*Dedicated to the Preservation of Trees*

James P. Allen & Associates

# Fiscalini Ranch Preserve
# Monterey Pine Forest Analysis
# Maintenance and Monitoring Program

Prepared for
Friends of the Fiscalini Ranch Preserve

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# INTRODUCTION
## Background

Friends of the Fiscalini Ranch Preserve (FFRP) are invested in determining the current condition of the Monterey pine forest and taking action to preserve and protect this resource.

Jo Ellen Butler, FFRP Executive Director contacted my firm in November of 2013 to discuss the possibility of conducting the FRP Monterey Pine Forest Analysis, and defining a Maintenance and Monitoring Program.

After visiting the Preserve in late November and taking part in a community walk through the forest led by Jo Ellen, I provided a Scope of Work, Project Approach, Budget and Timeline to complete the study. This proposal was revised over the next two months with input from the FFRP Board of Directors (BOD). Ms. Butler accepted the proposal as a representative of the FFRP BOD on February 1, 2014 engaging my firm to provide the following services:

- Conduct discussions with and collect written comments from the FFRP Board, the Cambria Forest Committee and community members in order to understand existing philosophies, policies and practices and how they are working at the Preserve
- Review existing background documents
    a. Final Master Environmental Impact Report
    b. Cambria Forest Management Plan (CFMP)
    c. East West Ranch Conservation Easement and Management Plan
    d. Trail map
    e. Vegetation Zones Map File
- Prepare for and conduct a meeting with FFRP Board, volunteers and the Cambria Forest Committee to understand existing program implementation and history of Fiscalini Ranch Preserve (FRP) forest management
- Involve the community in conversation about the Monterey Pine Forest at FRP
- Define Program specific Goals and Objectives based on information gained at the community meeting
- Assess the condition of the FRP Monterey pine forest systems following guidelines defined in the CFMP
    a. Define Management Units with homogeneous natural features, health status and ecological processes with like treatment requirements, where possible
    b. Perform a visual inspection of the entire Monterey pine forest within the Fiscalini Ranch Preserve boundary
    c. Assess general conditions following the Site Condition Checklist for each Management Unit as defined in CFMP
    d. Prioritize treatments/treatment options based on severity of need, available budget and resources for implementation within a five-year time frame
- Present a draft Summary of Findings to FFRP Board of Directors (FFRP BOD) by April 30, 2014
- Receive draft comments from FFRP BOD
- Prepare and present the final report

**Program Goals and Objectives:**

The Goals and Objectives as defined by FFRP BOD reflect and support those stated in the CFMP**.**

a. Improve Monterey Pine Forest health and structure consistent with applicable laws, policies and regulations
    i. Perpetuate and Maintain the existing Monterey Pine forest acreage
    ii. Maintain and further expand Monterey pine plantings.
    iii. Maintain and enhance habitat for native plants and wildlife from an ecosystem perspective
    iv. Address the eucalyptus growing within the pine forest.
b. Reduce wild land fire potential by managing flammable fuel loads
c. Manage risks; identify and mitigate hazardous conditions near residences and public use areas
d. Maintain, enhance and perpetuate forest health and future growth
e. Preserve and Protect aesthetic and functional benefits

This report is limited to analysis of the Monterey Pine Forest system at FRP does not apply to non-forested areas. The report will follow the CFMP model and will be simple, clear and direct. The report will not contain detailed random plot samples, canopy analysis or individual tree inventories.

The intent is to present general condition assessments of individual Management Units following the CFMP's Site Condition Checklist with prioritized treatment options and recommendations to meet Program Goals and Objectives within a 5-year Implementation framework.

The Maintenance and Monitoring Program (M&MP) is intended to provide prioritized action steps to meet Program Goals and Objectives within a 5-year Implementation framework that are realistic; offering treatments/treatment options that can be funded and achieved to meet Program objectives.

This report may be used by the FFRP Board to inform decision-making and identify funding sources.

## SUMMARY

The Monterey Pine Forest extents within the Fiscalini Ranch Preserve (FRP) easement boundaries have been assessed and Management Units defined. Treatment options have been identified and prioritized within an achievable five-year Implementation Program.

Although very little information was available regarding the past history of this forest system, it can be assumed that disease, site conditions, insect activity and changing climate have resulted in a high degree of tree mortality and failure in the last 20 to 30 years.

Forest conditions range from poor to good. Although community wide pine tree mortality levels have been estimated to be greater than 25%, the FRP Monterey pine forest currently exhibits lower mortality levels of 10 to 15%. Tree mortality can be expected to increase in the next few years due the effects of prolonged drought.

Threats to and resulting from the FRP forest system must be managed to decrease risk of wildfire, guard against personal injury and protect this irreplaceable resource. Primary threats to the forest

system include risk of wildfire initiated from points outside of the easement boundaries along with invasive, suppressive plants encroaching upon the forest.

Threatening elements created by the forest to the community include wildfire initiated from within the FRP easement boundaries and falling trees or tree branches. The FRP has been identified as a High Fire Hazard Zone.

Alan Peters, with CAL FIRE and Mark Miller, Chief of the Cambria Fire Department have identified additional areas where fuel breaks need to be created or expanded. These areas are defined as Management Units A1 and A2, identified on the attached map.

Community volunteers have planted at least two thousand trees since the year 2000. Natural regeneration is excellent both within and expanding outward from the forest extents. Future volunteer projects should focus on restoring the ecosystem within the forest and include managing suppressive and invasive plants in conjunction with modifying crowded conditions to allow for natural regeneration. The distribution of cones and seeds along with planting smaller quantities of properly spaced saplings can enhance the system.

The Maintenance and Monitoring Program defined for the FRP Monterey pine forest is intended to be achievable. The Implementation Plan provides prioritized Action Items, Treatment assignments, Performance Timeline, Budget and Possible Funding Sources. Quantified monitoring to assure the Success Criteria has been met will determine necessary treatment adaptions.

To properly oversee and actualize the Implementation Plan, a Professional Forest Manager/Resource Ecologist must be identified and hired. Current realities are that a Registered Professional Forester (RFP) with the required experience, knowledge and attributes may not exist regionally and would need to be recruited from outside the Cambria area at a high cost, beyond FFRP BOD budget capabilities. CAL FIRE has expressed willingness to act in this capacity pursuant to PRC §750.

The FRP Forest Manager/Resource Ecologist could be recruited from the volunteer ranks at Program onset until budget funds support hiring a professional. This individual could be defined as the FRP Implementation Program Advocate. This individual must be independent, objective and focused solely on the success of the FRP Implementation Program. Filling this position is essential to Program Success, providing support and additional resources for the current Ranch Manager.

Immediate tasks for the FRP Forest Manager/Resource Ecologist or FRP Implementation Program Advocate will be to gain permits, identify grant fund opportunities and initiate high priority treatments including:

- Flammable Fuel Management
- High Risk Tree Maintenance
- Eliminate/Control Invasives

Since the Monterey pine forest is a fire dependent resource (i.e., it is typically regenerated and reinvigorated from the effects of heat and fire), it is important that the Program foster the same type of outcomes that typically occur from a fire event of this habitat, such as understory thinning (Carl, 2011).

Given funding constraints, this objective may be best achieved by defining 3 areas for test plots. Each test plot would be approximately one acre demonstrating 3 different understory treatments applied by CAL FIRE hand crews; cut/chip, cut/lop/scatter and cut/pile/burn. The success of each treatment can be assessed. CAL FIRE crews can repeat the most beneficial treatments annually.

The Forest Manager/Resource Ecologist will direct field crews as to what to remove or modify, what to retain, identify wildlife habitat and practice the most resource protective applications.

The Forest Manager will be responsible for quantified monitoring for all forest treatments performed at FRP.

- Immediately prior to implementation of the treatment. The first monitoring inspection shall document existing MU conditions in a quantified manner (Tree and understory plant size, species and quantity) in order to provide a baseline for comparison with post-treatment conditions.

- Immediately after implementation of the treatment. The second monitoring inspection should document the immediate post-treatment conditions in the Management Unit; the Forest Manager/Resource Ecologist will document that the treatment prescription was executed

**Adaptive Management** is an essential component of the FRP M&MP to be overseen and documented by the Forest Manager/Resource Ecologist. If Success Criteria of the treatment prescription has not been met or could be improved or modified, treatment adjustments will be made and implemented.

**Success Criteria/Performance Benchmarks** are the standards by which the Program will be judged to be successful in the eyes of the FFRP BOD. The question to be answered is: has the treatment achieved the desired outcome? Once the 5-Year Implementation Program has been completed, The Forest Manager/Resource Ecologist should be able to report with certainty, whether or not, and to what extent, Success Criteria was/was not met.

Success Criteria for the FRP M&MP is defined as:

- Retain a qualified Forest Manager/ Resource Ecologist or FRP Implementation Program Advocate
- Complete Treatments 1 and 2 (Flammable Fuel and Hazard Tree Management) within 1 year from Program inception
- Renew Treatments #1 and 3 annually, or as necessary
- Initiate Treatment #3 (Control/Eliminate Invasives) within 1 year
- Increase annual efforts to implement Treatment #3 through Year 5
- Implement Treatment #4 (Test Plots) annually through Year 5

The Forest Manager and FFRP and CCSD BOD should review Program Goals and Objectives annually and at the conclusion of the 5-year Implementation Program.

In order to meet Program Goals and Objectives, a culture of cooperation, partnership and team building must be initiated and developed by the FFRP BOD.

# OBSERVATIONS
## Site Description

The Fiscalini Ranch Preserve (FRP) is a 430-acre coastal open space property located in Cambria, California. Elements of nine habitat types typical of coastal central California and the Cambria area are represented on the FRP including riparian woodland; riparian scrub; seasonal wetland; Monterey pine forest; oak / toyon woodland; coastal scrub; sea bluff scrub; grassland; and ruderal/anthropogenic (human created/disturbed). There are many special-status plant and wildlife species found on the Ranch Preserve.

The property is owned and maintained by the Cambria Community Services District (CCSD). Friends of the Fiscalini Ranch Preserve (FFRP) hold the conservation easement on the property. Carlos Mendoza, CCSD is currently the Ranch Manager and oversees maintenance with support from FFRP.

The native Monterey pine forest component at FRP is considered sensitive habitat by local, state and federal agencies. It covers approximately 70 acres occurring in large stands and isolated incidences. The FRP Monterey pine forest represents a small percentage of the estimated 2464-acre Monterey pine forest system in Cambria.

Soils, slope percentages and erosion ratings have been classified by the Natural Resources Conservation Service (2005) and documented on the attached map. The Monterey pine forest at FRP grows almost entirely in San Simeon sandy loam soils on slopes ranging from 2 to 50%. Erosion class ratings are moderate (.24). Typically this soil type has a grayish brown, sandy loam surface layer about 24-inches thick. This upper soil layer is underlayed by brown mottled clay to depths of 34 inches. The subsoil clay restricts uniform water movement and root penetration. It is subject to gully erosion that occurs at several locations at FRP. This condition increases the importance of vegetative cover. Because of the limited rooting environment, wind throw (trees uprooting in response to wind force) is common (Chorover/McBride, 1987).

The photo at right exhibits the change in soil color and texture at the interface of the upper sandy loam layer and clay underlayment as indicated by the red line. Rooting depth ranges from 20 to 40 inches. This large tree, found in Management Unit B is one of many uprooted trees within FRP.

## Monterey Pine Forest Resources

Forest conditions vary dramatically within the FRP forest as well as individual MUs; there are excellent examples of a functional Monterey pine forest with diversity in tree age class, size and condition.

Management Units A2, B and C best represent the native Monterey pine forest system at FRP. Tree associates in these MUs are limited to one hardwood, coast live oak *Quercus agrifolia*. Other plants present in these Units include:

- Coffeberry *Rhamnus californica*
- Toyon *Heteromeles arbutifolia*
- Alum root *Heuchera sp*
- Sticky monkey flower *Mimulus auranntiacus*
- Native honeysuckle *Lonicera sp*
- Flowering currant *Ribes sp*
- Gooseberry *Ribes sp*
- Bracken fern *Pteridium aquilinum* var. *pubescens*

Management Units A2 (pictured on the title page) and B have several examples of adequate spacing between large diameter trees for regeneration and development of understory plants including coffeberry and toyon.

Other sections of the forest in Management Units B and C have extremely dense stands of even-aged regenerative growth. There are many areas where dead and fallen trees, downed logs and woody debris cover large sections of the forest floor. These materials are accumulating at rates exceeding the capability of insects, fungi and microorganisms to decompose and recycle.

Still other areas of Management Units B and C have canopy gaps created by large tree failures with ivy, blackberry, poison oak and downed debris suppressing regeneration and increasing wildfire potentials.

Three sections within MU B have been identified as Test Plot sites; appropriate conditions for CAL FIRE hand crews to thin small plots of up to 3 acres total annually to demonstrate different treatment methods such as cut/chip, cut/pile/burn, and cut/lop/scatter. The section pictured above is the southwest of a xeric (dry) swale at the *Owl's Roost* bench, pictured at right.

These areas provide an excellent contrast in conditions. The Forest Manager/Resource Ecologist will monitor, documenting existing MU conditions in a quantified manner (Tree and understory plant size,

species and quantity) in order to provide a baseline for comparison with post-treatment conditions. Regeneration, new sapling production is abundant within and expanding beyond forest extents where conditions are conducive to seed germination and growth. There is excellent regeneration and expansion of the forest boundaries in the following areas:

- North and west of Management Unit "B"
- North and east of Management Unit "C"
- North of Management Unit "E"
- West of Management Unit "F"
- Throughout Management Unit "G", sporadically as individuals or in small groups as depicted in the photo at right.

In the last 19 years community volunteers have planted thousands of seedlings in Management Units D1 and D2. The earliest plantings were by Cal Poly volunteers in 1995 in MU D2. Saplings were densely planted from seeds of unknown origin, some in rows resembling a plantation or Christmas tree farm.

Understory plants have not colonized this area. Western gall rust *Peridermium harknessii*, a fungal disease is present in many of these trees. Several have multiple trunks with poor attachment points, a genetic trait not found in naturally regenerated trees growing from FRP seed sources.

Two to three hundred saplings propagated from cones collected within and near the Preserve and grown by local volunteers including Brad Seek and Blair McCormick were planted annually beginning in 2001. Thanksgiving planting events from 2001 to 2006 and again in 2012 planted saplings to the west of the earliest Cal Poly plantings in MU D2. Plantings by FFRP volunteers during this period resembled those planted by Cal Poly; *densely planted, without adequate spacing some in rows resembling a plantation or Christmas tree farm*. The 2012 plantings were placed in grasslands extending to the west and north of Mu D2. Many saplings were planted around significant coast live oak trees. Future growth of these saplings will suppress the coast live oaks and degrade their woodland environment.

Between the years 2008 and 2011, 12 to 20 FFRP volunteers planted 2 to 300 trees per year beginning to the north of Victoria Lane Trail #5 and proceeding in the northwest direction. Saplings were planted very close together in the 2008 and 2009 plantings but gained more separation in 2010 and 2011.

There were no planting events in 2007 and 2013. In 2013 the FFRP BOD decided to wait for the results of this study to determine the appropriateness of past planting efforts.

The dedication and commitment of the volunteers that planted these trees is commendable and should be respected. Several of the replanting areas are overcrowded and do not bear resemblance to the native Monterey pine forest. They are absent of native understory plants; shrubs and groundcovers. In addition, they have been installed in areas where forest migration may not have occurred naturally.

Natural regeneration is excellent both within and expanding outward from the forest extents. Volunteer projects should focus on restoring the ecosystem within forest extents, managing suppressive/invasive plants, preparing crowded canopy gaps for natural regeneration along with distributing cones/seeds and planting smaller quantities of saplings with adequate spacing.

It is of utmost importance to protect the genetic integrity of this Monterey pine forest system at FRP. Any future plantings should be propagated exclusively from seed stock collected from FRP.

Management Unit E is a mixed woodland comprised of coast live oak, Monterey cypress *Hesperocyparis macrocarpa* planted originally as a windscreen along with a mix of riparian species; willow Salix sp.  etc., in a wetland environment on the northern edge of the Unit. There is excellent regeneration on the northern edge of this unit.

This Unit as well as Management Unit F, to the north is one of the most visually prominent sections of FRP.

The southwestern edge of MU E is bordered by MU D2 and grasslands. The photo at right illustrates the 1995 Cal Poly plantings encroaching on the oak woodland component of this Unit.

The 2012 plantings resulted in saplings, circled in green being planted in proximity to the oak woodland. These Monterey pine saplings should not have been planted in areas that encroach upon, suppress or degrade other forest systems.

There are several areas where invasive plants are encroaching on the forest. Invasive species are not native to the FRP forest and have the capability to spread rapidly and displace native species. Invasive species within or encroaching upon the FRP forest include:
Blue gum eucalyptus *Eucalyptus globulus*

- Management Unit "F" above Santa Rosa Creek
- Management Unit "A2" (East Ranch)
  - To the east of Ramsey Drive
  - Below Piney Way

English *Hedera helix* and Cape ivy *Delairea odorata*, French broom *Genista monspessulana*, Scotch broom *Cytisus scoparius*, pampas grass *Cortaderia  selloana*, Black acacia *Acacia melenoxylon*, poison hemlock *Conium maculatum* and orchard grass *Dactylis glomerata.*

- Management Units A1 and A2 adjacent to/within the Highway 1 Right of Way

Continued advancement of these invasive plants will overtake the FRP forest, suppressing growth and limiting the opportunities for natural regeneration. Native trees and shrubs are deprived of growing space, vital nutrients and moisture. Prompt, decisive action should be taken to control or eliminate these threats to the FRP forest.

Large stature eucalyptus have overtaken several sections of the forest, most visibly within Management Unit F, a prominent vista from the East Village and central portions of Main Street. Eucalyptus trees occupy approximately 20% of this MU and are expanding their footprint.

Given their size and age, many of the larger trees, greater than 18 diameter inches should be retained as trees of significance; with biotic, habitat and aesthetic functions.

Management Unit F displays excellent regeneration capabilities on the western edge. Continued advancement of the eucalyptus will suppress regeneration. Treatments to eliminate or control invasives at FRP should be initiated immediately.

As with other treatments, The Forest Manager/Resource Ecologist will monitor and adapt treatments as necessary to control or eliminate suppressive, invasive species.

Pitch canker *Fusarium circinatum* influences appear to be minimal at FRP. This pathogen has resulted in high mortality levels community wide since 1990. Sudden Oak Death (SOD) *Phytophthora ramorum* is not reported to be present at FRP. This is a highly mobile disease that is very active in the Big Sur area, approximately 45 miles from FRP. Cautions should be taken to guard the FRP from this disease; California bay *Umbellularia californica* trees, a vector of the pathogen should be removed or pruned to maintain a 20 foot separation from adjacent tree canopies. It is recommended that the attached Best Management Practices for pitch canker and SOD be adhered to.

The FRP has been identified as a High Fire Hazard Zone. In order to defend FRP from wildfire potential, shaded fuel breaks have been created in the following areas by CCSD:

- Wastewater treatment area north of the FRP easement boundary in 2009
- East Ranch (Management Unit A2) in 2011
- Easement boundaries adjacent to private properties on Warren Road and Trenton Street in 2004 (Management Unit A1)

Grasslands and meadows are mowed as needed during fire season. Fuel breaks are maintained by clearing flammable vegetation with a weed eater. Concerns have been expressed that native plants are destroyed by this method. This can be corrected by the FRP Forest Manager/Forest Ecologist overseeing all activities and directing personnel. The Manager will be responsible for proper treatment implementation as well as for identifying wildlife habitat and plants to be avoided/respected during treatments: Native shrubs, primarily coffeberry and toyon be retained where they are not likely to create ladder fuels.

These fuel breaks were funded through grants that have diminished over the last 4 years. Alan Peters, with CAL FIRE and Mark Miller, Chief of the Cambria Fire Department have identified additional areas where fuel breaks need to be created or expanded. These areas are defined as Management Units A1 and A2, identified on the attached map.

## DEFINING MANAGEMENT UNITS (MU)

The FRP forest has been divided into 9 Management Units (MU) with assigned letter designations for identification purposes. Management Units were defined by distinguishing areas with similar conditions, where possible and bound by obvious, relatively permanent features; established roads, trails, fences, easement boundaries and/or distinct changes in forest composition. Management Units locations are identified on the attached map.

Some of the individual MU's have a variety of conditions requiring different treatments. Others are defined by similar conditions or treatment requirements. As funds become available, sub-units will be defined, inventoried and treated for each area's particular scale, needs and priority. Alternatively, Management Units can be identified "on demand" by the Forest Manager/Resource Ecologist with boundaries defined by the areal extent of treatment that available funding will support. Each MU shall be inventoried (tree size, number and condition) prior to treatment and immediately after to document success criteria and adapt future treatment strategies as needed.

- Management Unit A1 is defined as a Risk Management Zone bound by private properties on Warren Road and Trenton Street to the south, Highway 1 to the east, Huntington Road to the north and CCSD lands abutting private property to the northeast.
- Management Unit A2 is also defined as a Risk Management Zone and is bound by Highway 1 to the west, Ramsey Road to the east, Skye Street, Wilton Drive, Burton Circle, Piney Way, Pine Street, and Rogers Drive to the south and CCSD lands abutting private property to the northeast.
- Management Unit B is bound by Forest Loop Trail to the north, south and west, Creek to Forest Trail #7 to the northeast and the easement boundary to the east.
- Management Unit C is bound by the Marine Terrace Trail #2 to the west, Grassland/Open Space to the north Management Unit D to the west and Management Unit A to the south.
- Management Unit D1 is bound by the Management Unit C to the west, Grassland/Open Space to the north, Forest Loop Trail #4 and Victoria Trail #5 to the south.
- Management Unit D2 is bound by the Management Unit G to the west, Grassland/Open Space to the north, Forest Loop Trail #4 and Victoria Trail #5 to the south
- Management Unit E is by the Creek to Ridge Trail #9 to the north, Santa Rosa Creek Trail-West to the west, easement boundary to the east and Creek to Ridge Trail #9 to the south.
- Management Unit F is bound by the easement boundary to the north, Ridge Trail #2 to the west, easement boundary to the east and Management Unit D to the south.
- Management Unit G lies outside the other MU boundaries but within the remainder of the FRP easement.

## MANAGEMENT UNIT SITE CONDITION CHECKLIST

Each MU was visually assessed during the Months of March and April 2014. MU boundaries and conditions were located with a Global Positioning System (GPS) and input to the attached *Management Unit Conditions Map*. Conditions of each Management Unit are documented on the attached *Site Conditions Checklist, Attachment A*.

## TREATMENT OPTIONS

The selection of Management Units treatments/treatment options follows a two-tiered approach to the M&MP Implementation, respecting the forest as one complete, interconnected system.

The first tier follows a broader perspective within the context of the forest wide goals to create and maintain a spatially and ecologically diverse and functional Monterey pine forest. The second tier addresses implementation on individual MUs respecting funding, labor availability and CCSD direction with FFRP BOD input. (adapted from CFMP 2002).

The CFMP organized treatment prescriptions in two broad categories; overstory and understory. The CFMP projected that management goals would be most effectively achieved by implementing 1or more understory treatments in conjunction with the overstory treatment identified as appropriate. These treatments were designed to mimic disturbances in a natural Monterey pine forest ecosystem to reset succession in a way that prepares the management unit to support new Monterey pine and native oak trees and recover.

This approach has been modified to apply specifically to the FRP Monterey Pine forest system. In the 20+ years since the CFMP was compiled the FRP forest has lost significant trees due to, age, disease and insect attacks. There are large canopy gaps throughout the forest, eliminating the need to artificially create gaps. Dead, fallen and downed logs and woody debris are very dense, suppressing new growth in many sections of the forest.

### TIER 1, FORESTWIDE PRIORITIES

Tier 1 FRP Implementation Program considers the needs of the Monterey pine forest system on a complete, forestwide scale: while individual treatment priorities will be assigned to different management units, the vision or goal for the entire forest must be a high priority.

To properly oversee and actualize the Implementation Plan, the CFMP stresses the need to identify and hire a Professional Forest Manager. The CFMP projected the **Professional Forest Manager/Resource Ecologist** *would be selected by and report to the CCSD and FFRP Board of Directors with Cambria Forest Committee input. S/he will be a licensed Professional Forester/Forest Ecologist have experience in natural resources management, forest ecology, and central California coastal habitats and species, with specific expertise in Monterey pine forest ecology.*

Current realities are that a registered professional forester with the required experience, knowledge and attributes may not exist regionally and would need to be recruited from outside the Cambria area at a high cost, beyond FFRP BOD budget capabilities.

The FRP Forest Manager/Resource Ecologist may be recruited from the volunteer ranks at Program onset until budget funds support hiring a professional. This individual (FRP Implementation Program Advocate) needs to be independent, objective and focused on the success of the FRP Implementation Program. This *FRP Implementation Program Advocate* should have experience as defined in CFMP: *in natural resources management, forest ecology, and central California coastal habitats and species, with specific expertise in Monterey pine forest ecology* perhaps from a laymen's perspective.

The Scope of Work for the FRP Forest Manager/Resource Ecologist

- Understand, actualize and attain FRP M&MP Goals and Objectives.
- Educating the community about Monterey pine ecosystems, conservation and management at FRP
    - Conduct Community educational workshops at FRP
    - Create interpretive signage explaining the Monterey pine forest ecosystem at FRP
        - Post at trailheads or FRP entry points within/near the forest
        - Identify observational points of forest development
            - Regeneration
            - Canopy gaps
            - Invasive plants
- Implement Treatments within individual Management Units as budgets allow
- Consult the Regulatory Compliance Matrix (see table 5-1 CFMP, attached) and ensure that regulatory compliance needs are met for all proposed treatments.
- Identify, apply for and gain necessary permits
- Identify funding sources
    - Apply for and obtain grant funds
- Define and conduct quantified monitoring of treatment areas, quantified
    - Inventory areas to be treated pre-treatment
        - Baseline conditions
        - Tree and understory plant size, species and quantity
    - Post treatment inventory, quantified
    - Monitor at necessary intervals
- Adapt further treatments to meet Program Goals and Objectives
- Maintain a file documenting M&MP actions and current status
    - Maintain GPS map file recording existing conditions and treatment areas
- Submit status reports to the FFRP BOD

In the early stages of Program Implementation this position may need to be assumed by the FRP Executive Director in partnership with CCSD or a CAL FIRE Registered Professional Forester (RPF) in partnership with a knowledgeable community member or a local arborist in partnership with a CAL FIRE RPF.

Filling this position is essential to Program Success and an opportunity for FFRP BOD to develop a culture of cooperation, partnership and team building.

## TIER 2, INDIVIDUAL MANAGEMENT UNIT TREATMENTS

Given the current conditions of the FRP forest, treatment options, defined below have been defined to meet Program specific Goals and Objectives. All proposed treatments to be performed within the *Coastal Commission Special Treatment Areas* shall adhere to Article11 of the California Forest Practice Rules, 2013 Title 14, California Code of Regulations Chapters 4, 4.5 and 10. Treatments performed outside these areas shall adhere to all applicable ordinances.

### Treatment 1

In order to defend the Fiscalini Ranch Preserve and neighboring properties in Cambria from wildfire potential, the following FRP wildfire Prevention Program defines necessary treatments and locations for management of flammable fuels. The implementation of this Program will meet or exceed criteria defined in Public Resources Code 4291.

Treatment areas are identified on the attached map as Management Units A1 and A2. Appropriate, site specific Management Strategies and Tactics will be defined by CAL FIRE and the Cambria Fire Department.

Management Strategies include:

- Fuel Breaks: intended to modify fire behavior and spread by altering fuel beds in a linear alignment and may include retained trees (shaded fuel breaks).
- Fire Break; a non-combustible fire barrier either natural or man-made (e.g. lake, game trail, road).
- Roadside Fuel Treatments; are intended to reduce the likelihood of ignition sources along roadways and maintain access/egress capabilities.
- Defensible Space: fuel reduction around improvements, structures and critical infrastructure.
- Fuel Reduction; intended to modify fire behavior by treating fuels over large areas in strategic locations or historic fire corridors; typically conducted on large expanses of federal or private land (e.g. Strategically Placed Area Treatments)

Tactics Include:

- Manual/Hand Work
  - Cut/Lop/Scatter
  - Cut/Pile/Burn
  - Cut/Chip
  - Weedeating
  - Pruning
- Mechanical
  - Mowing
  - Grinding
  - Piling/Crushing
  - Plowing/Disking/Harrowing
- Chemical Applications
- Prescribed Burning
  - Fuel Reduction
  - Training Burns
  - Weed Control
  - Habitat Restoration

Treatment 1 Approach Template

The fuel break will be constructed through a variety of treatment methods that could include mechanical shredding (mastication) and/or the use of hand crews (chainsaw use with material either: chipped, lopped and scattered, or piled and burned). When using a masticator or other heavy equipment in the forest, at least 15 feet clearance from trees and shrubs to be preserved will be maintained.

The fuel reduction methods will treat a majority of the smaller diameter live and dead woody vegetation in the understory, creating a shaded fuel break. Most dead and down material, including both trees and shrubs, less than 10 inches in diameter at breast height (dbh) will be treated. To reduce ladder fuels, most live brush and trees less than 10 inches dbh will be removed when beneath the canopy of overstory trees. When not beneath the canopy of overstory trees, live brush and trees less than 10 inches dbh will be retained to achieve an average horizontal spacing of 10-15 feet between crowns. In some cases, retained trees will be limbed (pruned) with hand crews to reduce the chances of fire moving from the ground up into tree crowns.

In areas where larger trees are unhealthy, widely spaced or near the end of their lifespan, healthy trees less than 10 diameter inches may be retained to promote the re-establishment of larger trees as quickly as possible in all areas.

A fully intact forest will be retained with a modified stand structure including trees of all sizes. Pines and oaks of all sizes including seedlings, saplings, and pole-size trees will be retained with the objective of retaining the healthiest, best-formed trees at an average stem spacing of 10-15 feet.

The Fiscalini Ranch Preserve Forest Manager/Forest Ecologist will oversee all activities, direct field crews and be responsible for identifying wildlife habitat and plants to be avoided/respected during treatments: Mature shrubs, primarily toyon and coffeeberry will be retained where suitable trees are lacking and where they are not likely to create ladder fuels. Important habitat components including wildlife snags, large down logs and woodrat houses will be retained. All trees and shrubs less than 10” dbh to be retained will be flagged with ribbons by the Fiscalini Ranch Preserve Forest Manager prior to treatment operations.

**Treatment 2**

Hazard Tree Management

The Forest Manager/Resource Ecologist will conduct frequent inspections to determine if hazardous tree conditions present a risk to those that travel the FRP forest trails or reside near the easement extents.

The FRP Tree Risk Management Policy shall be considered passive, typical of native forest systems. The intent is to maintain a safe environment and provide a Due Standard of Care by the CCSD Ranch Manager.

**Treatment 2, continued**

Hazardous Conditions Near Trails

Dead, dying and broken trees or tree parts that hang over benches and trails in the forest that are at risk of falling and injuring people shall be treated. This includes trees/tree sections that can easily be pushed over with minimal force or may fall and strike a trail or bench without warning.

Example at right; the Trenton entry trail has a wooden bridge crossing the Trenton/Warren Gully. A large Monterey pine tree growing near the uphill switchback section of the trail has several large diameter dead branches that could fall at any moment. These branches should be pruned from the tree to eliminate the potential for them to fall and strike a trail user as they climb the steps or cross the footbridge.

Hazardous Conditions Near Residences

Trees that are > 50% dead or in an irreversible state of decline shall be reduced in height to a level that reflects the distance to striking an adjacent residence.

Example: Dead trees to the east of the Marlborough entrance would strike the nearby residence if they were to fall. These trees can be reduced in height to a point where they won't hit the structure when they fall. The remaining trunks of the dead trees will create snags for wildlife habitat; granaries for acorn woodpeckers and nesting cavities as depicted in the photo to the right, below.

**Treatment 3**

Control of Invasives

- Removal of eucalyptus and acacia trees less than 18 inches in diameter at breast height in a controlled manner to avoid damage the surrounding forest elements to be preserved. Chemical control of stumps is necessary to discourage resprouting. This approach will allow the significant, larger trees to remain but limit further suppressive influences from eucalyptus and acacia tree growth.
- Hand removal of English ivy vines on the forest floor and tree trunks. Chemical control of regrowth
- Removal of cape ivy is difficult since this species grows from fragments. Chemical and physical techniques are effective, but only with frequent monitoring and re-application.
- Cut pampas grass to ground level, then treat with chemicals, burning is not recommended
- Remove mature French broom shrubs using the most current physical techniques, follow with chemical treatment

French broom control treatments defined by Staub Forestry in 2011 include:

- Pull plants when soil is damp enough and removal will not create erosion. Cut plants just above soil when soils are dry or uprooting too disruptive.
- Plants without seedheads can and should be left on site. Smaller plants should be placed in contact with the ground and perpendicular to the fall line of the slope as much as possible without covering desirable understory plants. Larger concentrations or sizes of broom without seedheads should be piled and lopped.
- Plants with seedheads should be segregated from all other material and removed from the site if possible. Under no circumstances should they be chipped and broadcast on site. If seedheaded plants cannot be removed from the site, they should be concentrated in a relatively small number of piles and lopped on site. This will concentrate the seed and make subsequent control much easier.
- Ideally, follow-up chemical treatment will control subsequent sprouting and seedling growth.

As with all other treatments, The Forest Manager/Resource Ecologist will monitor, document conditions pre and post treatment and adapt treatments as necessary to control or eliminate invasive species.

**Treatment 4**

Test Plots

Since the Monterey pine forest is a fire dependent resource (i.e., it is typically regenerated and reinvigorated from the effects of heat and fire, it is important that the Program foster the same type of outcomes that typically occur from a fire event of this habitat, such as understory thinning (Carl, 2011). Given funding constraints, this objective may be best achieved by defining 3 areas for test

plots. Each test plot would be approximately one acre demonstrating 3 different understory treatments applied by CAL FIRE hand crews; cut/chip, cut/lop/scatter and cut/pile/burn. The success of each treatment can be assessed. CAL FIRE hand crews can repeat the most beneficial treatments annually.

Test plot areas are proposed for MU B and identified on the attached map

**Treatment 5**
Seed/cone scatter
Cones and seeds should be collected from healthy trees within the management unit where they are to be scattered to ensure germination of stock that is adapted to local microclimates. Either cones or seeds may be scattered. Scattering open cones will likely be the most cost-effective method. Closed cones can be taken from healthy mature limbs by pruning small limbs or portions of large limbs and cutting the cones off the limbs by hand. The cones can then be artificially heated to open them or placed in the open on hot summer days, where they should open on their own. Cones should be scattered as evenly as possible in open areas to maximize the chance that seedlings will grow in suitable microsites. Care should be taken to insure that genetic differences between management units are considered when scattering seeds

**Treatment 6**
Thinning of dense areas
Trees in crowded stands tend to grow slowly. Indicators of the need to thin are crowded or overlapping tree crowns, closely spaced trunks, and thin stems. Thinning releases the trees from excessive competition, stimulates greater growth, and removes defective or malformed trees that will become a hazard in the future. Young tree stands should be thinned every 5–10 years until the stands reach mature form.

A final thinning should be performed to achieve desired spacing or to remove potentially hazardous trees before they grow out of the sapling stage. When stands have been thinned and are growing vigorously, shrubs and forbs naturally tend to occupy the understory.

This treatment may include removal of woody debris generated by falling trees.

## Priority Level Designations

Each MU has been assigned necessary Treatments with priority levels defined as follows:
**1. High**, requiring immediate attention
**2. Moderate**, of importance to maintain forest health and ecosystem functionality. Funding sources should be identified and recommended treatments initiated as soon as possible.
**3. Low**, elective forest rehabilitation treatments shall be performed as budgets allow.

# MAINTENANCE AND MONITORING PROGRAM

The Maintenance and Monitoring Program defined for the FRP Monterey pine forest is intended to be achievable. The Implementation Program, *Attachment B* clearly defines necessary maintenance with Prioritized Action Items, Treatment Assignments, Performance Timeline, Approximate Budget and Possible Funding Sources.

**MONITORING (adapted from CFMP).**

Quantified monitoring to assure the Success Criteria has been met will determine necessary treatment adaptions and is defined below.

Monitoring schedules should reflect the severity of the treatment and the projected or anticipated future conditions on the treated site. Monitoring intervals should be appropriately spaced to permit the identification of any potential concerns and to track successional changes; the precise interval will depend on the treatment and the success criteria. Following is a sample-monitoring schedule.

1. Immediately prior to implementation of the treatment. The first monitoring inspection should document existing MU conditions in a quantified manner (Tree and understory plant size, species and quantity) in order to provide a baseline for comparison with post-treatment conditions.

2. Immediately after implementation of the treatment. The second monitoring inspection should document the immediate post-treatment conditions in the Management Unit; the Forest Manager/Resource Ecologist will document that the treatment prescription was executed properly and that the immediate goals for the treatment have been met.

3. At six-month intervals for 5 years, the extent of the current M&MP. The continuous collection of data will document successional changes and regrowth and health of Monterey pines within the treated Management Unit and identify the success and necessary treatment adjustments.

All monitoring data will be entered into a database and systematically organized so it provides a usable archive of historical information about the treated Management Units. It should also offer the means to make comparisons between pre- and post-treatment data, and between the monitoring results and the success criteria.

Spatial data; locations of Management Unit boundaries, specific conditions, treatment areas etc. should be maintained in a geographic information system (GIS) database or by field mapping. As the number of treated MUs increases and as the monitoring data are characterized and tracked over time, this type of spatially organized database will help the Forest Manager/Resource Ecologist analyze data and administer treatment to FRP MU's quickly and efficiently.

The database should be used to compare the quantitative data and the spatial data. The comparisons will help assess how well the treated area is progressing relative to the success criteria for the Management Unit, and the Program Goals and Objectives.

**Adaptive Management** is an essential component of the FRP M&MP to be overseen and documented by the Forest Manager/Resource Ecologist. If Success Criteria of the treatment prescription has not been met or could be improved/modified, treatment adjustments will be made and implemented.

**Success Criteria/Performance Benchmarks**

Success Criteria are the standards by which the Program will be judged to be successful in the eyes of the FFRP and CCSD BOD. The question to be answered is: has the treatment achieved the desired outcome. Once the 5-Year Implementation Program has been completed, The Forest Manager/Resource Ecologist should be able to report with certainty, whether or not, and to what extent, criteria was/was not met.

Success Criteria for the FRP M&MP is defined as:

- Retain a qualified Forest Manager/ Resource Ecologist or FRP Implementation Program Advocate
- Complete Treatments #1 and 2 within 1 year from Program inception
- Initiate Treatment #3 within 1 year
- Increase annual efforts to implement Treatment #3 through Year 5
- Implement Treatment #4 annually through Year 5

**Possible Funding Sources**

Funding sources must be researched, identified, applied for and gained by the Forest Manager. Possible funding sources for grants include:

- CAL FIRE
- Coastal Conservancy
- State of California, Wildlife Conservation Board, Forest Conservation Program
- National Forest Foundation Matching Awards Program
- National Forest Foundation Community Assistance Program
- National Forest Foundation Collaboration Support Program (CSP)
- California Natural Resources Agency, Environmental Enhancement and Mitigation Program (EEMP)
- San Luis Obispo County Community Fire Safe Council (Cambria Focus Group)

Please contact me directly at 831-426-6603 with any questions regarding the FRP Monterey pine forest resources.

Respectfully submitted,

James P. Allen
Registered Consulting Arborist #390

# Management Unit Condition Assessment
# Site Condition Checklist

# Attachment A

**MANAGEMENT UNIT "A1"**
**CONDITION ASSESSMENT, SITE CONDITION CHECKLIST**

Management Unit A1 is defined as the West Ranch Risk Management Zone bound by private properties on Warren Road and Trenton Street to the south, Hiway 1 to the east, Huntington Road to the north and CCSD lands abutting private property to the northeast. This unit includes sections of CalTrans Right of Way to the west of Hiway 1 and CCSD properties at the northeast and southeast corners of the FRP easement boundary.

**Evaluation Table 1.** Visual Sensitivity

| **a) Is the management unit visible from any of these receptors:** | **Yes** | **No** |
|---|---|---|
| Burton Drive? | | ✓ |
| Ardath Drive? | | ✓ |
| Main Street? | ✓ | |
| Santa Rosa Creek Road? | | ✓ |
| Highway 1? | ✓ | |
| **b) Is the management unit considered a local landmark or point of interest?** | ✓ | |

**Evaluation Table 2.** Erosion Potential

| **Question** | **Yes** | **No** |
|---|---|---|
| Is the slope of the site >20%? | ✓ | |
| Does the management unit contain a stream or wetlands, or is it within 300 feet of a stream or wetlands? | | ✓ |
| Are there signs of gully formation or other soil erosion onsite? | ✓ | |
| Is the erosion class rating (from the local Soil Survey) for site soils "High" or "Moderate"? | **Moderate** | |

**Evaluation Table 3.** Monterey Pine Size Category

| | **Ground Cover** | | |
|---|---|---|---|
| | **Sparse (0-10%)** | **Moderate (11-25%)** | **Dense (≥26%)** |
| I. Seeds and Cones (per square meter) | | ✓ | |
| | **Canopy Cover** | | |
| | **Sparse (0-25%)** | **Moderate (26-50%)** | **Dense (≥51%)** |
| II. Pole size (< 4 inches dbh) | ✓ | | |
| II. Pole size (4-20 inches dbh) | | ✓ | |
| IV. Mature (>20 inches dbh) | ✓ | | |
| V. Dead, Dying, and Infected (all sizes) | ✓ | | |

**Evaluation Table 4.** Adjacent Parcel Inventory

a) Have any of the following treatments defined in the CFMP been applied to parcels of land adjacent to the management unit within the last 5 years?

| Treatment: | Yes | No |
|---|---|---|
| Treatments 5 6 or 7 | | ✓ |

b) Do any of the following conditions occur on parcels of land adjacent to the management unit?

| Condition: | Yes | No |
|---|---|---|
| Less than 30% canopy cover of trees | | ✓ |
| Gully erosion more than 8 inches deep | ✓ | |
| Sheet erosion | ✓ | |

**Management Unit A1**
**Specific Conditions, some locations are identified on the attached map**

- Shaded fuel break along easement boundaries near Warren Drive
- Warren/Trenton Gully initiation near and outfall at Hiway 1
- Even aged stand of Monterey pine within CalTrans Right of Way, west of Hiway 1, appears to have been planted when the road was constructed
- Invasive plants including genesta and Cape ivy within CalTrans Right of Way

**MANAGEMENT UNIT "A2"**
**CONDITION ASSESSMENT, SITE CONDITION CHECKLIST**

Management Unit A2 is also defined as the East Ranch Risk Management Zone. This MU is bound by Highway 1 to the west, Ramsey Road to the east, Skye Street, Wilton Drive, Burton Circle, Piney Way, Pine Street, and Rogers Drive to the south and CCSD lands abutting private property to the northeast. This unit includes sections of CalTrans Right of Way to the east of Highway 1 and CCSD properties at the southern and southeast corners of the FRP easement boundary.

**Evaluation Table 1.** Visual Sensitivity

| a) Is the management unit visible from any of these receptors: | | Yes | No |
|---|---|---|---|
| | Burton Drive? | ✓ | |
| | Ardath Drive? | | ✓ |
| | Main Street? | ✓ | |
| | Santa Rosa Creek Road? | | ✓ |
| | Highway 1? | ✓ | |
| **b) Is the management unit considered a local landmark or point of interest?** | | | ✓ |

**Evaluation Table 2.** Erosion Potential

| Question | Yes | No |
|---|---|---|
| Is the slope of the site >20%? | | ✓ |
| Does the management unit contain a stream or wetlands, or is it within 300 feet of a stream or wetlands? | ✓ | |
| Are there signs of gully formation or other soil erosion onsite? | ✓ | |
| Is the erosion class rating (from the local Soil Survey) for site soils "High" or "Moderate"? | **Moderate** | |

**Evaluation Table 3.** Monterey Pine Size Category

| | Ground Cover | | |
|---|---|---|---|
| | **Sparse (0-10%)** | **Moderate (11-25%)** | **Dense (≥26%)** |
| I. Seeds and Cones (per square meter) | ✓ | | |
| | **Canopy Cover** | | |
| | **Sparse (0-25%)** | **Moderate (26-50%)** | **Dense (≥51%)** |
| II. Pole size (< 4 inches dbh) | ✓ | | |
| II. Pole size (4-20 inches dbh) | ✓ | | |
| IV. Mature (>20 inches dbh) | | ✓ | |
| V. Dead, Dying, and Infected (all sizes) | ✓ | | |

**Evaluation Table 4.** Adjacent Parcel Inventory

a) Have any of the following treatments defined in the CFMP been applied to parcels of land adjacent to the management unit within the last 5 years?

| Treatment: | Yes | No |
|---|---|---|
| Treatments 5, 6, or 7 | | ✓ |

b) Do any of the following conditions occur on parcels of land adjacent to the management unit?

| Condition: | Yes | No |
|---|---|---|
| Less than 30% canopy cover of trees | | ✓ |
| Gully erosion more than 8 inches deep | ✓ | |
| Sheet erosion | ✓ | |

**Management Unit A2**
**Specific Conditions, some locations are identified on the attached map**

- Fern Creek, a riparian area within CalTrans Right of Way, east side of Hiway 1
  a. Riparian influenced tree species; willow etc.
- Invasive plants including genesta, Cape ivy, pampas grass and acacia trees within CalTrans Right of Way
- Eucalyptus grove abutting Ramsey Drive
- Line of significant eucalyptus below Piney Way

**MANAGEMENT UNIT "B"**
**CONDITION ASSESSMENT, SITE CONDITION CHECKLIST**

Management Unit B is bound by Forest Loop Trail to the north, south and west, Creek to Forest Trail #7 to the northeast and the easement boundary to the east. This unit includes sections of CalTrans Right of Way to the west of Hiway 1 and CCSD properties at the northeast and southeast corners of the FRP easement boundary.

**Evaluation Table 1.** Visual Sensitivity

| **a) Is the management unit visible from any of these receptors:** | **Yes** | **No** |
|---|---|---|
| Burton Drive? | | ✓ |
| Ardath Drive? | ✓ | |
| Main Street? | ✓ | |
| Santa Rosa Creek Road? | | ✓ |
| Highway 1? | ✓ | |
| **b) Is the management unit considered a local landmark or point of interest?** | ✓ | |

**Evaluation Table 2.** Erosion Potential

| **Question** | **Yes** | **No** |
|---|---|---|
| Is the slope of the site >20%? | | ✓ |
| Does the management unit contain a stream or wetlands, or is it within 300 feet of a stream or wetlands? | | ✓ |
| Are there signs of gully formation or other soil erosion onsite? | ✓ | |
| Is the erosion class rating (from the local Soil Survey) for site soils "High" or "Moderate"? | **Moderate** | |

**Evaluation Table 3.** Monterey Pine Size Category

| | **Ground Cover** | | |
|---|---|---|---|
| | **Sparse (0-10%)** | **Moderate (11-25%)** | **Dense (≥26%)** |
| I. Seeds and Cones (per square meter) | | ✓ | |
| | **Canopy Cover** | | |
| | **Sparse (0-25%)** | **Moderate (26-50%)** | **Dense (≥51%)** |
| II. Pole size (< 4 inches dbh) | | ✓ | |
| II. Pole size (4-20 inches dbh) | | | ✓ |
| IV. Mature (>20 inches dbh) | | ✓ | |
| V. Dead, Dying, and Infected (all sizes) | ✓ | | |

**Evaluation Table 4.** Adjacent Parcel Inventory

a) Have any of the following treatments defined in the CFMP been applied to parcels of land adjacent to the management unit within the last 5 years?

| Treatment: | Yes | No |
|---|---|---|
| Treatments 5, 6, or 7 | | ✓ |

b) Do any of the following conditions occur on parcels of land adjacent to the management unit?

| Condition: | Yes | No |
|---|---|---|
| Less than 30% canopy cover of trees | ✓ | |
| Gully erosion more than 8 inches deep | ✓ | |
| Sheet erosion | ✓ | |

**Management Unit B**
**Specific Conditions, some locations are identified on the attached map**

- Midden Meadow
- Two xeric (dry) swales in the north/south direction
- Dense conditions in central portion of the MU
- Excellent conditions in the southeast corner of this MU
- Abuts CalTrans Right of Way with invasive plants including genesta, Cape ivy, pampas grass

**MANAGEMENT UNIT "C"**
**CONDITION ASSESSMENT, SITE CONDITION CHECKLIST**

Management Unit C is bound by the Marine Equestrian Trail #2 to the west, Grassland/Open Space to the north Management Unit D to the west and Management Unit A to the south.

**Evaluation Table 1.** Visual Sensitivity

| a) Is the management unit visible from any of these receptors: | Yes | No |
|---|---|---|
| Burton Drive? | | ✓ |
| Ardath Drive? | | ✓ |
| Main Street? | | ✓ |
| Santa Rosa Creek Road? | | ✓ |
| Highway 1? | | ✓ |
| **b) Is the management unit considered a local landmark or point of interest?** | | |

**Evaluation Table 2.** Erosion Potential

| Question | Yes | No |
|---|---|---|
| Is the slope of the site >20%? | | ✓ |
| Does the management unit contain a stream or wetlands, or is it within 300 feet of a stream or wetlands? | ✓ | |
| Are there signs of gully formation or other soil erosion onsite? | ✓ | |
| Is the erosion class rating (from the local Soil Survey) for site soils "High" or "Moderate"? | **Moderate** | |

**Evaluation Table 3.** Monterey Pine Size Category

| | Ground Cover | | |
|---|---|---|---|
| | **Sparse (0-10%)** | **Moderate (11-25%)** | **Dense (≥26%)** |
| I. Seeds and Cones (per square meter) | ✓ | | |
| | **Canopy Cover** | | |
| | **Sparse (0-25%)** | **Moderate (26-50%)** | **Dense (≥51%)** |
| II. Pole size (< 4 inches dbh) | ✓ | | |
| II. Pole size (4-20 inches dbh) | ✓ | | |
| IV. Mature (>20 inches dbh) | | ✓ | |
| V. Dead, Dying, and Infected (all sizes) | ✓ | | |

**Evaluation Table 4.** Adjacent Parcel Inventory

a) Have any of the following treatments defined in the CFMP been applied to parcels of land adjacent to the management unit within the last 5 years?

| Treatment: | Yes | No |
|---|---|---|
| Treatment s 5, 6 or 7 | | ✓ |

b) Do any of the following conditions occur on parcels of land adjacent to the management unit?

| Condition: | Yes | No |
|---|---|---|
| Less than 30% canopy cover of trees | | ✓ |
| Gully erosion more than 8 inches deep | ✓ | |
| Sheet erosion | ✓ | |

**Management Unit A2**
**Specific Conditions, some locations are identified on the attached map**

- Shaded fuel break along easement boundaries near Marlborough and Victoria entrances
- Dense growth, excellent regeneration
- Gully formation develops east to west
- Invasive plants including myoporin in northern reach of MU
- High fuel loads from past large tree failures

**MANAGEMENT UNIT "D1"**
**CONDITION ASSESSMENT, SITE CONDITION CHECKLIST**

Management Unit D is bound by the Management Unit C to the west, Grassland/Open Space to the north, Forest Loop Trail #4 and Victoria Trail #5 to the south.

**Evaluation Table 1.** Visual Sensitivity

| a) Is the management unit visible from any of these receptors: | Yes | No |
|---|---|---|
| Burton Drive? | | ✓ |
| Ardath Drive? | | ✓ |
| Main Street? | | ✓ |
| Santa Rosa Creek Road? | | ✓ |
| Highway 1? | | ✓ |
| **b) Is the management unit considered a local landmark or point of interest?** | | |

**Evaluation Table 2.** Erosion Potential

| Question | Yes | No |
|---|---|---|
| Is the slope of the site >20%? | | ✓ |
| Does the management unit contain a stream or wetlands, or is it within 300 feet of a stream or wetlands? | ✓ | |
| Are there signs of gully formation or other soil erosion onsite? | ✓ | |
| Is the erosion class rating (from the local Soil Survey) for site soils "High" or "Moderate"? | **Moderate** | |

**Evaluation Table 3.** Monterey Pine Size Category

| | Ground Cover | | |
|---|---|---|---|
| | **Sparse (0-10%)** | **Moderate (11-25%)** | **Dense (≥26%)** |
| I. Seeds and Cones (per square meter) | | ✓ | |
| | **Canopy Cover** | | |
| | **Sparse (0-25%)** | **Moderate (26-50%)** | **Dense (≥51%)** |
| II. Pole size (< 4 inches dbh) | ✓ | | |
| II. Pole size (4-20 inches dbh) | | ✓ | |
| IV. Mature (>20 inches dbh) | | ✓ | |
| V. Dead, Dying, and Infected (all sizes) | ✓ | | |

**Evaluation Table 4.** Adjacent Parcel Inventory

a) Have any of the following treatments defined in the CFMP been applied to parcels of land adjacent to the management unit within the last 5 years?

| Treatment: | Yes | No |
|---|---|---|
| Treatments 5, 6 or 7 | | ✓ |

b) Do any of the following conditions occur on parcels of land adjacent to the management unit?

| Condition: | Yes | No |
|---|---|---|
| Less than 30% canopy cover of trees | | ✓ |
| Gully erosion more than 8 inches deep | ✓ | |
| Sheet erosion | ✓ | |

**Management Unit D1**
**Specific Conditions, some locations are identified on the attached map**

- Planting area bordered by natural regeneration extending from MU's B and C
- Approximately 200 to 250 saplings were planted annually by volunteers beginning in 2008 through 2011
- Understory plantings have not developed
- Many plantings do not have adequate space to develop

**MANAGEMENT UNIT "D2"**
**CONDITION ASSESSMENT**

Management Unit D2 is bound by the Management Unit C to the west, Grassland/Open Space to the north, Forest Loop Trail #4 and Victoria Trail #5 to the south.

**Evaluation Table 1.** Visual Sensitivity

| a) Is the management unit visible from any of these receptors: | Yes | No |
|---|---|---|
| Burton Drive? | | ✓ |
| Ardath Drive? | | ✓ |
| Main Street? | ✓ | |
| Santa Rosa Creek Road? | | ✓ |
| Highway 1? | ✓ | |
| **b) Is the management unit considered a local landmark or point of interest?** | | |

**Evaluation Table 2.** Erosion Potential

| Question | Yes | No |
|---|---|---|
| Is the slope of the site >20%? | | ✓ |
| Does the management unit contain a stream or wetlands, or is it within 300 feet of a stream or wetlands? | ✓ | |
| Are there signs of gully formation or other soil erosion onsite? | ✓ | |
| Is the erosion class rating (from the local Soil Survey) for site soils "High" or "Moderate"? | **Moderate** | |

**Evaluation Table 3.** Monterey Pine Size Category

| | Ground Cover | | |
|---|---|---|---|
| | **Sparse (0-10%)** | **Moderate (11-25%)** | **Dense (≥26%)** |
| I. Seeds and Cones (per square meter) | ✓ | | |
| | **Canopy Cover** | | |
| | **Sparse (0-25%)** | **Moderate (26-50%)** | **Dense (≥51%)** |
| II. Pole size (< 4 inches dbh) | ✓ | | |
| II. Pole size (4-20 inches dbh) | | ✓ | |
| IV. Mature (>20 inches dbh) | ✓ | | |
| V. Dead, Dying, and Infected (all sizes) | ✓ | | |

**Evaluation Table 4.** Adjacent Parcel Inventory

a) Have any of the following treatments defined in the CFMP been applied to parcels of land adjacent to the management unit within the last 5 years?

| Treatment: | Yes | No |
|---|---|---|
| Treatments 5, 6 or 7 | | ✓ |

b) Do any of the following conditions occur on parcels of land adjacent to the management unit?

| Condition: | Yes | No |
|---|---|---|
| Less than 30% canopy cover of trees | | ✓ |
| Gully erosion more than 8 inches deep | ✓ | |
| Sheet erosion | ✓ | |

**Management Unit D2**
**Specific Conditions, some locations are identified on the attached map**

- Replanting area
- Approximately 200 to 250 saplings were planted by Cal Poly volunteers in the year 2000
- Crowded conditions with inadequate spacing
- Annual by volunteers beginning in 2000 through 2006 and 2012
- Understory plantings have not developed
- Many plantings do not have adequate space to develop
- High propensity for gall rust and other diseases

**MANAGEMENT UNIT "E"**
**CONDITION ASSESSMENT, SITE CONDITION CHECKLIST**

Management Unit E is a mixed woodland that includes Monterey cypress, riparian influences species, coast live oak and a few well established native Monterey pine regenerations bound by the Creek to Ridge Trail #9 to the north, Santa Rosa Creek Trail-West to the west, easement boundary to the east and Creek to Ridge Trail #9 to the south.

**Evaluation Table 1.** Visual Sensitivity

| **a) Is the management unit visible from any of these receptors:** | | **Yes** | **No** |
|---|---|---|---|
| | Burton Drive? | | ✓ |
| | Ardath Drive? | | ✓ |
| | Main Street? | ✓ | |
| | Santa Rosa Creek Road? | | ✓ |
| | Highway 1? | ✓ | |
| **b) Is the management unit considered a local landmark or point of interest?** | | ✓ | |

**Evaluation Table 2.** Erosion Potential

| **Question** | **Yes** | **No** |
|---|---|---|
| Is the slope of the site >20%? | | ✓ |
| Does the management unit contain a stream or wetlands, or is it within 300 feet of a stream or wetlands? | ✓ | |
| Are there signs of gully formation or other soil erosion onsite? | ✓ | |
| Is the erosion class rating (from the local Soil Survey) for site soils "High" or "Moderate"? | **Moderate** | |

**Evaluation Table 3.** Monterey Pine Size Category

| | **Ground Cover** | | |
|---|---|---|---|
| | **Sparse (0-10%)** | **Moderate (11-25%)** | **Dense (≥26%)** |
| I. Seeds and Cones (per square meter) | ✓ | | |
| | **Canopy Cover** | | |
| | **Sparse (0-25%)** | **Moderate (26-50%)** | **Dense (≥51%)** |
| II. Pole size (< 4 inches dbh) | ✓ | | |
| II. Pole size (4-20 inches dbh) | ✓ | | |
| IV. Mature (>20 inches dbh) | | ✓ | |
| V. Dead, Dying, and Infected (all sizes) | ✓ | | |

**Evaluation Table 4.** Adjacent Parcel Inventory

a) Have any of the following treatments defined in the CFMP been applied to parcels of land adjacent to the management unit within the last 5 years?

| Treatment: | Yes | No |
|---|---|---|
| Treatments 5, 6 or 7 | | ✓ |

b) Do any of the following conditions occur on parcels of land adjacent to the management unit?

| Condition: | Yes | No |
|---|---|---|
| Less than 30% canopy cover of trees | | ✓ |
| Gully erosion more than 8 inches deep | ✓ | |
| Sheet erosion | ✓ | |

**Management Unit E**
**Specific Conditions, some locations are identified on the attached map**

- Oak woodland with riparian wetland influence to the north of the MU
- Significant Coast live oaks intermixed with Monterey cypress planted as a windrow
- Excellent regeneration on the northern sections of the MU
- Saplings were planted on the southwestern section of this MU in 2012

**MANAGEMENT UNIT "F"**
**CONDITION ASSESSMENT, SITE CONDITION CHECKLIST**

This MU is bound by the easement boundary to the north, Ridge Trail #2 to the west, Santa Rosa Creek Trail to the east andCreek to Ridge Trail #9 to the south.

**Evaluation Table 1.** Visual Sensitivity

| **a) Is the management unit visible from any of these receptors:** | | **Yes** | **No** |
|---|---|---|---|
| | Burton Drive? | | ✓ |
| | Ardath Drive? | | ✓ |
| | Main Street? | ✓ | |
| | Santa Rosa Creek Road? | | ✓ |
| | Highway 1? | ✓ | |
| **b) Is the management unit considered a local landmark or point of interest?** | | | |

**Evaluation Table 2.** Erosion Potential

| **Question** | **Yes** | **No** |
|---|---|---|
| Is the slope of the site >20%? | ✓ | |
| Does the management unit contain a stream or wetlands, or is it within 300 feet of a stream or wetlands? | ✓ | |
| Are there signs of gully formation or other soil erosion onsite? | ✓ | |
| Is the erosion class rating (from the local Soil Survey) for site soils "High" or "Moderate"? | **Moderate** | |

**Evaluation Table 3.** Monterey Pine Size Category

| | **Ground Cover** | | |
|---|---|---|---|
| | **Sparse (0-10%)** | **Moderate (11-25%)** | **Dense (≥26%)** |
| I. Seeds and Cones (per square meter) | ✓ | | |
| | **Canopy Cover** | | |
| | **Sparse (0-25%)** | **Moderate (26-50%)** | **Dense (≥51%)** |
| II. Pole size (< 4 inches dbh) | ✓ | | |
| II. Pole size (4-20 inches dbh) | ✓ | | |
| IV. Mature (>20 inches dbh) | ✓ | | |
| V. Dead, Dying, and Infected (all sizes) | ✓ | | |

**Evaluation Table 4.** Adjacent Parcel Inventory

a) Have any of the following treatments defined in the CFMP been applied to parcels of land adjacent to the management unit within the last 5 years?

| Treatment: | Yes | No |
|---|---|---|
| Treatment 5, 6 or 7 | | ✓ |

b) Do any of the following conditions occur on parcels of land adjacent to the management unit?

| Condition: | Yes | No |
|---|---|---|
| Less than 30% canopy cover of trees | | ✓ |
| Gully erosion more than 8 inches deep | ✓ | |
| Sheet erosion | ✓ | |

**Management Unit F**
**Specific Conditions, some locations are identified on the attached map**

- Management Unit F is a mixed woodland that includes Monterey pine, coast live oak and exotic eucalyptus.
- This MU is highly visible from the west village with significant eucalyptus and large stature Monterey pine
- Strong oak woodland component
- Eucalyptus occupy at least 20% of the MU and are expanding their influence

**MANAGEMENT UNIT "G"**
**CONDITION ASSESSMENT, SITE CONDITION CHECKLIST**

Management Unit G encompasses the remainder of Monterey pine forest extents, primarily outliers and regenerative growth in small groups as well as individuals within the remainder of the Ranch Preserve boundaries.

**Evaluation Table 1.** Visual Sensitivity

| **a) Is the management unit visible from any of these receptors:** | **Yes** | **No** |
|---|---|---|
| Burton Drive? | | ✓ |
| Ardath Drive? | | ✓ |
| Main Street? | | ✓ |
| Santa Rosa Creek Road? | | ✓ |
| Highway 1? | | ✓ |
| **b) Is the management unit considered a local landmark or point of interest?** | | |

**Evaluation Table 2.** Erosion Potential

| **Question** | **Yes** | **No** |
|---|---|---|
| Is the slope of the site >20%? | | ✓ |
| Does the management unit contain a stream or wetlands, or is it within 300 feet of a stream or wetlands? | ✓ | |
| Are there signs of gully formation or other soil erosion onsite? | ✓ | |
| Is the erosion class rating (from the local Soil Survey) for site soils "High" or "Moderate"? | **Moderate** | |

**Evaluation Table 3.** Monterey Pine Size Category

| | **Ground Cover** | | |
|---|---|---|---|
| | **Sparse (0-10%)** | **Moderate (11-25%)** | **Dense (≥26%)** |
| I. Seeds and Cones (per square meter) | ✓ | | |
| | **Canopy Cover** | | |
| | **Sparse (0-25%)** | **Moderate (26-50%)** | **Dense (≥51%)** |
| II. Pole size (< 4 inches dbh) | ✓ | | |
| II. Pole size (4-20 inches dbh) | | ✓ | |
| IV. Mature (>20 inches dbh) | ✓ | | |
| V. Dead, Dying, and Infected (all sizes) | ✓ | | |

**Evaluation Table 4.** Adjacent Parcel Inventory

a) Have any of the following treatments defined in the CFMP been applied to parcels of land adjacent to the management unit within the last 5 years?

| Treatment: | Yes | No |
|---|---|---|
| Treatment 5, 6 or 7 | | ✓ |

b) Do any of the following conditions occur on parcels of land adjacent to the management unit?

| Condition: | Yes | No |
|---|---|---|
| Less than 30% canopy cover of trees | | ✓ |
| Gully erosion more than 8 inches deep | ✓ | |
| Sheet erosion | ✓ | |

**Management Unit G**
**Specific Conditions, some locations are identified on the attached map**

Sporadic sections of natural regeneration

# Implementation Program

# Attachment B

## Fiscalini Ranch Preserve

## Monterey Pine Forest Analysis
## Maintenance and Monitoring Program

## Implementation Program

| Management Unit, (MU) | Action Items With Options | Priority Level | Treatment Number | Performance Timeline | Approximate Budget | Possible Funding Source | Monitoring Protocol | Has Success Criteria been met? Yes/No | Adaptive Management Prescription |
|---|---|---|---|---|---|---|---|---|---|
| Forest wide | Identify and hire a Professional Forest Manager/ Resource Ecologist<br>**OR**<br>Identify and recruit an FRP Implementation Program Advocate within the community | **1**<br><br>**1** | N/A | Immediately<br><br>Immediately | $40 to $60,000 per year<br><br>$0 to $5,000 per year | CCSD FFRP | Performance to be evaluated at 3-month intervals during the first year. | Is the individual meeting Program Goals and Objectives? | Performance to be evaluated at 3-month intervals during the first year. Modifications to Scope of Work as necessary |
| A1 and A2 | Risk Management<br><br>Reduce Flammable Fuel Loads to levels acceptable to Cambria Fire Department and CalFire<br><br>Manage hazard trees to avoid risk to trail users and adjacent residences<br><br>Control/Remove Invasives | **1**<br><br>**1**<br><br>**2** | 1<br><br>2<br><br>3 | To begin immediately once permits are obtained.<br><br>Treatments #1 and 2 to be repeated annually or as needed<br><br>Treatment #3 to be repeated annually through the 5-Year Program life | $75 to 125,000 initially- $20,000 per year for annual treatments<br><br>$5,000<br><br>$25,000 | CalTrans<br><br>FFRP<br><br>CCSD<br><br>CAL FIRE<br><br>Grant Funds | Immediately prior to and after Treatment implementation | Completion of Treatments #1 and 2 within 1 year<br><br>Initiate Treatment #3 within 1 year | Document completion of Implementation Measures<br><br>Monitor effectiveness and impacts of treatments<br><br>Modify Implementation Measures as necessary |
| B | Three Test Plots<br><br>Scatter cones and seeds after test plot treatments | **2**<br><br>**3** | 4<br><br>5 | To begin as soon as permits are obtained within Year 1<br><br>Repeat annually<br><br>After Treatment #4 is completed | $25,000 per year<br><br>$0, Volunteer Effort | CAL FIRE<br><br>CCSD<br><br>FFRP | Immediately prior to and after implementation | Completion of Treatment #4 within 1 year<br><br>Annual renewal | Monitor effectiveness and impacts of treatments<br><br>Modify Implementation Measures as necessary |

## Fiscalini Ranch Preserve

## Monterey Pine Forest Analysis
## Maintenance and Monitoring Program

## Implementation Program

| Management Unit, (MU) | Action Items With Options | Priority Level | Treatment Number | Performance Timeline | Approximate Budget | Possible Funding Source | Monitoring Protocol | Has Success Criteria been met? Yes/No | Adaptive Management Prescription |
|---|---|---|---|---|---|---|---|---|---|
| C | Remove invasive myoporin trees | **3** | 3 | Program Year 4 | $1000 | FFRP<br>CCSD<br>Grants | Immediately prior to and after Treatment implementation | Have invasives been successfully controlled? | Modify Implementation Measures as necessary |
| D1 and D2 | Thin crowded planting areas | **2** | 6 | Program Years 4 and 5 | $20,000 per year | CAL FIRE<br><br>CCSD<br>FFRP | Immediately prior to and after Treatment implementation | Are these areas expressing better vigor and increase in understory plants? | Increase or reduce thinning |
| E | Remove invasive ivy | **2** | 3 | Program Year 3 | $15,000 | FFRP<br>CCSD<br>Grants | Immediately prior to and after Treatment implementation | Have invasives been successfully controlled? | Modify Implementation Measures as necessary |
| F | Control invasive eucalyptus<br>Remove invasive ivy | **2** | 3 | Program Year 3 | $40,000 | FFRP<br>CCSD<br>Grants | Immediately prior to and after Treatment implementation | Have invasives been successfully controlled? | Modify Implementation Measures as necessary |
| G | Monitor regeneration levels | **3** | | Program Years 1 through 5 | $0, Volunteer Effort | FFRP<br>CCSD | Photo or map file defining regeneration population levels | Where is regeneration occurring and to what degree? | |

# CalFIRE Tree Notes
# Pitch Canker Best Management Practices

# Attachment C

# TREE NOTES

**CALIFORNIA DEPARTMENT OF FORESTRY AND FIRE PROTECTION**

| **Edmund G. Brown** | **Ken Pimlott** | **John Laird** |
|---|---|---|
| Governor | Director | Secretary for Resources |
| State of California | Dept. of Forestry & Fire Protection | Natural Resources Agency |

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# Pitch Canker Disease in California


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## Introduction

Pitch canker, an introduced disease of pines caused by the fungus *Fusarium circinatum* Nirenberg O'Donnell (formerly *F. subglutinans* [Wollenweb and Reinking] Nelson, Toussoun and Marasas f. sp. *pini*) was first identified on Monterey pines, *Pinus radiata* D. Don, in California in the summer of 1986. Some of the most severe impacts have been to Monterey pine planted along roadway right-of-ways and in landscape settings: Monterey pine Christmas tree plantations have likewise been impacted in numerous locations. Pitch canker also occurs in California's three native populations of Monterey pine: Point Aῆo Nuevo and the Monterey Peninsula since 1992 and Cambria since 1994.

Outside of California pitch canker also occurs in the southeastern United States from Virginia to Florida and west to Texas, and in Haiti, Mexico, Japan, South Korea, Spain, France, Italy, Chile and South Africa. Genetic analyses of pathogen populations from around the world indicate that the pathogen may have originated in Mexico and that its recent introduction into California came by way of the southeastern Unites States.

Impacts of the disease include crown dieback and mortality of trees of all sizes. Insects have a significant role in both disease spread and tree mortality.

## Tree Species Affected by Pitch Canker

Monterey and bishop Pine (*Pinus muricata*) are the tree species most commonly infected in California. However, 18 pine species plus Douglas-fir, either native or planted, are susceptible to this pathogen in greenhouse and field settings (Table 1).

**Table 1:** Tree species observed to be infected with the pitch canker fungus in nature, and species found to be resistant or susceptible in greenhouse tests.

| | | | Susceptibility | |
|---|---|---|---|---|
| **Species** | **Common Name** | **Status [1]** | **Field [2]** | **Greenhouse [3]** |
| *Pinus attenuata* | Knobcone pine | Native | S | S |
| *P. canariensis* | Canary Island Pine | Exotic | R | R |
| *P. contorta spp. contorta* | Shore Pine | Native | S | S |
| *P. contorta spp. murryana* | Lodgepole Pine | Native | N | S |
| *P. coulteri* | Coulter Pine | Native | S- | S |
| *P. eldarica* | Eldarica Pine | Exotic | N | S |
| *P. halepensis* | Aleppo Pine | Exotic | S | S |
| *P. jeffreyi* | Jeffrey Pine | Native | N | S |
| *P. lambertiana* | Sugar Pine | Native | N | S |
| *P. monphylla* | Pinyon Pine | Native | N | S- |
| *P. muricata* | Bishop Pine | Native | S | S |
| *P. pinea* | Italian Stone Pine | Exotic | R | R |
| *P. ponderosa* | Ponderosa Pine | Native | S- | S |
| *P. radiata* | Monterey Pine | Native | S | S |
| *P. sabiniana* | Gray Pine | Native | S- | S |
| *P. sylvestris* | Scotch Pine | Exotic | N | S |
| *P. thunbergii* | Japanese Black Pine | Exotic | N | R |
| *P. torreyana* | Torrey Pine | Native | S- | S |
| *Pseudotsuga menziesii* | Douglas-Fir | Native | S- | S- |

1) Greenhouse tests of susceptibility were based on the results of artificial inoculations. Species are rated as susceptible (S) if they sustained definite lesions at the site of inoculation, or resistant (R) if there was little or no lesion development. For species rated as S-, most tested individuals were resistant, but a small percentage appeared moderately susceptible..
2) Field susceptibility is based on observations of natural infections. Species are rated as susceptible (S) if numerous trees are known to be infected and/or some trees have sustained severe damage from pitch canker. Species that have frequently been observed in otherwise infested areas and for which few or no trees are known to have sustained natural infections and none have been heavily damaged by pitch canker are rated as resistant (R); the level of resistance differs within this group. For species rated as S-, one or more infected trees have been observed, but the number of observations is too limited to provide a meaningful estimate of their relative susceptibility. For species rated as N, no infected trees have been observed, but the occurrence of this species in proximity to natural inoculum is too infrequent to conclude that the lack of disease is indicative of resistance.

Wilker, K., T.R. Gordon, A>J. Storer, D.L. Wood. 2003. Pitch Canker. Pest Note: UC ANR Publication. Publication Number 74107, http://www.ipm.ucdavis.edu/PMG/PESTNOTES/pn74107.html .

## Symptoms of Pitch Canker

The signature symptom of pitch canker on pines is a resinous canker that can occur on any woody portion of the tree, including branches, bole, and roots. Resin is copious on the outside of the canker and penetrates deep into the wood, giving it an amber or honey color. Each canker represents a separate infection and multiple infections typically occur on a tree over time. Cankers girdle small diameter stems such as branch tips, tree tops, and the main stem of seedlings and young trees, causing the distal portion of the stem to die. Susceptibility to the disease, and hence symptoms, vary considerably from one tree to the next.

Photo 1: Branch dieback on Monterey Pine.

Typically, the first symptom noticed on mature trees is branch dieback (Photo 1) which results from infections usually within one or two whorls of a branch tip. As the tip dies foliage distal to the infection initially turns lime green, then progresses to yellow, then reddish brown, and eventually falls from the branch (Photo 2). Red needles are often reflexed.

Photo 2: Progressive symptomatic color change of foliage on girdled stems.

Pine cones abort before or after reaching full size and typically remain closed on infected whorls. The disease intensifies through repeated infections that can lead to extensive dieback in the canopy.

Crown symptoms initially are common in the upper third of the tree canopy. Preferential feeding on suitable branch tips by insect vectors carrying the pitch canker pathogen may explain this observation. As the disease intensifies, dieback spreads throughout the canopy.

Bole cankers are frequently found on trees with severe canopy symptoms. These infections are very conspicuous due to extensive production of resin that can coat lower limbs and several feet of the trunk below the infection (Photo 3). Bole cankers are slightly sunken, up to approximately 8 inches in diameter and usually appear after branch dieback has occurred. In some cases, diseased trees are severely weakened and may suffer top kill due to girdling of the trunk and/or attack by engraver beetles. Death of mature trees is often due to bark beetle attack.

Photo 3: Canker on bole of Monterey Pine.

Infections on Douglas-fir are characterized by tip tieback without copious resin exudation; callous tissue may form at infection sites.

In young Monterey pines, including Christmas trees, resinous cankers often occur at the root crown; the entire tree subsequently wilts and dies. Christmas tree branch infections will occasionally occur in the absence of root crown cankers. Tree death does not follow as rapidly in these cases.

## Pitch Canker Fungus Transmission

The progression of pitch canker in California differs somewhat from what has been reported in the southeastern United States, where disease outbreaks are more sporadic in time and space, and epidemics subside rather quickly as a recovery phase begins. Disease incidence in the SE US has been related to weather events and human activities that cause wounds. Insects appear to be much more important to disease spread and infection in California, where outbreaks are characterized by a high level of disease incidence and progression that can last for many years before subsiding.

The fungus is capable of producing both asexual and sexual spores, but only asexual spores have been observed in nature. Spore deposition studies indicate that sporulation is enhanced during cool-wet conditions, does not occur in cold-wet conditions when average minimum temperatures approach 0ºC, and may occur in warm conditions in the absence of rainfall if high humidity is caused by coastal fog. The spores of *F. circinatum* need an opening in the bark to initiate infection. Such openings can be created by wind, hail, silvicultural practices (pruning, limbing, wounding the tree, etc.), insects, etc. Spore germination and growth both proceed very slowly at 10 °C and more rapidly as temperature increases up to 20 °C. For this reason, infection rates tend to be lower in winter than during warmer periods. However, higher temperatures will favor infections only if wounds are deep enough to reach moisture within the plant or if ambient humidity is high and/or free moisture is present. Thus, infections mediated by twig beetles (*Pityophthorus* spp.), which create only very shallow wounds on healthy branches, occur at a higher frequency when relative humidity is at or close to 100%. In contrast, where inoculum is delivered to deeper wounds, the effect of ambient humidity on infection frequency is greatly diminished.

Temperature and moisture requirements for infection are consistent with the widespread occurrence of pitch canker in the SE US, where rainfall during warm periods is common. Conversely, in California, precipitation occurs primarily during the coolest months of the year and pitch canker is restricted to the central coast, where moderate temperatures coincide with high humidity and/or condensation provided by moist marine air. Although the present distribution of pitch canker implies a climatic limitation on the geographic range of the disease, whether or not such limitations remain effective may be contingent on the activity of insect vectors and wounding agents. Whereas twig beetles create shallow wounds on healthy branches, which they find unsuitable for colonization, the cone beetle (*Conophthorus radiatae*) will move the pathogen deeply into host tissue wherein spore germination will not be dependent on ambient moisture. Therefore, if the range of *C. radiate* expands or other wounding agents with similar feeding/breeding habitats develop an association with *F. circinatum*, pitch canker may become problematic for susceptible trees over a much wider area. In California this could include coastal areas north of 39°N latitude, where the absence of pitch canker in stands of susceptible species (planted *P. radiata* and native *P. muricata* (bishop pine)) presumably reflects the fact that temperatures are relatively cool during periods when moisture is available, which limits opportunities for infection of shallow wounds.

Pitch canker can spread from infected to uninfected trees by wind-driven dispersal of airborne spores. In addition, many species of insects native to California have been shown to carry *F. circinatum,* including: twig beetles, and cone beetles and engraver beetles (*Ips* spp.) all in the family Curculionidae; as well as the deathwatch beetle (*Ernobius punctulatus,* Family Anobiidae) and cylindrical bark beetles (*Lasconotus* spp., Family Zopheridae) (Table 2).

- **Engraver beetles** can cause infections on tree branches and boles by their tunneling activities.
- **Twig beetles**, *Pityophthorus* spp. colonize small branches and cone tissue in the upper canopy. Wounds created by exploratory feeding can lead to infection.
- **Monterey pine cone beetles** are more likely to feed in the upper canopy due to the increased availability of cones.
- **The deathwatch beetle** adults may enter the galleries of cone or twig beetles and contribute fungal inoculum (e.g. spores) that leads to infection.
- **Spittlebug**, *Aphrophora canadensis* is a wounding agent capable of initiating infections on succulent shoots during late winter and early spring.

Dispersal of insect vectors may spread pitch canker disease to new locations. Most of the beetle species inhabit recently fallen tree material as well as live trees. Many utilize more than one host tree species and have wide geographic ranges.

Seed coats of Monterey pine can carry the pitch canker fungus and produce infected seedlings. Any seed from a generally infested area can be host to the fungus, including seed from pines with few or no symptoms of disease. Movement of seeds and seedlings of *Pinus* spp. and Douglas-fir is a mechanism by which the pathogen can be introduced into uninfected areas.

**Table 2:** Bark and cone beetle species from which pitch canker fungus has been isolated.

| | |
|---|---|
| Monterey pine engraver | *Ips mexicanus* |
| Four-spined engraver | *Ips plasotgraphus maritimus* |
| California five-spined ips | *Ips paraconfusus* |
| Monterey pine cone beetles | *Conophthorus radiatae* |
| Twig beetles | *Pityophthorus carmeli, P. pulchellus tuberculatus, P. nitidulus, P setosus* |
| Cylindrical bark beetles | *Lasconotus pertenuis, L. nucleatus* |

There are a number of insects, diseases, and environmental conditions that cause symptoms that may be confused with pitch canker (Table 3). Positive diagnosis requires laboratory isolation and culture of the pitch canker fungus from symptomatic tree tissue.

**Table 3:** Comparison of pitch canker symptoms with other conditions of Monterey pine.

Key: X: Symptom usually occurs, O: Symptom occasionally occurs.

| | Streaming pitch | Yellow to red wilted tip needles | Yellow to red unwilted tip needles | Dead tips, needles fallen | Cone or conelet abortion | Swelling on branch | Lumpy or tubular pitch masses |
|---|---|---|---|---|---|---|---|
| Pitch canker fungus | X | X | O | X | X | | |
| Western gall rust | | O | X | O | O | X | |
| Dwarf Mistletoe | | | O | O | | X | |
| Diplodia Needle Blight | | X | | X | | | |
| Monterey pine scale | | X | | X | | | |
| Pitch moth | O | | | | | | X |
| Monterey pine tip moth | | | X | X | | | |
| Weevils | | O | X | X | | | |
| Red turpentine beetle | | | | | | | X |
| Ips bark beetles | | O | O | O | | | |
| Cone beetles | | | | | X | | O |
| Twig beetles | | O | X | X | O | | |
| Tree pruning or wounding | X | | | | | O | |
| Salt and wind dieback | | | X | X | | | |
| Suppressed branches | | O | X | O | | | |

## Disease Management

No effective controls for pitch canker, using either chemical or biological agents, are currently available. However, disease progression is quite variable and not all trees will be severely damaged by pitch canker. Even in very susceptible species, such as Monterey pine, it is possible for heavily infected trees to recover. Recovery appears to be due primarily to the occurrence of systemic induced resistance, which has been documented to occur in both native and planted stands of Monterey pine. Consequently, the occurrence of pitch canker is not, by itself, a good reason for removal of a tree. Pruning out of diseased branches (see below) may be justified if this restores the aesthetic value of tree and thus avoids the cost of removal and replacement.

Available Disease Management Measures

- **Restricted movement of infested timber out of the Coastal Pitch Canker Zone of Infestation (ZOI) -** Passed in 1997 by the Board of Forestry and Fire Protection, the ZOI encompasses all or parts of 21 counties along the coast of CA, (Figure 1). Logs from diseased trees harvested on private timberlands cannot be transported out of the ZOI unless mitigations are in place to prevent disease spread.
- **Limit movement of wood with bark attached** – Logs and firewood cut from infected trees should not be moved from the region of origin. To prevent the buildup of destructive beetles, firewood can be seasoned beneath tightly sealed 6 mil UV resistant clear plastic tarp. See CAL FIRE Tree Note #3 for more information on tarping wood and other methods to control insects.
- **Chipping of infested wood** – Chipping will reduce but not necessarily eliminate insects that carry the pathogen; it will have little impact on pathogen survival. Chipped material is best left on site and spread in a thin layer as ground mulch. Composting chips will eliminate the pathogen if the pathogen is exposed to 50ºC (120ºF) or higher for 10 days.
- **Pruning** to remove infected tips will usually not eliminate the disease. However, if a lightly infected tree is relatively isolated from other diseased trees, removal of infected tips may slow the development of a new disease center. Cut woody material may contain or become infested with insects that carry the pathogen. Burn, cover with a tarp, or chip pruned material. Infected Christmas trees should be treated similarly.
- **Sterilization of pruning tools** with Lysol$^{tm}$ or 10% chlorine bleach [10/90 mixture bleach to water] should be performed before and after pruning operations. A two-minute soak time is required for the bleach solution.
- **Do not collect pine seed** in areas where pitch canker is present. The pitch canker fungus can remain viable even after seeds are surface sterilized. Nurseries should destroy infected seedlings.
- **Plant resistant tree species.** Planting susceptible tree species in areas with pitch canker disease is likely to result in new infections. Such plantings should be avoided in the vicinity of native populations of Monterey, Bishop, shore and Torrey pines, as these species have very limited geographic distributions. New ornamental plantings of Monterey are not recommended at this time in California. Resistant Monterey pines have been identified, but generally are not available for planting.
- **High value trees** – Monterey and other pines vary greatly in their susceptibility to pitch canker. Most lightly to moderately susceptible trees recover. It is best to monitor diseased trees before deciding on a course of action. Treating the bole with a pesticide registered to prevent bark beetle attack may help keep lightly to moderately diseased trees alive, especially during periods of drought stress. Information on registered pesticides can be found at the California Department of Pesticide Regulation.

New occurrences of pitch canker should be reported to the county's agricultural department or the California Department of Forestry and Fire Protection.

## Future Implications

The potential for pitch canker to spread is significant considering the susceptibility of most pine species and the efficiency of the associated insect vectors in finding suitable host material. Native Monterey pine and bishop pine stands are at risk, as are landscape plantings of these and numerous other conifers.

The appearance of pitch canker in ornamental plantings of Douglas-fir and ponderosa pine has raised concern that native and commercial stands of these species in nearby coastal forests and the Sierra Nevada may become impacted by this disease. Native and landscape stands of these and other conifers in central coastal California are being monitored for symptoms of pitch canker.

The limited native ranges of Monterey pine, Torrey pine, and bishop pine heightens concern for the effect of pitch canker on these tree species. Monterey pine is the most widely planted timber species in the world, and California's native populations represent a global resource for breeding programs. While the long term impact of pitch canker is uncertain, the potential for the disease to reduce the genetic diversity of these species and the integrity of their native populations continues to be a concern.

**Pitch Canker Task Force Website: http://www.ufei.org/pitch_canker/index.html**

For information on bark beetles:

- CAL FIRE Tree Note #3: Controlling bark beetles in wood residue and firewood.
- CAL FIRE Tree Note #19: Managing bark beetles in urban and rural trees.

For information on diseases and insects spread by firewood:

- http://www.firewood.ca.gov/

## Acknowledgements and Disclaimer:

Thanks to the staff of the California Department of Forestry and Fire Protection, the University of California at Davis and the University of California at Berkeley for reviewing this manuscript. These guidelines are for use on state and private lands but are not intended to be a substitute for the California Forest Practice Rules or any related policies of the California Department of Forestry and Fire Protection.

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# Fiscalini Ranch Preserve
# Sudden Oak Death
# Best Management Practices

# Attachment D

# Fiscalini Ranch Preserve Sudden Oak Death Control
# Best Management Practices

## Sanitation measures to minimize pathogen spread

As a precaution against spreading the pathogen, clean and disinfect pruning tools after use on confirmed or suspected infested trees or in known infested areas. Sanitize tools before pruning healthy trees or working in pathogen-free areas. Clean chippers and other vehicles of mud, dirt, leaves, organic material, and woody debris before leaving a *P. ramorum* site and before entering a site with susceptible hosts.

***Before working***

• Inform crews about the arboricultural implications of *P. ramorum* and sanitation practices when they are working in infested areas.

• Provide crews with sanitation kits. (Sanitation kits should contain the following: Chlorine bleach [10/90 mixture bleach to water] or Clorox Clean-up® or Lysol®, scrub brush, metal scraper, boot brush, and plastic gloves).

• Sanitize shoes, pruning gear, and other equipment before working in an area with susceptible species.

***While working***

• When possible, work on *P. ramorum*-infected and susceptible species during the dry season (June-October) or ask customers to allow flexible scheduling so work may be done during dry spells. When working in wet conditions, keep equipment on paved, graveled, or dry surfaces and avoid mud.

• Work in disease-free areas before proceeding to infested areas.

• If possible, do not collect soil or plant material (wood, brush, leaves, and litter) from host trees in the quarantine area. Within the quarantine area, host material (e.g., wood, bark, brush, chips, leaves, or firewood) from tree removals or pruning of symptomatic or non-symptomatic host plants should remain on site to minimize pathogen spread.

***After working***

• Use all reasonable methods to sanitize personal gear and crew equipment before leaving a *P. ramorum*-infested site. Scrape, brush, and/or hose off accumulated soil and mud from clothing, gloves, boots, and shoes. Remove mud and plant debris by blowing out or power washing chipper trucks, chippers, bucket trucks, fertilization and soil aeration equipment, cranes, and other vehicles.

• Restrict the movement of soil and leaf litter under and around infected trees as spores may be found there. Contaminated soil, particularly mud, on vehicle tires, boots, shovels, stump grinders, trenchers, etc., may result in pathogen spread if moved to a new, uninfested site. Remove or wash off soil and mud from these items before use at another site. If complete on-site sanitation is not possible, complete the work at a local power wash facility or an isolated area in your equipment yard. Maintaining clean, orderly vehicles and equipment is good business, and prevents pathogen and weed-seed spread.

• Tools used in tree removal/pruning may become contaminated and should be disinfected with Lysol® spray, a 70% or greater solution of alcohol, or a Clorox® solution (1 part Clorox® to 9 parts water or Clorox Clean-up®). Remember that these products are corrosive to metal and fabric. Rinse your gear after sanitation.

## Oak care considerations

Sudden Oak Death is caused by a virulent, exotic pathogen, capable of killing healthy trees. Even though you may not prevent a *P. ramorum* infection, keeping oaks healthy (i.e., by creating favorable growing conditions, avoiding disturbances to the root zone, avoiding unnecessary pruning, pruning properly, avoiding harmful landscaping and gardening practices, and mitigating environmental stress) may alleviate many other more common problems of oaks in landscapes. Although native oaks are well-adapted to their local environment, various climatic events and disturbances within the root zone can cause stress and increase vulnerability to pest attack. Drought, unusually wet springs, regular and frequent irrigation, root loss, poor drainage, soil compaction, and pavement are common factors causing stress. Maintaining or restoring favorable growing conditions and avoiding disturbances are the best ways to maintain tree health.

Pruning of oak trees should be avoided or minimized in *P. ramorum*-infested areas, as wounds may serve as pathogen entry points, and attract bark beetles. Arboricultural work and equipment may also transport infectious spores to uncontaminated sites. Prune only as necessary and avoid excessive foliage removal. Removing more than 20% of a mature oak's foliage can impair its health. If possible, avoid pruning in winter and spring months, when there is increased risk of pathogen spread. Work with clients to schedule pruning of *P. ramorum*-infected trees, shrubs, and host species during the dry summer months.

## Plant selection and placement

The listing of a species as a *P. ramorum*-regulated plant does not preclude it from a well-designed garden. Many native plants are susceptible to the pathogen; however, they are also well-suited to many California gardens, their symptoms are minor and non-lethal, and they contribute negligibly to pathogen spread. On the other hand, some species, including California bay laurel, rhododendrons, and camellias, have been shown to support substantial *P. ramorum* sporulation on their leaves, which may contribute greatly to the spread of the pathogen. Additionally, the summer watering necessary to keep some non-native species alive under an oak tree may severely predispose the oak to other diseases. In all cases, it may be prudent to plant *P. ramorum* host plants at least 15 feet away and downslope from any susceptible oaks, and to only plant species with similar watering requirements (i.e., drought-tolerant species) near these trees.

Nurseries confirmed as having infected plant material are required to follow the Confirmed Nursery Protocol for *P. ramorum*, which includes the destruction of infected plants. Despite these safeguards, when making a purchase from a nursery, it is still prudent to assess a plant's overall health, checking for any symptoms. After purchasing a host plant, keep the plant in a holding area, away from other landscape plants, for a period of eight weeks. Should the plant be infected, this will allow time for disease symptom expression to occur before placing the plant in the landscape. Whenever possible, refrain from planting *P. ramorum* host species near susceptible oaks and tanoaks, as well as California bay laurel trees.

If you have lost or removed a *P. ramorum*-infected tree and want to replant at the same site, it is important to choose a plant that will suit your needs and adapt well to the location. There are many resources available that can guide you in making the right choice. Check for any local ordinances or guidelines that govern tree replacement or planting. Currently, *P. ramorum*-resistant planting stock is not available, nor is it known if it ever will be. Replanting the same species of tree that was lost may result in the new tree contracting the disease. However, if you have space for replanting many trees, consider replanting the same species (using local acorns or saplings grown from local acorns) in combination with other trees that are not known to be susceptible to the disease. Thus, if some trees are lost to the pathogen, there will still be other trees that survive. If all the trees survive, you may then thin them to the desired spacing. Coast live oaks do not seem to become infected by *P. ramorum* until they reach at least 4" in diameter, so new trees should be immune for a number of years, and high-value trees can be treated with Agri-Fos® if necessary once they reach a susceptible age. Species in the white oak group, such as valley oak, Garry oak, and blue oak are not known to be susceptible to *P. ramorum*.

# Regulatory Compliance Matrix
# Table 5-1, an excerpt from the *Cambria Forest Management Plan, 2002*

# Attachment E

# Regulatory Issues

This section describes the principal environmental laws, regulations, and policies that apply to implementation of the CFMP and ongoing management of the Cambria Monterey pine forest, and summarizes the procedures necessary to comply with them. Separate sections address federal, state, and county regulations; as appropriate, individual sections also describe the articulation between federal and state laws. Table 1 provides a list of local agencies with regulatory and/or management responsibilities that may affect Cambria's forest.

# Federal Regulations

## National Environmental Policy Act

The National Environmental Policy Act (NEPA) (42 United States Code [USC] 4321, 40 Code of Federal Regulations [CFR] 1500.1) is intended to ensure that the actions of federal agencies are evaluated for the potential to cause environmental damage. NEPA is unique in its interdisciplinary perspective; it requires the evaluation of impacts on the natural (physical and biological) environment but also contains environmental justice provisions designed to prevent federal agency actions from resulting in disproportionate impacts on low-income or minority communities. NEPA applies to all federal agencies and to most of the activities they manage, regulate, or fund that affect the environment. Projects undertaken and managed by state, local, or private entities may also be considered federal agency activities under NEPA if they are funded, permitted, approved, or otherwise assisted by the federal government.

NEPA requires federal agencies to assess and to publicly disclose the environmental consequences of their proposed actions through the preparation of appropriate documents. Typically, the federal agency that proposes a project or is most directly involved in project permitting or implementation is designated as the lead agency for NEPA compliance. The lead agency is responsible for preparing the environmental documentation for the proposed project, referred to as an action under NEPA. The President's Council on Environmental Quality (CEQ) has adopted regulations and other guidance providing detailed procedures that federal agencies must follow to implement NEPA; most federal agencies have additional guidelines regarding NEPA compliance procedures within the agency.

Several types of documents may be used to comply with NEPA. Some types of actions are categorically exempt from the assessment and disclosure of impacts required by NEPA; for such actions, a categorical exclusion is filed. More commonly, the first step in NEPA compliance is preparation of an environmental assessment (EA) in order to determine whether a proposed action is likely to result in a significant adverse effect on the environment. If the EA shows that no significant impact is likely, the lead agency files a finding of no significant impact (FONSI). If the EA shows that one or more significant adverse impacts may result from the proposed action, the lead agency must complete an environmental impact statement (EIS). The EIS is required to evaluate the likely environmental impacts of the proposed action and a reasonable range of feasible alternatives that would accomplish the same goals, and to identify the environmentally preferable alternative.

Many projects are subject to both NEPA and the California Environmental Quality Act (CEQA) (see below). If both NEPA and CEQA compliance are necessary, the lead agency or agencies may choose to cooperate in the preparation of a joint environmental document that complies with both federal and state environmental law.

# Federal Endangered Species Act

The Endangered Species Act (ESA) was enacted in 1973 to protect plant and wildlife species determined by the U.S. Fish and Wildlife Service (USFWS) or the National Marine Fisheries Service (NMFS) to be at risk of extinction. It is administered by the USFWS and NMFS. In general, NMFS is responsible for protection of ESA-listed marine species and anadromous fishes while other listed species are under USFWS jurisdiction

**Table** 1. Agencies with Roles and Responsibilities That May Affect Cambria's Monterey Pine Forest

| Agency | Roles and Responsibilities | Contact Information |
|---|---|---|
| U.S. Fish and Wildlife Service, Region 1<br>Ventura Field Office | • Issues biological opinions (BOs) in response to biological assessments (BAs)<br>• Has authority to issue incidental take statements and incidental take permits<br>• Reviews habitat conservation plans (HCPs)<br>• Protects and regulates take of migratory birds | 805/644-1766 |
| National Marine Fisheries Service, Southwest Region | • Issues biological opinions (BOs) in response to biological assessments (BAs)<br>• Has authority to issue incidental take statements and incidental take permits<br>• Reviews habitat conservation plans (HCPs) | 562/980-4001 |
| U.S. Army Corps of Engineers, Los Angeles District | • Regulates discharge of dredged and fill materials into waters of the United States<br>• Reviews applications for permits under Clean Water Act Section 404<br>• Establishes protocols for wetland delineations<br>• Regulates construction activities in, under, and over navigable waters | 213/452-3333 |
| Environmental Protection Agency, Region 9 | • Administers National Pollutant Discharge Elimination System (NPDES) program | Region 9 Office<br>415/947-8000<br><br>NPDES Permits and Stormwater<br>David Smith<br>Manager<br>415/972-3464 |
| Upper Salinas–Las Tablas Resource Conservation District | • Develops, implements, and administers local resource conservation programs and activities<br>• Provides technical conservation assistance to other agencies and landowner | 805/434-0396 x 5 |

| | | |
|---|---|---|
| California Department of Forestry and Fire Protection, San Luis Obispo Unit | • Responsible for forest fire prevention and suppression on lands in state responsibility areas<br>• Identifies very high fire hazard severity zones<br>• Administers burn permitting program; issues permits for burns to reduce fire hazard and for range improvement burns<br>• Authorizes prescribed burns and mechanical vegetation management in forested areas<br>• Designs and implements burn plans<br>• Develops smoke management plans for landowners<br>• Administers Forest Practice Act; reviews timber management documents and conducts inspections of logging sites | Alan Peters<br>805/593-3406 (Desk)<br>805/903-3406 (Cell) |
| California Department of Transportation, District 5 | • Provides landscaping plans for Highway 1 right-of-way<br>• Responsible for landscaping installation and maintenance along Highway 1, including Monterey pines | 805/549-3111 |
| State Resources Water Control Board | • Administers NPDES program | 916/341-5254 |
| Central Coast Regional Water Quality Control Board, San Luis Obispo | • Oversees NPDES program; reviews Storm Water Pollution Plans; issues NPDES permits<br>• Issues water quality certifications and waivers under Clean Water Act Section 401 | Main Office<br>805/549-3147<br><br>NPDES Program<br>Sheila Soderberg<br>805/549-3592<br>Sheila.Soderberg@waterboards.ca.gov |
| California Coastal Commission Local Coastal Programs, Central Coast District Office | • Oversees the coastal zone management program<br>• Reviews local coastal program land use plans and coastal permits for consistency with California Coastal Act requirements | Madeline Cavalieri, District Manager<br>831/427-4863 |
| San Luis Obispo County Department of Planning and Building | • Guides and manages growth through implementation of County General Plan, County Land Use Ordinance, and Coastal Zone Land Use Ordinance<br>• Issues tree removal and grading permits<br>• Reviews site drainage plans | Patricia Warren<br>805/781-5601, 805/781-5600 |
| Cambria Fire Department | • Responsible for fire prevention and suppression in Cambria under authority of Cambria Community Services Department | Mark Miller, Chief<br>805/927-6240 |
| Cambria Fire Safe Focus Group | • Part of San Luis Obispo County Fire Safe Council<br>• Citizen advisory group working with Cambria Fire Department and California Department of Forestry and Fire Protection | |

| | | |
|---|---|---|
| | • Identifies areas in Cambria's urban forests where fuel loads require reduction, including open space and defensible space around structures<br>• Carries out public education and outreach activities relevant to fire prevention and fire hazard reduction | |
| Pacific Gas & Electric Company | • Regulates activities within power line setbacks | Karsten Schultz<br>559/263-7471 |

## ESA Prohibitions

ESA Section 9 prohibits the take of any fish or wildlife species listed under the ESA as endangered. "Take" of threatened species is also prohibited under Section 9 unless otherwise authorized by federal regulations.[1] Take, as defined by the ESA, means "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct." Harm is defined as "any act that kills or injures the species, including significant habitat modification." In addition, Section 9 prohibits removing, digging up, cutting, and maliciously damaging, or destroying federally listed plants on sites under federal jurisdiction.

Appendix A of the Cambria Forest Management Plan (2002) provides a list of plants, fish, and wildlife that are federally listed as threatened or endangered and are known to occur or may occur in the Cambria area.

## ESA Authorization Process for Federal Actions

ESA Section 7 provides a means for authorizing take of threatened and endangered species by federal agencies under certain circumstances. It applies to actions that are conducted, permitted, or funded by a federal agency. Under Section 7, the federal agency conducting, funding, or permitting an action (the lead agency) must consult with USFWS or NMFS, as appropriate, to ensure that the proposed action will not jeopardize endangered or threatened species or destroy or adversely modify designated critical habitat. If a proposed project "may affect" a listed species or designated critical habitat, the lead agency is required to prepare a biological assessment (BA) evaluating the nature and severity of the expected effect. In response, USFWS or NMFS issues a biological opinion (BO), with a determination that the proposed action either

- may jeopardize the continued existence of 1 or more listed species (jeopardy finding) or result in the destruction or adverse modification of critical habitat (adverse modification finding), or
- will not jeopardize the continued existence of any listed species (no jeopardy finding) or result in adverse modification of critical habitat (no adverse modification finding).

The BO issued by USFWS or NMFS may stipulate "reasonable and prudent" conservation measures. If the project would not jeopardize a listed species, USFWS or NMFS issues an incidental take statement to authorize the proposed activity.

[1] In some cases, exceptions may be made for threatened species under ESA Section 4[d]; in such cases, the USFWS or NMFS issues a "4[d] rule" describing protections for the threatened species and specifying the circumstances under which take is allowed.

## ESA Permitting Process for Nonfederal Entities

ESA Section 10 provides a means for nonfederal entities (states, local agencies, and private individuals) to receive authorization for take of threatened and endangered species under certain circumstances. ESA Section 10 applies to projects that have no federal agency involvement. It allows USFWS and/or NMFS to issue an incidental take permit authorizing take resulting from otherwise legal activities, as long as the take would not jeopardize the continued existence of the species. Section 10 requires the applicant to prepare a habitat conservation plan (HCP) addressing project impacts and proposing mitigation measures to compensate for those impacts. The HCP is subject to USFWS and/or NMFS review and must be approved by the reviewing agency or agencies before the proposed project can be initiated.

# Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA) (16 USC 703) enacts the provisions of treaties between the United States, Great Britain, Mexico, Japan, and the Soviet Union and authorizes the U.S. Secretary of the Interior to protect and regulate the taking of migratory birds. The MBTA is administered by the USFWS. It sets seasons and bag limits for hunted species and protects migratory birds, their occupied nests, and their eggs (16 USC 703, 50 CFR 21, 50 CFR 10). Most actions that result in taking or in permanent or temporary possession of a protected species constitute violations of the MBTA. Examples of permitted actions that do not violate the MBTA include: the possession of a hunting license to pursue specific gamebirds; legitimate research activities; display in zoological gardens; bird-banding;
and other similar activities (Faanes et al. 1992)

# Clean Water Act

The Clean Water Act (CWA) is the primary federal law that protects the quality of the nation's surface waters, including lakes, rivers, and coastal wetlands. The CWA empowers the U.S. Environmental Protection Agency (EPA) to set national water quality standards and effluent limitations and includes programs addressing both point-source and nonpoint-source pollution. Point-source pollution is pollution that originates or enters surface waters at a single, discrete location such as an outfall structure or an excavation or construction site. Nonpoint-source pollution originates over a broader area and includes urban contaminants in stormwater runoff and sediment loading from upstream areas. The CWA operates on the principle that all discharges into the nation's waters are unlawful unless specifically authorized by a permit; permit review is the CWA's primary regulatory tool.

The following paragraphs provide additional details on specific sections of the CWA.

## Permits for Fill Placement in Waters and Wetlands

CWA Section 404 regulates the discharge of dredged and fill materials into "waters of the United States." Waters of the United States include oceans, bays, rivers, streams, lakes, ponds, and wetlands. Project proponents must obtain a permit from the USACE for all discharges of dredged or fill material into waters of the United States, including wetlands, before proceeding with
a proposed activity.

Waters of the United States in the Cambria forest are under the jurisdiction of the USACE, Los Angeles District. Before any management actions that may impact surface waters are carried out, a delineation of jurisdictional

waters of the United States should be completed for the affected management units, following USACE protocols (Environmental Laboratory 1987). The purpose of the delineation is to determine whether the affected management units encompass wetlands or other waters of the United States that qualify for CWA protection. These include any or all of the following.

- Areas within the ordinary high water mark of a stream, including non-perennial streams with a defined bed and bank and any streamchannel that conveys natural runoff, even if it has been realigned.
- Seasonal and perennial wetlands, including coastal wetlands.

*Wetlands* are defined for regulatory purposes as areas "inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions" (33 CFR 328.3, 40 CFR 230.3).

Section 404 permits may be issued only for the least environmentally damaging practicable alternative. That is, authorization of a proposed discharge is prohibited if there is a practicable alternative that would have less adverse impacts and lacks other significant adverse consequences.

Some general categories of activities have been issued permits by USACE on a nationwide basis (nationwide permits). Specific nationwide permits may apply to activities in management units at Cambria and these permits should be considered for use.

Certain activities are exempt from the Section 404 permitting process. Exempt activities include:

- farming, ranching, and forestry activities that are considered normal and ongoing (as of 1985 conditions), such as plowing, harvesting, and minor drainage of upland areas to waters of the United States;
- construction and maintenance of stock ponds and irrigation ditches;
- maintenance of drainage ditches;
- construction and maintenance of farm, forest, and mining roads in accordance with BMPs;
- construction of temporary sedimentation basins in upland areas; and
- activities regulated by an approved program of BMPs authorized by CWA Section 208(b)(4).

## Permits for Stormwater Discharge

CWA Section 402 regulates construction-related stormwater discharges to surface waters through the National Pollutant Discharge Elimination System (NPDES) program, administered by the EPA. In California, the State Water Resources Control Board is authorized by the EPA to oversee the NPDES program through the Regional Water Quality Control Boards (see related discussion under Porter-Cologne Water Quality Control Act below). The Cambria area is under the jurisdiction of the Central Coast Regional Water Quality Control Board (RWQCB).

NPDES permits are required for projects that disturb >1 acre of land. The NPDES permitting process requires the applicant to file a public notice of intent to discharge stormwater and to prepare and implement a Storm Water Pollution Prevention Plan (SWPPP, pronounced "swip"). The SWPPP includes a site map and a description of proposed construction activities. In addition, it describes the BMPs that will be implemented to

prevent soil erosion and discharge of other construction-related pollutants (e.g., petroleum products, solvents, paints, cement) that could contaminate nearby water resources. Permittees are required to conduct annual monitoring and reporting to ensure that BMPs are correctly implemented and effective in controlling the discharge of stormwater-related pollutants.

## Water Quality Certification

Under CWA Section 401, applicants for a federal license or permit to conduct activities that may result in the discharge of a pollutant into waters of the United States must obtain certification from the state in which the discharge would originate, or, if appropriate, from the interstate water pollution control agency with jurisdiction over affected waters at the point where the discharge would originate. Therefore, all projects that have a federal component and may affect state water quality (including projects that require federal agency approval, such as issuance of a Section 404 permit) must also comply with CWA Section 401. Section 401 certification or waiver for the Cambria area is under the jurisdiction of the Central Coast RWQCB.

# Rivers and Harbors Act

The Rivers and Harbors Act (RHA) protects the nation's navigable waters. As defined by the RHA, navigable waters include all waters that are

- subject to the ebb and flow of tides; and
- presently, historically, or potentially used for foreign or interstate commerce.

Regulations implementing Section 10 of the RHA are coordinated with those implementing CWA Section 404. Specifically, the RHA regulates

- construction of structures in, under, or over navigable waters;
- excavation or deposition of material in navigable waters; and
- all work affecting the course, location, condition, or capacity of navigable waters.

The USACE is responsible for administering the RHA. The USACE, Los Angeles District has jurisdictional authority over navigable waters in the Cambria area.

# Clean Air Act

## Overview

The Clean Air Act (CAA) of 1970 established national ambient air quality standards (NAAQS) for 6 pollutants: carbon monoxide (CO), ozone, particulate matter with a diameter less than 10 microns (inhalable particulate matter or PM10), nitrogen dioxide ($NO_2$), sulfur dioxide ($SO_2$), and lead. Most standards were set to protect public health; however, for some pollutants, standards are based on other values, such as protection of crops, protection of materials, and avoidance of nuisance conditions. Except for ozone, NAAQS represent short-term (24 hours or less) concentrations that may be exceeded no more than once per year and annual concentrations that may never be exceeded. NAAQS for ozone may be exceeded no more than 3 days in 3 years.

Air quality is regulated through county and regional air pollution control districts (APCDs) and air quality management districts (AQMDs). The APCDs and AQMDs issue permits and monitor new and modified sources of air pollution to ensure that emissions from these sources comply with national, state, and local emissions standards. The San Luis Obispo Air Pollution Control District (SLOAPCD) has jurisdiction over air quality in the Cambria area.

Areas that fail to meet NAAQS are called nonattainment areas. In recent years, the County has been a nonattainment area for ozone and PM10. Special provisions apply to the regulation of air quality in nonattainment areas; any management actions that have the potential to impact air quality (including any that rely on gasoline- or diesel-powered equipment) may be required to comply with air quality programs administered by the SLOAPCD.

## Controlled Burns and Air Quality

Open burns, including burns necessary to clear public rights-of-way, or to reduce fire hazards (fuel loading) or control disease or pests that cannot be addressed by any other means, are permitted under the SLOAPCD's District Rule 501. The SLOAPCD issues burn permits for both agricultural and prescribed burns. As part of its responsibility to oversee burns, the SLOAPCD also reviews and authorizes smoke management plans for prescribed burns, provides notice to the California Air Resources Board (CARB) of large or multi-day burns, and consults with CARB on procedures for CARB review and approval of large and multi-day burns. Any controlled burn implemented under the CFMP will require a permit from the SLOAPCD.

CARB's Smoke Management Guidelines for Agricultural and Prescribed Burning (Guidelines) (17 CCR 80100–80330) require annual or seasonal registration of all planned burn projects, including areas where naturally ignited wildland fires may be managed for resource benefits. The Guidelines also require burn proponents to prepare smoke management plans for all burn projects. State Smoke Management Guidelines are implemented under District Rule 502 – Agricultural (range Improvement and Prescribed) Burning.

Smoke management plans for burn projects that will affect an area of <10 acres or produce <1 ton of particulate matter must contain at least the following information.

- The location, types, and amounts of material to be burned.
- The expected duration of the fire from ignition to extinction.
- The names and telephone numbers of responsible personnel.

Smoke management plans for burn projects that will affect an area of >10 acres or produce >1 ton of particulate matter must also identify and provide information on the locations of all smoke-sensitive areas that may be affected.

Smoke management plans for fire agency projects at the urban-wildland interface that will affect an area <10 acres or produce <1 ton of particulate matter, and smoke management plans for all burn projects that will affect an area >100 acres or produce >10 tons of particulate matter must also contain information on the following.

- The meteorological conditions necessary for burning.
- The smoke management criteria the land manager or his/her designee will use to make burn ignition decisions.

- Projections of where the smoke from the burn is expected to travel during the day and at night, including a map.

- Specific contingency actions (such as fire suppression or containment) that will be taken if smoke impacts occur or if meteorological conditions deviate from those specified in the smoke management plan.

- An evaluation of the alternatives to burning that were considered; if environmental documentation was prepared for the burn project pursuant to NEPA or CEQA, the alternatives analysis is attached to the smoke management plan.

- Discussion of public notification procedures.

Smoke management plans must include monitoring procedures if

- the burn will affect an area larger than 250 acres;

- the burn will continue burning or producing smoke overnight;

- the burn area is located near smoke-sensitive areas; or

- the SLOAPCD requires monitoring for any other reason. Monitoring procedures may include visual monitoring, ambient particulate matter monitoring, or other monitoring approved by the SLOAPCD.

The SLOAPCD may require additional information or coordination with other agencies. For example, burn proponents may be required to obtain a statement from the California Department of Fish and Wildlife (DFW) certifying that the burn is desirable and proper if the burn is to be carried out primarily to improve wildlife or game habitat.

# Coastal Zone Management Act

The Coastal Zone Management Act (CZMA) was enacted in 1972 to regulate development affecting coastal waters and adjacent shorelines. The CZMA also applies to the inland belt that has "significant and direct impacts on coastal waters." Under the CZMA, states are encouraged to voluntarily develop coastal zone management programs (CZMPs) to preserve and protect the unique features relevant to each coastal area. CZMPs are approved by the Office of Ocean and Coastal Resource Management of the National Oceanic and Atmospheric Administration. All federal projects and projects that require a federal permit must be consistent with approved CZMPs. In California, Local Coastal Programs developed under the California Coastal Act serve as each area's CZMP (see California Coastal Act below).

## Section 106 of the National Historic Preservation Act

Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended, requires federal agencies or agencies to which they provide funding or issue permits to take into account the effects of their actions on cultural resources, including historic properties and historic and prehistoric archaeological sites. In addition, Section 106 requires lead agencies to

- provide review and comment opportunities on actions that may affect cultural resources to the Advisory Council on Historic Preservation (ACHP) (an independent federal agency responsible for advising the president and Congress on historic preservation), and to
- coordinate with the State Historic Preservation Officer (SHPO) in the state where the proposed action will take place.

The Section 106 compliance process has four basic steps.

1. Identify and evaluate cultural resources, including historic properties, in the project area.
2. Assess the potential effects of the project on cultural resources.
3. Consult with the SHPO and other interested parties regarding potential adverse effects on cultural resources, resulting in a memorandum of agreement (MOA).\
4. Proceed in accordance with the MOA.

# State Regulations and Programs

## California Environmental Quality Act

The California Environmental Quality Act (CEQA) (Public Resource Code 21000 et seq.) is the cornerstone of environmental law and policy in California. Like NEPA, CEQA requires project proponents to assess and publicly disclose the environmental implications of their proposed actions through the preparation of appropriate documents. The primary objectives of CEQA include:

- ensuring that the potential environmental impacts of proposed projects are disclosed to decision makers and the public;
- ensuring that environmental damage is avoided, reduced, or compensated for by the implementation of carefully designed mitigation measures;
- making the public aware of the reasons for an agency's approval of a project with significant, unavoidable, and unmitigable environmental impacts;
- fostering cooperation between agencies in the review of projects; and
- enhancing public involvement in the planning and review of projects that may impact local communities and their natural environment.

CEQA applies to discretionary activities proposed, implemented, or approved by California public agencies, including state, regional, county, and local agencies. Typically, the agency that proposes a project or is most directly involved in project permitting or implementation is designated as the lead agency for CEQA compliance and is responsible for preparing the environmental documentation for the proposed project (CEQA use of the term project is analogous to NEPA use of action; see Table 2).

Several types of documents may be used to comply with CEQA. Some types of actions are categorically exempt from the assessment and disclosure of impacts required by CEQA, and for such actions, a categorical exemption is filed; this is analogous to a categorical exclusion under NEPA (Table 2). For most projects, the first step in CEQA compliance is preparation of an initial study (IS). The IS is roughly analogous to the environmental assessment prepared as the first step in NEPA compliance; its purpose is to determine whether a proposed project is likely to result in a significant adverse impact on the environment. If the IS shows that no significant impact is likely, the lead agency files a negative declaration; if project impacts can be reduced below the level of significance by the implementation of 1 or more mitigation measures, the lead agency may file a mitigated negative declaration. However, if the IS shows that the proposed project is likely to result in 1 or more significant adverse impacts that cannot be adequately reduced by mitigation, the lead agency must complete an environmental impact report (EIR). The EIR is similar in scope and purpose to the EIS required under NEPA. It must evaluate the likely environmental impacts of the proposed project and a reasonable range of feasible alternatives that would accomplish the same goals, and is required to identify the environmentally superior alternative.

Many projects are subject to both CEQA and NEPA. If both CEQA and NEPA compliance are necessary, the lead state and federal agencies may choose to cooperate in the preparation of a joint environmental document that complies with both state and federal environmental law.

**Table 2.** Correspondence between Key CEQA and NEPA Terms

| CEQA Term | NEPA Term |
|---|---|
| Lead Agency | Lead Agency |
| Responsible Agency | Cooperating Agency |
| Proposed Project | Proposed Action |
| Environmentally Superior Alternative | Environmentally Preferable Alternative |
| Project Objectives | Purpose and Need |
| Environmental Impacts | Environmental Consequences |
| Categorical Exemption | Categorical Exclusion |
| Initial Study | Environmental Assessment |
| Negative Declaration | Finding of No Significant Impact |
| Environmental Impact Report | Environmental Impact Statement |

# California Endangered Species Act

The California Endangered Species Act (CESA) protects wildlife and plants listed as threatened and endangered under the Act by the California Fish and Game Commission. It is administered by DFW. CESA prohibits all persons from taking species that are state-listed as threatened or endangered except under certain circumstances; the CESA definition of take is any action or attempt to "hunt, pursue, catch, capture, or kill."

CESA Section 2081 provides a means by which agencies or individuals may obtain authorization for incidental take of state-listed species. Take must be incidental to, and not the purpose of, an otherwise lawful activity. Requirements for a Section 2081 permit include: the identification of impacts on listed species; development of

mitigation measures that minimize and fully mitigate impacts; development of a monitoring plan; and assurance of funding to implement mitigation and monitoring. CESA and the California Natural Community Conservation Planning Act include other means for obtaining take authorization from DFW for state-listed species, but an incidental take permit under Section 2081 is the most commonly used and in most cases will be the appropriate permitting mechanism for CFMP treatments affecting species in Cambria forest management units. CESA- listed threatened and endangered species and other special-status species that are known to occur or may occur in the Cambria forest are listed in appendix A of the Cambria Forest Management Plan (2002).

# California Coastal Act

The federal Coastal Zone Management Act of 1972 (see above) encourages the individual states to develop coastal zone management programs (CZMPs) to preserve and protect each coastal area's unique features. In 1976, the California legislature enacted the California Coastal Act, establishing the California Coastal Commission (CCC) and the San Francisco Bay Conservation and Development Commission (BCDC) as the state agencies with primary responsibility for enforcing the state's CZMP. The BCDC is responsible for the San Francisco Bay Area, and the CCC has jurisdiction over the state's coastal zone outside the Bay Area, including the Cambria area. The CCC and local governments cooperate in a unique partnership to manage the conservation and development of coastal resources through a comprehensive planning and regulatory program. Under this program, local governments prepare planning frameworks called local coastal program (LCP) land use plans and issue coastal permits for all development in their LCP area. The CCC is responsible for review and oversight of LCPs.

The California Coastal Act also defines Environmentally Sensitive Habitat Areas (ESHAs). ESHAs include rare or unique habitats (including Monterey Pine forest), habitats that support special-status species, coastal streams, and wetlands. The California Coastal Act's definitions of streams and wetlands are more inclusive than the CWA's criteria for identifying jurisdictional waters of the United States (see Clean Water Act above); thus, the California Coastal Act regulates habitats that are not regulated under the CWA.

# Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act articulates with the federal CWA (see Clean Water Act above). The Porter-Cologne Act, passed in 1975, provides for the development and periodic review of Water Quality Control Plans (basin plans) that designate beneficial uses of California's major rivers and groundwater basins and establish narrative and numerical water quality objectives for those waters (California Regional Water Quality Control Board 1995). Basin plans are primarily implemented by using the NPDES permitting system to regulate waste discharges so that water quality objectives are met (see discussion of the NPDES system in the Clean Water Act section above).

# California Fish and Game Code Sections 1601–1607 (Lake or Streambed Alteration Agreement Program)

Under Sections 1601–1607 of the California Fish and Game Code, DFW regulates projects that affect the flow, channel, or banks of rivers, streams, and lakes. Sections 1601 and 1603, respectively, require public agencies and private individuals to notify and enter into a streambed or lakebed alteration agreement with DFW before beginning construction of a project that will:

- divert, obstruct, or change the natural flow or the bed, channel, or bank of any river, stream, or lake;

- use materials from a streambed; or

- (Section 1601 only) result in the disposal or deposition of debris, waste, or other material containing crumbled, flaked, or ground pavement where it can pass into any river, stream, or lake.

Sections 1601–1607 may apply to any work undertaken within the 100-year floodplain of any body of water or its tributaries, including intermittent stream channels. In general, however, it is construed as applying to work within the active floodplain and/or associated riparian habitat of a wash, stream, or lake that provides benefit to fish and wildlife. Sections 1601–1607 typically do not apply to drainages that lack a defined bed and banks, such as swales, or to very small bodies of water and wetlands such as vernal pools.

# Z'berg-Nejedly Forest Practice Act of 1973

The Z'berg-Nejedly Forest Practice Act (FPA) of 1973 regulates commercial timber harvesting operations. It is administered by the State Board of Forestry (BOF) under the auspices of CDF; implementation of the FPA's provisions is guided by the state's comprehensive Forest Practice Rules.
BOF review and permitting authority serves as the FPA's primary regulatory mechanism.

Under the FPA, all commercial timber operations on nonfederal timberlands are required to have 1 of the following.

- A nonindustrial timber management plan approved by BOF.

- A timber operator license and a timber harvesting plan (THP) prepared by a registered professional forester and approved by BOF, or, for the commercial cutting or removal of Christmas trees, tanbark, fuelwood, root crown burls, posts, or split products, a limited timber operator license issued by BOF.

- A program timber environmental impact report (PTEIR).

BOF is responsible for reviewing timber management documents (including THPs and applications for timber operator licenses) for compliance with the FPA, relevant BOF rules, and other state and federal laws enacted to prevent adverse impacts on watersheds and wildlife. FPA also empowers CDF foresters to conduct onsite inspections of sites where timber harvesting has been proposed, in coordination with specialists from local, state, and federal resource agencies.

# Coastal Commission Special Treatment Areas

The California Forest Practice Rules use the designation Coastal Commission Special Treatment Areas to refer to forest areas that fall within the coastal zone and are thus under CCC jurisdiction (see related discussion in California Coastal Act section above) and that support specific conditions limiting forestry practices. Coastal Commission Special Treatment Areas have been designated in locations where timber harvests could result in adverse impacts on significant habitat, on the biological productivity associated with the coastal ecosystem, and/or on scenic or public recreation resources. They also include buffer zones adjacent to designated highways with coastal scenic view corridors as well as areas adjacent to publicly owned preserves and recreation areas. The Monterey pine forests in San Luis Obispo County include Coastal Commission Special Treatment Areas identified for scenic view corridors and sites of significant scenic value. Treatment is not precluded in these areas, but treatments must comply with Article 11 of the California Forest Practice Rules and should use only prescriptions appropriate for areas with high visual sensitivity.

# California Department of Forestry and Fire Protection—Burn Permit Program

Under Sections 4113 and 4125 of the Public Resource Code (PRC), CDF is responsible for preventing and extinguishing forest fires on lands defined as state responsibility areas (SRAs). SRAs include lands that provide forest or range products and watersheds that are not owned or managed by the federal government or encompassed within the boundaries of incorporated cities. CDF is also responsible for identifying very high fire hazard severity zones in SRAs and on lands protected by local fire agencies, such as the Cambria Fire Department. Through its regional ranger units, CDF administers a permitting program for 4 types of burn activities: residential backyard burning, burn barrels, burns to prevent fire hazards, and range improvement burns (Lewin pers. comm.). Under the burn permit program, landowners assume all costs and liability for permitted burns.

The CDF's San Luis Obispo Ranger Unit (SLORU) oversees burn permitting in the Cambria forest and surrounding areas; the SLOAPCD is responsible for overseeing the air quality impacts of permitted burns. The SLORU issues permits for prescribed burns to prevent fire hazards and for range improvement burns. As of March 2001, non-agricultural backyard burning of green waste has been prohibited in most of the County's developed areas, including the Cambria area.

# California Department of Forestry and Fire Protection—Vegetation Management Program

The CDF's Vegetation Management Program (VMP) authorizes the use of prescribed fire and mechanical means to reduce wildland fuel hazards and address other resource management issues in the state's forested areas, including SRAs. Under the VMP, private landowners enter into a contract with CDF for fire protection and other aspects of resource management; this offers landowners the advantage of cost-sharing and shared logistical responsibility.

Under the VMP, CDF is responsible for most aspects of burn design and implementation. When a landowner interested in implementing a prescribed burn under the VMP contacts CDF, CDF evaluates the feasibility of the roject and gathers relevant information from other involved local, state, and federal agencies. This includes coordinating the required approvals and consultations, such as developing a smoke management plan to be approved by the local air pollution control district. CDF is also responsible for designing a detailed burn plan. The burn plan is required to include: information on the location of the burn site and the objectives of the burn; a description of the weather, fuel moisture, and soil and duff moisture conditions under which the burn may proceed; a description of desired fire behavior; and a public information plan. Once the burn plan has been developed, CDF enters into a contract with the landowner, notifies the community, and, when conditions meet the requirements described in the burn plan, implements the burn.

A programmatic EIR (PEIR) was prepared for the VMP, with CDF serving as the lead agency. In compliance with CEQA, the PEIR analyzed the VMP's environmental impacts and identified ways to mitigate its unavoidable adverse impacts. CDF uses an environmental checklist to evaluate the likely environmental impacts of projects proposed under the VMP and determine whether these impacts are addressed in the PEIR. If a proposed project is within the scope of the VMP and its likely environmental impacts are addressed in the PEIR, no additional CEQA documentation is required. If a proposed project may result in one or more significant impacts that are not addressed in the PEIR, additional CEQA documentation is necessary; the project proponent must prepare an IS, leading to a negative declaration, a mitigated negative declaration, or an EIR.

# Existing County Regulations and Programs

The County's Land Use Ordinance (LUO) and Coastal Zone Land Use Ordinance (CZLUO) (Titles 22 and 23 of the San Luis Obispo County Code) establish regulations to implement the County General Plan and LCP and to guide and manage the future growth of the County in accordance with those plans. The LUO and CZLUO contain standards for the preparation of construction sites designed to protect the health, safety, and welfare of persons on or near a project site. The County's standards are intended to:

- prevent unwarranted or unsafe grading,
- prevent soil erosion as a result of grading,
- define appropriate circumstances for tree removal, and
- provide for adequate site drainage.

The County's Department of Planning and Building is responsible for administering the LUO and CZLUO and associated regulations, and for permitting under these ordinances.

The following sections provide additional information on County grading and tree removal permits and drainage plans.

# Grading Permit Program

The County requires proponents of projects that will include grading activities to apply for a County grading permit. The permit review process is designed to ensure that impacts on surface drainage, natural vegetation, and wildlife as a result of proposed earthmoving activities are identified and mitigated. A County grading permit may be required for any activity that involves:

- grading, excavation, or placement of fill;
- diking or dredging that affects wetlands and riparian areas; or
- earthwork, paving, surfacing, or other construction activity that alters any natural or other existing offsite drainage pattern, including but not limited to any change in the direction, velocity, or volume of flow.

Activities that may be exempt from grading permit requirements include:

- excavations <2 feet deep;
- excavations that do not create a cut slope >5 feet high and steeper than 1.5:1 (horizontal:vertical);
- placement of fill that is <1 foot deep and placed on natural terrain with a slope less than 5:1 (horizontal:vertical), or is <3 feet deep and is not intended to support structures, and does not exceed 50 cubic yards on any 1 lot or obstruct a drainage course.

To apply for a County grading permit, project proponents are required to submit a permit application and 2 sets of plans prepared by the appropriate licensed professional.

As required by Title 14 of the California Administrative Code, grading activities with any of the following characteristics will also require an environmental review under CEQA:

- grading on terrain with slopes greater than 10%;
- grading that requires more than 5,000 cubic yards of earthmoving; or
- grading within a sensitive resource area.

# Drainage Plan Standards

County drainage control standards require projects to minimize the harmful effects of stormwater runoff, including inundation and erosion on project sites, and to protect neighboring and downstream properties from drainage problems resulting from new development. Project proponents are required to submit a drainage plan with or incorporate a drainage plan into the grading permit application for any project that:

- involves a land disturbance (grading, or removal of vegetation down to duff or bare soil, by any method) of >40,000 square feet;
- will result in an impervious surface of >20,000 square feet;
- is subject to local ponding because of soil conditions and lack of identified drainage channels;
- is located in an area identified by the County Engineer as having a history of flooding or erosion that may be further aggravated by or have a harmful effect on the project;
- is located within a Flood Hazard combining designation;
- involves land disturbance or placement of structures within 50 feet of any watercourse shown on the most current U.S. Geological Survey 7.5- minute topographic quadrangle map;
- involves hillside development on slopes steeper than 10%;
- involves development on a site adjacent to any coastal bluff; or
- may, by altering existing drainage, cause an onsite erosion or inundation hazard or change the offsite drainage pattern, including but not limited to any change in the direction, velocity, or volume of flow.

If a proposed project requires a drainage plan, CEQA compliance will be necessary.

# Tree Removal Regulations

Tree removal refers to the destruction or displacement of a tree by cutting, bulldozing, or other mechanical or chemical methods, resulting in physical transportation of the tree from its site and/or death of the tree. County tree removal standards are intended to protect existing trees and other coastal vegetation from indiscriminate or unnecessary removal, consistent with the CCA and with the policies of the County's LCP.

Under the County LUO and CZLUO, tree removal may take place only when:

- a tree is dead, diseased beyond reclamation, or hazardous;
- trees are crowded and good horticultural practices dictate thinning;
- a tree interferes with existing utilities, structures, or right-of-way improvements;
- a tree obstructs existing or proposed improvements that cannot be reasonably designed to avoid the need for tree removal;
- a tree blocks sunlight needed for active or passive solar heating or cooling, and the building or solar collectors cannot be oriented to collect sufficient sunlight without removing the tree;
- a tree conflicts with an approved fire safety plan where required by Section 22.05.080 of the LUO; or
- the tree to be removed will be replaced within a 10-year period by another that will provide equal or better shade, screening, solar efficiency, or visual amenity, as verified in writing by a licensed landscape architect, licensed landscaping contractor, or certified nurseryman.

A tree removal permit is required for the removal of any tree located within urban or village reserve limits or in other specific areas identified by the planning area standards in the most recent County General Plan's Land Use Element.

The following types of tree removal are subject to Minor Use Permit approval:

- removal of riparian vegetation near any coastal stream or wetland;
- tree removal that is not accompanied by a land use permit for development;
- removal of trees located in any appealable area;
- removal of trees located in any sensitive resource area where the identified resources are trees, as shown on official combining designation maps (Part III of Land Use Element, County General Plan); and
- tree cutting that will cumulatively remove more than 6,000 square feet of vegetation (measured on the basis of canopy area).

Minor Use Permit approval may also be required for the removal of major vegetation and/or for work that occurs within the ESHA.

Approval is required before the removal or replacement of any existing trees *except* trees that:

- are identified and approved for removal in an approved Plot Plan, Site Plan, or Development Plan, provided that such removal is subject to the standards of Section 22.05.064 of the LUO (Tree Removal Standards);

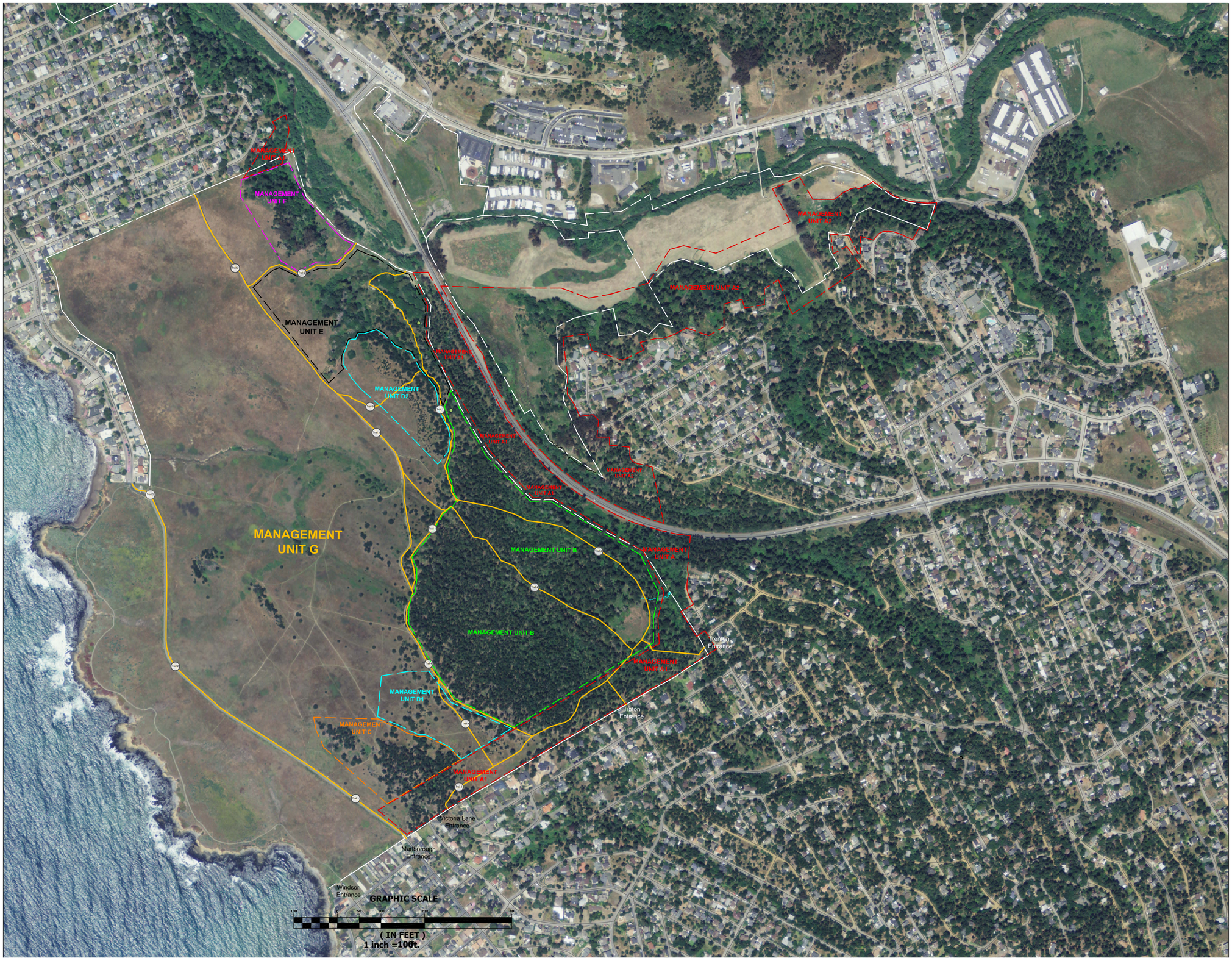
- are located in areas designated for residential land use on sites developed with residential uses;
- are located within or adjacent to a utility right-of-way, when such trees are to be removed by a public agency or public utility or are to be removed under an encroachment permit issued by a public agency having jurisdiction;
- are in a hazardous condition that presents an immediate danger to health or property;
- have trunks measuring <8 inches in diameter at 4 feet above grade;
- are to be removed in preparation for agricultural cultivation and crop production in an area designated for agricultural land use; or
- are to be removed as part of management practice in orchards under commercial agricultural production.

# Proposed County Regulations

The County is currently in the process of developing guidelines for new and infill construction and exterior remodels in Cambria's residential areas. The guidelines were created in recognition of the distinctive character of Cambria's neighborhoods, in order to give area property owners, developers, and architects a clear sense of the design that the community hopes to achieve in each neighborhood. Specific goals of the new guidelines include:

- promoting residential design that is consistent with the context of the built neighborhood and the surrounding Monterey pine forest;
- encouraging site-sensitive design that respects the natural features and limitations of each site;
- and ensuring that building size, massing, and location are in scale with surrounding development.

The new guidelines had not been approved at the time the CFMP was prepared, but may be in force by the time it is implemented.




## Map Key / Legend

- Fiscalini Ranch Preserve Easement Extents
- Existing Trail Alignment
- (2) Marine Terrace Trail
- (3) Ridge Trail
- (4) Forest Loop Trail
- (5) Victoria Lane Trail
- (7) Creek to Forest Trail
- (9) Creek to Ridge Trail
- Management Units A1 and A2
- Management Unit B
- Management Unit C
- Management Unit D1 and D2
- Management Unit E
- Management Unit F
- Management Unit G

# MANAGEMENT UNIT CONSTRAINTS

**Fiscalini Ranch Preserve**
Cambria, CA

**Monterey Pine Forest Analysis**
**Maintenance & Monitoring Program**

James P. Allen & Associates
611 Mission Street, Santa Cruz Ca 95060
**office** 831.426.6603 **fax** 831.460.1464
**email** jpallen@consultingarborists.com



Date: 05/30/14

# Map Key / Legend

- Fiscalini Ranch Preserve Easement Extents
- Existing Trail Alignment
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- Management Unit C
- Management Unit D
- Management Unit E
- Management Unit F
- Management Unit G
- Eucalyptus Groves
- Test Plot Locations (3)
- Volunteer Planting Locations

# MANAGEMENT UNIT EXTENTS & CONDITIONS

**Fiscalini Ranch Preserve**
Cambria, CA

**Monterey Pine Forest Analysis Maintenance & Monitoring Program**

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Date: 05/30/14

Salinas silty clay loam
2 to 9 percent slopes
Erosion class rating: moderate (0.28)

San Simeon sandy loam
2 to 9 percent slopes
Erosion class rating: moderate (0.24)

Marimel silty clay loam
drained
Erosion Class Rating: moderate (0.28)

San Simeon sandy loam
30 to 50 percent slopes
Erosion class rating: moderate (0.24)

San Simeon sandy loam
30 to 50 percent slopes
Erosion class rating: moderate (0.24)

San Simeon sandy loam
15 to 30 percent slopes
Erosion class rating: moderate (0.24)

San Simeon sandy loam
2 to 9 percent slopes
Erosion class rating: moderate (0.24)

Briones-Pismo loamy sands
9 to 30 percent slopes
Erosion class rating: low (0.20)

Concepcion loam
2 to 5 percent slopes
Erosion class rating: moderate (0.32)

San Simeon sandy loam
9 to 15 percent slopes
Erosion class rating: moderate (0.24)

Briones-Pismo loamy sands
9 to 30 percent slopes
Erosion class rating: low (0.20)

San Simeon sandy loam
15 to 30 percent slopes
Erosion class rating: moderate (0.24)

San Simeon sandy loam
15 to 30 percent slopes
Erosion class rating: moderate (0.24)

San Simeon sandy loam
2 to 9 percent slopes
Erosion class rating: moderate (0.24)

San Simeon sandy loam
9 to 15 percent slopes
Erosion class rating: moderate (0.24)

Concepcion loam
2 to 5 percent slopes
Erosion class rating: moderate (0.32)

Briones-Pismo loamy sands
9 to 30 percent slopes
Erosion class rating: low (0.20)

GRAPHIC SCALE

100 0 50 100 200 50

( IN FEET )
1 inch =100t.

## Map Key / Legend

Fiscalini Ranch Preserve Easement Extents

Soil Type Boundary
*(Natural Resources Conservation Service 2005)*

# FISCALINI RANCH PRESERVE SOILS MAP

## Fiscalini Ranch Preserve

Cambria, CA

**Monterey Pine Forest Analysis**
**Maintenance & Monitoring Program**

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