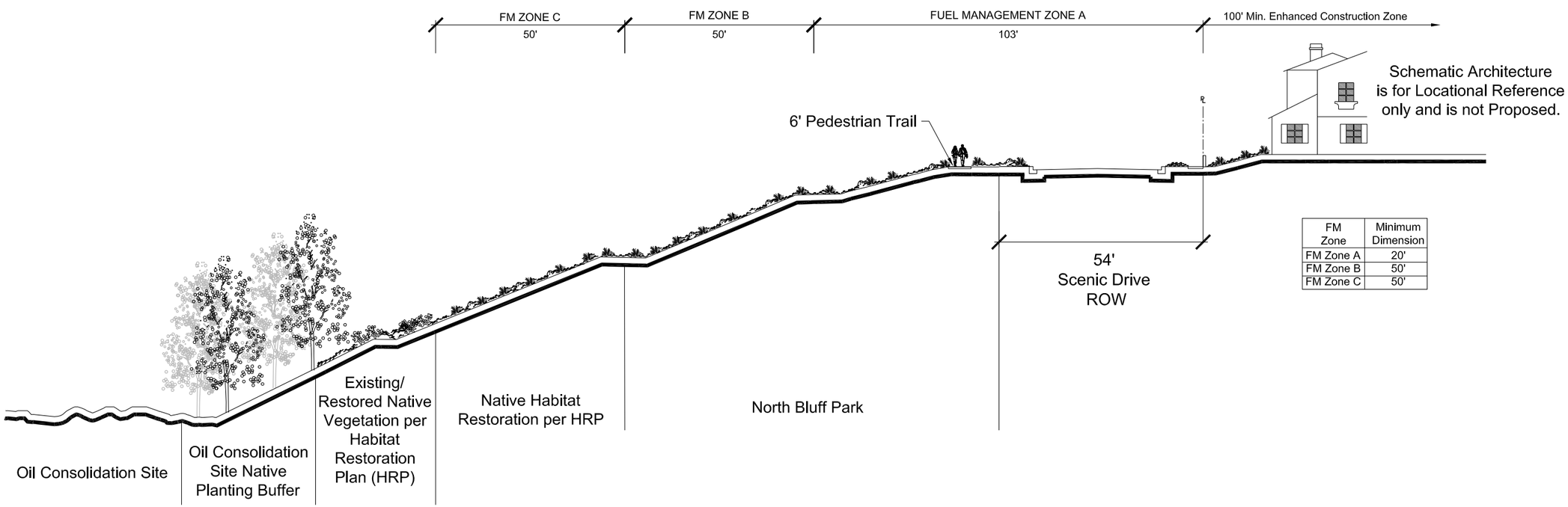
Exhibit 9

Fuel Management Zone Cross-Section C5-C5

0 15 30 60

firesafe PLANNING SOLUTIONS | GLENN LUKOS ASSOCIATES Regulatory Services | FUSCOE | FORMA 2011·01·04

S:\clients\brooks_street_1729\1729001\07_planning_cad\products\fire_program\working\fuel_mod_sections.dwg



CROSS-SECTION C6-C6

NEWPORT BANNING RANCH

FIRE AND LIFE SAFETY PROGRAM
City of Newport Beach - California

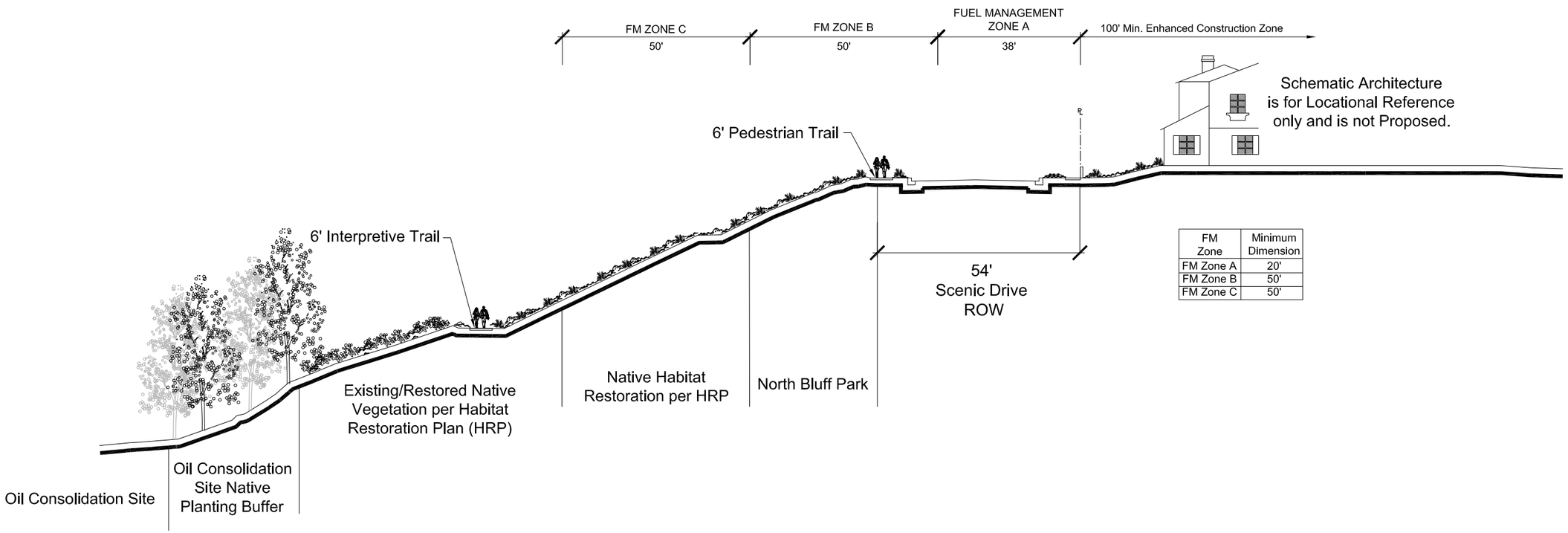
Exhibit 10

Fuel Management Zone Cross-Section C6-C6

0 15 30 60

firesafe PLANNING SOLUTIONS | GLENN LUKOS ASSOCIATES Regulatory Services | FUSCOE | FORMA 2011·01·04

S:\clients\brooks_street_1729\1729001\07_planning_cad\products\fire_program\working\fuel_mod_sections.dwg



FM Zone	Minimum Dimension
FM Zone A	20'
FM Zone B	50'
FM Zone C	50'

CROSS-SECTION C7-C7

NEWPORT BANNING RANCH

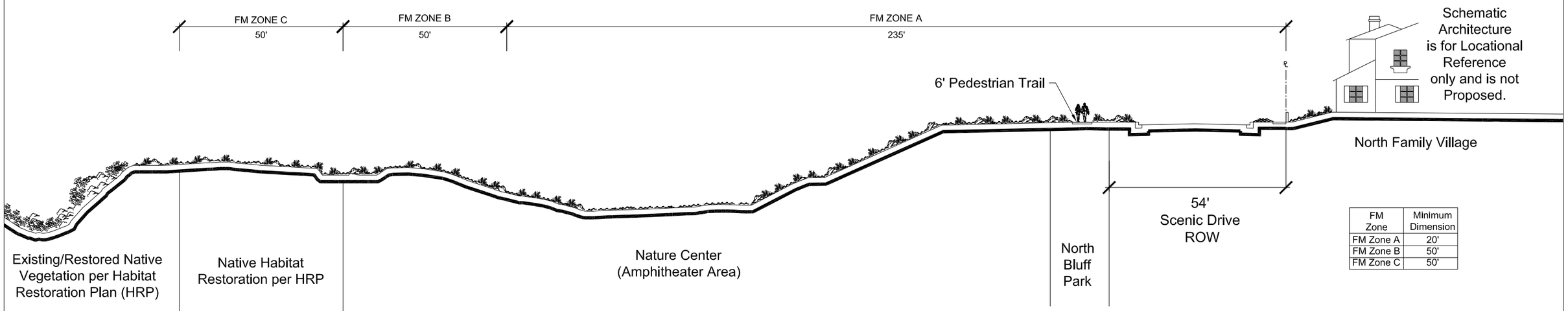
FIRE AND LIFE SAFETY PROGRAM
City of Newport Beach - California

Exhibit 11
Fuel Management Zone Cross-Section C7-C7

0 15 30 60

firesafe PLANNING SOLUTIONS | GLENN LUKOS ASSOCIATES Regulatory Services | FUSCOE | FORMA 2011·01·04

S:\clients\brooks_street_1729\1729001\07_planning_cad\products\fire_program\working\fuel_mod_sections.dwg



FM Zone	Minimum Dimension
FM Zone A	20'
FM Zone B	50'
FM Zone C	50'

CROSS-SECTION D-D

NEWPORT BANNING RANCH

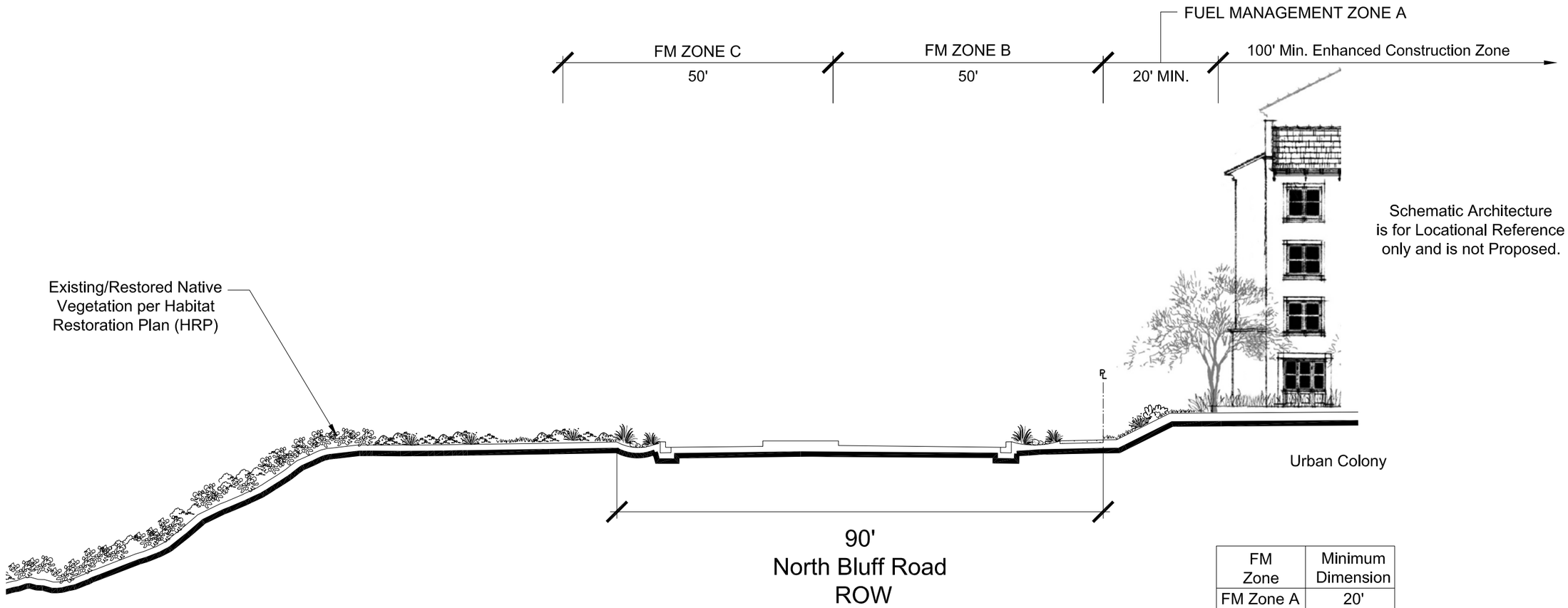
FIRE AND LIFE SAFETY PROGRAM
City of Newport Beach - California

Exhibit 12
Fuel Management Zone Cross-Section D-D

0 15 30 60

firesafe PLANNING SOLUTIONS | GLENN LUKOS ASSOCIATES Regulatory Services | FUSCOE | FORMA 2011·01·04

S:\clients\brooks_street_1729\1729001\07_planning_cad\products\fire_program\working\fuel_mod_sections.dwg



FM Zone	Minimum Dimension
FM Zone A	20'
FM Zone B	50'
FM Zone C	50'

CROSS-SECTION E-E

NEWPORT BANNING RANCH

Exhibit 13

Fuel Management Zone Cross-Section E-E

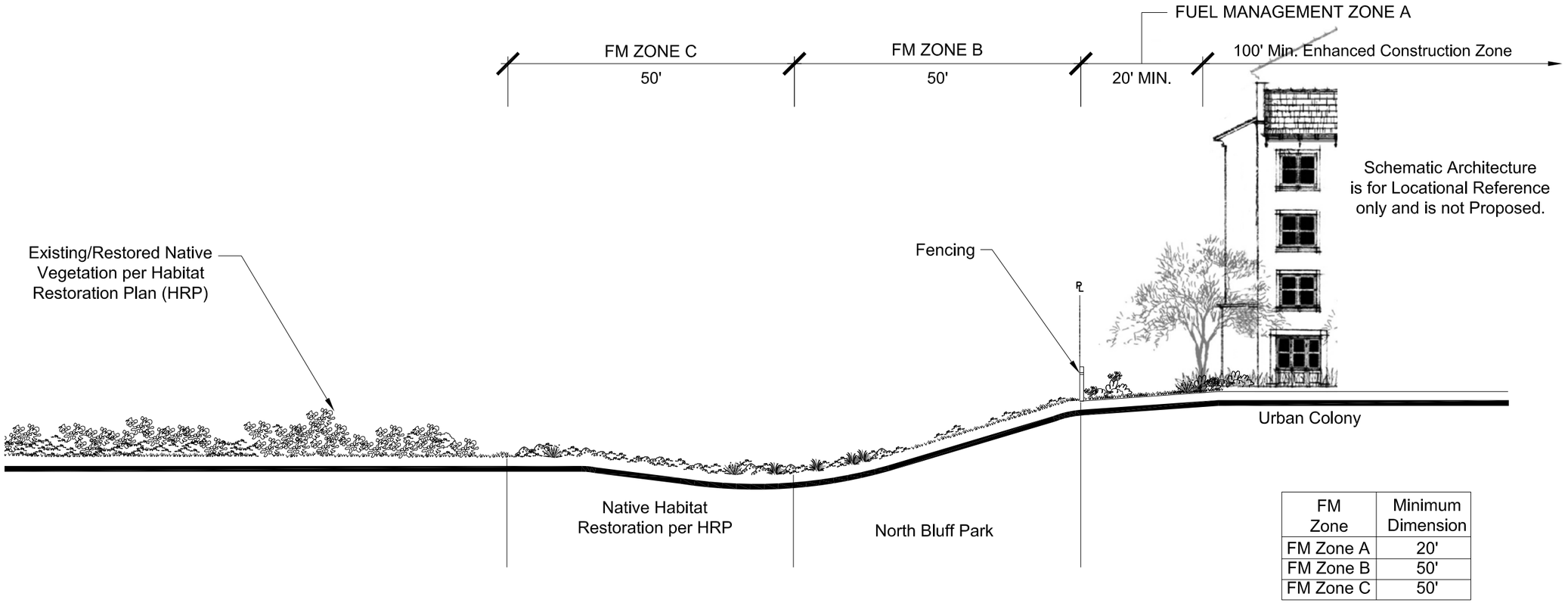
FIRE AND LIFE SAFETY PROGRAM

City of Newport Beach - California

0 10 20 40

firesafe PLANNING SOLUTIONS | GLENN LUKOS ASSOCIATES Regulatory Services | FUSCOE Engineering | FORMA 2011·01·04

S:\clients\brooks_street_1729\1729001\07_planning_cad\products\fire_program\working\fuel_mod_sections.dwg



FM Zone	Minimum Dimension
FM Zone A	20'
FM Zone B	50'
FM Zone C	50'

CROSS-SECTION F-F

NEWPORT BANNING RANCH

FIRE AND LIFE SAFETY PROGRAM
City of Newport Beach - California

Exhibit 14
Fuel Management Zone Cross-Section F-F

0 10 20 40

firesafe PLANNING SOLUTIONS | GLENN LUKOS ASSOCIATES Regulatory Services | FUSCOE Engineering | FORMA 2011·01·04

S:\clients\brooks_street_1729\1729001\07_planning_cad\products\fire_program\working\fuel_mod_sections.dwg

NBR F&LSP Attachment 1a

FUEL MANAGEMENT PLANT PALETTE

1. Permitted Plant Palette for Fuel Management Zone A

FUEL MANAGEMENT ZONE A		
Botanical Name	***Common Name***	***Suitability***
Trees		
Acer macrophyllum	*Big Leaf Maple*	*C*
Arbutus unedo	*Strawberry Tree*	
Ceratonia siliqua	*Carob*	*C D*
Citrus species	*Citrus*	*C*
Eriobotrya japonica	*Loquat*	*C*
Erythrina species	*Coral Tree*	*C D*
Ginkgo biloba	*Maidenhair Tree*	*C D*
Juglans californica	*California Black Walnut*	*C D*
Lagerstroemia indica	*Crape Myrtle*	*C*
Lagunaria patersonii	*Primrose Tree*	*CD*
Liriodendron tulipfera	*Tulip Tree Fernleaf*	-
Liquidambar styraciflua	*American Sweet Gum*	*C*
Lyonthamnus flori. ssp. Asplenifolius	*Ironwood*	*C D*
Macadamia integrifolia	*Macadamia Nut*	-
Maytenus boaria	*Mayten Tree*	-
Metrosideros excelsus	*New Zealand Christmas Tree*	*C D*
Parkinsonia aculeata	*Mexican Palo Verde*	*CD*
Pistacia chinensis	*Chinese Pistache*	*C*
Pittosporum undulatum	*Victorian Box*	-
Platanus racemosa	*California Sycamore*	*C*
Populus fremontii	*Western Cottonwood*	*C*
Quercus agrifolia	*Coast Live Oak*	*C D*
Quercus engelmannii	*Engelmann Oak*	*C D*
Quercus suber	*Cork Oak*	-
Rhus lancea	*African Sumac*	*C D*
Sambucus mexicana	*Mexican Elderberry*	*C D*
Stenicarpus sinuatus	*Firewheel Tree*	*CD*

(1) This plant species may not be located within 50 feet of homes.

C = California Friendly
D = Drought Tolerant
O = Suitable to plant under Oaks

FUEL MANAGEMENT PLANT PALETTE

FUEL MANAGEMENT ZONE A		
Botanical Name	***Common Name***	***Suitability***
Shrubs		
Aeonium species	*Aeonium*	*C D*
Agave species	*Century Plant*	*C D*
Agave attenuata	*Century Plant*	*C D*
Agave attenuata	*Fox Tail Agave*	*C D*
Agave filifera	*Agave Filifera*	*C D*
Agave parryi v. couesii	*Couesii Century Plant*	*C D*
Agave shawii	*Shaw's Century Plant*	*C D*
Agave species	*Century Plant*	*C D*
Agave vilmoriniana	*Octopus Agave*	*C D*
Aloe arborescens	*Tree Aloe*	*C D*
Aloe arborescens	*Candelabra Aloe*	*C D*
Aloe species	*Aloe*	*C D*
Aloe striata	*Coral Aloe*	*C D*
Aloe Vera	*Medicinal Aloe*	*C D*
Aptenia cordifolia	*Hearts And Flowers*	*C D*
Baccharis pilularis 'Twin Peaks #2'	*Dwarf Coyote Bush*	*C D*
Baccharis salicifolia	*Mulefat*	*C D*
Bromus carinatus	*California Brome*	*C*
Bulbine frutescens	*Stalked Bulbine*	*D*
Bulbine frutescens 'Hallmark'	*Dwarf Orange Bulbine*	*D*
Bulbine frutescens 'Yellow'	*Yellow bulbine*	*D*
Carissa macrocarpa	*Green Carpet Natal Plum*	-
Ceanothus g. var. hori. 'Yankee Point'	*Yankee Point Ceanothus*	*C D O*
Ceanothus gloriosus 'Point Reyes'	*Point Reyes Ceanothus*	*C D O*
Ceanothus griseus ' Louis Edmunds'	*Louis Edmunds Ceanothus*	*C D O*
Ceanothus griseus var. horizontalis	*Carmel Creeper Ceanothus*	*C D O*
Ceanothus megarcarpus	*Big Pod Ceanothus*	*C D*
Ceanothus prostrates	*Squaw Carpet Ceanothus*	*C D*
Ceanothus spinosus	*Green Bark Ceanothus*	*C D*
Ceanothus verrucosus	*Wart-Stem Ceanothus*	*C D*
Cephalocereus senilis	*Old Man Cactus*	*CD*
Cerastium tomentosum	*Snow-in-Summer*	-

(1) This plant species may not be located within 50 feet of homes.

C = California Friendly
D = Drought Tolerant
O = Suitable to plant under Oaks

FUEL MANAGEMENT PLANT PALETTE

FUEL MANAGEMENT ZONE A		
Botanical Name	***Common Name***	***Suitability***
Shrubs (continued)		
Cercis occidentalis	*Western Redbud*	*C D O*
Cereus hildmannianus	*Hildmann Cactus*	*C D*
Cereus peruvianus	*Peruvian Tree Cactus*	*C D*
Chrysanthemum leucanthemum	*Oxeye Daisy*	-
Cistus hybridus	*White Rockrose*	*C D*
Cistus incanus	*NCN*	*C D*
Cistus incanus ssp. Corsicus	*NCN*	*C D*
Cistus salviifolius	*Sageleaf Rockrose*	*C D*
Cistus x purpereus	*Orchid Rockrose*	*C D*
Convolvulus cneorum	*Bush Morning Glory*	*C D*
Coprosma kirkii	*Creeping Coprosma*	-
Coprosma pumila	*Prostrate Coprosma*	-
Cotoneaster buxifolius	*NCN*	*C D*
Crassula arborescens	*Silver Jade Plant*	*C D*
Crassula ovata	*Jade Tree*	*C*
Delosperma 'Alba'	*White Trailing Ice Plant*	*C D*
Dodonaea viscosa	*Hopseed Bush*	*C D*
Doryanthes palmeri	*Spear Lily*	-
Drosanthemum hispidum	*Ice Plant*	*C D*
Dudleya brittonii	*Dudleya*	*C D*
Dudleya caespitosa	*Sea Lettuce*	*C D O*
Dudleya hassei	*Hasse's Dudleya*	*C D O*
Dudleya lanceolata	*Lance-Leaved Dudleya*	*C D O*
Dudleya pulverulenta	*Chalk Dudleya*	*C D*
Dudleya viscida	*San Juan Live Forever*	*C D O*
Echeveria species	*Hens and Chickens*	*C D*
Echinocactus grusonii	*Golden Barrel Cactus*	-
Echium species	*Echium*	*C D*
Escallonia species	*Escallonia Varieties*	*C*
Euphorbia biglandulosa	*Gopher Plant*	*C D*
Euphorbia characias	*Euphorbia*	*C D*
Euphorbia rigida	*Yellow Spurge*	*C D*
Euphorbia tirucalli 'Sticks on Fire'	*Sticks on Fire*	*C D*
Feijoa sellowiana	*Pineapple Guava*	-

(1) This plant species may not be located within 50 feet of homes.

C = California Friendly
D = Drought Tolerant
O = Suitable to plant under Oaks

FUEL MANAGEMENT PLANT PALETTE

FUEL MANAGEMENT ZONE A		
Botanical Name	***Common Name***	***Suitability***
Shrubs (continued)		
Graptopetalum paraguayense	*Ghost Plant, Mother of Pearl Plant*	-
Grewia occidentalis	*Starflower*	*C*
Hardenbergia comptoniana	*Lilac Vine*	-
Hesperaloe funifera	*Giant Hesperaloe*	*C D*
Hypericum calycinum	*Aaron's Beard*	*D*
Kalanchoe beharensis	*Felt Plant*	*C D*
Kalanchoe pumila	*Flower Dust Plant*	*C D*
Kniphofia uvaria	*Red Hot Poker*	*C D*
Lamium maculatum	*Dead Nettle*	-
Lamium maculatum 'Beacon Silver'	*Beacon Silver Dead Nettle*	-
Lampranthus aurantiacus	*Ice Plant*	*C D*
Lampranthus productus	*Lampranthus*	*C D*
Lampranthus spectabilis	*Trailing Ice Plant*	*C D*
Lampranthus spectabilis 'Rose'	*Rose Trailing Ice Plant*	*C D*
Lantana camara cultivars	*Yellow Sage*	*C D*
Lantana camara montevidensis	*Trailing Lantana*	*C D*
Lavandula dentata	*French Lavender*	*C D*
Leptospermum 'laevigatum'	*Australian Tea Tree*	*C D*
Leucophyllum frutescens	*Texas Ranger*	*C D*
Ligustrum japonicum 'Texanum'	*Texas Privet*	*C D*
Limonium perezii	*Sea Lavender*	*C D*
Lonicera japonica 'Halliana'	*Hall's Japanese Honeysuckle*	-
Lonicera subspicata	*Wild Honeysuckle*	-
Mahonia 'Golden Abundance'	*Golden Abundance Mahonia*	*C D*
Mahonia nevenii	*Nevin Mahonia*	*C D*
Malephora lutea	*Rocky Point Ice Plant*	*C D*
Manfreda maculosa	*Manfreda*	-
Myoporum debile	*NCN*	-
Myoporum 'Pacificum'	*NCN*	-
Myoporum parvilfolium	*NCN*	-
Nolina cismontane	*Chapparal Nolina*	-
Nolina species	*Mexican Grasstree*	*C D*
Opuntia littoralis	*Prickly Pear*	*C D*
Opuntia oricola	*Oracle Cactus*	*C D*

(1) This plant species may not be located within 50 feet of homes.

C = California Friendly
D = Drought Tolerant
O = Suitable to plant under Oaks

FUEL MANAGEMENT PLANT PALETTE

FUEL MANAGEMENT ZONE A		
Botanical Name	***Common Name***	***Suitability***
Shrubs (continued)		
Opuntia species	*Prickly Pear, Cholla*	*C D*
Osteospermum fruticosum	*Trailing African Daisy*	*C D*
Pachypodium lamieri [(1)]	*Madagascar Palm* [(1)]	-
Pedilanthus macrocarpus	*Lady's Slippers*	*D*
Photinia fraseri	*NCN*	*C D*
Pilea cadierei	*Creeping Charlie*	-
Portulacaria afra	*Elephant's Food*	*C D*
Prunus caroliniana	*Carolina Cherry Laurel*	*C D*
Prunus ilicifolia 'Ilicifolia'	*Holly Leafed Cherry*	*C D O*
Prunus lyonii	*Catalina Cherry*	*C D*
Punica granatum	*Pomegranate*	-
Pyracantha species	*Firethorn*	*C D*
Quercus berberdifolia	*California Scrub Oak*	*D*
Quercus dumosa	*Coastal Scrub Oak*	*C D*
Rhaphiolepis species	*India Hawthorn*	*C*
Rhus integrifolia	*Lemonade Berry*	*C D O*
Rhus ovata	*Sugarbush*	*C D*
Romneya coulteri	*Matilija Poppy*	*C D*
Romneya coulteri 'White Cloud'	*White Cloud Matilija Poppy*	*C D*
Rosmarinus officinalis	*Rosemary*	*C D*
Salvia greggii [(1)]	*Autumn Sage* [(1)]	*C D*
Salvia sonomensis [(1)]	*Creeping Sage* [(1)]	*C D*
Santolina chamaecyparissus	*Lavendar Cotton*	*C D*
Santolina virens	*Green Lavender Cotton*	*C D*
Sedum species	*Stonecrop*	*C D*
Solanum xantii	*Purple Nightshade*	*C D*
Tecoma capensis	*Cape Honeysuckle*	*C D*
Xylosma congestum	*Shiny Xylosma*	-
Yucca glauca	*Spanish Bayonet*	*C D*
Yucca Species [(1)]	*Yucca* [(1)]	*C D*
Yucca whipplei [(1)]	*Our Lord's Candle* [(1)]	*C D*

(1) This plant species may not be located within 50 feet of homes.

C = California Friendly
D = Drought Tolerant
O = Suitable to plant under Oaks

FUEL MANAGEMENT PLANT PALETTE

FUEL MANAGEMENT ZONE A		
Botanical Name	***Common Name***	***Suitability***
Groundcover		
Armeria maritima	*Common Thrift*	*C D*
Artemisia caucasica	*Caucasian Artesmisia*	*D*
Aptenia cordifolia x Red Apple	*Aptenia*	*D*
Cistus cripus	*NCN*	*C*
Coreopsis lancelata	*Coreopsis*	*C*
Corea pulchella	*Australian Fuscia*	*D*
Crassula lacteal	*NCN*	*D*
Crassula multicava	*NCN*	*D*
Crassula tetragona	*NCN*	*D*
Delosperma 'alba'	*White Trailing Ice Plant*	*C D*
Drosanthemum floribundum	*Rosea Ice Plant*	*C*
Drosanthemum hispidum	*NCN*	*C*
Drosanthemum speciosum	*Dewflower*	*C*
Fragaria chiloensis	*Beach Strawberry*	*D*
Iberis sempervirens	*Evergreen Candytuft*	*C D*
Iberis umbellatum	*Globe Candytuft*	*C*
Lampranthus aurantiacus	*Bush Ice Plant*	-
Lampranthus filicaulis	*Redondo Creeper*	-
Lampranthus spectabilis	*Trailing Ice Plant*	*C*
Lasthenia californica	*Dwarf Goldfields*	-
Lupinus arizonicus	*Desert Lupine*	*C D*
Lupinus benthamii	*Spider Lupine*	-
Lupinus bicolor	*Miniature Lupine*	-
Lupinus sparsiflorus	*Losely flowered Annual Lupine/Coulter's*	-
Ophiopogon japonicus	*Mondo Grass*	-
Pelargonium peltatum	*Ivy Geranium*	-
Sedum species	*Stone Crop*	-
Vines		
Bougainvillea spp.	*Bougainvillea*	*C D*
Macfadyena unguis-cati	*Cat's Claw*	*C D*
Mascagnia macroptera	*Golden Vine*	*D*
Passiflora edulis	*Passion Flower*	-
Turf		
Marathon II 'Festuca Arundinacea'	*Dwarf Tall Fescue*	
Turf	*A-G Sod Farms Inc.- Elite Plus*	*D*

(1) This plant species may not be located within 50 feet of homes.

C = California Friendly
D = Drought Tolerant
O = Suitable to plant under Oaks

FUEL MANAGEMENT PLANT PALETTE

2. Permitted Plant Palette for Fuel Management Zone B

FUEL MANAGEMENT ZONE B	
Botanical Name	***Common Name***
Shrubs From Seed	
Dichelostemma capitatum	*Wild hyacinth*
Dudleya pulverulenta	*Chalk dudleya*
Horkelia cuneata	*Mesa horkelia*
Lotus heermannii	*Woolly lotus*
Melica imperfecta	*Coast range melic*
Mirabilis californica	*Wishbone bush*
Nassella pulchra	*Purple needlegrass*
Sisyrinchium bellum	*Blue-eyed grass*
Shrubs From Container	
Aeonium species	*Aeonium*
Agave attenuata	*Fox Tail Agave*
Agave shawii	*Shaw's Century Plant*
Aloe arborescens	*Candelabra Aloe*
Aloe species	*Aloe*
Aloe striata	*Coral Aloe*
Crassula species	*Silver Jade Plant*
Dichelostemma capitatum	*Wild hyacinth*
Distictis spicata	*Saltgrass*
Dudleya lanceolata	*Lance-leaved dudleya*
Dudleya pulverulenta	*Chalk Dudleya*
Echeveria species	*Echeveria*
Horkelia cuneata	*Mesa horkelia*
Kalanchoe beharensis	*Felt Plant*
Kalanchoe pumila	*Flower Dust Plant*
Limonium perezii	*Sea Lavender*
Lycium californicum	*California boxthorn*
Nassella lepida	*Foothill needle-grass*
Opuntia littoralis	*Coast prickly-pear*
Opuntia prolifera	*Coast cholla*
Opuntia species	*Prickly Pear, Cholla*
Portulacaria afra	*Elephant's Food*
Sedum species	*Stonecrop*

(1) This plant species may not be located within 50 feet of homes.

C = California Friendly
D = Drought Tolerant
O = Suitable to plant under Oaks

FUEL MANAGEMENT PLANT PALETTE

FUEL MANAGEMENT ZONE B	
Botanical Name	***Common Name***
Sisyrinchium bellum	*Blue-eyed grass*
Tecoma capensis	*Cape Honeysuckle*
Yucca whipplei [(1)]	*Our Lord's Candle* [(1)]

(1) This plant species may not be located within 50 feet of homes.

C = California Friendly
D = Drought Tolerant
O = Suitable to plant under Oaks

FUEL MANAGEMENT PLANT PALETTE

3. Permitted Plant Palette for Fuel Management Zone C / Habitat Restoration *

HABITAT RESTORATION / FUEL MANAGEMENT ZONE C	
Botanical Name	***Common Name***
Grasslands	
Bothriochloa barbinodis	Beardgrass
Distichlis spicata	Saltgrass
Lasthenia californica	California goldfields
Melica imperfecta	Coast Range Melica
Nassella lepida	Foothill needlegrass
Nassella pulchra	Purple needlegrass
Succulent Scrub Mosaic	
Non-Combustible/Succulent Species	
Cylindropuntia prolifera	Coastal cholla
Opuntia littoralis	Coastal prickly pear
Suaeda taxifolia	Woolly sea-blite
Fire-Resistive Shrub Species	
Encelia californica (2)	California encelia (2)
Isocoma menziesii (2)	Coastal goldenbush (2)
Isomeris arborea (2)	Bladderpod (2)
Lycium californicum (2)	California boxthorn (2)

The plants will be established in a mosaic pattern, with alternating patches of the fire-resistive shrub species and non-combustible/succulent species such that it achieves the equivalent of a 50- to 60-percent "thinning" standard with the typically "thinned" areas actually composed at NBR of succulent and cactus species. The intention is to continue to provide nesting and foraging habitat for special-status birds such as California gnatcatcher (*Polioptila californica*) and coastal cactus wren (*Campylorhynchus brunneicapillus*), with the large patches of non-combustible/succulent species intended to minimize fire risk.

* For other habitat restoration plant palettes, refer to Habitat Restoration Plan for Mitigations and Project Design Features for the Project.

(2) This plant species may not be located within 30 feet of off-Project homes along the easterly Project boundary, between 17th Street and 19th Street in the City of Costa Mesa.

C = California Friendly
D = Drought Tolerant
O = Suitable to plant under Oaks

City of Newport Beach
Urban Wildland Interface Area
Standard for Hazard Reduction

NBR • F&LSP
Attachment 1b

Fire Resistive Plant List

Botanical Name	Common Name	Plant Form	Remarks
Abelia x grandiflora	Glossy Abelia	Shrub	
Acacia redolens desert carpet (1)	Desert Carpet	Shrub	
Acer macrophyllum	Big Leaf Maple	Tree	
Achillea millefolium	Common Yarrow	Low Shrub	Prune back after flowering to remove dried fire fuel
Achillea tomentosa	Woolly Yarrow	Low Shrub	Prune back after flowering to remove dried fire fuel
Aeonium decorum	Aeonium	Ground cover	
Aeonium simsii	no common name	Ground cover	
Agave attenuata	Century Plant	Succulent	
Agave shawii	Shaw's Century Plant	Succulent	
Agave victoriae-reginae	no common name	Ground Cover	Low maintenance
Ajuga reptans	Carpet Bugle	Ground Cover	Poor on slopes
Alnus cordata	Italian Alder	Tree	
Alnus rhombifolia	White Alder	Tree	30-50 feet height
Aloe arborescens	Tree Aloe	Shrub	Highly invasive
Aloe aristata	no common name	Ground Cover	
Aloe brevifoli	no common name	Ground Cover	
Aloe Vera	Medicinal Aloe	Succulent	
Alogyne huegeii	Blue Hibiscus	Shrub	
Ambrosia chammissonis	Beach Bur-Sage	Perennial	
Amorpha fruticosa	Western False Indigobush	Shrub	Native
Anigozanthus flavidus	Kangaroo Paw	Perennial/accent	
Antirrhinum nuttalianum ssp.	no common name	Subshrub	
Aptenia cordifolia x 'Red Apple'	Red Apple Aptenia	Ground cover	High fire retardance
Arbutus unedo	Strawberry Tree	Tree	
Arctostaphylos 'Pacific Mist'	Pacific Mist Manzanita	Ground Cover	
Arctostaphylos edmundsii	Little Sur Manzanita	Ground Cover	Slow to establish
Arctostaphylos glandulosa ssp.	Eastwood Manzanita	Shrub	
Arctostaphylos hookeri 'Monterey Carpet'	Monterey Carpet Manzanita	Low Shrub	Excellent drought tolerance, semi-upright to 12 inches
Arctostaphylos pungens	no common name	Shrub	
Arctostaphylos refugioensis	Refugio Manzanita	Shrub	
Arctostaphylos uva-ursi	Bearberry	Ground Cover	Excellent drought tolerance, spreading 4-6', height to 1'
Arctostaphylos x 'Greensphere'	Greensphere Manzanita	Shrub	
Artemisia caucasica	Caucasian Artesmisia	Ground Cover	Very low maintenance; takes some foot traffic
Artemisia pycnocephala	Beach Sagewort	Perennial	
Atriplex canescens	Four-Wing Saltbush	Shrub	
Atriplex lentiformis ssp. breweri	Brewer Saltbush	Shrub	Native
Baccharis emoyi	Emory Baccharis	Shrub	
Baccharis pilularis ssp. Consanguinea	Chaparral Bloom	Shrub	Native - Drought tolerant
Baccharis pilularis var. pilularis 'Twin Peaks #2'	Twin Peaks	Ground Cover	Use only male plants
Baxtylis glomerata	Berber Orchard Grass	Grass	

Baccharis salicifolia	Mulefat	Shrub	Native - Drought tolerant

Botanical Name	**Common Name**	**Plant Form**	**Remarks**
Baileya multiradiata	Desert Marigold	Ground Cover	Drought tolerant
Beaucarnea recurvata	Bottle Palm	Shrub/Small Tree	
Bougainvillea spectabilis (2)	Bougainvillea	Shrub	
Brahea armata (3)	Mexican Blue Palm/Blue Hesper Palm	Palm	
Brahea brandegeei (4)	San Jose Hesper Palm	Palm	
Brahea edulis (5)	Guadalupe Palm	Palm	
Brickellia californica	no common name	Subshrub	
Bromus carinatus	California Brome	Grass	
Camissonia cheiranthifiloa	Beach Evening Primrose	Perennial Shrub	Native
Carissa macrocarpa	Green Carpet Natal Plum	Ground Cover/Shrub	Fair-good drought tolerance, spreads 12-18"
Carpobrotus chilensis	Sea Fig Ice Plant	Ground Cover	
Ceanothus gloriosus 'Point Reyes'	Point Reyes Ceanothus	Shrub	Excellent drought tolerance, semi-upright 12-18"
Ceanothus griseus 'Louis Edmunds'	Louis Edmunds Ceanothus	Shrub	
Ceanothus griseus horizontalis	Yankee Point	Ground Cover	
Ceanothus griseus var. horizontalis	Carmel Creeper Ceanothus	Shrub	Excellent drought tolerance.
Ceanothus griseus var. horizontalis 'Yankee Point'	Yankee Point Ceanothus	Shrub	2-3' tall
Ceanothus megarcarpus	Big Pod Ceanothus	Shrub	
Ceanothus prostratus	Squaw Carpet Ceanothus	Shrub	Excellent drought tolerance; spreads 2-6'
Ceanothus spinosus	Green Bark Ceanothus	Shrub	
Ceanothus verrucosus	Wart-Stem Ceanothus	Shrub	
Cerastium tomentosum	Snow-in-Summer	Ground cover/Shrub	White flower color
Ceratonia siliqua	Carob	Tree	
Cercis occidentalis	Western Redbud	Shrub/Tree	Drought tolerant
Chrysanthemum leucanthemum	Oxeye Daisy	Ground Cover	Ornamental, flowering
Cistus crispus	no common name	Ground Cover	
Cistus hybridus	White Rockrose	Shrub	
Cistus incanus	no common name	Shrub	
Cistus incanus ssp. Corsicus	no common name	Shrub	
Cistus salviifolius	Sageleaf Rockrose	Shrub	
Cistus x purpureus	Orchid Rockrose	Shrub	
Citrus spp.	Citrus	Tree	
Clarkia bottae	Showy Fairwell to Spring	Annual	
Cneoridium dumosum	Bushrue	Shrub	
Collinsia heterophyllia	Chinese Houses	Annual	
Comarostaphylis diversifolia	Summer Holly	Shrub	
Convolvulus cneorum	Bush Morning Glory	Shrub	White flower color
Coprosma kirkii	Creeping Coprosma	Ground Cover/Shrub	Subject to dieback after 3-4 years
Coprosma pumila	Prostrate Coprosma	Low shrub	
Coreopsis californica	Califiornia Coreopsis	Annual	
Coreopsis lanceolata	Coreopsis	Ground Cover	Ornamental flowering
Corea pulchella	Australian Fuscia	Ground Cover	12" height, 36" spread
Cotoneaster buxifolius	no common name	Shrub	
Cotoneaster congestus 'Likiang'	Likiang Cotoneaster	Ground Cover/Vine	
Cotoneaster aprneyi	no common name	Shrub	
Crassula lactea	no common name	Ground Cover	
Crassula multicava	no common name	Ground Cover	Not recommended for steep slopes

Botanical Name	Common Name	Plant Form	Remarks
Crassula ovata	Jade Tree	Shrub	
Crassula tetragona	no common name	Ground Cover	
Croton californicus	California Croton	Ground Cover	
Delosperma 'alba'	White trailing Ice Plant	Ground Cover	Not recommended for steep slopes
Dendromecon rigida	Bush Poppy	Shrub	
Dichelostemma capitatum	Blue Dicks	Herb	
Distinctis buccinatoria	Blood-Red Trumpet Vine	Vine/Climbing vine	
Dodonaea viscosa	Hopseed Bush	Shrub	Drought tolerant
Drosanthemum floribundum	Rosea Ice Plant	Ground Cover	
Drosanthemum hispidum	no common name	Ground Cover	
Drosanthemum speciosus	Dewflower	Ground Cover	
Dudleya lanceolata	Lance-leaved Dudleya	Succulent	Native
Dudleya pulverulenta	Chalk Dudleya	Succulent	Native
Elaeagnus pungens	Silverberry	Shrub	
Encelia californica	California Encelia	Small Shrub	Native
Epilobium canum [Zauschneria californica]	Hoary California Fuschia	Shrub	
Eriastrum sapphirinum	Mojave Woolly Star	Annual	
Eriobotrya japonica	Loquat	Tree	
Eriodictycon crassifolium	Thick Leaf Yerba Santa	Shrub	
Eriodictycon trichocalyx	Yerba Santa	Shrub	
Eriophyllum confertiflorum	no common name	Shrub	Native
Erythrina spp.	Coral Tree	Tree	Red/pink flower color
Escallonia spp.	Several varieties	Shrub	
Eschscholzia californica	California Poppy	Flower	
Eschscholzia mexicana	Mexican Poppy	Herb	
Euonymus fortunei	Winter Creeper Euonymus	Ground Cover	
Feijoa sellowiana	Pineapple Guava	Shrub/Tree	
Fragaria chiloensis	Wild Strawberry/Sand Strawberry	Ground Cover	
Frankenia salina	Alkali Heath	Ground Cover	Native
Fremontondendron californicum	California Flannelbush	Shrub	
Gaillardia x grandiflora	Blanketflower	Ground Cover	Ornamental flower
Galvezia speciosa	Bush Snapdragon	Shrub	Red flowers
Garrya ellipta	Silktassel	Shrub	
Gazania hybrids	South African Daisy	Ground Cover	
Gazania rigens leucolaena	Training Gazania	Ground Cover	Strongly recommended; creeping varieties
Gillia capitata	Globe Gilia	Perrenial	
Gilia leptantha	Showy Gilia	Perrenial	
Gilia tricolor	Bird's Eyes	Perrenial	
Ginkgo biloba	Maidenhair Tree	Tree	
Gnaphalium Californicum	California Everlasting	Annual	
Grewia occidentalis	Starflower	Shrub	
Grindelia stricta	Gum Plant	Ground Cover	Green foliage
Hakea suaveolens (6)	Sweet Hakea	Shrub	
Hardenbergia comptoniana	Lilac Vine	Shrub	
Heliathemum muutabile	Sunrose	Ground Cover/Shrub	Good drought tolerance, 6-12"
Helianthemum scoparium	Rush Rose	Shrub	Small leaves, drought tolerant
Heliotropium curassavicum	Salt Heliotrope	Ground Cover	Native
Helix Canariensis	English Ivy	Ground Cover	

Botanical Name	Common Name	Plant Form	Remarks
Hesperaloe parviflora	Red Yucca	Perennial	
Heteromeles arbutifolia (7)	Toyon	Shrub	Native - May be trimmed up to tree form
Hypericum calycimum	Aaron's Beard	Shrub	Good t very good drought tolerance
Iberis sempervirens	Edging Candytuft	Ground Cover	White flower color
Iberis umbellatum	Globe Candytuft	Ground Cover	Ornamental flowering
Isocoma menziesii	Coastal Goldenbush	Small Shrub	Native
Isomeris arborea	Bladderpod	Shrub	Native - Drought tolerant
Iva hayesiana	Poverty Weed	Ground Cover	Erosion control, fast growth, spreads
Juglans californica	California Black Walnut	Tree	
Juncus acutus	Spiny Rush	Perrenial	Native
Keckiella antirrhinoides	Yellow Bush Penstemon	Subshrub	
Keckiella cordifolia	Heart Leaved Penstemon	Subshrub	
Keckiella ternata	Blue Stemmed Bush Penstemon	Subshrub	
Kniphofia uvaria	Red Hot Poker	Perennial	
Lagerstroemia indica	Crape Myrtle	Tree	
Lagunaria patersonii	Primrose Tree	Tree	
Lamprathus aurantiacus	Bush Ice Plant	Ground Cover	
Lampranthus filicaulis	Redondo Creeper	Ground Cover	
Lampranthus spectabilis	Trailing Ice Plant	Ground Cover	
Lantana camara cultivars	Yellow Sage	Shrub	Water deeply, infrequently
Lantana montevidensis	Trailing Lantana	Shrub	Frost tender
Lasthenia californica	Dwarf Goldfields	Annual	
Lavandula dentata	French Lavender	Shrub	
Leptospermum laevigatum	Australian Tea Tree	Shrub	
Leucophyllum frutescens	Texas Ranger	Shrub	
Leymus condensatus	Giant Wild Rye	Large Grass	Native
Ligustrum japonicum	Texas privet	Shrub	White flower color
Limonium pectinatum	no common name	Ground Cover	Drought and salt tolerant
Limonium perezii	Sea Lavender	Shrub	Perennial
Liquidambar styraciflua (8)	American Sweet Gum	Tree	
Liriodendron tulipfera	Tulip Tree	Tree	
Lonicera japonica 'Halliana'	Hall's Japanese Honeysuckle	Vining Shrub	
Lonicera subspicata	Wild Honeysuckle	Vining Shrub	Creamy white flowers
Lotus corniculatus	Bird's Foot Trefoil	Ground Cover	Green lush look
Lotus hermannii	Northern Woolly Lotus	Perennial	
Lotus scoparius	Deerweed	Shrub	Native
Lupinus arizonicus	Desert Lupine	Annual	
Lupinus benthamii	Spider Lupine	Annual	
Lupinus bicolor	Sky Lupine	Flowering annual	
Lupinus sparsiflorus	Loosely Flowered Annual Lupine/Coulter's Lupine	Annual	
Lyonothamnus floribundus ssp. Asplenifolius	Fernleaf Ironwood	Tree	
Macadamia integrifolia	Macadamia Nut	Tree	
Mahonia aquifolium 'Golden Abundance'	Golden Abundance Oregon Grape	Shrub	Bright yellow flowers
Mahonia nevenii	Nevin Mahonia	Shrub	Yellow flowers
Malacothamnus Fasciculatus	Chapparal Mallow	Shrub	
Malephora luteola	Training Ice Plant	Ground Cover	Yellow flowers

Botanical Name	Common Name	Plant Form	Remarks
Maytenus boaria	Mayten Tree	Tree	
Melaleuca nesophila	Pink Melaleuca	Shrub	
Metrosideros excelsus	New Zealand Christmas Tree	Tree	
Mimulus spp.	Monkeyflower	Flower	
Mirabilis californica	Wishbone Bush	Perrenial	
Myoporum debile	no common name	Shrub	Excellent along seacoast
Myoporum insulare	Boobyalla	Shrub	
Myoporum parvilfolium	no common name	Ground Cover	
Myoporum 'Pacificum'	no common name	Ground Cover	
Nassella (stipa) lepidra	Foothill Needlegrass	Ground Cover	Native
Nassella (stipa) pulchra	Purple Needlegrass	Ground Cover	Native
Nemophilia menziesii	Baby Blue Eyes	Annual	
Nerium Oleander	Oleander	Shrub	Subject to leaf gall in large groupings
Nolina cismontana	Chapparal Nolina	Shrub	
Nolina spp.	Mexican Grasstree	Shrub	Drought tolerant
Oenothera belandieri	Mexican Evening Primrose	Ground Cover	
Oenothera hookeri	California Evening Primrose	Flower	Drought tolerant
Oenothera speciosa	Show Evening Primrose	Perrenial	
Ophiopogon japonicus	Mondo Grass	Ground Cover	
Opuntia littoralis	Prickly Pear	Cactus	Native
Opuntia oricola	Oracle Cactus	Cactus	Native
Opuntia prolifera	Coast Cholla	Cactus	Native
Osmanthus fragrans	Sweet Olive	Shrub	
Osteospermum fruticosum	Training African Daisy	Ground Cover	
Parkinsonia aculeata	Mexican Palo Verde	Tree	Yellow flowers
Pelargonium peltatum	Ivy Geranium	Ground Cover	
Penstemon spp.	Beard Tongue	Shrub	
Photinia fraseria	no common name	Shrub	
Pistacia chinesis	Chinese Pistache	Tree	
Pittosporum undulatum	Victorian Box	Tree	
Plantago erecta	California Plantain	Annual	
Plantago insularis	Woolly Plantain	Annual	
Plantago sempervirens	Evergreen Plantain	Ground Cover	Grey leaves; drought tolerant
Plantanus racemosa	California Sycamore	Tree	Native
Plumbago auritulata	Plumbago Cape	Shrub	
Popolus fremontii	Western Cottonwood	Tree	Native
Portulacaria Afra	Elephant's Food	Shrub	
Potentilla glandulosa	Sticky Cinquefoil	Subshrub	
Potentilla tabernaemontanii	Spring Cinquefoil	Ground Cover	
Prunus caroliniana	Carolina Cherry Laurel	Shrub/Tree	White flower color
Prunus ilicifolia ssp. Ilicifolia	Holly Leafed Cherry	Shrub	
Prunus lyonii	Catalina Cherry	Shrub/Tree	White flower color
Punica granatum	Pomegranate	Shrub/Tree	
Puya spp.	Puya	Succulent/Shrub	
Phyla nodiflora	Lippia	Ground Cover	
Pyracantha spp.	Firethorn	Shrub	
Quercus agrifolia	Coast Live Oak	Tree	Oak woodland
Quercus berberdifolia (9)	California Scrub Oak	Shrub	Valuable soil binder
Quercus dumosa (10)	Coastal Scrub Oak	Shrub	
Quercus engelmannii	Engelmann Oak	Tree	Open structure
Quercus suber	Cork Oak	Tree	

Botanical Name	Common Name	Plant Form	Remarks
Rhamnus alaternus	Italian Buckthorn	Shrub	
Rhamnus californica	California Coffee Berry	Shrub	Green leaves; drought tolerant
Rhamnus crocea	Redberry	Shrub	Native - Intricate branching
Rhamnus crocea ssp. Ilicifolia	Hollyleaf Redberry	Shrub	
Rhaphiolepis spp.	Indian Hawthorne	Shrub	
Rhus integrifolia	Lemonade Berry	Shrub	Native - May be trimmed up to tree form
Rhus lancea	African Sumac	Tree	25' height
Rhus ovata (11)	Sugarbush	Shrub	
Ribes aureum	Golden Currant	Shrub	
Ribes indecorum	White Flowering Currant	Shrub	
Ribes speciosum	Fuschia Flowering Goosebberry	Shrub	Native
Ribes viburnifolium	Evergreen currant	Shrub	
Romneya coulteri	Matilija Poppy	Shrub	Large showy white flowers
Romneya coulteri 'White Cloud'	White Cloud Matilija Poppy	Shrub	
Rosmarinus officinalis (12)	Rosemary	Shrub	
Salvia greggii (13)	Autums Sage	Shrub	
Salvia sonomensis (14)	Creeping Sage	Ground Cover	
Sambucus mexicana	Mexican Elderberry	Tree	Drought tolerant
Santolina chamaecyparissus	Lavender Cotton	Ground Cover	
Santolina virens	Green Lavender Cotton	Shrub	
Satureja chandleri	San Miguel Savory	Perennial	
Scirpis scutus	Hard Stem Bulrush	Perennial	
Scirpus californicus	California Bulrush	Perennial	Native
Sedum acre	Goldmoss Sedum	Ground Cover	Not recommended on steep slopes
Sedum album	Green Stonecrop	Ground Cover	
Sedum confusum	no common name	Ground Cover	
Sedum lineare	no common name	Ground Cover	
Sedum x rubrotinctum	Pork and Beans	Ground Cover	
Senecio serpens	no common name	Ground Cover	
Sisyrinchium bellum	Blue Eyed Grass	Ground Cover	Drought tolerant
Solanum douglasii	Douglas Nightshade	Shrub	
Solanum xantii	Purple nightshade	Perennial	Native
Stenicarpus sinuatus	Firewheel Tree	Tree	
Strelitzia nicolai	Giant Bird of Paradise	Perennial	
Strelitzia reginae	Bird of Paradise	Perennial	
Symphoricarpos mollis	Creeping Snowberry	Shrub	
Tecoma stans (Stenolobium stans)	Yellow Bells	Shrub/Small Tree	
Tecomaria capensis	Cape Honeysuckle	Ground Cover	Vine
Teucarium chamedrys	Germander	Ground Cover	
Thymus serpyllum	Lemon Thyme	Ground Cover	
Trachelospermum jasminoides	Star Jasmine	Shrub	White flower color
Trichosstems lanatum	Woolly Blue Curls	Shrub	
Trifolium hirtum 'Hyron'	Hyron Rose Clover	Ground Cover	Drought tolerant
Trifolium fragerum 'O'Connor's'	O'Connor's Legume	Ground Cover	
Umbellularia californica	California Laurel	Tree	Very spreading
Verbena lasiostachys	Western Vervain	Perennial	
Verbena peruviana	no common name	Ground Cover	
Verbena spp.	Verbena	Ground Cover	Ornamental flowering
Vinca minor	Dwarf Periwinkle	Ground Cover	Very spreading

Botanical Name	Common Name	Plant Form	Remarks
Vitis girdiana	Desert Wild Grape	Vine	
Vulpia myuros ‘Zorro’	Zorro Annual Fescue	Grass	
Westringia fruticosa	no common name	Shrub	
Xannithorrhoea spp.	Grass Tree	Perennial accent/shrub	
Xylosma congestum	Shiny Xylosma	Shrub	
Yucca spp.	Yucca	Shrub	Drought tolerant
Yucca whipplei	Yucca	Shrub	

Approved Plant Palette – Qualification statements for Select Plant Species

1. **Acacia redolens desert carpet:** May be used in the upper ½ of the "B" fuel modification zone. The plants may be planted at 8' on center, maximum spacing in meandering zones not to exceed a mature width of 24' or a mature height of 24".

2. **Bougainvillea spectabilis (procumbent varieties):** Procumbent to mounding varieties may be used in the mid "B" fuel modification zone. The plants may be planted in clusters at 6' on center spacing not to exceed eight plants per cluster. Mature spacing between individual plants or clusters shall be 30' minimum.

3. **Brahea armata:** Additional information may be required as directed by NBFD.

4. **Brahea brandegeel:** Additional information may be required as directed by NBFD.

5. **Brahea edulis:** May be used in upper and mid "B" fuel modification zone. The plants shall be used as single specimens with mature spacing between palms of 20' minimum.

6. **Hakea Suaveolens:** May be used in the mid "B" fuel modification zone. The plants shall be used as single specimens with mature spacing between plants of 30' minimum.

7. **Heteromeles arbutifolia:** May be used in the mid to lower "B" fuel modification zone. The plants may be planted in clusters of up to 3 plants per cluster. Mature spacing between individual plants or clusters shall be 30' minimum.

8. **Liquidambar styraciflua:** May be used in the mid "B" fuel modification zone. The plant shall be used as single specimens with mature spacing between trees and 30' minimum.

9. **Quercus berberdifolia:** Additional information may be required as directed by NBFD.

10. **Quercus dumosa:** May be used in the mid to lower "B" fuel modification zone. The plants may be planted in clusters of up to 3 plants per cluster. Mature spacing between individual plants or clusters shall be 30' minimum.

11. **Rhus ovata:** May be used in the mid to lower "B" fuel modification zone of inland areas only. The plants may be planted in clusters of up to 3 plants per cluster. Mature spacing between individual plants or clusters shall be 30' minimum.

12. **Rosmarinus officinalis:** Additional information may be required as directed by NBFD.

13. **Salvia greggii:** Additional information may be required as directed by NBFD.

14. **Salvia sonomensis:** May be used in the mid to upper "B" fuel modification zone. The plants may be planted in clusters of up to 3 plants per cluster. Mature spacing between individual plants or clusters shall be 15' minimum.

City of Newport Beach
Urban Wildland Interface Area
Standard for Hazard Reduction

NBR • F&LSP
Attachment 1c

UNDESIRABLE PLANT SPECIES

Certain plants are considered to be undesirable in the landscape due to characteristics that make them highly flammable. These characteristics can be either physical or chemical. Physical properties that would contribute to high flammability include large amounts of dead material retained within the plant, rough or peeling bark, and the production of copious amount of litter. Chemical properties include the presence of volatile substances such as oils, resins, wax, and pitch. Certain native plants are notorious for containing these volatile substances.

Plants with these characteristics shall not be planted in any of the fuel modification zones. Should these species already exist within these areas, they shall be removed because of the potential threat they pose to any structures. They are referred to as target species since their complete removal is a critical part of hazard reduction. These fire-prone plant species are (but not limited to):

COMBUSTIBLE PLANT LIST (MANDATORY REMOVAL)

Common Name	Botanical Name
Artichoke Thistle	Cynara cardunculus
Castor Bean plant	Ricinus commons
Wild Artichoke	Cirsium vulgare
Black Mustard	Brassica nigra
Milk Thistle	Silybum marianum
Russian Thistle/Tumbleweed	Salsola australis
Indian Tabacco	Nicotiana bigelovii
Tree Tobacco	Nicotiana glauca
Prickly Lettuce	Lactuca serriola
Horseweed	Conyza canadensis
Telegraph Plant	Heterotheca grandiflora
Mayweed	Anthemix cotula
Burning Nettle	Urtica Urens
Noary Cress, Perennial Peppergrass	Cardaria draba
Wild Turnip, Yellow Mustard, Field Mustard	Brassica rapa
Chamise	Adenostoma fasciculatum
Red Shanks	Adenostoma sparsifolium
Pampas Grass	Cartaderia selloana
California Sagebrush	Artemisia californica
Common Buckwheat	Eriogonum fasciculatum
Black Sage	Salvia mellifera
Pampas Grass	Corraders
Cypress	Cupressus sp
Eucalyptus	Eucalyptus sp
Juniper	Juniperus sp
Pine	Pinus sp

NBR • F&LSP
Attachment 2a

CHAPTER 47

REQUIREMENTS FOR WILDLAND-URBAN INTERFACE FIRE AREAS

SECTION 4701 GENERAL

4701.1 Scope. *The mitigation of conditions where a wildfire burning in vegetative fuels may readily transmit fire to buildings and threaten to destroy life, overwhelm fire suppression capabilities, or result in large property losses shall comply with this chapter.*

4701.2 Purpose. *The purpose of this code is to provide minimum standards to increase the ability of a building to resist the intrusion of flame or burning embers being projected by a vegetation fire and contributes to a systematic reduction in conflagration losses through the use of performance and prescriptive requirements.*

SECTION 4702 DEFINITIONS

4702.1 General. *For the purpose of this chapter, certain terms are defined as follows:*

CDF DIRECTOR *means the Director of the California Department of Forestry and Fire Protection.*

FIRE PROTECTION PLAN *is a document prepared for a specific project or development proposed for a Wildland-Urban Interface Fire Area. It describes ways to minimize and mitigate potential for loss from wildfire exposure.*

The Fire Protection Plan shall be in accordance with this chapter. When required by the enforcing agency for the purposes of granting modifications, a fire protection plan shall be submitted. Only locally adopted ordinances that have been filed with the California Building Standards Commission in accordance with Section 101.14 or the Department of Housing and Community Development in accordance with Section 101.15 shall apply.

FIRE HAZARD SEVERITY ZONES *are geographical areas designated pursuant to California Public Resources Codes Sections 4201 through 4204 and classified as Very High, High, or Moderate in State Responsibility Areas or as Local Agency Very High Fire Hazard Severity Zones designated pursuant to California Government Code Sections 51175 through 51189.*

The California Code of Regulations, Title 14, Section 1280 entitles the maps of these geographical areas as "Maps of the Fire Hazard Severity Zones in the State Responsibility Area of California."

LOCAL AGENCY VERY HIGH FIRE HAZARD SEVERITY ZONE *means an area designated by a local agency upon the recommendation of the CDF Director pursuant to Government Code Sections 51177(c), 51178 and 51189 that is not a state responsibility area and where a local agency, city, county, city and county, or district is responsible for fire protection.*

STATE RESPONSIBILITY AREA *means lands that are classified by the Board of Forestry pursuant to Public Resources Code Section 4125 where the financial responsibility of preventing and suppressing forest fires is primarily the responsibility of the state.*

WILDFIRE *is any uncontrolled fire spreading through vegetative fuels that threatens to destroy life, property, or resources as defined in Public Resources Code Sections 4103 and 4104.*

WILDFIRE EXPOSURE *is one or a combination of radiant heat, convective heat, direct flame contact and burning embers being projected by vegetation fire to a structure and its immediate environment.*

WILDLAND-URBAN INTERFACE FIRE AREA *is a geographical area identified by the state as a "Fire Hazard Severity Zone" in accordance with the Public Resources Code Sections 4201 through 4204 and Government Code Sections 51175 through 51189, or other areas designated by the enforcing agency to be at a significant risk from wildfires. See Article 86B for the applicable referenced sections of the Government Code and the Public Resources Code.*

SECTION 4703 PLANS [RESERVED]

SECTION 4704 FIRE HAZARD SEVERITY ZONES

4704.1 General. *Lands in the state are classified by the CDF Director in accordance with the severity of wildfire hazard expected to prevail in those areas and the responsibility for fire protection, so that measures may be identified which will reduce the potential for losses to life, property, and resources from wildfire.*

4704.2 Classifications. *The CDF Director classifies lands into fire hazard severity zones in accordance with California Public Resources Code Sections 4201 through 4204 for State Responsibility Areas and in accordance with Government Code Sections 51175 through 51189 for areas where a local agency is responsible for fire protection.*

SECTION 4705 WILDLAND-URBAN INTERFACE FIRE AREA

4705.1 General. *Construction methods and requirements to mitigate wildfire exposure shall be applied within geographical areas where a wildfire burning in vegetative fuels may readily transmit fire to buildings and threaten to destroy life, overwhelm fire suppression capabilities, or result in large property losses.*

4705.2 Construction methods and requirements within established limits. *Within the limits established by law, construction methods intended to mitigate wildfire exposure shall comply with the California Building Code Chapter 7A, and this chapter.*

4705.3 Establishment of limits. *The establishment of limits for the Wildland-Urban Interface Fire Area's required construction methods shall be designated pursuant to the California Public Resources Code for State Responsibility areas or by a local agency following a finding supported by substantial evidence in the record that the requirements of this section are necessary for effective fire protection within the area.*

SECTION 4706
VEGETATION MANAGEMENT [RESERVED]

SECTION 4707
DEFENSIBLE SPACE [RESERVED]

SECTION 4708
MATERIALS AND CONSTRUCTION METHODS FOR EXTERIOR WILDFIRE EXPOSURE

4708.1 Scope, purpose and application.

4708.1.1 Scope. *This chapter applies to building materials, systems and or assemblies used in the exterior design and construction of new buildings located within a Wildland-Urban Interface Fire Area as defined in this chapter.*

4708.1.2 Purpose. *The purpose of this chapter is to establish minimum standards for the protection of life and property by increasing the ability of a building located in any Fire Hazard Severity Zone within State Responsibility Areas or any Wildland-Urban Interface Fire Area to resist the intrusion of flame or burning embers projected by a vegetation fire and contributes to a systematic reduction in conflagration losses.*

4708.1.3 Application. *New buildings located in any Fire Hazard Severity Zone within State Responsibility Areas or any Wildland-Urban Interface Fire Area designated by the enforcing agency for which an application for a building permit is submitted on or after December 1, 2005, shall comply with the following Sections:*

1. *4710.1 Roofing*
2. *4710.2 Attic Ventilation*

4708.2 Alternates for materials, design, tests, and methods of construction. *The enforcing agency is permitted to modify the provisions of this chapter for site-specific conditions in accordance with the California Building Code Appendix Chapter 1, Section 104.10. When required by the enforcing agency for the purposes of granting modifications, a fire protection plan shall be submitted in accordance with the Chapter 47.*

SECTION 4709
STANDARDS OF QUALITY [RESERVED]

SECTION 4710
MATERIALS, SYSTEMS AND METHODS OF CONSTRUCTION

4710.1 Roofing.

4710.1.1 General. *Roofs shall comply with the requirements of this chapter and the California Building Code, Chapter 15. Roofs shall have a roofing assembly installed in accordance with its listing and the manufacturer's installation instructions.*

4710.1.2 Roof coverings. *Where the roof profile allows a space between the roof covering and roof decking, the spaces shall be constructed to prevent the intrusion of flames and embers, be firestopped with approved materials or have one layer of No. 72 ASTM cap sheet installed over the combustible decking.*

4710.1.3 Roof valleys. *When provided, valley flashings shall be not less 0.019-inch (0.48 mm) (No. 26 galvanized sheet gage) corrosion-resistant metal installed over a minimum 36-inch-wide (914 mm) underlayment consisting of one layer of No. 72 ASTM cap sheet running the full length of the valley.*

4710.1.4 Roof gutters. *Roof gutters shall be provided with the means to prevent the accumulation of leaves and debris in the gutter.*

4710.2 Attic ventilation.

4710.2.1 General. *When required by the California Building Code, Chapter 15, roof and attic vents shall resist the intrusion of flame and embers into the attic area of the structure, or shall be protected by corrosion-resistant, noncombustible wire mesh with ¼-inch (6 mm) openings or its equivalent.*

4710.2.2 Eave or cornice vents. *Vents shall not be installed in eaves and cornices.*

Exception: *Eave and cornice vents may be used provided they resist the intrusion of flame and burning embers into the attic area of the structure.*

SECTION 4711
EXTERIOR WALLS [RESERVED]

SECTION 4712
DECKING, FLOORS AND UNDERFLOOR PROTECTION [RESERVED]

SECTION 4713
ANCILLARY BUILDINGS AND STRUCTURES [RESERVED]

CHAPTER 7A [SFM]

MATERIALS AND CONSTRUCTION METHODS FOR EXTERIOR WILDFIRE EXPOSURE

SECTION 701A
SCOPE, PURPOSE AND APPLICATION

701A.1 Scope. *This chapter applies to building materials, systems and/or assemblies used in the exterior design and construction of new buildings located within a Wildland-Urban Interface Fire Area as defined in Section 702A.*

701A.2 Purpose. *The purpose of this chapter is to establish minimum standards for the protection of life and property by increasing the ability of a building located in any Fire Hazard Severity Zone within State Responsibility Areas or any Wildland-Urban Interface Fire Area to resist the intrusion of flames or burning embers projected by a vegetation fire and contributes to a systematic reduction in conflagration losses.*

701A.3 Application. *New buildings located in any Fire Hazard Severity Zone within State Responsibility Areas or any Wildland-Urban Interface Fire Area designated by the enforcing agency for which an application for a building permit is submitted on or after December 1, 2005, shall comply with the following sections:*

1. ***704A.1—Roofing***
2. ***704A.2—Attic Ventilation***

701A.3.1 Alternates for materials, design, tests, and methods of construction. *The enforcing agency is permitted to modify the provisions of this chapter for site-specific conditions in accordance with Appendix Chapter 1, Section 104.10. When required by the enforcing agency for the purposes of granting modifications, a fire protection plan shall be submitted in accordance with the California Fire Code, Chapter 47.*

701A.3.2 New buildings located in any fire hazard severity zone. *New buildings located in any Fire Hazard Severity Zone, or any Wildland-Urban Interface Fire Area designated by the enforcing agency for which an application for a building permit is submitted on or after January 1, 2008, shall comply with all sections of this chapter.*

701A.3.2.1 Inspection and certification. *Building permit applications and final completion approvals for buildings within the scope and application of this chapter shall comply with the following:*

701A.3.2.2 *The local building official shall, prior to construction, provide the owner or applicant a certification that the building as proposed to be built complies with all applicable state and local building standards, including those for materials and construction methods for wildfire exposure as described in this chapter.*

701A.3.2.3 *The local building official shall, upon completion of construction, provide the owner or applicant with a copy of the final inspection report that demonstrates the building was constructed in compliance with all applicable state and local building standards, including those for materials and construction methods for wildlife exposure as described in this chapter.*

701A.3.2.4 *Prior to building permit final approval the property shall be in compliance with the vegetation clearance requirements prescribed in California Public Resources Code 4291 California Government Code Section 51182.*

SECTION 702A
DEFINITIONS

For the purposes of this chapter, certain terms are defined below:

CDF DIRECTOR *means the Director of the California Department of Forestry and Fire Protection.*

FIRE PROTECTION PLAN *is a document prepared for a specific project or development proposed for a Wildland Urban Interface Fire Area. It describes ways to minimize and mitigate potential for loss from wildfire exposure.*

The Fire Protection Plan shall be in accordance with this chapter and the California Fire Code, Chapter 47. When required by the enforcing agency for the purposes of granting modifications, a fire protection plan shall be submitted. Only locally adopted ordinances that have been filed with the California Building Standards Commission or the Department of Housing and Community Development in accordance with Section 101.8 shall apply.

FIRE HAZARD SEVERITY ZONES *are geographical areas designated pursuant to California Public Resources Codes Sections 4201 through 4204 and classified as Very High, High, or Moderate in State Responsibility Areas or as Local Agency Very High Fire Hazard Severity Zones designated pursuant to California Government Code, Sections 51175 through 51189. See California Fire Code Article 86.*

The California Code of Regulations, Title 14, Section 1280, entitles the maps of these geographical areas as "Maps of the Fire Hazard Severity Zones in the State Responsibility Area of California."

IGNITION-RESISTANT MATERIAL *is any product which, when tested in accordance with ASTM E 84 for a period of 30 minutes, shall have a flame spread of not over 25 and show no evidence of progressive combustion. In addition, the flame front shall not progress more than 10½ feet (3200 mm) beyond the centerline of the burner at any time during the test.*

Materials shall pass the accelerated weathering test and be identified as exterior type, in accordance with ASTM D 2898 and ASTM D 3201. All materials shall bear identification showing the fire performance rating thereof. That identification shall be issued by ICC-ES or a testing facility recognized

by the State Fire Marshal having a service for inspection of materials at the factory.

Fire-Retardant-Treated Wood or noncombustible materials as defined in Section 202 shall satisfy the intent of this section.

The enforcing agency may use other definitions of ignition-resistant material that reflect wildfire exposure to building materials and/or their materials, performance in resisting ignition.

***LOCAL AGENCY VERY HIGH FIRE HAZARD SEVERITY ZONE** means an area designated by a local agency upon the recommendation of the CDF Director pursuant to Government Code Sections 51177(c), 51178 and 5118 that is not a state responsibility area and where a local agency, city, county, city and county, or district is responsible for fire protection.*

***STATE RESPONSIBILITY AREA** means lands that are classified by the Board of Forestry pursuant to Public Resources Code Section 4125 where the financial responsibility of preventing and suppressing forest fires is primarily the responsibility of the state.*

***WILDFIRE** is any uncontrolled fire spreading through vegetative fuels that threatens to destroy life, property, or resources as defined in Public Resources Code Sections 4103 and 4104.*

***WILDFIRE EXPOSURE** is one or a combination of radiant heat, convective heat, direct flame contact and burning embers being projected by vegetation fire to a structure and its immediate environment.*

***WILDLAND-URBAN INTERFACE FIRE AREA** is a geographical area identified by the state as a "Fire Hazard Severity Zone" in accordance with the Public Resources Code Sections 4201 through 4204 and Government Code Sections 51175 through 51189, or other areas designated by the enforcing agency to be at a significant risk from wildfires. See Section 706A for the applicable referenced sections of the Government Code and the Public Resources Code.*

SECTION 703A
STANDARDS OF QUALITY

***703A.1 General.** Material, systems, and methods of construction used shall be in accordance with this Chapter.*

***703A.2 Qualification by testing.** Material and material assemblies tested in accordance with the requirements of Section 703A shall be accepted for use when the results and conditions of those tests are met. Testing shall be performed by a testing agency approved by the State Fire Marshal or identified by an ICC-ES report.*

***703A.3 Standards of quality.** The State Fire Marshal standards listed below and as referenced in this chapter are located in the California Referenced Standards Code, Part 12 and Chapter 35 of this code.*

***SFM 12-7A-1,** Exterior Wall Siding and Sheathing.*

***SFM 12-7A-2,** Exterior Window.*

***SFM 12-7A-3,** Under Eave.*

***SFM 12-7A-4,** Decking.*

SECTION 704A
MATERIALS, SYSTEMS AND METHODS OF CONSTRUCTION

704A.1 Roofing.

***704A.1.1 General.** Roofs shall comply with the requirements of Chapter 7A and Chapter 15. Roofs shall have a roofing assembly installed in accordance with its listing and the manufacturer's installation instructions.*

***704A.1.2 Roof coverings.** Where the roof profile allows a space between the roof covering and roof decking, the spaces shall be constructed to prevent the intrusion of flames and embers, be firestopped with approved materials or have one layer of No. 72 ASTM cap sheet installed over the combustible decking.*

***704A.1.3 Roof valleys.** When provided, valley flashings shall be not less than 0.019-inch (0.48 mm) (No. 26 galvanized sheet gage) corrosion-resistant metal installed over a minimum 36-inch-wide (914 mm) underlayment consisting of one layer of No. 72 ASTM cap sheet running the full length of the valley.*

***704A.1.4** Reserved.*

***704A.1.5 Roof gutters.** Roof gutters shall be provided with the means to prevent the accumulation of leaves and debris in the gutter.*

704A.2 Attic ventilation.

***704A.2.1 General.** When required by Chapter 15, roof and attic vents shall resist the intrusion of flame and embers into the attic area of the structure, or shall be protected by corrosion-resistant, noncombustible wire mesh with $^1/_4$-inch (6 mm) openings or its equivalent.*

***704A.2.2 Eave or cornice vents.** Vents shall not be installed in eaves and cornices.*

***Exception:** Eave and cornice vents may be used provided they resist the intrusion of flame and burning embers into the attic area of the structure.*

***704A.2.3 Eave protection.** Eaves and soffits shall meet the requirements of SFM 12-7A-3 or shall be protected by ignition-resistant materials or noncombustible construction on the exposed underside.*

704A.3 Exterior walls.

***704A.3.1 General.** Exterior walls shall be approved noncombustible or ignition-resistant material, heavy timber, or log wall construction or shall provide protection from the intrusion of flames and embers in accordance with standard SFM 12-7A-1.*

***704A.3.1.1 Exterior wall coverings.** Exterior wall coverings shall extend from the top of the foundation to the roof, and terminate at 2-inch (50.8 mm) nominal solid wood blocking between rafters at all roof overhangs, or in the case of enclosed eaves, terminate at the enclosure.*

***704A.3.2 Exterior wall openings.** Exterior wall openings shall be in accordance with this section.*

***704A.3.2.1 Exterior wall vents.** Unless otherwise prohibited by other provisions of this code, vent openings in*

exterior walls shall resist the intrusion of flame and embers into the structure or vents shall be screened with a corrosion-resistant, noncombustible wire mesh with $^{1}/_{4}$- inch (6 mm) openings or its equivalent.

704A.3.2.2 Exterior glazing and window walls. *Exterior windows, window walls, glazed doors, and glazed openings within exterior doors shall be insulating-glass units with a minimum of one tempered pane, or glass block units, or have a fire-resistance rating of not less than 20 minutes, when tested according to ASTM E 2010, or conform to the performance requirements of SFM 12-7A-2.*

704A.3.2.3 Exterior door assemblies. *Exterior door assemblies shall conform to the performance requirements of standard SFM 12-7A-1 or shall be of approved noncombustible construction, or solid core wood having stiles and rails not less than $1^{3}/_{8}$ inches thick with interior field panel thickness no less than $1^{1}/_{4}$ inches thick, or shall have a fire-resistance rating of not less than 20 minutes when tested according to ASTM E 2074.*

Exception: *Noncombustible or exterior fire-retardant treated wood vehicle access doors are not required to comply with this chapter.*

704A.4 Decking, floors and underfloor protection.

704A.4.1 Decking.

704A.4.1.1 Decking surfaces. *Decking, surfaces, stair treads, risers, and landings of decks, porches, and balconies where any portion of such surface is within 10 feet (3048 mm) of the primary structure shall comply with one of the following methods:*

1. *Shall be constructed of ignition-resistant materials and pass the performance requirements of SFM 12-7A-4, Parts A and B.*
2. *Shall be constructed with heavy timber, exterior fire-retardant-treated wood or approved noncombustible materials.*
3. *Shall pass the performance requirements of SFM 12-7A-4, Part A, 12-7A-4.7.5.1 only with a net peak heat release rate of 25kW/sq-ft for a 40-minute observation period and:*
    a. *Decking surface material shall pass the accelerated weathering test and be identified as exterior type, in accordance with ASTM E 84 and;*
    b. *The exterior wall covering to which it the deck is attached and within 10 (3048 mm) feet of the deck shall be constructed of approved noncombustible or ignition resistant material.*

    Exception: *Walls are not required to comply with this subsection if the decking surface material conforms to ASTM E-84 Class B flame spread.*

The use of paints, coatings, stains, or other surface treatments are not an approved method of protection as required in this chapter.

704A.4.2 Underfloor and appendages protection.

704A.4.2.1 Underside of appendages and floor projections. *The underside of cantilevered and overhanging appendages and floor projections shall maintain the ignition-resistant integrity of exterior walls, or the projection shall be enclosed to the grade.*

704A.4.2.2 Unenclosed underfloor protection. *Buildings shall have all underfloor areas enclosed to the grade with exterior walls in accordance with Section 704A.3.*

Exception: *The complete enclosure of under floor areas may be omitted where the underside of all exposed floors, exposed structural columns, beams and supporting walls are protected as required with exterior ignition-resistant material construction or be heavy timber.*

704A.5 Ancillary buildings and structures.

704A.5.1 Ancillary buildings and structures. *When required by the enforcing agency, ancillary buildings and structures and detached accessory structures shall comply with the provisions of this chapter.*

NBR F&LSP Attachment 3

Fuel Management and Maintenance Program Analysis

Newport Banning Ranch

Newport Beach, California

June 2010

Prepared by:

firesafe ::PLANNING SOLUTIONS

Table of Contents

1 Purpose of Report

Firesafe Planning Solutions performed an assessment of how the fuel management and maintenance program (FMMP) will reduce the intensity of a wildfire approaching The Newport Banning Ranch residential community. This fire analysis report provides the results of the assessment and shows support of the fuel management installation and maintenance program. The study takes into consideration existing vegetative interface fuels, future re-vegetated interface areas, topography, and weather conditions during a fire. The study includes expected fire behavior burning within off-site and on-site vegetation. Additionally exterior and interior located perimeter vegetation treatment and maintenance plan are addressed. The fire intensity from worst case scenario examples has been calculated and the results of fire behavior calculations were are simulated against the fire protection design built into the Newport Banning Ranch (NBR) development.

2 Geographic Description

The NBR site is not located within an existing Special Fire Protection Area. Once developed, the site will be designated as a Special Fire Protection Area as it is within the sphere of the city of Newport Beach Fire Department's guidelines and City staff has indicated it will require such designation.

The future community will be mostly attached to existing development on the southwest, south, and east. The NBR planned community is located west of the city of Costa Mesa. The entire east side of NBR is bordered by existing commercial, light industrial, and residential development. For the sake of wildland interface, the new tracts will fill-in the area between two existing built-out developments, similar to bridge connecting the developments together except for the Oxbow Loop (Semeniuk Slough) located to the west. The northwest side of NBR will have a moderate wildland interface from vegetation within the existing adjacent oil fields situated 50-75 feet below the future community. The south side of the community is bordered by West (Pacific) Coast Highway and small moderate-hazard vegetative areas near the coastal bluffs along the highway.

(Figure 1) Most of the development perimeter in yellow does not have a wildland interface due to existing surrounding developments on the south-west, south, and east.

3 Site Fire Hazard Assessment

Most of the future homes will border the Bluff Park edges, which itself will adjoin upland areas of the Open Space Preserve, including an interior located drainage arroyo that separates the north and south development areas. This "Large Arroyo" will continue to support a healthy coastal sage scrub plant community or be restored to coastal sage scrub vegetation or upland grassland. Droughts have had an impact on existing coastal sage scrub plant communities. The recent rains have caused the shrub type vegetation on the site to support much greener and denser vegetation presently, and non-native grasses and weeds are more prevalent too. During droughts, coastal sage scrub plant communities can have a large percentage of dead material. This is due to the Mediterranean climate where long wet winters promote lots of new growth and long dry summer seasons can cause parts of the plants to die back. The shrubs on the interior arroyos are primarily dominated by Encelia Californica, which grows between 1-3 feet in height and is on the approved Fire Department plant list. Other types of vegetation in and adjacent to the interior located drainage arroyos are:

3.1 Oil Lease and Interior Arroyo Vegetation:

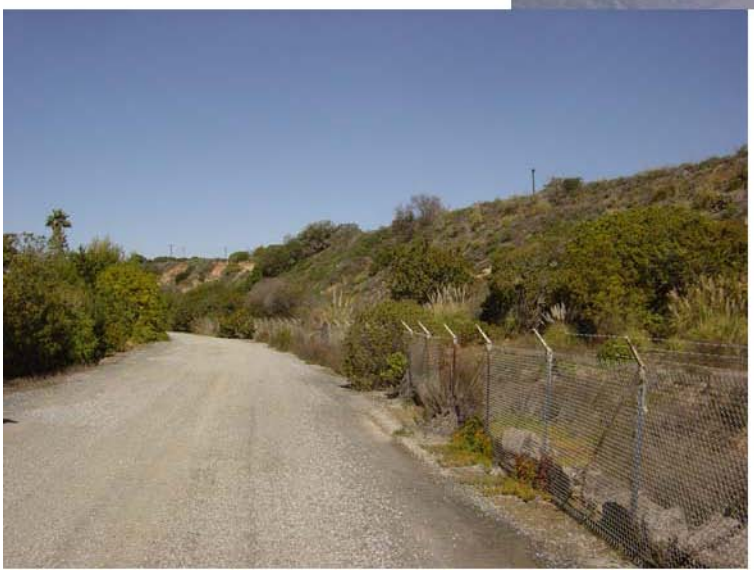
Type	Approximate Height Ft.	Approximate Width Ft.
• Baccharis	5	3
• Saltbush	3	8
• Lemonadeberry	7	7
• Toyon	7	7
• Bladder Pod	3	3
• Mulefat	7	3
• Willow	15	12
• Cactus		

Other species found on-site that are determined by The City of Newport Beach Fire Department as being highly combustible are required to be continuously removed from the fuel management zone: Pampas Grass, Buckwheat, Artemisia, Black Sage, Thistles, Mustard, and Castor Bean.

(Figure 2) Photo of the interior arroyo vegetation. Notice the vegetation on the slopes of the arroyos is mostly only as tall as the cactus is except for the willows in the drainage.

3.2 62nd Street Oxbow Loop Development Perimeter Vegetation: (Not a direct Interface)

Type	Approximate Height Ft.	Approximate Width Ft.
• Pine	15	10
• Pepper	15	12
• Chinese Elm	15	7
• Juniper	9	7
• Ice Plant / Covers	1	20
• Eucalyptus	20	12
• Willow	15	12
• Palm	25	10-20
• Ornamental shrubs	8	6



(Figure 3) These species are located along the banks of the Oxbow Loop and are not a fire hazard to the proposed structures. The road between the bank vegetation and the slope leading up near the future development helps as a fire break. The types of vegetation on the slopes on the opposite side of the Oxbow Loop and road are the same as within the oil lease and interior arroyos.

Specific plant palettes are identified in this document for the various zones within the fuel management areas. These palettes have been reviewed and approved by the Newport Beach Fire Department and landscape architects.

In addition to areas currently vegetated with the coastal sage scrub, the Project will establish new plantings within the Project as a habitat area for raptors. This area will be designed as an upland grasslands area. It will be maintained with specific plant species and will not be allowed to transition into a shrub or chaparral plant community. It will be maintained by "hand plucking" any plant materials not on the approved list on an annual basis to maintain its value as a raptor habitat.

3.3 Upland Native Grassland Mosaic Restoration Areas

Upland Grassland Mosaic Restoration Areas will be established within the center of the Project area and adjacent to the developed areas. Most of these will be in the intermediate Zone "B" between the wildland and the irrigated fuel management zones. These areas will be vegetated with a suite of native bunchgrasses, succulents, cactus, and other low height/fuel volume native plants suitable for raptor foraging and as gnatcatcher and cactus wren habitat as summarized below.

UPLAND NATIVE GRASSLAND MOSAIC PLANT PALETTE

HABITAT RESTORATION / FUEL MANAGEMENT ZONE "C"	
Botanical Name	***Common Name***
Grasslands	
Bothriochloa barbinodis	Beardgrass
Distichlis spicata	Saltgrass
Lasthenia californica	California goldfields
Melica imperfecta	Coast Range Melica
Nassella lepida	Foothill needlegrass
Nassella pulchra	Purple needlegrass
Succulent Scrub Mosaic	
Non-Combustible/Succulent Species	
Cylindropuntia prolifera	Coastal cholla
Opuntia littoralis	Coastal prickly pear
Suaeda taxifolia	Woolly sea-blite
Fire-Resistive Shrub Species	
Encelia californica (1)	California encelia (1)
Isocoma menziesii (1)	Coastal goldenbush (1)
Isomeris arborea (1)	Bladderpod (1)
Lycium californicum (1)	California boxthorn (1)

(1) *This plant species may not be located within 50 feet of homes.*

3.4 Vernal Pool Restoration and Edges

An existing vernal pool southwest of the intersection of Bluff Road and 17th Street restoration will be restored as part of Project's Habitat Restoration Plan (HRP). The HRP will protect and restore the degraded habitat within the pool boundary and provide an open space buffer around the pool.

As shown below, the plant palettes for the Vernal Pool Restoration Area and for the Vernal Pool Watershed Area (surrounding the Pool) have both been designed as low-growing suites of native plant species that will provide appropriate habitat consistent with the habitat mitigation objectives for the Project.

The Vernal Pool Restoration and Watershed Areas are adjoined by the vernal pool interpretive park and adjacent public streets, including Bluff Road and Scenic Drive. One edge of the Vernal Pool Watershed Area will be developed with homes. A six-foot-high radiant heat wall shall be constructed along this

residential edge.[1] This wall, in conjunction with plant heights of 12 inches or less, will provide protection for the homes from a fire originating in that area. The precise design and location of the radiant heat wall will be shown in the final Fire Master Plan (see Section 10).

PLANT PALETTE – VERNAL POOL RESTORATION AREA

Botanic Name	***Common Name***	***Plant Height***
Cressa truxillensis	Alkali weed	2 to 6 inches
Distichlis spicata	Saltgrass	4 to 8 inches
Frankenia salina	Alkali heath	4 to 8 inches
Heliotropum curassivicum	Seaside heliotrope	4 to 8 inches
Lasthenia californica	California goldfields	4 to 8 inches
Lupinus bicolor	Miniature lupine	4 to 8 inches
Malvella leprosa	Alkali side	2 to 6 in
Plantago erecta	Western plantain	3 to 6 inches
Spergularia marina	Saltmarsh sand spurrey	1 to 4 inches

PLANT PALETTE – VERNAL POOL WATERSHED AREA

Botanic Name	***Common Name***	***Plant Height***
Cressa truxillensis	Alkali weed	2 to 6 inches
Distichlis spicata	Saltgrass	4 to 8 inches
Dudleya lanceolata (succulent)	Lance-leaved dudleya	12 inches
Dudleya pulverulenta (succulent)	Chalk dudleya	12 inches
Frankenia salina	Alkali seaheath	4 to 8 inches
Lasthenia californica	Dwarf goldfields	4 to 8 inches
Lupinus bicolor	Miniature lupine	4 to 8 inches
Malvella leprosa	Alkali side	2 to 6 inches
Melica imperfecta	Coast range melic	16 inches
Nassella pulchra	Purple needlegrass	18 inches
Opuntia littoralis (succulent)	Coast prickly-pear	36 inches
Opuntia prolifera (succulent)	Coast cholla	48 inches
Plantago erecta	Western plantain	3 to 6 inches
Suaeda taxifolia (succulent)	Wooly sea-blite	12 inches

Both the upland native grassland mosaic and vernal pool areas are depicted on the Fuel Management Plan graphic attached to this report.

[1] A radiant heat wall is typically a six-foot-high solid masonry wall. Certain types of insulated glass products may be incorporated into radiant heat walls to provide a "view wall." For example, Superlite II-XL, Pyrostop, Pyrobel, Contraflam, and Swissflam are glazing products rated 60-minute plus to ASTME119, limit temperature rise to 250F degrees, and reduce radiant heat flux to 0 kilowatts per square meter.

4 Fuel Management

Fuel management is land that is designated for the installation of plant species and land with selectively removed native vegetation. A fuel management program starts when the local governmental planning department places development construction conditions requiring a fuel management program. Any new development occurring within lands containing highly combustible native vegetation needs management of the vegetation at the urban interface in order to protect structures. High-fuel and volatile native plants are generally replaced with drought-tolerant, fire-resistant species in order to slow the speed and intensity of an approaching wildfire.

Fuel management programs vary in complexity and designs. They are dependent upon the type and spacing of vegetation as well as topography, weather conditions, and the placement of structure within the development Project. Irrigated fuel management zones help to reduce the impacts of wildfire before they spread to structures. The reduction of available native fuels , which have been replaced by fire resistive plant types, will cause a reduction in the intensity of a fire when approaching homes/structures.

Fuel management is as an on-going maintenance program because the program requires zones to be maintained indefinitely. Installing new plants works great initially and maintenance is easy, but proper long-term maintenance can be difficult if not done correctly. Experienced techniques can assist in extending the longest possible life span for the plants. Funds for fuel management maintenance need to be anticipated in the annual budget of association dues. Proper and consistent maintenance can save on the total long-term cost of maintenance over long periods of time or the failure of the protection system with wide spread consequences to the building owners and the city.

5 The Fuel Management Program

The Fuel Management Program designed for the NBR is very similar to fuel management programs approved in the County of Orange within the last 5 years. The design of NBR is very similar to the Marblehead coastal development in the City of San Clemente, the Brighwater coastal development in Huntington Beach, and the Dana Point Headlands Reserve development. The Marblehead development was approved with fuel management zones less in total width than what is proposed for NBR and additionally there is a greater-sized coastal sage scrub habitat preserved within these developments. Marblehead Coastal and Dana Headlands Preserve are similar in proximity to the ocean, topography, and plant species. All three developments were regulated by the California Coastal Commission which created the requirement to preserve specific plant species both on- and off-site.

The Fuel Management and Maintenance Program (FMMP) requires regular maintenance activities to be done routinely on an indefinite basis generally by the future Homeowners Association (HOA). The fuel management zones will be originally installed and maintained by the master developer until the ongoing maintenance responsibility is turned over to the ultimate maintenance entity. Where fuel management areas include road right-of-way, they may be maintained by the City. Where fuel management areas are FMZ Zone “C”, they will be maintained by the Banning Ranch Conservancy Group (to be determined). The maintenance requirements are clearly shown on the fuel management plans. The developer will distribute the approved plans with maintenance requirements directly to the Homeowners Association at

a required maintenance turnover meeting. The program requires The City of Newport Beach Fire Department to be present at the maintenance turnover.

The following fuel management zones are safe designs based on results the size of the wildland areas, type of vegetation, and amount of vegetation, the fuel/structure wind alignments, and the BehavePlus Calculation Results Analysis in this report.

The fuel management Area is a minimum of 120 feet in total width and divided into three (3) zones:

5.1 Zone "A"

- Zone "A" is generally a minimum 20-foot-wide flat or level-grade defensible space consisting of irrigated landscape and/or hardscape. Zone "A" will be located on private lots, within the Bluff Park, and/or within road rights-of-way.
- Combustible structures are prohibited within Zone "A". Vegetation shall be consistent with the permitted plant palette and densities for Zone "A" shown in Attachment 1a. Plants determined by the Fire Department to be highly combustible or otherwise undesirable shall be removed during regular maintenance (see Attachment 1b for "undesirable" plant list).
- Depending upon the land use, Zone "A" shall be maintained by individual property owners, a Homeowners Association or similar community entity, or (for public roadways) by the City.
- There are no sensitive habitats within or adjacent to Zone "A", and thinning and/or removal of non-approved landscape shall be permitted throughout the year.

5.2 Zone "B"

- Zone "B" is generally a minimum 50-foot-wide space adjacent to Zone "A" and closer to the native vegetation areas. It consists of trails, hardscape, and/or irrigated low-fuel volume landscape within the portion of the Bluff Park adjacent to the Open Space Site Planning Areas. The irrigation system shall be designed to mimic normal/average rainfall and to provide the necessary moisture to the plants during dry periods or seasons.
- As in Zone A, combustible structures are prohibited within Zone "B". Vegetation within Zone "B" shall be consistent with the permitted plant palette and densities for Zone "B" shown in Attachment 1a. Plants determined by the Fire Department to be highly combustible or otherwise undesirable shall be removed during regular maintenance (see Attachment 1b for the "undesirable" plant list).
- Zone "B" shall be maintained by a Homeowners Association or similar community entity.
- There are no sensitive habitats within Zone "B", and thinning and/or removal of non-approved landscape will be permitted throughout the year.
- Fire Department highly combustible (not part of the HRP) plants will be removed during the regular maintenance.
- Meet all Fire Department Zone "B" maintenance requirements.

5.3 Zone "C"

- Zone "C" is a minimum 50-foot-wide space between Zone "B" and existing or proposed native habitat. Zone "C" is itself part of the native habitat restoration area proposed by the Newport Banning Ranch Habitat Restoration Plan (HRP).

- As in Zones "A" and "B", combustible structures and construction are not permitted within Zone "C". Zone "C" will be composed of a mosaic pattern of non-irrigated low grasses, succulents, cactus, and other low height/fuel volume native plants, as described for the Zone "C" plant palette in Attachment 1a. Existing non-native plants and species not approved by the HRP for this area, including those on the Fire Department's "undesirable" plant list contained in Attachment 1b, will be removed prior to restoration planting.

- In the Upland Open Space Area north of the Urban Colony and west of the City of Costa Mesa, a 100-foot-wide Zone "C" will be created adjacent to existing neighborhoods, including California Seabreeze. Unmanaged vegetation currently comes up to the rear yards of the off-Project homes in this area. Newport Banning Ranch will provide an especially wide Fuel Management Zone "C" in this area as a component of the Habitat Restoration Plan. The Zone "C" plant palette for the 30 feet of this Zone "C" closest to the homes will be more limited than usual to specified grasses, cacti, succulents, and open rock areas as noted in the Zone "C" plant palette.

- It is anticipated that Zone "C" will be maintained by the Newport Banning Ranch Conservation Group, yet to be determined. Maintenance by a Homeowners Association or similar community entity may be proposed in certain locations.

- Maintenance within Zone "C" will include removal of non-native/invasive species, removal of dead plant material, and removal of species inconsistent with the HRP, including those on the Fire Department's "undesirable" plant list. Maintenance within Zone "C" will not include the pruning, thinning, or removing of living HRP-approved native vegetation.

5.4 Maintenance Requirements for All Management Zones:

- No highly combustible plant species shall be allowed per City Fire Department's Requirements/ Guidelines.

- Horizontal and vertical plant spacing specifications are required and shall be shown on the final Fire Master Plan and maintained.

- Dead and dying material shall be removed regularly in Zones "A" and "B".

- Dead material removed from Zone "C" consistent with City-approved HRP.

6 Calculating Fire Behavior

This report uses a scientific approach to describe a wildland fire hazard assessment and expected wildland fire behavior within and outside of the fuel management zones. Computer projections simulate a fire burning within the native vegetative fuels directly outside the boundaries of the management zones. This report will demonstrate why fuel management zones will help protect structures in the community.

Firesafe Planning Solutions used a computer software program titled "BehavePlus Fire Modeling System 3.0.2" to predict the level of wildfire intensity for a fire approaching NBR. BehavePlus is a fire behavior prediction and fuel-modeling system, and is one of the most accurate methods for predicting wildland fire behavior. The BehavePlus fire behavior computer modeling system is utilized by wildland fire experts nationwide. The Fire Behavior and Fuel Modeling System, developed by research scientists from USDA-Forest Service (Andrews & Bevens, 2003; Burgan & Rothermel, 1984) will be used to evaluate both wildfire risk as well as the proposed vegetation management recommendations.

The BehavePlus system provides an indication of how vegetative fuels will burn under specific fuel, weather, and topography conditions. The BehavePlus system is a set of computer programs based upon energy release from specific fuels during a fire and is employed by wildfire professionals both nationally and internationally to predict wildfire behavior. Fuel models used in BEHAVE have been classified into specific groups, based upon fuel loading (tons/acre), fuel height, and surface to volume ratio. The differences in fire behavior among these models are basically related to fuel and their distribution among fuel particle size classes. Observation of the location and positioning of fuels in the field determines which fuel groups are presented. Vegetative fuels are recognized as fuel models within the BehavePlus program. The fuel models in the computer program are also referenced from the book titled "Aids to Determining Fuel Models for Estimating Fire Behavior." The fuel models were designed to aid in determining fuel types and are used in calculating and estimating fire behavior.

The fire model describes the fire behavior only within the flaming front of the fire. The primary moving force in the fire is dead fuel less than ¼" in diameter. These are the finest fuels that carry the fire. Fuels larger than ¼" contribute to fire intensity, but not necessarily to fire spread as much as the fine fuels. The BehavePlus fire model describes a wildfire spreading through surface fuels, which are the burnable materials within 6' of the ground and contiguous to the ground.

This type of modeling will demonstrate that the FMMP is the best fire defense system for NBR. The modeling will show that the structures are significantly further away than the most extreme flame lengths and intensity that would be produced. Instead of estimating with the exact fuel models for calculating fire behavior, we will input worst case scenario factors and fuel models to ensure a further safety cushion in the computer fire behavior calculations and results analysis.

BehavePlus Related References:

1. *Aids to Determining Fuel Models for Estimating Fire Behavior, Hal E. Anderson. General Technical Report INT-122 April 1982. United States Department of Agriculture – Forest Service, Intermountain Station, Ogden, Utah 84401.*
2. *BehavePlus: Fire Behavior Prediction and Fuel Modeling System - BURN Subsystem. General Technical Report INT-194. Patricia L. Andrews, United States Department of Agriculture - Forest Service, Intermountain Station, Ogden, Utah 84401.*

7 Wildland Interface Fuel Types

These fuels are considered highly combustible in the native setting and can be analyzed for their fire performance based on many factors. The type and amount of fuels in the wildland area located immediately outside of the fuel management zone are generally:

7.1 20 % Native Grasses from 1-2' in Height

These fuels present the potential for a fast-spreading, wind-driven fire. Fire intensity is low but the rate of spread is high. With structures setbacks and enhanced construction requirements in place, they do not present a significant hazard. This type of fire is generally in a localized small area.

7.2 60% Coastal Sage Shrubs 3- 4' in Height

The shrubs present the potential for a fast-spreading, wind-driven fire. Fire intensity and ember production has the potential to be high at the wildland interface area because the shrubs are covering 2/3 of the land outside of the zone limits. The shrubs will not present a fire hazard to the homes after the fuel management zone is installed, structures are setback, and construction requirements are in place.

7.3 20% Remaining Vegetation Types

Chaparral-type, tree-form shrubs and trees outside of the zone limits will not be a fire hazard to the homes because the homes will be far enough away so heat travel will not cause direct flame impingement or radiant heat ignition of the homes. Ember intrusion will be deflected by the construction features of the homes.

(Figure 4) This type of vegetation will fit into a BehavePlus fuel model type SCAL 18. The site vegetation is not as dense as the vegetation described within the model, so fire behavior will be even lower than predicted.

8 Wind Patterns and Structure Alignment

The result of wild fire intensity is determined by wind speed, wind direction, the age of fuels, and the amount of moisture in the air. Wind direction determines how dry or moist the relative humidity in the air is. Fire intensity and rate of fire spread are usually determined by the speed of the winds. We entered the two most extreme wind patterns and speeds relating to wildfires into the BehavePlus model. All other lesser wind patterns and wind speeds normally produce less fire intensity based on a fire in wildland fuels. The two most extreme wind patterns/structure location alignments are:

- 50 mph northeast Santa Ana wind. (Generally occurring in the late fall, during low fuel moisture times). A review of RAWS data for the area could not find any recorded wind gusts above this level for the past 10 years; and
- A rare 30 mph dry southwest on-shore, normally prevailing wind. (Generating from over the ocean, after dry air is pushed out to sea by a Santa Ana condition).

A 50 mph north-east wind scenario would mostly affect homes on the interior arroyo because a fire affecting the north-west perimeter will be moving laterally or away from the homes located on the north-west perimeter

North -West Development Interface Photos

(Figure 5) We used BehavePlus to calculate and predict a south-west wind-directed fire coming from the vegetation within the oil lease that could affect the north-west perimeter of the development. The oil lease has many roads (future trails), which serve as continuity breaks in the scattered fuels.

(Figure 6) We used BehavePlus to calculate and predict a south-west wind-directed fire coming from the vegetation within the oil lease that could affect the North-West perimeter of the development. The fuels in the oil lease area are not even as severe as the SCAL 18 model we used in many areas. Fire behavior will be less than the worst-case scenario we calculated in those areas.

(Figure 7) We used BehavePlus to calculate and predict a south-west wind-directed fire coming from the vegetation within the oil lease that could affect the North-West perimeter of the development. The fuels in the oil lease area are not as severe as the SCAL 18 model we used. Fire behavior will be less than the worst case scenario we calculated.

(Figure 8) This is a photo of the most extreme north side of the future development which is directly adjacent to existing development.

(Figure 9) Photo of the west-facing slope below the future development located on the west side of the development. A south-west wind-directed fire coming from the vegetation within the oil lease could affect the North-West perimeter of the development.

Interior Development Arroyo Interface Photos

(Figure 10) We used BehavePlus to calculate and predict south-west wind and north-east wind directed fires coming from native vegetation within interior open space arroyos. Unless the wind happens to change in the middle of a fire event, the fire will continue to move only one direction of the two directions shown. Homes located on the perimeter of the interior arroyos shown will have all of the CBC Chapter 7A construction requirements in place even though they are not required by code in moderate or high fire hazard areas.

(Figure 11) We used BehavePlus to calculate and predict south-west wind-directed and north-east wind-directed fires coming from native vegetation within interior open space arroyos. On the right is a lower arroyo drainage with Willow species. The fuels on the right are not in the fuel management zones and have a fairly high-fuel moisture content. On the left is the coastal sage scrub vegetation Fuel Model SCAL 18

(Figure 12) We used BehavePlus to calculate and predict south-west wind-directed and north-east wind-directed fires coming from native vegetation within interior open space arroyos. In the background is a lower arroyo drainage with Willow species. The fuels in the forefront are the coastal sage scrub vegetation Fuel Model SCAL 18. The Pampas Grass will be removed and the Encelia would remain and be horizontally spaced not to create a fuel mass exceeding 40% of the total area.

(Figure 13) We used BEHAVE to calculate and predict south-west wind-directed and north-east wind-directed fires coming from native vegetation within interior open space arroyos. The fuels in the forefront are the coastal sage scrub vegetation Fuel Model SCAL 18. The Encelia would remain and be horizontally spaced. Areas in between shrub groups will have low grasses, succulents, cactus, and other low-fuel-volume species.

(Figure 14) We used BEHAVE to calculate and predict south-west wind-directed and north-east wind-directed fires coming from native vegetation within interior open space arroyos. The fuels in the forefront are Encelia. In the distance you can see the upslope vegetation which will be leading up to homes. Homes located on the perimeter of the interior arroyos shown will have all of the CBC Chapter 7A construction requirements in place even though they are not required by code in moderate or high fire hazard areas.

9 BehavePlus Fire Behavior Inputs and Results

9.1 Fuel Moistures:

The fuel moistures used in the modeling for the BehavePlus calculation are the worst case scenario. Relative humidity, temperature, slope aspect, time of day, and month of the year all have an impact on the determination of the actual percentage of dead fuel moisture. The values listed below are at or below the lowest recorded levels for the area being analyzed.

Fuel moisture changes over time. In general, the dead fuel moisture will move about 2/3 of the difference between its current moisture level in the fuel and that of the air around in varying increments based on the size (amount of surface area to total mass) of the fuel. Fuels are grouped by the time it takes to move the 2/3 distance. "One hour" fuel is less than ½ inch thick. It is the most volatile of the fuels. "Ten hour" fuel is between ½ inch and 1 inch thick. "Hundred hour" fuel is between 1 inch and 3 inches and "Thousand hour" fuel is above 3 inches in thickness. Thousand hour fuels are relatively stable and are not used in this model

Live fuel moisture is the moisture found in the leaf and woody portion of a shrub. Live fuel moisture is calculated by cutting a small branch and weighing it, placing it in a low temperature oven for 12 hours, removing the branch and weighing it again. The difference in weight is the loss of moisture in the leaves and woody portion of the branch. For this reason, live moisture may exceed 100% of the dry weight of the plant. Live fuel moisture is the highest in the spring and early summer, and the lowest in late summer, fall and early winter. Los Angeles County Fire Department samples live fuel moistures from sites throughout Los Angeles County each month.

Fuel moisture recorded from the sites still apply to Orange County area and serve as an indicator of moisture content. We are using worst case moistures to indicate the results of worst case wild fire. All other fires when there are greater fuel moistures within the shrubs, will result in less fire intensity than we are predicting.

South, Southwest and West Wind Condition Fuel Moisture Inputs: Late fire season 30-MPH southwest wind pattern.

- 1-Hour Fine Fuel Moisture 3%
- 10-Hour Fuel Moisture 5%
- 100-Hour Fuel Moisture 7%
- Live Herbaceous Fuel Moisture 30%
- Live Woody Fuel Moisture 60%

North, Northeast and East Wind Condition Fuel Moisture Inputs: Santa Ana Winds

- 1-Hour Fine Fuel Moisture 2%
- 10-Hour Fuel Moisture 3%
- 100-Hour Fuel Moisture 5%

- Live Herbaceous Fuel Moisture 30%
- Live Woody Fuel Moisture 50%

BehavePlus Fire Behavior Inputs and Results are as follows:

9.2 The North-West Development Perimeter Side / South -West Wind Driven Fire

The North-West side of the development is mostly subject to south-west normal prevailing wind direction fire weather:

(Figure 15) BehavePlus fuel model type SCAL 18 on the slope leading up to the future development.

9.2.1. BehavePlus Inputs:

Wind Direction: South-west wind moving to a north-east direction
Wind Speed: 30 mph wind speed, upslope, unsheltered
Slope: 15% degree slope

9.2.2. BehavePlus Outputs:

Fuel Model	SCAL18	Grass 4	Grass Scrub 2
Max Rate of Spread (feet/min)	194	908	266
Fire Line Intensity (Btu/ft/s)	13,141	7,643	2,476
Flame Length (feet)	**35.3**	27.5	16

9.3 Interior Arroyo North-East Wind Driven Fire

(Figure 16) BehavePlus fuel model type SCAL 18 in the interior arroyo leading up to the future development. Encelia shrubs are present in the foreground.

9.3.1. BehavePlus Inputs:

Wind Direction: North-East wind moving to a south-west direction
Wind Speed: 50 mph wind speed, upslope, unsheltered
Slope: 60% degree slope.

9.3.2. BehavePlus Outputs:

Fuel Model	SCAL18	Grass 4	Grass Scrub 2
Max Rate of Spread (feet/min)	384	1,945	676
Fire Line Intensity (Btu/ft/s)	27,885	18,339	6,924
Flame Length (feet)	**49.9**	41.1	26.3

10 BehavePlus Calculation Results Analysis

The modeling for this Project used the extreme conditions in every case. Winds were modeled at or above the strongest gusts recorded over the past 10 years. Fuel moistures were estimated at or below those recorded in existing databases. Slopes were used that created the greatest impact for rate of spread (this is not always the steepest slope as the slope itself begins to shelter the fuel from the extreme aspects of the wind when it becomes a barrier).

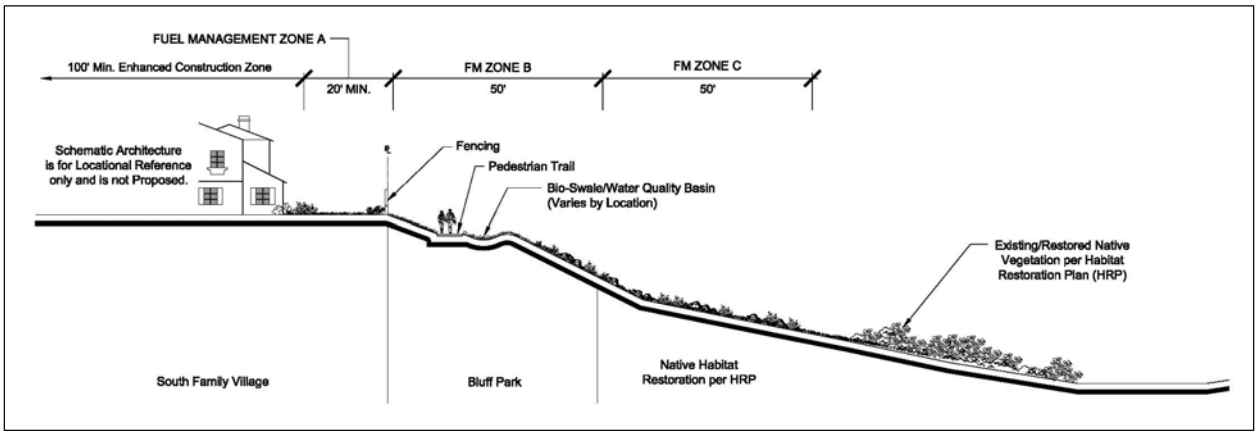
Three separate fuel models were used to project the maximum fire behavior for this Project. Southern California Model 18 (Sage/Buckwheat) was used for the interior pristine areas that will be allowed to continue in their natural state. Both grass (GR4 moderate grass, dry climate) and grass/shrub mix (GS2 moderate load, dry climate) models were used to insure that fire behavior was correctly modeled as the upland grassland interface matures.

It should be noted that while the GR4 model is more volatile in terms of rate of spread and flame length, the SCAL18 model has the greatest threat in terms of total volume of fire/heat and impact on the adjacent structures. Under the existing plan, the SCAL18 fuel will always be separated from the structures by the grassland mosaic (Zone "C") and the modified management fuel zones (Zone "A" and Zone "B"). The fuel management system has been designed so that SCAL18 fuel is no closer than 120 feet from the structures. The maximum flame length in the SCAL18 zone is 49.9 feet. For this reason, the Zone "C"/habitat area is never less than 50 feet in width and in many cases is two times the minimum.

The grass/shrub mosaic interface (Zone "C") will produce a maximum flame length of 41 feet in the worst case scenario. This would be a wind-driven fire, traveling upslope, in extreme weather (low humidity and high temperature), unsheltered and with a continuous fuel bed. This zone will double as a raptor habitat. It will not be thinned or modified for fire management but it will be maintained by "hand plucking" materials which are not on the approved palette. It will start out as primary grassland mosaic and may eventually become a grass/shrub mixture. It was modeled in both configurations. The Zone "C" is not irrigated. The maximum flame length that can be achieved at the Zone "B"/Zone "C" juncture is 41 feet. For this reason, the Zone "B" minimum width is 50 feet.

Zone "B" is irrigated and will provide the necessary buffer for a defensible space. The heat sink properties of Zone "B" will result in a 75% flame length reduction in this zone. This is due to the Zone "B" being cleared, replanted, and permanently irrigated with only plants listed on the approved plans. Plants are originally installed and maintained conforming to code-required horizontal spacing arrangements. Due to the fact that the Zone "C" has a low fuel loading in term of duration of flame front, the actual flames from the Zone "C" will be significantly reduced prior to reaching the Zone "B". The duration of the flaming front should not be long enough to remove enough moisture from the Zone "B" plants to have them ignite. As long at the dead and duff components of the Zone "A" and Zone "B" maintenance plans have been followed, no fire will move past Zone "B". Zone "A" is the buffer that provides for the defensible space. While no direct flame is intended at the Zone "A" juncture with Zone "B", an additional area of 20 feet is provided that will allow fire crews to safely position themselves into that interface between the wildland and the structures for suppression efforts.

The arrangement of the zones is shown in an example below:



Structure ignition from wild vegetation fires comes mostly from two sources, firebrands and radiant and convective heat. Ignition of a structure by convective heat transfer requires direct flame impingement. If the flame lengths are less than the measured distance to non-managed combustible vegetation from a structure, there is a probability of structure ignition. This is not the case with this Project. The future structures will not ignite from the direct effects of fire as they are never within a distance which provides for a possibility of ignition. Fires in fuels measured directly outside the fuel management zones do not have sufficient flame lengths to contact the homes.

During strong and dry winds, convective firebrands have the capability of being carried by drafts and strong winds for long distances. The chance of firebrands igniting a structure will depend on the size of the firebrand and the type of receptive construction materials on the structure. Firebrands landing on combustible roofing and decks are common sources for structure ignition. Firebrands can also enter a structure through broken windows, unscreened vents, decks and chimneys, and any small opening.

The chance of a structure fire caused by firebrands is not a concern for the NBR as **all homes** will be constructed with Class A roofing and roofing assemblies and attic venting requirements from Chapter 7A from the 2007 California Building Code (CBC). In addition, **all structures adjacent to a fuel management zone** will further be constructed to meet the minimum requirements of Chapter 7A for exterior wall and eave surface, window and door requirements, appendages and underfloor protection. Therefore, due to the fact that mostly non-combustible building materials will be used in the construction of structures, the radiant heat issue needs to be addressed.

Wildland fires could cause ignition to existing developments by radiating heat to a structure. Radiation exposure depends on the intensity and the duration of the fire. Radiant heat decreases as the distance between the fire and the structure increases. Single-pane windows are subject to breaking from radiant heat and provide an opening for embers to enter a structure. Structure windows adjacent to fuel management zones will be dual pane with one pane tempered in case of an ember hitting a heated window. Radiant heat has a short lifetime in a concentrated area because the fire passes by structures that have been constructed to the latest codes and continues to move onward.

Radiant and convective heat transfer energy is not enough to reach the future structures to the point of ignition because the fuels measured are more than 100 feet away from the homes when you total the distance of the management zone and the structure setbacks. See the following information regarding a valid structure assessment model used by the Forest Service and professionals throughout the nation titled “SIAM”.

Flames and fire intensity are significantly reduced within the fuel management zone. The fuel management zone also reduces the amount of embers projected into the air because the area is replanted with plants with greater fire-resistive characteristics and the plants are spaced and thinned.

11 Structure Ignition Assessment Model (SIAM).

A USDA Forest Service research study and report titled “Structure Ignition Assessment Model (SIAM)” by Jack D. Cohen, Intermountain Fire Science Laboratory, Missoula, Montana, has helped to validate how much distance is required to keep structures from igniting due to wildland fire radiant heat.

SIAM research further suggests that for reducing structure ignitions from radiant and convective heat sources, vegetation management (fuel treatment) beyond some relatively short (100 feet) distance from a structure built of non-combustible materials has little significant benefit for reducing flame generated ignitions. Vegetation management cannot be practically extensive enough to significantly reduce airborne firebrand ignitions landing on combustible roofs or other fuel beds on privately controlled land around a home. In lighter fuels such as grass and short grass, fuel treatment can be reduced to 50 feet and still protect a structure that is built of non-combustible materials.

Project structures will be set back even further from the intensity of a fire burning outside the limits of the fuel management zone. Back and side yards incorporate ornamental plants and trees in a turf or planter type setting. Fire suppression efforts combined with the fuel management zone protection and the latest building construction practices will ensure the best possible outcome for a safe development.

12 Report Summary

This development is designed and protected by the most recently developed codes. BehavePlus was used estimate the maximum intensity of fire moving towards this development, and flame lengths and fire intensity will be ultimately be reduced by the installation and maintenance of the FMMP.

Using a systematic approach, the threats presented by the vegetation that will remain after the completion of this Project have been mitigated to a point where they do not present a risk to the structure or occupants of this Project once completed. The use of fuel management, enhanced construction features, and ongoing maintenance will insure that this community remains protected from the threat of wildfires as long as the conditions required by this program are in compliance.

NBR F&LSP Attachment 3

Fuel Management and Maintenance Program Analysis

Newport Banning Ranch

Newport Beach, California

May 2010

Prepared by:

firesafe ::PLANNING SOLUTIONS

Table of Contents

1 Purpose of Report

Firesafe Planning Solutions performed an assessment of how the fuel management and maintenance program (FMMP) will reduce the intensity of a wildfire approaching The Newport Banning Ranch residential community. This fire analysis report provides the results of the assessment and shows support of the fuel management installation and maintenance program. The study takes into consideration existing vegetative interface fuels, future re-vegetated interface areas, topography, and weather conditions during a fire. The study includes expected fire behavior burning within off-site and on-site vegetation. Additionally exterior and interior located perimeter vegetation treatment and maintenance plan are addressed. The fire intensity from worst case scenario examples has been calculated and the results of fire behavior calculations were are simulated against the fire protection design built into the Newport Banning Ranch (NBR) development.

2 Geographic Description

The NBR site is not located within an existing Special Fire Protection Area. Once developed, the site will be designated as a Special Fire Protection Area as it is within the sphere of the city of Newport Beach Fire Department's guidelines and City staff has indicated it will require such designation.

The future community will be mostly attached to existing development on the southwest, south, and east. The NBR planned community is located west of the city of Costa Mesa. The entire east side of NBR is bordered by existing commercial, light industrial, and residential development. For the sake of wildland interface, the new tracts will fill-in the area between two existing built-out developments, similar to bridge connecting the developments together except for the Oxbow Loop (Semeniuk Slough) located to the west. The northwest side of NBR will have a moderate wildland interface from vegetation within the existing adjacent oil fields situated 50-75 feet below the future community. The south side of the community is bordered by West (Pacific) Coast Highway and small moderate-hazard vegetative areas near the coastal bluffs along the highway.

(Figure 1) Most of the development perimeter in yellow does not have a wildland interface due to existing surrounding developments on the south-west, south, and east.

3 Site Fire Hazard Assessment

Most of the future homes will border the Bluff Park edges, which itself will adjoin upland areas of the Open Space Preserve, including an interior located drainage arroyo that separates the north and south development areas. This "Large Arroyo" will continue to support a healthy coastal sage scrub plant community or be restored to coastal sage scrub vegetation or upland grassland. Droughts have had an impact on existing coastal sage scrub plant communities. The recent rains have caused the shrub type vegetation on the site to support much greener and denser vegetation presently, and non-native grasses and weeds are more prevalent too. During droughts, coastal sage scrub plant communities can have a large percentage of dead material. This is due to the Mediterranean climate where long wet winters promote lots of new growth and long dry summer seasons can cause parts of the plants to die back. The shrubs on the interior arroyos are primarily dominated by Encelia Californica, which grows between 1-3 feet in height and is on the approved Fire Department plant list. Other types of vegetation in and adjacent to the interior located drainage arroyos are:

3.1 Oil Lease and Interior Arroyo Vegetation:

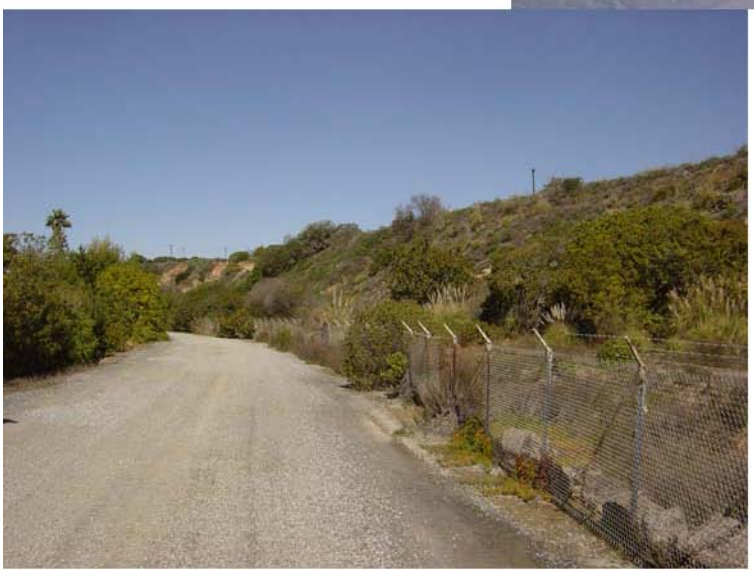
Type	Approximate Height Ft.	Approximate Width Ft.
• Baccharis	5	3
• Saltbush	3	8
• Lemonadeberry	7	7
• Toyon	7	7
• Bladder Pod	3	3
• Mulefat	7	3
• Willow	15	12
• Cactus		

Other species found on-site that are determined by The City of Newport Beach Fire Department as being highly combustible are required to be continuously removed from the fuel management zone: Pampas Grass, Buckwheat, Artemisia, Black Sage, Thistles, Mustard, and Castor Bean.

(Figure 2) Photo of the interior arroyo vegetation. Notice the vegetation on the slopes of the arroyos is mostly only as tall as the cactus is except for the willows in the drainage.

3.2 62nd Street Oxbow Loop Development Perimeter Vegetation: (Not a direct Interface)

Type	Approximate Height Ft.	Approximate Width Ft.
• Pine	15	10
• Pepper	15	12
• Chinese Elm	15	7
• Juniper	9	7
• Ice Plant / Covers	1	20
• Eucalyptus	20	12
• Willow	15	12
• Palm	25	10-20
• Ornamental shrubs	8	6



(Figure 3) These species are located along the banks of the Oxbow Loop and are not a fire hazard to the proposed structures. The road between the bank vegetation and the slope leading up near the future development helps as a fire break. The types of vegetation on the slopes on the opposite side of the Oxbow Loop and road are the same as within the oil lease and interior arroyos.

Specific plant palettes are identified in this document for the various zones within the fuel management areas. These palettes have been reviewed and approved by the Newport Beach Fire Department and landscape architects.

In addition to areas currently vegetated with the coastal sage scrub, the Project will establish new plantings within the Project as a habitat area for raptors. This area will be designed as an upland grasslands area. It will be maintained with specific plant species and will not be allowed to transition into a shrub or chaparral plant community. It will be maintained by "hand plucking" any plant materials not on the approved list on an annual basis to maintain its value as a raptor habitat.

3.3 Upland Native Grassland Mosaic Restoration Areas

Upland Grassland Mosaic Restoration Areas will be established within the center of the Project area and adjacent to the developed areas. Most of these will be in the intermediate Zone "B" between the wildland and the irrigated fuel management zones. These areas will be vegetated with a suite of native bunchgrasses, succulents, cactus, and other low height/fuel volume native plants suitable for raptor foraging and as gnatcatcher and cactus wren habitat as summarized below.

UPLAND NATIVE GRASSLAND MOSAIC PLANT PALETTE

HABITAT RESTORATION / FUEL MANAGEMENT ZONE "C"	
Botanical Name	***Common Name***
Grasslands	
Bothriochloa barbinodis	Beardgrass
Distichlis spicata	Saltgrass
Lasthenia californica	California goldfields
Melica imperfecta	Coast Range Melica
Nassella lepida	Foothill needlegrass
Nassella pulchra	Purple needlegrass
Succulent Scrub Mosaic	
Non-Combustible/Succulent Species	
Cylindropuntia prolifera	Coastal cholla
Opuntia littoralis	Coastal prickly pear
Suaeda taxifolia	Woolly sea-blite
Fire-Resistive Shrub Species	
Encelia californica (1)	California encelia (1)
Isocoma menziesii (1)	Coastal goldenbush (1)
Isomeris arborea (1)	Bladderpod (1)
Lycium californicum (1)	California boxthorn (1)

(1) *This plant species may not be located within 50 feet of homes.*

3.4 Vernal Pool Restoration Area

A vernal pool on the Project site southwest of Bluff Road and 17th Street will be preserved and enhanced as part of the HRP. The plant palette for the Vernal Pool Restoration Area (Planning Area 2e) has been designed as a low-growing suite of appropriate native species that will provide appropriate habitat consistent with habitat mitigation objectives for the Project.

PLANT PALETTE – VERNAL POOL RESTORATION AREA

Botanic Name	**Common Name**	**Plant Height**
Cressa truxillensis	Alkali weed	2 to 6 inches
Distichlis spicata	Saltgrass	4 to 8 inches
Frankenia salina	Alkali heath	4 to 8 inches
Heliotropum curassivicum	Seaside heliotrope	4 to 8 inches

Lasthenia californica	California goldfields	4 to 8 inches
Lupinus bicolor	Miniature lupine	4 to 8 inches
Malvella leprosa	Alkali sida ches	2 to 6 in
Plantago erecta	Western plantain	3 to 6 inches
Spergularia marina	Saltmarsh sand spurrey	1 to 4 inches

Both the upland native grassland mosaic and vernal pool areas are depicted on the Fuel Management Plan graphic attached to this report.

4 Fuel Management

Fuel management is land that is designated for the installation of plant species and land with selectively removed native vegetation. A fuel management program starts when the local governmental planning department places development construction conditions requiring a fuel management program. Any new development occurring within lands containing highly combustible native vegetation needs management of the vegetation at the urban interface in order to protect structures. High-fuel and volatile native plants are generally replaced with drought-tolerant, fire-resistant species in order to slow the speed and intensity of an approaching wildfire.

Fuel management programs vary in complexity and designs. They are dependent upon the type and spacing of vegetation as well as topography, weather conditions, and the placement of structure within the development Project. Irrigated fuel management zones help to reduce the impacts of wildfire before they spread to structures. The reduction of available native fuels , which have been replaced by fire resistive plant types, will cause a reduction in the intensity of a fire when approaching homes/structures.

Fuel management is as an on-going maintenance program because the program requires zones to be maintained indefinitely. Installing new plants works great initially and maintenance is easy, but proper long-term maintenance can be difficult if not done correctly. Experienced techniques can assist in extending the longest possible life span for the plants. Funds for fuel management maintenance need to be anticipated in the annual budget of association dues. Proper and consistent maintenance can save on the total long-term cost of maintenance over long periods of time or the failure of the protection system with wide spread consequences to the building owners and the city.

5 The Fuel Management Program

The Fuel Management Program designed for the NBR is very similar to fuel management programs approved in the County of Orange within the last 5 years. The design of NBR is very similar to the Marblehead coastal development in the City of San Clemente, the Brighwater coastal development in Huntington Beach, and the Dana Point Headlands Reserve development. The Marblehead development was approved with fuel management zones less in total width than what is proposed for NBR and additionally there is a greater-sized coastal sage scrub habitat preserved within these developments. Marblehead Coastal and Dana Headlands Preserve are similar in proximity to the ocean, topography, and plant species. All three developments were regulated by the California Coastal Commission which created the requirement to preserve specific plant species both on- and off-site.

The Fuel Management and Maintenance Program (FMMP) requires regular maintenance activities to be done routinely on an indefinite basis generally by the future Homeowners Association (HOA). The fuel management zones will be originally installed and maintained by the master developer until the ongoing maintenance responsibility is turned over to the ultimate maintenance entity. Where fuel management areas include road right-of-way, they may be maintained by the City. Where fuel management areas are FMZ Zone "C", they will be maintained by the Banning Ranch Conservancy Group (to be determined). The maintenance requirements are clearly shown on the fuel management plans. The developer will distribute the approved plans with maintenance requirements directly to the Homeowners Association at a required maintenance turnover meeting. The program requires The City of Newport Beach Fire Department to be present at the maintenance turnover.

The following fuel management zones are safe designs based on results the size of the wildland areas, type of vegetation, and amount of vegetation, the fuel/structure wind alignments, and the BehavePlus Calculation Results Analysis in this report.

The fuel management Area is a minimum of 120 feet in total width and divided into three (3) zones:

5.1 Zone "A"

- Zone "A" is generally a minimum 20-foot-wide flat or level-grade defensible space consisting of irrigated landscape and/or hardscape. Zone "A" will be located on private lots, within the Bluff Park, and/or within road rights-of-way.

- Combustible structures are prohibited within Zone "A". Vegetation shall be consistent with the permitted plant palette and densities for Zone "A" shown in Attachment 1a. Plants determined by the Fire Department to be highly combustible or otherwise undesirable shall be removed during regular maintenance (see Attachment 1b for "undesirable" plant list).

- Depending upon the land use, Zone "A" shall be maintained by individual property owners, a Homeowners Association or similar community entity, or (for public roadways) by the City.

- There are no sensitive habitats within or adjacent to Zone "A", and thinning and/or removal of non-approved landscape shall be permitted throughout the year.

5.2 Zone "B"

- Zone "B" is generally a minimum 50-foot-wide space adjacent to Zone "A" and closer to the native vegetation areas. It consists of trails, hardscape, and/or irrigated low-fuel volume landscape within the portion of the Bluff Park adjacent to the Open Space Site Planning Areas. The irrigation system shall be designed to mimic normal/average rainfall and to provide the necessary moisture to the plants during dry periods or seasons.

- As in Zone A, combustible structures are prohibited within Zone "B". Vegetation within Zone "B" shall be consistent with the permitted plant palette and densities for Zone "B" shown in Attachment 1a. Plants determined by the Fire Department to be highly combustible or otherwise undesirable shall be removed during regular maintenance (see Attachment 1b for the "undesirable" plant list).

- Zone "B" shall be maintained by a Homeowners Association or similar community entity.

- There are no sensitive habitats within Zone "B", and thinning and/or removal of non-approved landscape will be permitted throughout the year.

- Fire Department highly combustible (not part of the HRP) plants will be removed during the regular maintenance.

- Meet all Fire Department Zone "B" maintenance requirements.

5.3 Zone "C"

- Zone "C" is a minimum 50-foot-wide space between Zone "B" and existing or proposed native habitat. Zone "C" is itself part of the native habitat restoration area proposed by the Newport Banning Ranch Habitat Restoration Plan (HRP).

- As in Zones "A" and "B", combustible structures and construction are not permitted within Zone "C". Zone "C" will be composed of a mosaic pattern of non-irrigated low grasses, succulents, cactus, and other low height/fuel volume native plants, as described for the Zone "C" plant palette in Attachment 1a. Existing non-native plants and species not approved by the HRP for this area, including those on the Fire Department's "undesirable" plant list contained in Attachment 1b, will be removed prior to restoration planting.

- In the Upland Open Space Area north of the Urban Colony and west of the City of Costa Mesa, a 100-foot-wide Zone "C" will be created adjacent to existing neighborhoods, including California Seabreeze. Unmanaged vegetation currently comes up to the rear yards of the off-Project homes in this area. Newport Banning Ranch will provide an especially wide Fuel Management Zone "C" in this area as a component of the Habitat Restoration Plan. The Zone "C" plant palette for the 30 feet of this Zone "C" closest to the homes will be more limited than usual to specified grasses, cacti, succulents, and open rock areas as noted in the Zone "C" plant palette.

- It is anticipated that Zone "C" will be maintained by the Newport Banning Ranch Conservation Group, yet to be determined. Maintenance by a Homeowners Association or similar community entity may be proposed in certain locations.

- Maintenance within Zone "C" will include removal of non-native/invasive species, removal of dead plant material, and removal of species inconsistent with the HRP, including those on the Fire Department's "undesirable" plant list. Maintenance within Zone "C" will not include the pruning, thinning, or removing of living HRP-approved native vegetation.

5.4 Maintenance Requirements for All Management Zones:

- No highly combustible plant species shall be allowed per City Fire Department's Requirements/ Guidelines.

- Horizontal and vertical plant spacing specifications are required and shall be shown on the final Fire Master Plan and maintained.

- Dead and dying material shall be removed regularly in Zones "A" and "B".

- Dead material removed from Zone "C" consistent with City-approved HRP.

6 Calculating Fire Behavior

This report uses a scientific approach to describe a wildland fire hazard assessment and expected wildland fire behavior within and outside of the fuel management zones. Computer projections simulate a fire burning within the native vegetative fuels directly outside the boundaries of the management zones. This report will demonstrate why fuel management zones will help protect structures in the community.

Firesafe Planning Solutions used a computer software program titled "BehavePlus Fire Modeling System 3.0.2" to predict the level of wildfire intensity for a fire approaching NBR. BehavePlus is a fire behavior prediction and fuel-modeling system, and is one of the most accurate methods for predicting wildland fire behavior. The BehavePlus fire behavior computer modeling system is utilized by wildland fire experts nationwide. The Fire Behavior and Fuel Modeling System, developed by research scientists from USDA-Forest Service (Andrews & Bevens, 2003; Burgan & Rothermel, 1984) will be used to evaluate both wildfire risk as well as the proposed vegetation management recommendations.

The BehavePlus system provides an indication of how vegetative fuels will burn under specific fuel, weather, and topography conditions. The BehavePlus system is a set of computer programs based upon energy release from specific fuels during a fire and is employed by wildfire professionals both nationally and internationally to predict wildfire behavior. Fuel models used in BEHAVE have been classified into specific groups, based upon fuel loading (tons/acre), fuel height, and surface to volume ratio. The differences in fire behavior among these models are basically related to fuel and their distribution among fuel particle size classes. Observation of the location and positioning of fuels in the field determines which fuel groups are presented. Vegetative fuels are recognized as fuel models within the BehavePlus program. The fuel models in the computer program are also referenced from the book titled "Aids to Determining Fuel Models for Estimating Fire Behavior." The fuel models were designed to aid in determining fuel types and are used in calculating and estimating fire behavior.

The fire model describes the fire behavior only within the flaming front of the fire. The primary moving force in the fire is dead fuel less than ¼" in diameter. These are the finest fuels that carry the fire. Fuels larger than ¼" contribute to fire intensity, but not necessarily to fire spread as much as the fine fuels. The BehavePlus fire model describes a wildfire spreading through surface fuels, which are the burnable materials within 6' of the ground and contiguous to the ground.

This type of modeling will demonstrate that the FMMP is the best fire defense system for NBR. The modeling will show that the structures are significantly further away than the most extreme flame lengths and intensity that would be produced. Instead of estimating with the exact fuel models for calculating fire behavior, we will input worst case scenario factors and fuel models to ensure a further safety cushion in the computer fire behavior calculations and results analysis.

BehavePlus Related References:

1. *Aids to Determining Fuel Models for Estimating Fire Behavior, Hal E. Anderson. General Technical Report INT-122 April 1982. United States Department of Agriculture – Forest Service, Intermountain Station, Ogden, Utah 84401.*
2. *BehavePlus: Fire Behavior Prediction and Fuel Modeling System - BURN Subsystem. General Technical Report INT-194. Patricia L. Andrews, United States Department of Agriculture - Forest Service, Intermountain Station, Ogden, Utah 84401.*

7 Wildland Interface Fuel Types

These fuels are considered highly combustible in the native setting and can be analyzed for their fire performance based on many factors. The type and amount of fuels in the wildland area located immediately outside of the fuel management zone are generally:

7.1 20 % Native Grasses from 1-2' in Height

These fuels present the potential for a fast-spreading, wind-driven fire. Fire intensity is low but the rate of spread is high. With structures setbacks and enhanced construction requirements in place, they do not present a significant hazard. This type of fire is generally in a localized small area.

7.2 60% Coastal Sage Shrubs 3- 4' in Height

The shrubs present the potential for a fast-spreading, wind-driven fire. Fire intensity and ember production has the potential to be high at the wildland interface area because the shrubs are covering 2/3 of the land outside of the zone limits. The shrubs will not present a fire hazard to the homes after the fuel management zone is installed, structures are setback, and construction requirements are in place.

7.3 20% Remaining Vegetation Types

Chaparral-type, tree-form shrubs and trees outside of the zone limits will not be a fire hazard to the homes because the homes will be far enough away so heat travel will not cause direct flame impingement or radiant heat ignition of the homes. Ember intrusion will be deflected by the construction features of the homes.

(Figure 4) This type of vegetation will fit into a BehavePlus fuel model type SCAL 18. The site vegetation is not as dense as the vegetation described within the model, so fire behavior will be even lower than predicted.

8 Wind Patterns and Structure Alignment

The result of wild fire intensity is determined by wind speed, wind direction, the age of fuels, and the amount of moisture in the air. Wind direction determines how dry or moist the relative humidity in the air is. Fire intensity and rate of fire spread are usually determined by the speed of the winds. We entered the two most extreme wind patterns and speeds relating to wildfires into the BehavePlus model. All other lesser wind patterns and wind speeds normally produce less fire intensity based on a fire in wildland fuels. The two most extreme wind patterns/structure location alignments are:

- 50 mph northeast Santa Ana wind. (Generally occurring in the late fall, during low fuel moisture times). A review of RAWS data for the area could not find any recorded wind gusts above this level for the past 10 years; and
- A rare 30 mph dry southwest on-shore, normally prevailing wind. (Generating from over the ocean, after dry air is pushed out to sea by a Santa Ana condition).

A 50 mph north-east wind scenario would mostly affect homes on the interior arroyo because a fire affecting the north-west perimeter will be moving laterally or away from the homes located on the north-west perimeter

North -West Development Interface Photos

(Figure 5) We used BehavePlus to calculate and predict a south-west wind-directed fire coming from the vegetation within the oil lease that could affect the north-west perimeter of the development. The oil lease has many roads (future trails), which serve as continuity breaks in the scattered fuels.

(Figure 6) We used BehavePlus to calculate and predict a south-west wind-directed fire coming from the vegetation within the oil lease that could affect the North-West perimeter of the development. The fuels in the oil lease area are not even as severe as the SCAL 18 model we used in many areas. Fire behavior will be less than the worst-case scenario we calculated in those areas.

(Figure 7) We used BehavePlus to calculate and predict a south-west wind-directed fire coming from the vegetation within the oil lease that could affect the North-West perimeter of the development. The fuels in the oil lease area are not as severe as the SCAL 18 model we used. Fire behavior will be less than the worst case scenario we calculated.

(Figure 8) This is a photo of the most extreme north side of the future development which is directly adjacent to existing development.

(Figure 9) Photo of the west-facing slope below the future development located on the west side of the development. A south-west wind-directed fire coming from the vegetation within the oil lease could affect the North-West perimeter of the development.

Interior Development Arroyo Interface Photos

(Figure 10) We used BehavePlus to calculate and predict south-west wind and north-east wind directed fires coming from native vegetation within interior open space arroyos. Unless the wind happens to change in the middle of a fire event, the fire will continue to move only one direction of the two directions shown. Homes located on the perimeter of the interior arroyos shown will have all of the CBC Chapter 7A construction requirements in place even though they are not required by code in moderate or high fire hazard areas.

(Figure 11) We used BehavePlus to calculate and predict south-west wind-directed and north-east wind-directed fires coming from native vegetation within interior open space arroyos. On the right is a lower arroyo drainage with Willow species. The fuels on the right are not in the fuel management zones and have a fairly high-fuel moisture content. On the left is the coastal sage scrub vegetation Fuel Model SCAL 18

(Figure 12) We used BehavePlus to calculate and predict south-west wind-directed and north-east wind-directed fires coming from native vegetation within interior open space arroyos. In the background is a lower arroyo drainage with Willow species. The fuels in the forefront are the coastal sage scrub vegetation Fuel Model SCAL 18. The Pampas Grass will be removed and the Encelia would remain and be horizontally spaced not to create a fuel mass exceeding 40% of the total area.

(Figure 13) We used BEHAVE to calculate and predict south-west wind-directed and north-east wind-directed fires coming from native vegetation within interior open space arroyos. The fuels in the forefront are the coastal sage scrub vegetation Fuel Model SCAL 18. The Encelia would remain and be horizontally spaced. Areas in between shrub groups will have low grasses, succulents, cactus, and other low-fuel-volume species.

(Figure 14) We used BEHAVE to calculate and predict south-west wind-directed and north-east wind-directed fires coming from native vegetation within interior open space arroyos. The fuels in the forefront are Encelia. In the distance you can see the upslope vegetation which will be leading up to homes. Homes located on the perimeter of the interior arroyos shown will have all of the CBC Chapter 7A construction requirements in place even though they are not required by code in moderate or high fire hazard areas.

9 BehavePlus Fire Behavior Inputs and Results

9.1 Fuel Moistures:

The fuel moistures used in the modeling for the BehavePlus calculation are the worst case scenario. Relative humidity, temperature, slope aspect, time of day, and month of the year all have an impact on the determination of the actual percentage of dead fuel moisture. The values listed below are at or below the lowest recorded levels for the area being analyzed.

Fuel moisture changes over time. In general, the dead fuel moisture will move about 2/3 of the difference between its current moisture level in the fuel and that of the air around in varying increments based on the size (amount of surface area to total mass) of the fuel. Fuels are grouped by the time it takes to move the 2/3 distance. "One hour" fuel is less than ½ inch thick. It is the most volatile of the fuels. "Ten hour" fuel is between ½ inch and 1 inch thick. "Hundred hour" fuel is between 1 inch and 3 inches and "Thousand hour" fuel is above 3 inches in thickness. Thousand hour fuels are relatively stable and are not used in this model

Live fuel moisture is the moisture found in the leaf and woody portion of a shrub. Live fuel moisture is calculated by cutting a small branch and weighing it, placing it in a low temperature oven for 12 hours, removing the branch and weighing it again. The difference in weight is the loss of moisture in the leaves and woody portion of the branch. For this reason, live moisture may exceed 100% of the dry weight of the plant. Live fuel moisture is the highest in the spring and early summer, and the lowest in late summer, fall and early winter. Los Angeles County Fire Department samples live fuel moistures from sites throughout Los Angeles County each month.

Fuel moisture recorded from the sites still apply to Orange County area and serve as an indicator of moisture content. We are using worst case moistures to indicate the results of worst case wild fire. All other fires when there are greater fuel moistures within the shrubs, will result in less fire intensity than we are predicting.

South, Southwest and West Wind Condition Fuel Moisture Inputs: Late fire season 30-MPH southwest wind pattern.

- 1-Hour Fine Fuel Moisture 3%
- 10-Hour Fuel Moisture 5%
- 100-Hour Fuel Moisture 7%
- Live Herbaceous Fuel Moisture 30%
- Live Woody Fuel Moisture 60%

North, Northeast and East Wind Condition Fuel Moisture Inputs: Santa Ana Winds

- 1-Hour Fine Fuel Moisture 2%
- 10-Hour Fuel Moisture 3%
- 100-Hour Fuel Moisture 5%

- Live Herbaceous Fuel Moisture 30%
- Live Woody Fuel Moisture 50%

BehavePlus Fire Behavior Inputs and Results are as follows:

9.2 The North-West Development Perimeter Side / South -West Wind Driven Fire

The North-West side of the development is mostly subject to south-west normal prevailing wind direction fire weather:

(Figure 15) BehavePlus fuel model type SCAL 18 on the slope leading up to the future development.

9.2.1. BehavePlus Inputs:

Wind Direction: South-west wind moving to a north-east direction
Wind Speed: 30 mph wind speed, upslope, unsheltered
Slope: 15% degree slope

9.2.2. BehavePlus Outputs:

Fuel Model	SCAL18	Grass 4	Grass Scrub 2
Max Rate of Spread (feet/min)	194	908	266
Fire Line Intensity (Btu/ft/s)	13,141	7,643	2,476
Flame Length (feet)	**35.3**	27.5	16

9.3 Interior Arroyo North-East Wind Driven Fire

(Figure 16) BehavePlus fuel model type SCAL 18 in the interior arroyo leading up to the future development. Encelia shrubs are present in the foreground.

9.3.1. BehavePlus Inputs:

Wind Direction: North-East wind moving to a south-west direction
Wind Speed: 50 mph wind speed, upslope, unsheltered
Slope: 60% degree slope.

9.3.2. BehavePlus Outputs:

Fuel Model	SCAL18	Grass 4	Grass Scrub 2
Max Rate of Spread (feet/min)	384	1,945	676
Fire Line Intensity (Btu/ft/s)	27,885	18,339	6,924
Flame Length (feet)	**49.9**	41.1	26.3

10 BehavePlus Calculation Results Analysis

The modeling for this Project used the extreme conditions in every case. Winds were modeled at or above the strongest gusts recorded over the past 10 years. Fuel moistures were estimated at or below those recorded in existing databases. Slopes were used that created the greatest impact for rate of spread (this is not always the steepest slope as the slope itself begins to shelter the fuel from the extreme aspects of the wind when it becomes a barrier).

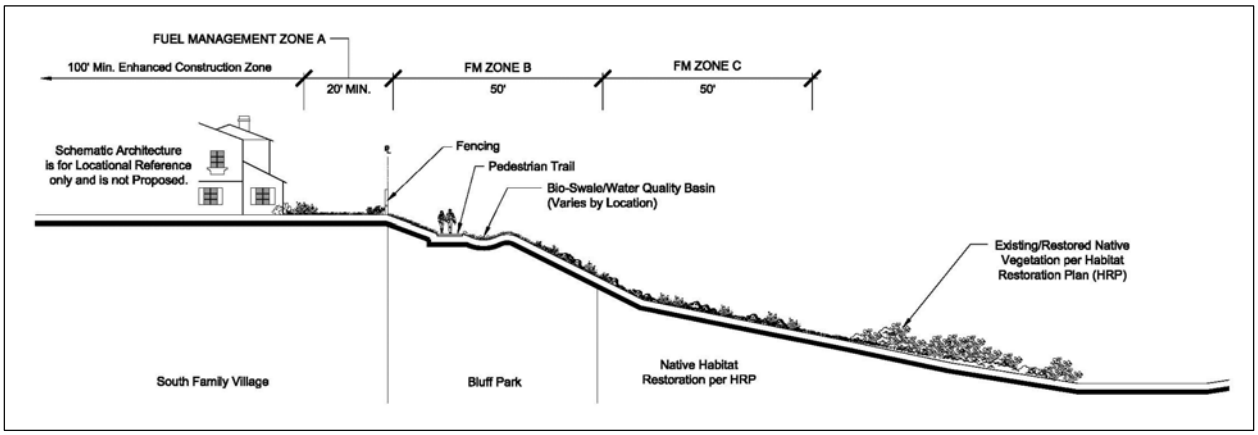
Three separate fuel models were used to project the maximum fire behavior for this Project. Southern California Model 18 (Sage/Buckwheat) was used for the interior pristine areas that will be allowed to continue in their natural state. Both grass (GR4 moderate grass, dry climate) and grass/shrub mix (GS2 moderate load, dry climate) models were used to insure that fire behavior was correctly modeled as the upland grassland interface matures.

It should be noted that while the GR4 model is more volatile in terms of rate of spread and flame length, the SCAL18 model has the greatest threat in terms of total volume of fire/heat and impact on the adjacent structures. Under the existing plan, the SCAL18 fuel will always be separated from the structures by the grassland mosaic (Zone "C") and the modified management fuel zones (Zone "A" and Zone "B"). The fuel management system has been designed so that SCAL18 fuel is no closer than 120 feet from the structures. The maximum flame length in the SCAL18 zone is 49.9 feet. For this reason, the Zone "C"/habitat area is never less than 50 feet in width and in many cases is two times the minimum.

The grass/shrub mosaic interface (Zone "C") will produce a maximum flame length of 41 feet in the worst case scenario. This would be a wind-driven fire, traveling upslope, in extreme weather (low humidity and high temperature), unsheltered and with a continuous fuel bed. This zone will double as a raptor habitat. It will not be thinned or modified for fire management but it will be maintained by "hand plucking" materials which are not on the approved palette. It will start out as primary grassland mosaic and may eventually become a grass/shrub mixture. It was modeled in both configurations. The Zone "C" is not irrigated. The maximum flame length that can be achieved at the Zone "B"/Zone "C" juncture is 41 feet. For this reason, the Zone "B" minimum width is 50 feet.

Zone "B" is irrigated and will provide the necessary buffer for a defensible space. The heat sink properties of Zone "B" will result in a 75% flame length reduction in this zone. This is due to the Zone "B" being cleared, replanted, and permanently irrigated with only plants listed on the approved plans. Plants are originally installed and maintained conforming to code-required horizontal spacing arrangements. Due to the fact that the Zone "C" has a low fuel loading in term of duration of flame front, the actual flames from the Zone "C" will be significantly reduced prior to reaching the Zone "B". The duration of the flaming front should not be long enough to remove enough moisture from the Zone "B" plants to have them ignite. As long at the dead and duff components of the Zone "A" and Zone "B" maintenance plans have been followed, no fire will move past Zone "B". Zone "A" is the buffer that provides for the defensible space. While no direct flame is intended at the Zone "A" juncture with Zone "B", an additional area of 20 feet is provided that will allow fire crews to safely position themselves into that interface between the wildland and the structures for suppression efforts.

The arrangement of the zones is shown in an example below:



Structure ignition from wild vegetation fires comes mostly from two sources, firebrands and radiant and convective heat. Ignition of a structure by convective heat transfer requires direct flame impingement. If the flame lengths are less than the measured distance to non-managed combustible vegetation from a structure, there is a probability of structure ignition. This is not the case with this Project. The future structures will not ignite from the direct effects of fire as they are never within a distance which provides for a possibility of ignition. Fires in fuels measured directly outside the fuel management zones do not have sufficient flame lengths to contact the homes.

During strong and dry winds, convective firebrands have the capability of being carried by drafts and strong winds for long distances. The chance of firebrands igniting a structure will depend on the size of the firebrand and the type of receptive construction materials on the structure. Firebrands landing on combustible roofing and decks are common sources for structure ignition. Firebrands can also enter a structure through broken windows, unscreened vents, decks and chimneys, and any small opening.

The chance of a structure fire caused by firebrands is not a concern for the NBR as **all homes** will be constructed with Class A roofing and roofing assemblies and attic venting requirements from Chapter 7A from the 2007 California Building Code (CBC). In addition, **all structures adjacent to a fuel management zone** will further be constructed to meet the minimum requirements of Chapter 7A for exterior wall and eave surface, window and door requirements, appendages and underfloor protection. Therefore, due to the fact that mostly non-combustible building materials will be used in the construction of structures, the radiant heat issue needs to be addressed.

Wildland fires could cause ignition to existing developments by radiating heat to a structure. Radiation exposure depends on the intensity and the duration of the fire. Radiant heat decreases as the distance between the fire and the structure increases. Single-pane windows are subject to breaking from radiant heat and provide an opening for embers to enter a structure. Structure windows adjacent to fuel management zones will be dual pane with one pane tempered in case of an ember hitting a heated window. Radiant heat has a short lifetime in a concentrated area because the fire passes by structures that have been constructed to the latest codes and continues to move onward.

Radiant and convective heat transfer energy is not enough to reach the future structures to the point of ignition because the fuels measured are more than 100 feet away from the homes when you total the distance of the management zone and the structure setbacks. See the following information regarding a valid structure assessment model used by the Forest Service and professionals throughout the nation titled “SIAM”.

Flames and fire intensity are significantly reduced within the fuel management zone. The fuel management zone also reduces the amount of embers projected into the air because the area is replanted with plants with greater fire-resistive characteristics and the plants are spaced and thinned.

11 Structure Ignition Assessment Model (SIAM).

A USDA Forest Service research study and report titled “Structure Ignition Assessment Model (SIAM)” by Jack D. Cohen, Intermountain Fire Science Laboratory, Missoula, Montana, has helped to validate how much distance is required to keep structures from igniting due to wildland fire radiant heat.

SIAM research further suggests that for reducing structure ignitions from radiant and convective heat sources, vegetation management (fuel treatment) beyond some relatively short (100 feet) distance from a structure built of non-combustible materials has little significant benefit for reducing flame generated ignitions. Vegetation management cannot be practically extensive enough to significantly reduce airborne firebrand ignitions landing on combustible roofs or other fuel beds on privately controlled land around a home. In lighter fuels such as grass and short grass, fuel treatment can be reduced to 50 feet and still protect a structure that is built of non-combustible materials.

Project structures will be set back even further from the intensity of a fire burning outside the limits of the fuel management zone. Back and side yards incorporate ornamental plants and trees in a turf or planter type setting. Fire suppression efforts combined with the fuel management zone protection and the latest building construction practices will ensure the best possible outcome for a safe development.

12 Report Summary

This development is designed and protected by the most recently developed codes. BehavePlus was used estimate the maximum intensity of fire moving towards this development, and flame lengths and fire intensity will be ultimately be reduced by the installation and maintenance of the FMMP.

Using a systematic approach, the threats presented by the vegetation that will remain after the completion of this Project have been mitigated to a point where they do not present a risk to the structure or occupants of this Project once completed. The use of fuel management, enhanced construction features, and ongoing maintenance will insure that this community remains protected from the threat of wildfires as long as the conditions required by this program are in compliance.

NBR F&LSP Attachment 4

May 12, 2010

Mr. Steve Bunting
Fire Marshall/Chief Fire Prevention Division
Newport Beach Fire Department
3300 Newport Boulevard
Newport Beach, CA 92658-8915

SUBJECT: **Alternate Means and Methods for Fuel Management**
Newport Banning Ranch Planned Community
Newport Beach, CA

On behalf of Newport Banning Ranch LLC, we hereby submit a request for use of Alternate Means and Methods (AM&M) per the 2007 California Fire Code. Our request relates to our proposal to provide a total fuel management width of 120 feet, which is less than the standard 170 feet.

The following information is being provided to assist in your evaluation of this proposed AM&M.

A. Project information:

- Project name: Newport Banning Ranch Planned Community
- Contact person: David Oatis, Firesafe Planning Solutions, (949) 240-5911
  302 N. El Camino Real, Suite 202, San Clemente, CA 92672
- Current landowner: Newport Banning Ranch, LLC
- Development type: Residential, resort, and commercial planned community

B. Code Sections for which the modification is requested:

- 2007 California Fire Code (CFC) Section 317 and local amendments.

C. General Description:

The Newport Banning Ranch Project is an approximately 401-acre master planned community in the City of Newport Beach. Consistent with the City's General Plan, the community will be composed of compact development with up to 1,375 single-family and multi-family residential dwelling units, a maximum 75-room resort, and up to 75,000 square feet of commercial uses. Pursuant to the General Plan, at least 50 percent of the site must be

retained in open space. Therefore, significant uses include approximately 231 acres of upland and lowland open space, and a 20-acre oil facilities consolidation site that will ultimately revert to open space. The General Plan also calls for a 20- to 30-acre community park. The plan proposes a 28-acre community park, a 21-acre bluff park, and approximately 4 acres of interpretive parks.

Newport Banning Ranch property is located north of West (Pacific Coast Highway), south of 19th Street, and east of the Santa Ana River.

The property has been a producing oil field since the early 1940s. It contains over 470 producing/potentially producing and abandoned oil well sites and related oil facility infrastructure, including but not limited to pipelines, storage tanks, power poles, machinery, improved and unimproved roadways, buildings, and oil processing facilities.

Today, and in addition to oil, the majority of the property contains non-native vegetation and invasive species. However, there is intact native vegetation on the Project site. Slopes along the southern and southwestern site boundary support maritime succulent scrub and disturbed coastal bluff scrub. The property supports several special status plants and protected wildlife species. The federally-listed threatened coastal California gnatcatcher and the coastal cactus wren (a California Department of Fish and Game [CDFG] Species of Special Concern) are present on the Project site.

The Project site is generally bound on the north by Talbert Nature Preserve/Regional Park in the City of Costa Mesa and residential development in the City of Newport Beach; on the south by West Coast Highway and residential development in the City of Newport Beach; on the east by residential, light industrial, and office development in the Cities of Costa Mesa and Newport Beach; and on the west by the USACE wetlands restoration area and the Santa Ana River. The City of Huntington Beach is west of the Santa Ana River. At its nearest point, the Project site is less than 0.25 mile inland from the Pacific Ocean.

There is currently no public access to the Project site.

D. Hardship:

Our hardship is: The inability to achieve a standard 170 feet of Fuel Modification width because of the simultaneous need to preserve open space and protect native habitat areas, consistent with the City's General Plan and California Coastal Commission policies.

E. Proposed alternative fire protection measures:

The Project proposes a minimum 120-foot-wide Fuel Management area that would be comprised of a minimum 20-foot-wide Zone A, a minimum 50-foot-wide Zone B, and a minimum 50-foot-wide Zone C. In many areas of the Project, Zone A is considerably wider than the minimum 20 feet, and the total width is considerably wider than the minimum120-foot-wide width, as shown on the Fuel Management Plan and cross-sections submitted with this letter.

Alternative fire protection measures are proposed as follows:

a. Enhanced Construction Zone – All structures on lots within 100' of the interior Fuel Management edge (i.e., FMZ "A") shall receive enhanced construction on all four (4) sides per 2007 California Building Code Chapter 7A and the 2007 California Fire Code Chapter 47 as locally amended by the City of Newport Beach. (CBC Chapter 7A and CFC Chapter 47 are provided as Attachments 2a and 2b, respectively, to this Fire and Life Safety Program.)

b. Ember Intrusion Zone – Structures outside the Enhanced Construction Zone as defined above will be treated as being within an Ember Intrusion Zone. These structures, which comprise all structures in the community exclusive of the Enhance Construction Zone structures, are subject to new CBC Chapter 7A requirements to mitigate ember intrusion, including:

1) 704A.1.2.....Roof Coverings
2) 704A.1.3.....Roof Valley Coverings
3) 704A.1.5.....Roof Gutters
4) 704A.2.....Attic Vents
5) 704A.2.2.....Eave and Cornice Vents
6) 704A.3.2.1.....Exterior Wall Vents
7) 704A.4.1.1.....Decking Surfaces
8) 704A.4.2.1.....Underside of Appendages and Floor Protection
9) 704A.4.2.2.....Unenclosed Underfloor Protection

c. Sprinkler Systems – All single-family and multi-family homes shall be constructed with an approved modified NFPA 13 Automatic Fire Sprinkler System installed by a licensed fire sprinkler contractor. All commercial use buildings shall be constructed with an approved full NFPA 13 Automatic Fire Sprinkler System installed by a licensed fire sprinkler contractor. Separate plans shall be submitted to the Fire Department for approval prior to installation.

Thank you in advance for your consideration of this proposed AM&M request. Please feel free to call me with any questions or requests for additional information.

Sincerely,

David Oatis, President
Firesafe Planning Solutions for Newport Banning Ranch LLC

NEWPORT BANNING RANCH

PLANT PALETTE

APPLICANT

Newport Banning Ranch LLC

1300 Quail Street, Suite 100
Newport Beach, CA 92660

Michael A. Mohler, Managing Director
Tel: (949) 833-0222

Submitted to:
City of Newport Beach
Planning Department
3300 Newport Boulevard
Newport Beach, California 92658

NOVEMBER 2010

Submitted by:
Newport Banning Ranch LLC

DESIGN TEAM

CTG Energetics
Green & Sustainable Solutions

FORMA Design
Planners & Landscape Architects

Fuscoe Engineering
Civil & Water Quality Engineers

Studio SA
Green & LEED Consultant

Plant Palette

Table of Contents

(1) Fuel Management Zone Plant Palettes are also located in the Fire and Life Safety Program. This includes North Bluff Road Bioswale Plant Palette between 17th and 19 Streets adjacent to Open Space Preserve.

(2) The plant palette for the Vernal Pool Watershed Area is also located in the Fire and Life Safety Program.

INTRODUCTION

1 Scope and Relationship to Master Development Plan

The Newport Banning Ranch (NBR) Plant Palette is a technical appendix to the NBR Master Development Plan (MDP), and is referenced extensively in NBR-MDP Chapter 8, Master Landscape Plan.

The NBR Plant Palette was developed in cooperation with the City of Newport Beach General Services Department and Fire Department, and identifies the species of plants permitted in the various Landscape Zones depicted on NBR-MDP Exhibit 8-1, Community Landscape Zones Map.

2 Landscape Zones

2.1.1 Overview

The Project is divided into five (5) landscape zones as identified on Exhibit 8-1, "Community Landscape Zones Map." Three (3) landscape zones are within the Villages, Colonies, and Parklands; two (2) landscape zones are within the Open Space Preserve.

2.1.2 Landscape Zones within the Villages, Colonies, and Parklands

1. Interior Community Zone – Comprising all of the developed areas within the Villages, Colonies, and Parklands outside of Fuel Management Zones, the Interior Community Zone includes all private and public landscape areas outside of the Open Space Preserve, including the Community Park, Bluff Park, public road rights-of-way (e.g., parkways and medians), and common landscape lots owned and maintained by a Homeowners Association. This zone consists of irrigated landscape consistent with the Plant Palette, provided as Appendix C.

2. Fuel Management Zone A – Comprising a minimum 20-foot-wide area adjacent to habitable buildings, Zone A consists of irrigated landscape consistent with the Fire and Life Safety Program (Appendix B) and the Plant Palette (Appendix C).

3. Fuel Management Zone B – Comprising a minimum 50-foot-wide area adjacent to Zone A, Zone B consists of irrigated landscape consistent with the Fire and Life Safety Program (Appendix B) and the Plant Palette (Appendix C). Zone B irrigation shall be limited to that required to mimic average annual natural rainfall.

An aesthetically important function of the Interior Community Zone and the Fuel Management Zones is to provide a visually soft transition between the Open Space Preserve and buildings within the Development Areas of the Community. The Public Bluff Parks, which encircle most of the Community's residential and resort development, play an important role in this landscape design.

2.1.3 Landscape Zones within the Open Space Preserve

1. Habitat Restoration Zones – Habitat areas in the Open Space Preserve are identified in the Habitat Restoration Plan and will be managed by the Banning Ranch Conservancy Group. Landscape habitat restoration zones include:

   - Alkali Meadow;
   - Coastal Bluff Scrub;
   - Grassland;
   - Maritime Succulent Scrub;
   - Succulent Scrub Mosaic;
   - Riparian; and
   - Vernal Pool Restoration and Watershed Area.

   Habitat protection, creation, and restoration activities, including the native plant palette for each Habitat Restoration Zone, are identified in the Habitat Restoration Plan (Appendix A).

2. Dual Habitat Restoration Zone and Fuel Management Zone C – A minimum 50-foot-wide area, the Dual Habitat Restoration Zone and Fuel Management Zone C consists of non-irrigated low grasses, succulents, cactus, and other low height/fuel volume native plants within the Open Space Preserve as shown in the Habitat Restoration Plan (Appendix A), the Fire and Life Safety Program (Appendix B), and Plant Palette (Appendix C).

2.1.4 Fuel Management Zone Details

The Fire and Life Safety Program (FLSP) contained in Appendix C, contains a detailed Fuel Management Zones Map and a comprehensive set of 13 cross-sections depicting how these zones provide a safe transition from natural habitat areas within the Open Space Preserve to the development areas within the Villages and Colonies and Parklands.

In describing to Fuel Management Zones, the FLSP addresses three special interface areas within the Project:

1. The Vernal Pool Watershed Area that adjoins both the Vernal Pool Restoration Area and residential development areas in the North Family Village;

2. The bioswales along North Bluff Road between the Urban Colony and 19th Street; and

3. The 100-foot-wide Dual Habitat Restoration Zone and Fuel Management Zone C adjacent to currently unprotected neighborhoods in the City of Costa Mesa (including California Seabreeze) to provide both habitat restoration and fire fuel management as part of the Project.

Refer to the FLSP (Appendix C) for details on the Cross-Sections and Fuel Management Zones.

3 Format of Plant Palette for Villages, Colonies, and Parklands

The use of plants within the Villages, Colonies, and Parklands is further coded as to plants that are acceptable for use in:

a. Public parkways and medians;

b. Private homeowner yards; and

c. Homeowners association and common landscape areas.

These distinctions are, in part, based upon maintenance costs and other characteristics that affect the City's willingness to act certain plants in publicly-owned and/or maintained areas.

4 Invasive Plants Prohibited

The NBR Plant Palette was revised during preparation of the NBR-MDP to reflect City comments and specifically avoid plants identified as invasive species by the California Invasive Plant Council's current (February 2006) California Invasive Plant Inventory.

5 Use of Plant Palette

All construction-level landscape plans shall be subject to review and approval by the City of Newport Beach, including public parks and parkways, landscape lots, medians and land use developments, Landscape Plans, and shall use only the approved NBR Plant Palette. The initial planting and on-going landscape maintenance activities for public landscape areas shall monitor and remove weeds and invasive plants not on the approved NBR Plant Palette.

1 Interior Community Zone Plant Palette

INTERIOR COMMUNITY					
Botanical Name	**Common Name**	**Suitability**	**PLANT USE**		
			Public[1]	**Private[2]**	**HOA[3]**
Trees					
Acer macrophyllum	*Big Leaf Maple*	C	X	X	X
Acer negundo species californicum	*Box Elder*	C			X
Acer palmatum species	*Japanese Maple*	D	X	X	X
Aesculus californica	*California Buckeye*	C	X	X	X
Alnus rhombifolia	*White Alder*	C	X	X	X
Arbutus menziesii	*Madrone*	C	X	X	X
Arbutus unedo	*Strawberry Tree*	C D	X	X	X
Arbutus unedo 'Marina'	*Arbutus*	C D	X	X	X
Bauhinia purpurea	*Orchid Tree*	-	X	X	X
Bauhinia purpurea 'Candida'	*Orchid Tree*	-	X	X	X
Betula pendula species	*White Birch*	C	X	X	X
Brachychiton populneus	*Bottle Tree*	C D	X	X	X
Calocedrus decurrens	*Incense Cedar*	C D		X	
Camellia japonica 'Kramer's Supreme'	*Common Camellia*	-		X	X
Carica papaya	*Papaya*	C	X	X	X
Cassia leptophylla	*Gold Medallion Tree*	C	X	X	X
Ceanothus arboreus	*Feltleaf Ceanothus*	C	X	X	X
Ceratonia siliqua	*Carob Tree*	C D	X	X	X
Cercidium floridum	*Blue Palo Verde*	C D	X	X	X
Cercis occidentalis	*Western Redbud*	C D	X	X	X
Chilopsis linearis	*Desert Willow*	C	X	X	X
Chorisia speciosa	*Floss Silk Tree*	C		X	X
Cinnamomum camphora	*Camphor Tree*	C	X	X	X
Citrus species	*Citrus*	C		X	
Cupaniopsis anacardioides	*Carrotwood*	C	X	X	X
Eriobotrya japonica	*Loquat*	C	X	X	X
Erythrina crista-galli	*Cockspur Coral*	C			X
Erythrina coralloides	*Naked Coral Tree*	C D			X
Erythrina humeana	*Natal Coral*	C D			X
Ficus species (Carica Prohibited)	*Ficus*	C		X	X
Feijoa sellowiana	*Pineapple Guava*	C	X	X	X
Fraxinus uhdei species	*Shamel Ash*	C D	X	X	X

C = California Friendly
D = Drought Tolerant
O = Suitable to plant under Oaks
[1] = Acceptable plant material for Public Parkways/Medians.
[2] = Acceptable plant material for Private Homeowner Yards.
[3] = Acceptable plant material for HOA/Common Areas.

INTERIOR COMMUNITY					
Botanical Name	**Common Name**	**Suitability**	**PLANT USE**		
			Public[1]	**Private[2]**	**HOA[3]**
Trees (continued)					
Fraxinus velutina species	*Arizona Ash*	C D	X	X	X
Geijera parviflora	*Australian Willow*	C	X	X	X
Ginkgo biloba	*Maidenhair Tree*	C D	X	X	X
Ginkgo biloba 'Autumn Gold'	*Autumn Gold Maidenhair*	C D	X	X	X
Ginkgo biloba 'Saratoga'	*Maidenhair Tree*	C D	X	X	X
Hakea laurina	*Sea Urchin Hakea*	C D		X	X
Hakea suaveolens	*Sweet Hakea*	C D		X	X
Hymenosporum flavum	*Sweetshade*	C	X	X	X
Juglans californica	*Southern California Black Walnut*	C D			X
Koelreuteria bipinnata	*Chinese Flame Tree*	C D	X	X	X
Lagerstroemia indica	*Crape Myrtle*	C	X	X	X
Laurus nobilis	*Sweet Bay*	C D	X	X	X
Leptospermum laevigatum	*Australian Tea Tree*	C D	X	X	X
Leptospermum scoparium	*New Zealand Tea Tree*	C D	X	X	X
Leptospermum scoparium 'Ruby Glow'	*'Ruby Glow' New Zealand Tea Tree*	C D	X	X	X
Liriodendron tulipifera	*Tulip Tree*	C	X	X	X
Lithocarpus densiflorus	*Tanbark Oak*	C D	X	X	X
Liquidambar styraciflua species	*American Sweet Gum*	C	X	X	X
Lyonothamnus floribundus ssp. Asplenifolius	*Fern-Leaf Catalina Ironwood*	C D	X	X	X
Macadamia integrifolia	*Macadamia Nut*	C	X	X	X
Magnolia species	*Magnolia*	C	X	X	X
Maytenus boaria	*Mayten Tree*	C	X	X	X
Melaleuca nesophila	*Pink Melaleuca*	C D	X	X	X
Melaleuca quinquenervia	*Paperbark Tree*	C D	X	X	X
Metrosideros excelsus 'Variegata'	*Variegated New Zealand Xmas Tree*	C D	X	X	X
Parkinsonia aculeata	*Palo Verde*	C D	X	X	X
Pistacia chinensis	*Chinese Pistache*	C	X	X	X
Pittosporum undulatum	*Victorian Box*	-	X	X	X
Platanus acerifolia	*London Plane Tree*	C	X	X	X
Platanus acerifolia 'Bloodgood'	*London Plane Tree*	C	X	X	X
Platanus acerifolia 'Yarwood'	*London Plane Tree*	C	X	X	X
Platanus mexicana	*Mexican Sycamore*	D	X	X	X
Platanus racemosa	*California Sycamore*	C	X	X	X
Podocarpus henkelii	*Long-leafed Yellow Wood*	C		X	X

C = California Friendly
D = Drought Tolerant
O = Suitable to plant under Oaks
[1] = Acceptable plant material for Public Parkways/Medians.
[2] = Acceptable plant material for Private Homeowner Yards.
[3] = Acceptable plant material for HOA/Common Areas.

INTERIOR COMMUNITY					
Botanical Name	**Common Name**	**Suitability**	**PLANT USE**		
			Public[1]	**Private[2]**	**HOA[3]**
Trees (continued)					
Podocarpus macrophyllus	*Yew Pine*	*C*		*X*	*X*
Populus x canadiensis	*Carolina Poplar*	*C*	*X*	*X*	*X*
Populus fremontii	*Fremont Cottonwood*	*C*	*X*	*X*	*X*
Prosopis glandulosa torreyana	*Western Honey Mesquite*	*C D*	*X*	*X*	*X*
Prunus caroliniana	*Carolina Laurel Cherry*	*C D*	*X*	*X*	*X*
Prunus ilicifolia ssp. Lyonii	*Holly Leaf Cherry*	*C D*	*X*	*X*	*X*
Prunus lyonii	*Catalina Cherry*	*C D*	*X*	*X*	*X*
Punica granatum	*Pomegranate*	*C*	*X*	*X*	*X*
Punica granatum 'Wonderful'	*Pomegranate*	*C*	*X*	*X*	*X*
Pyrus kawakamii	*Evergreen Pear*	*C*	*X*	*X*	*X*
Quercus species	*Oak*	*C D*	*X*	*X*	*X*
Quercus agrifolia	*Coast Live Oak*	*C D*	*X*	*X*	*X*
Quercus chrysolepis	*Canyon Live Oak*	*C D*	*X*	*X*	*X*
Quercus Douglasii	*Blue Oak*	*C D*	*X*	*X*	*X*
Quercus dumosa	*Scrub Oak*	*C D*	*X*	*X*	*X*
Quercus engelmannii	*Mesa Oak*	*C D*	*X*	*X*	*X*
Quercus ilex	*Holly Oak*	*C D*	*X*	*X*	*X*
Quercus lobata	*Valley Oak*	*C D*			*X*
Quercus rubra	*Northern Red Oak*	*C D*			*X*
Quercus suber	*Cork Oak*	*C D*			*X*
Rhus lancea	*African Sumac*	*C D*	*X*	*X*	*X*
Robinia X ambigua 'Purple Robe'	*Purple Robe Locust*	*C D*	*X*	*X*	*X*
Salix species	*Willow*	*C*		*X*	*X*
Salix babylonica	*Weeping Willow*	*C*		*X*	*X*
Salix gooddingii	*Black Willow*	*C*		*X*	*X*
Sambucus mexicana	*Blue Elderberry*	*C D*	*X*	*X*	*X*
Sequoia sempervirens	*Coast Redwood*	*C*		*X*	*X*
Spathodea campanulata	*African Tulip Tree*	-	*X*	*X*	*X*
Stenocarpus sinuatus	*Firewheel Tree*	-	*X*	*X*	*X*
Strelitzia nicollii	*Giant Bird Of Paradise*	-		*X*	*X*
Tabebuia impetiginosa	*Pink Trumpet Tree*	*D*	*X*	*X*	*X*
Tabebuia ipe	*Trumpet Tree*	*D*	*X*	*X*	*X*
Tecoma stans	*Yellow Bells*	*C*	*X*	*X*	*X*
Tipuana tipu	*Tipu Tree*	*C D*	*X*	*X*	*X*
Tristania conferta	*Brisbane Box*	*C D*	*X*	*X*	*X*

C = California Friendly
D = Drought Tolerant
O = Suitable to plant under Oaks
[1] = Acceptable plant material for Public Parkways/Medians.
[2] = Acceptable plant material for Private Homeowner Yards.
[3] = Acceptable plant material for HOA/Common Areas.

PLANT PALETTE

INTERIOR COMMUNITY					
Botanical Name	**Common Name**	**Suitability**	**PLANT USE**		
			Public[1]	**Private[2]**	**HOA[3]**
Trees (continued)					
Tristania laurina	*Kanooka Box*	*C D*	*X*	*X*	*X*
Ulmus parvifolia	*Evergreen Elm*	*C*	*X*	*X*	*X*
Ulmus pumila	*Siberian Elm*	*D*	*X*	*X*	*X*
Umbellularia californica	*California Bay Laurel*	*C*	*X*	*X*	*X*
Yucca gloriosa	*Spanish Dagger*	*C D*	*X*	*X*	*X*
Yucca rostrata	*Beaded Yucca*	*C D*	*X*	*X*	*X*
Yucca torreyi	*Torrey Yucca*	*D*	*X*	*X*	*X*
Palms					
Archontophoenix cunninghamiana	*King Palm*	*C*	*X*	*X*	*X*
Brahea armata	*Mexican Blue Palm*	*C D*	*X*	*X*	*X*
Brahea edulis	*Guadalupe Palm*	*C D*	*X*	*X*	*X*
Butia capitata	*Pindo Palm*	*C*	*X*	*X*	*X*
Caryota cummingii	*Himalayan Fish Tail Palm*	-	*X*	*X*	*X*
Caryota urens	*Himalayan Fish Tail Palm*	*C*	*X*	*X*	*X*
Chamaerops humilis	*Mediterranean Fan Palm*	*C*	*X*	*X*	*X*
Cocos plumosa	*Queen Palm*	*C*	*X*	*X*	*X*
Cordyline baueri	*Bauer's Dracaena*	*C D*	*X*	*X*	*X*
Cordyline stricta	*Palm Lily*	*C*	*X*	*X*	*X*
Cycas revoluta	*Sago Palm*	*C*	*X*	*X*	*X*
Howea forsteriana	*Kentia Palm*	*C*	*X*	*X*	*X*
Phoenix dactylifera	*Date Palm*	*C D*	*X*	*X*	*X*
Phoenix reclinata	*Reclinata Date Palm*	*C*	*X*	*X*	*X*
Phoenix roebelenii	*Pygmy Date Palm*	*C*	*X*	*X*	*X*
Rhapis excelsa	*Lady Palm*	*C*	*X*	*X*	*X*
Trachycarpus fortunei	*Windmill Palm*	*C*	*X*	*X*	*X*
Umbellularia californica	*California Bay Laurel*	*C*	*X*	*X*	*X*
Washingtonia filifera	*California Fan Palm*	*C*	*X*	*X*	*X*
Shrubs					
Abelia grandiflora	*Glossy Abelia*	*C*	*X*	*X*	*X*
Abelia grandiflora 'Edward Goucher'	*Pink Abelia*	*C*	*X*	*X*	*X*
Acacia species (Dealbata Prohibited)	*Acacia*	*C D*	*X*	*X*	*X*
Acanthus mollis	*Bear's Breech*	*C*	*X*	*X*	*X*
Acer species	*Japanese Maple*	*D*		*X*	*X*
Aeonium arboreum	*Aeonium*	*C D*	*X*	*X*	*X*
Aeonium species	*Aeonium*	*C D*	*X*	*X*	*X*

C = California Friendly
D = Drought Tolerant
O = Suitable to plant under Oaks
(1) = Acceptable plant material for Public Parkways/Medians.
(2) = Acceptable plant material for Private Homeowner Yards.
(3) = Acceptable plant material for HOA/Common Areas.

INTERIOR COMMUNITY					
Botanical Name	**Common Name**	**Suitability**	**PLANT USE**		
			Public[1]	**Private[2]**	**HOA[3]**
Shrubs (continued)					
Agapanthus 'Queen Anne'	*Lily of the Nile*	*D*	*X*	*X*	*X*
Agapanthus africanus varieties	*Lily of the Nile*	*D*	*X*	*X*	*X*
Agave species	*Century Plant*	*C D*	*X*	*X*	*X*
Agave americana	*Century Plant*	*C D*	*X*	*X*	*X*
Agave attenuata	*Fox Tail Agave*	*C D*	*X*	*X*	*X*
Agave attenuatta	*Century Plant*	*C D*	*X*	*X*	*X*
Agave deserti	*Agave*	*C D*	*X*	*X*	*X*
Agave filifera	*Agave Filifera*	*C D*	*X*	*X*	*X*
Agave parryi v. couesii	*Couesii Century Plant*	*C D*	*X*	*X*	*X*
Agave shawii	*Desert Century Plant*	*C D*	*X*	*X*	*X*
Agave shawii	*Shaw's Century Plant*	*C D*	*X*	*X*	*X*
Agave species	*Century Plant*	*C D*	*X*	*X*	*X*
Agave vilmoriniana	*Octopus Agave*	*C D*	*X*	*X*	*X*
Aloe arborescens	*Candelabra Aloe*	*C D*	*X*	*X*	*X*
Aloe species	*Aloe*	*C D*	*X*	*X*	*X*
Aloe striata	*Coral Aloe*	*C D*	*X*	*X*	*X*
Aloe vera	*Medicinal Aloe*	*C D*	*X*	*X*	*X*
Alyogyne huegelii 'Purple haze'	*Blue Hibiscus*	*C D*	*X*	*X*	*X*
Amorpha fruticosa	*Indigo Bush*	*C D*	*X*	*X*	*X*
Anigozanthos flavidus species	*Kangaroo Paw*	*C D*	*X*	*X*	*X*
Aptenia cordifolia	*Hearts And Flowers*	*C D*	*X*	*X*	*X*
Aquilegia formosa	*Western Columbine*	*C O*	*X*	*X*	*X*
Arbutus andrachne	*Arbutus*	*C D*	*X*	*X*	*X*
Arbutus unedo 'Compacta'	*Dwarf Strawberry Tree*	*C D*	*X*	*X*	*X*
Arctostaphylos 'Howard McMinn'	*Howard McMinn Manzanita*	*C D O*	*X*	*X*	*X*
Arctostaphylos 'Sentinel'	*Sentinel Manzanita*	*C D O*	*X*	*X*	*X*
Arctostaphylos 'Sunset'	*Sunset Manzanita*	*C D O*	*X*	*X*	*X*
Arctostaphylos species	*Manzanita*	*C D*	*X*	*X*	*X*
Artemisia species (Californica Prohibited)	*Sagebrush*	*C D*	*X*	*X*	*X*
Asparagus densiflorus 'Meyers'	*Myers Asparagus*	*C*	*X*	*X*	*X*
Asparagus densiflorus 'Sprengeri'	*Sprenger Asparagus*	*C*	*X*	*X*	*X*
Atriplex lentiformiss ssp. Brewerii	*Brewer Saltbush*	*C D*	*X*	*X*	*X*
Azalea 'Coral Bells'	*Azalea*	*C*	*X*	*X*	*X*
Azalea 'George Lindley Tabor'	*Azalea*	*C*	*X*	*X*	*X*

C = California Friendly
D = Drought Tolerant
O = Suitable to plant under Oaks
(1) = Acceptable plant material for Public Parkways/Medians.
(2) = Acceptable plant material for Private Homeowner Yards.
(3) = Acceptable plant material for HOA/Common Areas.

INTERIOR COMMUNITY					
Botanical Name	**Common Name**	**Suitability**	**PLANT USE**		
			Public[1]	**Private[2]**	**HOA[3]**
Shrubs (continued)					
Azalea 'Pride of Dorking	*Sun Azalea*	*C*	*X*	*X*	*X*
Azalea 'Purple Splendor'	*Gable Azalea*	*C*	*X*	*X*	*X*
Azalea 'Red Bird'	*Red Bird Azalea*	*C*	*X*	*X*	*X*
Azalea 'Sherwood Orchid'	*Kurume Azalea*	*C*	*X*	*X*	*X*
Azalea 'Sherwood Red'	*Azalea*	*C*	*X*	*X*	*X*
Baccharis pilularis 'Twin Peaks #2'	*Dwarf Coyote Bush*	*C D*	*X*	*X*	*X*
Baccharis salicifolia	*Mulefat*	*C D*	*X*	*X*	*X*
Baccharis species	*Baccharis*	*C D*	*X*	*X*	*X*
Bougainvillea 'Torch Glow'	*Bougainvillea*	*C D*	*X*	*X*	*X*
Bougainvillea species	*Bougainvillea*	*C D*	*X*	*X*	*X*
Bromus carinatus	*California Brome*	*C*		*X*	*X*
Bulbine frutescens	*Stalked Bulbine*	*D*		*X*	*X*
Bulbine frutescens 'Hallmark'	*Dwarf Orange Bulbine*	*D*		*X*	*X*
Bulbine frutescens 'Yellow'	*Yellow bulbine*	*D*		*X*	*X*
Buxus japonica	*Japanese Boxwood*	*C*		*X*	*X*
Buxus mic. japonica 'Compacta'	*Green Beauty Boxwood*	*C*		*X*	*X*
Buxus mic. japonica 'Green Beauty'	*Japanese Boxwood*	*C*		*X*	*X*
Calliandra californica	*Baja Fairy Duster*	*C D*	*X*	*X*	*X*
Calliandra eriophylla	*Fairy Duster*	*C D*	*X*	*X*	*X*
Calliandra tweedii	*Brazilian Flame Bush*	*C D*	*X*	*X*	*X*
Callistemon 'Violaceus'	*Bottlebrush*	*C D*	*X*	*X*	*X*
Calycanthus occidentalis	*Spice Bush*	*C O*	*X*	*X*	*X*
Camellia japonica 'Kramer's Supreme'	*Common Camellia*	-	*X*	*X*	*X*
Camellia japonica species	*Camellia*	-	*X*	*X*	*X*
Carissa macrocarpa	*Green Carpet Natal Plum*	-	*X*	*X*	*X*
Carissa species	*Carissa*	*C D*	*X*	*X*	*X*
Carpenteria californica	*Bush Anemone*	*C D O*		*X*	*X*
Cassia species	*Cassia*	*C D*	*X*	*X*	*X*
Ceanothus g. var. hori. 'Yankee Point'	*Yankee Point Ceanothus*	*C D O*	*X*	*X*	*X*
Ceanothus gloriosus 'Point Reyes'	*Point Reyes Ceanothus*	*C D O*	*X*	*X*	*X*
Ceanothus griseus 'Louis Edmunds'	*Louis Edmunds Ceanothus*	*C D O*	*X*	*X*	*X*
Ceanothus griseus var. Horizontalis	*Carmel Creeper Ceanothus*	*C D O*	*X*	*X*	*X*
Ceanothus megacarpus	*Big Pod Ceanothus*	*C D*	*X*	*X*	*X*
Ceanothus prostrates	*Squaw Carpet Ceanothus*	*C D*	*X*	*X*	*X*

C = California Friendly
D = Drought Tolerant
O = Suitable to plant under Oaks
(1) = Acceptable plant material for Public Parkways/Medians.
(2) = Acceptable plant material for Private Homeowner Yards.
(3) = Acceptable plant material for HOA/Common Areas.

INTERIOR COMMUNITY					
Botanical Name	**Common Name**	**Suitability**	**PLANT USE**		
			Public[1]	**Private[2]**	**HOA[3]**
Shrubs (continued)					
Ceanothus spinosus	*Green Bark Ceanothus*	C D	X	X	X
Ceanothus verrucosus	*Wart-Stem Ceanothus*	C D	X	X	X
Cephalocereus senilis	*Old Man Cactus*	C D		X	X
Cephalocereus senilis	*Old Man Cactus*	C		X	X
Cercis canadensis var. mexicana	*Mexican Redbud*	C D	X	X	X
Cercis occidentalis	*Western Redbud*	C D O		X	X
Cereus hildmannianus	*Hildmann Cactus*	C D		X	X
Cereus peruvianus	*Peruvian Tree Cactus*	C D		X	X
Chrysanthemum frutescens species	*Marguerite*	-		X	X
Chrysanthemum leucanthemum	*Oxeye Daisy*	-		X	X
Cistus hybridus	*White Rockrose*	C D	X	X	X
Cistus incanus	*NCN*	C D	X	X	X
Cistus incanus ssp. Corsicus	*NCN*	C D	X	X	X
Cistus salvifolius	*Sageleaf Rockrose*	C D	X	X	X
Cistus x purpureus	*Orchid Rockrose*	C D	X	X	X
Cleome isomeris	*Bladderpod Spiderflower*	C D		X	X
Clivia miniata	*Kaffir lily*	-	X	X	X
Clivia miniata Flame ™	*Flame ™ Kaffir Lily*	-	X	X	X
Cneoridium dumosum	*Bush Rue*	-	X	X	X
Cocculus laurifolius	*Laurelleaf Snail Seed*	-	X	X	X
Coleonema pulchrum 'Gold Sunset'	*Golden Breath of Heaven*	C D	X	X	X
Comarostaphylis diversifolia	*Summer Holly*	C D	X	X	X
Coprosma baueri	*Mirror Plant*	C	X	X	X
Coprosma kirkii	*Creeping Coprosma*	C	X	X	X
Coprosma pumila	*Prostrate Mirror Plant*	C	X	X	X
Coprosma repens	*Mirror Plant*	C	X	X	X
Coprosma repens 'Variegata'	*Variegated Mirror Plant*	C	X	X	X
Correa 'Ivory Bells'	*Ivory Bells Australian Fuchsia*	C D	X	X	X
Cotoneaster aprneyi	*NCN*	C	X	X	X
Cotoneaster buxifolius	*NCN*	C	X	X	X
Cotoneaster species (Franchetii, Lacteus, Pannosus Prohibited)	*Cotoneaster*	C D	X	X	X
Crassula arborescens	*Jade Plant*	C D		X	X
Crassula species	*Silver Jade Plant*	C D		X	X

C = California Friendly
D = Drought Tolerant
O = Suitable to plant under Oaks
(1) = Acceptable plant material for Public Parkways/Medians.
(2) = Acceptable plant material for Private Homeowner Yards.
(3) = Acceptable plant material for HOA/Common Areas.

INTERIOR COMMUNITY					
Botanical Name	**Common Name**	**Suitability**	**PLANT USE**		
			Public[1]	**Private[2]**	**HOA[3]**
Shrubs (continued)					
Crassula argentea	*Donkey Tail*	C D		X	X
Crassula ovata	*Jade Tree*	C		X	X
Cuphea hyssopifolia 'Lavender'	*False Heather*	C D	X	X	X
Cuphea llavea	*Bat-Faced Cuphea*	C	X	X	X
Cyathea cooperi	*Australian Tree Fern*	-	X	X	X
Cyclamen persicum	*Cyclamen*	D		X	X
Cyperus alternifolius	*Umbrella Flatsedge*	C D		X	X
Cyperus papyrus	*Egyptian Paper Reed*	C D		X	X
Cytisus praecox 'Allgold'	*Warminster Broom*	D	X	X	X
Dasylirion wheeleri	*Grey Desert Spoon*	C D	X	X	X
Delosperma 'Alba'	*White Trailing Ice Plant*	C D	X	X	X
Dendromecon rigida	*Bush Poppy*	C D	X	X	X
Dichelostemma pulchellum	*Blue Dicks*	C D	X	X	X
Dicksonia antarctica	*Tasmanian Tree Fern*	C	X	X	X
Dietes vegeta	*Butterfly Iris*	C D	X	X	X
Dodonaea viscosa	*Hopseed Bush*	C D	X	X	X
Dodonaea viscosa 'Purpurea'	*Purple Leafed Hopseed Bush*	C D	X	X	X
Doryanthes palmeri	*Spear Lily*	C	X	X	X
Dorycnium hirsutum	*Hairy Canary Clover*	D	X	X	X
Dracaena draco	*Dragon Tree*	C D	X	X	X
Dudleya brittonii	*Dudleya*	C D		X	X
Dudleya caespitosa	*Sea Lettuce*	C D O		X	X
Dudleya hassei	*Hasse's Dudleya*	C D O		X	X
Dudleya lanceolata	*Lance-leaved Dudleya*	C D O		X	X
Dudleya pulverulenta	*Chalk Dudleya*	C D		X	X
Dudleya viscida	*San Juan Live Forever*	C D O		X	X
Echeveria 'Imbricate'	*Hen and Chicks*	C D	X	X	X
Echeveria species	*Echeveria*	C D	X	X	X
Echinocactus grusonii	*Golden Barrel Cactus*	C D		X	
Echium fastuosum	*Pride of Madeira*	C D		X	X
Echium fastuosum 'Select Blue'	*Select Blue*	C D		X	X
Elaeagnus multiflora	*Elaeagnus*	C D		X	X
Elaeagnus pungens	*Silver Berry*	C D		X	X
Encelia californica	*California Encelia*	C		X	X

C = California Friendly
D = Drought Tolerant
O = Suitable to plant under Oaks
[1] = Acceptable plant material for Public Parkways/Medians.
[2] = Acceptable plant material for Private Homeowner Yards.
[3] = Acceptable plant material for HOA/Common Areas.

INTERIOR COMMUNITY					
Botanical Name	**Common Name**	**Suitability**	**PLANT USE**		
			Public[1]	**Private[2]**	**HOA[3]**
Shrubs (continued)					
Encelia densiflora	*Brittlebush*	C D		X	X
Encelia farinosa	*Brittlebush*	C D		X	X
Encelia frutescens	*Green Brittlebush*	C D		X	X
Epilobium californica	*California Fuchsia*	C D		X	X
Escallonia species	*Escallonia varieties*	C	X	X	X
Euphorbia biglandulosa	*Gopher Plant*	C D		X	X
Euphorbia characias	*Euphorbia*	C D		X	X
Euphorbia rigida	*Yellow Spurge*	C D		X	X
Euphorbia tirucalli 'Sticks on Fire'	*Sticks on Fire*	C D		X	X
Fallugia paradoxa	*Apache Plume*	C D		X	X
Fatshedera lizei	*Botanical Wonder*	C	X	X	X
Fatsia japonica	*Japanese Fatsia*	C	X	X	X
Feijoa sellowiana	*Pineapple Guava*	C	X	X	X
Ferocactus viridescens	*Barrel Cactus*	C D		X	X
Fremontodendron 'California Glory'	*Flannel Bush*	C D		X	X
Fremontodendron californicum	*California Flannel Bush*	C D		X	X
Fremontodendron decumbens hybrid	*Hybrid Flannel Bush*	C D		X	X
Fremontodendron 'El Dorado Gold'	*El Dorado Gold Fremontia*	C D		X	X
Fremontodendron 'Ken Taylor'	*Ken Taylor Flannel Bush*	C D		X	X
Fremontodendron 'Pacific Sunset'	*Pacific Sunset Flannel Bush*	C D		X	X
Galvezia species	*Snapdragon*	C D		X	X
Galvezia speciosa 'Firecracker'	*Firecracker Snapdragon*	C D		X	X
Gardenia jasminoides	*Cape-jasmine*	C	X	X	X
Genista racemosa	*Sweet Broom*	C D		X	X
Geranium incanum	*Crane's Bill*	C D		X	X
Graptopetalum paraguayense	*Ghost Plant, Mother of Pearl Plant*	C		X	X
Grevillea species 'Noelii'	*Grevillea*	C D	X	X	X
Grewia occidentalis	*Lavender Starflower*	C	X	X	X
Hakea laurina	*Sea Urchin Hakea*	C D	X	X	X
Hakea suaveolens	*Sweet Hakea*	C D	X	X	X
Hebe 'Co-ed'	*Veronica 'co-ed'*	C	X	X	X
Hebe 'Evansii'	*Veronica Rubra*	C	X	X	X
Hebe 'Patty's Purple'	*Veronica 'Patty's Purple'*	C	X	X	X
Hebe 'Veronica Lake'	*Veronica Lake Hebe*	C	X	X	X

C = California Friendly
D = Drought Tolerant
O = Suitable to plant under Oaks
[1] = Acceptable plant material for Public Parkways/Medians.
[2] = Acceptable plant material for Private Homeowner Yards.
[3] = Acceptable plant material for HOA/Common Areas.

INTERIOR COMMUNITY					
Botanical Name	**Common Name**	**Suitability**	**PLANT USE**		
			Public(1)	**Private(2)**	**HOA(3)**
Shrubs (continued)					
Hemerocallis species	*Hemerocallis*	C D	X	X	X
Hesperaloe funifera	*Giant Hesperaloe*	C D		X	X
Hesperaloe funifera	*Giant Hesperaloe*	C D		X	X
Heteromeles arbutifolia	*Toyon*	C D O		X	X
Heuchera species	*Coral Bell*	C D O		X	X
Hibiscus species	*Hibiscus*	C	X	X	X
Horkelia cuneata	*Mesa horkelia*	C		X	X
Hydrangea macrophylla	*Hydrangea*	C		X	X
Hydrangea macrophylla Pink 'n Pretty ™	*Pink 'n Pretty ™ Hydrangea*	C		X	X
Hydrangea macrophylla 'Variegata'	*Hydrangea*	C		X	X
Hydrangea macrophylla 'White'	*Hydrangea*	C		X	X
Hypericum calycinum	*Creeping St. John's Wort*	D		X	X
Hypericum frondosum	*Golden St. Johnswort*	D		X	X
Hypericum frondosum 'Sunburst'	*Sunburst Hypericum*	D		X	X
Ilex species (Aquifolium Prohibited)	*Ilex*	C D	X	X	X
Iris Douglasiana	*Douglas Iris*	C D O		X	X
Isomeris arborea	*Bladderpod*	C D O		X	X
Kalanchoe beharensis	*Felt Plant*	C D		X	X
Kalanchoe pumila	*Flower Dust Plant*	C D		X	X
Kniphofia uvaria	*Red Hot Poker*	C D	X	X	X
Lamium maculatum	*Dead Nettle*	C		X	X
Lamium maculatum 'Beacon Silver'	*Beacon Silver Dead Nettle*	C		X	X
Lampranthus aurantiacus	*Ice Plant*	C D	X	X	X
Lampranthus productus	*Lampranthus*	C D	X	X	X
Lampranthus spectabilis	*Trailing Ice Plant*	C D	X	X	X
Lampranthus spectabilis 'Rose'	*Rose Trailing Ice Plant*	C D	X	X	X
Lantana camara cultivars	*Yellow Lantana*	C D	X	X	X
Lantana camara montevidensis	*Trailing Lantana*	C D	X	X	X
Lantana species	*Lantana*	C D	X	X	X
Lavandula angustifolia 'Hidcote'	*Hidcote Lavender*	C D	X	X	X
Lavandula dentata 'Candicans'	*Candicans French Lavender*	C D	X	X	X
Lavandula heterophylla	*Sweet Lavender*	C D	X	X	X
Lavandula multifida	*Fernleaf Lavender*	C D	X	X	X
Lavandula stoechas	*Spanish Lavender*	C D	X	X	X

C = California Friendly
D = Drought Tolerant
O = Suitable to plant under Oaks
(1) = Acceptable plant material for Public Parkways/Medians.
(2) = Acceptable plant material for Private Homeowner Yards.
(3) = Acceptable plant material for HOA/Common Areas.

INTERIOR COMMUNITY					
Botanical Name	**Common Name**	**Suitability**	**PLANT USE**		
			Public[1]	**Private[2]**	**HOA[3]**
Shrubs (continued)					
Lavandula stoechas 'Otto Quast'	*Otto Quast Spanish Lavender*	C D	X	X	X
Lavandula x intermedia 'Provence'	*Provence Lavender*	C D	X	X	X
Lavatera 'Purisima'	*Purisma Tree Mallow*	C D	X	X	X
Leptospermum laevigatum	*Australian Tea Tree*	C D	X	X	X
Leptospermum species	*Leptospermum*	C D	X	X	X
Leucophyllum frutescens	*Texas Ranger*	C D	X	X	X
Leucophyllum species	*Leucophyllum*	C D	X	X	X
Ligustrum japonicum 'Texanum'	*Wax Leaf Privet*	C D	X	X	X
Ligustrum lucidum	*Glossy Privet*	C D		X	X
Limonium californicum	*Marsh Rosemary*	C D		X	X
Limonium perezii	*Sea Lavender*	C D	X	X	X
Liriope muscari species	*Lily Turfs*	C	X	X	X
Lobelia laxiflora	*Mexican Bush Lobelia*	D	X	X	X
Lotus dendroideus	*Coastal Deer Weed*	C D		X	X
Lotus heermannii	*Woolly Lotus*	C		X	X
Lotus scoparius	*Deerweed*	C D		X	X
Lupinus albifrons	*Silver Bush Lupine*	C D		X	X
Lupinus chamissonis	*Dune Lupine*	C D		X	X
Lycium californicum	*California boxthorn*	C D		X	X
Mahonia 'Golden Abundance'	*Golden Abundance Mahonia*	C D		X	X
Mahonia nevenii	*Nevin Mahonia*	C D		X	X
Mahonia species	*NCN*	C D		X	X
Malephora lutea	*Rocky Point Ice Plant*	C D		X	X
Malosma laurina	*Laurel Sumac*	C D		X	X
Manfreda maculosa	*Manfreda*	C		X	X
Mimulus aurantiacus	*Sticky Monkey Flower*	C D O		X	X
Mimulus bifidus	*Santa Lucia Monkey Flower*	C D O		X	X
Mimulus longiflorus	*Bush Monkeyflower*	C D O		X	X
Mimulus puniceus	*Red Monkey Flower*	C D O		X	X
Mimulus species	*Monkey Flower*	C D O		X	X
Muhlenbergia cap. 'Regal Mist'	*Pink Muhly*	C D	X	X	X
Myoporum debile	*NCN*	C	X	X	X
Myoporum parvifolium	*NCN*	C	X	X	X
Myrica californica	*Pacific Wax Myrtle*	C	X	X	X
Myrsine africana	*African Box*	C	X	X	X

C = California Friendly
D = Drought Tolerant
O = Suitable to plant under Oaks
[1] = Acceptable plant material for Public Parkways/Medians.
[2] = Acceptable plant material for Private Homeowner Yards.
[3] = Acceptable plant material for HOA/Common Areas.

INTERIOR COMMUNITY					
Botanical Name	**Common Name**	**Suitability**	**PLANT USE**		
			Public[1]	**Private[2]**	**HOA[3]**
Shrubs (continued)					
Myrtus communis	*True Myrtle*	C D	X	X	X
Myrtus communis 'Boetica'	*Myrtle*	C D	X	X	X
Myrtus communis 'Compacta'	*Greek Myrtle*	C D	X	X	X
Myrtus communis 'Variegata'	*Variegated Common Myrtle*	C D	X	X	X
Nandina species	*Nandina*	C D	X	X	X
Nephrolepis cordifolia	*Southern Sword Fern*	C D	X	X	X
Nolina beldingii	*Bear Grass*	C D	X	X	X
Nolina bigelovii	*Desert Nolina*	C D	X	X	X
Nolina cismontane	*Chapparal Nolina*	C D	X	X	X
Nolina parryi	*Parry's Beargrass*	C D	X	X	X
Oenothera species	*Evening Primrose*	C D	X	X	X
Optunia oricola	*Oracle Cactus*	C D		X	X
Optunia profilerus	*Coast Cholla*	C D		X	X
Opuntia littoralis	*Prickley Pear*	C D		X	X
Opuntia species	*Opuntia*	C D		X	X
Opuntia species	*Prickly Pear, Cholla*	C D		X	X
Osmanthus fragrans	*Sweet Olive, Tea Olive*	C D	X	X	X
Osteospermum fruticosum 'Hybrid White'	*Freeway Daisy*	C D	X	X	X
Pachypodium lamieri	*Madagascar Palm*	C D	X	X	X
Pedilanthus macrocarpus	*Lady's Slippers*	D	X	X	X
Pedilanthus macrocarpus	*Lady's Slippers*	C	X	X	X
Penstemon heterophyllus	*Foothill Penstemon*	C	X	X	X
Penstemon species	*Penstemon*	C D	X	X	X
Philodendron selloum	*Split Leaf Philodendron*	C	X	X	X
Phormium species	*New Zealand Flax*	C D	X	X	X
Photinia x fraseri	*Fraser Photinia*	C	X	X	X
Phyllostachys aurea (In Contained Plant Area)	*Golden Bamboo*	-		X	X
Phyllostachys bambusoides (In Contained Plant Area)	*Giant Timber Bamboo*	-		X	X
Pilea cadierei	*Creeping Charlie*	-	X	X	X
Pilea cadierei	*Creeping Charlie*	-	X	X	X
Pinus contorta	*Shore Pine*	-	X	X	X
Pinus monophylla	*Singleleaf Pinon*	C D	X	X	X
Pittosporum species	*Pittosporum*	C D	X	X	X

C = California Friendly
D = Drought Tolerant
O = Suitable to plant under Oaks
[1] = Acceptable plant material for Public Parkways/Medians.
[2] = Acceptable plant material for Private Homeowner Yards.
[3] = Acceptable plant material for HOA/Common Areas.

INTERIOR COMMUNITY					
Botanical Name	**Common Name**	**Suitability**	**PLANT USE**		
			Public[1]	**Private[2]**	**HOA[3]**
Shrubs (continued)					
Plumbago auriculata	*Cape Plumbago*	C D	X	X	X
Plumbago capensis	*Cape Plumbago*	C D	X	X	X
Plumbago scandens 'Summer Snow'	*White Desert Plumbago*	C D	X	X	X
Podocarpus species	*Podocarpus*	C	X	X	X
Portulacaria afra	*Elephant's Food*	C D	X	X	X
Prunus caroliniana	*Carolina Laurel Cherry*	C D	X	X	X
Prunus caroliniana 'Compacta'	*Dwarf Carolina Laurel Cherry*	C D	X	X	X
Prunus ilicifolia 'Ilicfolia'	*Holly Leaf Cherry*	C D	X	X	X
Prunus lyonii	*Catalina Cherry*	C D	X	X	X
Prunus species (Cerasifera Prohibited)	*Laurel Cherry*	C	X	X	X
Psidium calleianum 'Rincon'	*Rincon Strawberry Guava*	C D	X	X	X
Punica granatum	*Pomegranate*	C	X	X	X
Pyracantha species	*Firethorn*	C D	X	X	X
Quercus dumosa	*Scrub Oak*	C D		X	X
Rhamnus californica	*California Coffeeberry*	C D O		X	X
Rhamnus californica 'Eve Case'	*Eve Case Coffeeberry*	C D O		X	X
Rhamnus californica 'Mound San Bruno'	*Mound San Bruno Coffeeberry*	C D O		X	X
Rhamnus crocea	*Redberry Buckthorn*	C D O		X	X
Rhamnus crocea species insula	*NCN*	C D O		X	X
Rhamnus species	*NCN*	C D		X	X
Rhaphiolepis species	*Indian Hawthorn*	C	X	X	X
Rhus integrifolia	*Lemonade Berry*	C D O	X	X	X
Rhus lentii	*Pink Flowering Sumac*	C D	X	X	X
Rhus ovata	*Sugar Bush*	C D	X	X	X
Rhus species	*Sumac*	C D	X	X	X
Ribes aureum	*Golden Currant*	C D O		X	X
Ribes indecorum	*White Flowered Currant*	C D O		X	X
Ribes sanguineum glutinosum	*Pink Flowering Currant*	C D O		X	X
Ribes sanguineum 'White Icicle'	*Flowering Currant*	C D O		X	X
Ribes species	*Currant*	C D O		X	X
Ribes speciosum	*Fuchsia-flowering Gooseberry*	C D O		X	X
Ribes viburnifolium	*Evergreen Currant*	C D O		X	X
Romneya coulteri	*Matilija Poppy*	C D	X	X	X
Romneya coulteri 'White Cloud'	*White Cloud Matilija Poppy*	C D	X	X	X
Rosa californica	*California Wild rose*	C O	X	X	X

C = California Friendly
D = Drought Tolerant
O = Suitable to plant under Oaks
(1) = Acceptable plant material for Public Parkways/Medians.
(2) = Acceptable plant material for Private Homeowner Yards.
(3) = Acceptable plant material for HOA/Common Areas.

INTERIOR COMMUNITY					
Botanical Name	**Common Name**	**Suitability**	**PLANT USE**		
			Public[1]	**Private[2]**	**HOA[3]**
Shrubs (continued)					
Rosmarinus officinalis	*Rosemary*	C D	X	X	X
Rosmarinus species	*Rosemary*	C D	X	X	X
Salvia greggii	*Autumn Sage*	C D	X	X	X
Salvia sonomensis	*Creeping Sage*	C D	X	X	X
Salvia spathacea	*Hummingbird Sage*	C O	X	X	X
Salvia species (Aethiopis, Mellifera Prohibited)	*Sage*	C D	X	X	X
Sambucus mexicana	*Blue Elderberry*	C D	X	X	X
Santolina chamaecyparissus	*Lavender Cotton*	C D	X	X	X
Santolina virens	*Green Lavender Cotton*	C D	X	X	X
Schefflera actinophylla	*Schefflera*	D	X	X	X
Schefflera arboricola	*Pinarf Schefflera*	D	X	X	X
Sedum lineare 'Variegatum'	*Stringy Stonecrop*	C D	X	X	X
Sedum morganianum	*Donkey Tail*	C D	X	X	X
Sedum sieboldii	*October Daphne*	C D	X	X	X
Sedum spathulifolium	*Stonecrop*	C D	X	X	X
Sedum spathulifolium 'Purpureum'	*Purple Stonecrop*	C D	X	X	X
Sedum species	*Stonecrop*	C D	X	X	X
Sedum spectabile 'Brilliant'	*Brilliant Showy Stonecrop*	C D	X	X	X
Simmondsia chinensis	*Jojoba*	C D	X	X	X
Sophora secundiflora	*Texas Mountain Laurel*	C D	X	X	X
Strelitzia reginae	*Bird of Paradise*	C	X	X	X
Tecoma capensis	*Cape Honeysuckle*	C D	X	X	X
Tecoma stans	*Yellow Bells*	C	X	X	X
Tecomaria capensis	*Cape Honeysuckle*	C	X	X	X
Teucrium chamaedrys	*Trailing Germander*	C D		X	X
Teucrium chamaedrys 'Prostratum'	*Prostrate Germander*	C D		X	X
Teucrium cossonii majoricum	*Germander*	C D		X	X
Teucrium fruticans	*Bush Germander*	C D		X	X
Teucrium fruticans 'Azurea'	*Azurea Bush Germander*	C D		X	X
Thalictrum fendleri v. polycarpum	*Meadow Rue*	C D O		X	X
Thuja occidentalis	*White Cedar*	D		X	X
Thuja occidentalis 'Smaragd'	*Emerald Cedar*	D		X	X
Trachelospermum jasminoides	*Star Jasmine*	C	X	X	X
Trichostema lanatum	*Wooly Blue Curls*	C D		X	X

C = California Friendly
D = Drought Tolerant
O = Suitable to plant under Oaks
(1) = Acceptable plant material for Public Parkways/Medians.
(2) = Acceptable plant material for Private Homeowner Yards.
(3) = Acceptable plant material for HOA/Common Areas.

INTERIOR COMMUNITY					
Botanical Name	**Common Name**	**Suitability**	**PLANT USE**		
			Public[1]	**Private[2]**	**HOA[3]**
Shrubs (continued)					
Verbena lilacina	*Lilac Verbena*	C D	X	X	X
Verbena lilacina 'De La Mina'	*Cedros Island Verbena*	C D	X	X	X
Verbena peruviana	*Verbena*	C D	X	X	X
Verbena peruviana 'Homestead Purple'	*Homestead Purple Verbena*	C D	X	X	X
Verbena peruviana 'Tapien Soft Pink'	*Tapien Soft Pink Verbena*	C D	X	X	X
Verbena peruviana 'Temari Violet'	*Lipstick Verbena*	C D	X	X	X
Verbena peruviana 'White'	*Verbena*	C D	X	X	X
Viburnum dentatum	*Arrowwood Viburnum*	C D	X	X	X
Viburnum species	*Viburnum*	C	X	X	X
Westringia fruticosa	*Australian Rosemary*	C D	X	X	X
Westringia fruticosa 'Morning Light'	*Morning Light Australian*	C D	X	X	X
Westringia fruticosa 'Wynyabbie Gem'	*Coast Rosemary*	C D	X	X	X
Woodwardia fimbriata	*Giant Chain Fern*	C	X	X	X
Xylosma congestum	*Shiny Xylosma*	C	X	X	X
Yucca baileyi	*Bailey's Yucca*	D	X	X	X
Yucca elata	*Soaptree Yucca*	C D	X	X	X
Yucca filamentosa 'Golden Sword'	*Golden Sword Yucca*	C D	X	X	X
Yucca glauca	*Spanish Bayonet*	C D	X	X	X
Yucca glauca	*Spanish Bayonet*	C D	X	X	X
Yucca gloriosa	*Spanish Dagger*	C D	X	X	X
Yucca harrimaniae	*Harriman's Yucca*	D	X	X	X
Yucca pallida	*Twistleaf Yucca*	D	X	X	X
Yucca rostrata	*Beaked Yucca*	C D	X	X	X
Yucca schidigera	*Mohave Yucca*	C D	X	X	X
Yucca torreyi	*Torrey*	D	X	X	X
Yucca whipplei	*Our Lord's Candle*	C D	X	X	X
Groundcover					
Abutilon palmeri	*Indian Mallow*	C D	X	X	X
Achillea millefolium	*Common Yarrow*	C D O	X	X	X
Achillea tomentosa	*Woolly Yarrow*	C	X	X	X
Aeonium decorum	*Aeonium*	C	X	X	X
Aeonium simsii	*NCN*	C	X	X	X
Aloe nobilis	*Gold Tooth Aloe*	C D	X	X	X
Aptenia cordifolia	*Hearts And Flowers*	C	X	X	X
Arctostaphylos 'Carmel Sur'	*Carmel Sur Manzanita*	C D	X	X	X

C = California Friendly
D = Drought Tolerant
O = Suitable to plant under Oaks
[1] = Acceptable plant material for Public Parkways/Medians.
[2] = Acceptable plant material for Private Homeowner Yards.
[3] = Acceptable plant material for HOA/Common Areas.

INTERIOR COMMUNITY					
Botanical Name	**Common Name**	**Suitability**	**PLANT USE**		
			Public[1]	**Private[2]**	**HOA[3]**
Groundcover (continued)					
Arctostaphylos 'Emerald Carpet'	*Emerald Carpet Manzanita*	*C D*	*X*	*X*	*X*
Arctostaphylos 'Pacific Mist'	*Pacific Mist Manzanita*	*C D O*	*X*	*X*	*X*
Arctostaphylos 'Point Reyes'	*Point Reyes Manzanita*	*C D*	*X*	*X*	*X*
Armeria maritima	*Common Thrift*	*C D*	*X*	*X*	*X*
Artemisia caucasica	*Caucasian Artemisia*	*D*	*X*	*X*	*X*
Artemisia frigida	*Fringed Sage*	*D*	*X*	*X*	*X*
Aquilegia formosa	*Western Columbine*	*C O*	*X*	*X*	*X*
Baccharis species	*Baccharis*	*C D*	*X*	*X*	*X*
Camissonia cheiranthifolia	*Beach Suncap*	*C*	*X*	*X*	*X*
Campanula carpatica	*Bellflower*	*C*	*X*	*X*	*X*
Campanula carpatica 'Blue Clips'	*Blue Clips Bellflower*	*C*	*X*	*X*	*X*
Campanula elatines garganica	*Adriatic Bellflower*	*C*	*X*	*X*	*X*
Campanula poscharskyana	*Serbian Bellflower*	*C D*	*X*	*X*	*X*
Ceanothus gloriosus	*Point Reyes Creeper*	*C D O*	*X*	*X*	*X*
Ceanothus griseus hor. 'Yankee Point'	*Yankee Point California Lilac*	*C D O*	*X*	*X*	*X*
Ceanothus hearstiorum	*Hearst California Lilac*	*C D*	*X*	*X*	*X*
Ceanothus 'Joyce Coulter'	*Ceanothus Joyce Coulter*	*C D O*	*X*	*X*	*X*
Ceanothus maritimus	*Maritime Ceanothus*	*C*	*X*	*X*	*X*
Ceanothus 'Point Reyes'	*Point Reyes Ceanothus*	*C D O*	*X*	*X*	*X*
Ceanothus 'Yankee Point'	*Yankee Point Ceanothus*	*C D*	*X*	*X*	*X*
Cerastium tomentosum	*Snow In Summer*	*C D*	*X*	*X*	*X*
Cercocarpus species	*Mahogany*	*C D*	*X*	*X*	*X*
Cistus cripus	*NCN*	*C*	*X*	*X*	*X*
Coreopsis lancelata	*NCN*	*C*	*X*	*X*	*X*
Coreopsis maritima	*Sea Dahlia*	*C D*	*X*	*X*	*X*
Correa pulchella	*Australian Fuscia*	*D*	*X*	*X*	*X*
Cotoneaster dammeri	*Bearberry Cotoneaster*	*C D*	*X*	*X*	*X*
Cotoneaster dammeri 'Lowfast'	*Lowfast Cotoneaster*	*C D*	*X*	*X*	*X*
Cotoneaster horizontalis	*Rock Cotoneaster*	*C D*	*X*	*X*	*X*
Crassula lacteal	*NCN*	*D*	*X*	*X*	*X*
Delosperma 'Alba'	*White Trailing Ice Plant*	*C D*	*X*	*X*	*X*
Dianthus sp.	*Carnation*	-	*X*	*X*	*X*
Dichondra micrantha	*Dichondra*	-	*X*	*X*	*X*
Drosanthemum floribundum	*Rosea Ice Plant*	*C*	*X*	*X*	*X*
Drosanthemum hispidum	*Ice Plant*	*C*	*X*	*X*	*X*

C = California Friendly
D = Drought Tolerant
O = Suitable to plant under Oaks
[1] = Acceptable plant material for Public Parkways/Medians.
[2] = Acceptable plant material for Private Homeowner Yards.
[3] = Acceptable plant material for HOA/Common Areas.

INTERIOR COMMUNITY					
Botanical Name	**Common Name**	**Suitability**	**PLANT USE**		
			Public[1]	**Private[2]**	**HOA[3]**
Groundcover (continued)					
Drosanthemum speciosum	*Dewflower*	*C*	*X*	*X*	*X*
Drosanthemum speciosum 'Rosea'	*Rose Iceplant*	*C*	*X*	*X*	*X*
Dymondia margaretae	*Dymondia*	*C*	*X*	*X*	*X*
Epilobium californica	*California Fuchsia*	*C D*	*X*	*X*	*X*
Erigeron species	*Fleabane*	*C D O*	*X*	*X*	*X*
Erigeron glaucus	*Seaside Daisy*	*C D O*	*X*	*X*	*X*
Erigeron karvinskianus	*Mexican Daisy*	*C O*	*X*	*X*	*X*
Festuca ovina glauca	*Blue Fescue*	*C D*	*X*	*X*	*X*
Fragaria californica	*Strawberry*	*C D O*	*X*	*X*	*X*
Fragaria chiloensis	*Beach Strawberry*	*C D O*	*X*	*X*	*X*
Gazania rigens leucolaena	*Trailing Gazania*	*C*	*X*	*X*	*X*
Gazania species	*Gazania*	*C D*	*X*	*X*	*X*
Galvezia speciosa 'Firecracker'	*Firecracker Snapdragon*	*C D O*	*X*	*X*	*X*
Geranium incanum	*Cranesbill*	*C D*	*X*	*X*	*X*
Geranium san. 'New Hampshire Purple'	*New Hampshire Purple Bloody Cranesbill*	*D*	*X*	*X*	*X*
Geranium sanguineum	*Blood Red Geranium*	*D*	*X*	*X*	*X*
Garrya elliptica	*Coast Silk Tassel*	*C D O*	*X*	*X*	*X*
Hedera canariensis	*English Ivy*	*D*	*X*	*X*	*X*
Heuchera species	*Coral Bells*	*C D O*	*X*	*X*	*X*
Heuchera maxima and hybrids	*Island Alum Root*	*C D O*	*X*	*X*	*X*
Iberis sempervirens	*Candytuft*	*C D*	*X*	*X*	*X*
Iberis umbellatum	*Globe Candytuft*	*C*	*X*	*X*	*X*
Iris Douglasiana	*Douglas Iris*	*C D O*	*X*	*X*	*X*
Iva hayesiana	*San Diego Marsh Elder*	*C D*	*X*	*X*	*X*
Lampranthus aurantiacus	*Bush Ice Plant*	-	*X*	*X*	*X*
Lampranthus filicaulis	*Redondo Creeper*	-	*X*	*X*	*X*
Lampranthus spectabilis	*Trailing Ice Plant*	*C*	*X*	*X*	*X*
Lantana camara cultivars	*Yellow Lantana*	*C D*	*X*	*X*	*X*
Lantana camara montevidensis	*Trailing Lantana*	*C D*	*X*	*X*	*X*
Lantana species	*Lantana*	*C D*	*X*	*X*	*X*
Lasthenia californica	*Dwarf Goldfields*	-	*X*	*X*	*X*
Lobelia erinus	*Lobelia*	*C*	*X*	*X*	*X*
Lonicera 'Graham Thomas'	*Graham Thomas Honeysuckle*	*C*	*X*	*X*	*X*
Lonicera x Heckrottii	*Gold Flame Honeysuckle*	*C*	*X*	*X*	*X*

C = California Friendly
D = Drought Tolerant
O = Suitable to plant under Oaks
(1) = Acceptable plant material for Public Parkways/Medians.
(2) = Acceptable plant material for Private Homeowner Yards.
(3) = Acceptable plant material for HOA/Common Areas.

INTERIOR COMMUNITY					
Botanical Name	**Common Name**	**Suitability**	**PLANT USE**		
			Public[1]	**Private[2]**	**HOA[3]**
Groundcover (continued)					
Lonicera japonica 'Halliana'	*Halls Japanese Honeysuckle*	C	X	X	X
Lonicera subspicata	*Wild Honeysuckle*	C	X	X	X
Lupinus arizonicus	*Desert Lupine*	C D	X	X	X
Lupinus benthamii	*Spider Lupine*	C	X	X	X
Lupinus bicolor	*Sky Lupine*	C	X	X	X
Lupinus sparsiflorus	*Loosely Flowered Lupine*	C	X	X	X
Malephora lutea	*Rocky Point Ice Plant*	C	X	X	X
Mimulus species and hybrids	*Monkey Flower*	C D O	X	X	X
Mirabilis californica	*California Four O'Clock*	C	X	X	X
Monardella species	*Monardella*	C D	X	X	X
Myoporum parvifolium	*Myoporum*	C D	X	X	X
Myoporum parvifolium 'Putah Creek'	*Wide-leaf Myoporum*	C D	X	X	X
Oenothera speciosa 'Rosea'	*Showy Evening Primrose*	C D	X	X	X
Oenothera stubbei	*Saltillo Evening Primrose*	C	X	X	X
Ophiopogon japonicus	*Mondo Grass*	C D	X	X	X
Ophiopogon pla. 'Nigrescens'	*Lily Turf*	C D	X	X	X
Pelargonium peltatum	*Ivy Geranium*	-	X	X	X
Penstemon heterophyllus	*Foothill Penstemon*	C	X	X	X
Penstemon spectabilis	*Royal Beard Tongue*	C D	X	X	X
Potentilla tabernaemontanii	*Spring Cinquefoil*	C D	X	X	X
Prunus ilicifolia species lyonii	*Holly Leaf Cherry*	C D O	X	X	X
Rhamnus species		C D O	X	X	X
Rhus species		C D	X	X	X
Ribes malvaceum	*Chaparral Currant*	C D O	X	X	X
Ribes viburnifolium	*Evergreen Currant*	C D O	X	X	X
Salvia clevelandii	*Cleveland Sage*	C D	X	X	X
Salvia 'Dara's Choice'	*Dara's Choice Creeping Sage*	C D	X	X	X
Salvia leucophylla 'Pt. Sal'	*Purple Leaf Sage*	C D	X	X	X
Scaevola 'Mauve Clusters'	*Fan Flower*	C	X	X	X
Sedum spurium 'Dragon's Blood'	*Two Row Stone Crop*	C D	X	X	X
Senecio Douglasii	*Douglas Ragwort*	C D	X	X	X
Shepherdia argentea	*Silver Buffaloberry*	C	X	X	X
Sisyrinchium species	*Blue-eyed Grass*	C	X	X	X
Soleirolia soleirolli	*Baby Tears, Angel's Tears*	C	X	X	X
Stachys byzantina 'Primrose Heron'	*Primrose Heron Lamb's Ear*	C D	X	X	X

C = California Friendly
D = Drought Tolerant
O = Suitable to plant under Oaks
[1] = Acceptable plant material for Public Parkways/Medians.
[2] = Acceptable plant material for Private Homeowner Yards.
[3] = Acceptable plant material for HOA/Common Areas.

INTERIOR COMMUNITY					
Botanical Name	**Common Name**	**Suitability**	**PLANT USE**		
			Public[1]	**Private[2]**	**HOA[3]**
Groundcover (continued)					
Teucrium chamaedrys	*Trailing Germander*	C D	X	X	X
Teucrium chamaedrys 'Prostratum'	*Prostrate Germander*	C D	X	X	X
Thalictrum fendleri var. polycarpum	*Meadow Rue*	C D O	X	X	X
Thymus praecox 'Purple Carpet'	*Purple Carpet Creeping Thyme*	C D	X	X	X
Thymus praecox arcticus	*Creeping Thyme*	C	X	X	X
Trachelospermum asiaticum	*Yellow Star Jasmine*	C	X	X	X
Verbena species	*Verbena*	C D	X	X	X
Vinca minor	*Periwinkle*	D	X	X	X
Vinca minor 'Sterling Silver'	*Sterling SIlver Periwinkle*	D	X	X	X
Zauschneria californica	*California Fuchsia*	C D	X	X	X
Zinnia acerosa	*Desert Zinnia*	C D	X	X	X
Zinnia angustifolia 'Classic'	*Zinnia*	C D	X	X	X
Vines					
Actinidia arguta	*Bower Actinidia*	D	X	X	X
Antigonon leptopus	*San Miguel Coral Vine*	C D	X	X	X
Antigonon leptopus 'Baja Red'	*Red Queen Wreath*	C D	X	X	X
Antigonon leptopus alba	*Queen's Wreath*	C D	X	X	X
Bignonia cherere	*Blood Red Trumpet Vine*	C D	X	X	X
Bougainvillea species	*Bougainvillea*	C D	X	X	X
Callaeum lilacaena	*Lilac Orchid Vine*	D	X	X	X
Callaeum macroptera	*Yellow Orchid Vine*	D	X	X	X
Calystegia macrostegia 'Anacapa Pink'	*Island Morning Glory*	C D O	X	X	X
Carpenteria californica	*Bush Anemone*	C D	X	X	X
Clematis species	*Clematis*	D O	X	X	X
Clytostoma callistegioides	*Lavender Trumpet Vine*	C	X	X	X
Distictis buccinatoria	*Scarlet Trumpet Vine*	C	X	X	X
Distictis x riversii	*Royal Trumpet Vine*	C	X	X	X
Fatshedera lizei	*Botanical Wonder*	C	X	X	X
Ficus pumila	*Creeping Fig*	C		X	X
Ficus repens	*Creeping Fig*	C		X	X
Galvezia speciosa	*Island Bush Snapdragon*	C D	X	X	X
Gelsemium sempervirens	*Carolina Jessamine*	C	X	X	X
Grewia occidentails	*Lavender Starflower*	C	X	X	X
Hardenbergia comptoniana	*Lilac Vine*	C	X	X	X
Hardenbergia violacea rosea	*Coral Pea*	C	X	X	X

C = California Friendly
D = Drought Tolerant
O = Suitable to plant under Oaks
[1] = Acceptable plant material for Public Parkways/Medians.
[2] = Acceptable plant material for Private Homeowner Yards.
[3] = Acceptable plant material for HOA/Common Areas.

INTERIOR COMMUNITY					
Botanical Name	**Common Name**	**Suitability**	**PLANT USE**		
			Public[1]	**Private[2]**	**HOA[3]**
Vines (continued)					
Ipomoea acuminata	*Blue Dawn Flower*	C D	X	X	X
Jasminum nitidum	*Angelwing Jasmine*		X	X	X
Jasminum polyanthum	*Pink Jasmine*	C	X	X	X
Keckiella cordifolia	*Climbing Penstemon*	C	X	X	X
Lantana species	*Lantana*	C D	X	X	X
Lavatera 'Purisima'	*Purisima Tree Mallow*	C D	X	X	X
Lonicera subspicata	*Chaparral Honeysuckle*	C D	X	X	X
Macfadyena unguis-cati	*Yellow Trumpet Vine*	C D	X	X	X
Mandevilla 'Alice du Pont'	*Chile Jasmine*	-	X	X	X
Mandevilla 'Red Riding Hood'	*Mandevilla*	-	X	X	X
Mandevilla splendens	*Mandevilla*	-	X	X	X
Mascagnia lilacaena	*Lilac Orchid Vine*	D	X	X	X
Mascagnia macroptera	*Golden Vine*	D	X	X	X
Merremia aurea	*Yellow Morning Glory Vine*	C D	X	X	X
Muehlenbeckia axillaris	*Creeping Wire Vine*	D	X	X	X
Pandorea jasminoides 'Lady Di'	*Jasmine Pandorea*	-	X	X	X
Pandorea pandorana	*Wonga Wonga Vine*	-	X	X	X
Parthenocissus 'Hacienda Creeper'	*Hacienda Creeper*	D	X	X	X
Parthenocissus quinquefolia	*Virginia Creeper*	-	X	X	X
Parthenocissus tricuspidata	*Boston Ivy*	-	X	X	X
Parthenocissus tricuspidata 'Veitchii'	*Boston Ivy*	-	X	X	X
Passiflora alatocaerulea	*Passion Vine*	-	X	X	X
Passiflora edulis	*Passion Fruit*	-	X	X	X
Passiflora jamesonii	*Pink Passion Vine*	-	X	X	X
Petrea volubilis	*Purple Wreath*	-	X	X	X
Plumbago capensis	*Cape Plumbago*	C D	X	X	X
Podranea ricasoleana	*Pink Trumpet Vine*	C D	X	X	X
Polygonum aubertii	*Silver Lace vine*	D	X	X	X
Potentilla tabernaemontanii	*Spring Cinquefoil*	C D	X	X	X
Rhynchospermum asiaticum	*Star Jasmine*	C	X	X	X
Ribes malvaceum	*Chapparal Currant*	C D	X	X	X
Ribes viburnifolium	*Evergreen Currant*	C D	X	X	X
Rosa californica	*California Wild Rose*	C D	X	X	X
Rosa 'Cecile Brunner'	*Cecile Brunner Rose*	C D	X	X	X
Rosa 'Golden Showers'	*Climbing Rose*	C	X	X	X

C = California Friendly
D = Drought Tolerant
O = Suitable to plant under Oaks
[1] = Acceptable plant material for Public Parkways/Medians.
[2] = Acceptable plant material for Private Homeowner Yards.
[3] = Acceptable plant material for HOA/Common Areas.

INTERIOR COMMUNITY					
Botanical Name	**Common Name**	**Suitability**	**PLANT USE**		
			Public[1]	**Private[2]**	**HOA[3]**
Vines (continued)					
Rosa 'Royal Sunset'	*Climbing Rose*	C	X	X	X
Rosa banksiae 'Alba Plena'	*White Lady Banks' Rose*	C	X	X	X
Rosa banksiae lutea	*Banksia Rose*	C	X	X	X
Rubus ursinus	*California Blackberry*	C	X	X	X
Senecio confusus	*Orange Senecio*	C	X	X	X
Solandra maxima	*Cup Of Gold Vine*	C	X	X	X
Stephanotis floribunda	*Madagascar Jasmine*	-	X	X	X
Tecoma stans	*Yellow Bells*	C	X	X	X
Tecomaria capensis	*Cape Honeysuckle*	C	X	X	X
Tecomaria capensis 'Aurea'	*Cape Honeysuckle*	C	X	X	X
Thunbergia alata	*Black Eyed Susan Vine*	C	X	X	X
Thunbergia fragrans	*Sky Flower*	C	X	X	X
Thunbergia grandiflora	*Bengal Clockvine*	C	X	X	X
Thunbergia gregorii	*Orange Clock Vine*	C	X	X	X
Trachelospermum jasminoides	*Star Jasmine*	C	X	X	X
Vitis species	*Grape*	O	X	X	X
Vitis californica 'Roger's Red'	*California Grape*	C O	X	X	X
Wisteria chinensis	*Wisteria*	-	X	X	X
Wisteria floribunda	*Japanese Wisteria*	-	X	X	X
Wisteria sinensis	*Chinese Wisteria*	-	X	X	X
Grass					
Aristida purpurea var. purpurea	*Purlpe Tree-Awn*	-		X	X
Bothriochloa barbinodis	*Silver Beardgrass*	-		X	X
Bouteloua gracilis	*Blue Grama Grass*	C D		X	X
Calamagrostis x acutiflora 'Karl Foerster'	*'Karl Foerster' Feather Reed Grass*	C O		X	X
Calamagrostis x acutiflora 'Stricta'	*'Stricta' Feather Reed Grass*	C O		X	X
Calamagrostis foliosa	*Cape Mendocino Reed Grass*	C O		X	X
Calamagrostis nutkaensis	*Pacific Reed Grass*	C O		X	X
Carex elata 'Bowles Golden'	*Bowles Golden Sedge*	C D	X	X	X
Carex glauca	*Blue Sedge*	C D	X	X	X
Carex pansa	*California Meadow Sedge*	C D	X	X	X
Carex praegracilus	*Dune Sedge*	C D	X	X	X
Carex subfusca	*Mountain Sedge*	C D	X	X	X
Carex spissa	*San Diego Sedge*	C D	X	X	X
Carex stricta	*Sedge*	C D	X	X	X

C = California Friendly
D = Drought Tolerant
O = Suitable to plant under Oaks
[1] = Acceptable plant material for Public Parkways/Medians.
[2] = Acceptable plant material for Private Homeowner Yards.
[3] = Acceptable plant material for HOA/Common Areas.

INTERIOR COMMUNITY					
Botanical Name	**Common Name**	**Suitability**	**PLANT USE**		
			Public[1]	**Private[2]**	**HOA[3]**
Grass (continued)					
Carex testacea	*Sedge*	C D	X	X	X
Carex texensis	*Texas Sedge*	C D	X	X	X
Carex tumulicola	*Foothill Sedge*	C D	X	X	X
Cyperus alt. 'Gracilis'	*Umbrella Plant*	C D		X	X
Elymus glaucus	*Blue Wildrye*	C D	X	X	X
Festuca ovina glauca	*Blue Glow Fescue*	C D	X	X	X
Festuca glauca 'Elijah Blue'	*Elijah Blue Festuca*	C D	X	X	X
Festuca mairei	*Atlas Festuca*	C D	X	X	X
Festuca rubra 'Molate'	*Pt. Molate Fescue*	C D	X	X	X
Festuca glauca 'Siskiyou Blue'	*Siskiyou Blue Festuca*	C D	X	X	X
Festuca trachyphylla	*Rana Creek*	C D	X	X	X
Helictotrichon sempervirens	*Blue Oat Grass*	C D	X	X	X
Leymus condensatus 'Canyon Prince'	*Canyon Prince Giant Wild Rye*	C D O	X	X	X
Leymus triticoides	*Creeping Wild Rye*	C O	X	X	X
Lilium humboldtii	*Humboldt Lily*	C D	X	X	X
Melica imperfecta	*Coast Melic Grass*	O	X	X	X
Miscanthus sinensis	*Maiden Grass*	C	X	X	X
Miscanthus sinensis 'Cabaret'	*'Cabaret' Jap. Silver Grass*	C	X	X	X
Miscanthus sinensis 'Kleine Fontane'	*'Kleine Fontane' Jap. Silver Grass*	C	X	X	X
Miscanthus sinensis 'Morning Light'	*'Morning Light' Jap. Silver Grass*	C	X	X	X
Miscanthus sinensis variegates	*Variegated Japanese Silver Grass*	C	X	X	X
Miscanthus species	*Grass*	C	X	X	X
Miscanthus transmorrisonensis	*Evergreen Miscanthus*	C D	X	X	X
Muhlenbergia capillaris	*Pink Muhly*	C D	X	X	X
Muhlenbergia pubescens	*Soft Blue Mexican Muhly*	C D	X	X	X
Muhlenbergia rigens	*Deer Grass*	C D	X	X	X
Muhlenbergia species	*Muhlenbergia*	C D	X	X	X
Muhlenbergia cap. 'Regal Mist'	*Pink Muhly*	C D	X	X	X
Nassella pulchra	*Purple Needlegrass*	C D O		X	X
Nassella species	*Needlegrass*	C D O		X	X
Nolina bigelovii	*Desert Nolina*	C D	X	X	X
Nolina species	*Bear Grasses*	C D	X	X	X
Ophiopogon jabburan vittata	*Snakebeard*	C D	X	X	X
Ophiopogon japonicus	*Mondo Grass*	C	X	X	X
Phalaris arundinacea 'Picta'	*Variegated Ribbon Grass*	D	X	X	X

C = California Friendly
D = Drought Tolerant
O = Suitable to plant under Oaks
[1] = Acceptable plant material for Public Parkways/Medians.
[2] = Acceptable plant material for Private Homeowner Yards.
[3] = Acceptable plant material for HOA/Common Areas.

INTERIOR COMMUNITY					
Botanical Name	**Common Name**	**Suitability**	**PLANT USE**		
			Public[1]	**Private[2]**	**HOA[3]**
Grass (continued)					
Phalaris arundinacea 'Rosea'	*Ribbon Grass*	*D*	*X*	*X*	*X*
Scirpus californica	*California Bulrush*	*C*	*X*	*X*	*X*
Scirpus species	*Bullrush species*	*C*	*X*	*X*	*X*
Scirpus tabernaemontani	*Soft-Stem Bulrush*	*C*	*X*	*X*	*X*
Sesleria autumnalis	*Autumn Moor Grass*	*C*	*X*	*X*	*X*
Sesleria caerulea	*Blue Moor Grass*	*C*	*X*	*X*	*X*
Setaria palmifolia	*Palm Grass*	*C*	*X*	*X*	*X*
Sisyrinchium californicum	*Golden-Eyed Grass*	*C*	*X*	*X*	*X*
Sorghastrum nutans	*Indian Grass*	*D*		*X*	*X*
Sporobolus airoides	*Alkali Dropseed*	*C D*		*X*	*X*
Sporobolus wrightii	*Giant Dropseed*	*C D*		*X*	*X*
Stenotaphrum secundatum	*St. Augustine Grass*	*C*	*X*	*X*	*X*
Stipa gigantea	*Giant Feather Grass*	*C D*	*X*	*X*	*X*
Stipa pulchra	*Needle Grass*	*C D*	*X*	*X*	*X*
Stipa tenuissima	*Mexican Feather Grass*	*C D*	*X*	*X*	*X*
Zoysia hybrid De Anza	*Zoysia De Anza*	*C D*	*X*	*X*	*X*
Zoysia tenufolia	*Korean Grass*	*C D*	*X*	*X*	*X*
Turf					
Marathon II 'Water Saver'	*Dwarf Tall Fescue*		*X*	*X*	*X*
Turf	*A-G Sod Farms Inc. – Elite Plus*		*X*	*X*	*X*

C = California Friendly
D = Drought Tolerant
O = Suitable to plant under Oaks
(1) = Acceptable plant material for Public Parkways/Medians.
(2) = Acceptable plant material for Private Homeowner Yards.
(3) = Acceptable plant material for HOA/Common Areas.

2 Fuel Management Zone A Plant Palette

FUEL MANAGEMENT ZONE A					
Botanical Name	**Common Name**	**Suitability**	**PLANT USE**		
			Public[1]	**Private[2]**	**HOA[3]**
Trees					
Acer macrophyllum	*Big Leaf Maple*	*C*	*X*	*X*	*X*
Arbutus unedo	*Strawberry Tree*		*X*	*X*	*X*
Ceratonia siliqua	*Carob*	*C D*	*X*	*X*	*X*
Citrus species	*Citrus*	*C*		*X*	
Eriobotrya japonica	*Loquat*	*C*	*X*	*X*	*X*
Erythrina species	*Coral Tree*	*C D*	*X*	*X*	*X*
Ginkgo biloba	*Maidenhair Tree*	*C D*	*X*	*X*	*X*
Juglans californica	*Southern California Black Walnut*	*C D*			*X*
Lagerstroemia indica	*Crape Myrtle*	*C*	*X*	*X*	*X*
Lagunaria patersonii	*Primrose Tree*	*CD*	*X*	*X*	*X*
Liriodendron tulipfera	*Tulip Tree Fernleaf*	-	*X*	*X*	*X*
Liquidambar styraciflua species	*American Sweet Gum*	*C*	*X*	*X*	*X*
Lyonthamnus flori. ssp. Asplenifolius	*Fern-Leaf Catalina Ironwood*	*C D*	*X*	*X*	*X*
Macadamia integrifolia	*Macadamia Nut*	-	*X*	*X*	*X*
Maytenus boaria	*Mayten Tree*	-	*X*	*X*	*X*
Metrosideros excelsus	*New Zealand Christmas Tree*	*C D*	*X*	*X*	*X*
Parkinsonia aculeata	*Mexican Palo Verde*	*CD*	*X*	*X*	*X*
Pistacia chinensis	*Chinese Pistache*	*C*	*X*	*X*	*X*
Pittosporum undulatum	*Victorian Box*	-	*X*	*X*	*X*
Platanus racemosa	*California Sycamore*	*C*	*X*	*X*	*X*
Populus fremontii	*Western Cottonwood*	*C*	*X*	*X*	*X*
Quercus agrifolia	*Coast Live Oak*	*C D*	*X*	*X*	*X*
Quercus engelmannii	*Engelmann Oak*	*C D*	*X*	*X*	*X*
Quercus suber	*Cork Oak*	-			*X*
Rhus lancea	*African Sumac*	*C D*	*X*	*X*	*X*
Sambucus mexicana	*Mexican Elderberry*	*C D*	*X*	*X*	*X*
Stenicarpus sinuatus	*Firewheel Tree*	*CD*	*X*	*X*	*X*

(1) This plant species may not be located within 50 feet of homes.

C = California Friendly
D = Drought Tolerant
O = Suitable to plant under Oaks
(1) = Acceptable plant material for Public Parkways/Medians.
(2) = Acceptable plant material for Private Homeowner Yards.
(3) = Acceptable plant material for HOA/Common Areas.

FUEL MANAGEMENT ZONE A					
Botanical Name	**Common Name**	**Suitability**	**PLANT USE**		
			Public(1)	**Private(2)**	**HOA(3)**
Shrubs					
Aeonium species	*Aeonium*	*C D*	X	X	X
Agave species	*Century Plant*	*C D*	X	X	X
Agave attenuata	*Century Plant*	*C D*	X	X	X
Agave attenuata	*Fox Tail Agave*	*C D*	X	X	X
Agave filifera	*Agave Filifera*	*C D*	X	X	X
Agave parryi v. couesii	*Couesii Century Plant*	*C D*	X	X	X
Agave shawii	*Shaw's Century Plant*	*C D*	X	X	X
Agave species	*Century Plant*	*C D*	X	X	X
Agave vilmoriniana	*Octopus Agave*	*C D*	X	X	X
Aloe arborescens	*Tree Aloe*	*C D*	X	X	X
Aloe arborescens	*Candelabra Aloe*	*C D*	X	X	X
Aloe species	*Aloe*	*C D*	X	X	X
Aloe striata	*Coral Aloe*	*C D*	X	X	X
Aloe Vera	*Medicinal Aloe*	*C D*	X	X	X
Aptenia cordifolia	*Hearts And Flowers*	*C D*	X	X	X
Baccharis pilularis 'Twin Peaks #2'	*Dwarf Coyote Bush*	*C D*	X	X	X
Baccharis salicifolia	*Mulefat*	*C D*	X	X	X
Bromus carinatus	*California Brome*	*C*		X	X
Bulbine frutescens	*Stalked Bulbine*	*D*		X	X
Bulbine frutescens 'Hallmark'	*Dwarf Orange Bulbine*	*D*		X	X
Bulbine frutescens 'Yellow'	*Yellow bulbine*	*D*		X	X
Carissa macrocarpa	*Green Carpet Natal Plum*	-	X	X	X
Ceanothus g. var. hori. 'Yankee Point'	*Yankee Point Ceanothus*	*C D O*	X	X	X
Ceanothus gloriosus 'Point Reyes'	*Point Reyes Ceanothus*	*C D O*	X	X	X
Ceanothus griseus ' Louis Edmunds'	*Louis Edmunds Ceanothus*	*C D O*	X	X	X
Ceanothus griseus var. horizontalis	*Carmel Creeper Ceanothus*	*C D O*	X	X	X
Ceanothus megarcarpus	*Big Pod Ceanothus*	*C D*	X	X	X
Ceanothus prostrates	*Squaw Carpet Ceanothus*	*C D*	X	X	X
Ceanothus spinosus	*Green Bark Ceanothus*	*C D*	X	X	X
Ceanothus verrucosus	*Wart-Stem Ceanothus*	*C D*	X	X	X
Cephalocereus senilis	*Old Man Cactus*	*CD*		X	X
Cerastium tomentosum	*Snow-in-Summer*	-	X	X	X

(1) This plant species may not be located within 50 feet of homes.

C = California Friendly
D = Drought Tolerant
O = Suitable to plant under Oaks
(1) = Acceptable plant material for Public Parkways/Medians.
(2) = Acceptable plant material for Private Homeowner Yards.
(3) = Acceptable plant material for HOA/Common Areas.

FUEL MANAGEMENT ZONE A					
Botanical Name	**Common Name**	**Suitability**	**PLANT USE**		
			Public(1)	**Private(2)**	**HOA(3)**
Shrubs (continued)					
Cercis occidentalis	*Western Redbud*	C D O		X	X
Cereus hildmannianus	*Hildmann Cactus*	C D		X	X
Cereus peruvianus	*Peruvian Tree Cactus*	C D	X	X	X
Cistus hybridus	*White Rockrose*	C D	X	X	X
Cistus incanus	*NCN*	C D	X	X	X
Cistus incanus ssp. Corsicus	*NCN*	C D	X	X	X
Cistus salviifolius	*Sageleaf Rockrose*	C D	X	X	X
Cistus x purpereus	*Orchid Rockrose*	C D	X	X	X
Coprosma kirkii	*Creeping Coprosma*	-	X	X	X
Coprosma pumila	*Prostrate Coprosma*	-	X	X	X
Cotoneaster buxifolius	*NCN*	C D	X	X	X
Crassula arborescens	*Silver Jade Plant*	C D		X	X
Crassula ovata	*Jade Tree*	C		X	X
Delosperma 'Alba'	*White Trailing Ice Plant*	C D	X	X	X
Dodonaea viscosa	*Hopseed Bush*	C D	X	X	X
Doryanthes palmeri	*Spear Lily*	-	X	X	X
Drosanthemum hispidum	*Ice Plant*	C D	X	X	X
Dudleya brittonii	*Dudleya*	C D		X	X
Dudleya caespitosa	*Sea Lettuce*	C D O		X	X
Dudleya hassei	*Hasse's Dudleya*	C D O		X	X
Dudleya lanceolata	*Lance-Leaved Dudleya*	C D O		X	X
Dudleya pulverulenta	*Chalk Dudleya*	C D		X	X
Dudleya viscida	*San Juan Live Forever*	C D O		X	X
Echeveria species	*Hens and Chickens*	C D	X	X	X
Echinocactus grusonii	*Golden Barrel Cactus*	-		X	
Echium species (Candicans Prohibited)	*Echium*	C D		X	X
Escallonia species	*Escallonia Varieties*	C	X	X	X
Euphorbia biglandulosa	*Gopher Plant*	C D	X	X	X
Euphorbia characias	*Euphorbia*	C D		X	X
Euphorbia rigida	*Yellow Spurge*	C D		X	X
Euphorbia tirucalli 'Sticks on Fire'	*Sticks on Fire*	C D		X	X
Feijoa sellowiana	*Pineapple Guava*	-	X	X	X

(1) This plant species may not be located within 50 feet of homes.

C = California Friendly
D = Drought Tolerant
O = Suitable to plant under Oaks
(1) = Acceptable plant material for Public Parkways/Medians.
(2) = Acceptable plant material for Private Homeowner Yards.
(3) = Acceptable plant material for HOA/Common Areas.

FUEL MANAGEMENT ZONE A					
Botanical Name	**Common Name**	**Suitability**	**PLANT USE**		
			Public(1)	**Private(2)**	**HOA(3)**
Shrubs (continued)					
Graptopetalum paraguayense	*Ghost Plant, Mother of Pearl Plant*	-		X	X
Grewia occidentalis	*Starflower*	C	X	X	X
Hardenbergia comptoniana	*Lilac Vine*	-		X	X
Hesperaloe funifera	*Giant Hesperaloe*	C D		X	X
Hypericum calycinum	*Aaron's Beard*	D		X	X
Kalanchoe beharensis	*Felt Plant*	C D		X	X
Kalanchoe pumila	*Flower Dust Plant*	C D		X	X
Kniphofia uvaria	*Red Hot Poker*	C D	X	X	X
Lamium maculatum	*Dead Nettle*	-		X	X
Lamium maculatum 'Beacon Silver'	*Beacon Silver Dead Nettle*	-		X	X
Lampranthus aurantiacus	*Ice Plant*	C D	X	X	X
Lampranthus productus	*Lampranthus*	C D	X	X	X
Lampranthus spectabilis	*Trailing Ice Plant*	C D	X	X	X
Lampranthus spectabilis 'Rose'	*Rose Trailing Ice Plant*	C D	X	X	X
Lantana camara cultivars	*Yellow Sage*	C D	X	X	X
Lantana camara montevidensis	*Trailing Lantana*	C D	X	X	X
Lavandula dentata	*French Lavender*	C D	X	X	X
Leptospermum 'laevigatum'	*Australian Tea Tree*	C D	X	X	X
Leucophyllum frutescens	*Texas Ranger*	C D	X	X	X
Ligustrum japonicum 'Texanum'	*Texas Privet*	C D	X	X	X
Limonium perezii	*Sea Lavender*	C D	X	X	X
Lonicera japonica 'Halliana'	*Hall's Japanese Honeysuckle*	-	X	X	X
Lonicera subspicata	*Wild Honeysuckle*	-	X	X	X
Mahonia 'Golden Abundance'	*Golden Abundance Mahonia*	C D		X	X
Mahonia nevenii	*Nevin Mahonia*	C D		X	X
Malephora lutea	*Rocky Point Ice Plant*	C D		X	X
Manfreda maculosa	*Manfreda*	-		X	X
Myoporum debile	*NCN*	-	X	X	X
Myoporum parvilfolium	*NCN*	-	X	X	X
Nolina cismontane	*Chapparal Nolina*	-	X	X	X
Nolina species	*Mexican Grasstree*	C D	X	X	X
Opuntia littoralis	*Prickly Pear*	C D		X	X
Opuntia oricola	*Oracle Cactus*	C D		X	X

(1) *This plant species may not be located within 50 feet of homes.*

C = *California Friendly*
D = *Drought Tolerant*
O = *Suitable to plant under Oaks*
(1) = *Acceptable plant material for Public Parkways/Medians.*
(2) = *Acceptable plant material for Private Homeowner Yards.*
(3) = *Acceptable plant material for HOA/Common Areas.*

FUEL MANAGEMENT ZONE A					
Botanical Name	**Common Name**	**Suitability**	**PLANT USE**		
			Public(1)	**Private(2)**	**HOA(3)**
Shrubs (continued)					
Opuntia species	*Prickly Pear, Cholla*	C D		X	X
Osteospermum fruticosum	*Trailing African Daisy*	C D		X	X
Pachypodium lamieri	*Madagascar Palm*	-	X	X	X
Pedilanthus macrocarpus	*Lady's Slippers*	D	X	X	X
Photinia fraseri	*NCN*	C D	X	X	X
Pilea cadierei	*Creeping Charlie*	-	X	X	X
Portulacaria afra	*Elephant's Food*	C D	X	X	X
Prunus caroliniana	*Carolina Cherry Laurel*	C D	X	X	X
Prunus ilicifolia 'Ilicifolia'	*Holly Leafed Cherry*	C D O	X	X	X
Prunus lyonii	*Catalina Cherry*	C D	X	X	X
Punica granatum	*Pomegranate*	-	X	X	X
Pyracantha species	*Firethorn*	C D	X	X	X
Quercus berberdifolia	*California Scrub Oak*	D		X	X
Quercus dumosa	*Coastal Scrub Oak*	C D		X	X
Rhaphiolepis species	*India Hawthorn*	C	X	X	X
Rhus integrifolia	*Lemonade Berry*	C D O	X	X	X
Rhus ovata	*Sugarbush*	C D	X	X	X
Romneya coulteri	*Matilija Poppy*	C D	X	X	X
Romneya coulteri 'White Cloud'	*White Cloud Matilija Poppy*	C D	X	X	X
Rosmarinus officinalis	*Rosemary*	C D	X	X	X
Salvia greggii (1)	*Autumn Sage (1)*	C D	X	X	X
Salvia sonomensis (1)	*Creeping Sage (1)*	C D	X	X	X
Santolina chamaecyparissus	*Lavendar Cotton*	C D	X	X	X
Santolina virens	*Green Lavender Cotton*	C D	X	X	X
Sedum species	*Stonecrop*	C D	X	X	X
Tecoma capensis	*Cape Honeysuckle*	C D	X	X	X
Xylosma congestum	*Shiny Xylosma*	-	X	X	X
Yucca glauca	*Spanish Bayonet*	C D	X	X	X
Yucca Species (1)	*Yucca (1)*	C D	X	X	X
Yucca whipplei (1)	*Our Lord's Candle (1)*	C D	X	X	X

(1) This plant species may not be located within 50 feet of homes.

C = California Friendly
D = Drought Tolerant
O = Suitable to plant under Oaks
(1) = Acceptable plant material for Public Parkways/Medians.
(2) = Acceptable plant material for Private Homeowner Yards.
(3) = Acceptable plant material for HOA/Common Areas.

FUEL MANAGEMENT ZONE A					
Botanical Name	**Common Name**	**Suitability**	**PLANT USE**		
			Public(1)	**Private(2)**	**HOA(3)**
Groundcover					
Aptenia cordifolia x Red Apple	*Aptenia*	*D*	*X*	*X*	*X*
Armeria maritima	*Common Thrift*	*C D*	*X*	*X*	*X*
Artemisia caucasica	*Caucasian Artesmisia*	*D*	*X*	*X*	*X*
Cistus cripus	*NCN*	*C*	*X*	*X*	*X*
Coreopsis lancelata	*Coreopsis*	*C*	*X*	*X*	*X*
Corea pulchella	*Australian Fuscia*	*D*	*X*	*X*	*X*
Crassula lacteal	*NCN*	*D*	*X*	*X*	*X*
Crassula multicava	*NCN*	*D*	*X*	*X*	*X*
Crassula tetragona	*NCN*	*D*	*X*	*X*	*X*
Delosperma 'alba'	*White Trailing Ice Plant*	*C D*	*X*	*X*	*X*
Drosanthemum floribundum	*Rosea Ice Plant*	*C*	*X*	*X*	*X*
Drosanthemum hispidum	*NCN*	*C*	*X*	*X*	*X*
Drosanthemum speciosum	*Dewflower*	*C*	*X*	*X*	*X*
Fragaria chiloensis	*Beach Strawberry*	*D*	*X*	*X*	*X*
Iberis sempervirens	*Evergreen Candytuft*	*C D*	*X*	*X*	*X*
Iberis umbellatum	*Globe Candytuft*	*C*	*X*	*X*	*X*
Lampranthus aurantiacus	*Bush Ice Plant*	-	*X*	*X*	*X*
Lampranthus filicaulis	*Redondo Creeper*	-	*X*	*X*	*X*
Lampranthus spectabilis	*Trailing Ice Plant*	*C*	*X*	*X*	*X*
Lasthenia californica	*Dwarf Goldfields*	-	*X*	*X*	*X*
Lupinus arizonicus	*Desert Lupine*	*C D*	*X*	*X*	*X*
Lupinus benthamii	*Spider Lupine*	-	*X*	*X*	*X*
Lupinus bicolor	*Sky Lupine*	-	*X*	*X*	*X*
Lupinus sparsiflorus	*Losely flowered Annual Lupine/ Coulter's*	-	*X*	*X*	*X*
Ophiopogon japonicus	*Mondo Grass*	-	*X*	*X*	*X*
Pelargonium peltatum	*Ivy Geranium*	-	*X*	*X*	*X*
Sedum species	*Stone Crop*	-		*X*	*X*
Vines					
Bougainvillea spp.	*Bougainvillea*	*C D*	*X*	*X*	*X*
Macfadyena unguis-cati	*Cat's Claw*	*C D*	*X*	*X*	*X*
Mascagnia macroptera	*Golden Vine*	*D*	*X*	*X*	*X*
Passiflora edulis	*Passion Flower*	-	*X*	*X*	*X*

(1) This plant species may not be located within 50 feet of homes.

C = California Friendly
D = Drought Tolerant
O = Suitable to plant under Oaks
(1) = Acceptable plant material for Public Parkways/Medians.
(2) = Acceptable plant material for Private Homeowner Yards.
(3) = Acceptable plant material for HOA/Common Areas.

PLANT PALETTE

FUEL MANAGEMENT ZONE A					
Botanical Name	**Common Name**	**Suitability**	**PLANT USE**		
			Public(1)	**Private(2)**	**HOA(3)**
Turf					
Marathon II 'Water Saver'	*Dwarf Tall Fescue*		*X*	*X*	*X*
Turf	*A-G Sod Farms Inc.- Elite Plus*	*D*	*X*	*X*	*X*

(1) *This plant species may not be located within 50 feet of homes.*

C = *California Friendly*
D = *Drought Tolerant*
O = *Suitable to plant under Oaks*
(1) = *Acceptable plant material for Public Parkways/Medians.*
(2) = *Acceptable plant material for Private Homeowner Yards.*
(3) = *Acceptable plant material for HOA/Common Areas.*

3 Fuel Management Zone B Plant Palette

FUEL MANAGEMENT ZONE B	
Botanical Name	***Common Name***
Shrubs From Seed	
Dichelostemma capitatum	*Wild hyacinth*
Dudleya lanceolata	*Lance-leaved dudleya*
Dudleya pulverulenta	*Chalk dudleya*
Horkelia cuneata	*Mesa horkelia*
Lotus heermannii	*Woolly lotus*
Lycium californicum	*California boxthorn*
Melica imperfecta	*Coast range melic*
Mirabilis californica	*Wishbone bush*
Nassella pulchra	*Purple needlegrass*
Opuntia littoralis	*Coast prickly-pear*
Opuntia prolifera	*Coast cholla*
Sisyrinchium bellum	*Blue-eyed grass*
Shrubs From Container	
Aeonium species	*Aeonium*
Agave attenuata	*Fox Tail Agave*
Agave shawii	*Shaw's Century Plant*
Aloe arborescens	*Candelabra Aloe*
Aloe species	*Aloe*
Aloe striata	*Coral Aloe*
Crassula species	*Silver Jade Plant*
Dichelostemma capitatum	*Wild hyacinth*
Distictis spicata	*Saltgrass*
Dudleya pulverulenta	*Chalk Dudleya*
Echeveria species	*Echeveria*
Horkelia cuneata	*Mesa horkelia*
Kalanchoe beharensis	*Felt Plant*
Kalanchoe pumila	*Flower Dust Plant*
Limonium perezii	*Sea Lavender*
Nassella lepida	*Foothill needle-grass*
Opuntia species	*Prickly Pear, Cholla*
Portulacaria afra	*Elephant's Food*
Sedum species	*Stonecrop*
Sisyrinchium bellum	*Blue-eyed grass*
Tecoma capensis	*Cape Honeysuckle*
Yucca whipplei [(1)]	*Our Lord's Candle* [(1)]

(1) This plant species may not be located within 50 feet of homes.

C = California Friendly
D = Drought Tolerant
O = Suitable to plant under Oaks

4 North Bluff Road Bioswale Plant Palette (17th to 19th Street adjacent to Open Space Preserve) (1)

For other habitat restoration plant palettes, refer to Habitat Restoration Plan.

HABITAT RESTORATION / FUEL MANAGEMENT ZONE C	
Botanical Name	**Common Name**
Grasslands	
Bothriochloa barbinodis	Beardgrass
Distichlis spicata	Saltgrass
Lasthenia californica	California goldfields
Melica imperfecta	Coast Range Melica
Nassella lepida	Foothill needlegrass
Nassella pulchra	Purple needlegrass
Succulent Scrub Mosaic	
Non-Combustible/Succulent Species	
Cylindropuntia prolifera	Coastal cholla
Opuntia littoralis	Coastal prickly pear
Suaeda taxifolia	Woolly sea-blite
Fire-Resistive Shrub Species	
Encelia californica (2)	California encelia (2)
Isocoma menziesii (2)	Coastal goldenbush (2)
Isomeris arborea (2)	Bladderpod (2)
Lycium californicum (2)	California boxthorn (2)

The plants will be established in a mosaic pattern, with alternating patches of the fire-resistive shrub species and non-combustible/succulent species such that it achieves the equivalent of a 50- to 60-percent "thinning" standard with the typically "thinned" areas actually composed at NBR of succulent and cactus species. The intention is to continue to provide nesting and foraging habitat for special-status birds such as California gnatcatcher (*Polioptila californica*) and coastal cactus wren (*Campylorhynchus brunneicapillus*), with the large patches of non-combustible/succulent species intended to minimize fire risk.

(1) *Fuel Management Zone Plant Palettes are also located in the Fire and Life Safety Program. This includes North Bluff Road Bioswale Plant Palette between 17th and 19th Streets adjacent to Open Space Preserve.*

(2) *This plant species may not be located within 30 feet of off-Project homes along the easterly Project boundary, between 17th Street and 19th Street in the City of Costa Mesa.*

C = California Friendly
D = Drought Tolerant
O = Suitable to plant under Oaks

5 Habitat Restoration Zones Plant Palettes (See Habitat Restoration Plan) [2]

6 Habitat Restoration/Fuel Management Zone C [1]

(1) *Fuel Management Zone Plant Palettes are also located in the Fire and Life Safety Program. This includes North Bluff Road Bioswale Plant Palette between 17th and 19 Streets adjacent to Open Space Preserve.*

(2) *The plant palette for the Vernal Pool Watershed Area is also located in the Fire and Life Safety Program.*

C = California Friendly
D = Drought Tolerant
O = Suitable to plant under Oaks

NEWPORT BANNING RANCH

GREEN AND SUSTAINABLE PROGRAM

APPLICANT

Newport Banning Ranch LLC

1300 Quail Street, Suite 100
Newport Beach, CA 92660

Michael A. Mohler, Managing Director
Tel: (949) 833-0222

Submitted to:
City of Newport Beach
Planning Department
3300 Newport Boulevard
Newport Beach, California 92658

AUGUST 2011

Submitted by:
Newport Banning Ranch LLC

DESIGN TEAM

CTG Energetics
Green & Sustainable Solutions

FORMA Design
Planners & Landscape Architects

Fuscoe Engineering
Civil & Water Quality Engineers

Studio SA
Green & LEED Consultant

Green and Sustainable Program

Table of Contents

Attachments

GREEN AND SUSTAINABLE PROGRAM

1 Background

1.1 Sustainable Development

With the enactment of the Global Warming Solutions Act of 2006 (also known as AB 32), California took a significant step in confirming its commitment to address climate change. Although much recent attention has been focused on the reduction of greenhouse gas emissions, there also are a number of important strategies being considered by communities today to reduce the impact of development on the environment more generally. Creating "green" and sustainable communities through environmentally conscious development is one of the strategies being employed in land use planning and development today. At the national, State, and local levels of government, attention is being directed to identifying and employing development practices that achieve long-term environmental sustainability for new communities.

The Green and Sustainable Program provides an overview on the importance of integrating sustainable community principles into the development of Newport Banning Ranch (NBR) and includes measures and elements of project design that are being proposed to incorporate positive solutions to the need for environmentally conscious development. The Program begins with a brief discussion of recent State of California legislation and regulatory programs designed to address climate change and reduce greenhouse gas emissions, outlines the basic principles of sustainable development, and discusses the strategies employed at NBR to respond to the desire to create sustainable communities, and concludes with an outline of the Project-specific measures to create a green and sustainable community at NBR.

1.2 California Climate Change Efforts

Beginning in 2005, California has taken steps to pioneer efforts at reducing greenhouse gas emission. On June 1, 2005, Governor Arnold Schwarzenegger signed Executive Order S-3-05 which established greenhouse gas emission reduction targets with a goal of achieving a reduction of greenhouse gas emissions to 80% below 1990 levels by 2050. The Governor's Executive Order was followed by enactment of the Global Warming Solutions Act of 2006 or AB 32 (codified at Health and Safety Code Section 38500 et seq.) which directed the California Air Resources Board to establish a comprehensive program to reduce greenhouse gases by 2020.

In addition to these legislative mandates, the Statewide goal of greenhouse gas emissions has also been incorporated into implementation of existing environmental statutes and regulations, including the California Environmental Quality Act (CEQA). SB 97, which was signed by the Governor in 2007, requires the Governor's Office of Planning and Research to prepare, develop and transmit guidelines for the feasible mitigation of greenhouse gas emissions or the effects of greenhouse gas emissions as evaluated under CEQA.

On July 17, 2008, the California Building Standards Commission adopted the 2008 California Green Building Code (CGBC), the nation's first Statewide "green" building code. This contained a relatively complex set of proposed regulations that would be imposed in two steps (i.e., first voluntary and then mandatory) across a variety of site planning and building components and technologies.

The 2008 CGBC included green and sustainable building measures organized in the following five categories:

- Planning and Design;
- Energy Efficiency;
- Water Efficiency and Conservation;
- Material Conservation and Resource Efficiency; and
- Environmental Quality.

The 2008 CGBC became effective on a voluntary basis on January 15, 2009. The mandatory edition of the new code was enacted by the California Legislature in January 2010 as the 2010 California Green Building Standards Code or "CALGreen Code," Part 11 of the California Code of Regulations. This Code became effective on January 1, 2011, and includes both mandatory and voluntary measures. It is applicable to all cities and to both residential and nonresidential occupancies in the State of California, as annotated in the Code. The concept is that local public agencies will incorporate the CALGreen Code provisions into their own construction plan review and field inspection processes.

Achieving the State's goals of energy efficiency and greenhouse gas emission reduction will require a variety of efforts among the public and private sector, including the development of energy-efficient technology, increasing the use of renewable resources, promoting energy conservation and waste reduction, and incorporating measures into the construction and development of land that focus on sustainable or "green" communities.

NBR will achieve Green Development goals and objectives by a variety of plans, programs, and project design features. These goals and objectives, strategies, and commitments, are summarized in the following sections, and are intended to create a comprehensive framework to guide future land use development within the Site.

NBR is envisioned as an exemplary community that – in its layout, design, construction, and lifestyle – reduces greenhouse gas emissions, and conserves water and energy resources. Land use considerations include encouraging the development of compact, mixed-use, walkable development that reduces vehicle miles traveled; encourages alternative fuel vehicle use; conserves energy and water usage; and promotes carbon sequestration, as explained in more detail in Section 2, Strategic Overview.

2 Strategic Overview

Newport Banning Ranch LLC (NBR LLC) is committed to making NBR (Project) a State- and Nationally-recognized green and sustainable project – one that will exceed "business-as-usual" and stay in front of the wave of government standards to demonstrate how to successfully orchestrate green and sustainable solutions in an infill coastal community.

A holistic approach has been employed to master plan the entire property and to ensure the full use of green and sustainable project design, water quality engineering, construction, landscape, and long-term operation and maintenance. The Project is striving to align itself with U.S. Green Building Council's (USGBC's) Leadership in Environmental and Energy Design Program for Neighborhood Development (i.e., LEED-ND or a similar recognized Program), which is a third-party verification that a development's location and design meet accepted high levels of environmentally responsible, sustainable development. The LEED-ND Program is collaboration between the USGBC, the Congress for New Urbanism, and the Natural Resource Defense Council. Should LEED-ND certification be sought, the Project can be Certified at three stages; Pre-entitlement, Approved Plan, and Completed Neighborhood Development, all through a third-party evaluation process.

The clean-up, project design features, mitigation, and long-term management of the natural open space areas is described in detail in the Habitat Restoration Plan submitted as a part of the Project's applications. In addition, the Project has taken tangible steps to reduce business-as-usual greenhouse gas (GHG) emissions and development impacts on climate change. Efforts include a January 2009 study that:

- Describes the GHG implications of the Project;
- Quantifies and discloses the Project's estimated GHG emissions; and
- Identifies and commits to verifiable strategies to reduce GHG emissions.

This approach is consistent with California AB 32 goals, will be consistent with independent third-party certification standards, and will be achieved through local implementation of a tailored program of project-initiated components. A copy of the January 2009 study is attached (See Attachment A).

The design reviews and charrettes conducted to date have outlined items which emphasize the creation of compact, walkable, vibrant neighborhoods to encourage healthy living. Besides standards of smart growth and new urbanism best practices, the standards of design include efficient energy and water use. Some basic principles that are incorporated into the Project Checklist are:

- Habitat Restoration Plan which restores, enhances, or buffers marginal and degraded habitat;
- Healthy green-building practices and standards, including high-performance energy and water efficiency that exceed local standards;
- Site-wide stormwater reduction with detention/water cleansing basins to reduce peak storm flow and cleanse off-site tributary runoff;
- Transit-oriented strategies, such as connectivity to adjacent areas and public transportation;
- Mixed-income community with an affordable housing program;
- Community open-space stewardship: land conservation and restoration with active parks and trail systems;
- Walkable village center with commercial, recreational, and adjacent educational and civic services;
- Planning that accounts for steep slopes, soils, public viewsheds, and habitat protection; and
- Environmental education resources.

2.1 Team of Experts

NBR LLC has retained ***CTG Energetics, Inc.***, a nationally recognized leader in green and sustainable modeling and strategic planning. CTG's Director of Climate Change Services worked with NBR to incorporate the ***Sustainable Communities Model*** evaluation methodology into the Project's overall Green and Sustainable Program. As a technical resource identified by the California Office of Planning and Research, **the model developed by CTG Energetics, Inc. *"quantifies total CO2 emissions allowing communities the ability to optimize planning decisions that result in the greatest environmental benefit for the least cost."***

NBR LLC has also retained the **LEED-Accredited *Professional staff from Studio SA***, a Santa Ana architectural and environmental consulting group and member of the U.S. Green Building Council (USGBC), with local knowledge of green building and the application of **LEED for Neighborhood Design (LEED-ND)** to coastal Orange County. Its environmental staff is managed by an active leader of the Surfrider Foundation and a person who has managed sustainable mixed-use and affordable housing projects in California with high LEED ratings.

2.2 Three-Prong Strategy

To achieve the State of California's goals of energy efficiency and greenhouse gas emission reduction will require a variety of efforts by the public and private sector, including the development of energy-efficient technology, promoting energy conservation and waste reduction, and incorporating measures into the land development and construction that focus on sustainable or "green" communities.

NBR LLC is aggressively moving ahead with a three-prong strategy that includes consistency with third-party certification standards, developing a specific program aimed at the site's unique environmental assets and opportunities, and staying current with evolving Statewide codes and regulations.

2.2.1 Third-Party "Green Certification"

The Project will be designed to be consistent with recognized green building programs such as, but not limited to, Build It Green, USGBC LEED-ND™, California Green Builder, or National Association of Home Builders' National Green Building Standard™, that exist at the time of final Project approval. This commitment is reiterated in the Resource Performance Matrix (see Commitment 3.10.1-a, which references Greenhouse Gas Emissions PDF 4.11-1) and could also be satisfied by the CALGreen Code as set forth in Section 2.2.3.

2.2.2 Project-Specific Resource Management Program

The comprehensive Resource Management Program measures the green and sustainable implementation process across 13 resource areas, ranging from habitat and watershed to carbon sequestration and governance. Each resource system has goals and associated objectives which focus on significantly reducing the Project's carbon footprint, protecting and restoring on-site habitat areas, and contributing to the reduction of GHG emissions.

2.2.3 Keep Pace with Evolving State Standards

Pursuant to SB 97 and CEQA, NBR will be comprehensively evaluated during the EIR process for the feasible mitigation of GHG emissions.

Additionally, NBR will conform to the ***2010 California Green Building Standards Code (CALGreen Code)***, the nation's first mandatory Statewide standards "green" building code. This comprehensive almost 200-page code will impose uniform regulations **across a variety of site planning and residential and commercial building components and technologies**, including planning and design, energy efficiency; water efficiency and conservation; material conservation and resource efficiency; and environmental quality.

If it is determined that the application of the CALGreen Code, potentially including optional measures, can be made equivalent to a third party certification program, as was one of the objectives of the California Green Building Standards Commission, it may be used to satisfy that objective. As the Commission's website notes: "Unlike point-based certification systems that can be purchased, the CALGreen Code mandates required field inspections using a public, transparent infrastructure that is stringent, successful, and cost-effective. The California Building Standards Commission is providing the industry a comprehensive blueprint on how to significantly reduce carbon output, maximize resources, and save property owners thousands of dollars in green certification fees."

3 NBR Resource Management Program

3.1 Resource Systems Included

The green and sustainable program for NBR is viewed broadly and focuses on sustainability in terms of the 13 resource areas identified below:

1. Habitat;
2. Watershed;
3. Energy, Air, and Water;
4. Carbon Sequestration;
5. Traffic and Transportation;
6. Public Views and Access;
7. Wildland Fire Safety;
8. Open Space;
9. Archaeology and Paleontology;
10. Oil and Gas;
11. Brownfield Conversion;
12. Governance; and
13. Social.

Green and sustainable opportunities related to these systems are summarized , with appropriate references to the NBR Planned Community zoning, Master Development Plan, and the various plans and programs contained in technical reports prepared in support of the Project and included as part of the overall application package submitted to the City of Newport Beach.

3.2 Methodology Used

Each resource system has associated goals and objectives which focus on significantly reducing the Project's carbon footprint, protecting and restoring on-site habitat areas, and contributing to the reduction of greenhouse gas emissions.

To meet the Project's green and sustainable goals and objectives, implementation strategies were then developed and analyzed, and then integrated into the NBR Planned Community (NBR-PC) zoning regulations and the implementation measures and the plans in the NBR Master Development Plan (NBR-MDP).

Project commitments were then generated to provide a dimension to the Project implementation strategies. Finally, the commitments are incorporated in the various Project documents, most frequently NBR-PC zoning regulations and/or the NBR-MDP. The NBR-PC, NBR-MDP, was well as other technical plans and programs, are drafted to provide for and ensure the implementation these commitments.

The Draft Project EIR has evaluated the commitments in the implementing plans and programs, and, in some cases, has designated these as Project Design Features (PDFs). These are reiterated verbatim and identified by PDF number in the Resource Management Performance Matrix.

During the public environmental review process, the Landowner/Master Developer and Project team will continue to compare these NBR commitments against a baseline that reflects current California policies, regulations, and practices for comparably-sized projects (e.g., compliance with current Title 24 of the Code of Regulations). This will allow the Project to be compared to the environmental consequence of a conventional "business as usual" development.

The Project's intent is to improve upon and surpass this baseline, and to reduce impacts so as to meet the goals and objectives established for each resource system.

The process will, to the extent practicable, seek measurable results in each resource system so that this process will produce a comparison of the Project as proposed to the "business-as-usual" development model.

3.3 Resource Management Performance Matrix

The Resource Management Performance Matrix is provided on the following pages, and provides the goals and objectives, strategies, commitments, and implementing plans and programs for each of the 13 resource areas identified in Section 3.1.

At the conclusion of each resource area is a list of the Project Design Features (PDFs) that have been incorporated into the Project to avoid/reduce environmental impacts and that are recognized as PDFs in the Project EIR prepared pursuant to the California Environmental Quality Act (CEQA).

RESOURCE MANAGEMENT PERFORMANCE MATRIX
GREEN AND SUSTAINABLE COMMUNITY PROGRAM FOR NEWPORT BANNING RANCH

RESOURCE #	RESOURCE SYSTEM		GOALS AND OBJECTIVES		STRATEGIES		COMMITMENTS	IMPLEMENTING PLANS/ PROGRAMS
1	HABITAT	***1.1***	***Habitat Restoration:*** *Incorporate the avoidance, protection, preservation, and restoration of habitat areas in the Project's planning and design to the maximum extent practicable.*	1.1.1	Survey, map, and evaluate habitat areas, jurisdictional waters and wetlands, and ecological corridors.	1.1.1-a	Habitat areas, jurisdictional waters and wetlands, and ecological corridors have been surveyed, mapped, and evaluated. The results, conclusions, and recommendations have been reported in the Biological Technical Report, reflected in the NBR-PC and NBR-MDP, and incorporated into a comprehensive Habitat Restoration Plan (HRP) in accordance with Resource Agency protocols.	A comprehensive Habitat Restoration Plan (HRP) provided with the NBR-MDP will function as the Project's primary component for implementing the commitments described. The HRP will be submitted for Agency reviews prior to Coastal Commission approval of the (first) Master Coastal Development Permit. Prior to issuance of a grading permit for land use development, the Landowner/Master Developer will furnish evidence of Resource Agency approvals of the HRP.
				1.1.2	Restore, enhance, or buffer marginal and degraded habitat types in targeted areas.	1.1.2-a	The HRP will include implementation measures for the buffering, restoration, and enhancement of degraded habitat areas slated for preservation.	(See Implementing Plans/Programs for 1.1.1-a above.)
				1.1.3	Remove invasive plants and restore native vegetation in targeted areas.	1.1.3-a	The HRP will include implementation measures for the removal of invasive vegetation and restoration with suitable native species where appropriate.	(See Implementing Plans/Programs for 1.1.1-a above.)
		1.2	***Habitat Mitigation:*** *Incorporate on-site mitigation efforts for loss of habitat area.*	1.2.1	Mitigate the temporary and/or permanent disturbance and/or loss of habitat type pursuant to Resource Agencies accepted practices.		The HRP will include implementation measures for the mitigation of all temporary and/or permanent disturbance and/or loss of habitat areas.	A comprehensive Habitat Restoration Plan (HRP) provided with the NBR-MDP will function as the Project's primary component for implementing the commitments described. (See Implementing Plans/Programs for 1.1.1-a above.)
		1.3	***Jurisdictional Wetlands:*** *Avoid and minimize impacts to Federal/State jurisdictional wetlands to the maximum extent practicable.*	1.3.1	Survey, map, and plan to avoid to maximum extent possible, jurisdictional wetlands for development purposes.	1.3.1-a	ACOE, CDFG, and CCC jurisdictional waters and wetlands have been surveyed, mapped, and evaluated. The results, conclusions and recommendations have been reported in the Jurisdictional Delineation Report, reflected in the NBR-PC and NBR-MDP, and incorporated into the HRP in accordance with Resource Agency protocols.	A comprehensive Habitat Restoration Plan (HRP) provided with the NBR-MDP will function as the Project's primary component for implementing the commitments described above. (See Implementing Plans/Programs for 1.1.1-a above.) The HRP addresses ACOE, CDFG, and CCC jurisdictional concerns, and will be supplemented by required Resource Agency permits and agreements.

RESOURCE MANAGEMENT PERFORMANCE MATRIX
GREEN AND SUSTAINABLE COMMUNITY PROGRAM FOR NEWPORT BANNING RANCH

RESOURCE #	RESOURCE SYSTEM		GOALS AND OBJECTIVES		STRATEGIES		COMMITMENTS	IMPLEMENTING PLANS/ PROGRAMS
1	HABITAT	*1.4*	***Ecological/Wildlife Corridors:*** *Preserve, protect and buffer existing on-site ecological corridors in the project's planning and design.*	1.4.1	Preserve and buffer existing on-site ecological corridors where appropriate.	1.4.1-a	On-site linkages for resident avifauna and regional connectivity will be enhanced. (The benefits of this connectivity are sometimes referred to as the "archipelago effects").	A comprehensive Habitat Restoration Plan (HRP) provided with the NBR-MDP will function as the Project's primary component for implementing the commitments described. (See Implementing Plans/ Programs for 1.1.1-a above.)
				1.4.2	Improve the quality of existing corridors.	1.4.2-a	Habitat linkages, removal of invasives, and quality of existing corridors will be enhanced.	A comprehensive Habitat Restoration Plan (HRP) provided with the NBR-MDP will function as the Project's primary component for implementing the commitments described. (See Implementing Plans/Programs for 1.1.1-a above.)
		1.5	***Conservancy:*** *Incorporate the designation or formation of a Newport Banning Ranch Conservancy in the Project's planning and design.*	1.5.1	Establish and/or contract with an existing non-profit organization for oversight and management of habitat areas.	1.5.1-a	The Landowner/Master Developer may make one or more Irrevocable Offer(s) of Dedication to public agencies or non-profit organizations, including but not limited to the City of Newport Beach, County of Orange, a State or Federal agency, and/or a qualified non-profit organization, to oversee the maintenance and management of Open Space habitat areas. Said public agency and/or non-profit organization may be an existing organization or may be established and subsidized by the Landowner/Master Developer.	The NBR-PC, HRP, and the Pre-Annexation and Development Agreement (PADA) will function as the Project's primary components for implementing the commitments described. (See Implementing Plans/Programs for 12.1.1-a below.)
		1.6	***Project Design Features to Avoid/Reduce Environmental Impacts:*** *Incorporate Project Design Features (PDFs) into the NBR Planned Community Development Plan (NBR-PC) and the NBR Master Development Plan (NBR-MDP) to avoid/reduce the environmental impacts of the Project, as determined by the Project EIR prepared pursuant to the California Environmental Quality Act (CEQA).*	1.6.1	Include a minimum of 220 gross acres of the Project Site as habitat conservation, restoration, and/or mitigation.	1.6.1-a	*The Master Development Plan designates a minimum of 220 gross acres of the Project site as wetland restoration/water quality areas, habitat conservation areas, and restoration mitigation areas.* (EIR Biological Resources PDF 4.6-1.)	Mitigation Monitoring Program for certified Project EIR.
				1.6.2	Include a Habitat Restoration Plan in conjunction with the Master Development Plan. Include wetland restoration/water quality areas, habitat conservation areas, and restoration mitigation areas within the Master Development Plan.	1.6.2-a	*The Master Development Plan includes a Habitat Restoration Plan (HRP) for the Habitat Areas. The HRP includes provisions for the preservation and long-term maintenance of existing sensitive habitat and habitat created and restored by the Project.* (EIR Biological Resources PDF 4.6-2.)	Mitigation Monitoring Program for certified Project EIR.

RESOURCE MANAGEMENT PERFORMANCE MATRIX
GREEN AND SUSTAINABLE COMMUNITY PROGRAM FOR NEWPORT BANNING RANCH

RESOURCE #	RESOURCE SYSTEM		GOALS AND OBJECTIVES		STRATEGIES		COMMITMENTS	IMPLEMENTING PLANS/ PROGRAMS
1	HABITAT			1.6.3	Provide a maintenance and monitoring program for the Habitat Management Plan.	1.6.3-a	*As identified in the Master Development Plan, the Habitat Areas to be restored as project design features will be subject to the same five-year Maintenance and Monitoring Program implemented for areas restored as mitigation. Standard Vegetation Monitoring Procedures are outlined in the Biological Technical Report prepared for the Project EIR and will be implemented consistent with applicable regulatory requirements.* (EIR Biological Resources PDF 4.6-3.)	Mitigation Monitoring Program for certified Project EIR.
				1.6.4	Utilize "dark sky" lighting program with limited street lighting and fixtures that provide public safety but minimize impacts on sensitive resources.	1.6.4-a	*The Master Development Plan requires that street lights be utilized only in key intersections and safety areas. The Planned Community Development Plan requires that a "dark sky" lighting concept will be implemented within areas of the Project that adjoin habitat areas. Light fixtures within these areas will be designed for "dark sky" applications and adjusted to direct/reflect light downward and away from adjacent habitat areas. The Newport Banning Ranch Planned Community Development Plan will restrict exterior house lighting to minimize light spillage into adjacent habitat areas.* (EIR Biological Resources PDF 4.6-4.)	Mitigation Monitoring Program for certified Project EIR.
2	WATERSHED	*2.1*	***Runoff Management:*** *Meet or exceed local flood control standards*	2.1.1	Implement development practices that maintain the existing hydrologic character of the site while reducing erosion and sedimentation.	2.1.1-a	A detention/water cleansing basin will be constructed at or near the off-site entrance to the Southern Arroyo to reduce peak storm flow generated in off-site tributary areas of Costa Mesa and Newport Beach.	A comprehensives Watershed Assessment Report submitted as part of the Project Application and the Master Drainage Plan and Water Quality Management Plan (WQMP) submitted as part of the NBR-MDP will function as the Project's primary component for implementing the commitments described. Additionally, future Project-Level WQMPs will be submitted as part of all land use development projects within the Project Site as required by the NBR-MDP.

RESOURCE MANAGEMENT PERFORMANCE MATRIX
GREEN AND SUSTAINABLE COMMUNITY PROGRAM FOR NEWPORT BANNING RANCH

RESOURCE #	RESOURCE SYSTEM		GOALS AND OBJECTIVES		STRATEGIES		COMMITMENTS	IMPLEMENTING PLANS/ PROGRAMS
2	**WATERSHED**					2.1.1-b	Peak flows will be redirected to the Lowland area to reduce Semeniuk Slough (Oxbow Loop) impacts.	A comprehensives Watershed Assessment Report submitted as part of the Project Application and the Master Drainage Plan and Water Quality Management Plan (WQMP) submitted as part of the NBR-MDP will function as the Project's primary component for implementing the commitments described. Additionally, future Project-Level WQMPs will be submitted as part of all land use development projects within the Project Site as required by the NBR-MDP.
						2.1.1-c	Maintain existing flow rates to the West Coast Highway and the Southern Arroyo drainage systems by implementing bio-cells and adjusting the proposed tributary areas.	A comprehensives Watershed Assessment Report submitted as part of the Project Application and the Master Drainage Plan and Water Quality Management Plan (WQMP) submitted as part of the NBR-MDP will function as the Project's primary component for implementing the commitments described. Additionally, future Project-Level WQMPs will be submitted as part of all land use development projects within the Project Site as required by the NBR-MDP.
		2.2	***Water Quality Treatment:*** *Meet or exceed State Water Resource Water Quality Control Board requirements*	2.2.1	Implement source control and water quality treatment to treat runoff and improve the water quality outletting to the Oxbow Loop and Lowland areas.	2.2.1-a	A detention/water cleansing basin will be constructed at the entrance to the Southern Arroyo to cleanse off-site tributary runoff from the commercial area east of the Project Site.	A comprehensives Watershed Assessment Report submitted as part of the Project Application and the Master Drainage Plan and Water Quality Management Plan (WQMP) submitted as part of the NBR-MDP will function as the Project's primary component for implementing the commitments described. Additionally, future Project-Level WQMPs will be submitted as part of all land use development projects within the Project Site as required by the NBR-MDP.

RESOURCE MANAGEMENT PERFORMANCE MATRIX
GREEN AND SUSTAINABLE COMMUNITY PROGRAM FOR NEWPORT BANNING RANCH

RESOURCE #	RESOURCE SYSTEM		GOALS AND OBJECTIVES		STRATEGIES		COMMITMENTS	IMPLEMENTING PLANS/ PROGRAMS
2	**WATERSHED**					2.2.1-b	Include, in site design, allowances for Best Management Practices such as bio-cells along proposed streets, bio-swales in park areas, and, if appropriate to the height/ density/scale of the development, subterranean parking in some multi-family products.	A comprehensives Watershed Assessment Report submitted as part of the Project Application and the Master Drainage Plan and Water Quality Management Plan (WQMP) submitted as part of the NBR-MDP will function as the Project's primary component for implementing the commitments described. Additionally, future Project-Level WQMPs will be submitted as part of all land use development projects within the Project Site as required by the NBR-MDP.
		2.3	***Project Design Features to Avoid/Reduce Environmental Impacts:*** *Incorporate Project Design Features (PDFs) into the NBR Planned Community Development Plan (NBR-PC) and the NBR Master Development Plan (NBR-MDP) to avoid/reduce the environmental impacts of the Project, as determined by the Project EIR prepared pursuant to the California Environmental Quality Act (CEQA).*	2.3.1	Treat off-site urban runoff from Costa Mesa and Newport Beach and Project runoff that drains into the Lowland Area.	2.3.1-a	*The Master Development Plan requires that two water quality basins (one in the Community Park and one in the Open Space Preserve) be constructed to treat off-site urban runoff from Costa Mesa and Newport Beach and Project runoff that drains into the Lowland Area.* (EIR Hydrology and Water Quality PDF 4.4-1.)	Mitigation Monitoring Program for certified Project EIR.
				2.3.2	Include a water quality basin and a diffuser basin to provide for storm water control, energy dissipation, and natural water quality treatment.	2.3.2-a	*The Master Development Plan includes a water quality basin and a diffuser basin located within the Open Space Preserve to l provide for storm water control, energy dissipation, and natural water quality treatment.* (EIR Hydrology and Water Quality PDF 4.4-2.)	Mitigation Monitoring Program for certified Project EIR.
				2.3.3	Design public arterials and selected collector roadways within the Project to be designed with "Green Street" and other Low Impact Development (LID) features,	2.3.3-a	*The Master Development Plan requires that public arterials and some selected collector roadways throughout the Project site be designed with "Green Street" and other Low Impact Development (LID) features, such as bioswales and bio-cells. Green Streets are designed to incorporate sustainable design elements such as narrower pavement widths, canopy street trees, traffic-calming features, and minimal street lighting. Landscaping along the street edges will be selectively used to treat storm water runoff from the streets and adjacent development areas.* (EIR Hydrology and Water Quality PDF 4.4-3).	Mitigation Monitoring Program for certified Project EIR.
				2.3.4	Plant arroyos with native riparian vegetation as part of habitat restoration and consistent with fire management plans to minimize potential erosion and enhance water-cleansing.	2.3.4-a	*The Master Development Plan requires that arroyos be planted with native riparian vegetation in areas as part of restoration effort to minimize potential erosion and to indirectly enhance the water-cleansing function.* (EIR Hydrology and Water Quality PDF 4.4-4.)	Mitigation Monitoring Program for certified Project EIR.

RESOURCE MANAGEMENT PERFORMANCE MATRIX
GREEN AND SUSTAINABLE COMMUNITY PROGRAM FOR NEWPORT BANNING RANCH

RESOURCE #	RESOURCE SYSTEM		GOALS AND OBJECTIVES		STRATEGIES		COMMITMENTS	IMPLEMENTING PLANS/ PROGRAMS
2	**WATERSHED**			2.3.5	Stabilize and maintain runoff systems from the Project site to West Coast Highway and the Semeniuk Slough..	2.3.5-a	*The Master Development Plan requires development of a drainage plan to ensure that runoff systems from the Project site to West Coast Highway and the Semeniuk Slough will be stabilized and maintained through the Project's drainage system.* (EIR Hydrology and Water Quality PDF 4.4-5.)	Mitigation Monitoring Program for certified Project EIR.
				2.3.6	Use best management practices (BMPs) for erosion control, sediment control, wind erosion control, storm water and non-storm water management, and waste management/pollution control.	2.3.6-a	*The Master Development Plan requires the use of best management practices (BMPs) for erosion control, sediment control, wind erosion control, storm water and non-storm water management, and waste management/pollution control. These BMPs will be implemented to ensure that potential effects on local site hydrology, runoff, and water quality remain in compliance with all required permits, City policies, and the Project's Water Quality Management Plan (WQMP), and Storm Water Pollution Prevention Plan (SWPPP).* (EIR Hydrology and Water Quality PDF 4.4-6.)	Mitigation Monitoring Program for certified Project EIR.
3	**ENERGY, AIR, AND WATER**	***3.1***	***Energy Efficiency:*** *Meet and exceed energy code requirements and convey information about their performance to stakeholders both pre-and post-entitlement.*	3.1.1	Reduce emissions through design and building features.	3.1.1-a	All residential buildings will exceed 2008 Title 24 requirements by at least 5% through improved design, materials, construction, inspection, and equipment/appliance specifications.	The NBR-PC and NBR-MDP will function as the Project's primary components for implementing the commitments described.
				3.1.2	Provide each Dwelling Unit with the capability to visualize real time energy use and track consumption over time.	3.1.2-a	Residential building multimetering "Dashboards" will be installed in all homes.	The NBR-PC and NBR-MDP will function as the Project's primary components for implementing the commitments described.
		3.2	***Potable Water Use:*** *Meet or exceed local agency recommendations for water conservation.*	3.2.1	Use a variety of water-saving devices to reduce indoor water use.	3.2.1-a	Builder-installed indoor appliances, including dishwashers, showers, and toilets, will be low water use.	The NBR-PC and NBR-MDP will function as the Project's primary components for implementing the commitments described.
						3.2.1-a	Homeowner Association (HOA) owned and operated public and/or common area men's restrooms will be required to feature waterless urinals.	The NBR-PC and NBR-MDP will function as the Project's primary components for implementing the commitments described.

RESOURCE MANAGEMENT PERFORMANCE MATRIX
GREEN AND SUSTAINABLE COMMUNITY PROGRAM FOR NEWPORT BANNING RANCH

RESOURCE #	RESOURCE SYSTEM		GOALS AND OBJECTIVES		STRATEGIES		COMMITMENTS	IMPLEMENTING PLANS/ PROGRAMS
3	ENERGY, AIR, AND WATER	***3.3***	***Irrigation Water Use:*** *Save energy and emissions embodied in water through landscape design.*	3.3.1	Use a mixture of native water-saving plantings and high-efficiency irrigation systems.	3.3.1-a	100% of the new plant materials in the Upland and Lowland Open Space Districts will be California natives.	The NBR-PC and NBR-MDP will function as the Project's primary components for implementing the commitments described.
						3.3.1-b	All public and common area landscaping will be irrigated by a "Smart Controller" system featuring satellite weather data, rain sensors, and/or moisture sensors.	The NBR-PC and NBR-MDP will function as the Project's primary components for implementing the commitments described.
						3.3.1-c	Community landscape areas will be designed on a "hydrozone" basis where plants are planted in groups according to their water requirements and sun and wind exposures.	The NBR-PC and NBR-MDP will function as the Project's primary components for implementing the commitments described.
		3.4	***Storm Water Conservation:*** *Incorporate storm water conservation and groundwater protection strategies where feasible.*	3.4.1	Implement rainfall infiltration and impounding through planning and design of streets and rights-of-way.	3.4.1-a	Many streets will be designed and constructed as "green" streets with bio-swales. Impoundment areas will be designed and constructed to capture, treat, and retain runoff.	The NBR-PC and NBR-MDP will function as the Project's primary components for implementing the commitments described.
		3.5	***Transportation Emissions:*** *Strive for below-average levels of transportation-related greenhouse gas emissions.*	3.5.1	Consider access to transit, proximity to diverse land uses, and connectivity for pedestrians and bicycles in project's design features.	3.5.1-a	The community's design provides access to transit, proximity to diverse land uses, and connectivity for pedestrians and bicycles.	The NBR-PC and NBR-MDP will function as the Project's primary components for implementing the commitments described.
		3.6	***Solid Waste:*** *Meet and exceed regional waste diversion goals.*	3.6.1	Include project features and educational measures to reduce waste generation rates and promote recycling.	3.6.1-a	Recycling, reuse, and reduced-use information and educational materials will be provided to all residents.	The NBR-PC and NBR-MDP will function as the Project's primary components for implementing the commitments described.
		3.7	***Construction Waste Recycling:*** *Increase construction waste recycling.*	3.7.1	Reduce associated life cycle greenhouse gas emissions.	3.7.1-a	Construction waste diversion rate will be increased by 50% from standard 2010 practices.	The NBR-PC and NBR-MDP will function as the Project's primary components for implementing the commitments described.
		3.8	***Materials:*** *Use materials with relatively low environmental impacts.*	3.8.1	Evaluate and implement materials with relatively low environmental impacts.	3.8.1-a	Building materials and finishes will contain low amounts of Volatile Organic Compounds (VOCs).	The NBR-PC and NBR-MDP will function as the Project's primary components for implementing the commitments described.

RESOURCE MANAGEMENT PERFORMANCE MATRIX
GREEN AND SUSTAINABLE COMMUNITY PROGRAM FOR NEWPORT BANNING RANCH

RESOURCE #	RESOURCE SYSTEM		GOALS AND OBJECTIVES		STRATEGIES		COMMITMENTS	IMPLEMENTING PLANS/ PROGRAMS
3	**ENERGY, AIR, AND WATER**					3.8.1-b	Air conditioning units will be Freon-free.	The NBR-PC and NBR-MDP will function as the Project's primary components for implementing the commitments described.
						3.8.1-c	Concrete for paving in public infrastructure and Project common areas will not be acid-washed unless mandated by agency requirements.	The NBR-PC and NBR-MDP will function as the Project's primary components for implementing the commitments described.
		3.10	***Project Design Features to Avoid/ Reduce Environmental Impacts:*** *Incorporate Project Design Features (PDFs) into the NBR Planned Community Development Plan (NBR-PC) and the NBR Master Development Plan (NBR-MDP) to avoid/reduce the environmental impacts of the Project, as determined by the Project EIR prepared pursuant to the California Environmental Quality Act (CEQA).*	3.10.1	Design and implement that Project so that it is consistent with a recognized green building program.	3.10.1-a	*The Newport Banning Ranch Planned Community Development Plan and the Master Development Plan require that the Project be consistent with a recognized green building program that exists at the time of final Project approval such as, but not limited to, Build It Green, the U.S. Green Building Council's (USGBC's) Leadership in Energy and Environmental Design-Neighborhood Development (LEED-ND), California Green Builder, or National Association of Home Builders' National Green Building Standard.* (EIR Greenhouse Gas Emissions PDF 4.11-1.)	Mitigation Monitoring Program for certified Project EIR.
				3.10.2	Design and implement that Project so that it will exceed adopted 2008 Title 24 energy conservation requirements by a minimum of 5 percent.	3.10.2-a	*The Newport Banning Ranch Planned Community Development Plan and the Master Development Plan require the Project to exceed adopted 2008 Title 24 energy conservation requirements by a minimum of 5 percent.* (EIR Greenhouse Gas Emissions PDF 4.11-2.)	Mitigation Monitoring Program for certified Project EIR.

RESOURCE MANAGEMENT PERFORMANCE MATRIX
GREEN AND SUSTAINABLE COMMUNITY PROGRAM FOR NEWPORT BANNING RANCH

RESOURCE #	RESOURCE SYSTEM		GOALS AND OBJECTIVES		STRATEGIES		COMMITMENTS	IMPLEMENTING PLANS/ PROGRAMS
3	**ENERGY, AIR, AND WATER**			3.10.3	Design and implement the Project so that it meets green building standards related to: a. low water use b. waterless urinals c. Freon free air conditioning d. avoidance of acid-washed concrete e. HOA education on recycling f. multimetering dashboards to visualize energy use g. design compatibility for solar power technology	3.10.3-a	*The Newport Banning Ranch Planned Community Development Plan and the Master Development Plan require that all residential development incorporate the following measures, which will be reflected on and incorporated into every application for a final subdivision map that creates residential lots:* *a. Builder-installed indoor appliances, including dishwashers, showers, and toilets, will be low water use. Homeowner Association (HOA) owned and operated public and/or common area men's restrooms will be required to feature waterless urinals.* *b. Smart Controller irrigation systems will be installed in all public and common area landscaping. Community landscape areas will be designed on a "Hydrozone" basis to group plants according to their water requirements and sun exposure.* *c. Air conditioning units will be Freon-free.* *d. Concrete for paving in public infrastructure and Project common areas will not be acid-washed unless mandated by agency requirements.* *e. The future homeowners association for Newport Banning Ranch will be required to provide educational information on recycling to all homeowners prior individual purchase of property and again annually.* *f. Multimetering "dashboards" will be provided in each dwelling unit to visualize real-time energy use.* *g. Single-family detached residential roofs, commercial building roofs, and HOA-owned public building roofs, which have adequate solar orientation, shall be designed to be compatible with the installation of photovoltaic panels or other current solar power technology.* (EIR Greenhouse Gas Emissions PDF 4.11-4.)	Mitigation Monitoring Program for certified Project EIR.

RESOURCE MANAGEMENT PERFORMANCE MATRIX
GREEN AND SUSTAINABLE COMMUNITY PROGRAM FOR NEWPORT BANNING RANCH

RESOURCE #	RESOURCE SYSTEM		GOALS AND OBJECTIVES		STRATEGIES		COMMITMENTS	IMPLEMENTING PLANS/ PROGRAMS
3	**ENERGY, AIR, AND WATER**			3.10.4	Implement the Project to reduce construction waste and recycle and reuse on-site materials to reduce off-site hauling and associated traffic.	3.10.4-a	*The Newport Banning Ranch Planned Community Development Plan and the Master Development Plan require that the following measures be implemented during initial project grading activities and will be incorporated into all grading permit applications submitted to the City:* *• a. Construction waste diversion will be increased by 50 percent from 2010 requirements.* *• b. To the extent practical, during the oilfield clean-up and remediation process, the Landowner/Master Developer will be required to recycle and reuse materials on site to minimize off-site hauling and disposal of materials and associated off-site traffic.* (EIR Greenhouse Gas Emissions PDF 4.11-5.)	Mitigation Monitoring Program for certified Project EIR.
4	**CARBON SEQUESTRATION**	***4.1***	***Carbon Sequestration:*** Use on-site restoration of natural habitats as well as planting of public parks and open space areas for carbon sequestration.	4.1.1	Evaluate the potential for carbon sequestration and, where feasible, design restoration programs to enhance natural sequestration.	4.1.1-a	Planting to implement HRP has been enhanced in terms of habitat creation, restoration, and overall enhancement resulting in increased carbon sequestration.	A comprehensive Habitat Restoration Plan (HRP) provided with the NBR-MDP will function as the Project's primary component for implementing the commitments described. (See Implementing Plans/Programs for 1.1.1-a above.)
						4.1.1-b	Community landscaping improvements for streets, parks, common areas, open space areas, and habitat areas will be enhanced, restored, and improved with major supplemental plantings that will dramatically increase the biomass of Newport Banning Ranch, providing for significant onsite carbon sequestration.	The NBR-PC and NBR-MDP will function as the Project's primary components for implementing the commitments described.
				4.1.2	Evaluate potential for topsoil mining to maximize carbon banking through tree/planting programs.	4.1.2-a	Non-contaminated topsoil from on-site grading areas will be stripped, stockpiled, and reused in public parks and community landscape areas.	The NBR-PC and NBR-MDP will function as the Project's primary components for implementing the commitments described.

RESOURCE MANAGEMENT PERFORMANCE MATRIX
GREEN AND SUSTAINABLE COMMUNITY PROGRAM FOR NEWPORT BANNING RANCH

RESOURCE #	RESOURCE SYSTEM		GOALS AND OBJECTIVES		STRATEGIES		COMMITMENTS	IMPLEMENTING PLANS/ PROGRAMS
5	TRAFFIC AND TRANSPORTATION	*5.1*	***Reduced Vehicle Miles Traveled:*** *Create opportunities for and improve alternative modes of transportation.*	5.1.1	Provide a pedestrian-friendly design through site planning.	5.1.1-a	Streets and intersections will be designed to create a safe, pleasant pedestrian experience that encourages walking and bicycling in place of the auto.	The NBR-PC and NBR-MDP will function as the Project's primary components for implementing the commitments described.
				5.1.2	Evaluate the opportunity for a pedestrian bridge connection over West Coast Highway.	5.1.2-a	The community's design will propose for a pedestrians and bicycle bridge connection over West Coast Highway to connect the Project with the beach area.	The NBR-PC and NBR-MDP will function as the Project's primary components for implementing the commitments described.
				5.1.3	Provide opportunities for advanced communications technology (telecommuting).	5.1.3-a	Fiber-optic systems (FiOS), or similar high-speed communication technology available at the time of development, will be installed to all homes.	The NBR-PC and NBR-MDP will function as the Project's primary components for implementing the commitments described.
		5.2	***Reduced Impacts to Adjacent Areas:*** *Improve traffic flow in and around project site.*	5.2.1	Include multiple dispersion routes for vehicular traffic flow in and around site.	5.2.1-a	Streets – including Bluff Road and 15th, 16th, and 17th Streets – will be designed and improved to offer multiple route choices to reduce congestion, both internally and externally.	The NBR-PC and NBR-MDP will function as the Project's primary components for implementing the commitments described.
				5.2.2	Include an opportunity within the Project to provide public access to Sunset Ridge Park.	5.2.2-a	Public vehicular/pedestrian access will be designed from Bluff Road, through the Community Park, to the City's Sunset Ridge Park, which lies east of the Project Site.	The NBR-PC and NBR-MDP will function as the Project's primary components for implementing the commitments described.
				5.2.3	Use landscape design features to create green and calm streets.	5.2.3-a	Median islands will provide additional landscape areas.	The NBR-PC and NBR-MDP will function as the Project's primary components for implementing the commitments described.
				5.2.4	Use traffic-calming devices, where feasible, to better manage vehicular traffic.	5.2.4-a	Intersection bulb-outs will provide for reduced vehicle speeds, higher traffic volumes, and safer, calmed traffic flow.	The NBR-PC and NBR-MDP will function as the Project's primary components for implementing the commitments described.

RESOURCE MANAGEMENT PERFORMANCE MATRIX
GREEN AND SUSTAINABLE COMMUNITY PROGRAM FOR NEWPORT BANNING RANCH

RESOURCE #	RESOURCE SYSTEM		GOALS AND OBJECTIVES		STRATEGIES		COMMITMENTS	IMPLEMENTING PLANS/ PROGRAMS
5	**TRAFFIC AND TRANSPORTATION**	***5.3***	***Project Design Features to Avoid/Reduce Environmental Impacts:*** *Incorporate Project Design Features (PDFs) into the NBR Planned Community Development Plan (NBR-PC) and the NBR Master Development Plan (NBR-MDP) to avoid/reduce the environmental impacts of the Project, as determined by the Project EIR prepared pursuant to the California Environmental Quality Act (CEQA).*	5.3.1	Provide arterial highway capacity needed to address existing demand as well as for planned growth in the region.	5.3.1-a	*In addition to mitigating traffic impacts of the Project, the transportation improvements included in the Master Development Plan provide arterial highway capacity needed to address existing demand as well as for planned growth in the region through implementing portions of the City's General Plan and the County's Master Plan of Arterial Highways.* (EIR Transportation and Circulation PDF 4.9-1.)	Mitigation Monitoring Program for certified Project EIR.
				5.3.2	Provide arterial roadway improvements and contributions toward off-site improvements earlier in the development phasing program than needed to mitigate Project traffic impacts.	5.3.2-a	*The Pre-Annexation and Development Agreement requires that arterial roadway improvements and contributions toward off-site improvements be provided earlier in the development phasing program than needed to mitigate Project traffic impacts and requires that contributions toward off-site improvements be provided early relative to the development phasing.* (EIR Transportation and Circulation PDF 4.9-2.)	Mitigation Monitoring Program for certified Project EIR.
				5.3.3	Include a new arterial connection between West Coast Highway and 19th Street to enhance access to and from Costa Mesa and help mitigate projected regional growth impacts.	5.3.3-a	*The Master Development Plan includes a new arterial connection between West Coast Highway and 19th Street that will provide enhanced access to and from southwest Costa Mesa which will contribute to the mitigation of the impacts of projected regional growth.* (EIR Transportation and Circulation PDF 4.9-3.)	Mitigation Monitoring Program for certified Project EIR.
				5.3.4	Provide for commercial uses within walking distance of the proposed and nearby residential neighborhoods to reduce vehicle trips and vehicle miles traveled.	5.3.4-a	*The Master Development Plan provides for commercial uses in the Mixed-Use/Residential and Visitor-Serving Resort/Residential Land Use Districts, within walking distance of the proposed residential neighborhoods and nearby residential areas to reduce vehicle trips and vehicle miles traveled.* (EIR Air Quality PDF 4.10-1.)	Mitigation Monitoring Program for certified Project EIR.
				5.3.5	Plan the Project so that it can provide a pedestrian and bicycle bridge over West Coast Highway to connect inland and beach areas.	5.3.5-a	*If permitted by all applicable agencies, a pedestrian and bicycle bridge over West Coast Highway will be provided, as set forth in the Master Development Plan, from the Project Site to a location south of West Coast Highway to encourage walking and bicycling to and from the beach.* (EIR Recreation and Trails PDF 4.8-3.)	Mitigation Monitoring Program for certified Project EIR.

RESOURCE MANAGEMENT PERFORMANCE MATRIX
GREEN AND SUSTAINABLE COMMUNITY PROGRAM FOR NEWPORT BANNING RANCH

RESOURCE #	RESOURCE SYSTEM		GOALS AND OBJECTIVES		STRATEGIES		COMMITMENTS	IMPLEMENTING PLANS/ PROGRAMS
5	**TRAFFIC AND TRANSPORTATION**			5.3.6	Coordinate with Orange County Transportation Authority (OCTA) to allow for a transit routing through the community, and to provide bus stops and/or shelters.	5.3.6-a	*The Newport Banning Ranch Planned Community Development Plan and the Master Development Plan require the Project to be coordinated with Orange County Transportation Authority (OCTA) to allow for a transit routing through the community, and will provide bus stops and/or shelters as needed in the community to accommodate the bus routing needed by OCTA.* (EIR Greenhouse Gas Emissions PDF 4.11-3.)	Mitigation Monitoring Program for certified Project EIR.
6	**PUBLIC VIEWS AND ACCESS**	***6.1***	***New Accessways and Places:*** *Create public views and trails through Project design. (There currently are no public views from with the Project site.)*	6.1.1	Design a variety of view parks accessible by the public.	6.1.1-a	The entire western and southern perimeter of the community is designed as a linear public Bluff Park offering numerous vista points.	The NBR-PC and NBR-MDP will function as the Project's primary components for implementing the commitments described.
				6.1.2	Design public trails in all directions with connections to surrounding open space areas and facilitate public access to nearby neighborhoods.	6.1.2-a	An extensive network of public trails, including the Lowland Trail, Upland Trail, Arroyo Trail, Bluff Toe Trail, and Bluff Park Trails totaling approximately 5 miles will link all areas of the community with connections to the beach and the Santa Ana River Trail System.	The NBR-PC and NBR-MDP will function as the Project's primary components for implementing the commitments described.
				6.1.3	Provide the opportunity for a pedestrian bridge connection over West Coast Highway.	6.1.3-a	The Project proposes to provide a bridge connection to the beach over West Coast Highway for pedestrians and bicycles.	The NBR-PC and NBR-MDP will function as the Project's primary components for implementing the commitments described.
		6.2	***Viewshed Protections:*** *Address visual impacts on public and private viewsheds.*	6.2.1	Use visual studies and simulations to refine project design, grading, landscape, and architecture.	6.2.1-a	Visual studies and simulations have been used to refine project design – grading, landscape, architecture – affecting public views (e.g., roads, parks, and open space).	The NBR-PC and NBR-MDP will function as the Project's primary components for implementing the commitments described.
		6.3	***Project Design Features to Avoid/Reduce Environmental Impacts:*** *Incorporate Project Design Features (PDFs) into the NBR Planned Community Development Plan (NBR-PC) and the NBR Master Development Plan (NBR-MDP) to avoid/reduce the environmental impacts of the Project, as determined by the Project EIR prepared pursuant to the California Environmental Quality Act (CEQA).*	6.3.1	Plan the Project so that it provides a public park system that exceeds minimum City General Plan and Municipal Code requirements, including the City's local park requirements pursuant to the State Quimby Act.	6.3.1-a	*The Master Development Plan and Tentative Tract Map provide for approximately 51 gross (42 net) acres of public parkland in the form of an approximately 27-gross-acre (23-net-acre) public Community Park, 2 bluff parks comprising approximately 21 gross (18 net) acres, and 3 interpretive parks containing approximately 4 gross (3 net) acres. The approximately 27 acres for the public Community Park exceeds the City's Municipal Code requirement for park dedication for the 1,375-unit Project, which is approximately 15 acres.* (EIR Recreation and Trails PDF 4.9-1.)	Mitigation Monitoring Program for certified Project EIR.

RESOURCE MANAGEMENT PERFORMANCE MATRIX
GREEN AND SUSTAINABLE COMMUNITY PROGRAM FOR NEWPORT BANNING RANCH

RESOURCE #	RESOURCE SYSTEM		GOALS AND OBJECTIVES		STRATEGIES		COMMITMENTS	IMPLEMENTING PLANS/ PROGRAMS
6	PUBLIC VIEWS AND ACCESS			6.3.2	Plan the Project so that it provides a system of bicycle, pedestrian, and interpretive trails within the developed areas and the Upland and Lowland Open Space Districts.	6.3.2-a	*The Master Development Plan provides a system of bicycle, pedestrian, and interpretive trails within the developed areas and the Upland and Lowland Open Space areas of the Project.* (EIR Recreation and Trails PDF 4.9-2.)	Mitigation Monitoring Program for certified Project EIR.
				6.3.3	Plan the Project so that it can provide a pedestrian and bicycle bridge over West Coast Highway to connect inland and beach areas.	6.3.3-a	*If permitted by all applicable agencies, a pedestrian and bicycle bridge over West Coast Highway will be provided, as set forth in the Master Development Plan, from the Project Site to a location south of West Coast Highway to encourage walking and bicycling to and from the beach.* (EIR Recreation and Trails PDF 4.8-3.)	Mitigation Monitoring Program for certified Project EIR.
7	WILDLAND FIRE AND LIFE SAFETY	*7.1*	***Fire and Life Safety Protection:*** *Protect life and property from wildland fire hazards.*	7.1.1	Provide appropriate fuel management zones between occupied structures and fire hazard areas.	7.1.1-a	A fire model analysis as to the exposure of structures to wildland fire hazards has been prepared. These studies have been provided in the site planning for the community and in the design of fuel management zones and an enhanced construction zones. These studies are provided in conjunction with the Planned Community Development Plan and Master Development Plan/ Tentative Tract Map.	The NBR-PC (Fire and Life Safety Regulations) and the Newport Banning Ranch Fire and Life Safety Program provided with the NBR-MDP will function as the Project's primary components for implementing the commitments described.
				7.1.2	Establish fuel management zones and programs to maintain the integrity of designated habitat areas.	7.1.2-a	The site planning for the community and the design of fuel management zones and programs have been completed with considerable consultation with the project biologist to respect and maintain the integrity of existing potential Special-Status Habitat areas proposed by the HRP. These studies are provided in conjunction with the Planned Community Development Plan and Master Development Plan/Tentative Tract Map.	The NBR-PC (Fire and Life Safety Regulations) and the Newport Banning Ranch Habitat Restoration Program and Fire and Life Safety Program provided with the NBR-MDP will function as the Project's primary components for implementing the commitments described.
				7.1.3	Incorporate fire-resistant design, materials, and methods for occupied structures where required.	7.1.3-a	All structures will be designed and constructed to meet or exceed fire-resistant standards and codes for materials and methods.	The NBR-PC (Fire and Life Safety Regulations) and the Newport Banning Ranch Fire and Life Safety Program provided with the NBR-MDP will function as the Project's primary components for implementing the commitments described.

RESOURCE MANAGEMENT PERFORMANCE MATRIX
GREEN AND SUSTAINABLE COMMUNITY PROGRAM FOR NEWPORT BANNING RANCH

RESOURCE #	RESOURCE SYSTEM		GOALS AND OBJECTIVES		STRATEGIES		COMMITMENTS	IMPLEMENTING PLANS/ PROGRAMS
7	WILDLAND FIRE AND LIFE SAFETY			7.1.4	Provide adequate emergency equipment access routes to all occupied structures.	7.1.4-a	Emergency equipment access to all structures will be designed in consultation with City public safety officials to meet or exceed all codes and standards.	The NBR-PC (Fire and Life Safety Regulations) and the Newport Banning Ranch Fire and Life Safety Program provided with the NBR-MDP will function as the Project's primary components for implementing the commitments described.
		7.2	***Project Design Features to Avoid/Reduce Environmental Impacts:*** *Incorporate Project Design Features (PDFs) into the NBR Planned Community Development Plan (NBR-PC) and the NBR Master Development Plan (NBR-MDP) to avoid/reduce the environmental impacts of the Project, as determined by the Project EIR prepared pursuant to the California Environmental Quality Act (CEQA).*	7.2.1	Design the Project to provide fire-resistant construction for all structures adjoining natural open space, including fire-resistant building materials and sprinklers.	7.2.1-a	*The Master Development Plan requires that the Project be designed to provide fire-resistant construction for all structures adjoining natural open space, including utilizing fire-resistant building materials and sprinklers.* (EIR Fire Protection PDF 4.14-1.)	Mitigation Monitoring Program for certified Project EIR.
8	OPEN SPACE	*8.1*	***Open Space Preservation:*** *Set aside a majority of the project site in permanent open space.*	8.1.1	Preserve more than 50% of the Project site in permanent open space, both as natural habitat area and as public park area.	8.1.1-a	More than 240 acres (approximately 60% of the Project Site) will be designated for permanent open space as part of the Open Space Preserve.	The NBR-PC, NBR-MDP, and an Open Space Dedication Program that will be approved as part of or in conjunction with the future Pre-Annexation and Development Agreement (PADA) for the Project will function as the Project's primary components for implementing the commitments described.
				8.1.1	Preserve majority of Lowlands open space habitat.	8.1.1-a	The Project will preserve almost all of the potential Special-Status Habitat in the Lowland as permanent open space.	The NBR-PC and NBR-MDP will function as the Project's primary components for implementing the commitments described.
				8.1.2	Preserve majority of Upland open space habitat.	8.1.2-a	The Project will preserve almost all of the potential Special-Status Habitat in the Upland as permanent open space.	The NBR-PC and NBR-MDP will function as the Project's primary components for implementing the commitments described.

RESOURCE MANAGEMENT PERFORMANCE MATRIX
GREEN AND SUSTAINABLE COMMUNITY PROGRAM FOR NEWPORT BANNING RANCH

RESOURCE #	RESOURCE SYSTEM		GOALS AND OBJECTIVES		STRATEGIES		COMMITMENTS	IMPLEMENTING PLANS/ PROGRAMS
8	**OPEN SPACE**			8.1.3	Avoid and preserve existing sensitive open space habitat where practicable.	8.1.3-a	The Project will, in addition to mitigation restoration, provide for avoidance and long-term preservation and/or restoration of areas of existing coastal sage scrub, maritime succulent scrub/Encelia scrub, southern coastal bluff scrub, alkali meadow, southern black willow forest, southern willow scrub, southern coastal brackish marsh, southern coastal salt marsh, tidal mudflat, and vernal pool habitat.	A comprehensive Habitat Restoration Plan (HRP) provided with the NBR-MDP will function as the Project's primary component for implementing the commitments described.
				8.1.4	Minimize lighting impacts on open space habitat where practicable.	8.1.4-a	The Project will utilize street lights only in key intersections and safety areas. A "dark sky" lighting concept will be implemented within areas of the Project that adjoin habitat areas. Light fixtures within these areas will be designed for "dark sky" applications and adjusted to direct/reflect light downward and away from adjacent habitat areas. Project regulations will restrict exterior house lighting to minimize light spillage into adjacent habitat areas.	The NBR-PC and NBR-MDP will function as the Project's primary components for implementing the commitments described.
				8.1.5	Utilize suitable open space areas as core component of the natural carbon sequestration strategy.	8.1.5-a	The biomass of open space areas will be enhanced through supplemental plantings of California native plants, providing for significant on-site carbon sequestration.	The NBR-PC and NBR-MDP will function as the Project's primary components for implementing the commitments described.
		8.2	***Parkland Creation:*** *Provide active and passive parks to serve this project and adjacent areas.*	8.2.1	Set aside more than 10% of the Project site as permanent park land that is open to the public without restriction.	8.2.1-a	More than 10% (i.e., over 40 acres) of the Project Site will be set aside as publicly accessible park land for active and passive recreation and interpretive purposes.	The NBR-PC, NBR-MDP, and an Open Space Dedication Program that will be approved as part of or in conjunction with the future Pre-Annexation and Development Agreement (PADA) for the Project will function as the Project's primary components for implementing the commitments described.
				8.2.2	Passive and active parks and interpretive areas shall be connected to the trail system.	8.2.2-a	An extensive public trail network, over 5 miles in length, will link open space, parks, and residential and resort areas of the community, with connections to the beach and the Santa Ana River Trail System.	The NBR-PC and NBR-MDP will function as the Project's primary components for implementing the commitments described.
				8.2.3	Evaluate and designate private recreational areas and facilities to augment public parks.	8.2.3-a	Pedestrian paseos, neighborhood greens, and community focal points will provide mini-parks and "third place" elements for the residential areas to increase social interaction and create a sense of place. These will be designated on the Master Development Plan.	The NBR-PC and NBR-MDP will function as the Project's primary components for implementing the commitments described.

RESOURCE MANAGEMENT PERFORMANCE MATRIX
GREEN AND SUSTAINABLE COMMUNITY PROGRAM FOR NEWPORT BANNING RANCH

RESOURCE #	RESOURCE SYSTEM		GOALS AND OBJECTIVES		STRATEGIES		COMMITMENTS	IMPLEMENTING PLANS/ PROGRAMS
8	**OPEN SPACE**	***8.3***	***Project Design Features to Avoid/Reduce Environmental Impacts:*** *Incorporate Project Design Features (PDFs) into the NBR Planned Community Development Plan (NBR-PC) and the NBR Master Development Plan (NBR-MDP) to avoid/reduce the environmental impacts of the Project, as determined by the Project EIR prepared pursuant to the California Environmental Quality Act (CEQA).*	8.3.1	Designate more than 240 acres of the Project Site as Open Space.	8.3.1-a	*The Master Development Plan designates more than 240 gross acres of the Project site as Open Space, including wetland restoration/water quality areas, interpretive trails, habitat restoration areas, and habitat preservation areas. Open Space areas also include 2 sites and a connecting road comprising approximately 17 acres designated for continuing but interim use as oil and gas production sites. At the end of the oilfield's useful life, this area will revert to Open Space land use.* (EIR Land Use and Related Planning Programs PDF 4.1-3.)	Mitigation Monitoring Program for certified Project EIR.
D				8.3.2	Designate areas of the Project Site to for a diverse public park system.	8.3.2-a	*The Master Development Plan designates areas for a diverse public park system to include active, passive, and interpretive recreation opportunities.* (EIR Land Use and Related Planning Programs PDF 4.1-2.)	Mitigation Monitoring Program for certified Project EIR.
				8.3.3	Provide for a minimum of 20 acres of public Bluff Park.	8.3.3-a	*The Master Development Plan provides for a minimum of 21 gross (18 net) acres for public Bluff Parks as a visual and passive recreational amenity, trail corridor, and a transition between open space and development.* (EIR Land Use and Related Planning Programs PDF 4.1-4.)	Mitigation Monitoring Program for certified Project EIR.
				8.3.4	Provide for a minimum of 50 acres of public parkland.	8.3.4-a	*The Master Development Plan and Tentative Tract Map provide for approximately 51 gross (42 net) acres of public parkland in the form of an approximately 27-gross-acre (22-net-acre) public Community Park, 2 bluff parks comprising approximately 21 gross (18 net) acres, and 3 interpretive parks containing approximately 4 gross (3 net) acres. The approximately 27 gross acres for the public Community Park exceeds the City's Municipal Code requirement for park dedication for the 1,375-unit Project, which is approximately 15 acres.* (EIR Recreation and Trails PDF 4.8-1.)	Mitigation Monitoring Program for certified Project EIR.

RESOURCE MANAGEMENT PERFORMANCE MATRIX
GREEN AND SUSTAINABLE COMMUNITY PROGRAM FOR NEWPORT BANNING RANCH

RESOURCE #	RESOURCE SYSTEM		GOALS AND OBJECTIVES		STRATEGIES		COMMITMENTS	IMPLEMENTING PLANS/ PROGRAMS
9	ARCHAEOLOGY AND PALEONTOLOGY	***9.1***	***Cultural Resource Preservation:*** *Comply with accepted practices for the preservation of cultural resource artifacts or recovery of these artifacts in a manner that preserves the scientific and historical value of the resource consistent with local, State, and Federal laws, guidelines, and protocols.*	9.1.1	Research literature and survey the project site using standard protocols.	9.1.1-a	Existing on-site archaeological and paleontological resources have been surveyed, mapped, and evaluated. The results, conclusions and recommendations have been reported in the Cultural Resource Assessment Survey for Agency review in conjunction with preparation of the EIR.	The certified Project EIR, including a comprehensive cultural resource assessment survey, provides the database and necessary mitigation measures Mitigation Monitoring Program to ensure the Project's compliance with the strategies and commitments described.
				9.1.2	Implement recommended mitigation measures during the planning, design, implementation, and construction of the project as appropriate.	9.1.2-a	EIR Mitigation Measures identified in the EIR and in the Cultural Resource Assessment Survey will be implemented in accordance with local, State, and Federal laws, guidelines, and protocols.	The certified Project EIR, including a comprehensive cultural resource assessment survey, provides the database and necessary mitigation measures Mitigation Monitoring Program to ensure the Project's compliance with the strategies and commitments described.
		9.2	***Project Design Features to Avoid/Reduce Environmental Impacts:*** *Incorporate Project Design Features (PDFs) into the NBR Planned Community Development Plan (NBR-PC) and the NBR Master Development Plan (NBR-MDP) to avoid/reduce the environmental impacts of the Project, as determined by the Project EIR prepared pursuant to the California Environmental Quality Act (CEQA).*	9.2.1	No PDFs for archaeological (cultural) or paleontological resources PDFs have been identified.	9.2.1-a	Although no PDFs for archaeological (cultural) or paleontological resources have been identified, although it is anticipated that mitigations for archaeological (cultural) or paleontological resources will be included in the certified Project EIR and required as part of Project implementation.	The certified Project EIR, including a comprehensive cultural resource assessment survey, provides the database and necessary mitigation measures Mitigation Monitoring Program to ensure the Project's compliance with the strategies and commitments described.

RESOURCE MANAGEMENT PERFORMANCE MATRIX
GREEN AND SUSTAINABLE COMMUNITY PROGRAM FOR NEWPORT BANNING RANCH

RESOURCE #	RESOURCE SYSTEM		GOALS AND OBJECTIVES		STRATEGIES		COMMITMENTS	IMPLEMENTING PLANS/ PROGRAMS
10	**OIL AND GAS**	***10.1***	***Compatible Oil and Gas Operations:*** *Provide for compatible ongoing oil and gas recovery operations during project implementation, habitat restoration, public and private development, and ongoing residential occupancy and public and private use.*	10.1.1	Consolidate oil and gas operations, equipment, pipelines, and storage facilities.	10.1.1-a	All oil and gas operations, equipment, pipelines, and storage facilities now spread out over the entire 401-acre property will be consolidated to two oil facility consolidation sites connected by an access road/easement, totaling approximately 17 acres.	The NBR-PC, NBR-MDP, and a Final Remedial Action Plan (RAP) to be approved by the Regional Water Quality Control Board (RWQCB) and the Orange County Health Care Agency (OCHCA) will function as the primary components for implementing the commitments described.
				10.1.2	Provide perimeter plantings, physical barriers, signage, and information where feasible to ensure continuing oil and gas recovery operations are reasonably compatible with the proposed open space, development, and use and occupancy of Newport Banning Ranch Project Site.	10.1.2-a	Perimeter plantings, physical barriers, signage, and informational literature for residents and visitors will be provided where feasible to ensure reasonable compatibility of continued oil and gas recovery operations with the proposed open space restoration, public and private development, and the overall public and private use and residential occupancy of Newport Banning Ranch Project Site.	The NBR-PC, NBR-MDP, and a Final Remedial Action Plan (RAP) to be approved by the Regional Water Quality Control Board (RWQCB) and the Orange County Health Care Agency (OCHCA) will function as the primary components for implementing the commitments described. Additionally, informational literature for prospective home-buyers and residents will be provided in conjunction with full disclosure documents in purchase and sales agreements.
		10.2	***Project Design Features to Avoid/Reduce Environmental Impacts:*** *Incorporate Project Design Features (PDFs) into the NBR Planned Community Development Plan (NBR-PC) and the NBR Master Development Plan (NBR-MDP) to avoid/reduce the environmental impacts of the Project, as determined by the Project EIR prepared pursuant to the California Environmental Quality Act (CEQA).*	10.2.1	Consolidate existing oil operations into two areas within the Open Space Preserve, and provide that these areas revert to an Open Space use at the end of the oilfield's life.	10.2.1-a	*The Master Development Plan requires existing oil operations to be consolidated into two areas within the Open Space Preserve designated as "Interim Oil Facilities", in accordance with the land use districts established for the Project site in the Newport Banning Ranch Planned Community Development Plan, totaling approximately 17 acres including the service access road. This use will ultimately revert to an Open Space land use at the end of the oilfield's useful life.* (EIR Hazards and Hazardous Materials PDF 4.5-1.)	Mitigation Monitoring Program for certified Project EIR.

RESOURCE MANAGEMENT PERFORMANCE MATRIX
GREEN AND SUSTAINABLE COMMUNITY PROGRAM FOR NEWPORT BANNING RANCH

RESOURCE #	RESOURCE SYSTEM		GOALS AND OBJECTIVES		STRATEGIES		COMMITMENTS	IMPLEMENTING PLANS/ PROGRAMS
11	BROWNFIELD CONVERSION AND INFILL DEVELOPMENT	*11.1*	***Safe and Sustainable Infill Community:*** *Provide for the safe and efficient transformation of most of the project site area from an active oil and gas resource recovery operation to a sustainable mixed-use community.*	11.1.1	Provide a sustainable infill development on a portion of the Project Site, with access to public transit.	11.1.1-a	The Project will provide a sustainable infill development on a portion of the Project Site within a 1/2-mile walking distance of existing public transit and additional transit routes to be provided in coordination with OCTA through the community.	The NBR-PC and NBR-MDP will function as the primary components for implementing the commitments described.
				11.1.2	Map oil and gas wells to ensure that no habitable structures are proposed within ten feet of abandoned wells;	11.1.2-a	All oil and gas wells have been accurately mapped and their locations have been considered in the site planning of the community as summarized in the Draft Remedial Action Program (RAP) submitted to the City with Project applications.	The NBR-PC, NBR-MDP, and a Final Remedial Action Plan (RAP) to be approved by the Regional Water Quality Control Board (RWQCB) and the Orange County Health Care Agency (OCHCA) will function as the primary components for implementing the commitments described. If and as necessary, other implementing plans/programs required by law will be approved by public agencies with jurisdiction over oil facility decommissioning and abandonment. The comprehensive final Remedial Action Program (final RAP) will be submitted to and approved by the Regional Water Quality Control Board (RWQCB) and the Orange County Health Care Agency (OCHCA), and implemented for the oil field clean-up and remediation prior to Project development. The final RAP will be based upon the draft RAP and the existing clean-up levels that have been in effect since 2001 and that address ongoing clean-up and remediation activities on the Project Site. The final RAP will identify the remediation methods to be employed that have been previously described in the draft RAP; specify the clean-up levels for specific areas of the Project Site depending upon the land uses proposed for those areas; and provide additional details such as the location of on-site areas for bioremediation.

RESOURCE #	RESOURCE SYSTEM		GOALS AND OBJECTIVES		STRATEGIES		COMMITMENTS	IMPLEMENTING PLANS/ PROGRAMS
11	BROWNFIELD CONVERSION AND INFILL DEVELOPMENT							The cleanup levels shall be approved by the RWQCB and/or OCHCA, and the final RAP will describe the means by which those clean-up standards will be met per the remediation methods described in the draft RAP. Methods described in the draft RAP include the use of natural bio-remediation of soils on site, where and when feasible; and removal and recycling of materials such as concrete, gravel, and asphalt-like road materials.
				11.1.3	Decommission and abandon oil and gas wells outside of on-going oil operations areas in accordance with State standards.	11.1.3-a	The Project will decommission and abandon oil wells in accordance with State of California Department of Oil, Gas, and Geothermal Resources (DOGGR) standards.	The NBR-PC, NBR-MDP, and a Final Remedial Action Plan (RAP) will function as the primary components for implementing the commitments described (See 11.1.2 above.) If and as necessary, other implementing plans/programs required by law will be approved by public agencies with jurisdiction over oil facility decommissioning and abandonment.
				11.1.4	Plan and design all proposed occupied structures to maintain minimum setbacks from abandoned wells.	11.1.4-a	As provided for in the Draft RAP, Construction-level Site Plans will be designed to ensure that no habitable structures is located above or within 10 feet of any abandoned well. Other safety/venting provisions are set forth in the Draft RAP. In particular, the Project will implement recommended mitigation measures to protect habitable structures from potential exposure to methane.	(See Implementing Plans/Programs for 11.1.3-a above.)

RESOURCE MANAGEMENT PERFORMANCE MATRIX
GREEN AND SUSTAINABLE COMMUNITY PROGRAM FOR NEWPORT BANNING RANCH

RESOURCE #	RESOURCE SYSTEM		GOALS AND OBJECTIVES		STRATEGIES		COMMITMENTS	IMPLEMENTING PLANS/ PROGRAMS
11	**BROWNFIELD CONVERSION AND INFILL DEVELOPMENT**			11.1.5	Implement recommended mitigation measures to protect all occupied structures and inhabitants from potential exposure to methane and natural gas and other toxic elements.	11.1.5-a	As set forth in the Draft RAP, the following mitigation measures will be incorporated into oil facility abandonment and remediation: 1. A Hazardous Gas Analysis of the property will be conducted as outlined by the OCFA to determine appropriate mitigation measures as necessary. 2. An Environmental Monitor will be used during site grading to immediately handle any small impacts encountered. 3. Oil well casing tops will be adjusted and tested to respect land use development grading (e.g., keeping the tops of the oil wells close enough to the new surface to be monitored) 4. Methane vents will be installed on all abandoned oil wells within and near land use development. 5. Habitable structures will be prohibited above or within 10 feet of any abandoned oil well. 6. Methane barriers and passive venting will be required for habitable structures near wells.	(See Implementing Plans/Programs for 11.1.3-a above.)
				11.1.6	Use "smart design" to locate new buildings and community facilities to be least affected by prior oil/ energy uses.	11.1.6-a	All oil and gas wells have been mapped and their locations have been considered in site planning and the Tentative Tract Map for the Project.	(See Implementing Plans/Programs for 11.1.3-a above.)
		11.2	***Project Design Features to Avoid/Reduce Environmental Impacts:*** *Incorporate Project Design Features (PDFs) into the NBR Planned Community Development Plan (NBR-PC) and the NBR Master Development Plan (NBR-MDP) to avoid/reduce the environmental impacts of the Project, as determined by the Project EIR prepared pursuant to the California Environmental Quality Act (CEQA).*	11.2.1	Provide for commercial uses within walking distance of the proposed and nearby residential neighborhoods to reduce vehicle trips and vehicle miles traveled.	11.2.1-a	*The Project will include commercial uses, in the Mixed-Use/Residential and Visitor-Serving Resort/Residential Land Use Districts, within walking distance of the proposed residential neighborhoods and nearby residential areas to reduce vehicle trips and vehicle miles traveled.* (EIR Air Quality PDF 4.10.1.)	Mitigation Monitoring Program for certified Project EIR.
				11.2.2	Provide public pedestrian and bicycle trails to reduce auto-dependency by connecting residential neighborhoods to parks and open space within the Project site and to off-site recreational amenities,	11.2.2-a	*The Master Development Plan provides a network of public pedestrian and bicycle trails to reduce auto-dependency by connecting proposed residential neighborhoods to parks and open space within the Project site and to off-site recreational amenities, such as the beach and regional parks and trails.* (EIR Air Quality PDF 4.10.2.)	Mitigation Monitoring Program for certified Project EIR.

RESOURCE MANAGEMENT PERFORMANCE MATRIX
GREEN AND SUSTAINABLE COMMUNITY PROGRAM FOR NEWPORT BANNING RANCH

#	SYSTEM		GOALS AND OBJECTIVES		STRATEGIES		COMMITMENTS	IMPLEMENTING PLANS/ PROGRAMS
11	**BROWNFIELD CONVERSION AND INFILL DEVELOPMENT**			11.2.3	Recycle soil, concrete, and other oil-related equipment/materials, to the maximum extent feasible.	11.2.3-a	*The Newport Banning Ranch Planned Community Development Plan and the Master Development Plan require that the following measures be implemented during initial project grading activities and will be incorporated into all grading permit applications submitted to the City:* *a. Construction waste diversion will be increased by 50 percent from 2010 requirements.* *b. To the extent practical, during the oilfield clean-up and remediation process, the Landowner/Master Developer will be required to recycle and reuse materials on site to minimize off-site hauling and disposal of materials and associated off-site traffic.* (EIR Greenhouse Gas Emissions PDF #4.11-5.)	Mitigation Monitoring Program for certified Project EIR.
12	**GOVERNANCE**	***12.1***	***Dedicated Open Space Management and Maintenance:*** *Provide the structure and process to oversee the long-term operations, management and maintenance of the site's open space areas and resources, as well as the community's common areas.D9*	12.1.1	Establish the Newport Banning Ranch Conservancy or contract with an existing organization, charged with the authority and responsibility to direct the management and maintenance of NBR's various open space preservation areas and programs.	12.1.1-a	The Landowner/Master Developer may make one or more Irrevocable Offer(s) of Dedication to public agencies or non-profit organizations, including but not limited to the City of Newport Beach, County of Orange, a State, or Federal agency, and/or a qualified non-profit organization, to oversee the maintenance and management of Open Space habitat areas. Said non-profit organization may be an existing organization or be established and subsidized by the Landowner/Master Developer.	The NBR-PC, HRP, and the Pre-Annexation and Development Agreement (PADA) will function as the Project's primary components for implementing the commitments described. (See Implementing Plans/Programs for 1.5.1-a above.)
13	**SOCIAL**	***13.1***	***Mixed Income Community:*** *Provide affordable housing on site if and as feasible.*	13.1.1	Construct on-site affordable housing units if and as feasible+A8.	13.1.1-a	Affordable, Moderate-Income dwelling units will be developed in accordance with an Affordable Housing Implementation Plan (AHIP) as required by the City's General Plan Housing Element.	The NBR-PC, the Pre-Annexation and Development Agreement (PADA), and an Affordable Housing Implementation Plan (AHIP) approved by the City will function as the Project's primary components for implementing the commitments described.
		13.2	***Project Design Features to Avoid/Reduce Environmental Impacts:*** *Incorporate Project Design Features (PDFs) into the NBR Planned Community Development Plan (NBR-PC) and the NBR Master Development Plan (NBR-MDP) to avoid/reduce the environmental impacts of the Project, as determined by the Project EIR prepared pursuant to the California Environmental Quality Act (CEQA).*	13.2.1	Include a range of housing types to meet the needs of various economic segments of the community.	13.2.1-a	*The Master Development Plan includes a range of housing types to meet the needs of a variety of economic segments of the community to be design to appeal to different age groups and lifestyles.* (EIR Population, Housing, and Employment PDF 4.7-1.)	Mitigation Monitoring Program for certified Project EIR.

ATTACHMENT A

Climate Change & Carbon Strategy

Newport Banning Ranch

Prepared by CTG Energetics, January 14, 2009

NEWPORT BANNING RANCH
CLIMATE CHANGE & CARBON STRATEGY

INTRODUCTION

This document introduces the issue of climate change and greenhouse gas emissions related to the Newport Banning Ranch (NBR) project. The goal of the document is to provide an introduction to the subject, articulate objectives, and describe a process for communication and evaluation of project performance. These steps provide the foundation for effective collaboration between the City and the project team.

The document is arranged in the following sections:

- Goals
- Introduction to land use and climate change
- Current and emerging regulation
- NBR emissions reduction strategies
- Opportunities for collaboration

Each section has a number of sub-sections that introduce more specific issues, such as individual regulations and options for performance benchmarking. This document outlines a process that will demonstrate that NBR contributes directly to meeting state and local goals for greenhouse gas emissions reductions.

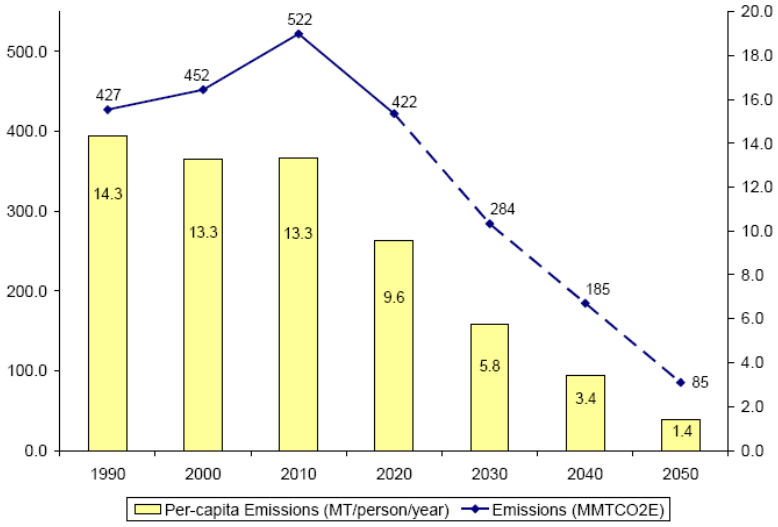
GOALS

PROJECT GOALS

Newport Banning Ranch intends to be an *exceptional* example of sustainable development. The project team believes that the design, construction, and operation of NBR can help the City achieve its climate change and greenhouse gas goals. However, the "rules of the road" with respect to climate and carbon are unclear, and the project seeks the City's cooperation and collaboration in defining a process for the evaluation and communication of project performance. NBR hopes to work with the City to develop a clear process to describe the project's anticipated performance with respect to state and local policy objectives. NBR hopes and expects that this process can be developed through a dialog with staff and City decision makers.

CITY GOALS

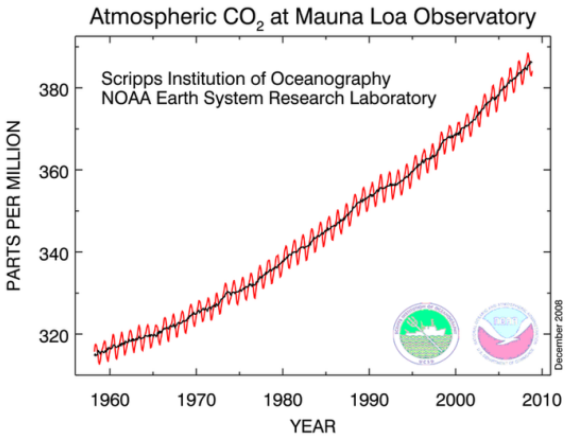
The California Air Resources Board's Implementation Plan for the Global Warming Solutions Act (AB 32) expects local government action to contribute toward the reduction of millions of metric tonnes of CO_2 equivalent by 2020, including 28 MMTC02e from building energy efficiency and rooftop solar photovoltaics and hot water and 5 MMTC02e from regional transportation. These reductions must ultimately be achieved through changes in new and existing buildings and land use. Achieving these goals will require dramatic change from business-as-usual and sustained reductions in emissions for decades into the future. One barometer of this change will be decreases in per capita emissions, such as those illustrated in the accompanying figure from the ARB's adopted Scoping Plan.[1]



INTRODUCTION TO LAND USE AND CLIMATE CHANGE

GLOBAL CLIMATE CHANGE

The Earth's climate is changing. Average surface temperatures have risen by approximately 0.5°C over the last century. The Intergovernmental Panel on Climate Change (IPCC) has repeatedly concluded that these changes are likely to continue and potentially accelerate with significant impacts on human health and natural systems. The IPCC has concluded it is very likely



[1] Figure 6: Emissions Trajectories toward 2050 from page 138 of the ARB Scoping Plan for the Implementation of AB 32.

these changes are driven by anthropogenic emissions of greenhouse gases and that reductions in greenhouse gas emissions may avert or reduce adverse impacts associated with climate change. Studies indicate that the effects of global climate change may include rising surface temperatures, loss of snow pack, sea level rise, more extreme heat days per year, and more drought years.[2]

GHGs are the result of both natural and anthropogenic activities. Forest fires, decomposition, industrial processes, landfills, and consumption of fossil fuels for power generation, transportation, heating, and cooling are the primary sources of GHG emissions. Without human intervention, the Earth maintains an approximate inter-annual balance between the emission of GHGs into the atmosphere and its storage in oceans and terrestrial ecosystems. Events and activities, such as the industrial revolution and the increased combustion of fossil fuels (e.g., gasoline, diesel, coal, etc.), have contributed to the rapid increase in atmospheric levels of GHGs over the last 150 years. This reflects a human-caused imbalance between rates of greenhouse gas emissions and the ability of the Earth to assimilate this waste product.

LAND USE AND GHG EMISSIONS

Buildings and land use are major contributors to California's greenhouse gas emissions. Depending on assumptions, buildings and land use are directly associated with over 50% of California's annual GHG emissions. Sources of GHG emissions associated with NBR include:

- Land-use and land cover change (e.g., changes in carbon sequestration)
- Construction and embodied energy of materials
- Building system operations, including on-site and off-site combustion of fossil fuels
- Transportation, including residents, employees, customers, and services
- Building-related resource and waste streams, including potable and non-potable water and solid waste
- Building retirement, demolition, or renovation

While ownership and control of these emissions is spread across many actors, buildings and land-use projects represent a nexus that brings these factors together and offers opportunities to reduce emissions through changes (and sometimes innovations) in design, construction, and operations.

[2] Existing climate change models also show that climate warming portends a variety of impacts on agriculture, including loss of microclimates that support specific crops, increased pressure from invasive weeds and diseases, and loss of productivity due to changes in water reliability and availability.

CURRENT AND EMERGING REGULATION

There is no clear road map for land use projects dealing with climate change and greenhouse gas emissions, and the NBR team is not aware of any specific requirements from the City or clearly applicable regional or state standards. However, a number of factors have converged to motivate the consideration of climate change and greenhouse gas emissions in the design of projects, particularly during the preparation of environmental documentation. The following sections describe these emerging mandates.

REGULATORY CONTEXT

Consideration for climate change and greenhouse gas emissions in environmental review and documentation is currently driven by a set of issues, including:

- State goals for greenhouse gas emissions reduction articulated in the California's Global Warming Solutions Act (AB32);
- Interpretations of these new goals with respect to existing environmental policy, most notably the California Environmental Quality Act (CEQA);
- Forthcoming state-wide policy, including requirements for project-level GHG analysis (SB 97);
- Linking transportation funding, housing demand, and GHG emissions (SB 375); and
- Private legal action against individual projects, such as lawsuits by non-profit groups.

These factors, along with others, have created *de facto* expectations that land-use and building projects will:

- Discuss the implications of climate change for a project, including the *contributions of the project to greenhouse gas emissions* and the *consequences of changing climatic conditions for the performance of the project*;
- Quantify and report greenhouse gas emissions; and
- Develop and implement strategies that demonstrate *consistency with state goals* for greenhouse gas emissions reductions.

REGULATIONS DIRECTLY AFFECTING THE PROJECT

CALIFORNIA'S GLOBAL WARMING SOLUTIONS ACT (AB 32)

In response to growing scientific and political concern regarding global climate change, California has adopted a series of policies recognizing the threat posed by anthropogenic climate change and setting high-level goals to reduce GHGs from across the economy.

In June 2005, Governor Schwarzenegger signed Executive Order S-3-05, which established GHG emissions targets for the State, as well as a process to ensure the targets are met. As a result of this Executive Order, the California Climate Action Team (CAT), led by the Secretary of the California Environmental Protection Agency, was formed. The CAT published a report in March 2006, in which it laid out several recommendations and strategies for reducing GHG emissions and reaching the targets established in the Executive Order.[3] The GHG targets are:

- By 2010, reduce to 2000 emission levels;
- By 2020, reduce to 1990 emission levels; and
- By 2050, reduce to 80 percent below 1990 levels.

In September 2006, Governor Arnold Schwarzenegger signed the California Global Warming Solutions Act of 2006, also known as AB 32, into law. AB 32 commits the State to achieving the following:

- 2000 GHG emission levels by 2010 (which represents an approximately 11 percent reduction from "business-as-usual")
- 1990 levels by 2020 (approximately 30% percent below "business-as-usual")

To achieve these goals, AB 32 mandates that the California Air Resources Board (ARB) establish a quantified emissions cap, institute a schedule to meet the cap, implement regulations to reduce Statewide GHG emissions from stationary sources, and develop tracking, reporting, and enforcement mechanisms to ensure that reductions are achieved.

[3] California Climate Action Team. Climate Action Team Report to Governor Schwarzenegger and the Legislature, 2006.

The California Air Resources Board recently approved the Climate Change Scoping Plan required by AB 32.[4] The Scoping Plan proposes a *"comprehensive set of actions designed to reduce overall carbon emissions in California, improve our environment, reduce our dependence on oil, diversify our energy sources, save energy, and enhance public health while creating new jobs and enhancing growth in California's economy."* The Scoping Plan indicates that "reducing greenhouse gas emissions to 1990 levels means cutting approximately 30 percent from business-as-usual emission levels projected for 2020, or about 15 percent from today's [absolute] levels". The Scoping Plan defines "business-as-usual" (BAU) as emissions in the absence of GHG reduction measures (i.e., the 2020 BAU forecast does not take credit for reduction from AB 1493 GHG emissions reduction standards for vehicles, implementation of the Renewables Portfolio Standard, or reductions in emissions associated with the Low Carbon Fuel Standard).

The Scoping Plan calls for a *coordinated set of solutions* to address all major categories of GHG emissions:

- Transportation emissions will be addressed through higher standards for vehicle fuel economy, the Low Carbon Fuel Standard, and greater consideration to reducing vehicle miles traveled through land use planning.[5]
- Buildings, land use, and industrial operations will be encouraged and, sometimes, required to use energy more efficiently.
- Utility energy supplies will change to include more renewable energy sources through implementation of the Renewables Portfolio Standard. This will be complemented with emphasis on local generation, including rooftop photovoltaics and solar hot water installations.

The Scoping Plan emphasizes opportunities for households and businesses to save energy and money through increasing energy efficiency. The Scoping Plan indicates that substantial savings of electricity and natural gas will be accomplished by improving energy efficiency by 25 percent. The Scoping Plan identifies a number of specific issues relevant to the proposed Project including:

[4] Available at http://www.arb.ca.gov/cc/scopingplan/document/scopingplandocument.htm

[5] There has also been California legislative activity acknowledging the relationship between land use planning and transportation sector GHG emissions. California Senate Bill 375 (passed Assembly on 8/25/2008; passed Senate on 8/30/2008; signed by the Governor on September 30, 2008) links regional planning for housing and transportation with the greenhouse gas reduction goals outlined in AB 32. Reductions in GHG emissions would be achieved by, for example, locating housing closer to jobs, retail, and transit.

- Discrete Early Actions, including regulation of landfills, motor vehicles, refrigerants, and roofing materials.
- Using a green building framework as a mechanism which could enable GHG emissions reductions in other sectors [i.e., electricity, natural gas].
- Increasing the supply and utilization of green power and lower carbon intensity energy sources.
- Supporting the Department of Water Resources' work to implement the Governor's objective to reduce per capita water use by 20% by 2020.
- Local governments setting quantifiable emissions reduction targets for their jurisdictions and using their influence and authority to encourage reductions in emissions caused by energy use, waste and recycling, water and wastewater systems, transportation, and community design.

SENATE BILL 97

California Senate Bill 97 (SB 97), passed in August 2007, works in conjunction with CEQA and AB 32. SB 97 requires the Governor's Office of Planning and Research (OPR) to prepare and develop guidelines for the mitigation of GHG emissions or the effects thereof, including but not limited to, effects associated with transportation and energy consumption. These guidelines must be transmitted to the Resources Agency by July 1, 2009, to be certified and adopted by January 1, 2010. The OPR and the Resources Agency shall periodically update these guidelines to incorporate new information or criteria established by ARB. SB 97 will apply retroactively to any CEQA documents which have not been finalized.

CALIFORNIA ENVIRONMENTAL QUALITY ACT

The absence of specific guidelines from OPR has not removed or delayed the requirement for projects to consider climate change and greenhouse gas emissions in CEQA documentation. However, the absence of guidelines has meant that specific approaches for addressing these issues vary widely. Many CEQA lead agencies (including draft standards from the Air Resources Board) appear to be converging on a multi-tiered approach.[6]

[6] See the *Proposed CARB Significance Determination Approach* below for more information on one approach recommended by ARB staff.

The first tier would compare a project's performance against a local or regional Climate Action Plan: a plan with very specific components including an emissions inventory, policies for reducing remissions, and a framework for monitoring and verifying emissions reductions.

In the absence of a local plan, a project is evaluated against a second tier of criteria. These are typically described as performance criteria which demonstrate that a proposed project is a substantial departure from "business-as-usual" with respect to climate change greenhouse gas emissions. This involves establishing credible benchmarks to define "business-as-usual" and developing project design features that reduce emissions with relative to these baselines. In practice, this requires indentifying emissions reduction opportunities across a project, including land plan elements, building design and operations, transportation, public infrastructure (e.g., street lighting), solid waste management, water, materials, and construction.

NBR EMISSIONS REDUCTION STRATEGIES

The City of Newport Beach does not currently have a publicly available Climate Action Plan that describes clear goals for emissions reductions or provides guidelines for project-level greenhouse gas emissions performance. In the absence of such a plan, NBR proposes a performance-based based approach that demonstrates that project contributes to state and local goals for greenhouse gas emissions reduction. approach is to address climate change and greenhouse gas emissions is in line with prevailing practice, many proposed assessment approaches, and, most importantly, the concepts used in ARB's Scoping Plan. This includes:

- Assessing the implications of climate change for the project *and* the impact of the project on greenhouse gas emissions.
- Quantifying and disclosing anticipated greenhouse gas emissions through environmental documentation.
- Demonstrating consistency with state and local goals for GHG emissions reduction through project design features.

In line with the intentions of the Scoping Plan, the overall goal is to demonstrate that the project is a substantial break from business-as-usual and provide superior performance with respect to GHG emissions. A full technical discussion of this approach is beyond the scope of this document. The following sections describe the foundation of NBR's approach and illustrate some of the benefits.

PERFORMANCE BENCHMARKS

The most fundamental consideration is the development of performance benchmarks (a.k.a., baselines) that can be used to evaluate NBR's performance relative to state and local goals. NBR recognizes *two* relevant types of performance benchmarks [7].

1. NBR's land use plan will reduce *per capita* GHG emission relative to conventional residential developments through a combination of location, density, connectivity, and diverse land uses.

2. NBR's buildings and infrastructure will reduce the *intensity* of GHG emissions relative to state and local benchmarks, such as the Title 24 energy code. This will be achieved through high performance design and operations, including energy efficiency, water conservation, solid waste management, and, in some cases, the use of on-site renewable energy.

The following sections describe the features of NBR related to each performance area and the types of considerations involved in using this information to evaluate contributions to state and local GHG reduction efforts.

BENCHMARKING THE LAND PLAN

The most critical benchmark involves consideration of the NBR land plan itself. The best metric for this is *per capita* greenhouse gas emissions. Community leaders, planners and CEQA practitioners have long known that project environmental impacts can be effectively reduced on a per-acre basis simply by reducing a project's density. However, this approach to community planning merely displaces environmental impacts to other locations and has contributed to the sprawling development patterns of Southern California. Similar processes can undermine *economy-wide* efforts to address climate change.

A land use plan that supports state and local goals will yield *per capita* emissions lower than current local and regional averages and in line with goals for 2020 and beyond. Per capita emissions metrics should integrate all operational emissions, including building-related energy use, transportation, water, and solid waste. This metric is more meaningful and relevant to state goals than comparisons to past emissions (e.g., 1990 levels). Per capita metrics provide a mechanism to help demonstrate the potential value of NBR in "moving the needle" toward lower emissions for the City as a whole (i.e., helping reduce the rate of growth in emissions from new construction *and* demonstrating strategies for achieving lower carbon footprints per person).

[7] NBR *Land Plan* and *Resource Matrix*

NBR's land use plan will reduce *per capita* GHG emission relative to conventional residential developments through a combination of location, density, connectivity, diverse land uses, and reuse of a brownfield site (Refer to Exhibit 2-1, *Planned Community Development Plan*). These elements reduce *per capita* emissions by providing land uses that reduce trip number and length and allow for non-automobile travel modes. The land use plan also includes more compact dwelling units, many with "shared-wall" construction that can reduce total energy use and increase efficiency. These features are consistent with recommendations from state agencies, including the California Attorney General[8], California Air Resources Board[9], and California Department of Transportation[10].

Specific features of the NBR land plan that could contribute to reductions in *per capita* GHG emissions include:

a) Abandonment, clean-up, and remediation of the existing 65-year-old oil field that covers virtually the entire 402-acre site down to a 19-acre interim oil facility consolidation site;

b) The designation of approximately 290 acres of permanent open space within the highly developed coastal area of Orange County, of which:

c) Provision of multiple arterial and collector roadway connections that comprise approximately 16 acres and that will improve local and regional traffic circulation within this area of the City and County, and which incorporate design elements such as roundabouts that maintain constant vehicular flow and reduce emissions ;

d) Provision of a compact development footprint of approximately 112 acres which is less than 30% of the total site. This footprint will accommodate 1,375 residential units composed of:

    a. Diverse mix of residential densities from 3 to over 40 dwelling units per acre, with over 70 percent of the homes in a more compact configuration that ranges from 20 to 40 units per acre;

    b. Inclusion of mixed use developments where the majority of homes within the community are within convenient walking distance of local goods and services, as well as restaurants and on-site recreation facilities; and

[8] California Attorney General Fact Sheet of Greenhouse Gas Mitigation Measures, http://ag.ca.gov/globalwarming/pdf/GW_mitigation_measures.pdf

[9] California Air Resources Board, Scoping Plan for the Implementation of AB 32, http://www.arb.ca.gov/cc/scopingplan/scopingplan.htm

[10] See the Cal-Trans Climate Action Plan

c. Diverse mix of residential building types encompassing single family detached homes, single family attached townhomes and rowhouses, 2- to 4-story resort condominiums, and generally 5-story urban colony condominiums and affordable apartments;

e) The provision of a full-service 75-key destination resort inn overlooking the Newport Beach coastline, that will serve longer stay visitors with a full-service spa, restaurants, and other amenities, thus keeping within the local area visitors and groups that might otherwise travel outside of the area and with greater transportation and overall carbon impacts;

f) The provision of a diverse mix of pedestrian accessible parks and recreation opportunities at the neighborhood, community, and regional scale, including active sports and family facilities, as well as more a variety of passive interpretive sites, a nature center, and a 2-mile-long, view-oriented bluff park; and

g) The provision of over 8 miles of public trails that not only link the resort and all residential neighborhoods with on-site parks and recreation areas, but connect to surrounding off-site regional and community parks, including Talbert Nature Preserve to the north, the Santa Ana River Regional Trail to the west, Sunset Ridge Community Park to the east, and the sand beach and Pacific Ocean, via a pedestrian bridge over West Coast Highway to the west.

Through density, provision of natural areas, and extensive connectivity, the land plan would reduce the per capita GHG emissions of NBR residents and, in some cases, the surrounding community. This would be accomplished through a variety of means. Relatively high density favors the construction of smaller, more efficient units, which frequently have shared walls and opportunities for increased shading. Additionally, denser, more diverse land use patterns typically result in lower trip generation and shorter trips, which will reduce the project's overall number of generated vehicle miles traveled (VMT). These features will work together with NBR's trail and circulation network to create a pedestrian-friendly environment. This system encourages residents to choose alternative modes, such as walking and bicycling, resulting in additional project VMT reductions and associated GHG emissions reductions. Finally, the land plan provides for efficient use of the project site, allowing for significant natural open space preservation and allowing for the sequestration of carbon into the soil through natural processes.

The resulting reduction of per capita GHG emissions directly parallels the Scoping Plan's reduction goal of reducing emissions from 14 metric tons per person to 10 metric tons per person by 2020.

BENCHMARKING BUILDINGS AND INFRASTRUCTURE

The second benchmark would focus more on the performance of buildings and infrastructure. In this case performance cannot readily be evaluated on a per capita basis. More relevant benchmarks include energy code, local requirements, and, in some cases, best practices. No single benchmark is relevant to all emissions sources, so it is necessary to identify the most relevant basis for evaluate the performance of the project for each emissions source. For example, building energy efficiency is best evaluated with respect to the Title 24 energy code. The performance of homes and commercial buildings proposed for the project can be evaluated as a percentage improvement over code. However, it is important to note that Title 24 energy code does not consider on-site renewable energy supply or a range of increasingly

important building-related energy uses not associated with safety or comfort (e.g., plug loads). Consequently, it may be useful to supplement an energy code-based performance benchmark with a metric that evaluates performance directly in terms of GHG emissions. A transition to such a metric is envisioned in the ARB Scoping Plan. This could be an innovative feature of planning for NBR and an opportunity for the City to develop a new, generally useful performance metric.

In other cases, a state-wide benchmark like Title 24 does not exist, and it is more relevant to consider the performance of the project against local or regional conditions. It is useful to benchmark water consumption separately for indoor domestic uses and outdoor irrigation. This provides the ability to distinguish between complementary measures, such as high-efficiency fixtures for indoor use and combinations of landscape palettes and irrigation technology for outdoor use. Solid waste management needs to be considered during both construction and operations. Jurisdictions vary significantly in their solid waste management activities and capabilities. It is most relevant to benchmark NBR against local statistics, such as those compiled by the California Integrated Waste Management Board.

Specific features of NBR's buildings and infrastructure that reduce the *intensity* of GHG emissions include:

- Energy efficiency for residential units that exceeds Title 24 (2005) by 20%
- Indoor water conservation achieved through high-efficiency water fixtures
- Outdoor water conservation achieved through water-saving landscape pallets comprised of 50% to 100% native and/or drought tolerant species and the use of high-efficiency irrigation technology, such as weather-based controllers.

Benchmarking buildings and infrastructure performance is a traditional tool for understanding relative performance, and NBR will extend this to include consideration for GHG emissions. NBR's approach targets each major source of GHG emissions (sometimes called "end-uses") and demonstrates how proposed features increase performance relative to a base case. For example, homes designed to exceed Title 24 (2005) energy code will use less energy and produce fewer GHG emissions than homes only meeting minimum standards. Similar comparisons can be created for each of the other major sources of emissions, and the results can collectively demonstrate NBR's support for a range of GHG emissions reduction goals.

NBR's approach contributes incrementally toward the California Public Utilities Commission and California Energy Commission's "big, bold" programmatic initiatives, including the statewide strategic goals of delivering zero-net-energy homes by 2020 and zero-net-energy commercial buildings by 2030. These aggressive targets are essential components of the Air Resources Board's Scoping Plan to achieve the goals of AB 32 by 2020.

NBR PERFORMANCE

The NBR project team has conducted preliminary analyses of the land use plan and building and infrastructure to begin estimate the performance of the project with and without the project design features described above. (i.e., comparing the proposed project to benchmarks with a traditional land use plan and conventional buildings and infrastructure).

The analysis indicates that NBR will be associated with approximately 30,000 metric tons of annual CO_2 equivalent per year at build out. The two largest sources of greenhouse gases comprise this total are transportation and building operations. The combination of NBR's diverse land use plan and high-performance buildings and infrastructure will significantly improve the performance of the project relative to benchmarks and represent a demonstrable break from "business-as-usual". The combination of the sustainable land use plan and high-performance buildings will reduce annual GHG emissions at build out by over 50% in comparison to a similar sized development consisting entirely of large, single-family detached homes.

These are illustrative performance metrics and project design features, and the NBR project team will refine these estimates during the preparation of environmental documentation.

OPPORTUNITIES FOR COLLABORATION

The evolving regulatory landscape is uncertain and potentially challenging. However, it also offers opportunities for the City to lead the way toward a healthier, more sustainable, low carbon future. NBR can help contribute to this change by providing an exemplary example of sustainable, high-performance development. Maximizing the potential benefits requires coordination and could benefit from specific collaborative actions. For example:

- The City can develop a climate action plan that meets California Air Resources Board criteria for use as a primary CEQA compliance mechanism (see *Proposed CARB Significance Determination Approach* below). This would provide the City with maximum flexibility in developing locally appropriate criteria and strategies, while expediting review for NBR and future projects addressing climate change under CEQA. This is an approach currently under consideration by other jurisdictions in Orange County, including the City of Irvine and the City of Laguna Beach.

- The City can provide information on its present and anticipated future *per capita* energy use and GHG emissions. NBR can use this information to describe the value of the project in reducing City-wide per capita emissions.

- The City can provide data on energy use and GHG emissions for typical and recent residential developments. The City of Irvine is currently working with Southern California Edison to develop procedures to use an existing Geographic Information System to combine data from the utility

and the assessor's office to estimate emissions for specific land use types. The City and NBR can use this type of information to describe the performance of the project relative to typical developments.

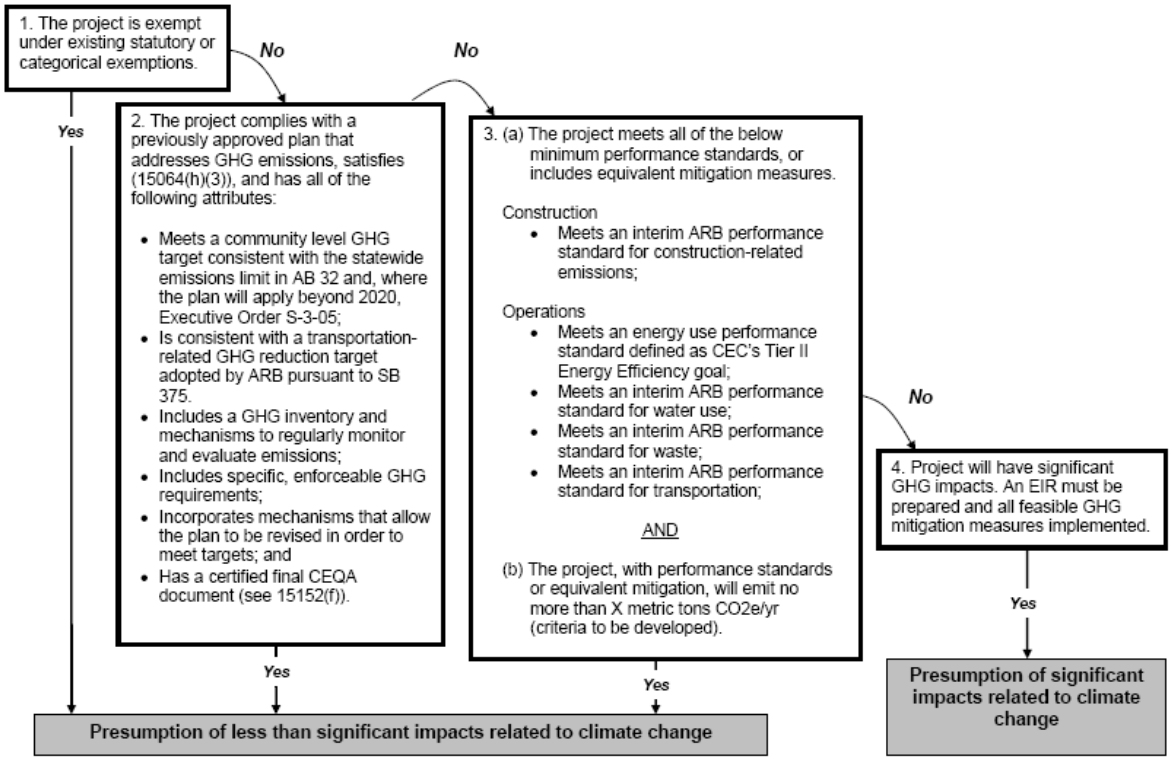
- The City can help arrange for energy use monitoring based on data collected from utilities. NBR can use this information to demonstrate performance over time.

These collaborative actions could enhance NBR efforts to create a project that demonstrably moves the community toward a higher-performance, lower carbon future. None of these actions can be done by either party acting in isolation, and both have much to gain from working together. This collaborative effort can also establish a framework for other current and future projects within the City.

PROPOSED CARB SIGNIFICANCE DETERMINATION APPROACH

This figure below is part of the preliminary draft staff proposal released by the California Air Resources Board on October 24, 2008. The figure illustrates a proposed approach for evaluating the significance of greenhouse gas emissions from residential and commercial projects under the California Environmental Quality Act. The process reflects a chain of possible tests, starting with Box 1 (categorical exemptions), Box 2 (consistency with a climate action plan), Box 3 (performance-based metrics, and Box 4 (finding of significant impacts requiring implementation of mitigation measures).

Note: Box 2 is based on the availability of an approved local plan addressing GHG emissions. Given that most jurisdictions (including Newport Beach) have not yet developed climate change plans, most projects will need to address the Box 3 criteria.



TENTATIVE TRACT MAP NO. 17308

FOR CONDOMINIUM PURPOSES

LEGAL DESCRIPTION

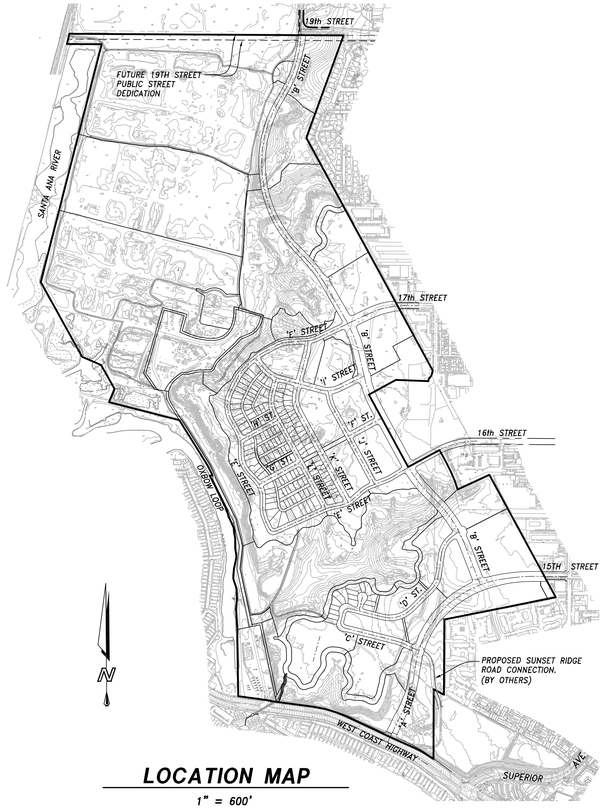
A PORTION OF LOTS "B", "C" AND "D", ALL IN THE BANNING TRACT, IN THE CITY OF NEWPORT BEACH, COUNTY OF ORANGE, STATE OF CALIFORNIA, AS SHOWN ON A MAP OF SAID TRACT FILED IN THE CASE OF HANCOCK BANNING AND OTHERS VS. MARY H. BANNING FOR PARTITION, BEING CASE NO. 6385 UPON THE REGISTER OF ACTIONS OF THE SUPERIOR COURT OF LOS ANGELES COUNTY, CALIFORNIA, AND A PORTION OF THE RANCHO SANTIAGO DE SANTA ANA, DESCRIBED IN BOOK 3, PAGE 387 OF PATENTS, RECORDS OF LOS ANGELES COUNTY, CALIFORNIA.

NOTES:

1. EXISTING LAND USE: OIL EXTRACTION
   ADJACENT LAND USE:
   N– RESIDENTIAL/OPEN SPACE
   S– RESIDENTIAL
   E– COMMERCIAL/RESIDENTIAL/INDUSTRIAL
   W– OPEN SPACE/RESIDENTIAL
   PROPOSED LAND USES: RESIDENTIAL, PARK, OIL EXRACTION/OPEN SPACE, COMMERCIAL, COASTAL INN
2. ZONING: PER THE NEWPORT BANNING RANCH PLANNED COMMUNITY ZONING.
3. DOMESTIC WATER AND SANITARY SEWER SERVICE TO BE PROVIDED BY THE CITY OF NEWPORT BEACH.
4. ALL PROPOSED UTILITIES TO BE UNDERGROUND
   ELECTRICAL: SOUTHERN CALIFORNIA EDISON COMPANY
   GAS: SOUTHERN CALIFORNIA GAS COMPANY
   TELEPHONE: PAC BELL CABLE
   CABLE: TIME WARNER
5. THE DEVELOPER WILL COMPLY WITH ENERGY CONSERVATION MEASURE SET FORTH IN TITLE XXIV OF THE CALIFORNIA ADMINISTRATIVE CODE.
6. DRAINAGE ON THIS SITE WILL BE CONVEYED BY MEANS OF A STORM CONVEYANCE SYSTEM CONSISTING OF VARYING SIZES OF CHANNELS, STORM DRAIN PIPES, CULVERTS, AREA DRAINS AND BROW DITCHES.
7. SIDEWALK RETURN TO BE PER CITY OF NEWPORT BEACH STANDARD PLAN NO. 181 AND TITLE 24 OF AMERICAN WITH DISABILITIES ACT.
8. ALL STREETS ARE PUBLIC UNLESS NOTED OTHERWISE ON MAP.
9. ALL EXISTING EASEMENTS ARE TO REMAIN IN THEIR CURRENT DESIGNATED LOCATIONS UNLESS OTHERWISE NOTED.
10. TOTAL LENGTH OF PROPOSED STREETS IS APPROXIMATELY 23,900 LF.
11. TOTAL PROJECT ACREAGE IS 401.1 GROSS AC.
12. THERE ARE 232 NUMBERED LOTS AND 19 LETTERED LOTS. SEE LOT SUMMARY TABLES FOR PROPOSED LAND USE BY LOT
13. MULTIPLE FINAL TRACT MAPS CAN BE FILED FOR THIS TENTATIVE TRACT MAP.
14. THE ASSESSOR'S PARCEL NUMBERS FOR THE PROJECT AREA ARE: 114–170–24, 43, 49, 50, 52, 72, 75, 77, 79, 83, & 424–041–04.
15. ALL EXISTING WELLS, IRRIGATION LINES, CESSPOOLS, SEWERS, CULVERTS, STORM DRAINS, SOLID OR LIQUID WASTE DISPOSAL SITES, AND UNDERGROUND STRUCTURES WITHIN THE SUBDIVISION WILL BE ABANDONED PER THE GOVERNING AGENCIES SPECIFICATIONS UNLESS OTHERWISE NOTED.
16. ALL LETTERED LOTS SHOWN ON THIS MAP MAY BE DIVIDED ON THE FINAL MAPS INTO MULTIPLE LOTS FOR PHASING, FINANCING, CONSTRUCTION OR DEDICATION PURPOSES.
17. ALL FIRE ACCESS ROADS SHALL COMPLY WITH N.B. FIRE DEPARTMENT STANDARDS.

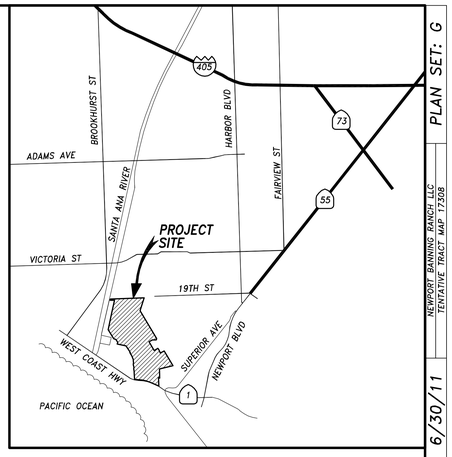
PROPOSED DEVIATIONS:

1. MODIFIED KNUCKLES ARE ALLOWABLE AS SHOWN AT THE BEND IN 'C' STREET AND 'E' STREET. SEE MODIFIED KNUCKLE DETAIL ON SHEET 2.
2. 5' WIDE BIKE LANES ARE ALLOWABLE ON 'A' STREET, 'B' STREET, 15TH STREET AND 17TH STREET.
3. BIOSWALES/BIOCELLS WITH A 5' WALK OR 8' MEANDERING WALK ARE ALLOWABLE ON 'A' STREET, 'B' STREET, 15TH STREET, 16TH STREET AND 17TH STREET.
4. SIDEWALK IS NOT PROPOSED ON THE WEST SIDE OF 'A' STREET (FROM WEST COAST HIGHWAY TO 'C' STREET), OR THE WEST SIDE OF 'B' STREET (17TH STREET TO 19TH STREET) DUE TO THE ADJACENCY OF OPEN SPACE.
5. BIOSWALES/BIOCELLS ARE ALLOWABLE AS A PARKWAY TREATMENT ON LOCAL STREETS AS SHOWN ON TENTATIVE TRACT MAP.
6. INTERSECTION TAPERS AND MID–BLOCK TAPERS ARE ALLOWABLE ON LOCAL STREETS AND LOCAL TO LOCAL STREET INTERSECTIONS AS SHOWN ON TENTATIVE TRACT MAP. SEE DETAILS ON SHEET 2.
7. AT CITY OF NEWPORT BEACH REQUEST, 'A' STREET (FROM WEST COAST HIGHWAY TO 'C' STREET) IS AT AN ALLOWABLE MAXIMUM CENTERLINE GRADIENT OF 8%.



LOCATION MAP

1" = 600'



VICINITY MAP

NTS

PROJECT NORTH

N

STREET DEDICATIONS

STREET	PROPOSED LAND USE	MAINTENANCE RESPONSIBILITY	LOT AREA ACRES
WEST COAST HIGHWAY	PUBLIC STREET	CALTRANS	0.4
"A" STREET	PUBLIC STREET	CITY	4.5
"B" STREET	PUBLIC STREET	CITY	11.2
"C" STREET	PUBLIC STREET	CITY	1.4
"D" STREET	PUBLIC STREET	CITY	2.2
"E" STREET	PUBLIC STREET	CITY	5.4
"F" STREET	PUBLIC STREET	CITY	0.4
"G" STREET	PUBLIC STREET	CITY	0.6
"H" STREET	PUBLIC STREET	CITY	0.4
"I" STREET	PUBLIC STREET	CITY	1.7
"J" STREET	PUBLIC STREET	CITY	1.2
"K" STREET	PUBLIC STREET	CITY	2.3
"L" STREET	PUBLIC STREET	CITY	1.8
15TH STREET	PUBLIC STREET	CITY	1.3
16TH STREET	PUBLIC STREET	CITY	0.2
17TH STREET	PUBLIC STREET	CITY	1.1
TOTAL			35.9

19TH STREET	PUBLIC STREET DEDICATION	CITY/CONSERVATION	3.1
TOTAL			3.1

NOTE: CITY RESERVES THE RIGHT TO REQUIRE MAINTENANCE OF PARKWAY AND MEDIAN LANDSCAPE TO BE BY MASTER HOA.

LETTERED LOTS

LOT NUMBER	PROPOSED LAND USE	MAINTENANCE RESPONSIBILITY	LOT AREA ACRES
A	OPEN SPACE	CONSERVATION	48.9
B	OPEN SPACE	CONSERVATION	5.2
C	OPEN SPACE	CONSERVATION	6.4
D	OPEN SPACE	CONSERVATION	33.9
E	OPEN SPACE	CONSERVATION	8.4
F	OPEN SPACE/INTERPRETIVE	HOA	0.5
G	OPEN SPACE	CONSERVATION	47.2
H	OPEN SPACE	CONSERVATION	15.3
I	WATER QUALITY BASIN	CONSERVATION	2.7
J	OPEN SPACE	CONSERVATION	10.0
K	OPEN SPACE	CONSERVATION	30.7
L	WATER DIFFUSING BASIN	CONSERVATION	0.4
M	OPEN SPACE	CONSERVATION	2.1
N	OPEN SPACE	CONSERVATION	8.3
O	OPEN SPACE	CONSERVATION	1.4
P	OPEN SPACE	CONSERVATION	3.2
Q	OPEN SPACE	CONSERVATION	0.7
R	OPEN SPACE	CONSERVATION	3.7
TOTAL			229.0

OWNER/SUBDIVIDER

NEWPORT BANNING RANCH LLC
1300 QUAIL STREET, SUITE 100 NEWPORT BEACH, CA 92660

BY: _____ DATE

MICHAEL A. MOHLER
Authorized Signatory

SHEET INDEX

NUMBERED LOTS

LOT NUMBER	PROPOSED LAND USE	MAINTENANCE RESPONSIBILITY	LOT AREA ACRES
1	MIXED USE/RESIDENTIAL	HOA	4.6
2	MIXED USE/RESIDENTIAL	HOA	5.0
3	MIXED USE/RESIDENTIAL	HOA	4.7
4	MIXED USE/RESIDENTIAL	HOA	3.6
5	LANDSCAPE	CONSERVATION	0.9
6	ACCESS ROAD	OIL OPERATOR/HOA	0.7
7	ACCESS ROAD	OIL OPERATOR/HOA	1.5
8	PARK	HOA	0.3
9	ALLEY	HOA	0.4
10	RESIDENTIAL	HOMEOWNER	0.2
11	RESIDENTIAL	HOMEOWNER	0.1
12	RESIDENTIAL	HOMEOWNER	0.1
13	RESIDENTIAL	HOMEOWNER	0.1
14	RESIDENTIAL	HOMEOWNER	0.1
15	RESIDENTIAL	HOMEOWNER	0.1
16	RESIDENTIAL	HOMEOWNER	0.2
17	RESIDENTIAL	HOMEOWNER	0.1
18	RESIDENTIAL	HOMEOWNER	0.1
19	RESIDENTIAL	HOMEOWNER	0.1
20	RESIDENTIAL	HOMEOWNER	0.1
21	RESIDENTIAL	HOMEOWNER	0.1
22	RESIDENTIAL	HOMEOWNER	0.1
23	RESIDENTIAL	HOMEOWNER	0.1
24	RESIDENTIAL	HOMEOWNER	0.1
25	RESIDENTIAL	HOMEOWNER	0.1
26	RESIDENTIAL	HOMEOWNER	0.1
27	RESIDENTIAL	HOMEOWNER	0.1
28	RESIDENTIAL	HOMEOWNER	0.1
29	ALLEY	HOA	0.1
30	RESIDENTIAL	HOMEOWNER	0.1
31	RESIDENTIAL	HOMEOWNER	0.1
32	RESIDENTIAL	HOMEOWNER	0.1
33	LANDSCAPE	HOA	0.1
34	RESIDENTIAL	HOMEOWNER	0.1
35	RESIDENTIAL	HOMEOWNER	0.1
36	RESIDENTIAL	HOMEOWNER	0.1
37	RESIDENTIAL	HOMEOWNER	0.1
38	RESIDENTIAL	HOMEOWNER	0.1
39	RESIDENTIAL	HOMEOWNER	0.1
40	RESIDENTIAL	HOMEOWNER	0.1
41	RESIDENTIAL	HOMEOWNER	0.1
42	RESIDENTIAL	HOMEOWNER	0.1
43	ALLEY	HOA	0.1
44	RESIDENTIAL	HOMEOWNER	0.1
45	RESIDENTIAL	HOMEOWNER	0.1
46	RESIDENTIAL	HOMEOWNER	0.1
47	RESIDENTIAL	HOMEOWNER	0.1
48	RESIDENTIAL	HOMEOWNER	0.1
49	LANDSCAPE	HOA	0.2
50	RESIDENTIAL	HOMEOWNER	0.1
51	RESIDENTIAL	HOMEOWNER	0.1
52	RESIDENTIAL	HOMEOWNER	0.1
53	RESIDENTIAL	HOMEOWNER	0.1
54	RESIDENTIAL	HOMEOWNER	0.2
55	RESIDENTIAL	HOMEOWNER	0.2
56	RESIDENTIAL	HOMEOWNER	0.1
57	RESIDENTIAL	HOMEOWNER	0.1
58	ALLEY	HOA	0.2
59	RESIDENTIAL	HOMEOWNER	0.1
60	RESIDENTIAL	HOMEOWNER	0.1
61	RESIDENTIAL	HOMEOWNER	0.1
62	RESIDENTIAL	HOMEOWNER	0.1
63	RESIDENTIAL	HOMEOWNER	0.1
64	RESIDENTIAL	HOMEOWNER	0.1
65	ALLEY	HOA	0.2
66	RESIDENTIAL	HOMEOWNER	0.1
67	RESIDENTIAL	HOMEOWNER	0.1
68	RESIDENTIAL	HOMEOWNER	0.1
69	RESIDENTIAL	HOMEOWNER	0.1
70	RESIDENTIAL	HOMEOWNER	0.1
71	RESIDENTIAL	HOMEOWNER	0.1
72	RESIDENTIAL	HOMEOWNER	0.1
73	LANDSCAPE	HOA	0.2
74	RESIDENTIAL	HOMEOWNER	0.1
75	RESIDENTIAL	HOMEOWNER	0.1
76	RESIDENTIAL	HOMEOWNER	0.1
77	RESIDENTIAL	HOMEOWNER	0.1
78	RESIDENTIAL	HOMEOWNER	0.1
79	RESIDENTIAL	HOMEOWNER	0.1
80	RESIDENTIAL	HOMEOWNER	0.1
81	ALLEY	HOA	0.2
82	RESIDENTIAL	HOMEOWNER	0.1
83	RESIDENTIAL	HOMEOWNER	0.1
84	RESIDENTIAL	HOMEOWNER	0.1
85	RESIDENTIAL	HOMEOWNER	0.1
86	RESIDENTIAL	HOMEOWNER	0.1
87	RESIDENTIAL	HOMEOWNER	0.1
88	RESIDENTIAL	HOMEOWNER	0.1
89	RESIDENTIAL	HOMEOWNER	0.1
90	RESIDENTIAL	HOMEOWNER	0.1
91	RESIDENTIAL	HOMEOWNER	0.1
92	RESIDENTIAL	HOMEOWNER	0.1
93	RESIDENTIAL	HOMEOWNER	0.1
94	RESIDENTIAL	HOMEOWNER	0.1
95	RESIDENTIAL	HOMEOWNER	0.1
96	ALLEY	HOA	0.2
97	RESIDENTIAL	HOMEOWNER	0.1
98	RESIDENTIAL	HOMEOWNER	0.1
99	RESIDENTIAL	HOMEOWNER	0.1
100	RESIDENTIAL	HOMEOWNER	0.1
101	RESIDENTIAL	HOMEOWNER	0.1
102	RESIDENTIAL	HOMEOWNER	0.1
103	RESIDENTIAL	HOMEOWNER	0.1
104	ALLEY	HOA	0.4
105	LANDSCAPE	HOA	0.2
106	RESIDENTIAL	HOMEOWNER	0.1
107	RESIDENTIAL	HOMEOWNER	0.1
108	RESIDENTIAL	HOMEOWNER	0.1
109	RESIDENTIAL	HOMEOWNER	0.1
110	RESIDENTIAL	HOMEOWNER	0.1
111	RESIDENTIAL	HOMEOWNER	0.1
112	RESIDENTIAL	HOMEOWNER	0.1
113	RESIDENTIAL	HOMEOWNER	0.1
114	RESIDENTIAL	HOMEOWNER	0.1
115	RESIDENTIAL	HOMEOWNER	0.1
116	RESIDENTIAL	HOMEOWNER	0.1
117	RESIDENTIAL	HOMEOWNER	0.1
118	RESIDENTIAL	HOMEOWNER	0.2
119	RESIDENTIAL	HOMEOWNER	0.2
120	RESIDENTIAL	HOMEOWNER	0.3
121	RESIDENTIAL	HOMEOWNER	0.2
122	RESIDENTIAL	HOMEOWNER	0.2
123	RESIDENTIAL	HOMEOWNER	0.2
124	RESIDENTIAL	HOMEOWNER	0.1
125	RESIDENTIAL	HOMEOWNER	0.1
126	RESIDENTIAL	HOMEOWNER	0.1
127	RESIDENTIAL	HOMEOWNER	0.2
128	RESIDENTIAL	HOMEOWNER/HOA	2.2
129	RESIDENTIAL	HOMEOWNER/HOA	1.1
130	RESIDENTIAL	HOMEOWNER	0.1
131	RESIDENTIAL	HOMEOWNER	0.1
132	RESIDENTIAL	HOMEOWNER	0.1
133	RESIDENTIAL	HOMEOWNER	0.1
134	RESIDENTIAL	HOMEOWNER	0.1
135	RESIDENTIAL	HOMEOWNER	0.1
136	RESIDENTIAL	HOMEOWNER	0.1
137	RESIDENTIAL	HOMEOWNER	0.1
138	RESIDENTIAL	HOMEOWNER	0.1
139	RESIDENTIAL	HOMEOWNER	0.1
140	RESIDENTIAL	HOMEOWNER	0.1
141	RESIDENTIAL	HOMEOWNER	0.1
142	RESIDENTIAL	HOMEOWNER	0.1
143	RESIDENTIAL	HOMEOWNER	0.1
144	RESIDENTIAL	HOMEOWNER	0.1
145	RESIDENTIAL	HOMEOWNER	0.1
146	RESIDENTIAL	HOMEOWNER	0.1
147	RESIDENTIAL	HOMEOWNER	0.1
148	RESIDENTIAL	HOMEOWNER	0.1
149	RESIDENTIAL	HOMEOWNER	0.1
150	RESIDENTIAL	HOMEOWNER	0.1
151	RESIDENTIAL	HOMEOWNER	0.1
152	RESIDENTIAL	HOMEOWNER	0.1
153	RESIDENTIAL	HOMEOWNER	0.1
154	RESIDENTIAL	HOMEOWNER	0.1
155	RESIDENTIAL	HOMEOWNER	0.1
156	RESIDENTIAL	HOMEOWNER	0.1
157	RESIDENTIAL	HOMEOWNER	0.1
158	RESIDENTIAL	HOMEOWNER	0.1
159	RESIDENTIAL	HOMEOWNER	0.1
160	RESIDENTIAL	HOMEOWNER	0.1
161	RESIDENTIAL	HOMEOWNER	0.1
162	LANDSCAPE	HOA	0.1
163	RESIDENTIAL	HOMEOWNER	0.1
164	RESIDENTIAL	HOMEOWNER	0.1
165	RESIDENTIAL	HOMEOWNER	0.1
166	RESIDENTIAL	HOMEOWNER	0.1
167	RESIDENTIAL	HOMEOWNER	0.1
168	RESIDENTIAL	HOMEOWNER	0.1
169	RESIDENTIAL	HOMEOWNER	0.1
170	RESIDENTIAL	HOMEOWNER	0.1
171	RESIDENTIAL	HOMEOWNER	0.1
172	RESIDENTIAL	HOMEOWNER	0.1
173	RESIDENTIAL	HOMEOWNER	0.1
174	RESIDENTIAL	HOMEOWNER	0.1
175	RESIDENTIAL	HOMEOWNER	0.1
176	RESIDENTIAL	HOMEOWNER	0.1
177	RESIDENTIAL	HOMEOWNER	0.1
178	RESIDENTIAL	HOMEOWNER	0.1
179	RESIDENTIAL	HOMEOWNER	0.1
180	RESIDENTIAL	HOMEOWNER	0.1
181	RESIDENTIAL	HOMEOWNER	0.1
182	RESIDENTIAL	HOMEOWNER	0.1
183	RESIDENTIAL	HOMEOWNER	0.1
184	RESIDENTIAL	HOMEOWNER/HOA	3.2
185	LANDSCAPE	HOA	0.2
186	RESIDENTIAL	HOMEOWNER/HOA	2.8
187	RESIDENTIAL	HOMEOWNER/HOA	2.7
188	RESIDENTIAL	HOMEOWNER/HOA	3.3
189	PARK	HOA	0.9
190	INTERIM OIL OPERATIONS SITE	OIL OPERATOR	8.6
191	PARK	HOA	5.7
192	PARK	HOA	1.9
193	PARK	HOA	1.0
194	PARK	CITY	2.4
195	PARK	CITY	4.2
196	PARK	CITY	6.8
197	RESIDENTIAL	HOA	2.6
198	RESIDENTIAL	HOA	3.0
199	PARK	HOA	1.2
200	LANDSCAPE	HOA	0.1
201	RESIDENTIAL	HOA	2.0
202	LANDSCAPE	HOA	0.1
203	PARK	HOA	1.0
204	RESIDENTIAL	HOMEOWNER	0.1
205	RESIDENTIAL	HOMEOWNER	0.1
206	RESIDENTIAL	HOMEOWNER	0.1
207	RESIDENTIAL	HOMEOWNER	0.2
208	RESIDENTIAL	HOMEOWNER	0.1
209	RESIDENTIAL	HOMEOWNER	0.2
210	RESIDENTIAL	HOMEOWNER	0.1
211	RESIDENTIAL	HOMEOWNER	0.1
212	RESIDENTIAL	HOMEOWNER	0.1
213	RESIDENTIAL	HOMEOWNER	0.2
214	RESIDENTIAL	HOMEOWNER	0.2
215	RESIDENTIAL	HOMEOWNER	0.1
216	RESIDENTIAL	HOMEOWNER	0.1
217	RESIDENTIAL	HOMEOWNER	0.1
218	RESIDENTIAL	HOMEOWNER	0.1
219	RESIDENTIAL	HOMEOWNER	0.1
220	RESIDENTIAL	HOMEOWNER/HOA	2.0
221	LANDSCAPE	HOA	0.1
222	RESIDENTIAL	HOMEOWNER/HOA	2.0
223	RESIDENTIAL	HOMEOWNER/HOA	5.5
224	PARK	HOA	2.1
225	LANDSCAPE	CONSERVATION	0.4
226	INTERIM OIL OPERATIONS SITE	OIL OPERATOR	4.8
227	PARK	HOA	0.2
228	RESIDENTIAL/RESORT	HOA/RESORT OPERATOR	4.7
229	PARK	HOA	2.5
230	OPEN SPACE/PARK	CITY	6.6
231	PARK	CITY	4.2
232	PARK	CITY	0.3
233	INTERPRETIVE PARK	CONSERVATION/HOA	2.3
TOTAL			136.2

PREPARED UNDER THE SUPERVISION OF:

REGISTERED PROFESSIONAL ENGINEER JOHN C. OLIVIER NO. 044568 Exp. 03/31/12 CIVIL STATE OF CALIFORNIA

JOHN C. OLIVIER RCE 044568 EXP. 03/31/12

NO.	DATE	REVISIONS	APPROVED

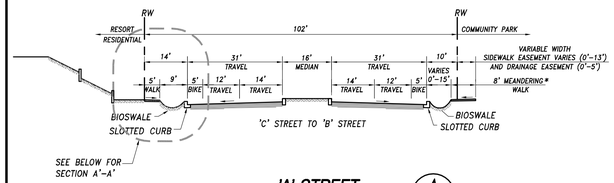
DRAWN BY:
DESIGNED BY:
CHECKED BY: JO

FUSCOE ENGINEERING
16795 Von Karman, Suite 100
Irvine, California 92606
tel 949.474.1960 * fax 949.474.5315
www.fuscoe.com

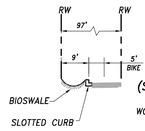
TENTATIVE TRACT NO. 17308
CITY OF NEWPORT BEACH

SHEET 1 OF 7

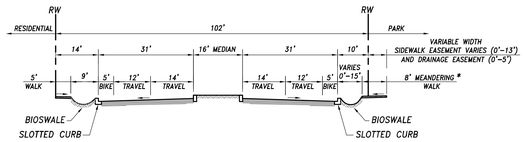
PLAN SET: G
NEWPORT BANNING RANCH LLC
TENTATIVE TRACT MAP 17308
6/30/11



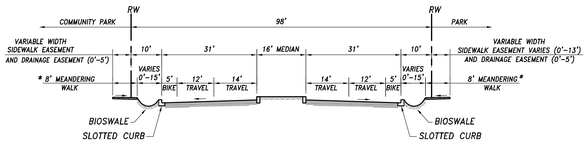
'A' STREET (PUBLIC) — A 2 — N.T.S.



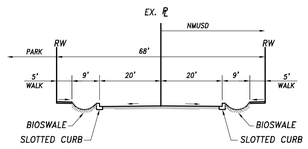
(Section A')
PUBLIC
WCH TO 'C' STREET



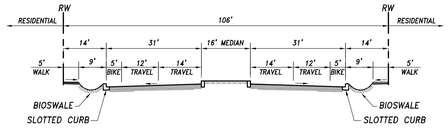
'B' STREET (PUBLIC) — B 2 — N.T.S.



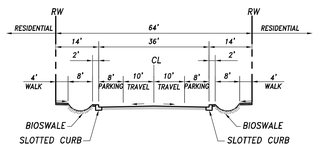
15TH STREET (PUBLIC) — C 2 — N.T.S.



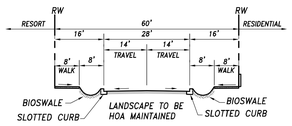
16TH STREET (PUBLIC) — D 2 — N.T.S.



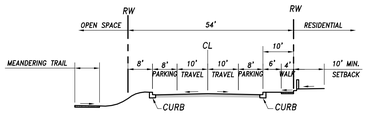
17TH STREET (PUBLIC) — E 2 — N.T.S.



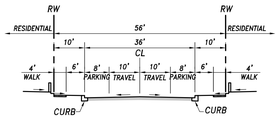
'F', 'G', 'I', 'K' STREET (PUBLIC) — F 2 — N.T.S.



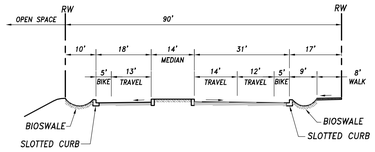
'C' STREET (PUBLIC) — G 2 — N.T.S.



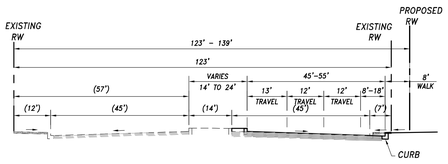
'E' STREET (PUBLIC) — H 2 — N.T.S.



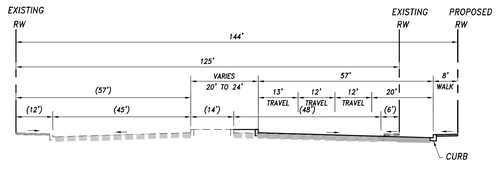
'D', 'H', 'J', 'L' STREET (PUBLIC) — I 2 — N.T.S.



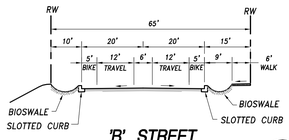
'B' STREET (PUBLIC) — J 2 — N.T.S.



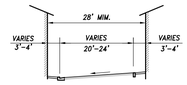
WEST COAST HIGHWAY (PUBLIC) — K 2 — N.T.S.



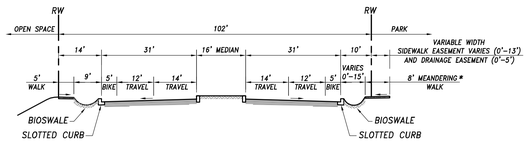
WEST COAST HIGHWAY (PUBLIC) — L 2 — N.T.S.



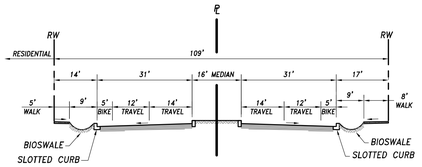
'B' STREET EXTENSION TO 19TH STREET (PUBLIC) — M 2 — N.T.S.



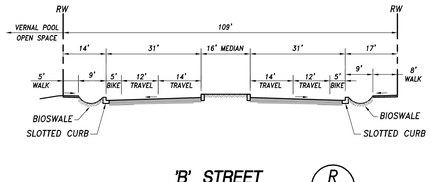
TYPICAL ALLEY — N 2 — N.T.S.



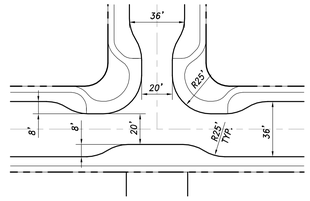
'B' STREET (PUBLIC) — P 2 — N.T.S.



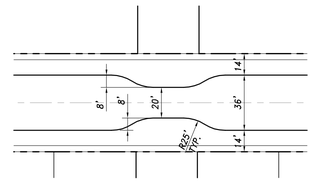
'B' STREET (PUBLIC) — Q 2 — N.T.S.



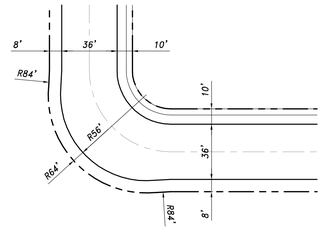
'B' STREET (PUBLIC) — R 2 — N.T.S.



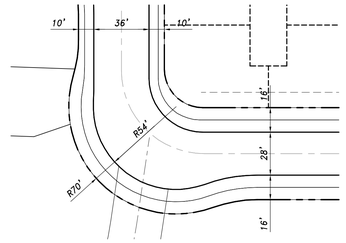
TAPER DETAIL AT INTERSECTION — 1" = 40'



TAPER DETAIL AT MID-BLOCK — 1" = 40'



MODIFIED KNUCKLE DETAIL 'E' STREET — 1" = 40'

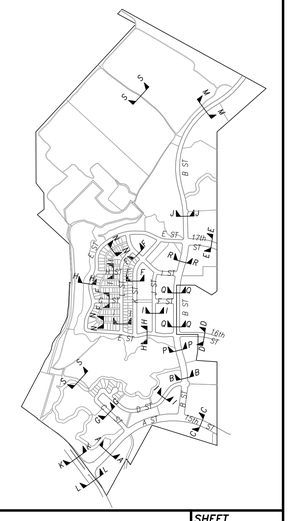


MODIFIED KNUCKLE DETAIL 'C' STREET — 1" = 40'

NOTE: THE PUBLIC TRAIL WILL BE UNIMPROVED UNLESS IMPROVEMENTS ARE REQUIRED BY A STATE OR FEDERAL RESOURCE AGENCY OR OTHER PUBLIC AGENCY

OPEN SPACE TRAIL SECTION — S 2 — N.T.S.

* MATERIAL TO BE DETERMINED PRIOR TO FINAL DESIGN. DG TO BE CONSIDERED WHEN WALK IS ADJACENT TO PARKS OR OPEN SPACES



NO.	DATE	REVISIONS	APPROVED

DRAWN BY:
DESIGNED BY:
CHECKED BY: JO

FUSCOE ENGINEERING
16795 Von Karman, Suite 100
Irvine, California 92606
tel 949.474.1960 * fax 949.474.5315
www.fuscoe.com

TENTATIVE TRACT NO. 17308

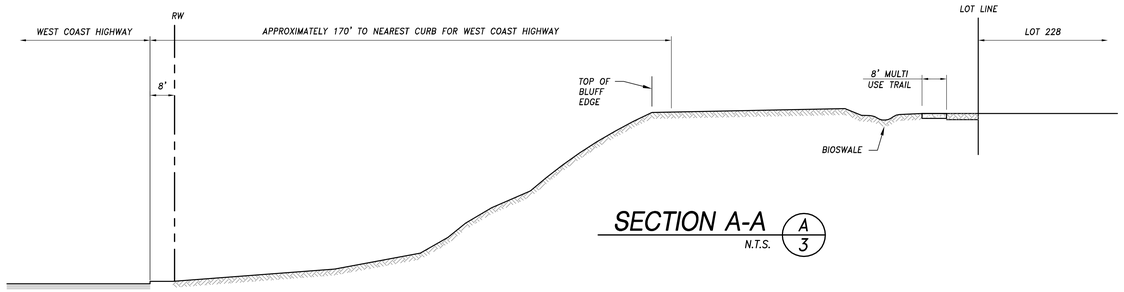
STREET SECTIONS & DETAILS

SHEET 2 OF 7

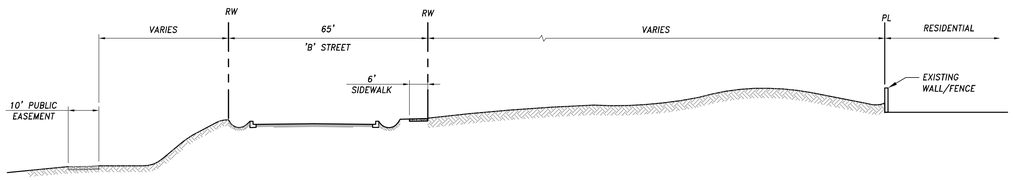
PLAN SET: G

NEWPORT BANNING RANCH LLC
TENTATIVE TRACT MAP 17308

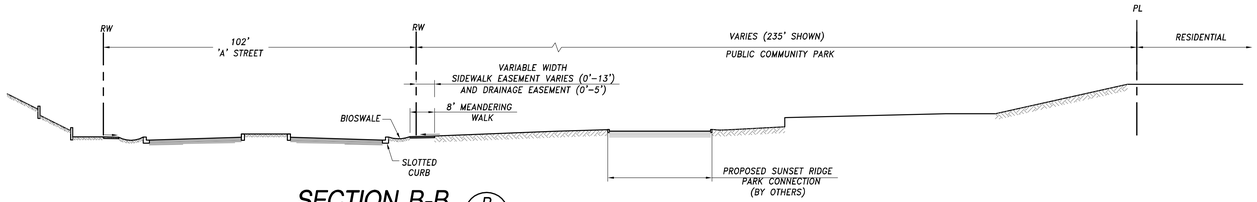
6/30/11



SECTION A-A (A/3)
N.T.S.

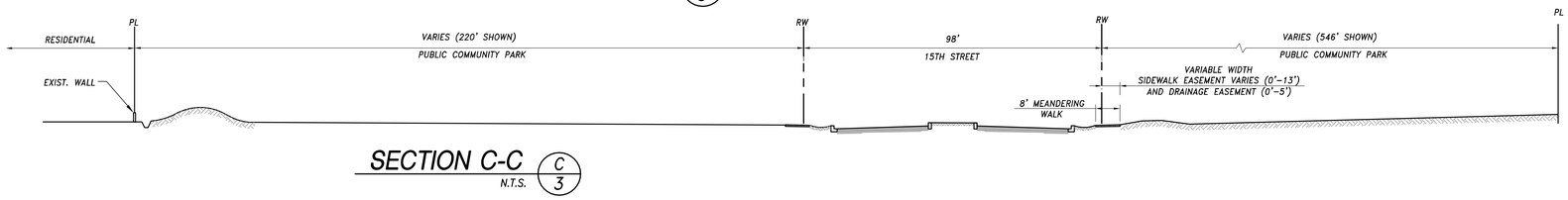


SECTION G-G (G/3)
N.T.S.

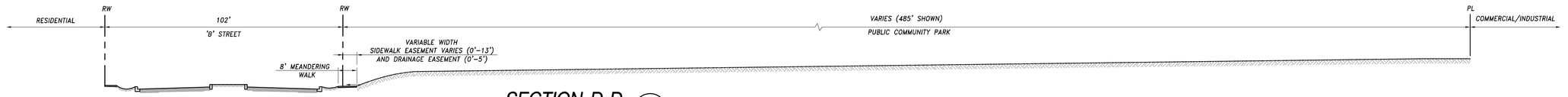


SECTION B-B (B/3)
N.T.S.

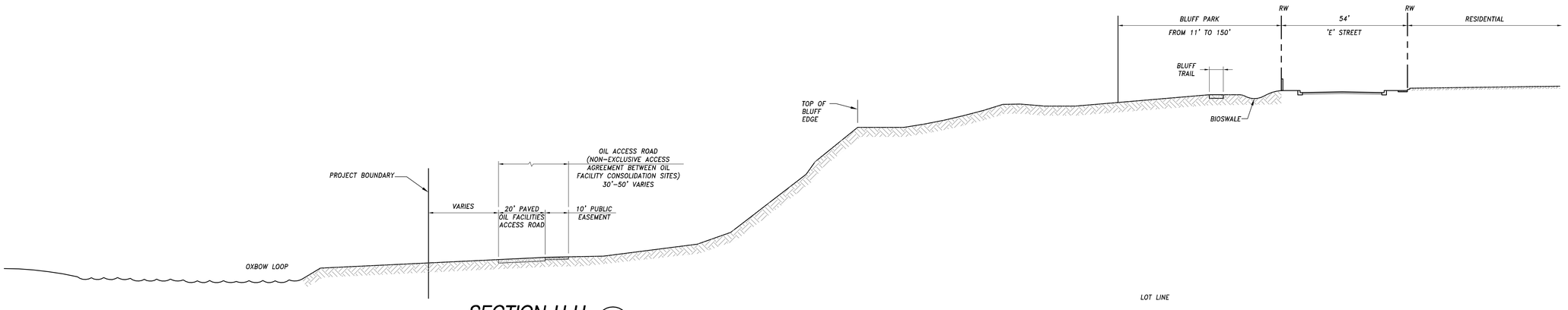
NOTE: REFER TO FIRE AND LIFE SAFETY PROGRAM FOR FUEL MANAGEMENT ZONES AND REQUIREMENTS



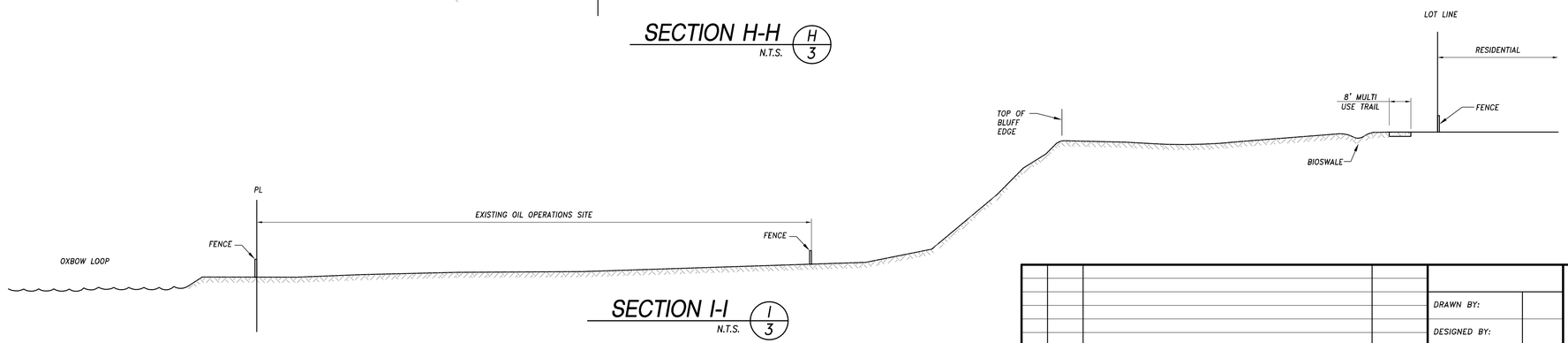
SECTION C-C (C/3)
N.T.S.



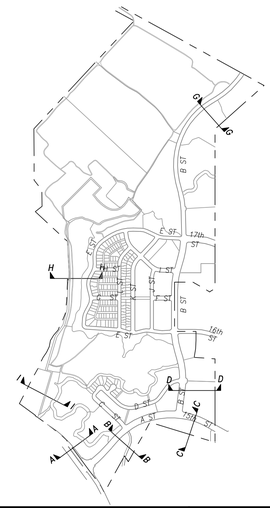
SECTION D-D (D/3)
N.T.S.



SECTION H-H (H/3)
N.T.S.



SECTION I-I (I/3)
N.T.S.



NO.	DATE	REVISIONS	APPROVED

DRAWN BY:
DESIGNED BY:
CHECKED BY: JO

FUSCOE ENGINEERING
16795 Von Karman, Suite 100
Irvine, California 92606
tel 949.474.1960 * fax 949.474.5315
www.fuscoe.com

TENTATIVE TRACT NO. 17308
CROSS SECTIONS

SHEET 3 OF 7

PLAN SET: G

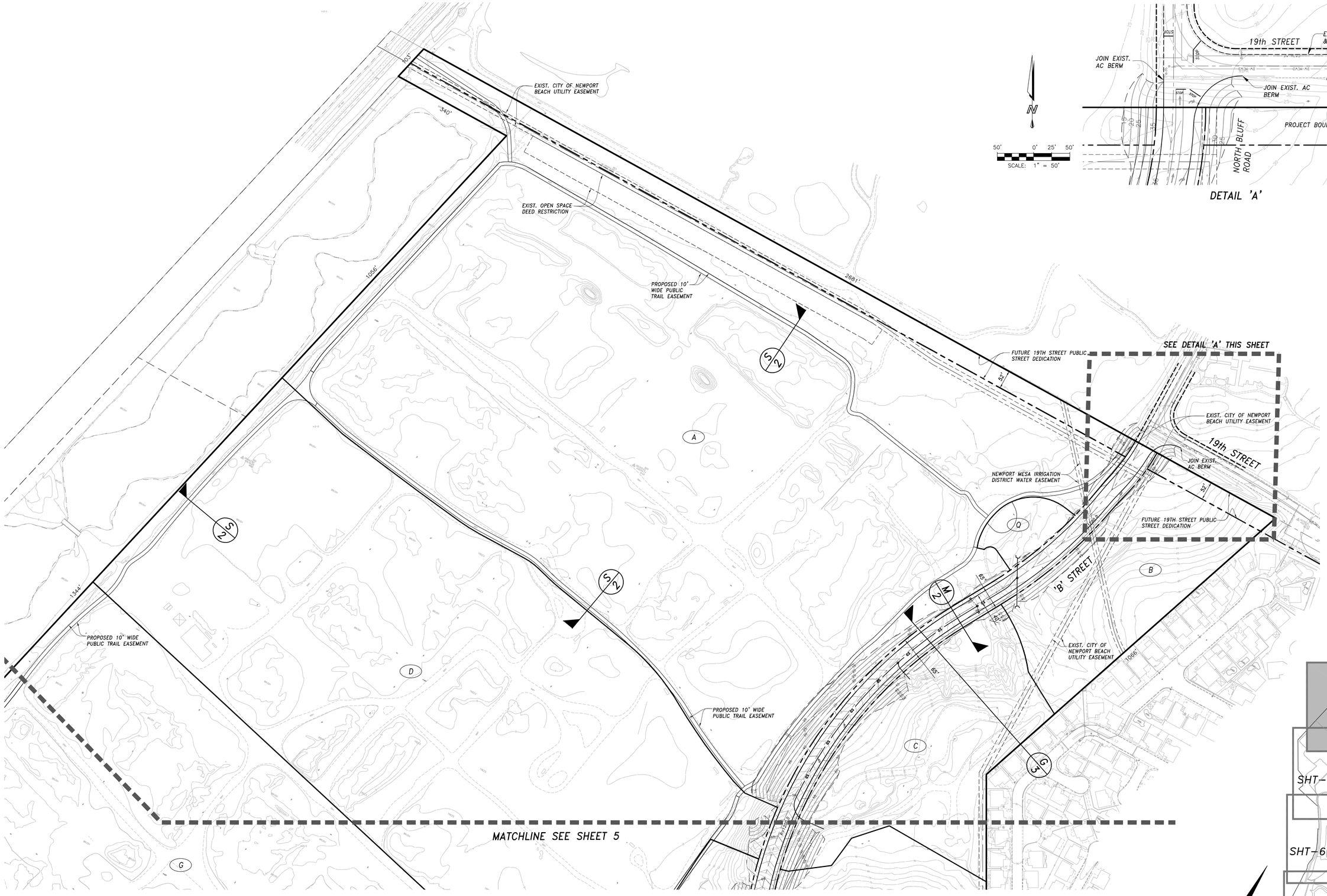
6/30/11

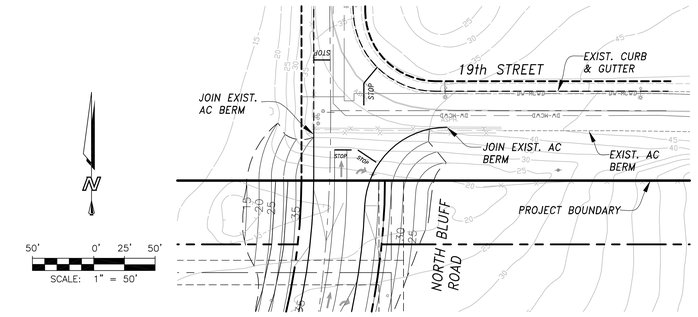
NEWPORT BANNING RANCH LLC
TENTATIVE TRACT MAP 17308

PLAN SET: G

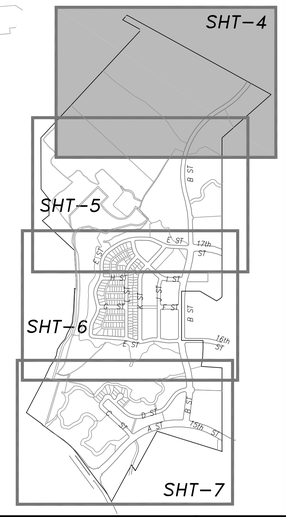
6/30/11

NEWPORT BANNING RANCH, LLC
TENTATIVE TRACT MAP 17308





DETAIL 'A'



NO.	DATE	REVISIONS	APPROVED

DRAWN BY:
DESIGNED BY:
CHECKED BY: JO

FUSCOE ENGINEERING
16795 Von Karman, Suite 100
Irvine, California 92606
tel 949.474.1960 • fax 949.474.5315
www.fuscoe.com

TENTATIVE TRACT NO. 17308

SHEET 4 OF 7

MATCHLINE SEE SHEET 4

MATCHLINE SEE SHEET 6

PROPOSED 10' WIDE PUBLIC TRAIL EASEMENT

PROPOSED 10' WIDE TRAIL EASEMENT

PROPOSED MAINTENANCE ACCESS ROAD

PROPOSED 20' WIDE STORMDRAIN EASEMENT

STATE OF CALIFORNIA & CITY NEWPORT BEACH BOHN-MACK COURT CASE DECISIONS, RESERVED RIGHTS & EASEMENTS

CITY NEWPORT BEACH UTILITY & ACCESS EASEMENT

STANDARD OIL & GAS CO. PIPELINE EASEMENT

OIL USE ACCESS ROAD

TOP OF BLUFF EDGE

BLUFF RESTORATION

UTILITY EASEMENT

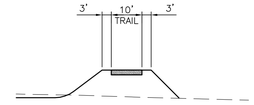
EXIST. CITY OF NEWPORT BEACH UTILITY EASEMENT

'B' STREET

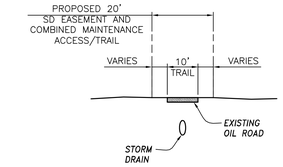
'E' STREET

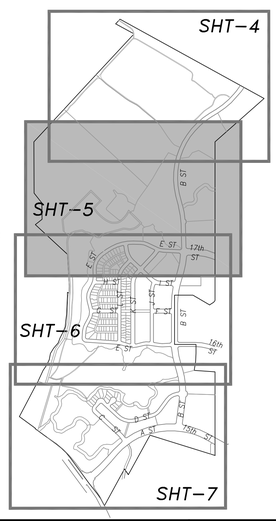
17th STREET

SECTION A
N.T.S.



SECTION B
N.T.S.





100' 0' 50' 100' 200'
SCALE: 1" = 100'

NO.	DATE	REVISIONS	APPROVED

DRAWN BY:
DESIGNED BY:
CHECKED BY: JO

FUSCOE ENGINEERING
16795 Von Karman, Suite 100
Irvine, California 92606
tel 949.474.1960 • fax 949.474.5315
www.fuscoe.com

TENTATIVE TRACT NO. 17308

SHEET 5 OF 7

PLAN SET: G

6/30/11

NEWPORT BANNING RANCH LLC
TENTATIVE TRACT MAP 17308

PLAN SET: G

6/30/11

NEWPORT BANNING RANCH LLC
TENTATIVE TRACT MAP 17308

MATCHLINE SEE SHEET 5

MATCHLINE SEE SHEET 7

NOT A PART

'E' STREET

'H' ST.

'G' ST.

'I' STREET

'K' STREET

'J' STREET

'F' STREET

'B' STREET

17th STREET

16th STREET

TOP OF BLUFF EDGE

BLUFF RESTORATION

PROPOSED 10' WIDE PUBLIC TRAIL EASEMENT

CITY OF NEWPORT BEACH 20' & 30' UTILITY & ROADS EASEMENT

STANDARD OIL & GAS CO. OIL PIPELINE EASEMENT

PROP. 10' WIDE PUBLIC TRAIL EASEMENT

OIL PIPE ACCESS EASEMENT

PROP. 20' WIDE STORMDRAIN AND SEWER EASEMENT

VARIABLE WIDTH SIDEWALK ESMT. VARIES (0'-13') AND DRAINAGE ESMT. (0'-5')

PROPOSED WATER QUALITY DETENTION BASIN

EXIST. CITY OF NEWPORT BEACH SLOPE/MAINTENANCE EASEMENT TO BE QUITCLAIMED

STORM DRAIN EASEMENT TO BE QUITCLAIMED

EXIST. CITY OF NEWPORT BEACH SLOPE/MAINTENANCE EASEMENT TO BE QUITCLAIMED

SHT-4

SHT-5

SHT-6

SHT-7

100' 0' 50' 100' 200'

SCALE: 1" = 100'

NO.	DATE	REVISIONS	APPROVED

DRAWN BY:

DESIGNED BY:

CHECKED BY: JO

FUSCOE ENGINEERING
16795 Von Karman, Suite 100
Irvine, California 92606
tel 949.474.1960 • fax 949.474.5315
www.fuscoe.com

TENTATIVE TRACT NO. 17308

SHEET 6 OF 7

MATCHLINE SEE SHEET 6

TOP OF BLUFF EDGE

PROP. 10' WIDE PUBLIC TRAIL EASEMENT

OIL PIPE ACCESS EASEMENT

PROP. 20' WIDE STORMDRAIN AND SEWER EASEMENT

CITY OF NEWPORT BEACH DRILLING EASEMENT

STATE CALIF DRAINAGE EASEMENT

PROP. 10' WIDE SEWER EASEMENT

20' UTILITY EASEMENT

STATE OF CALIF DRAINAGE EASEMENT

STATE CALIF CONSTRUCTION EASEMENT

WEST COAST HIGHWAY

'C' STREET

'D' STREET

'A' STREET

'B' STREET

15TH STREET

EXIST. CITY OF NEWPORT BEACH SLOPE/MAINTENANCE EASEMENT TO BE QUITCLAIMED

STORM DRAIN EASEMENT TO BE QUITCLAIMED

VARIABLE WIDTH SIDEWALK ESMT. VARIES (0'-13') AND DRAINAGE ESMT. (0'-5')

PROPOSED SUNSET RIDGE PARK CONNECTION (BY OTHERS)

CITY NEWPORT BEACH STORM DRAIN EASEMENT

RIGHT OF WAY DEDICATION TO CALTRANS

SEE DETAIL 'B' THIS SHEET

NOTE: A SIDEWALK EASEMENT WILL BE PROVIDED ON PORTIONS OF 15TH STREET, 'A' STREET AND 'B' STREET WHEN THE MEANDERING SIDEWALK IS OUTSIDE THE PUBLIC RIGHT OF WAY

SECTION 'A'
N.T.S.

SECTION 'B'
N.T.S.

DETAIL 'B'

SCALE: 1" = 50'

SCALE: 1" = 100'

SHT-4
SHT-5
SHT-6
SHT-7

NO.	DATE	REVISIONS	APPROVED

DRAWN BY:
DESIGNED BY:
CHECKED BY: JO

FUSCOE ENGINEERING
16795 Von Karman, Suite 100
Irvine, California 92606
tel 949.474.1960 • fax 949.474.5315
www.fuscoe.com

TENTATIVE TRACT NO. 17308

SHEET 7 OF 7

PLAN SET: G

6/30/11

NEWPORT BANNING RANCH LLC
TENTATIVE TRACT MAP 17308