Agenda Item X
WCCA
1/31/13
FINAL LETTER

CALIFORNIA CHAPARRAL INSTITUTE
...the voice of the chaparral

January 25, 2013

Board of Forestry and Fire Protection
Attn: George Gentry
Executive Officer
VegetationTreatment@fire.ca.gov
Sacramento, CA 94244-2460

Re: Draft Program EIR for the Vegetation Treatment Program

Dear Mr. Gentry and Board Members,

> **There are two types of fires; the ones we prepare for and the ones that do all the damage** (Fotheringham 2012).

Unfortunately, the Draft Program Environmental Impact Report for the Vegetation Treatment Program (PEIR) continues to ignore the fires that cause the most damage by focusing exclusively on habitat clearance projects.

This despite extensive scientific research that clearly indicates that the best way to effectively protect lives, property, and the natural environment from wildfire is through a **comprehensive approach** that focuses on *community and regional planning, ignitability of structures, and fuel modifications within and directly around communities at risk.*

> **Every decade we increase funding for fuel modifications and fire suppression activities, followed by a decade of even worse fire impacts** (Keeley 2009).

By stating that, "The proposed program is intended to lower the risk of catastrophic wildfires on nonfederal lands by reducing hazardous fuels," the PEIR perpetuates and expands the same approach that has failed to reduce cumulative wildfire loss and firefighting expenditures over the past century. **Consequently, the Board of Forestry is NOT addressing the main causes for loss of life and property from wildfire.**

Attempt to Exempt CalFire From CEQA

All projects within the 38 million acres of California (1/3rd of the state) the Board of Forestry (BoF) has targeted for habitat clearance by burning, grinding, grazing, or

herbicide will only be evaluated by a vague, yet-to-be formulated checklist. They will not be reviewed through the California Environmental Quality Act (CEQA). This will prevent citizens and independent scientists from questioning a project under CEQA that they feel is environmentally damaging.

We find this attempt to exempt CalFire from the environmental protections of California's premiere environmental law disturbing, although not surprising. One of the objectives under Goal #5 of the 2010 California Fire Plan endorses efforts to "remove regulatory barriers that limit hazardous fuel reduction activities." As we stated in our comment letter on the Draft Fire Plan, we strongly disagree with this objective and believe it is inappropriate for a government entity to advocate such action.

Rather than seeking ways to circumvent proper scientific oversight and efforts to insure that scarce fire management resources are used in the most effective way, the BoF should recommend inclusive community processes that embrace environmental review and invite all stakeholders. While democracy can be inconvenient, and collecting information that may question a proposed project frustrating, it is the best way to create a successful fire risk reduction strategy.

Impossible to Properly Evaluate the PEIR

By creating an overly broad "program" EIR without explaining where projects will be done, the BoF is making it impossible for the public and the scientific community to properly evaluate its plan to clear more than two million acres of wildland in California per decade. This is not the intent of a program EIR.

A program EIR allows for a more "exhaustive consideration of effects and alternatives than would be practical in an EIR on an individual action" AND allows "the lead agency to consider broad policy alternatives and program wide mitigation measures at an early time when the agency has greater flexibility to deal with basic problems or cumulative impacts" (CEQA Tool Box).

The BoF should have taken this opportunity to truly consider the entire fire environment rather than merely duplicating and expanding a program of questionable efficacy, namely more habitat clearance. Instead, the BoF is proposing an unacceptably open-ended, hypothetical Program that amounts to a "blank check," preventing subsequent California Environmental Quality Act (CEQA) reviews of thousands of projects.

The only reference to where the projects will be is an approximate number of acres within broad, and incredibly diverse, bioreigons. Only a vague, yet-to-be-determined checklist will be used to evaluate individual projects. If a project "passes" the checklist, it will be within the scope of the PEIR and exempt from subsequent CEQA review.

Over the past decade, our experience has shown that citizen and independent scientific oversight is essential evaluating habitat clearance operations. Local, state, and federal

agencies have repeatedly demonstrated a willingness to ignore potentially significant environmental impacts in order to complete projects.

The best opportunity Californians have to ensure that projects are both necessary and do not cause significant environmental damage, is their ability to the challenge agency actions through CEQA. This Program PEIR is attempting to take that protection away.

Faulty Conclusions

We find the PEIR's conclusions that individual and cumulative impacts are all less than significant are not supportable. The conclusions are based on broad, inaccurate assumptions and incomplete research, especially in regard to shrubland ecosystems. In fact, when it comes to using the most relevant, up to date scientific data, the PEIR fails to satisfy some of the most important standards required by CEQA.

Our analysis indicates there will likely be significant environmental impacts that cannot be mitigated as the PEIR describes.

Therefore, this PEIR needs to be retracted. In its place, the BoF should create a **comprehensive program** reflecting specific, regional differences that will achieve the Program's key goal, "to prevent loss of lives, reduce fire suppression cost, reduce private property losses and protect natural resources from devastating wildfire." (PEIR 1-1)

We offer a summary of such a comprehensive approach in our **suggested alternative to the Program** as part of our comments below.

In brief, a comprehensive approach will:

Save more lives and property. Most homes burn and lives are lost because communities are not fire safe, not because of inadequate wildland vegetation treatments of the type this PEIR proposes.

Significantly reduce the amount of habitat clearance. As demonstrated by science and codified in PRC 4291, fire safe structures and communities require much less surrounding vegetation management. As set forth in PRC 4291, local agencies may exempt from the law's standards, "structures with exteriors constructed entirely of nonflammable materials, or conditioned upon the contents and composition of the structure, and *may vary the requirements respecting the management of fuels* surrounding the structures in those cases."

It's not the absence of clearing distant wildand vegetation that is responsible for the loss of homes. The losses are caused by the fuels under the front porch, the needles in the rain gutter, and the location of the home.

Save the state a significant amount of money. Instead of continually clearing and re-clearing wildland areas, year after year, the state should focus on long term fixes to recurring wildfire hazards such as directing the removal of flammable cultivars (palms, acacia, etc.) within communities, focusing on science-based defensible space zones, help communities find funding to retrofit unsafe structural problems (vents, roofing, etc.), and most importantly **continue to develop its analysis of fire hazard areas in order to provide guidance to land planning agencies.** The BoF can use its current regulatory authority to accomplish much of this.

Habitat clearance activities beyond defensible space zones of the type the PEIR describes creates a financial black hole. In addition, it is likely the currently envisioned Program will become embroiled in expensive litigation.

The Failings of the PEIR

1. Underlying Bias

The proposed Vegetation Treatment Program is based on a questionable, overly-broad assumption about a natural landscape that is recognized as one of the most diverse biological regions on the planet. As a consequence, the PEIR's proposed Program, conclusions, and mitigations fail to accomplish the document's stated goals and threaten California's natural environment.

The broad assumption that underlies the entire PEIR is presented in the Executive Summary:

> Past land and fire management practices have had the effect of increasing the intensity, rate of spread, as well as the annual acreage burned on these lands (BOF, 1996).
>
> Much of this change in threat can be attributed to fire exclusion policies instituted over the past 100 years (Bureau of Land Management, 2005). (PEIR ES ii)

While it is true some forested communities have missed fire cycles and may be burdened by increased vegetation due to past fire suppression efforts, this is not the case for a significant amount of the natural landscape in California. For example, in evaluating research over the past decade concerning southern California, leading fire scientists have concluded in a US Forest Service publication,

> The fire regime in this region is dominated by human-caused ignitions, and fire suppression has played a critical role in preventing the ever increasing anthropogenic ignitions from driving the system wildly outside the historical fire return interval. Because the net result has been relatively little change in overall

> fire regimes, **there has not been fuel accumulation in excess of the historical range of variability, and as a result, fuel accumulation or changes in fuel continuity do not explain wildfire patterns** (Keeley et al. 2009b).

Although there are incidental references in the PEIR that,

- most of the brush and chaparral systems are probably operating close to their natural range of variation in fire frequency (PEIR 4.2-9)
- plant communities being threatened by type conversion due to excessive fire frequency (as opposed to vegetation build up via past fire suppression)
- current forecast models indicate that there will be an increase in grasslands... (PEIR ES iii)

the PEIR did not incorporate this information into the Program, in limitations on the 38 million acres of landscape "available for treatment," or within suggested mitigations.

The influence of the overly-broad and incorrect assumption can be seen in the predominant type of literature cited. Despite the fact that native shrublands, primarily chaparral, represent the most extensive native plant community in California, most of the literature cited is primarily concerned with forested ecosystems (specifically, research that conforms to the PEIR's basic assumption).

We discuss the failure of the PEIR to discuss the main points of disagreement below, but the issue here is that these references do not reflect the incredibly diverse ecosystem types in California that the BoF intends to clear, nor do they "provide decision makers with information which enables them to make a decision which intelligently takes account of environmental consequences." (Section 15151 Standard for Adequacy of an EIR, CEQA)

By making the inaccurate assumption that all vegetation communities are overgrown due to past fire suppression practices and need to be "treated," the BoF has designated about the third of the state of California to be included into its habitat clearance Program.

Syphard et al. (2006) summed up the problem well when they wrote,

> Despite overwhelming evidence that fire frequency is continuing to increase in coastal southern California (Keeley et al. 1999, Moritz et al. 2004, NPS 2004), the current fire-management program subscribes to the paradigm that fire suppression has led to fewer, larger fires, and that landscape-scale prescribed fire should be used to create a fine-scaled age mosaic. Considering the results of our simulations, we believe that adding more fire to the landscape through broad-scale prescribed burning may have negative ecological effects. Instead, our results are consistent with recent recommendations from the U.S. National Park Service to change the fire management program to focus fuel-reduction efforts and prescribed fire on strategic locations such as the wildland–urban interface (NPS 2004).

Unfortunately, one of the Program's main "treatments" is the very broad-scale burning project being rejected by a growing number of agencies (Fire Management Plan FEIS Santa Monica Mts 2005). In fact, the previous California Fire Plan (1996) rejected such an approach:

> The typical vegetation management project in the past targeted large wildland areas without assessing all of the values protected... The vegetation management program will shift emphasis to smaller projects closer to the new developments.

Specifically the PEIR states,

> Large Scale Wildland Treatment—These are areas up to the watershed scale, or even greater, that are treated to reduce highly flammable or dense fuels, including live brushy plants in some vegetation types (such as chaparral), a build up of decadent herbaceous vegetation or, dead woody vegetation. (PEIR 1-12)

The concept of "decadent herbaceous vegetation" has been used for years by fire management agencies to justify burning chaparral for resource reasons (Halsey 2011). There is no scientific justification for such burning (Montygierd-Loyba and Keeley 1985, Keeley et al. 1985, Keeley et al. 2005). The tendency for the PEIR to view native shrublands within a biased, pejorative context is a common theme:

> However, in the absence of periodic disturbance, the continued productivity of the state's rangelands is being *threatened by the encroachment of non-native invasive plants and native shrubs*. Vegetation treatments can help counter these *negative trends*, and improvement of rangeland condition is a primary objective of the VTP. (PEIR 1-5) *Emphasis added.*

The desire to modify the landscape to improve economic output is certainly a reasonable objective for a statewide management plan. However, allowing a systemic, negative bias against native ecosystems to influence policy management decisions is not. This bias appears to be one of the reasons the PEIR has failed to properly consider the cumulative effects on shrubland ecosystems (see below).

2. Inadequate Support for Program's Key Goal

While we agree that vegetation management can be an essential part of reducing wildland fire risks and can be effective in moderating wildfire behavior, the PEIR fails to provide an adequate level of support for its exclusive, broad brush approach: clearing habitat on a statewide basis. This failure to find adequate support is likely because, as Mell et al. 2010 wrote,

> a clear link has not been established between specific fuel treatments (e.g. reducing tree density or raising crown base height) and the resulting change in

> wildland fire behaviour, *especially over a range of environmental conditions*. (emphasis added)

Instead of reducing the *risks* of wildland fire, the factors that actually lead to the loss of life and property, the Program focuses exclusively on addressing the *hazard* of wildland fire, which is an unrealistic approach (hazard is anything that can cause harm, risk is the chance the hazard can cause harm to you). **The Program's exclusive approach is equivalent to trying to prevent earthquakes** (the hazard) instead of addressing the actual risks by earthquake-safe land planning and retrofitting buildings and structures to survive tremors.

The support the PEIR provides for this approach is inadequate not only because it broadly misapplies papers that are generally forest-based (as discussed above), but it exaggerates the fire management benefits of fuel treatments by ignoring the critical role played by community and home fire prevention. For example, the PEIR cites the success of fuel treatments during the 2007 Angora Fire:

> The Angora fire burned 3071 acres of forest and urban interface, destroying 254 homes and costing $160 million dollars. The fuel treatments generally worked as designed, significantly changing the fire behavior and subsequent fire effects to the vegetation (Safford, et. al., 2009). (PEIR 4.2-25)

While the Safford et al. paper is an excellent analysis of how fuel treatments can modify fire behavior and protect trees, the paper's conclusion that is most relevant to the PEIR's key goal to "reduce private property losses" is that,

> **Many homes burned in the Angora Fire in spite of the fuel treatment network;** government efforts to reduce fuels around urban areas and private lands do not absolve the public of the responsibility to reduce the flammability of their own property. (Safford et al. 2009)

Without an equal effort to address this issue, the BoF will be unnecessarily damaging the natural environment and wasting tax-payer dollars through its exclusive approach.

The PEIR then cites the Emergency California-Nevada Tahoe Basin Fire Commission Report (2008) by noting its 48 findings, "that serve as a plan to reduce said wildfires and negative impacts in the future."(PEIR 4.2-25)

Of the 48 findings, six are directly related to community and home fire prevention and six more deal with fire suppression. This was in recognition that it wasn't flaming trees that ignited the 254 homes that were lost, but other burning houses. While no single one cause could be blamed for the losses, flammable housing materials, wind blowing in alignment with streets, and the presence of logging slash from past commercial logging projects played important roles (Murphy et al. 2007).

The failure of fuel treatments to protect flammable communities is a frequent phenomena as demonstrated in the 2007 Grass Valley Fire (Cohen and Stratton 2008, Rogers et al. 2008), the 2003 Cedar Fire (Keeley et al. 2004), and the southern California 2007 firestorm (Keeley et al. 2009a). Such observations indicate a clear case for the need to conduct an objective cost/benefit analysis of fuel treatments (Keeley 2005).

When addressing fires driven by severe weather conditions (the ones that cause the most damage to life and property), the PEIR is generally dismissive of the ability to deal with them because these fires are "difficult to control even by the world's most comprehensive wildland protection system." (PEIR 4.2-10)

We find the failure to address wind driven fires as one of the major failures of the PEIR. Research is showing that with proper land planning, much of the risk presented by wind driven fires can be reduced significantly (Syphard et al. 2012, Moritz et al. 2010, Parisien and Moritz 2009).

3. Inadequate Disclosure of Expert Disagreements, Literature Cited

CEQA guidelines clearly state that,

> Disagreement among experts does not make an EIR inadequate, but the EIR should summarize the main points of disagreement among the experts. The courts have looked not for perfection but for adequacy, completeness, and a good faith effort at full disclosure.

The PEIR has failed to meet this guideline.

For example, we found no reference to the ongoing controversy regarding the benefits of severe, stand replacing fires and associated treatments in forests (Bond et al. 2012, Bond et al. 2009).

Relating to an underlying assumption that is aligned with the forest/fuel accumulation bias noted above, the PEIR claims that short fire return intervals in "frequent fire adapted communities",

> ...maintained an open, park-like forest stand with a continuous ground cover of grasses, herbs, and shrubs beneath the forest canopy (Kaufmann and Catamount, [nd]; Parsons and DeBenedetti, 1979). (PEIR 4.2-1)

The Kaufmann reference is a non-scientific publication that has more to do with dry-ponderosa pine forests in the southwest than the mixed conifer systems that are common in California. The Parsons paper did not conclude that forests in California were "open, park-like" with a "continuous ground cover of grasses." What the paper actually said about the mixed-conifer zone of Sequoia and Kings Canyon National Parks was that,

> The varying intensities and frequencies of the fires that occurred in these forests under natural conditions would have created a mosaic of open and closed canopy conditions, as well as heavy to minimal ground fuels.

The hypothesis that a "continuous ground cover of grasses" in Sequoia has been rejected by more recent research (Evett et al. 2003).

There are also new studies the PEIR failed to note that raise questions concerning the impact past fire suppression practices have had on mixed conifer forests in California. Odion and Hanson (2008) and Odion et al. (2009) suggest that forested areas in California that have missed the most fire return intervals (i.e., the most fire suppressed) are burning mostly at low/moderate-intensity and may not be experiencing higher levels of high-intensity fire than areas that have missed relatively fewer fire return intervals.

The one-size-fits-all approach the PEIR takes regarding fire suppression is not scientifically supportable and raises serious questions about the PEIR's conclusions.

For shrubland ecosystems, which have completely different fire regimes and responses to management than forests, there were less than a dozen peer-reviewed papers referenced (out of nearly 1,000 literature citations) relating directly to fire. Most of those were more concerned with the spread of invasive species than fire management. **We find this absence inexcusable, especially considering the fact that the most expensive, devastating wildland fires in California are associated with these ecosystems.** We are especially perplexed because there has been a wealth of research concerning shrubland ecosystems conducted over the past decade indicating that:

> • Unlike some forests, native shrublands have not become unnaturally dense with vegetation due to past fire suppression practices (Keeley et al. 2009b, Keeley et al.1999)
>
> • Prescribed burning is unlikely to have much influence on fire regimes in southern California (Price et al. 2012)
>
> • Large, severe, infrequent wildfires are the natural, historical pattern in central and southern California (Lombardo et al. 2009, Mensing and Bryne 1999, Keeley and Zedler 2009)
>
> • The age of vegetation has very little to do with the size of fires (Moritz 2003, Moritz et al. 2004)
>
> • Old-growth shrublands are healthy, dynamic ecosystems (Keeley et al. 2005)

All of these findings are contrary to the Program's rationale for conducting habitat clearance in central and southern California shrublands. For example,

> Well planned prescribed burning can be an effective means of reducing fuels that result from long periods of fire exclusion while moderating potential ecosystem damage (Knapp et al., 2005). (PEIR 1-4)

Here is what the cited Knapp et al. document actually said in reference to chaparral:

> Because of frequent human-caused ignitions and seasonal hot and dry winds, the fire regime remains similar today, despite fire-suppression efforts.
>
> The bottom line is that the potential for shifts in the plant community exists when the heat generated by prescribed burning is dissimilar to what would have been experienced with the fire regime that species evolved with.

The PEIR also continually refers to the creation of hydrophobic soils during severe fires as a justification for prescribed burns:

> Although the potential exists to create hydrophobic soils through prescribed burning, burning prescriptions typically are successful at keeping severity low enough to prevent formation of hydrophobic soils (DeBano, 1989). (PEIR 5.7-12)

Soils in chaparral are hydrophobic whether or not they are burned. There has not been any extensive study of quantitative effects of low, moderate and high severity burning on hydrophobicity and soil loss. Burning can cause the hydrophobic layer to sink in the soil and is thought to increase top soil erosion, but the field studies show that its effect disappears quickly after the first rains (Hubbert et al. 2006). More importantly, there have been quite a few studies of postfire erosion and debris flows and hydrophobicity is not typically a major component of these models as substrate type and slope incline are many times more deterministic in predicting soil loss (Cannon et al. 2009, Gartner et al. 2009).

It is clear the authors of the PEIR misunderstood the actual conclusions of some cited papers, did not conduct an adequate literature search, and appear to have ignored contrary evidence.

4. Questionable Citations

The two key references the PEIR provides to support its Program to conduct chaparral clearance projects in southern California are non-peer reviewed documents. One, San Diego County's 2003 Wildland Task Force Report, was removed from circulation on August 24, 2004, after the scientists who were quoted within wrote strong letters to the San Diego County Board of Supervisors indicating their work had been misquoted and misrepresented by county staff. The PEIR stated,

> In its August 2003 report, the San Diego Wildland Task Force agreed that fuel or vegetation management is the single most effective tool available to mitigate

> fires. The build-up of fuel greatly affected the intensity and speed of the recent fires contributing to the loss of lives and property. (PEIR 4.2-8)

The scientists cited in this Task Force Report made it clear they **did not support this conclusion**. In fact the scientists wrote to the Board that they found the report "woefully inadequate and biased in its treatment of the available scientific information, and flawed in many of its assumptions, its treatment of published data, and its recommendations concerning vegetation management as part of a comprehensive fire-risk reduction strategy" (Spencer et al. 2004, Halsey 2012).

There appear to be questionable citations in other subject areas as well. The PEIR cites only one outside reference in its Wildfire Trends Introduction to support its contention that "... streams are being infiltrated by silt and debris following high severity fires, and unnaturally severe wildfires have destroyed vast areas of forest (Bonnicksen, 2003)." (PEIR 4.2-3)

This reference is the testimony to the Committee on Resources, U.S. House of Representatives by a controversial timber industry spokesperson whose credentials have been questioned by other scientists. In an open letter to the press the scientists wrote that, "not only do the views and statements of Dr. Bonnicksen fall far outside the mainstream of scientific opinion, but more importantly that Dr. Bonnicksen has misrepresented himself and his qualifications to speak to these issues" (Rundel et al. 2006).

The concept that severe wildfires have "destroyed" vast areas of forest in California is a subjective perspective that does not belong in a what should be a scientifically-based analysis. Regarding streams "being infiltrated by silt," the National Marine Fisheries Service (2005) has properly examined the matter and has concluded:

> Wildfires occurring within various locations throughout the action area indirectly contribute fine sediment to streams. Although effects of fires may degrade stream habitat in the short-term, recent theory suggests wildfire has a role for creating and maintaining landscape characteristics, habitat complexity, and species diversity (Brown 1990, Rieman and Clayton 1997, Gresswell 1999).

The lack of transparency in the PEIR's citations is a pervasive issue. Some citations can't be found (e.g. BOF 1996), it's frequently unclear what they are referring to (e.g. Sugihara et al., 2006), and many are not relevant to the statement being supported (as noted above).

5. Areas of "Treatment" Unknown

According to CEQA Guideline 15124(a): "The precise location and boundaries of the proposed project shall be shown on a detailed map, preferably topographic. The location of the project shall also appear on a regional map." No such maps are included in this PEIR.

The maps that are included are either of the entire state or of large, complex bioregions. These are not helpful since approximately *only* 1/3 of those areas are apparently affected by the Program. These areas are not identified.

Even if the maps provided by the PEIR are used to estimate where projects might occur, there are conflicts between what the maps indicate and what the PEIR states. For example, the document's Condition Class map (4.2-13) indicates that much of southern coastal California is either significantly or moderately altered from its historical fire regime condition class. Yet the PEIR text cites research showing that most chaparral, the dominant ecosystem in coastal southern California, is within its historic fire return interval. In fact, the US Forest Service research has shown that most of the chaparral in the four National Forests in southern California actually has a positive departure from historical fire patterns, meaning the native shrubland ecosystem is being threatened by too much fire as opposed to not enough (Safford and Schmidt 2008).

Since the PEIR does not specify which landowners are part of this Program, a landowner, a land manager, or the neighbor of a cleared parcel has no way of determining whether or not they are subject to this Program, or even of knowing whether they are affected by it. As a consequence, effected parties have no idea if they should be concerned with this PEIR or not. Therefore, the lack of specific location information makes it impossible for this document to meet CEQA's requirement of notification.

Unfortunately, since the PEIR does not include information documenting public notices for its review period, we have no way of determining whether the public was properly notified at all.

6. Impossible to Determine Significant Impacts

Because the PEIR is so vague and does not identify any of the project areas, it is impossible for citizens and independent scientists to properly evaluate the potential for significant environmental impacts. The only place this can be done is at the specific project level. However, such a review, as normally provided by CEQA, is precluded as per this PEIR.

Depending on a yet-to-be made general checklist to evaluate projects (as indicated in the PEIR) is not a reasonable approach to situations that can be extremely complicated. The California gnatcatcher *(Polioptila californica californica)*, an endangered species in the highly flammable south coast bioregion, provides one example. The species is mentioned only once in the PEIR:

> The California gnatcatcher (*Polioptila californica californica*) and Southern California rufous-crowned Sparrow (*Aimophila ruficeps canescens*) are permanent residents of semi-open sage scrub habitats. These birds avoid dense, overgrown shrublands and so may benefit from treatments that create a better-proportioned mosaic of shrub mixed with open areas. (PEIR 5.5-64)

The PEIR never defines what "dense, overgrown shrublands" are, nor does it cite any references to support this overly broad statement, but the PEIR's suggestion that treatments "create a better-proportioned mosaic" suggests the intent of habitat manipulation which aligns with Goal 8 of the Program (altering vegetation structure to "improve" wildlife habitat).

If the PEIR had conducted an adequate review of the literature it would have found that, although gnatcatcher reproductive success is higher in younger coastal sage scrub, most gnatcatcher pairs live in coastal sage scrub stands greater than 20 years old (Atwood et al. 2002). The most important result of the research, however, was that population persistence (through a regional population crash) was highest in the oldest stands, which serve as important refugia.

Suggesting that the habitat for the gnatcatcher is potentially open for manipulation is contrary to accepted practice. For example, the USFS Forest Plan Criteria S39 states, "Avoid fuel treatments in coastal sage scrub within the range of the California gnatcatcher, except in Wildland/Urban Interface Defense Zones and on fuelbreaks. (Federal Code 36 CFR 219)

Since the PEIR does not explain where its "fuel treatments" or habitat manipulations will be conducted, we find it difficult how the authors conclude that the Program will cause no significant impacts to the gnatcatcher. More troubling, the PEIR follows up by actually suggesting the clearance of habitat will be a positive in a bioregion subject to more than 200,000 *unspecified* acres of clearing:

> In summary, indirect effects of the VTP in the South Coast Bioregion are likely to be positive for species that occur in open habitats where exotic pest species are unlikely to invade. (PEIR 5.5-65)

Coastal sage scrub habitat is indeed extremely vulnerable to exotic, invasive pest species when disturbed, in the form of non-native grasses (O'Leary 1995, Talluto and Sudling 2008). Ironically, this is something the PEIR recognizes:

> However, gnatcatcher populations are likely to decline if shrub removal treatments result in a conversion of sage scrub to exotic grassland. (PEIR 5.5-64)

Then the PEIR indicates that,

> Treatments shall not remove essential habitat elements of special status taxa know [sic] or likely to occur in the area (Mitigation Method PEIR 5.5.2-11)

How will the BoF determine what is "essential habitat" for the gnatcatcher? This is never indicated. Since coastal sage scrub is one of the dominant plant communities ("fuel" in the parlance of the PEIR) in the south coast bioregion, we don't know how the BoF will meet the goals of the PEIR without impacting gnatcatcher habitat.

Although contradictory statements and questionable conclusions within the PEIR are a deep concern, the bigger issue addressed here is that in many instances the PEIR fails to acknowledge well known environmental problems. If they had, as in the case of the gnatcatcher, they would have realized and acknowledged the potential for the Program to cause significant impacts.

In a 1997 Memorandum of Understanding (MOU), the US Fish and Wildlife Service (USFWS) agreed to allow the clearance of coastal sage scrub (gnatcatcher habitat) within the 100 foot defensible space zone around structures without the need for a take permit in each instance. In exchange, fire agencies were to report the number of acres cleared annually. Under this agreement, as per section 4(d) of the Endangered Species Act, a maximum cumulative loss of 5% of total gnatcatcher habitat in the county (approx 220,000 acres), or about 745 acres, was allowed due to fire clearance activities. The terms were clarified in an Incidental Take Statement from the USFWS.

Unfortunately, although fire agencies continue to clear vegetation in and around San Diego County, we have found that neither the USFWS nor the various fire authorities have made any effort to comply with the terms set forth in the Incidental Take Statement. In 2009 we issued a Freedom of Information Act request to the USFWS for any documentation relating to the MOU or compliance therewith. The sparse documentation delivered did not include any annual acreage reports and, instead, mostly consisted of internal USFWS correspondence asking why nothing was being done with regard to MOU compliance.

Based on the Program as described in the PEIR, it appears the BoF is proposing clearance operations over and above a level that has likely already exceeded USFWS guidelines.

Since the PEIR does not make clear where fuel treatments will be conducted in the south coast bioregion, nor does it provide the necessary evidentiary documentation to support its assumptions, it’s conclusion that the Program will not cause significant impacts to the gnatcatcher and other sensitive species is highly questionable. We have found similar problems relating to other species throughout the document.

7. Minimized Negative Impacts of Prescribed Fire/Type Conversion

Although the PEIR acknowledges that chaparral can be type converted by too frequent fires, it fails to provide any mitigation to actually prevent it.

The use of prescribed fire during in chaparral, especially when conducted during the cool season, can lead to type conversion (Keeley 2006). It is not an appropriate management strategy for that reason. The suggested mitigation to properly “time” or adjust the “intensity” of a prescribe burn is unrealistic and is only in reference to special status plants, not plant communities.

> Mitigation Measure 5.5.3-1**.** For fire-adapted special status plants, the timing or intensity of prescribed burns shall be adjusted and incorporated into Burn Plan prescriptions to simulate the natural fire regime. The project will be burned in a pattern to create and maintain a mosaic of old and young growth chaparral with diverse habitat structures. (PEIR 5.5-109)

The proper ecological "time" for a fire in chaparral is during the height of the fire season. Chaparral fires are naturally "intense." Attempting to reduce intensity can cause significant negative impacts to the ecosystem, namely type conversion (Keeley and Brennan 2012, Keeley et al. 2011, Keeley et al. 2005).

Regarding the use of prescribed fire to control invasive species, actual experience has demonstrated that with herbaceous weeds, prescribed fire usually does not result in sustainable control unless the program involves repeated burning. For example, the East Bay Regional Parks finds it successful if they burn every year to control yellow star thistle. However, once those treatments are stopped, the target species potentially returns with a vengeance (Alexander and D'Antonio 2003). Some woody species such as brooms may be controlled with a particular fire frequency, but that frequency will be detrimental to many native woody species as well. As a general rule, **reducing fire and other disturbances is likely to do more to restore native systems** than increasing broad scale disturbance, at least in California.

Due to the growing spread of Sahara mustard (*Brassica tournefortii*) in desert regions, the proposed Program has the potential of causing significant negative impacts to thousands of acres in chaparral and transition zones adjacent to, and potentially within, both the Mojave Desert and Anza-Borrego Desert by prescribed fire as well as mastication and herbicide spraying. The resulting denuded and disturbed soils would be highly vulnerable to type conversion into a Sahara mustard monoculture where native habitats are currently at low risk of takeover by this aggressive weed species. Fields of Sahara mustard decimate biodiversity of both native flora and fauna; produce dry, fire-prone landscapes; and eliminate the wildflowers that attract visitors to desert communities. We could not find a reference to this incredibly invasive species in the PEIR.

In regards to impacts of prescribed fire on wildlife, the PEIR appears to dismiss the problem by claiming, "Most shrub-dwelling wildlife will be able to avoid direct mortality by flying away or taking shelter on or under the ground before the fire arrives." (5.5-23)

Most chaparral animals are extremely territorial. They may fly away to "avoid direct mortality," but with their specific territory eliminated and lack of unoccupied territories at the fire edge, it is not unreasonable to assume the expatriated animal will die.

8. Ignored Cumulative Impacts

Another approach the author's use throughout the PEIR to dismiss potentially significant impacts relates to the percentage of the bioregion being "treated."

> Since no more than 0.28% of any life form will be treated annually, bioregion-level effects are expected to be relatively minimal. (PEIR 5.5-65)

We find this kind of thinking not only naive, but disingenuous. It is irrelevant how much of the broad landscape is being treated on an annual basis when there are numerous vegetation communities and specialized habitats found throughout each bioregion that only occupy limited areas. The clearance of the only surviving patch of old-growth chaparral near the town of Pine Valley, as the US Forest Service intended to do in its current Mt. Laguna/Pine Valley HFRA Project in the Cleveland National Forest, cannot be dismissed as insignificant just because it only represents a fraction of the total chaparral in the entire bioregion.

Thinking on a percentage and annual basis also precludes seriously considering the cumulative impacts over time.

The PEIR only considers "treatment" programs conducted by other agencies and timber harvest activities. It does not include the impact of increased fire frequency on ecosystems, such as chaparral, already impacted by such a trend. Such an approach precludes a proper analysis of cumulative effects.

The PEIR's suggested mitigation measures regarding the spread of invasives that will result when native shrublands type-convert to non-native weedlands due to the Program's "treatments," fail to address resulting significant impacts of habitat loss. Cleaning the tires of clearance equipment, making sure the canopy cover of trees (where present) is at least 60% for shade, and informing local groups interested in noxious weed control (PEIR 5.5-112) to prevent the spread of invasives are not adequate.

The PEIR does recommend the "development of project level management measures and implementation methods are necessary to minimize likelihood of type conversion" (6-59), but this is in context of sagebrush steepe plant communities. It also is in alignment with the questionable assumption that underlies the PEIR. Namely, the "encroachment" of junipers due to fire suppression. While there is evidence that fire suppression may have allowed the spread of trees into the steepe, many of the management responses are extremely controversial, such as dragging massive chains across the steepe plant community to rip up junipers and sagebrush for range "improvement."

To defer a proper plan "to minimize the likelihood of type conversion" to the project level will prevent a proper analysis of the Program's cumulative effects.

To properly evaluate the cumulative impacts of the Program, the PEIR should have examined the *total* impact of all fire on the landscape, not dismiss such impacts by indicating, among other things, that the average size of its treatments (approx 260 acres) is not big enough to have significant impacts on the region.

For example, the PEIR seems to totally dismiss the potential impact on migratory birds when there is no indication in the proposed Program that clearance operations will not occur between February and September to protect bird nests.

> Significance criteria 1C. Interfere substantially with the movement of any native resident or migratory species or with established native resident or migratory species corridors, or impede the use of native species nursery areas; and permanently alter the habitat value of established wildlife corridors. (PEIR 6-60)
>
> Determination of Significance. *Based on average size of VTP prescribed burn project area (260 acres),* frequency of occurrence, and expected spatial distribution, the cumulative impact of VTP with other related actions is considered less than significant with adopted implementation and mitigation measures when assessed at the scale of a bioregion. (PEIR 6-65) *Emphasis added.*

Mitigations for cumulative impacts? The standard response in the PEIR is "none required." We find such findings in complete opposition to standard practices and in violation of the Migratory Bird Treaty Act and California State law. We provide an alternative mitigation measure in appendix I.

The first step in determining the cumulative impact of the proposed Program is to conduct a statewide evaluation of native shrublands and provide a reliable estimate of how many acres have been type converted historically, how much is currently threatened, and what impact the Program, development, increased fire frequency, and climate change may have on existing shrublands. Otherwise, any conclusions relating to the cumulative environmental impacts of a vegetation treatment program will be questionable.

The photo above demonstrates the impacts from one type of "fuel treatment" proposed in the PEIR. A rich, old-growth stand of chaparral in Santa Barbara County is being systematically compromised by clearance activities funded by a local FireSafe chapter. The foreground represents the impact of mastication showing significant soil disturbance. In the background, the longer-term impact of earlier treatments show the invasion and spread of highly flammable, non-native weeds and grasses. This process has increased the ignitability of this area with the addition of flashy fuels.

Additional pictorial examples of habitat clearance projects for the purpose of "treating fuels" can be found in the following albums:

Cuyamaca State Park:
https://plus.google.com/photos/111832478062101189732/albums/5794481180501585377

Cuyamaca State Park II:
https://plus.google.com/photos/111832478062101189732/albums/5795096192589480961

Clearance activities near and within the Los Padres National Forest:
https://plus.google.com/photos/111832478062101189732/albums/5512793492339288961

Clearance projects in the Cleveland National Forest:
https://plus.google.com/photos/111832478062101189732/albums/5444493002476885681

9. Inadequate Alternatives

As per CEQA (15126.6), "An EIR shall describe a range of reasonable alternatives to the project,... which would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project, and evaluate the comparative merits of the alternatives."

The only alternatives provided in the PEIR are variations on the amounts and types of treatment types used. Also, we reject the conclusion that "no alternative would create a potential increase in wildfire extent/severity..." (PEIR 5.2-14). The spread of invasive grasses that will likely result when shrublands are subject to the Program's "treatments" has been shown not only to increase the potential for ignitions, but to lengthen the fire season (Brooks et al. 2004). The PEIR has not provided any evidence that such a change would not increase wildfire extent, let alone an increase in the number of fires.

To achieve the CEQA requirement, the BoF's primary goal to "enhance the protection of lives, property and natural resources from wildland fire," and to conform to the PEIR's purpose "to analyze the environmental effects of the VTP, to indicate ways to reduce or avoid potential environmental damage resulting from the program, and to identify alternatives to the proposed program," there needs to be a **Wildland-Urban Interface (WUI) alternative.** The WUI alternative would take a comprehensive approach that focuses on *community and regional planning, ignitability of structures, and fuel modifications directly within and around communities at risk.*

There is an abundant amount of scientific research indicating that focusing vegetation treatment, as this PEIR does, as the preferred method to protect lives, property, and the environment from wildland fire is a failed policy. This was made clear during the 2007 Witch Creek Fire, among many others, in which more than 1,100 homes were destroyed and two people were killed. According to a comprehensive study from the Institute for Business and Home Safety (2008), "Wind-blown embers, which can travel one mile or more, were the biggest threat to homes in the Witch Creek Wildfire. There were few, if any, reports of homes burned as a result of direct contact with flames" from wildland fuels.

A much broader study (Syphard et al. 2012) confirmed and expanded upon this finding by examining data on 700,000 addresses in the Santa Monica Mountains and part of San Diego County. The researchers mapped the structures that had burned in those areas between 2001 and 2010, a time of devastating wildfires in the region.

Buildings on steep slopes, in Santa Ana wind corridors, and in low-density developments intermingled with wild lands were the most likely to have burned. **Nearby vegetation was not a big factor in home destruction.**

Looking at vegetation growing within roughly half a mile of structures, the authors concluded that **the exotic grasses that often sprout in areas cleared of native habitat**

like chaparral could be more of a fire hazard than the shrubs. "We ironically found that homes that were surrounded mostly by grass actually ended up burning more than homes with higher fuel volumes like shrubs," Syphard said.

It is the houses themselves, their location, and the fuels within 120 feet of those houses (including litter in gutters, yard junk, cultivars like palms and acacia, wood piles, etc.), that determines whether the property is vulnerable to fire.

Dr. Jack Cohen (2000), a research scientist with the US Forest Service, has concluded after extensive investigations that home ignitions are not likely unless flames and firebrand ignitions occur within 120 feet of the structure. His findings have shown that,

> …effective fuel modification for reducing potential WUI (wildland/urban interface) fire losses need only occur within a few tens of meters from a home, not hundreds of meters or more from a home. This research indicates that home losses can be effectively reduced by focusing mitigation efforts on the structure and its immediate surroundings (Cohen 1999).

Cohen's work is consistent with the research on homes with nonflammable roofs conducted by other scientists. During WUI wildland fire events, Foote and Gilless (1996) at Berkeley found an 86 percent home survival rate for homes with a defensible space of 84 feet.

The lack of a WUI alternative is surprising, especially in light of discussions within the Board of Forestry and Fire Protection itself. During a 2005 meeting of the Range Management Advisory Committee (RMAC), participants discussed strategies focused on actual assets at risk rather than landscape level "fuel treatments" of the type the current PEIR is proposing. The following is taken from the minutes of that meeting:

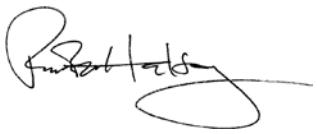
> Jeff Stephens asked to speak to RMAC as the VMP (Vegetation Management Program) Manager versus that of the RMAC Executive Secretary. He outlined three points for consideration by RMAC:
>
> • First, the original goals developed when VMP was created were developed in a different political and environmental climate than what exists today. Rather than eliminate the program perhaps what is needed is a reevaluation of the goals given the politics and environmental concerns of today.
>
> • Second, the VMP has historically been a prescribed fire program. Perhaps what is needed is a program that is more diverse in the type treatments, vegetation types, and circumstances where it may be used. This is a goal of the VMP PEIR.
>
> • Third, when developing recommendations to the Board RMAC may wish to consider the views of some researchers like Jon Keeley, who maintain that the fires that occurred in the south during October 2003 would have occurred regardless of vegetative stand age or structure developed via fuel treatments. This

> is because these fires occur under extreme fire weather events associated with low fuel moisture. **Therefore it is not a good use of resources to perform large landscape fuel reduction projects; rather it is more useful to concentrate efforts near the values to be protected** (RMAC 2005).

We urge the Department of Forestry and CalFire to retract this PEIR and create a **comprehensive program** as referenced above reflecting specific, regional differences, actual assets at risk, and current science without an attempt to exempt its projects from CEQA. In only this way will the state achieve the Program's key goal of preventing loss of lives, reducing fire suppression cost, reducing private property losses and protecting natural resources from devastating wildfire.

As a final note, while the protection of life and property will always be the primary focus of any fire management program, all too often the natural environment is viewed only as a "fuel" that needs to be mitigated, especially shrubland ecosystems. This often leads to decisions on the fire line and during vegetation management activities that have seriously compromised the natural environment. **Valuable natural resources such as old-growth chaparral, intact habitat, and important wildlife corridors need to be seen for what they are, assets at risk.**

Sincerely,



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The California Chaparral Institute is a non-profit science and educational organization dedicated to promoting an understanding of and appreciation for California's shrubland ecosystems, helping the public and government agencies create sustainable, fire safe communities, and encouraging citizens to reconnect with and enjoy their local, natural environments. www.californiachaparral.org.

Literature Cited

Atwood, J. L, A.D. Pairis, M.R. Fugagli, and C.A. Reynolds. 2002. Effects of Fire on California Gnatcatcher Populations on Camp Pendleton Marine Corps Base. Final Report. Report submitted to Marince Corps Base Camp Pendleton pursuant to requirements of Contract No. N68711-98-LT-80045.

Bond, M.L., R.B. Siegel, R.L. Hutto, V.A. Saab, and S.A. Shunk. 2012. A New Forest Fire Paradigm. The Wildlife Professional. Winter 2012. The Wildlife Society.

Bond, M.L., D.E. Lee, C.M. Bradley, and C.T.Hanson. 2009. Influence of pre-fire tree mortality on fire severity in conifer forests of the San Bernardino Mountains, California. The Open Forest Science Journal 2:41-47.

Brooks, M.L., C.M. D'Antonio, D.M. Richardson, J.M. DiTomaso, J.B. Grace, R.J. Hobbs, J.E. Keeley, M. Pellant, D. Pyke. 2004. Effects of invasive alien plants on fire regimes. Bioscience 54:677-688.

California Fire Plan. 1996. The California Board of Forestry.

Cannon,S. H. , Gartner, J. E., Rupert, M. G. , Michael, J. A., Staley, D. R. and Worstell, B. B. 2009. Emergency asssessment of postfire debris-flow hazards for the 2009 Station Fire, San Gabriel Mountains, Southern California: , U.S. Geological Survey Open-File Report 2009-1227, 24 p.

CEQA Tool Box. Website: http://www.calrecycle.ca.gov/SWFacilities/Permitting/ceqa/Documents/EIR/Types.htm#Program.

Cohen, J.D. 1999. Reducing the wildland fire threat to homes: where and how much? USDA Forest Service Gen. Tech. Report PSW-GTR-173, pp 189-195.

Cohen, J.D. 2000. Preventing disaster: home ignitability in the wildland-urban interface. Journal of Forestry 98: 15-21Cohen, J. and J. Saveland. 1997. Structure ignition assessment can help reduce fire damages in the W-UI. Fire Mgt. Notes 57:19-23.

Cohen, J.D. and R.D. Stratton. 2008. Home Destruction Examination. Grass Valley Fire. Lake Arrowhead, CA. R5-TP-026b. http://www.fs.fed.us/r5/fire/management/fuels/12san-grasval-hd-email.pdf

Evett, R.R., R.A. Woodward, W. Harrison, J. Suero, P. Raggio, and J.W. Bartolome. 2003. Phytolith evidence for the lack of a grass understory in a giant sequoia (Sequoiadendron giganteum) stand in the central Sierra Nevada, California: A report to Save-the-Redwoods League. The University of California, Berkeley.

Fire Management Plan FEIS Santa Monica Mts. 2005.

Foote, E., J.K. Gilless. 1996. Structural survival. In Slaughter, Rodney, ed. California's I-zone, 112-121. Sacramento, CA: California Fire Service Training and Education System.

Fotheringham, C.J. 2012. Personal communication.

Gartner, J. E., Cannon, S. H. , Helsel, D. R., and Bandurraga M. 2009. Multivariate Statistical models for predicting sediment yields from Southern California watersheds: , U.S. Geological Survey Open-File Report 2009-1200, 42 p.

Halsey, R.W. 2012. The politics of fire, shrubs, and Bureaucracies. The Chaparralian Vol. 8, Issue 3/4.

Halsey, R.W. 2011. Chaparral as a natural resource: changing the conversation about chaparral and fire. In Proceeding, CA Native Plant Society Conservation Conference, 17-19 Jan. 2009: 82-86.

Hubbert, K.R., H.K. Preisler, P.M. Wohlgemuth, R.C. Graham, M.G. Nargog. 2006. Prescribed burning effects on soil physical properties and soil water repellency in steep chaparral watershed, southern California, USA. Geoderma 130: 284-298.

Institute for Business and Home Safety. 2008. Mega Fires: The Case for Mitigation. The Witch Creek Wildfire, October 21-31, 2007.

Keeley, J.E. 2009. In Halsey: Chaparral as a Natural Resource Proceedings of the CNPS Conservation Conference, 17–19 Jan 2009 pp. 82–86.

Keeley, J.E. 2006. Fire management impacts on invasive plants in the western United States. Conservation Biology 20: 375-384.

Keeley, J.E. 2005. Chaparral fuel modification: What do we know – and need to know? Fire Management Today, Volume 65(4): 11-12.

Keeley, J.E. and T.J. Brennan. 2012. Fire-driven alien invasion in a fire-adapted ecosystem. Oecologia 169: 1043-1052.

Keeley, J.E., J.F. Franklin, C. D'Antonio. 2011. Fire and invasive plants on California landscapes. In D. McKenzie et al. (eds.), The Landscape Ecology of Fire, Ecological Studies 213. Springer Science + Business Media B.V.

Keeley, J.E. and P.H. Zedler. 2009. Large, high-intensity fire events in southern California shrublands: debunking the fine-grain age patch model. Ecological Applications 19: 69-94.

Keeley, J.E., H. Safford, C.J. Fotheringham, J. Franklin, and M. Moritz. 2009a. The 2007 southern California wildfires: Lessons in complexity. Journal of Forestry 107:287-296.

Keeley, J.E.; Aplet, G.H.; Christensen, N.L.; Conard, S.C.; Johnson, E.A.; Omi, P.N.; Peterson, D.L.; Swetnam, T.W. 2009b. Ecological foundations for fire management in North American forest and shrubland ecosystems. Gen. Tech. Rep. PNW-GTR-779. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. 92 p.

Keeley, J.E., T. Brennan, and A.H. Pfaff. 2008. Fire severity and ecosystem responses following crown fires in California shrublands. Ecological Applications 18: 1530-1546.

Keeley, J.E., A.H. Pfaff, and H.D. Safford. 2005. Fire suppression impacts on postfire recovery of Sierra Nevada chaparral shrublands. International Journal of Wildland Fire 14: 255-265.

Keeley, J.E. and C.J. Fotheringham. 2005. Alien plant dynamics following fire in Mediterranean-Climate California Shrublands. Ecological Applications 15: 2109-2125.

Keeley, J. E., C. J. Fotheringham, and M. Moritz. 2004. Lessons from the 2003 wildfires in southern California. Journal of Forestry 102: 26-31.

Keeley, J.E., Fotheringham, C.J., Morais, M. 1999. Reexamining fire suppression impacts on brushland fire regimes. Science Vol. 284. Pg. 1829-1832.

Keeley, J.E., A. Brooks, T. Bird, S. Cory, H. Parker, E. Usinger. 1986. Demographic structure of chaparral under extended fire-free conditions. In J.J. DeVries (ed), Proceedings of the Chaparral Ecosystems Research Conference. May 16-17, 1985.

Lombardo, K.J., T.W. Swetnam, C.H. Baisan, M.I. Borchert. 2009. Using bigcone Douglas-fir fire scars and tree rings to reconstruct interior chaparral fire history. Fire Ecology 5: 32-53.

Mell, W.E., S.L. Manzello, A. Maranghides, D. Butry, and R. Rehm. 2010. The wildland-urban interface fire problem - current approaches and research needs. International Journal of Wildland Fire 19: 238-251.

Mensing, S.A., Michaelsen, J., Byrne. 1999. A 560 year record of Santa Ana fires reconstructed from charcoal deposited in the Santa Barbara Basin, California. Quaternary Research. Vol. 51:295-305.

Montygierd-Loyba, T.M., and J.E. Keeley. 1986. Demographic patterns of the shrub Ceanothus megacarpus in an old stand of chaparral in the Santa Monica Mountains. In J.J. DeVries (ed), Proceedings of the Chaparral Ecosystems Research Conference. May 16-17, 1985.

Moritz, M. A. 2003. Spatiotemporal analysis of controls on shrubland fire regimes: age dependency and fire hazard. Ecology 84:351-361.

Moritz, M.A., T.J. Moody, M.A. Krawchuk, M. Hughes, and A. Hall. 2010. Spatial variation in extreme winds predicts large wildfire locations in chaparral ecosystems. Geophysical Research Letters 37, L04801, doi:10.1029/2009GL041735.

Moritz, M.A., J.E. Keeley, E.A. Johnson, and A.A. Schaffner. 2004. Testing a basic assumption of shrubland fire management: Does the hazard of burning increase with the age of fuels? Frontiers in Ecology and the Environment. 2:67-72.

Murphy, K, T. Rich, T. Sexton. 2007. An Assessment of Fuel Treatment Effects on Fire Behavior, Suppression Effectiveness, and Structure Ignition on the Angora Fire. R5-TP-025. http://www.fs.fed.us/r5/angorafuelsassessment/dat/angora-entire.pdf

National Marine Fisheries Service, 2005. Biological Opinion on Implementation of the Los Padres and Cleveland National Forests Land and Resource Management Plan, p16.

Odion, D.C., and C.T. Hanson. 2008. Fire severity in the Sierra Nevada revisited: conclusions robust to further analysis. Ecosystems 11: 12-15.

Odion, D.C., M.A. Moritz, D.A. DellaSala. 2009. Alternative community states maintained by fire in the Klamath Mountains, USA. British Ecological Society. Journal of Ecology

O'Leary, J.F. 1995. Coastal Sage Scrub: Threats and Current Status. Fremontia 23(4): 27-31Kirkpatrick J.B and C.F. Hutchinson. 1977. The community composition of Californian coastal sage scrub. Vegetation 35:21-33.

Parisien, M.A. and M.A. Moritz. 2009. Environmental controls on the distribution of wildfire at multiple spatial scales. Ecological Monographs 79: 127-154.

Price, W.F., R.A. Bradstock, J.E. Keeley, A.D. Syphard. 2012. The impact of antecedent fire on burned area in southern California coastal ecosystems. Journal of Environmental Management 113: 301-307

RMAC. 2005. Minutes of the January 4, 2005, Range Management Advisory Committee (RMAC). California Board of Forestry and Fire Protection. http://www.bof.fire.ca.gov/board_committees/range_management_advisory_committee/meeting_minutes/2005_range_management_advisory_committee_minutes/rmacminutesjanuary42005veg_fire.pdf

Rogers, G., W. Hann, C. Martin, T. Nicolet. 2008. Fuel Treatment Effects on Fire Behavior, Suppression Effectiveness, and Structure Ignition - Grass Valley Fire. San Bernardino National Forest. USDA. R5-TP-026a.

Rundel, P.W., M.F. Allen, N.L. Christensen Jr., and J.E. Keeley. Open Letter to the Media (Re: Thomas Bonnicksen). October 17, 2006.

Fire Management Plan FEIS Santa Monica Mts. 2005. Final Environmental Impact Statement for a Fire Management Plan. Santa Monica Mountains National Recreational Area, California. US Department of the Interior, National Park Service.

Safford, H. D. and D. Schmidt. 2008. Fire departure maps for southern California national forests. USDA Forest Service and The Nature Conservancy.

Spencer, W., A. Fege, S. Fleury, B. Goff, M.A. Hawke, J.L. Lincer, J. Bezler, A. Johnson, D. Younkman, M. Klein, G. Smith, J. Peugh. 2004. Letter from the San Diego Fire Recovery Network (SDFRN) to the San Diego County Board of Supervisors.

Syphard A.D., Franklin J., Keeley J.E. 2006. Simulating the effects of frequent fire on southern California coastal shrublands. Ecological Applications 16: 1744-1756.

Syphard, A.D., J.E. Keeley, A. Bar Massada, T.J. Brennan, V.C. Radeloff. 2012. Housing arrangement and location determine the likelihood of housing loss due to wildfire. PLoS ONE 7(3): e33954. doi: 10.1371/journal.pone.0033954.

Talluto M.V., Suding K. 2007. Historical change in coastal sage scrub in southern California, USA in relation to fire frequency and air pollution. Landscape Ecology 23: 803-815.

APPENDIX I

Migratory birds are perhaps the most highly valued component of North America's biological diversity, with approximately 1,200 species representing nearly 15% of the world's known bird species. The seasonal movement of migratory birds is one of the most complex and compelling dramas in the natural world. Migratory birds embark twice each year on long-distance journeys between their breeding areas and their wintering grounds, which are sometimes separated by thousands of miles. State, federal, and international law all recognize the importance of protecting migratory bird species from harm.

Pursuant to the MBTA, it is unlawful "at any time, by any means or in any manner to . . . take [or] kill . . . any migratory birds, [and] any part, nest, or eggs of any such bird." 16 U.S.C. § 703(a). This prohibition applies to federal agencies and their employees and contractors who may not intend to kill migratory birds but nonetheless take actions that result in the death of protected birds or their nests. *Humane Soc'y of the United States v. Glickman*, 217 F. 3d 882 (D.C. Cir. 2000) (holding that federal agencies are required to obtain a take permit from FWS prior to implementing any project that will result in take of migratory birds); see also *Robertson v. Seattle Audubon Soc'y*, 503 U.S. 429, 437–38 (1992) (finding that federal agencies have obligations under the MBTA) and *Center for Biological Diversity v. Pirie* (191 F.Supp.2d 161 (D.D.C. 2002) (allowing injunctive relief against federal agencies for violations of the MBTA). The prohibition on "take" of migratory birds includes destruction of nests during breeding season. Specifically, "nest destruction that results in the unpermitted take of migratory birds or their eggs, is illegal and fully prosecutable under the MBTA." U.S. Fish and Wildlife Service, Migratory Bird Permit Memorandum, from Director Steve Williams dated April 15, 2003.

In a *Memorandum of Understanding Between the U.S. Department of Agriculture Forest Service and the U.S. Fish and Wildlife Service to Promote the Conservation of Migratory Birds* ("MOU"), the agencies identified specific actions that, if implemented, would contribute to the conservation of migratory birds and their habitats. The MOU requires the Forest Service to alter the season of activities to minimize disturbances during the breeding season, to coordinate with the appropriate FWS Ecological Services office when planning projects that could affect migratory bird populations, and to follow all migratory bird permitting requirements. Importantly, the MOU "does not remove the Parties' legal requirements under the MBTA, BGEPA, or other statutes and does not authorize the take of migratory birds," (emphasis added).

Under the MBTA, "any person, association, partnership, or corporation" who violates the MBTA or regulations thereunder are subject to criminal and civil penalties. 16 U.S.C. §707. Violations of the MBTA are prosecuted as a misdemeanor, and upon conviction thereof, are subject to fines of up to $15,000 or imprisonment of up to six months, or both. *Id.*

Requirements of the California Fish & Game Code

In addition to the protections afforded by the federal MBTA and outlined above, several bird species within the project area are also protected under state law. Specifically, "[i]t is unlawful to take, possess, or needlessly destroy the nest or eggs of any bird," and "it is unlawful to take or possess a migratory nongame bird." *See* Cal. Fish & Game Code §§ 3503, 3513.

To mitigate the potential take of migratory bird nests, we recommend that the following mitigation measure be implemented for all vegetation clearing projects:

Source: Southern California Association of Governments. 2012. Final Programmatic Environmental Impact Report for the 2012-2035 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS), Appendix G: Examples of Measures that Could Reduce Impacts from Planning, Development and Transportation Projects.

BIO/OS34: Project sponsors may ensure that suitable nesting sites for migratory nongame native bird species protected under the Federal Migratory Bird Treaty Act and/or trees with unoccupied raptor nests (large stick nests or cavities) may only be removed prior to February 1, or following the nesting season.

A survey to identify active raptor and other migratory nongame bird nests may be conducted by a qualified biologist at least two weeks before the start of construction at project sites from February 1st through August 31st. Any active non-raptor nests identified within the project area or within 300 feet of the project area may be marked with a 300-foot buffer, and the buffer area may need to be avoided by construction activities until a qualified biologist determines that the chicks have fledged. Active raptor nests within the project area or within 500 feet of the project area may be marked with a 500-foot buffer and the buffer avoided until a qualified biologist determines that the chicks have fledged. If the 300-foot buffer for non-raptor nests or 500-foot buffer for raptor nests cannot be avoided during construction of the project, the project sponsor may retain a qualified biologist to monitor the nests on a daily basis during construction to ensure that the nests do not fail as the result of noise generated by the construction. The biological monitor may be authorized to halt construction if the construction activities cause negative effects, such as the adults abandoning the nest or chicks falling from the nest.

- Beginning thirty days prior to the disturbance of suitable nesting habitat, the project sponsor may arrange for weekly bird surveys conducted by a qualified biologist with experience in conducting breeding bird surveys to detect protected native birds occurring in the habitat that is to be removed and any other such habitat within 300 feet of the construction work area (within 500 feet for raptors) as access to adjacent areas allows. The last survey may be conducted no more than 3 days prior to the initiation of clearance/construction work.

- If an active raptor nest is found within 500 feet of the project or nesting habitat for a protected native bird is found within 300 feet of the project a determination may be made by a qualified biologist in consultation with CDFG whether or not project construction work will impact the active nest or disrupt reproductive behavior.

- If it is determined that construction will not impact an active nest or disrupt breeding behavior, construction will proceed without any restriction or mitigation measure. If it is determined that construction will impact an active raptor nest or disrupt reproductive behavior then avoidance is the only mitigation available. Construction may be delayed within 300 feet of such a nest (within 500 feet for raptor nests), until August 31 or as determined by CDFG, until the adults and/or young of the year are no longer reliant on the nest site for survival and when there is no evidence of a second attempt at nesting as determined by a qualified biologist. Limits of construction to avoid a nest may be established in the field with flagging and stakes or construction fencing marking the protected area 300 feet (or 500 feet) from the nest. Construction personnel may be instructed on the sensitivity of the area.

- Documentation to record compliance with applicable State and Federal laws pertaining to the protection of native birds may be recorded.