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Jon E. Keeley, Station Leader

TO: San Diego Fire Recovery Network
FROM: Jon E. Keeley, Research Scientist
RE: Report review
DATE: January 17, 2004

Thank you for sending me the report entitled "Mitigation Strategies for Reducing Wildland Fire Risks" prepared for the Board of Supervisors by the San Diego County Wildland Fire Task Force, August 13, 2003. Before using this report I believe there are some issues that you should consider.

In overview, the Wildland Fire Task Force report does not adequately reflect the full range of scientific results that are pertinent to the question of wildland fire risks and management options in San Diego County. It ignores a vast body of scientific literature bearing directly on how to effectively reduce threats of catastrophic fires in shrubland ecosystems, including numerous books and papers published in prominent scientific journals like *Science*, *Nature*, *Ecology*, *Conservation Biology*, and *Environmental Management*. This report contains an undeniable bias against work that suggests vigorous and expensive fuel manipulations in the backcountry of San Diego are not an effective means of reducing the current fire hazard situation at the urban / wildland interface. For example, within the past 5 years I have published more than 10 peer-reviewed articles in national scientific journals that presented evidence directly dealing with southern California and questioning the cost-effectiveness of broad landscape-scale prescription burning. None of these papers were cited. The only reference to this work was a fictitious bibliographic entry under a title that I have never published and with a combination of co-authors with whom I have never published any article. This citation lists Dr. E.A. Johnson, a respected ecologist and elected member of the Ecological Society of America's Board of Directors. He, like myself and others, has independently found that widespread prescription burning is neither ecologically sound nor cost effective for crown fire ecosystems such as chaparral. This fictitious citation seems a contrivance to lump together scientists who disagree with the inherent bias of this task force, namely concluding there is a need to do backcountry prescription burning and other fuel manipulations. This is particularly disturbing because my research papers, and those of others ignored in the report, have many positive suggestions for the most strategic and cost effective means of dealing with catastrophic wildfires. To ignore these ideas diverts funds away from other management activities that can make a difference.

This fictitious citation is only one of several fictitious entries in the bibliography and in part reflects a failure to respect the importance of a document such as this one, which is being used as a basis for county-wide management recommendations to reduce risks to human property and safety. Also reflective of this are quite a number of blatant errors of fact in the report. An example is illustrated on page 8 where it states that "Peng and Schoenberg... concluded that statistically, fuel was the limiting factor." However, the Peng and Schoenberg study showed that, while stands less than 20 years of age had a lower probability of burning, after that there was no significant effect of fuel age. This does not translate into the message that fuels need to be managed throughout the landscape. In a recent email communication (January 10, 2004) Dr. Schoenberg has verified that the Task Force report misinterprets his findings.

Also, the report is sloppy in its treatment of facts, and we suggest that every fact be verified before accepting it for what the report claims. Here are just a few examples: (1) on page 8, the report states that Peng and Schoenberg's work provides "a dramatic illustration of the difference between a landscape shaped with almost no fire suppression activity in Baja California compared to San Diego..."; however, Peng and Schoenberg never provided any data on

Baja and the figure ascribed to them is not theirs. (2) Peng and Schoenberg are purported to have “analyzed the Los Angeles Malibu fire regime.” This is not true. (3) The acreages burned shown in Figure 1 are about 5 times smaller than what is reported by the California Division of Forestry and Fire Protection Statewide Fire History Database and as reported in the journal *Science* (1999; Volume 284, pages 1829-1832). Also, (4) the legend in their Figure 5 claims that this figure shows fire size, but as shown in the key embedded within the figure, what is actually depicted are 5-year age-classes of vegetation. Any apparent fire in this figure is in fact an area that could have burned by multiple different fires during a 5-year period. This mistake greatly affects any conclusions about fire size drawn from these data.

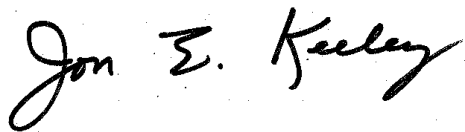
In addition to factual errors, the report makes some important conceptual mistakes that should be clarified. For example the report states, “By the early twentieth century, fire exclusion was the accepted practice.” The practice was that of fire *suppression*, not exclusion, and only on certain forested landscapes has suppression actually resulted in fire exclusion. The fire history record for San Diego County shows that, despite a century of heroic efforts at putting out fires, the fire suppression policy has not even come close to fire exclusion. When fire scientists in the Western U.S. talk about fire exclusion resulting from our fire suppression policy, they are talking about landscapes where fires really have been excluded, such as many yellow pine forests, thus allowing unnatural fuel accumulation. This does apply to some high elevation coniferous forests in the county, but fire exclusion has not occurred in the foothills and coastal plain of San Diego County and this is well illustrated by their Figure 1.

I could provide a long litany of other mistakes in this report but it makes little sense to try and correct this document. It would be better to start from scratch with a more complete and balanced report. The report has an agenda: to demonstrate that widespread fuel manipulations are the only way to protect property and lives. To do this the report attempts to downplay the importance of weather to wildfire behavior. The authors’ analysis is not an accurate portrayal of the issue because they have the inherent belief that only autumn Santa Ana wind-driven fires are controlled by weather and summer fires are purely controlled by fuels. This is not true. Just take for example the Pines Fire , which they portray as unaffected by weather, yet the LA Times reported “extremely low humidity, temperatures near 90 degrees, ... and [because of] gusts of wind embers skipped a mile ahead of the fire, starting new hot spots” (August 7, 2002). In general, the most catastrophic wildfires in southern California are weather-driven events, and fuel treatments when applied in the backcountry seldom stop these fires. The primary value of fuel treatments is to reduce fire intensity and increase the ability of fire fighters to approach the fire and put it out. As a result, treatments need to be strategically located where they help firefighters save homes, and the most cost-effective use of these expensive treatments is at the urban/wildland interface.

Lastly, let me suggest one of many unfortunate omissions in this report is its failure to examine the excellent US Forest Service book released in 1999 entitled “Southern California Mountains and Foothills Assessment” (General Technical Report PSW-GTR-172) by Stephenson and Calcarone. These authors thoroughly reviewed all pertinent scientific information on fire and resources in the region. While I don’t necessarily agree with all of their assessments, I do heartily endorse that report as a fair and accurate study of fire issues in the region.

Attached is a brief vitae with relevant publications.

Sincerely,

A handwritten signature in black ink that reads "Jon E. Keeley". The signature is written in a cursive, slightly slanted style.

Dr. Jon E. Keeley

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Education: Ph.D. (Botany) University of Georgia, Athens, 1977
B.S & M.S. (Biology) San Diego State University, 1971, 1973

Positions: U.S. Geological Survey, (GS-15 series 0408), 1998–present
University of California, Los Angeles, Adjunct Full Professor, 2001-present
National Science Foundation, Program Director 1997–1998
Occidental College, Biology Professor 1977–1998

Awards: Guggenheim Fellow, 1985–1986
Fellow, Southern California Academy of Sciences, 1994
Honorary Lifetime Member, California Botanical Society, 1998

Selected Publications:

- Keeley, J.E., C.J. Fotheringham, and M. Morais. 1999. Reexamining fire suppression impacts on brushland fire regimes. *Science* 284:1829-1832.
- Keeley, J.E., G. Ne'eman, and C.J. Fotheringham. 1999. Immaturity risk in a fire-dependent pine. *Journal of Mediterranean Ecology* 1:41-48.
- Keeley, J.E. and C.J. Fotheringham. 2001. The historical role of fire in California shrublands. *Conservation Biology* 15:1536-1548.
- Keeley, J.E. and C.J. Fotheringham. 2001. History and management of crown-fire ecosystems: A summary and response. *Conservation Biology* 15:1561-1567.
- Keeley, J.E. 2002. Native American impacts on fire regimes in California coastal ranges. *Journal of Biogeography* 29:303-320.
- Keeley, J.E. 2002. Fire management of California shrubland landscapes. *Environmental Management* 29:395-408.
- Keeley, J.E. 2002. Fire and invasives in mediterranean-climate ecosystems of California, pp. 81-94. In T.P. Wilson and K.E.M. Galley (eds) *Proceedings of the Invasive Species Workshop: The Role of Fire in the Control and Spread of Invasive Species*. Tall Timbers Research Station, Tallahassee, FL.
- Keeley, J.E. 2002. Fire management of California shrublands, pp. 175-189. In K.S. Blonksi, M.E. Morales, and T.J. Morales (eds) *Proceedings of the California's 2001 Wildfire Conference: 10 years After the 1991 East Bay Hills Fire*. University of California Forest Products Laboratory, Technical Report 35.01.462, Richmond, CA.
- Keeley, J.E., D. Lubin, and C.J. Fotheringham. 2003. Fire and grazing impacts on plant diversity and invasives in the Sierra Nevada. *Ecological Applications* 13:1355-1374.
- Keeley, J.E. and C.J. Fotheringham. 2003. Impact of past, present, and future fire regimes on North American Mediterranean shrublands, pp. 218-262. In T.T. Veblen, W.L. Baker, G. Montenegro, and T.W. Swetnam (eds), *Fire and Climatic Change in Temperate Ecosystems of the Western Americas*. Springer, New York.
- Keeley, J.E. and C.J. Fotheringham. 2003. Historical fire regime in southern California. *Fire Management Today* 63(1):8-9.