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RECOVERING FROM THE FIRES: RESTORING AND PROTECTING COMMUNITIES, WATER, WILDLIFE AND FORESTS IN SOUTHERN CALIFORNIA

OVERSIGHT FIELD HEARING

BEFORE THE

SUBCOMMITTEE ON FORESTS AND FOREST HEALTH

OF THE

COMMITTEE ON RESOURCES
U.S. HOUSE OF REPRESENTATIVES

ONE HUNDRED EIGHTH CONGRESS

FIRST SESSION

Friday, December 5, 2003, in Lake Arrowhead, California

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C O N T E N T S

Page

Hearing held on Friday, December 5, 2003 1

Statement of Members:
- Baca, Hon. Joe, a Representative in Congress from the State of California 5
- Bono, Hon. Mary, a Representative in Congress from the State of California 8
- Calvert, Hon. Ken, a Representative in Congress from the State of California 6
- Lewis, Hon. Jerry, a Representative in Congress from the State of California 4
- Pombo, Hon. Richard W., a Representative in Congress from the State of California 1
  - Prepared statement of 3
- Radanovich, Hon. George P., a Representative in Congress from the State of California 7
- Walden, Hon. Greg, a Representative in Congress from the State of Oregon 7

Statement of Witnesses:
- Barrett, Alan L., Council Member, Viejas Band of Kumeyaay Indians 65
  - Prepared statement of 67
- Barry, Chips, Director, Denver Water Department 36
  - Prepared statement of 40
- Bonnicksen, Thomas, Ph.D., Professor, Department of Forest Science, Texas A&M University 56
  - Prepared statement of 59
- Bosworth, Dale, Chief, Forest Service, U.S. Department of Agriculture 9
  - Prepared statement of 12
- Brierty, Peter, Fire Marshal, County of San Bernardino 42
  - Prepared statement of 45
- Chrisman, Hon. Mike, Secretary-Designate, California Resources Agency . 15
  - Prepared statement of 18
- Grindstaff, P. Joseph, General Manager, Santa Ana Watershed Project Authority 75
  - Prepared statement of 76
- Kinsinger, Anne, Regional Biologist, Western Region, U.S. Geological Survey 21
  - Prepared statement of 22
- Nenna, Dave, Tribal Administrator, Tule River Tribe 84
- Stephens, Scott, Ph.D., Assistant Professor of Fire Science, Department of Environmental Science, Policy and Management, University of California, Berkeley 68
  - Prepared statement of 71

Additional materials supplied:
- Dreier, Hon. David, a Representative in Congress from the State of California, Statement submitted for the record 92
- Issa, Hon. Darrell, a Representative in Congress from the State of California, Statement submitted for the record 93

OVERSIGHT HEARING ON RECOVERING FROM THE FIRES: RESTORING AND PROTECTING COMMUNITIES, WATER, WILDLIFE AND FORESTS IN SOUTHERN CALIFORNIA

Friday, December 5, 2003
U.S. House of Representatives
Subcommittee on Forests and Forest Health
Committee on Resources
Lake Arrowhead, California

The Subcommittee met, pursuant to call, at 11:13 a.m., in the Lake Arrowhead Resort Ballroom, Lake Arrowhead, California, Hon. Richard Pombo [Chairman of the Committee on Resources] presiding.

Present: Representatives Pombo, Calvert, Walden, Bono, Lewis, Radanovich and Baca.

STATEMENT OF THE HON. RICHARD W. POMBO, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF CALIFORNIA

Mr. POMBO. The Committee is meeting today to hear testimony on Recovering from the Fires: Restoring and Protecting Communities, Water, Wildlife and Forests in Southern California.

We all know the horrible details of last summer's fires here in southern California. The statistics speak for themselves—26 people killed, 3,361 homes destroyed and 739,000 acres burned. But it would be a terrible mistake to think that the damage is over now that the fires are out when in fact some of the most severe environmental consequences may well occur in the coming months and years. The tremendous loss of vegetation and the cooking of soils have exposed the hills to erosion, water runoff may increase and sediments may move downstream and damage houses or fill reservoirs putting endangered species and community water supplies at heightened risk.

We have learned from past fires in other states that the costs associated with post-fire rehabilitation and cleanup can be enormous and we have learned that minimizing these costs requires speedy assessment and action, stabilizing soils and reducing runoff with straw bundles, contour-felled trees, grass seeding, tree planting, enlarging and armoring culverts, building rock barriers and ditches and a number of other treatments.

Decisions concerning what techniques to apply, if any, depend on the characteristics and conditions of each particular site and need

to be made by the specialists of the burned area emergency rehabilitation teams. We will learn today the status of those teams and their activities, and in particular, the Committee will want to ensure that the necessary resources—financial, technical and human—are available and being employed effectively and efficiently.

In our hearing last September, in this very room, we heard that catastrophic fire in this area was not a question of if, but a question of when. This predictive reality has been known by forest scientists for years, if not decades. Inaction in the face of that reality has been tragic. Further inaction will be inexcusable. The conditions that have led to so many of the nation's uncontrollable fires in recent years exists just outside this building—over-dense forests of dead and dying trees and excessive accumulation of brush and woody debris are a tinderbox waiting for a spark.

Two days ago, the President signed the Health Forests Restoration Act into law. Congressman Walden, one of the authors of the bill, and I have worked with the forestry community for years to develop and pass this important legislation and are now poised to make sure that it is implemented quickly and correctly. It has provisions that will allow communities to have more say in the management of surrounding forests and will speed up the decision-making process so that hazardous materials can be removed faster with less red tape and fewer appeals and lawsuits.

While this landmark legislation will not solve all forestry problems, it is the first pro-forestry bill to be signed into law in decades and will make a difference in the management of our forests. I expect our Federal land managers to employ it immediately on the forests in this area and am anxious to hear their plans for doing so.

With the Health Forests Restoration Act becoming law, I believe that we have finally turned the corner away from the benign neglect of our forests to a thoughtful and scientific management, but I am also very much aware that work is left to be done. This law will need to be refined as we learn its inadequacies while other laws such as the Endangered Species Act still need to be addressed. Bringing communities back into the fold is an important first step. Now we must ensure that on-the-ground restoration begins in earnest and on a broad scale.

To begin to address these important issues, I would like to start today by thanking our witnesses and those in the audience for joining us. I would also like to extend my condolences to the families of those who lost their lives as a result of the wildfires and to thank all of the firefighters who risked their lives to protect homes and communities. I would also like to extent my thanks to the Chairman of San Bernardino County Board of Supervisors, Dennis Hansberger, for hosting us once again. Finally, I would like to thank the other members of Congress for attending today. In particular, Representative Lewis, for having us back in his district and for helping secure millions of dollars of appropriations in support of hazardous fuel reduction projects. His direct involvement put California at the front of the line for receiving these Federal funds. I look forward to his continued support and to working with all of you on this important matter.

I would like to recognize Mr. Lewis first for any comments he may have.

[The prepared statement of Mr. Pombo follows:]

Statement of The Honorable Richard Pombo, Chairman, Committee on Resources

We all know the horrible details of last summer's fires here in Southern California; the statistics speak for themselves: 26 people killed, 3,361 homes destroyed, and 739,000 acres burned. But it would be a terrible mistake to think that the damage is over now that the fires are out, when, in fact, some of the most severe environmental consequences may well occur in the coming months and years. The tremendous loss of vegetation and the cooking of soils have exposed the hills to erosion; water runoff may increase and cause flooding; sediments may move downstream and damage houses or fill reservoirs, putting endangered species and community water supplies at heightened risk.

We've learned from past fires in other states that the costs associated with post-fire rehabilitation and clean-up can be enormous, and we've learned that minimizing these costs requires speedy assessment and action; stabilizing soils and reducing runoff with straw bundles, contour-felled trees, grass seeding, tree planting, enlarging and armoring culverts, building rock barriers and ditches, and a number of other treatments.

Decisions concerning what techniques to apply, if any, depend on the characteristics and conditions of each particular site and need to be made by the specialists of the Burned Area Emergency Rehabilitation teams. We'll learn today the status of those teams and their activities and, in particular, the Committee will want to insure that the necessary resources—financial, technical and human—are available and being employed effectively and efficiently.

In our hearing last September, in this very room, we heard that catastrophic fire in this area was not a question of if, but a question of when. This predictive reality has been known by forest scientists for years, if not decades. Inaction in the face of that reality has been tragic; further inaction will be inexcusable. The conditions that have led to so many of the nation's uncontrollable fires in recent years exist just outside this building; over-dense forests of dead and dying trees, and excessive accumulations of brush and woody debris are a tinderbox waiting for a spark.

Two days ago the President signed the Healthy Forests Restoration Act into law. Congressman Walden, one of the authors of the bill, and I have worked with the forestry community for years to develop and pass this important legislation and are now poised to make sure that it is implemented quickly and correctly. It has provisions that will allow communities to have more say in the management of surrounding forests and will speed up decisionmaking processes so that hazardous fuels can be removed faster with less red tape and fewer appeals and lawsuits. While this landmark legislation will not solve all forestry problems, it is the first pro-forestry bill to be signed into law in decades and will make a difference in the management of our forests. I expect our federal land managers to employ it immediately on the forests in this area and am anxious to hear their plans for doing so.

With the Healthy Forests Restoration Act becoming law, I believe that we have finally turned the corner away from the benign neglect of our forests towards thoughtful and scientific management, but I am also very aware that much work is left to be done; this law will need to be refined as we learn it's inadequacies, while other laws, such as the Endangered Species Act, still need to be addressed. Bringing communities back into the fold is an important first step, now we must insure that on-the-ground restoration begins in earnest and on a broad scale.

To begin to address these important issues, I would like to start today by thanking our witnesses and those in the audience for joining us. I would also like to extend my condolences to the families of those who lost their lives as a result of the wildfires, and thank all the firefighters who risk their lives to protect homes and communities. I'd also like to extend my thanks to the Chairman of the San Bernardino City Board of Supervisors, Dennis Hansberger, for hosting us once again. Finally, I'd like to thank the other members of Congress for attending today, in particular, Representative Lewis for having us back to his district and for helping secure millions of dollars of appropriations in support of hazardous fuels reduction projects. His direct involvement put California at the front of the line for receiving these federal funds. I look forward to his continued support and to working with all of you on these important issues.

STATEMENT OF JERRY LEWIS, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF CALIFORNIA

Mr. LEWIS. First, thank you very much, Chairman Pombo, for bringing the Committee here and providing this opportunity for the community to begin to understand the response of the Congress to this tragedy. I would like to say, Mr. Chairman, you were here on September 22, just weeks before a tragedy struck, but we all knew in the offing was not just this challenge but the reality of a potential disaster. We have experienced a significant piece of that disaster, but I know that your Committee members flew by helicopter over the mountains just this morning to look one more time, first at the damage, but the remainder only somewhere at a maximum 10 percent, but more likely five percent of the bark beetle infested trees were impacted by this fire, which means that lightning strike could lead to an inferno tomorrow. The challenge is still very, very much ahead of us. And I do not know how we are going to go about eliminating all of those millions of dead trees, but we must do that and it is going to take years and millions and millions of dollars as well as effort and man-hour support and the like.

Mr. Chairman, as we came in this morning, I noticed some protesters out front with signs who would suggest that maybe we should not cut trees, that maybe there is some way to do this by waving a magic wand. I absolutely feel strongly for those who are concerned about our environment. You know of my past involvement in air quality questions in California myself. I hold no second spot in my mind's eye to this interest. But to have no habitat at all is not acceptable. Today, in my forest, we have eliminated the habitat in the form of tens of thousands of acres of species that we are very concerned about because of a lack of cooperative venture. And perhaps here, starting today, Mr. Chairman, we may have the opportunity to begin a base group of people who will start at ground zero and work hand in hand to try to figure out how you preserve the environment but restore our forests and indeed prevent this tragedy from ever striking this region again, once we have come together to find the solutions necessary.

So thank you very much for being here. I might mention, Mr. Chairman, you mentioned dollars. We were successful in getting a commitment and appropriation of $500 million in the recent supplemental to respond to this challenge. About half of that money has been redirected to the Forest Service so that services can be delivered more rapidly and services that are needed immediately can begin to take place. The Committee, Mr. Chairman, the Conference Committee, said before God and everybody that day that that was only a down-payment. And so indeed, the Federal government is going to be at the plate. But all of us are going to have to share in this at the local community, the fire service agencies, the State of California, the County of San Bernardino—we are all in this together.

So thank you very much for your courtesy and for being with us.

Mr. POMBO. Thank you. Mr. Baca.

STATEMENT OF THE HON. JOE BACA, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF CALIFORNIA

Mr. BACA. Thank you very much, Mr. Chairman. First of all, I want to thank you and I do not know if I was put on the left side because I am the Democrat and everybody else is on the right side, but I really want to thank you and welcome you to our district. We are here to talk about the tragedy that recently changed our lives. And it really has changed our lives. As Congressman Lewis indicated, I believe it is a volcano that is ready to explode at any time if we do not deal with the wildfires in the area that destroyed many of our homes and businesses and devastated our entire community.

As indicated, nearly 740,000 acres were burned, over 3,360 homes were destroyed and 26 people lost their lives. To me, when you lose one life, you have lost too many lives. At one point, nearly 16,000 firefighters risked their safety to help save our forest and protect our lives. We owe a great gratitude to a lot of the firefighters.

If I may have your permission, I would like to have every firefighter that is here from the Forest Service or other, could you please stand and let us give them a round of applause.

[Applause.]

Mr. BACA. These are the men and women really who courageously saved a lot of what could have happened, it could have been worse.

On Wednesday, President Bush signed the Healthy Forest Restoration Act. I have been consistent in supporting the President in this initiative, I am happy that both houses voted on this legislation, though some may see it as a Monday quarterbacking since we were warned for years that this was going to happen. I supported this bill three different times, I supported it in Committee and I supported it on the Floor. Many of us knew that the dead trees left out there were simply matches waiting to be ignited or exploding as volcanoes. I am unhappy that it took a devastating fire like this to pass this law, but now hopefully we have the law in place to make sure that something like this never happens again and I think that is what we are here to talk about, is to look at how we may prevent further damage to our area.

I commend both Chairman Pombo and Congressman McInnis for sending the legislation to the President's desk. But now the fires are over and we need to focus on recovery.

Water quality has always been a major problem in my district. We have consistently had to fight perchlorate contamination and drought. The families in my district have been conserving water for months and many of them are scared to give their babies water from the tap because of the perchlorate. So this is something that also affects us. And now with the fires, they have gotten worse. We are at the risk of ashes and debris creeping in the water supplies in some places like soil which has been scorched that is stopping water from soaking into the ground that is going to have a huge impact on Rialto and the Colden water basin.

I am also concerned about the impact that wildfires have had on Native American tribes in our area, 10 tribes in southern California have suffered damages from the wildfires—San

Pasquale, Dana Mission Indians lost 67 acres of the 68 homes. San Manuel lost 98 percent of its vegetation because of the wildfires.

I hope today we will discuss what Congress can do to help these tribes as part of the community to bounce back from the destruction.

I welcome my colleagues from the Inland Empire and I thank the witnesses for being here today and I look forward to hearing answers to some of the questions and I look forward to working in a bipartisan way to solve this problem because we have all got to come together, this is not a Democratic issue, this is not a Republican issue, this is not an Independent issue, but this is an issue that impacts all of us. And together we can make a difference and we look forward to solving these problems and hopefully we can prevent further damages to our areas and really look at the beautification, because as we flew over the area it was nice to see the beauty of the forests the way it is in some of the areas where it has not been devastated but in some of the areas when you look at it, it was like looking at a dinosaur, empty, shrubs in the area, it does not look pretty.

We are looking forward to restoring that. And when we look at this immediate area, we look at the corridor of I-15 that runs right through this area. What additional damage could have been done to as well because this is where nuclear waste and other transfers go from here to Nevada, through that area. Can you imagine if our firefighters and others had not done what they had done and if at that time there was any transfer of anything, what it could have done to this immediate area? It is not only this area but the effects it could have had in our whole region.

I thank you and I look forward to hearing from the witnesses. Thank you very much, Mr. Chairman.

Mr. POMBO. Thank you. Mr. Calvert.

STATEMENT OF THE HON. KEN CALVERT, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF CALIFORNIA

Mr. CALVERT Thank you, Mr. Chairman, and I want to thank you for having this hearing and I certainly want to thank Congressman Lewis for hosting us here in his Congressional District. I will keep my remarks extremely brief.

I know we want to get to our panels. But I as well as all of us want to thank the courageous firefighters and the first responders. What a fantastic evacuation in the face of a disaster, it could have been a lot worse, as we said, but people were successfully able to get off the mountain. This could have been much worse.

I certainly want to thank you for your efforts on the healthy forest initiative, I think that is a step forward. The work that needs to be done is enormous. As a native of southern California, we have seen these fires which have been a part of our life here in California, but of late, they have become more often and more fierce. So hopefully, with this legislation, we can take positive proactive steps to prevent this from happening.

Certainly I am concerned about the secondary effects of this. Chairing the Water Subcommittee and looking at the precious resource that we have here which is obviously very scarce, as Mr. Baca indicates, we are very concerned about water quality and the

effects off mountain that are going to happen because of flood problems and water quality issues. So that will be of interest also.

But again, thank you for this hearing and look forwards to listening to these panels today. Thank you.

Mr. POMBO. Mr. Radanovich.

STATEMENT OF THE HON. GEORGE RADANOVICH, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF CALIFORNIA

Mr. RADANOVICH. Thank you, Mr. Chairman, for having this hearing today, and to you, Jerry, for hosting it.

I come from the Yosemite part of California and 10 years ago, about 10 or 12 years ago, experienced bark beetle devastation, nothing to what I have seen on the helicopter tour around here. This is amazing. But I think that we have got a valuable tool in the healthy forest initiative because my experience has been when there was the desire to go in and harvest these trees, that the previous Administration would stall in their efforts to go harvest them and there were also lawsuits filed to block the harvesting of this kind of timber until it sat dead in the forest for so long that it was no longer economically viable.

I am looking forward to a good discussion with this panel and others about how that might be avoided this time around, because that is an awful fire danger out there.

I look forward to the testimony and appreciate the hearing being here.

Mr. POMBO. Mr. Walden.

STATEMENT OF THE HON. GREG WALDEN, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF OREGON

Mr. WALDEN. Thank you, Mr. Chairman. As the only non-Californian here on the panel, I appreciate the opportunity to come back. I was here with you September 22. I want to thank Congressman Lewis and you for having this hearing on this very important issue. I think we learned on September 22 what to anticipate in case of fire. We have seen that come into reality.

What we have to do now is evaluate what happens after a fire, because sometimes the consequences are even worse after a fire than before, when you begin to look at water quality issues, habitat issues, flood issues, sediment issues as well as setting up for the next monster fire. That I think is probably my biggest concern, is what do we do now after a fire. The smoke has cleared, the problem may have gotten worse, not better. As I understand it, there is a very small percentage of the diseased trees that actually burned, something less than 10 percent, which means the problem we so identified last fall in September remains and with the other stresses now in the forest, the other burn material that is out there, the fire danger may actually be greater and now you also face the terrible environmental potential of mudslides, sediment and other pollution.

So, Mr. Chairman, I thank you for your great leadership on this. We saw flying up today the result of a no-action alternative. A no-action alternative means you do not do anything, and for many years, many people thought doing nothing in the forest might be

the best thing for the forest. Most of us recognize that was not true. We have a picture now in our minds of the effect of no-action alternatives—this enormous fire, monster fire, catastrophic damage. We cannot just walk away from these forests, these chaparral areas, and expect them to survive unless you want monster fire and great destruction and devastation. And I for one do not want that.

So, Mr. Chairman, thank you for this. I look forward to our witnesses and I look forward to future legislative initiatives to do post-fire what we are now doing with the Healthy Forest Restoration Act for pre-fire activity.

Mr. POMBO. Ms. Bono.

STATEMENT OF THE HON. MARY BONO, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF CALIFORNIA

Ms. BONO. Thank you, Mr. Chairman. It is a pleasure to be here with all of you. I do not sit on the Resources Committee, I am on the Energy and Commerce Committee, but I represent an area that is very similar to this area and that would be Idyllwild, and I know that the photos we are seeing today and much of the discussion will not be focused on Idyllwild, but I would like to remind all of you to think of Idyllwild as we make this discussion.

I would also like to thank Chairman Lewis, who we have worked together so closely on this issue. We flew the area a year ago at least and looked for some solutions and ideas that were really out-of-the-box type of thinking and I commend the Chairman—even though he called Chairman Pombo, Chairman Bono—he probably does not know he did that, but I appreciate the raise in stature over there.

[Laughter.]

Ms. BONO. It is really Jerry's leadership that has been unbelievable as always.

This area, Congressman Lewis, has been near and dear to my heart for my entire life. I grew up in southern California and my first ski run was actually at what used to be called Goldmine, for all of you old timers up here, you remember Goldmine, it was a long time ago, and I really believe the forests are such a critical and essential part of southern California lifestyle and would hate to think of them being gone 1 day, but that reality is here.

Like Congressman Calvert said, I would also like to commend the community for evacuating 58,000 people without a single incident is really something that is amazing to have witnessed, but knowing that that came from within the community as we face this crisis here and in Idyllwild, people have been addressing what can be done from the community's point of view and things like evacuation routes were high on the priority list and you were quite successful at that. And like Congressman Calvert said, I applaud you for that.

But the different twist for me, I am in sort of the way of thinking here that we are still waiting for the other shoe to drop. We had no catastrophic fires over in Idyllwild, but we are still waiting, as are all of you up here. We are waiting for the other shoe to drop. My questions, truly for policymakers in Washington as well as in Sacramento, are how are we best equipped to deal with this, and

Congressman Lewis and I sat with FEMA and asked them for their help a long time ago and tried to press the case that this was a crisis that had already occurred and that FEMA needed to come in and help with this. Unfortunately, on the day of October 24, FEMA came out and said they would not be able to help us and I was a little bit frustrated by the timing, but southern California was ablaze and that FEMA made that statement.

The truth of the matter really is we do need to discuss the roles that both FEMA and OES play in this situation, because we do not want to dilute their responsibilities as they are faced with homeland security and other pressing issues, but how can we best address removing these trees and getting the job done. And I think that is a discussion that we should have perhaps today and certainly back in Washington and Sacramento.

I would also like to add, as we are frustrated perhaps by protesters, I would like to say that I believe multiple voices can be added to this debate. We had very successful legislation that we wrote in the previously 44th District of California when we established the Santa Rosa/San Jacinto National Monument, when we brought together all interested parties—the environmental community sat down with our builders and we came up with wonderful legislation that to this day everybody is very happy with. And I believe if we address this in the same spirit where we come together and have discussions and truly do what is best to move this forward, we can be quite successful and I hope we use the National Monument Act as an example of that spirit.

So I want to again thank you, Mr. Chairman Pombo, for having me here today. Thank you and I yield back.

Mr. POMBO. Thank you. I would like to introduce our first panel of witnesses. We have Chief of the Forest Service Dale Bosworth who is accompanied by Mr. Jack Blackwell and Mr. Gene Zimmerman; the Honorable Mike Chrisman, Secretary-Designate, California Resource Agency; and Ms. Anne Kinsinger, Regional Biologist, Western Region, USGS, accompanied by Mr. Jon Keely, Research Scientist, Western Ecological Research Center.

Before we begin, I would like to ask you to stand. It is customary in the Resources Committee to swear in all of our witnesses, so if you would stand and raise your right hand.

[Witnesses sworn.]

Mr. POMBO. Let the record show they answered in the affirmative.

Let me remind the witnesses that under Committee rules, you must limit your oral statements to five minutes, but your entire written testimony will appear in the record.

I now recognize Chief Bosworth for his statement.

STATEMENT OF DALE BOSWORTH, CHIEF, U.S. FOREST SERVICE, ACCOMPANIED BY JACK BLACKWELL, REGIONAL FORESTER, PACIFIC SW REGION, U.S. FOREST SERVICE and GENE ZIMMERMAN, FOREST SUPERVISOR, U.S. FOREST SERVICE

Mr. BOSWORTH. Thank you, Mr. Chairman. First, I really appreciate the invitation to be here today and to talk about some of the

efforts that we have underway for restoring and protecting the natural resources that were affected by these devastating fires.

I also want to thank you for your leadership in helping to get us the Healthy Forest Restoration Act that was signed into law, as you said, on Wednesday, and thank the rest of the members of the Committee for that help too. It is going to make a big difference. It was a very good day for the Forest Service last Wednesday when the President signed that. So thank you for that.

Now as we concentrate our efforts on some of these National Forest System lands in trying to do this restoration work, I want to also make sure that we all recognize that there were some equally devastating effects of these fires on some of the local people and local communities and we just feel very bad for those people and we want to do all the things that we can in the Forest Service to try to help them.

My statement will focus on the work of my agency, but again, we all know that there has been a tremendous amount and continues to be a tremendous amount of cooperation among all agencies. And as I say, while my statement focuses on the Forest Service, there is lots of other things going on that we recognize. Cooperation began long before the fires and I am very proud of Forest Supervisor Gene Zimmerman here, and his folks for the role that they played in helping the communities become prepared for this situation long before it happened. And I also think it is incredible that 58,000 people were evacuated from the mountain, some of them in the middle of the night without electricity, and that there were no incidents. And that is because of good planning and good leadership. And all the people involved in that should feel very proud as an example for the rest of the country.

There are many examples of heroic work that took place during these fires. They saved homes, they saved lives. But you know, I do not think we ought to be putting our firefighters in a situation where they have to be heroes day after day after day. There is a better way. And that way is restoring these fire dependent ecosystems to a healthy condition.

Our focus at the moment is going to be on restoring and protecting the natural resources after these fires. The work that we are doing here I think may be the most challenging stabilization effort that we have ever been involved in in the Forest Service. We have our very best expertise here available to help, to do what they can.

The chaparral areas where most of the fire occurred is different than the forest types and they require different treatments for both the rehabilitation as well as for risk reduction. So we have always got to be careful that we do not try to think of a one size fits all solution to any of these problems, but we look at the habitat type and the forest types that we are trying to deal with in each area.

The risk remains high in these bark beetle killed areas as we saw on our helicopter trip, because there is so much of that that remains out there and so many more trees that continue to die.

Before these fires were controlled though, while they were still burning, we had teams that were onsite that were evaluating and assessing the work that needed to be done in terms of rehabilitation and restoration. We activated four large burned area

emergency rehabilitation teams, we call them BAER teams. These BAER teams assess and they map the damage that has been caused by these fires and they design and implement rehabilitation plans to help protect life and property and reduce further damage from these fires.

As a result of the fires, ground cover has been burned away, exposing the soil to erosion hazards. This increased hazard exposes homes then that may not have previously been in the pathway of floods or susceptible to flood damage, but may be now. We are stabilizing slopes by spreading thousands of tons of straw mulch, we are digging catchment basins to slow down water, reshaping roads. We are clearing ditches, installing culverts to ensure adequate drainage systems. As you know, more water will run off now because we do not have the ground cover to catch it and so the existing culverts may not be large enough to carry that water, so we need to replace them with larger culverts.

To date, we have approved $9 million toward this effort and we have spent over $2.5 million at this point. Some examples of places that we are doing work—Silverwood Lake is a big concern, it is a major supplier of drinking water to over 12 million people, if I understand that correctly. Much of the forest around the lake was burned in the old fire. We are placing rice straw on hundreds of acres of burned areas there to slow or reduce the ash and the debris movement to the lake.

The Sespe Oil Fields on the Los Padres National Forest is another area where we are concerned. Floods or debris could cut oil and gas transmission lines, and the road system there provides access to feed California condors by the Fish and Wildlife Service on a daily basis. We are stabilizing the road system to reduce the risk to the pipeline and also to assure access to these condors.

So this BAER work is ongoing. We expect to be done generally by mid-December.

I want to say something about the Forest Service's Research and Development Branch. We have what I believe is the best natural resource, and it is the largest natural resource research and development organization in the world. This group is bringing their expertise to southern California to aid in the recovery efforts by assisting the BAER teams in assessing the situation and providing advice. The Pacific Southwest Research Station has laboratories all over California is one of the best in the country. They have some of the brightest scientists there that are here to help and they will do everything they can.

We are also addressing issues of advanced technologies for fire resistant housing, for biomass removal and techniques that homeowners can implement to reduce their risk of wildland fire damage.

There will also be some things that our scientists are doing to try to make sure that we are designing follow up studies so that we can fill in the gaps of knowledge in the science of fire recovery, so we can learn from what happens and what takes place from these efforts.

I do want to point out that emergency stabilization, this BAER work, is focused on short-term actions—short-term actions—to get burned areas through one or two seasons. This work is funded through our fire suppression funds because it is emergency. Now

more rehabilitation work may be necessary over the next several years to ensure that watershed work is maintained, that invasive weeds do not spread, that land is vegetated and key transportation routes and facilities are available. That work is funded through our regular national forest system appropriations.

Now this is important work and we are going to have to set priorities in this work in light of our responsibilities to sustain all of our other Forest Service programs, because we will have to take dollars from other programs to do this longer term restoration work here.

Even after these fires though, we are going to continue to face serious forest and rangeland health issues here and around the rest of the country. Restoring and rehabilitating our fire adapted ecosystems I believe is the most important task that our agency is going to undertake over at least the next decade. And again, the way that we are going to deal with these fires in the long term is by dealing with the forest. It is a forest management problem, not a fire problem.

We have made a commitment to move aggressively in accelerating vegetative treatments that will improve the fire condition class at the landscape level. We will be moving forward in the implementation of the Healthy Forest Restoration Act rapidly so that we can get on the ground and get more of the dollars to the ground to get this work done. We will be working closer with people, closer with the communities in implementing that healthy forest legislation, and that is critical that we have the people with us, that we work together across the landscape, not looking simply at one ownership or another, but looking at it as a landscape and working together to solve the problem. And we will be doing that.

I must say though I was a little disappointed the day after the Healthy Forest Restoration Act was passed when I was looking through some web pages on the computer and saw a couple of environmental web pages that already had documents on how we can litigate and stop any of the projects under the healthy forest legislation. It is disappointing to me because I did not see anything that said how we can maybe make the projects better. Because that is what we ought to all be working at, how can we make the projects better than immediately jumping to how can we stop the projects.

I hope that through effective public participation, effective public involvement, we will be able to bring all of these groups into the fold in how we manage at least the national forests.

Thanks again for the opportunity to be here and we will be happy to answer any questions you might have.

Mr. POMBO. Thank you. Mr. Chrisman.

[The prepared statement of Mr. Bosworth follows:]

Statement of Dale Bosworth, Chief, U.S. Forest Service, United States Department of Agriculture

Introduction

Mr. Chairman, thank you for this opportunity to discuss with your committee the status of our efforts for restoring and protecting the natural resource values that were affected by the recent fire events in Southern California. As we concentrate our efforts on National Forest System lands affected by the fires, we also recognize the equally devastating effects from this disaster on the local population, communities and other land management organizations. The activities now being undertaken by our agency and local, county, state and federal partners may be the most

challenging restoration effort that we have ever encountered. The skill that is needed and the scale of the effort are extraordinary. We are bringing the greatest expertise available to restore the vegetation and soil resources that were affected by the fires as quickly as possible.

Southern California Fire Review

As you were able to see today, the Southern California fires of 2003 were some of the most destructive wildfire events, in terms of structures lost and lives affected, in recent history. In three weeks, wildfires burned over 739,000 acres, 22 people lost their lives as a result of the fires, and 3,623 homes were destroyed. Thirty-five percent of the burned acreage was on National Forest System lands. Five large fires, the Paradise, Piru, Old, Grand Prix and Cedar fires were located on the Angeles, San Bernardino, Los Padres and Cleveland National Forests. The Forest Service spent over $71 million to suppress these fires. Before the fires were fully controlled, we had teams on site evaluating and assessing the work that needed to be done. Today, I would like to describe to you the progress of our current efforts and our goals for the future.

Current Emergency Stabilization Efforts

Emergency stabilization in Southern California is a multi-agency cooperative effort, accomplished across federal, state, private and tribal lands. The Forest Service is coordinating with the Natural Resource Conservation Service, the California Department of Forestry and Fire Protection, the Department of the Interior and local governments to make the emergency stabilization effort as effective and seamless as possible. The Forest Service activated four large Burned Area Emergency Rehabilitation (BAER-pronounced "bear") Teams, one per National Forest, to implement the emergency stabilization work. These teams are the equivalent of twelve normal-sized BAER teams which usually have 6 to 8 members per team. BAER teams are assembled on fires where resources may be at risk. The teams assess and map the damage caused by a fire and design and implement a rehabilitation plan. The goal is to protect life and property and reduce further natural and cultural resource damage.

As a result of the fires, much ground cover has been burned away, exposing the soil to the direct impact of rain. In addition, depending on the severity of the fire, the soil itself may repel water, rather than absorbing it. Less water soaking into the soil makes it difficult for seeds to germinate and for surviving plants to obtain water. These conditions may set the stage for soil erosion and for more rapid flooding when rains occur. Homes that were previously considered not in the path of flood waters will be susceptible to being damaged or lost to floods.

We are working to stabilize slopes scoured bare by the fires. On the ground and from the air, crews will spread thousands of tons of rice straw. The mulching is designed to help speed the growth of grasses whose roots will help stabilize the soil. This effort, however, is not without limitations. Mulching on slopes steeper than 60 degrees can do more harm than good. The straw washes downhill and clogs culverts and storm drains.

Treatments are designed to reduce flood levels and to direct the flood waters away from homes, property and places where people are likely to be. Here in Southern California, catchment basins are used to collect and slow water and debris. We are reshaping roads, clearing ditches and installing culverts to assure that road systems have drainage systems to carry storm water safely and effectively.

Floods often carry debris and mud with them. These debris torrents can damage or destroy critical natural resources, homes and property. Silverwood Lake on the San Bernardino National Forest, supplies drinking water to 12 million people. Much of the forest surrounding the lake was burned in the 91,000 acre Old Fire. During a heavy rain, ash and debris could wash into the lake overloading the filtration and sanitation systems. We are placing hundreds of acres of rice straw on the severely burned areas to slow or reduce the ash and debris movement into the lake.

Other values at risk include the Sespe Oil Fields on the Los Padres National Forest. Floods or debris torrents in the oil field could cut through the oil and gas transmission pipes, causing leaks. The road system that accesses the oil fields also provides access to the U.S. Fish and Wildlife Service National Condor Wildlife Refuge, where the USFWS feeds the condors on a daily basis. If this road system were lost to a flood or debris torrent, the condors would be at risk. We are stabilizing the road system to reduce the risk to the pipelines and assure access to the condors.

Approximately $9 million in (BAER) Forest Service funds have been approved for work on the Southern California Fires. To implement the emergency work as soon as possible, funds are approved incrementally as needs are identified. As of this week we have expended $2.5 million in emergency restoration funds. Recent rains

have had a positive effect by encouraging sprouting and regrowth of vegetation. The moisture has not been heavy enough to increase the damage in the burned areas. We do know that, if heavy winter rains occur, subsequent flooding and mud slides will follow. What we are trying to do now is evaluate where the biggest threats are and limit the damage as much as possible. The work of the BAER teams is expected to be completed by mid-December.

Science and Technology Transfer

As community leaders, citizens, land managers and institutions, such as the insurance industry, assess the situation and begin recovery efforts, it is important that they have the latest and best scientific expertise and information. Our Forest Service Research and Development organization is the largest natural resource research organization in the world. This group is bringing its expertise to Southern California recovery efforts by leading a coalition of scientific and technical organizations to assist the BAER teams in assessing the situation and providing advice and expertise on recovery efforts. We will also be designing follow-up studies to fill in key gaps in the science of fire recovery efforts where we still have information needs. The plan of action developed by these scientific specialists will go well beyond the initial efforts of recovery and stabilization and address such issues as: (1) advanced technologies in fire resistant housing construction; (2) factors impeding the effective implementation of biomass removal; and (3) techniques that homeowners can implement to reduce their risk within the wildland urban interface.

Rehabilitation Efforts

The emergency stabilization (BAER) work is focused on short-term actions to get burned areas through one or two seasons, especially the critical first season. This work is expected to be completed within weeks. Additional rehabilitation work will take place over the next several years to maintain the watershed work started, minimize the spread of invasive weeds into areas disturbed by the fire, revegetate land and keep key transportation routes open.

In addition to the lands burned in Southern California this year, a total of 1.4 million acres were burned on National Forest System lands this year with over 198,000 acres so severely burned that serious erosion hazards were created. The total cost of rehabilitation work in FY 2003 was met through appropriations and by reprioritizing our program of work. We recognize that these long-term rehabilitation needs are important. We will continue to weigh the priorities of this work in light of our responsibilities to sustain our other Forest Service programs to protect, manage and restore resource values on National Forest System lands. The rehabilitation work includes: reforestation, treatments for noxious weeds, wildlife habitat improvement, follow up on erosion and sedimentation mitigation, and rehabilitation of roads and recreation trails.

10-Year Comprehensive Strategy

Mr. Chairman, our expenditures on wildland fire suppression doubled in the last 10 years, illustrating the serious forest and rangeland health problem we face. As bad as the fires were, they burned for the most part in chaparral areas and did not appreciably change the forest health situation on forested lands in Southern California, particularly on the San Bernardino National Forest which has the most serious situation. In the forested areas, much of the remaining unburned acres are still choked with mostly small trees, many of which are dead and dying from drought and bark beetle infestations. Much of these forested lands remain at risk.

In addition we know that brushlands of Southern California are serious fire hazards. We also know that high severity crown fires have been a characteristic of chaparral landscapes for thousands of years and will continue to be. Wildland fire in Southern California and across much of the United States is an integral part of nature. Large chaparral fires tend to burn under very severe drought and high wind conditions that make control difficult or impossible. This does not mean that infrastructure damage is inevitable. Because we have communities and homes adjacent to, and within, these landscapes, we need to work together to reduce the danger through public-private partnerships. Treating vegetation zones around communities, roads and other important infrastructure can be effective when combined with programs where communities implement projects to fire-safe their homes and communities.

We advocate a comprehensive approach to address this and other situations across the country. In cooperation with the Western Governors' Association, our federal, state and tribal partners and interested stakeholders we have developed a 10-year Comprehensive Strategy and Implementation Plan to reduce wildland fire risks to communities and the environment. We are in the second year of implementing this strategy that acknowledges fire's role in the ecosystem. Restoring and

rehabilitating our fire adapted ecosystems may be the most important task that our agency undertakes. The Strategy and Implementation Plan provides a road map for helping communities to protect themselves from the risk of wildland fire.

The Comprehensive Strategy recognizes the need to shift our fire management emphasis from a reactive to a proactive approach. We are moving from treating symptoms towards treating the underlying problems and strategically placing hazardous fuel treatments throughout our nation's forests and rangelands to change large-scale fire behavior.

On the San Bernardino National Forest, implementing this strategy is underway. We have through cooperative efforts, reduced fuels along roadways to provide effective evacuation routes, thinned and removed dead trees, reduced fuel hazards and provided fuel breaks all of which were effective during the recent fires. Additional work remains, on the National Forests in Southern California as well as other areas across the country which are experiencing serious forest health problems.

On December 3rd, the President signed into law the Healthy Forests Restoration Act of 2003, which will give federal agencies needed additional tools to implement the 10-Year Comprehensive Strategy and Implementation Plan. I want to thank you Mr. Chairman for your support and leadership in the development and passage of this vitally important legislation.

The Act authorizes the Forest Service and other federal agencies to work directly with communities at risk in the development of community wildfire protection plans. The Secretaries of Agriculture and of the Interior will consider the recommendations within these community plans when developing an annual program of work. The Act requires the agencies to work collaboratively with local communities and interested parties when developing hazardous fuels reduction projects, and reduces the number of alternatives the agencies are required to conduct environmental analyses for proposed projects. The changes described in the Act should reduce the time span that occurs prior to management actions taking place.

Successful integration of the Healthy Forests Restoration Act in the implementation of the Comprehensive Strategy will result in landscape-scale changes that significantly reduce the potential for large, damaging fires. I, along with our Regional Foresters, have made a commitment to move forward aggressively in accelerating vegetative treatments that improve condition class in fire-adapted ecosystems on National Forest System lands.

I also wish to thank the Congress for providing additional funding in FY 2004 to help meet the challenge of reducing fire risk. In California, $15 million in hazardous fuel reduction funding and $25 million for state and private funding will help the state and local communities reduce wildfire hazards.

Conclusion

We will do our best to rehabilitate and restore the resources that were affected by these fires. I am confident that we have the right talent and teams in place to accomplish this work in cooperation with local and state agencies. At this time, I will be pleased to answer any questions that the committee may have.

STATEMENT OF THE HONORABLE MIKE CHRISMAN, SECRETARY-DESIGNATE, CALIFORNIA RESOURCES AGENCY

Mr. CHRISMAN. Thank you, Chairman Pombo and members of the Committee. It is a pleasure to be here and on behalf of Governor Schwarzenegger, I appreciate the opportunity to testify before this Committee today to discuss the catastrophic wildfires experienced here in California this fall.

Again, as other speakers have said, I appreciate the great efforts of the Chairman and the entire Resources Committee in getting the Healthy Forest Act passed—which, as we know, President Bush signed earlier this week.

Recent wildfires here in southern California have caused devastation on a scale that I have not seen in my lifetime. The lost acreage, the tragic loss of lives and, of course, the dollar cost is yet to be determined, but it is going to be in the hundreds and hundreds of millions of dollars. Beyond that human toll, southern California fires, of course, represent a major environmental catastrophe, the

scale of which we are still to determine. These fires destroyed not only trees, but watershed and habitat for the flora and fauna.

Like others, both on the dais as members and here on the witness stand, I would like to take the opportunity to commend the thousands of individuals who helped fight the fires, 15,000 people contributed to the army of firefighters and medics and logistical supporters and volunteers who helped to eventually extinguish these fires. In the midst of this widespread destruction it is easy to forget the achievements of the Federal, state and other local agencies.

As most of you are aware, former Governor Davis, in consultation with then Governor-elect Arnold Schwarzenegger, named a Blue Ribbon Commission to review the efforts to fight the state's recent wildfires and provide recommendations to prevent destruction from future fires. The Commission will present its recommendations in March of 2004. Andrea Tuttle the State Forester at the Department of Forestry and Fire Protection here in California, will represent the Resources Agency on that Commission and I urge the Committee to include a copy of the Commission's report and recommendations as a part of the hearing record, if we might, please.

The State of California with its Federal and local partners has made great strides in preparing for large scale wildfires and mobilizing resources to react once a fire begins. There is ample examples down in this part of the world in San Bernardino and Riverside Counties where managing fire emergencies through incident command-based, multi-agency organizations have been very successful over time. These organizations, of course, have developed and operate with strategic plans to serve as guiding, planning, preparedness, evacuation response and mitigation activities.

I personally cannot stress enough the importance and strength of the inter-agency cooperation we have experienced with our partners in formulating these preparedness plans. Cooperation between Regional Forester Jack Blackwell, myself, between Forest Supervisor Gene Zimmerman, CDF Units Tom O'Keefe of San Bernardino County and Tom Tisdale of Riverside and between our staffs has simply been tremendous. At every step along the way, Federal, state and county and special districts work together in ways they never experienced before.

The State of California in preparing for these fires, some of the actions that we took:

The California Department of Forestry took a strong role in clearing evacuation routes, reduced the paperwork involved in some of the laws that we have to meet.

The Department of Transportation provided trucks, hauling trees and waste.

The California Integrated Waste Management Board provided expanded use of transfer sites.

The Highway Patrol worked closely with local sheriffs and law enforcement agencies.

And many other examples of excellent cooperation between the various agencies.

Strong inter-agency coordination served California well during the recent fires and I pledge to continue efforts under the Schwarzenegger Administration.

However, while coordinated planning and effective reaction to wildfires is important, this alone does not address the root cause of the problem. California forests are in a state of crisis. Policies of 100 percent fire suppression and no reasonable thinning have left our forests choked full of dead and dying trees, as we have experienced around the Lake Arrowhead area. Some areas around this area, tree densities I am told are in the neighborhood of 400 trees per acre and sometimes more. Scientists estimate historically healthy forests in this region would support only 40 to 50 trees per acre. With a density 10 times historic levels, trees must compete for sunlight and water and as a result more and more trees are stressed out and unable to ward off disease or fire. More importantly, the massive increase in forest density creates a virtual tinderbox of forest fuels I think we have all experienced here and have seen the result of it.

Recent drought has, of course, undoubtedly contributed to this problem. As any visitor to Lake Arrowhead will tell you, the bark beetle infestation has greatly contributed also to the demise of our forests and enhanced the tinderbox effect.

Again, I want to commend the Chairman and the members of the Committee for the passage of the Healthy Forest Act. This legislation recognizes that forest management practices need to adapt recent scientific understandings to the causes of wildfire. Under the previous Administration here in California, the State of California recognized that our forests were in dire need of responsible and active management. The state spent significant resources removing dead and dying trees from our forests across the state. Furthermore, following a proclamation from Governor Davis, the California Public Utilities Commission has ordered Southern California Edison Company and San Diego Gas & Electric to remove all dead or dying trees that could potentially threaten transmission and distribution lines in their service territory. Edison predicts that this tree removal will run as high as $400 million and could take several years to complete.

These efforts and more will be necessary to protect our forests and reduce the potential for catastrophic wildfires. This problem was not created overnight and will not be solved overnight. It will be an expensive endeavor which is especially challenging for a state in the midst of fiscal woes. Given the sensitivity to California regarding forest management practices, I am convinced that a strong stakeholder process in reducing fuels without the help of local governments, residents and landowners and interest groups simply is not possible.

I pledge that the Resources Agency will recognize and respect differences in geography, habitat and human populations that occur in our forests. We will engage stakeholders and look for local solutions to managing these forests and reducing the risk of catastrophic fires.

To meet this challenge, the state must seek innovative solutions to forest thinning that both respects our environmental values and protects our forests from future fire calamities. One such idea is to promote the development of biomass power plants adjacent to our forests. Currently most of the dead or diseased trees that are

removed from our forests have little or no commercial value. They are often hauled off to municipal dumps or incinerated.

As we speak, Southern California Edison Company, with the help of the California Energy Commission, is pursuing the development of multiple biomass plants in areas affected by the bark beetle infestation. By converting wood waste into energy, California can protects its forests and provide cleaner, renewable energy to its citizens. As Secretary, I will seek to promote biomass power sources and other forest management techniques to achieve both economic and environmental benefits.

Mr. Chairman, thank you again for holding this most important hearing and as public servants, we know that government is designed to provide basic service and protect its citizens. In the area of forest management, oftentimes we are failing at both. The forest management policies of the past led to the environmental destruction and the loss of human life and property. If policymakers do not rise to this challenge, our forests will continue to burn with the massive fires like the ones that ravaged southern California and the intermountain west last summer. It is time to start actively managing our forests in a way to protect these beautiful resources and reduce the risk of these catastrophic fires.

Thank you very much.

Mr. POMBO. Thank you.

[Comments from the audience.]

Mr. POMBO. Before I recognize Ms. Kinsinger, I would just like to remind our audience that this is an official Congressional hearing and therefore we are bound by House rules, and as part of the House rules, any outbursts from the audience or expressions both in favor or opposed to any of the testimony is a violation of House rules, so I would like to ask all of you to maintain the decorum that is necessary in an official hearing. Thank you.

Ms. Kinsinger.

[The prepared statement of Mr. Chrisman follows:]

Statement of Mike Chrisman, Secretary, California Resources Agency

Chairman Pombo and Members of the Committee, on behalf of Governor Arnold Schwarzenegger, I appreciate the opportunity to testify before the Subcommittee regarding the catastrophic wildfires that California experienced this fall. I also appreciate the great efforts of the Chairman and the entire Resources Committee in passing the Healthy Forest Act, which President Bush signed earlier this week.

The recent wildfires in Southern California have caused devastation on a scale not seen before in my lifetime. The fires burned 739,597 acres in Southern California. At the height of the fires, over 15,000 personnel were actively working to contain them. Sadly, 3,631 homes were burned to the ground. Another 36 commercial properties and 1,169 outbuildings were also destroyed. And, most tragically, 22 people lost their lives in the fires. The total cost of the recent fires is still unknown, but it will surely be in the hundreds of millions of dollars.

Beyond the human toll, the Southern California fires represent a major environmental catastrophe, the scale of which we cannot yet fully determine. These devastating fires destroyed not only trees but also watersheds and habitat for numerous species of flora and fauna. Winter rains will bring further damage, as barren landscapes will lead to widespread erosion, polluting California's streams, rivers, and lakes, and clogging water treatment facilities.

I want to take this opportunity to commend the thousands of individuals who helped fight the fires. As I mentioned earlier, over 15,000 people contributed to the army of firefighters, medics, and logistical supporters and volunteers who helped to eventually extinguish the fires. In the midst of the widespread destruction, it is easy to forget the achievements of Federal, State and local agencies.

As you are aware, former Governor Gray Davis, in consultation with then Governor-elect Arnold Schwarzenegger, named a Blue Ribbon Commission to review the effort to fight the State's recent wildfires and provide recommendations to prevent destruction from future fires. The Commission will present its recommendations in March 2004. Andrea Tuttle, the State Forester at the Department of Forestry and Fire Protection, will represent the Resources Agency on the Commission. I urge you to include a copy of the Commission's report and recommendations as part of this hearing record.

State & Local Preparedness

The State of California, with its Federal and local partners, has made great strides in preparing for large-scale wildfires and mobilizing resources to react once a fire begins.

San Bernardino and Riverside Counties manage fire emergencies through an incident command-based, multi-agency organization known as a Mountain Area Safety Task Force (MAST). San Diego County created a similar organization called the Forest Area Safety Task Force (FAST). These groups include the county emergency and public works organizations, local Fire Safe Councils, the U.S. Forest Service, the California Department of Forestry and Fire Protection (CDF), the Office of Emergency Services, California Highway Patrol, California Department of Transportation, California Department of Fish and Game, and local utility operators. These organizations developed and operate from strategic plans that serve to guide planning, preparedness, evacuation response, and mitigation activities.

I cannot stress enough the importance and the strength of the interagency cooperation we have experienced with our partners in formulating these preparedness plans. Cooperation between Regional Forester Jack Blackwell and myself, between Forest Supervisor Gene Zimmerman and CDF Unit Chiefs Tom O'Keefe of San Bernardino County and Tom Tisdale of Riverside, and between our staffs has been tremendous. At every step along the way, the Federal, State, county and special districts worked together in ways they have never experienced before.

The following is a short summary of the actions taken by the State of California in preparation for the recent fires:

- CDF took a strong role clearing evacuation routes, temporary community shelter sites and fuel breaks utilizing inmate crews. We have reduced the paperwork for cutting trees on private lands, and coordinated implementation of the Endangered Species Act with the California Department of Fish and Game, especially with respect to protecting the Southern Rubber Boa snake.
- The California Department of Transportation provided trucks for hauling tree waste to disposal sites, and stockpiled signs, cones and heavy equipment for clearing roads in the event of evacuation.
- The California Integrated Waste Management Board permitted expanded use of the transfer sites for the tremendous volumes of wood waste, and the local Air Pollution Control District streamlined air quality permits for the air curtain burners. Those burners can efficiently dispose of large quantities of forest waste at very high temperatures with very little air emission.
- The California Highway Patrol worked closely with local sheriffs and law enforcement in designing and coordinating evacuation plans to help responders get in while getting evacuees out.
- The Contractors State License Board, in coordination with CDF, is conducting field inspections to insure that the public is protected from fraudulent business practice.
- We have participated with all the MAST agencies in San Bernardino County in a tabletop exercise to prepare for a wildfire in the Lake Arrowhead area.
- Every strike team, every firefighter coming into southern California is given a copy of this special Red Book, a Structure Protection Pre-Plan and mandatory briefing to inform them of the extraordinary fire behavior they may encounter, which may exceed anything they have ever experienced before.

Strong interagency coordination served California well during the recent fires. I pledge to continue these efforts under the Schwarzenegger Administration.

Forest Management is Fire Prevention

However, while coordinated planning and effective reaction to wildfires is important, this alone does not address the root cause of the problem. California's forests are in a state of crisis. Policies of 100 percent fire suppression and no reasonable thinning have left our forests choked full of dead and dying trees. In some areas around Lake Arrowhead, tree densities of 400 trees per acre are common. Scientists estimate that, historically, a healthy forest in this region would support only 40-50 trees per acre. With a density ten times historic levels, trees must compete for

sunlight and water. As a result, more and more trees are stressed out and unable to ward off disease or fire.

More importantly, the massive increase in forest density creates a virtual tinderbox of forest fuels. At one time, naturally occurring fires burned out small trees and brush, leaving larger trees unscathed. Today, the vegetation build-up causes fires to burn hotter and higher, destroying entire forests in their path.

Recent drought has undoubtedly contributed to this problem. When trees lack adequate water, they are unable to produce the sap that is needed to ward off deadly insects like the bark beetle. As any visitor to Lake Arrowhead can tell you, bark beetle infestation has greatly contributed to the demise of our forests and enhanced the tinderbox effect.

Again, I want to commend the Chairman for the passage of the Healthy Forests Act. This legislation recognizes that forest management practices need to adapt recent scientific understandings on the causes of wildfires. The U.S. General Accounting Office summarized the problem succinctly in a recent report:

> Human Activities—especially the federal government's decades-old policy of suppressing all wildland fires—have resulted in dangerous accumulations of brush, small trees, and other vegetation on federal lands. This vegetation has increasingly provided fuel for large, intense wildland fires, particularly in the dry, interior western United States. [1]

Under the previous Administration, the State of California recognized that our forests were in dire need of responsible and active management. The State spent significant resources removing dead and dying trees from our forests. Furthermore, following a proclamation from Governor Davis, the California Public Utility Commission has ordered Southern California Edison and San Diego Gas & Electric to remove all dead or dying trees that potentially threaten transmission and distribution lines in their service territory. Edison predicts that tree removal cost will run as high as $400 million and could take several years. These efforts, and more, will be necessary to protect our forests and reduce the potential for catastrophic wildfires.

But, I want to caution the public. This problem was not created overnight. And, it will not be solved overnight. It will be an expensive endeavor, which is especially challenging for a State in the midst of fiscal woes. Given the sensitivities in California regarding forest management policies, I am convinced that a strong stakeholder process is essential. The State of California and the U.S. Forest Service are not going to be successful in reducing fuels without the help of local governments, residents, landowners, and interest groups. I pledge that the Resources Agency will recognize and respect differences in geography, habit, and human population that occur in our forests. We will engage stakeholders and look for local solutions to managing these forests and reducing the risk of catastrophic fire.

To meet this challenge, the State of California must seek innovative solutions to forest thinning that both respects our environmental values and protects our forest from future fire calamities. One such idea is to promote the development of biomass power plants in or adjacent to our forests. Currently, most of the dead or diseased trees that are removed from our forests have little or no commercial value. They are often hauled off to municipal dumps or incinerated. In San Bernardino County alone, 400-500 tons of wood waste must be disposed of daily.

As we speak, Southern California Edison, with the help of the California Energy Commission, is pursuing the development of multiple biomass plants in areas affected by bark beetle infestation. By converting wood waste into energy, California can protect its forests and provide cleaner renewable energy to its citizens. As Secretary, I will seek to promote biomass power sources and other forest management techniques that achieve both economic and environmental benefits.

Mr. Chairman, thank you again for holding this important hearing. As public servants, we know that government is designed to provide basic services and protect its citizens. In the area of forest management, we are failing on both accounts. The forest management policies of the past led to environmental destruction and the loss of human life and property. If policymakers do not rise to this challenge, our forests will continue to burn in massive fires like the ones that ravaged Southern California this fall. It is time to start actively managing our forests in a way that protects these beautiful natural resources and reduces the risk of catastrophic fires that threaten so many communities in California.

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[1] GAO Report 04-52, "Forest Service: Information on Appeals and Litigation Involving Fuels Reduction Activities," October 2003.

STATEMENT OF ANNE KINSINGER, REGIONAL BIOLOGIST, WESTERN REGION, U.S. GEOLOGICAL SURVEY, ACCOMPANIED BY JON KEELY, RESEARCH SCIENTIST, WESTERN ECOLOGICAL RESEARCH CENTER, U.S. GEOLOGICAL SURVEY

Ms. KINSINGER. Thank you. Mr. Chairman, thank you for the opportunity to present this testimony. I have with me today Dr. Jon Keely and several other USGS scientists, who will be available to answer technical questions. Before I begin though, I would like to reiterate on behalf of the Department of Interior our gratitude to you, Mr. Chairman, and to other members of this Committee for the hard work in achieving the passage of the Healthy Forest Restoration Act of 2003. As you noted, the President signed that bill on Wednesday. The Department is grateful to you for your efforts in providing through this legislation additional tools to carry out the President's Healthy Forest Initiative.

I would also like to extend my sympathies to the local community for the losses they suffered during these fires.

The USGS conducts fire-related research to meet the varied needs of the land management community and to understand the role of fire on the landscape. This research includes fire management support, studies of post-fire effects and a wide range of studies on fire history and ecology. USGS is an active participant in the National Fire Plan and in the DOI and USDA joint fire science program. We are currently working closely with the FEMA-led multiagency support group to respond to these southern California fires as well as working with numerous BAER teams.

My testimony today is going to focus on five aspects of USGS fire response—the floods and debris flows, water quality, wildlife effects, invasive species and remote sensing.

As many of you have already noted, the damage from this year's wildfires in southern California is likely not over. Just as the fires were the largest in southern California's recorded history, the potential for floods and debris flows from the burned areas is great. Stormwater runoff in hundreds of very steep drainages with histories of large floods and debris flows will flow into some of the most rapidly growing urban areas of California.

In response, USGS has begun to install rain and stream gauges in critical hazard areas. We are meeting with the National Weather Service and flood control agencies to plan expanded flood warning sites. To assess the hazard from debris flows, the USGS has begun the modeling necessary to produce debris flow hazard maps of some of the most dangerous burn areas. And we do have a handout that we can show you that pinpoints some of the high risk areas. We are also working on plans, with the support of FEMA, to complete hazard maps for all fire areas. If possible, we will work to develop early warning systems both for flash floods and debris flows.

Water quality is also a concern. Fires in southern California have produced ash and a variety of chemicals that enter air, soil and ground and surface waters. Tracking these chemicals is critical for maintaining a healthy water supply and will also provide an understanding for the larger picture of water quality in southern California. If possible, the USGS will continue monitoring to deter-

mine the effects of winter floods on sediment and contaminant transport in the Santa Ana River Basin. We can also document and study the effects of atmospheric fallout and runoff from the fires in the San Diego Basin. Both of these basins, as you know, are important water supplies.

Since the mid-1990s, USGS has been conducting wildlife research in many of the areas impacted by these recent fires, including reptile and amphibian surveys at monitoring stations throughout southern California. We are studying the impact of fire on endangered species and on biodiversity in general and on the recovery of vegetation in these ecosystems. Our research has included the effectiveness of post-fire treatments, species diversity and abundance, as well as habitat quality assessments and vegetation characteristics.

The interaction of invasive plants and fire is creating substantial challenges also for land managers. Invasive plants can compete with native plants, alter wildlife habitat and promote the spread of fire. Invasive alien grasses especially benefit from fire. They promote recurrent fire in many cases to the point where native species cannot persist and native plant assemblages are converted to annual grasslands. This vegetation type conversion can reduce overall biodiversity and increase fire risk. We are continuing our research on fire and invasives and the relationship between the two.

Finally, the USGS is employing this remote sensing expertise to the fire aftermath. Fire response requires detailed imagery of the burn areas, both for additional research and for on-the-ground response activities. To meet common geographic data needs, the USGS is assessing the availability of remotely sensed imagery and data from all agency sources. And I would like to take a moment to thank the Forest Service in particular for purchasing some of this imagery and sharing it among all of the fire response partners.

In summary, USGS scientists have been studying the natural processes in southern California for decades and thus, we have some baseline data from which we can understand the long-term impacts of these burns. We are moving quickly to provide decision-makers with the information and tools they need in the aftermath of these devastating fires.

Mr. Chairman, this concludes my remarks and I would be happy to answer any questions you might have.

[The prepared statement of Ms. Kinsinger follows:]

Statement of Anne E. Kinsinger, Western Regional Biologist, U.S. Geological Survey

Mr. Chairman and Members of the Subcommittee, thank you for the opportunity to present this testimony regarding "Recovering from the Fires: Restoring and Protecting Communities, Water, Wildlife and Forests in Southern California." The USGS conducts fire-related research to meet the varied needs of the land management community and to understand the role of fire on the landscape; this research includes fire management support, studies of post-fire effects, and a wide range of studies on fire history and ecology. USGS is an active participant in the U.S. Department of Agriculture (USDA)/Department of the Interior (DOI) National Fire Plan, which is a long-term effort focused on helping to protect communities and natural resources. The USGS is also an active participant in the DOI and USDA Joint Fire Science Program; a partnership that develops information and tools for managers and specialists who deal with wildland fuels management issues. The Program was authorized and funded by Congress in October 1997. The USGS is using

its unique capabilities to investigate the complex interactions of Earth processes with the urban environment in Southern California.

My statement will describe the role of USGS in post-fire recovery and rehabilitation in Southern California. Before I begin, however, I have been asked to convey the gratitude of the Department of the Interior to Chairman Pombo and the other members of this Committee for their hard work in achieving the passage of H.R. 1904, the Healthy Forests Restoration Act of 2003. As you know, the President signed that bill on Wednesday. The Department is grateful to you for your efforts in providing, through this legislation, the additional tools needed to carry out the President's Healthy Forests Initiative, and the Department looks forward to making progress in ongoing efforts to address the problems of wildland fires here in California and elsewhere throughout the Country.

The recent fires in Ventura, San Bernardino and San Diego counties were devastating in their reach. However, the damage from this year's wildfires in Southern California is likely not complete. Just as the fires were the largest in Southern California's recorded history, the potential for floods and debris flows from the ravaged mountains is great. Storm water run-off in hundreds of drainages in extremely steep terrain with histories of large floods and debris flows will flow into some of the most rapidly growing urban areas of California. Thousands more homes could potentially be destroyed this winter as an indirect impact of the wildfires. Understanding the factors controlling the behavior of wildfires and the potential debris flows that are the indirect consequence of these fires will lead to improved predictive capabilities, helping to plan accurately for and mitigate fire and related hazards in future years and for future generations.

Employing existing data

We have been studying the natural processes of Southern California, in many cases for decades, and thus have baseline data from which we can understand the changes brought about by the fires.

Currently, extensive baseline data exists for two of the focal fire areas.

- San Diego Basin. The Sweetwater River System in the San Diego Basin consists of the Sweetwater River itself, and two receiving reservoirs that are used for drinking water supply (Loveland and Sweetwater Reservoirs). This system is the primary water supply for one million people, and has been heavily impacted by the Cedar fire. The USGS has been conducting atmospheric deposition and dissolved organic carbon studies on Sweetwater and Loveland Reservoirs for the past five years, and has also been conducting surface-water/ground-water interaction studies focused on the impact of pumping on riparian zones that support endangered species. These studies provide excellent data on pre-fire baseline conditions. This work will continue to document and study the effects of atmospheric fallout and runoff from fires on a water body used for drinking water. It is expected that the fire will increase levels of dissolved organic carbon, which will, in turn, increase concentrations of THMs (tri-halomethanes) when that water is chlorinated for public supply. If chemical indicators of the fire can be found, they will enable tracking of groundwater recharge from the fire areas through the alluvial/riparian system, providing accurate estimates of travel time. This will assist in providing the data necessary to help insure human health while protecting endangered species in the watershed.
- Santa Ana River Basin. Large parts of the Santa Ana River Basin were burned by the Old Fire and the Grand Prix Fire. The USGS has been conducting water-quality studies in the Santa Ana River Basin as part of the National Water Quality Assessment (NAWQA) program and several cooperative studies. These data can be used to assess the impact of the fires on water quality. Water-quality data are available from 7 mountain drainages, six of which were extensively burned. The seventh, the South Fork of the Santa Ana River was not burned and will serve as a control—although it received large amounts of atmospheric fallout. Existing data at these sites include general minerals, nutrients, dissolved organic carbon (DOC), and at selected sites, trace metals, pesticides, and semi-volatile organic carbon compounds. The NAWQA sites are strategically located to study the effects of the fire. The data will be collected bimonthly at three of the sites for a limited suite of constituents. Ten years of water-quality data also are available for downstream sites along the Santa Ana River where water is diverted to ponds that recharge aquifers pumped for water supply for more than 2 million people. Existing data include nutrients, trace elements, pesticides, and selected volatile organic carbon compounds. The study is ongoing and three storm flows will be sampled this year for nutrients, DOC concentrations and extensive characterization of the DOC using optical properties. Additional analyses are needed to characterize the effect of the fires. Ash and other

material washed from the basin during storm flow will accumulate in ponds used to recharge aquifers underlying Orange County.

In addition, since 1995, the USGS has been conducting wildlife research in many of the areas impacted by the recent fires, including reptile and amphibian surveys at fixed monitoring stations throughout Southern California. We knew that it was important to understand the response of the natural systems in Southern California to urbanization, and we have learned that Southern California is an ecosystem at great risk of biodiversity loss. The USGS is studying the impact of fire on endangered species and biodiversity in general and the recovery of vegetation in these ecosystems. The USGS research at the various sites has included species diversity and abundance, as well as habitat quality assessments and vegetation characteristics. Invasive plants and fire create substantial challenges for land managers. Invasive plants can compete with native plants, alter wildlife habitat, and promote the spread of fire. Invasive alien grasses especially benefit from fire, promote recurrent fire, in many cases to the point where native species cannot persist and native plant assemblages are converted to annual grasslands. This vegetation type-conversion can affect wildlife and reduce overall biodiversity. The effective management of many wildlife species depends on the control of invasive plants and the maintenance of appropriate fire regimes.

Collecting data for future management decisions

In spite of the tragedy of the recent Southern California fires, we have an unprecedented opportunity to collect data necessary for the effective mitigation of future events. The information collected in the burned areas can be transferable to most of the susceptible fire areas of Southern California. The USGS currently is working with land management and emergency response agencies to develop plans for assessment of hazards from floods and debris flows and for monitoring environmental recovery. This is in addition to mapping the area using remote sensing data as discussed more fully below.

The USGS is currently moving quickly to collect transitory data that will be destroyed over the next few weeks and months, including the effect of the fires on endangered species, the ecosystem causes and consequences of the fires (effect of fire suppression policies, re-growth, burn intensity, etc.), ground water and sediment pollution caused by the fire, the impact of the fires of the adjacent ocean, and "opportunistic" data (unique data acquisition opportunities created by the removal of vegetation, such as unique "bare earth" images along especially hazardous sections of the San Andreas fault). Analysis of these data will support restoration and mitigation plans of the burned lands, many of which are Federal lands managed by the Department of Interior.

This collection of transitory data is accompanied by activities to address immediate information needs for flood warning. The USGS is conducting reconnaissance field inspections of burned watersheds and has begun installation of a limited number of rain and stream gages in critical hazard areas. The USGS is meeting with the National Weather Service and Flood Control agencies to plan expanded ALERT flood warning sites. To assess the hazard from debris flows, the USGS has begun modeling necessary to produce Debris Flow Hazard maps of the most dangerous burn areas and is working on plans, with the support of FEMA, to complete hazard maps for all fire areas. Assessments of debris flow hazards will be shared with landowners and relevant agencies, including Bureau of Land Management, Bureau of Reclamation and the U.S. Forest Service. The USGS is already working with the U.S. Forest Service and others in advising Burned Area Emergency Response (BAER) teams in the affected area.

As water quality can be diminished by sediment transported from the burned watersheds, the USGS is working with baseline from past studies and collecting more data. Recent wildland fires in Southern California have produced ash and a variety of chemicals that enter the air, soil, ground-water and surface-water systems. The tracking of these chemicals through the water system is critical for maintaining a healthy water system, but it will also provide for understanding the larger picture of ground-water pollution in Southern California. Specifically, the USGS will continue with a previously planned monitoring experiment to determine the effects of winter floods on sediment and contaminant transport offshore of the mouth of the Santa Ana River.

As noted above, in order to assess the environmental response to the fires, the USGS is evaluating data from previous studies to identify useful pre-fire information that will serve as a baseline to assess fire impacts and monitor post- fire recovery, including species inventories and habitat quality assessment, water quality assessments, and vegetation characterization. The USGS has begun field surveys to assess impacts on endangered species that it already was monitoring.

The USGS is also employing its remote sensing expertise to the fire aftermath. Fire response has a need for detailed imagery of the burn areas, both for research and on-the-ground response activities. The USGS is working with other agencies on the post fire response, and examples of imagery that would be used include: a) High-resolution digital topographic mapping; b) Aerial photography; c) Satellite Synthetic Aperture Radar; and d) Multi- and Hyper-spectral imagery. To meet common geographic data needs, the USGS is assessing the availability of relevant remote sensed imagery and data from all agency sources.

Conclusion

USGS scientists have been studying the natural processes discussed in my testimony in Southern California for decades, and thus have the baseline data from which we can understand the changes brought about by the fires. The USGS has the scientific expertise in wildland fire research to help in understanding the ecosystems affected by wildfire, and to assist land managers in post-fire recovery and rehabilitation in Southern California.

Mr. Chairman, this concludes my remarks. I, and my colleague, Dr. Jon E. Keeley, USGS, Research Scientist, will be pleased to answer any questions you may have.

Mr. POMBO. Thank you very much. I would like to turn to the Committee for questions and remind the members of the Committee that we are under the five-minute rule and to limit your questions to five minutes. We have a number of panels and a long day ahead of us. So we will start with Mr. Calvert.

Mr. CALVERT Thank you, Mr. Chairman.

In this region, the last time I think that we had the potential of as much flood problems as we may have this winter was back in the El Nino period when we were given reasonable warning that there may be a potential hazard on its way and as a matter of fact, the U.S. Geological Survey, along with others, made that prediction. And we were able to get emergency declarations in effect to clear out flood control channels, clean out debris basins. Maybe this is a question also for the Corps of Engineers and the Fish and Wildlife, but we were able to be proactive in anticipating a potential disaster. And a good thing we did. We remember back in those days we were able to do that, we were able to clean out the Los Angeles River when a lot of people were screaming and yelling if I remember in those days, a lot of the debris basins, but we did it. And when the water did come—and by golly, it sure did come, we were prepared for it. And the disaster that could have been was mitigated substantially by the proactive work that took place.

Certainly in the Santa Ana region, Santa Ana River Basin region today, we are going to have a problem. I do not think it is if, it is just a matter of when, and when the water comes, and it will, then we are going to have to anticipate that.

This is a question primarily for U.S. Geological Survey, but for the entire panel, certainly with our new gentleman from the California Resources Agency, is what are we doing right now to make sure that we clear out all the bureaucratic roadblocks to make sure that we prepare for the inevitable, that we clean out these flood control channels, that we clean out the debris basins, that we put the check dams in immediately, that we get all of the permissions that are necessary today, because this work should be taking place right now.

So I think I will start with Ms. Kinsinger and then anyone else that would like to add in.

Ms. KINSINGER. Well, as I noted, we have been working with this FEMA-led multi-agency group and that has been our primary vehicle, along with the BAER teams. We have also been working with a lot of local offices of the emergency services. As you know, we are providing the scientific information, the tools, and so we are not involved in the permitting processes per se. But we have been on the ground already with hydrologists, geologists and our biologists.

Mr. CALVERT You would agree though, for the record, that these flood control channels, debris basins and the rest should be cleaned out and be made ready for the coming winter rains.

Ms. KINSINGER. Well, I agree that we need to prepare for the inevitable floods and debris flows. I might defer to my colleague Mike Choulters on that. Do you want to comment on that, Mike?

Mike Choulters is the California Water Resources District Chief.

Mr. CHOULTERS. Thank you. I think just to add to what Anne said, the ability of the USGS to get out quickly, which we have, and add to the alert network both with rain gauges and with stream gauges—beginning to get stream gauges in, that takes longer—is the mechanism that we would add to the larger group in finding ways to know when those disasters are going to occur and be able to report that quickly.

Mr. CALVERT I will ask Mike to add into this too, also.

Mr. CHRISMAN. Again, our efforts are joint efforts with our Federal counterparts, flood control agencies through the California Department of Water Resources. We do a prioritization on an annual basis of those streams and watersheds that need to be—where flood protection needs to be undertaken. Oftentimes we are behind the eight ball for budgetary problems, many times. But again, it is a very high priority as we watch weather patterns and try to measure the potential rainfall coming into California.

Mr. CALVERT I would say under budgetary reasons, obviously it will cost tremendous more dollars——

Mr. CHRISMAN. I could not agree more.

Mr. CALVERT —after the fact than before the fact.

Mr. CHRISMAN. Absolutely right.

Mr. CALVERT Thank you, Mr. Chairman.

Mr. POMBO. Mr. Baca.

Mr. BACA. Thank you very much, Mr. Chairman.

This question I guess either Jack or Dale can attempt to answer. The fire not only destroyed structures but burned soil and created high risk of floods, especially in the foothills. Weather forecasts to expect drier and warmer weather this year. How long should we expect the threat of floods?

Mr. BOSWORTH. You know, that is going to depend a lot on the kind of weather that we have in the next few years. What we worry about most, at least in terms of the emergency rehabilitation work that we do is the first season, the first rain. And we want to be prepared for that, that is why we want to have work done by the middle of December.

Then our next step is to make sure at least for the first couple of years we can make it through those years.

But then there is the longer term kind of rehabilitation needs that we will have over the next several years. But I do not think I can give you—maybe Jack or Gene can be more specific in terms

of exact number of years you might have to worry about flooding, but it is not over after the first year and it will be a number of years before we really feel like you are out of the woods. And it depends on how intensive the fires burn as well. But Gene has a little more experience in this part of the country than I do, so Gene, do you have anything to add to that?

Mr. BACA. And can you elaborate in terms of what impact, if we are not totally prepared for these kinds of floods to this area?

Mr. BOSWORTH. Well, when you start getting a lot of water on these kind of steep slopes under these kind of conditions, you can have mass soil movement. Of course, you have erosion, but then you have mass debris movement into the channels. It can back up when it becomes plugged, culverts can become plugged with debris, then the road washes out, that pushes more debris down, you can have mudslides into homes if they are located in harm's way. There are a number of those kinds of things that can happen if you have the wrong kinds of events following these kinds of devastating fires.

Mr. BACA. The next question. I know that workers in San Bernardino are using bales of hay, sandbags and traffic dividers to help ward off floods. Will this be sufficient in high risk areas, is question number one. What else can be done to minimize the amount of flood damage in these cities?

Mr. BOSWORTH. Well, again, depending upon what kind of weather conditions come about here in the future, you can have situations where nothing that we will do will solve the problem. So I would not want to make a false promise that everything that we are doing, at least on the national forest lands are going to solve the problem under any kind of weather event. But, for example, the amount of straw, the straw that we are putting on the ground, the thousands of tons of straw, our research has shown that that reduces the erosion in some cases 50 to 80, 90 percent. That will make a big difference under normal kinds of weather conditions.

Mr. BACA. And what is the length of time before it grows though, the effect if we do not have——

Mr. ZIMMERMAN. The straw that we are putting out does not have any seed in it. The estimated period for vegetative recovery, at least for a reasonably good start so the hillsides have a good semblance of green again, is three to five years.

Mr. BACA. Mr. Chrisman, in your testimony, you stress the importance of Federal-state partnerships dealing with various aspects of the forests and fire management. Overall, how would you rate the partnership in California and in what ways can it be improved?

Mr. CHRISMAN. My comments said the partnership is superb, I mean the planning, the inter-agency planning that goes on on a regular basis, the mock planning exercises that we go through on a regular basis across our agencies is superb. As I indicated in my testimony, I think proof of that was seen in the early successes in this catastrophic activity here when we were able to get the residents moved out and all of that. So again, it is working pretty well here in California.

You know, how can we improve it? I guess my response to that would be you can always improve upon the response to a catastrophic event like this. And the post-planning that goes into this

activity, I think hopefully will yield those kinds of things that we can do better as the inevitable natural event will occur later.

Mr. BACA. And one final question, and I know my time has run out, but from what you have seen so far, what threatened or endangered species were maybe most impacted by the fire?

Ms. KINSINGER. I would like to ask Dr. Robert Fisher to address that, if he could come up.

While he is coming up, I just wanted to say one thing about protecting lives in the case of flood and debris flows. And that is we do have the technology available to deploy early warning sensors in some of these very high risk areas such as the ones you are seeing on your map. Now those will not necessarily reduce property loss, but they can save lives.

Mr. BACA. Hello, and welcome.

Dr. FISHER. On the question of threatened and endangered species, I want to just add that the Resources Agency through the Legacy program has recently produced a series of maps that show which species occur only within the fire zones, being that the entire distribution of that species globally may have been affected by the fire. So there is a subset of plants and some animals that fall into that category. That does not mean that they are extinct, but it means that their habitat and their sensitivity might have changed.

For the most part, many endangered species were not greatly impacted by the fire, but what happens post-fire is what is really going to be important. And obviously the habitat has changed and we are right now focusing on trying to understand post-fire recovery in these species.

And I cannot really name—I would not want to name a couple of specific species, but we are less concerned about the direct impact on endangered species from the fire than we are what is going to happen post-burn in the recovery process.

Mr. BACA. Thank you.

Mr. POMBO. Mr. Radanovich.

Mr. RADANOVICH. Mr. Bosworth, in my opening statement, I had commented about lawsuits and the ability for the Forest Service to allow timber cutting both the fire damaged areas but also in the non-fire damaged areas that were susceptible—or had problems with bark beetle dead trees. With the advent of Healthy Forests, can you further elaborate on what you might see down the line? I know that the legislation has made it a little easier I think for forest plans to actually be implemented and eases the burden I think on the NEPA processes and things like that. Can you give me an oversight as to how you see it down the line once we try to get these forests into proper balance, what you might run into as a result of the law?

Mr. BOSWORTH. Well, I think the law is going to help us. Like I said earlier, I think it will give us some time to be more effective in terms of our public participation with communities. I think it will help us engage communities more effectively. There are some changes in terms of how you go about appealing. There is what we call a predecisional protest approach that we are going to develop as part of the legislation, that we think will give people a good opportunity to question our decisions, but will not take up as much time to do it.

So the whole focus is on being able to get decisions made quicker with better public participation and get the money and the work on the ground done quicker, more effectively. So that is what we will be working toward in the implementation of this. In the end, what I am hoping it will come to 10 years from now, 15 years from now, is we will have treated these forests in a way that will allow fire to still play a role in the environment. These are fire-adapted ecosystems that we are dealing with, they evolved with fire and we have to get fire back into them but it has to be in a way that is not going to be devastating.

So when you have a situation where there is way too many trees because we have been suppressing fires over the years, way too many trees, and then you have a drought situation, you end up with dead trees and with insect problems and then, of course, you end up with fire problems. We need to have fewer trees. We will be leaving the large, big trees, the right numbers of them, the right species and then getting fire back into those fire-adapted ecosystems.

Mr. RADANOVICH. Thank you very much. Mr. Chrisman, I have got a question for you and I do want to congratulate you on your recent appointment as Resources Secretary for California.

Mr. CHRISMAN. Thank you, Congressman.

Mr. RADANOVICH. I noticed on the ride here from the hospital where the helicopter pad was to the hotel that there is—and I believe it is being administered by CDF, a program to go in and pull out a lot of these dead trees due to the bark beetle.

Mr. CHRISMAN. Yes.

Mr. RADANOVICH. In an urban interface area, a place that may not be national forest, I think it is on private land, but nevertheless a fire danger. Is the funding—those are expensive jobs, I mean those trees are hanging over power lines and homes and everything else. That is no small task and I know that that kind of stuff is necessary probably all over the state in some ways.

Mr. CHRISMAN. It is, and you are right. As I indicated in my comments, you know, we are in the process of working with the utilities here in California, the Public Utilities Commission to get a lot of those trees moved away from the transmission and distribution lines.

One of the programs that CDF administers here in California is called the Fire Safe Program, a very effective program, again in the context, involving stakeholders and individuals who live in the rural/urban interfaces, which is more and more the case here in California, all up and down the State of California where we go in and help—CDF goes in and helps organize local communities to push vegetation back from their homes, vegetation back from structures, to recognize that we have got to manage these forest ecosystems in a way that prevents these kinds of catastrophic wildfires. We are doing a lot of that across California and of course, we are going to be working with our Federal and local counterparts to try to increase those activities over time.

Mr. RADANOVICH. So you actually have an operating budget, you are going to make sure that there are enough funds there to do all that interface.

Mr. CHRISMAN. That is exactly right.

Mr. RADANOVICH. All right, thank you very much.

Mr. POMBO. Mr. Walden.

Mr. WALDEN. Thank you, Mr. Chairman.

Chief or Gene perhaps, talk to me about the densities that are here today around Lake Arrowhead, both in the private and the public lands versus what historically they should be had fire operated naturally over the last century, or management had taken place. What do you see in terms of densities today and what should those densities be?

Mr. ZIMMERMAN. Obviously you realize that density is highly variable. Having said that, there are places here on the forest where there is 400 to 500 trees per acre. Typically we would expect as foresters in land like this in the neighborhood of 30 to 40 to 50 trees per acre, depending upon the carrying capacity of any particular site.

Mr. WALDEN. So you are saying it is 10 times?

Mr. ZIMMERMAN. Greatly over-populated with trees, yes.

Mr. WALDEN. And when we look at a picture like the one over here to my left showing the dead trees, we flew over areas like that, if that is your Federal forest land, what kind of time line are you on to clear that out and is it just the dead trees that need to be thinned out to rebuild the ecosystem?

Mr. ZIMMERMAN. We have been focusing on the dead trees because we have been focusing on human life and property issues like evacuation routes and areas right up against the urban interface. We need to focus on overall stand density. We need to take that next step and that is starting to deal with the densification of the remaining green trees, where they do remain. We have been reluctant to do that on the national forests. Initially a year-and-a-half ago when we started fairly aggressively dealing with this, we took out some green trees trying to treat a given acre, if you will, with one entry and get it down to an acceptable stocking. What we found is because of the high populations of bark beetles, we lost some of the trees that we left and we ended up with not enough trees. So right now until the population of beetles drop off, it is our intent to just deal with the red trees, but be ready to move aggressively to thin the remaining stands of green trees as soon as the population of beetles drops off. And we hope that happens.

Mr. WALDEN. In his testimony, Dr. Stephens I think it is, from Berkeley, talks about one of the things that is missing here is the infrastructure and that what is needed is a local mill. When was the last time you had a local mill and why do you not have one now?

Mr. ZIMMERMAN. Before my time. I have been here 11 years, there has not been a sawmill here in that time. I think Congressman Lewis probably—excuse me.

Mr. WALDEN. Is the lack of a sawmill, in your opinion, a problem for getting these trees out of here?

Mr. ZIMMERMAN It is certainly a part of it. The economics is driven by a lot of costs, you know, there is the cost of cutting the trees down, moving them, power lines, houses and all of that stuff. This is very expensive work. It would be nice if we did not just have to burn this material up. That too is expensive.

Mr. WALDEN. Or putting it in landfills?

Mr. ZIMMERMAN. Grinding it up and putting it in landfills is expensive. If there was some value, and the way to have value is to reduce the cost. Part of the cost of taking this stuff to a sawmill is the transportation cost. I understand it is about 7 hours one way, so only the very best of the logs are going to a sawmill, and thereby paying their own way through this.

Mr. WALDEN. When was the last time you had a timber sale, not a hazardous fuels reduction effort, but a timber sale, and why?

Mr. ZIMMERMAN. About eight or nine years ago, we sold the last sale, prior to this last year-and-a-half. I essentially threw in the towel on the timber sale program on this forest, even though it was a very small program.

Mr. WALDEN. Why?

Mr. ZIMMERMAN. Because our timber sales were being appealed and we had lawsuits, we had protests out in front of the ranger station here at Arrowhead, the district ranger was being hung in effigy and protesters on weekends protesting those small timber sales.

Mr. WALDEN. Then what is it going to take to get this forest cleaned out and how long is it going to take? This is a powder keg, both the private lands and the public lands. I never thought after being here in September and then watching these fires go that we would ever come back and be in this building. Three percent burned, is that it, of the bug-infested timber lands?

Mr. ZIMMERMAN. Three to five percent, somewhere in there.

Mr. WALDEN. Which means the bulk of them are left still in this volatile state.

Mr. ZIMMERMAN. Yes, and in fact the areas that burned where we had big infestations, there are now more dead trees there because of the fire.

Mr. WALDEN. So the fire situation is worse for the future?

Mr. ZIMMERMAN. What it is going to take obviously is infrastructure. You have mentioned part of the infrastructure, the other part is human infrastructure, licensed contractors, folks working for the various agencies, staff, to put contracts together, and money. And Congress is well aware of that.

Mr. WALDEN. Thank you, Mr. Chairman. Thank you.

Mr. POMBO. Mr. Lewis.

Mr. LEWIS. Thank you, Mr. Chairman. For the audience's edification, Mary Bono and I are not members of the Committee, so we have the privilege of being here by way of the courtesy of Chairman Richard Pombo.

[Laughter.]

Mr. LEWIS. And I wanted for the record, for all of those who were curious to know, that both Richard Pombo and I do know the difference between us and Mary Bono.

[Laughter.]

Mr. LEWIS. But she is sometimes difficult to ignore.

I am very interested, Mr. Bosworth, in pursuing the question of remaining dead trees and fuel, much of which is on public lands, but a lot of which is on private land as well. And as part or a fire on somebody's five acres where that individual cannot afford—I am not even worried about responsibility here, but cannot afford to take down those trees, could be the source of devastation. I would

like you to spend a moment addressing your sense of funding flows that are beginning to happen, whether there are adequate dollars beginning to fill in the pipeline and what role will any of those funds play in terms of dealing with this private land problem?

Mr. BOSWORTH. There are two kinds of dollars that we get, the Forest Service, in terms of what we would be using to help this situation. There is the money that we get to manage the national forest system, to deal with the fuels there. And then through our state and private forestry program, we get dollars that through grants can go to the counties and those dollars then can go to help private landowners to do other things within the county that needs to be done in these areas.

There is a big need out there. And in fact, I might have Jack Blackwell be specific about the kinds of dollars that he is getting at this point in terms of state and private dollars, but you know, I do not expect that we are going to be able to come up with enough money to take care of all the private land. What we can do though is we can come up with enough money to work together, and if we can get some of these other kinds of infrastructures in place—in other words, if we can find a way to utilize some of the material that is being removed, that would significantly or may significantly reduce the cost of doing some of the work that needs to be done. As long as we are going to haul it off and recover no value, it is going to be that much more expensive.

But I am going to ask Jack to be specific about the kinds of dollars that this area is getting right now from a state/private forestry standpoint.

Mr. BLACKWELL. OK. Congress has been very generous this year and that is due in large part, Mr. Lewis, to some of your tremendous work. There is $47.7 million that has already passed, about 50 percent of that is available for state and private work off the national forests. In addition, as you well know, there is $50 million pending in a consolidated appropriations bill, which we are all told has a great chance of passage. Again, that is a 50/50 split.

So southern California should see $97.7 million in fiscal 2004, the one we are in, and 50 percent of that work will occur—those funds will go onto the national forests and 50 percent on the state and private lands.

Mr. LEWIS. Thank you for that.

Mr. Chrisman, I was especially interested in your comment about the prospect of biomass sorts of development for energy production. There are some very interesting things going on that I have been made aware of in Oregon currently where in the past they have had a bark beetle problem. They are looking at the development of methane and other kinds of alternative fuels from those resources as the trees come down, et cetera. And I would like to talk with you a lot more about that. I think there is some tremendous potential there and there could be a state and Federal partnership developed as well.

Mr. CHRISMAN. I think the time is right for that, Congressman.

Mr. LEWIS. One more question of Mr. Bosworth, if I could. I know I am pushing my time here, but as we go forward and take down trees, saving our forest is much more than just taking down trees. We want to see those trees appropriately and well managed come

back and have the forest be here for as long as man may be here. Are there aggressive efforts to not only collect seeds of indigenous trees to the region, begin nursery programs and the like to begin actually growing plants that might well be placed in the forest lands over time here?

Mr. BOSWORTH. We do have large programs of reforestation, nurseries where we can grow seedlings and plant seedlings. We have gotten better and better and better at that over the years in terms of our ability to do that.

The real question is to get the lands into condition where those trees can grow, to where we can then, as I said before, get fire back into these fire-dependent ecosystems in a more controlled way, and I believe we can have healthy forests in the future.

Mr. LEWIS. Thank you, Mr. Chairman.

Mr. POMBO. Ms. Bono.

Ms. BONO. Thank you, Mr. Chairman.

I am going to ask my first question I believe to Chief Bosworth, and that is the general thinking I believe among people who are afraid of healthy forests is that we politicians have something called a slippery slope theory, that what we start has great intentions but it ends up being so much more than it is. And they believe even by thinning the forest here, that ultimately it is going to mean the entire commercial exploitation of logging of the forests here. I was wondering if you could take some time to—I do not believe in the slippery slope theory, I do believe there are reasonable people in government and in agencies who are there to prevent slippery slopes who are actually capable of stopping such things from happening. But I was wondering if you could take an opportunity to share your thoughts about this very thing.

Mr. BOSWORTH. I would be happy to. You know, one time, the Forest Service, on the national forests, we sold somewhere in the vicinity of 12 billion board feed a year of timber back in the mid-1980s. For the past several years, it has been about 1.8 to 2 billion board feet a year. We have not proposed big increases, we have not proposed any increases since I have been Chief of the Forest Service. What I am interested in is making sure that what we do, we do well.

These are battles and fights and fears of the past, in my opinion. And the threats to our national forests and to our nation's forests in the future are things like a natural buildup of fuel and invasive weeds and insects and diseases and some of those kinds of things. They are not—over-cutting and timber harvesting is not a battle of today or in the future, in my opinion.

Ms. BONO. Thank you. I think a prime example, and I will bring Mike into this debate, is when we talk about biomass or a local contractor mentioned cogeneration to me up here as well, which is another idea. But can you explain to me how much fuel currently exists and once we create biomass, are we then creating something that we are going to need to perpetuate so we are effectively continuing to look for further fuel to add to the biomass or is this something we can do and stop when the time is right?

Mr. CHRISMAN. That is an excellent question. It has created problems in the past as we have tried to encourage, through tax incentives and other types of programs, these types of biomass activities.

I mean you have got to create enough of an economic incentive for these kinds of opportunities to be made real and then to ultimately function in a way that they are continuing. Here in California, I cannot answer your question about the total amount of biomass. Clearly the biomass available off a forest is significant. There are biomass generation plants in the San Joaquin Valley that are taking biomass from agricultural products. That industry is on the growth in California because of the air pollution, air quality issues that are keeping the burning from happening with a lot of these facilities.

So again, it seems to me that what we need in this area is effective public/private partnerships where we have state and Federal tax structures maybe creating incentives where you can get capital investment in these kind of activities. What we do not want to get ourselves into is where we are—as in the 1980s, where we created a situation where we actually went in and subsidized the price of the output of some of these biomass plants. Ultimately economically they fail because market forces are at play and they just do not work. So we have got to create opportunities where these things do work. I think we are on the road to doing that.

Ms. BONO. Thank you. I realize my time has just about expired, so I will yield back, Mr. Chairman. Thank you very much.

Mr. POMBO. Thank you.

I have a number of questions but I think in the interest of time, Chief, I will just kind of boil it down to this—we have had complaints or concerns that have arisen by area residents about their ability to do things, to get in and clear areas out and delays because of Forest Service policy. What does Congress need to do to speed up the process in terms of doing this recovery? The healthy forest bill is one thing, and that is something that we need to do proactively to try to lessen the chance of this happening again, but it happened here. What do we need to do now? What suggestions can you have for this Committee and for Congress as to what our next step should be?

Mr. BOSWORTH. Well, I assume you are talking about the recovery aspects after the burn.

Mr. POMBO. Yeah.

Mr. BOSWORTH. And the things that we need to get done now. What the Forest Service is doing here in California is we are going to be issuing grants to these counties very quickly. On occasion we will hear some concerns about our grant process and whether it is too complicated and whether it is clear enough to be able to apply for a grant. We believe that we have got it down to a situation where people can apply for those grants fairly quickly and fairly easily. And our folks are ready to help any of them that need help in terms of how to apply for those grants. I believe a call letter went out around the first of December to all the counties in the area so that they can get those grant applications in.

In fact, I think what I will do is let Regional Forester John Blackwell talk a little more specifically about that because they have been working real hard at it.

Mr. BLACKWELL. Well, the Fire Safe Councils, the community groups that this new legislation promotes, working with them and through them, I believe are the way we need to go. And that is the

way that we are delivering the funding and trying to put together these action plans in response to the Healthy Forest Act.

And so it is as simple as that, I believe.

Mr. POMBO. Let me ask you specifically on one issue that was brought up to the Committee. And that is that local citizens have been kept from clearing out dead trees, brush and dirt piles along recently bulldozed fire breaks because Forest Service archaeologists and anthropologists must first inventory arrowheads and pottery shards and botanists must first inventory all disturbed flora before they can do anything. You know, it is real easy for us to blame the Forest Service or to blame you guys, but a lot of this is Federal law. And what I am looking for is what do we have to do, what can we do to make the recovery happen faster, to move through the bureaucratic process faster? Is it a matter, do you need more people or do you need some kind of a streamline in the law? Is there some kind of a bureaucratic reduction that we could do that can move this along faster?

Mr. BLACKWELL. Well, of course, people and funding always help. We have got the Antiquities Act, we cannot destroy priceless antiquities and so we have to survey for them. That takes time. We have got the Endangered Species Act. We cannot drive a plant or an animal to extinction through our activities. And so we have to survey and plan and that takes coordination.

The people that you are hearing from expressing frustration is some of the same frustration that we have over the length of time some of these things take. And they are very frustrating, but the goals are good. It is next to impossible to shortcut and not make terrible mistakes. And so we have to jump through those hoops.

You put your finger on a very tough problem that we wrestle with. Certainly more people allows us to get the work done quicker, but we have got to find ways to do it more efficiently, and we wrestle with that. The streamlined NEPA that we are working on now should help.

That is I guess about as far as I would go right now.

Mr. BOSWORTH. I would just like to add one thing. When I came into my job a couple of years ago, we put together a team to work on what we call the process predicament, and developed a document to try to identify all the areas where process is a problem for us. And we have had people working all across the country in trying to deal with—it is amazing the number of places where we have brought ourselves to a screeching halt because of our processes. And so we are trying to pick them up one at a time. We are working our way through these and my objective is in the end that we still have good processes, we still take care of the land the way we need to take care of it, but that we are effective and efficient and quick and we do it. And we have not been that way. So that is why we are trying to fix those processes. And you helped us with the Healthy Forests legislation.

Mr. POMBO. Well, I will just tell you on behalf of myself and the other members of the Committee, if you guys come up with suggestions, things that you need, do not hesitate to let us know. You know, the Healthy Forests initiative I think was a good thing and we were able to get that through, but now we are dealing with the aftermath, and if there is something that we need to do in order

to make that happen, you need to sit down and tell us what that is.

Mr. BOSWORTH. We will do that. I appreciate that.

Mr. POMBO. I want to thank this panel for their testimony. I am going to excuse this panel and call up our second panel. Mr. Chips Barry, Director, Denver Water Department and Mr. Peter Brierty, Fire Marshal, County of San Bernardino.

Before you sit down, if you would just raise your right hand.

[Witnesses sworn.]

Mr. POMBO. Let the record show they both answered in the affirmative.

We welcome you here today. As with the previous panel, I would ask you to limit your oral testimony to five minutes. Your entire written testimony will be included in the record. Mr. Barry, we are going to begin with you.

STATEMENT OF HAMLET J. BARRY, III, MANAGER, DENVER WATER, DENVER, COLORADO

Mr. BARRY. Thank you, Mr. Pombo. I am pleased to accept this invitation to be here today. My name is Chips Barry, I am the Manager of the Denver Water Department.

I think I am here because Denver Water has had some experiences in the last three or four years that might prove instructive to people in California. We have had fires and floods. Presumably we have learned something from that and maybe it is relevant to California. Although I will say that the soil conditions, vegetation types, et cetera, are different and I do not know for sure that everything we did is relevant here. That decision will need to be made by people as they go through the experience, but maybe we have learned something and it is helpful.

Teresa has agreed to show some slides for me. I want to point out this is my only opportunity to command the Federal government by asking her to put the slides up and down, so this is my one opportunity to do that.

[Laughter.]

Mr. BARRY. Teresa, you can go to the next one. Just to put things in context, this tells you what the Denver Water System looks like. Right there is the city of Denver, the continental divide runs through here like this, the different colors represent the different watersheds. The biggest watershed is the South Platte River Watershed. More than 80 percent of our water comes from that watershed, either because it comes through a tunnel from the west slope, Lake Dillon, to that watershed, or it originates in that watershed itself. So that gives you that idea.

Let me talk a little bit about the fires we have had in our system. This is the South Platte Watershed. We had a major fire called the Buffalo Creek fire in 1996. We had the Hayman fire in 1992. And from that, we have learned something, and let us talk a little bit about what we learned. And I will say that the Buffalo Creek fire is where we first learned our lesson. We did not anticipate what would happen after we had a 12,000 acre fire, which is relatively small, even by our standards and certainly by California standards, if that fire was followed by a two-inch rain.

Teresa, you can put the next one up, let us see what we have got here. Well, this shows that we have had seven fires in this watershed over the last seven years. We can skip right on to the next one, Teresa, please.

This is the shape of the Buffalo Creek fire, 12,000 acres. Sixty days after that fire, we got two inches of rain in this area and we are talking about rain on top of decomposed granite soil. It is not really soil, it is decomposed granite. I do not know how it compares to the situation here. But we had in about four or five hours two inches of rain in this area. That produced a wall of sediment that came roaring down this creek and dammed—this is the South Platte River right here. It dammed the South Platte River for a period of five or six hours until the river broke through and sent a sea of trash and sediment down the river into our major reservoir, which is right down here.

You can show the next picture, which I think will show—this is an example of 5,000 tons of driftwood sediment, porta potties, tires, propane tanks and other crap that we got overnight in this reservoir. This was a significant problem for us.

Let us look at the next one. This shows what happened to the water quality overnight. That is ash and sediment. Those are our intake towers right there.

Go ahead to the next one, Teresa. I will get to this in a minute. The Buffalo Creek brought us 400,000 cubic yards of sediment into a reservoir that had received 110,000 yards in the prior 11 years. We got 400,000 cubic yards in a space of about 2 days and that equaled what we had seen in prior 12 years. This was a surprise to us and this is the lesson that we were taught that helped us perhaps a little bit getting ready for the next fire.

Now this shows you something that is quite relevant to what the prior panel was talking about. This is the forest in 1900. This is the way the same ground looks today. It is overgrown, it is undermanaged, it needs to be thinned. It is top heavy with fuel and it is like it is in California, this is a disaster waiting to happen. Actually, we have already had this disaster, we burned this area in the Hayman fire in 1992.

We can go to that next slide. This is the whole Hayman fire burn area, this is a major reservoir of ours and this is property that we own. That is 8,000 acres right there, the total area is 137,000 acres. You can see the severity of the burn area around our watershed.

Now I will say that based on what we learned at Buffalo Creek, we began a program of forest treatment and thinning, much the way that the Chief was talking about. In the areas that we succeeded in thinning in advance of this fire, not because we knew the fire was coming but because it was time to do it. In those areas it either did not burn or it did not burn severely. And I will say that our facilities—we have a series of houses and shops and stuff right here. We had done all of that treatment around that area and it did not burn. We have become the poster child for forest thinning and forest treatment to show what happens if you do it and the area then burns, because where we had done the treatment it did not burn or it did not burn severely.

We did have opposition when we began that. We had cooperation from the Forest Service. We had citizens and others who did not want us to thin and treat the forest the way we thought was necessary. We did it and we are happy we did it. But we did not get our 8,000 acres done. You can see, this 8,000 acres, a lot of it burned severely.

Teresa, you can go to the next slide. I think I am going to begin to show what happened as a result of the fire. Goose Creek is one of the tributaries that drains into Cheesman Reservoir. This is what it looks like now, a year after the fire. You can just go ahead and whip through those and we can begin to see the stuff that we have done. Goose Creek used to be about 20 feet wide. It is now 150 feet wide and it has got three feet of sediment and ash deposited in the bottom of that drainage.

This is some of the treatment we did in the area that was burned. We put in straw bales and log sediment dams. We contoured and did directional felling. We hydro-seeded and hydromulched. We put down polyacrylomides which tend to hold the soil. We did hydro-axing. I will have to describe for you what a hydro-ax machine is. It is an amazing item. It is basically a deck mower—a huge deck mower on the end of a cherry picker. You put it at the top of a burned dead tree and it grinds the tree to mulch in about 30 seconds. It is like putting a tree in a pencil sharpener. And I am sure when you come up against your next primary opponent or his campaign manager, you will imagine use of this hydro-ax machine.

[Laughter.]

Mr. BARRY. This thing is remarkable. It is like putting a tree in a pencil sharpener. The last time I checked, we had hydo-axed 425,000 trees on our 8,000 acres, and that is only about a quarter of what needs to be done.

So we did timber sale in the salvage area. We have—in fact, I have this figure somewhere. Ten million board feet of lumber was salvaged from the area burned in this fire. We had to pay to have that done, I would say, but we reduced the amount we had to pay by the salvage value of 10 million board feet. They did not pay us to get it, but we had to pay less to have them do it.

Teresa, next slide. This begins to show some of the technique. We put in—oh, I have a figure here, well, 2,000 sediment dams in gullies like this of straw bales, at least 2,000. I have had a crew of 50 men working on our 8,000 acres in the Hayman forest every day since the fire 18 months ago. Forty men every day doing stuff like this. You can just go through the slides. They will show you the kind of things we are doing.

I always put this in here to amuse the Chief. Our land begins here. This is Forest Service land. We have put straw bale dams all the way down the drainage, all the way down to the reservoir. I will tell you that we think this helps but we have not yet seen a two-inch rain on top of this burn area. We have seen as much—we have seen only about a quarter-of-an-inch of rain so far. So I can tell you that we need to do everything we are doing, but I cannot tell you for sure that it will work absolutely. Mother Nature may win.

Teresa. We have done contour felling. You can see this. This is standing dead timber, where instead of salvaging the lumber we put it across the hill as a sediment dam.

Go ahead. Directional felling in drainage bottoms because you leave it. You do not cut the limbs off and you collect the sediment. You slow it down that way.

This is part of what this crew of men has been doing. We have built these little—these trash racks. You can see that there is sediment collected here. This is the result of a 1/4-inch rain or less. I was up there 2 weeks ago and many of these things are now full and they have to be emptied. If you can empty them. Sometimes you cannot get equipment in, the hill is too steep, et cetera.

This is an area showing what we would call completed treatment. Where we have seeded, we have hydro-axed, leaving the material that the hydro-ax produces from a dead standing tree, which is mulch. Leaving it on the ground and contour felling a tree. So that is what a good portion of our burned area looks like right now, our 8,000 acres.

I will say that—oh, no, one more thing here. My engineers had a bit of a gulp when I told them we needed to design a leaky dam, otherwise known as a sediment trap. That is what this is. The Goose Creek area was heavily burned. You can put up the next one, too. We built a 40-foot high dam that was designed to leak. It is supposed to let water through and hold sediment back. The dam face is down there. We are on the up-stream side. We know that is working. We are going to have to go in and clean it out. I suspect it is the Colorado equivalent of the sediment basins that you have here in the San Gabriel Mountains. It is smaller, smaller scale, same idea. Trap the sediment before it can go downhill and do too much damage.

Let me wrap up with just a few conclusions and observations about what Denver has learned. A great deal of the potential damage from the forest fir can be eliminated or reduced by careful deliberate forest management in the years and decades before. This is what the Chief and others were talking about. I have seen this firsthand. We have forests that have too much fuel, too many trees, too much disease and our fire suppression policy has exacerbated the problem. We have fuel loads that are indescribably large and they lead to the kind of problems that we have seen in our watershed.

Our preliminary conclusion is that our sediment control measures, most of them on a pretty small scale, are going to help, but I cannot guarantee that they are absolutely going to work. I am hopeful but not particularly optimistic that we will succeed in keeping 2 million cubic yards of decomposed granite sediment from washing downhill into the South Platte River and into Cheesman Reservoir. I am hopeful but I am not optimistic.

The Federal government agencies, NRCS, Forest Service, BLM are occasionally helpful and they are always sympathetic; however, their budgets are limited and the acreage they deal with is vast compared to our own. Following the fire, we have outspent the feds ten to one on an acre-per-acre basis in this burn area. The point is that you cannot depend upon the Federal government to do a great deal for you. No matter how big your problem is they have

a million problems just like it or bigger. So Denver has taken it upon ourselves, we are going to do for our land everything we can do. We do not expect—we would hope, but we do not expect the feds to be able to do the same thing.

I remain very concerned about overgrowth in the forest in the so-called red zone, which is the urban wildland interface not owned by the Federal government and not owned by Denver Water. It is overgrown as well. This is not part of my testimony, but listening to earlier testimony, Mr. Pombo, it seems to me if Congress could be of help here, we need to ask the insurance industry to require forest treatment on private land in the red zone, because if you do not treat it, you either do not get hazard insurance for your house or you pay a lot more for it. The single most effective thing that could be done on private land would be to do it through the insurance industry. Congress should—I know you do not like doing battle with the insurance industry, and I do not either at least on the local level. I have tried it and I lost. Not on this issue, on a different one. But it would make sense to me to have the private land incentive. The combination of carrot and stick. There has got to be something out there to get private landowners to take care of it and it may be that the insurance industry is a vehicle to make that happen.

Finally, I would simply say that based on our own experience, we know as much about what to do as the Federal agencies. They are helpful, but you have to rely on your own expertise and your own manpower and your own money if you are really going to get it done. We have done a lot. Denver has become the poster child for this treatment, but, of course, we have not had a two-inch rain on top of that fire area. I am afraid we may become the poster child for the disaster, too. But at the moment, we are the poster child for what you do before the fire and what you do after the fire.

Thank you for allowing me to testify.

Mr. POMBO. Thank you.

Mr. Brierty.

[The prepared statement of Mr. Barry follows:]

Statement of Hamlet J. Barry, III, Manager, Denver Water Department

I. Introduction

My name is Chips Barry, and I am Manager of the Denver Water Department. Denver Water is a municipal corporation that supplies water to 1.2 million people in and around Denver, Colorado. About one quarter of the population of Colorado is supplied by water from us. Our water supply is dependent on water generated in watersheds located primarily on Forest Service and other public lands west of Denver. We gather water in three watersheds west of Denver on both sides of the Continental Divide, and move it by canal and conduit as much as 80 miles to treatment facilities located near the city.

Denver Water has had several large fires in our watershed in the last seven years. This testimony will describe how Denver Water dealt with our watershed before, during, and after those fires, and attempt to distill the lessons we have learned about forest fires, erosion, sediment control, water quality, and the various levels of governmental ownership, control, or oversight that influence our action.

I make no claim that our experience is fully relevant to the recent wild fires here in California. I suspect that differences in vegetation type, soil conditions, topography, and settlement patterns mean that the lessons from our experience will be only partially helpful here in California. Nevertheless, I will try to distill our experience for whatever it may be worth.

II. Watershed Described

Denver draws water from the Blue River, the Fraser River, and the Williams Fork River, all of which are tributaries of the Colorado River west of the Continental Divide. We also draw water from the South Platte River, on the East Slope of the Continental Divide. Much of the water on the West Slope is delivered to Denver by tunnel through the upper reaches of the South Platte. Hence, more than 80% of the water supplied to Denver is delivered via the South Platte River. Thus, the South Platte watershed is of vital importance to us. Since 1996, there have been six forest fires in the upper South Platte watershed. Two of these have had, or will have, devastating consequences for us. (Insert Slides 1-4.)

III. Buffalo Creek Fire

The Buffalo Creek Fire began on May 8, 1996. It burned swiftly and was a very hot fire, burning 12,000 acres in a day. The intensity of the fire made the underlying soil hydrophobic, meaning it would not absorb water. While Denver Water knew that a forest fire could create erosion problems, we had, in fact, no real idea of what would happen. In July, we had a persistent rainstorm on top of the Buffalo Creek Area, and received two inches of rain in a short period of time. The decomposed granite "soil" moved like ball bearings when hit with that volume of water, and this destructive erosion load flowed directly down Spring Creek and dammed the South Platte River. After a few hours, the river broke the dam and the resulting mess ended up in our Strontia Springs Reservoir a mile further downstream. In three hours we received as much sediment in Strontia Springs Reservoir as had accumulated in the prior eleven years. We received something like 400,000 cubic yards of material. We also received fifteen or more surface acres of floating debris, and 5,000 tons of driftwood, port-a-potties, tires, and other flotsam brought down by the flood.

Looking back on the Buffalo Creek Fire and Flood, I think it's fair to say that we did not know how severe the erosion would be if we got a severe rainstorm on top of the area that had been burned. We did not anticipate the damage, but with only 60 days between the fire and the rain, there was little time to do anything had we known.

For this relatively small fire, the water quality and clean-up costs were nearly a million dollars, and the estimated future cost is 15 to 20 million dollars to dredge our reservoir. We estimate the aftereffects of erosion will negatively affect water quality, and cost us $250,000 per year for at least ten years. (Insert Slides 5-7.)

IV. The Hayman Fire

The Hayman Fire began on June 8, 2002. This fire began during times of drought, and was fueled by an overgrown, under-managed forest, and high winds. The fire burned for six weeks, and, at the end of it, 138,000 acres of our South Platte watershed had been consumed.

Prior to the fire, based partially on our experience at Buffalo Creek, we had begun a program of forest thinning and treatment to reduce the fuel loads in the forest on lands we own. However, Denver Water owns only 8,000 acres of the 138,000 burned, and even for our 8,000 we had only completed about one quarter of the thinning. The lesson is that the area that was thinned or treated did not burn or did not burn severely.

Following the Hayman Fire, and continuing until today, Denver Water has had a crew of up to 40 people working on our land around Cheesman Reservoir, in order to prevent or limit the kind of sedimentation seen after the Buffalo Creek Fire. Fortunately, we have not yet seen the kind of rainfall over this burned area that was seen in the summer of 1996. However, even a 1/4-inch rain has been sufficient to move tons of debris down the hill toward the river and our reservoir.

Since July of last year, the following restorative efforts have taken place at the Cheesman Reservoir property:

- Denver Water crews and aerial contractors have applied more than 210,000 pounds of grass seed over 4,550 acres, and have sprayed hydromulch over an additional 450 acres;
- Nearly 30,000 straw bales have been placed, creating nearly 2,000 sediment dams in gullies in the burn area in order to slow the flow of rain runoff;
- Crews have cut dead timber on steep slopes in the burn area using a process called "contour felling," in which trees are cut and aligned perpendicular to the slopes, again to prevent erosion;
- Denver Water also hired contractors with Hydroax machines to mulch standing dead trees on about 2,100 acres. This process helps break up the hydrophobic soils, removes the unsightly burned trees from the landscape, and returns organic materials to the soil, replacing those that were destroyed in the fire.

Much of this was done in areas that were already seeded, providing mulch over the seed;
- Under private contract, 1,700 acres of burned land were logged by timber salvage companies. About 10 million board feet of lumber—the equivalent of 22,000 cords of firewood or 2,900 miles of 2-by-4 studs—were salvaged;
- Starting this year, Denver Water planted 25,000 ponderosa pine seedlings and will continue to do so for the next nine years to reforest the area with its native pine species;
- As a more immediate source of protection for the dam and the water supply, a 140-foot-long, 40-foot-high rock sediment dam was constructed to span the Goose Creek inlet, northwest of the dam. The structure contains about 14,000 tons of rock and is designed to be water permeable; and
- Costs of the Cheesman reclamation have totaled nearly $5.5 million, with the U.S. Natural Resources Conservation Service and the U.S. Environmental Protection Agency reimbursing Denver Water about $2.8 million of that amount. Future dredging costs have not been estimated.

(Go through the sequence of slides from No. 8 through No. 23, describing the fire, erosion prevention measures, and sediment problems.)

V. Lessons Learned and Observations.

I do not know whether the experience of Denver Water in the arid ponderosa pine forest of the foothills of the Rockies is relevant to the chaparral fires in coastal California. Nevertheless, my observations and final thoughts are as follows:

1. A great deal of the potential damage from the forest fire can be eliminated by careful, deliberate forest management in the years and decades before. We have too much fuel load in our forests, and our fire suppression policy exacerbates the problem. Our forests need to be treated and thinned regularly and scientifically. This problem has nothing to do with favors to the timber industry;
2. Our preliminary conclusion is that our sediment control measures, most of them on a very small scale, have helped, but they have not yet been severely tested by a large rain event. I am hopeful, but not particularly optimistic, that we will succeed in preventing two million cubic yards of decomposed granite from moving downhill into our waterways;
3. The Federal Government agencies, namely NRCS, The Forest Service, and BLM, are occasionally helpful and usually sympathetic. However, their budgets are limited and the acreage they deal with is vast compared with our own. Following the fire, we have outspent the Feds nearly 10 to 1 on an acre-for-acre basis comparing our land to theirs. The point is that you cannot depend upon the Federal Government to do a great deal for you. No matter how big your problem is, it is only one among a million such problems for them;
4. Denver Water remains concerned about overgrown forests in the "red zone," which is the urban/wildland interface west of Denver up and down the Front Range. We have not yet discovered the right mixture of carrot and stick that will motivate private landowners to treat and thin the forest on their property to help avoid catastrophic wildfire; and
5. I think the above observations lead clearly to the conclusion that the local agencies know as much or more than anyone about the problems and what will help to alleviate future water quality, sediment, and erosion problems. Based on our experience, there is no guarantee that any of the measures will work, but we need to do what we can.

STATEMENT OF PETER BRIERTY, FIRE MARSHAL, SAN BERNARDINO COUNTY, CALIFORNIA

Mr. BRIERTY. Honorable members of the Subcommittee, Mr. Chair and Congressional guests, on behalf of the citizens of the County of San Bernardino and the Board of Supervisors of the County, I would like to thank you for the opportunity to speak here.

Last month these mountains dodged a bullet. A bullet that could have taken the life off of, if not out of, these mountains.

I realize that today across our great nation there are other forests with as many, possibly more, dead and dying trees. But those forests are not the most popular, not the most visited, not the most

populated. They do not contain $8 billion of assessed homes and properties and businesses, the homes of our citizens.

To manage the bark beetle problem the Board of Supervisors, over 18 months ago, authorized that the Mountain Area Safety Task Force, or MAST, be the administrative structure to manage this multi-jurisdictional emergency. The efforts of MAST paid great dividends in our response here on the mountain top. With that in mind, the county's Office of Emergency Services is reinvesting those benefits of the MAST model and has initiated an action plan in cooperation with our flood control districts to mitigate the effects of debris and flood runoff from the burned areas. There are now 30 miles of burned foothills, moonscape. This is not only a physical threat of debris and mud flows to our property owners down stream but it also threatens the quality of our drinking water, not just in the foothills and the mountains, but the quality of drinking water for millions of people in California and also the California water project.

A year before the fire started MAST was addressing reforestation. As we speak, the Lake Arrowhead Community Services District is creating a customer report that provides citizens with valuable information on erosion control. This is a companion document to their previous publication providing information on proper planting of fire resistant and drought tolerant native plants in the mountains. This week alone several meetings have been held between agency representatives, registered professional foresters, arborists, fire safe councils and the Resource Conservation Service and, of course, citizens in efforts to coordinate, educate and most importantly initiate action on the issues of proper replanting, healthy reforestation and erosion control. The House Resource Committee's continued support of these community-based operations are critical to the long-term success of reforestation on this mountain.

As of November the 1st, the fire siege of California consumed almost 800,000 acres, but 68 percent of those acres that burned were private lands, leaving only 32 percent that were Federal. I would ask that Congress encourage the Forest Service to utilize the maximum flexibility provided within the Act to fund efforts to mitigate the fire danger and the threat on private lands, or as the Act describes as at-risk communities that are surrounded by a forest boundary. There are 49,000 improved parcels with homes and businesses in this forest, but only a small minority of those businesses and homes are actually on Forest Service lands.

I would also ask that the Forest Service make their highest priority those projects that will protect our communities. They should endeavor to provide fuels treatments, fire protection zones, shaded fuel breaks in cooperation with local fire jurisdictions and create them immediately, but in an environmentally safe fashion with respect to artifacts of those who have gone before us adjacent to our communities.

Let us talk about fire safe councils. I would ask that funding be provided to our fire safe councils, but the grant approval system that we have today is rather Byzantine. It is cumbersome, it is time consuming and the folks that are sitting in this room today that are members of those fire safe councils are ready to act today,

not next year and not years from now but today. They are here and willing. These citizen-led organizations have made terrific progress in every single community across this mountain top. Their tireless efforts to motivate, educate and organize have paid great dividends to our mountain communities. Ellen Palima from Latto Creek should get a medal for what she did over there. Among their successes, their town hall meetings—constant town hall meetings, standing room only, filling this room itself to overflow, were clearly the foundation for success for the sheriff's office safely evacuating over 58,000 people off this mountain in a few days. Although it might not have been the largest evacuation in the state's history, it was certainly the most calm and absolutely the most polite.

The term tree removal now needs to include the development of infrastructure to utilize all of those wood products from the tree and consider them raw materials and not waste. The county itself has initiated funding actions to begin its own financial efforts to develop the much-needed wood products utilizations, wood mills, local mills, portable mills, cogeneration operations. At our last meeting tree removal operations were creating 600 tons of wood waste a day. That has just gone well over 800 and with the work of California Edison—one of our greatest allies on the mountain top for removing fuel is California Edison—we well may move over 1,600 tons a day. Now let us put that in perspective with last January. At this time last year we were handling about five tons of wood waste a day. We need that infrastructure. Also, please note that I have quoted only activity on the private lands. These numbers do not include the trees on Federal lands, which is roughly a 10 times larger land mass. The solutions that we need to consider must include the beneficial uses of all wood products regardless of their origin.

In terms of the fire response, we must also examine the National Fire Plan and the National Wildland Policy in regard to how local agencies are reimbursed when wildland fires threaten structures on private lands. Local governments, whose citizens all pay Federal taxes, incur great expense in providing structure protection during these events and do not have the mechanism or the funding in place, the so-called red money and green money, to pay for response from threats from outside their community.

With regard to the President's Healthy Forest Initiative. In recent days it has been somewhat frustrating to hear that the President's Healthy Forest Initiative was immaterial to the fire siege of 2003. Some have observed that the fire was mostly in chaparral and coastal sage, not the forest. Well I am here to tell you that our local mountain fire fighters and those that helped them from all over are not going to allow this fire to burn into this forest just to make a political point. Some say it was a little luck, some say it was the weather, but I say there was a lot of planning done by MAST, there was a lot of preparation by our fire safe councils and the bottom line, some incredible fire fighting—nothing less than heroic, at great risk to themselves—ta kept this fire out of the greater parts of our mountain communities. The siege of 2003 is now recognized as possibly the largest fire in California history with 3,000 homes lost, a tragedy. But the fire fighters kept this fire from getting into 10 times that many homes.

With regard to the trees that were effected, absolutely fewer than five percent of the trees were taken. That leaves 95 percent still standing and more dying every day. The threat is real, the threat is still here and we need your help as much now as we did before.

Again, I would like to take a moment to thank you for taking the time out of your busy schedules to meet with us today. Particularly again I would like to thank Congressman Lewis for his commitment to our citizens' safety, his tireless efforts to provide funding where none had existed before. I believe Senator Feinstein should be recognized for her help and her efforts to move this along. And I would like to extend a personal thank you to all of you members to that some day we can all say that we gave a gift of a healthy forest to our children—and my children are here today—and that gift can be given to their children so they can enjoy it.

I would look to thank you very much.

[The prepared statement of Mr. Brierty follows:]

Statement of Peter Brierty, Fire Marshal,
County of San Bernardino, California

Honorable members of the Subcommittee, Mr. Chair, on behalf of the citizens of the County of San Bernardino, and the Board of Supervisors, I would like to thank you for the opportunity to speak to you today.

Last month these mountain residents dodged a bullet. A bullet that could have taken the life off of, if not the life out of, these mountains.

I realize that today, across our great nation, there are other forests with as many or possibly more dead and dying trees. But those forests are not the most popular; they are not the most visited; they are not the most populated; they do not contain eight billion dollars of assessed value of businesses, and homes, the homes of our citizens.

POST-FIRE REHABILITATION

MAST

To manage the bark beetle problem the Board of Supervisors, 18 months ago, authorized that the Mountain Area Safety Taskforce (MAST) be the administrative structure to manage this multi-jurisdictional emergency. The efforts of MAST paid great dividends in our response to the fire here on the mountain. With that in mind, the County's Office of Emergency Services is reinvesting those benefits of the MAST model and has initiated an action plan in cooperation with our Flood Control Districts to mitigate the effects of debris and flood run off from the burned areas.

There are now 30 miles of burned foothills, moonscape, from La Verne in L.A. County across the front country to the Seven Oaks Dam east of Highland. This flood threat is not only a physical threat of debris and mud flows to property owners downstream but also threatens the quality of our drinking water, not just in the foothills, but the quality of the drinking water of millions of Southern Californians.

Under the original construct of MAST, a year before the fire started, a division was designed to address reforestation. As we speak, the Lake Arrowhead Community Services District is creating a Customer Report that provides citizens valuable information on Erosion Control. This is a companion document to their previous publication providing information on proper planting and replanting of fire resistant, drought tolerant plants in the mountain communities. This week alone several meetings have been held between Agency reps, Registered Professional Foresters, Arborists, Fire Safe Councils, the Resource Conservation Service and citizens in efforts to coordinate, educate, communicate and initiate action on the issues of proper replanting, healthy reforestation and erosion control.

The House Resources Committee's continued support of these community-based operations is critical to the long-term success of these endeavors.

FIRE PREVENTION

PRIVATE SECTOR PROPERTIES

We need to maximize the funding of fire hazard mitigation and dead tree removal in the private land holdings. As of November 1st the Fire Siege of California

consumed almost 800,000 acres. 68% of what burned was private lands. Only 32% was Federal Land.

I would ask that Congress encourage the USFS to utilize the maximum flexibility provided within the Act to fund efforts to mitigate fire threat on private lands that are surrounded by the forest boundary. There are 49,000 improved parcels, parcels with homes and businesses on private lands adjacent to the boundaries of the San Bernardino National Forest. Only a small minority of our mountain homes are actually on USFS lands.

I would also ask that the Forest Service make their highest priority, those projects that will protect our communities. They should endeavor to provide fuels treatments, fire protection zones or shaded fuel breaks in cooperation with local fire jurisdictions and create them immediately adjacent to our communities. I recognize some controversy in their effectiveness during a Santa Ana condition, but they are effective at reducing the velocity and momentum of fire and they do provide a degree of protection to our communities. A degree that doesn't exist today.

FIRE SAFE COUNCILS

I would ask that funding not only be provided to local agencies to remove the dead trees but also funding must be provided to our Fire Safe Councils. The Byzantine grant approval system that is used today is too cumbersome and time consuming. These folks are ready to act today. These citizen-led organizations have made terrific progress in every community across this mountain. Their tireless efforts to motivate, educate and organize have paid great dividends to our mountain communities. Among many successes, their town hall meetings, standing room only, were clearly the "foundation for success" of the Sheriff's Office safely evacuating over 50,000 people off of this mountain in only a few days. Some have said that it was the largest evacuation in the State's history. If it wasn't the largest it was the most calm and the most polite.

SOLID WASTE MANAGEMENT

We must reconsider our definition of "tree removal." It is no longer just felling the tree. Tree removal now needs to include the development and utilization of infrastructure to utilize all of the wood products from the tree and consider them raw materials, not waste. The County has taken actions that are financing initial efforts to develop much-needed wood products utilization, but much more can be done with your help. At our last meeting, tree removal operations were creating 600 tons of wood waste a day, now we have exceeded 800 tons a day and this is without the Southern California Edison tree removal operations in full swing. Their participation will likely move us to 1,600 tons a day. To put this in perspective, before the crisis, we managed five tons a day. Another source to consider is that the figures I have quoted only include activity on private lands. It does not include the Federal lands, which is roughly an area 10 times larger. The solutions that we consider must include beneficial uses for all wood products regardless of their origin.

FIRE RESPONSE

We must also examine the National Fire Plan and National Wildland Policy in regard to how local agencies are reimbursed when wildland fires threaten structures on private lands. Local governments, whose citizens all pay federal taxes, incur great expense in providing structure protection during these events and do not have the mechanisms or funding in place to pay for response to threats from outside their jurisdictions. With over 350 Counties, Cities and Tribes participating the specter of uncompensated provision of service is wearing thin the fabric of the best mutual aid system in the Country.

PRESIDENTS HEALTHY FOREST INITIATIVE

In recent days it has been somewhat frustrating to hear that the President's Healthy Forest Initiative was immaterial to the California Fire Siege of 2003. The detractors state that the fire was mostly in chaparral and coastal sage. I am here to tell you that our local mountain fire fighters were not going to allow this fire to burn into this forest just to make a point. Some say it was a little luck, some say it was the weather, but I will say that there was a lot of planning from our Mountain Area Safety Task Force, and preparation by our citizens and, the bottom line, some incredible fire fighting, nothing less than heroic fire fighting that kept this fire out of the greater parts of our mountain communities and out of the forest.

The Siege of 2003 is now recognized as the largest fire in California history with over 3 thousand homes lost. These fire fighters kept this fire from getting into the dead trees and saved ten times that number of homes. Homes that would have been lost had this fire gotten into our dead forest.

The fire affected fewer than 5% of the dead trees, 95% still standing and more dying every day. The threat is real, the treat is still here, and we need your help as much now as we did before.

Again, I would like to take a moment to thank you for taking time out of your busy schedules to meet with us today. I would particularly like to thank Congressman Jerry Lewis, for his commitment to our citizen's safety and for his tireless efforts to provide funding where none existed. Senator Feinstein should be recognized for her efforts to help us. And I would like to extend a personal thank you to all of you for your commitment to eliminate the fire danger that still exists here in our mountain communities and that someday, we all can say that we gave the gift of a healthy forest to our children, a gift that their children will enjoy. Thank you very much.

Mr. POMBO. Thank you and I thank you for your testimony.

[Applause.]

Mr. POMBO. I know, Mr. Brierty, that you had a personal conflict and when it is necessary for you to leave, feel free to do so.

Mr. BRIERTY. Thank you very much. I will be more than happy to stay and answer questions.

Mr. POMBO. Mr. Calvert.

Mr. CALVERT Thank you, Mr. Chairman.

Mr. Barry, I was very interested in your testimony as well as Mr. Brierty's testimony, but the after-effects of the fire. In the last panel, you may have heard my questions to our friends as U.S. Geological Survey, and as I mentioned, Fish and Wildlife is not here, the Corps is not here. Those are agencies I am sure you had to deal with in the permitting process which you had to go through.

The Hayman fire was approximately 140,000 acres. This fire exceeds that by a factor of two or three, three probably.

Mr. BARRY. Six.

Mr. CALVERT Six, yeah. There are six million people who live downstream in the Santa Ana River shed and I can tell you from flying over in the helicopter today that there is some work being done, but from your experience with a smaller fire, you are saying that if we have two inches of rain, if we are not prepared for this, we could have a disaster that is multiples of what you experienced in the Denver area, is that correct?

Mr. BARRY. Well, Mr. Calvert, I need to be very careful about not setting myself up as an expert in the geology, the soils, the hydrology, et cetera of this area. I certainly know—I think things are different here, your slopes are steeper, the soil is different and I do not want to project what I think will happen here because I have not studied it. And in fact, probably like many of you, I am a lawyer, not a scientist. So my word is not particularly valuable on that point anyway.

I do know that two inches of rain on top of the Hayman fire area in the next two or three years, any time in the next two or three years, is going to cause enormous problems for Denver and that is——

Mr. CALVERT. How many people downstream from the Hayman fire?

Mr. BARRY. Well, all the way downstream in the city, you are talking about two million, but in the area above the reservoirs that would probably fill up with sediment if anything happened, there are only a few thousand people. It is not quite like this area around Lake Arrowhead where it is heavily urbanized.

The Hayman fire area had probably only 5,000 or 6,000 houses in it total.

Mr. CALVERT. I guess I just want to make the point that as bad as the Hayman fire was and the predicament that you are in is terrible, this could very well be worse.

Mr. BARRY. I think this could be worse, but I want to be careful about that.

Mr. CALVERT. And so it is imperative that the permits are in place, that the work takes place immediately to make sure that we mitigate for that. And also on the water quality issue, which we will probably get into with the next panel, this obviously has a horrendous effect on water quality; and I know from my experience in chairing the Water Subcommittee that Colorado is in a difficult situation anyway with water. So if you are not able to use your groundwater, you have nowhere else to go.

Mr. BARRY. Well, groundwater is not the problem, it is the surface water. If that gets full of ash and sediment, then it is going to cost us more money to treat it.

Mr. Calvert, I had one item. Are you still there? There is a book, it is 20 years old now, but John McFee's book called "The Control of Nature" has three chapters in it, one about controlling lava by putting fire hose water, one about the Mississippi River and the Corps of Engineers and the third chapter is called "Los Angeles against the mountains" and it is the story of debris flow basins and the cycle of fire, flood, debris, et cetera. And I would urge Committee members to look at that. It is well written. I have never met John McFee, I would not know him if he walked in the room.

Mr. CALVERT. I did read the book a long time ago, I will re-read it.

Mr. BARRY. But it is superb in talking about the issue of what happens if.

Mr. CALVERT. Great, thank you.

And Mr. Brierty, your comments on fuel reduction, there are only several things you can do. People talk about fuel reduction and most people say they are in favor of that, but if you mention the word logging, you will get a lot of people upset. But what do you do with it? I mean either you can throw it away, which a lot of that is taking place today, or you can use it in some manner, whether it is biofuel or logs or something, to reduce the cost of removal, because this is going to be extremely expensive.

Mr. BRIERTY. Yes. There are several options. Some of them are long-term, the cogeneration option is an 18-month to 2-year process. But some of the things we have looked at—the county just provided a loan to a pallet manufacturer. One of the situations we have up here is the homes are so close together you cannot free fall a tree and make regular lumber out of it, but the person who makes pallet stock, four foot lengths, can take those four foot, five foot, six foot chunks that have to be cut down in that fashion and use those as raw materials. Rather than using the good lumber, the 50-60 foot logs for pallet stock, let us use the stuff that is made available here, create market niches that we can make on this mountaintop.

Mr. CALVERT. I was raised in this area—this is my last question, but I cannot remember, maybe Mr. Lewis can remember, but I

remember there used to be a local mill here. I think it closed in 1978 or the early 1980s.

Mr. BRIERTY. That is correct.

Mr. CALVERT. It was an old family mill, was it not?

Mr. BRIERTY. Yes, it was about 20 years ago. As early as a year ago, I had people tell me that there was no way that there would be another mill created in southern California, and as soon as we get it open, we are going to invite them to cut the ribbon with us.

[Laughter.]

Mr. CALVERT. Thank you.

Mr. POMBO. Mr. Baca.

Mr. BACA. Thank you very much.

Mr. Brierty, the first question is, you know, firefighters inhale fumes from fires and from everything else from fire burns. I have introduced a bill that requires health monitoring and analyzes the firefighters who respond to fires, wildfires and fire disasters. But besides the treatment, what do you think can be done through prevention? That is question number one. Number two, is there any equipment or precaution firefighters should use to reduce the amount of exposure to harmful fumes or other hazards?

Mr. BRIERTY. One of the situations in the forest is that is just a byproduct, there is no way to get around it. I think that is where the term "smoke eaters" came from. But one of the things we can do is through proper forestation, through proper removal of dead materials, we can reduce that fire hazard and reduce the overall risk to those firefighters. It is indeed—cancer is presumptive in these folks because they breathe so much contamination in their jobs. And I applaud you for your efforts to do that.

Mr. BACA. Thank you. I like the fact that you mention cancer presumption, because California is the first state to do that. Hopefully we can do that at the national level. I have introduced legislation in that area. Thank you for that plug.

Mr. BRIERTY. Thank you.

Mr. BACA. In reference to another question, do you believe that there is adequate funding to continue to be ready to fight any additional fires that may come our way? That is question number one. Two, is there adequate funding in terms of both equipment to fight the fires and the ability to protect our firefighters? Because I noticed that when I was out there during that period of time with the firefighters and highway patrol, I saw many of the individuals who were resident individuals trying to put out the fires themselves. Joe, can you call a firefighter, can you get them over to my home? I wish I had a magic wand and I would have just been able to got a fire truck in that immediate area and got it there. They felt they would have saved their homes, some of them did and some others did not. But is there anything that can be done?

Mr. BRIERTY. Absolutely. All across southern California, northern California, there are measures going forward to the voters to try to staff up and properly equip firefighters to do the job. To give you an example, for the last two years, we have been asking for assistance prior to the fire starting, and I was told by the FEMA representatives that as soon as the fire started, we would have all the resources we need. Now sitting on Sunday morning on October 26, watching the fire burn toward Crestline with seven local engines,

a strike team from San Diego and our assistants from the Forest Service and CDF is all we had that morning on Sunday.

But again, you have to remember that there was tremendous resources drawn everywhere in southern California. The answer to your question is no, there is not.

Mr. BACA. Thank you very much.

How much has the lack of infrastructure such as milling, cogens for electricity cost the County of San Bernardino?

Mr. BRIERTY. It has cost the county well over $5 million to this point and it is expected to increase until such time that we have those infrastructures in place. One of the benefits of that is once those infrastructures—mills, et cetera—come into place, it will again reduce the cost of the tree removal to our citizens and incentivize, absolutely incentivize the removal of dead trees and help us start the forest regeneration.

Mr. BACA. Thank you.

Mr. Barry, I know that I am running out of time, but my question pertains to something that you said and I am intrigued by it because you talked about the insurance industries.

Could you elaborate a little bit more in reference to what can be done there? Because I sit on the Financial Services Committee and that has jurisdiction over insurance companies.

Mr. BARRY. I did not put anything in my testimony because I did not think of this in this context until this morning, but it does seem to me—I do not know how Congress would do it. I do not want to—I do not know enough about how you would do it, but it would seem to me that the incentive for a homeowner to do forest treatment and thinning on land he owns would be considerable, if the insurance company said either we will not write insurance or we will increase the price unless you treat the forest land on your property. It seems to me that may be an easier mechanism than having the heavy hand of the Federal government tell a homeowner you must do X and you cannot do Y. That is always a difficult thing to do, but if there were a way for the insurance industry to make that as part of a policy or a requirement of a policy, you would see action.

But I have not begun—and I would be more than happy to have people from my office and utility and even state work with you all about that. It is just the beginnings of an idea at this point.

Mr. BACA. I would like to explore that since I do sit on that Committee.

But one final question, since my light is on. The city of Rialto in my district has declared a water shortage emergency on Tuesday. They have already faced serious quality and quantity problems due to perchlorate and drought, but the vegetation that has helped water seep into the ground has been destroyed. The City believes that they have enough water for now, but there will be serious problems if the basin does not soak up the water. The ashes and debris will also cause problems for water treatment.

How great of an impact do you believe that water shortage could have on this community or any other communities and what steps do you believe should be taken to make sure that there is enough quality water?

Mr. BARRY. That is to me?

Mr. BACA. Yes.

Mr. BARRY. We have many of the same problems in Colorado, almost all of our water supply in Denver comes from snowmelt. We have had several water-short years. We are taking a number of different steps to increase our water supply, including increased water conservations, incentives, rebates, et cetera. We are building a water recycling plant, $110 million worth of recycled water that will be reused for non-potable purposes. And we are building small projects, nothing big, but a whole number of different things to increase supply.

Beyond sort of generic advice, I want to stay away from telling California agencies how they should do their business, because it is different than ours.

Mr. BACA. Peter, if you would like——

Mr. BRIERTY. Congressman Baca, on your question on insurance, one of the things I am sure mountain residents would be very concerned about is actually a concern over cancellation, that the fear may be too great by the insurance companies, but if you could assist in assuring folks that their insurance would not be canceled as long as they took prudent actions, that would be much appreciated.

Mr. BACA. Thank you.

Mr. POMBO. Mr. Radanovich.

Mr. RADANOVICH. Thank you. I thought both your testimonies were very valuable and I appreciate you being here, but I have no questions.

Mr. POMBO. Mr. Walden.

Mr. WALDEN. Thank you, Mr. Chairman. I too appreciate your testimony.

I wanted to point out, this discussion about biomass and how we can use that to produce power. Just to remind people that in the Healthy Forests Restoration Act, we put a provision in there for $10 a green ton to help subsidize it, to help pay for getting it basically out of the woods down to where it can be used. People you talk to who are in that business will tell you that is a pittance compared to what it will take, so we are not going to artificially subsidize it to the point of not being economically feasible, it will either make it or not. But it is a little bit of an incentive I think that will help develop a market for that renewable resource.

How do you say your last name?

Mr. BRIERTY. Just like you were to make tea out of briars, briartea.

Mr. WALDEN. Good, thank you.

Mr. CALVERT. Sticky subject.

Mr. WALDEN. The point I was going to make, when we were putting together the Healthy Forest Restoration Act, the House version left open but set priorities where this Act would have its priority. And we said wildland/urban interface, watersheds, areas of endangered and threatened specie habitat and watersheds. When the Senate got done with it, they put an arbitrary half-mile limit and said half the money has to be spent within half a mile of a wildland/urban interface. Now in reality, we spend over 60 percent of the funds there today.

We were trying to leave some flexibility to deal with, if it is your watershed, the Forest Service says needs it the most, supply it

there, or if it is wildland/urban interface, you can do it there, but try not to have these arbitrary limits.

The concern I have is that this Act, as good as it is, and the reform, as good as it is, only applies to about 11 percent—11 percent—of the lands identified in the forest system that we know are subject to catastrophic fire, bug infestation and disease, because there is 190 million acres at threat. This is limited to 20 million acres. Now that is still a lot of territory, but it does not apply to timber sales, it does not go into wilderness areas, it does not go into these roadless areas. All that stuff is sort of off limits. And so as I look at the problem we face, this Act will help us in a limited way, but it seems to me there is a lot more that needs to be done. And I guess specifically to you, Mr. Barry, in the watershed environment and in a post-fire environment, what were you able to do and the timeline you undertook versus those across the red dotted line you had there, in the Federal lands, how long has it taken them to do things? And can you compare the processes? You are an attorney, give us an idea.

Mr. BARRY. One, I think one of our concerns with the Healthy Forest bill is it does not put emphasis on watershed, and we thought that perhaps that was missing. Congressman McInnis, who I know well and have for 20 years, we are going to miss him, did a good job, did very much appreciate all that work, but if I had any problem with the bill, it did not quite go enough to identify watersheds as a particular area of concern.

Mr. WALDEN. We did highlight it though as one of the top ones.

Mr. BARRY. You did highlight it and I agree with that, and I think that was helpful. And I know that this is all part of a larger political process, so I want to use the term log rolling, but perhaps in this context, that might be a little bit off.

Mr. WALDEN. Would not go.

Let us go back to the watershed.

Mr. BARRY. What we did in the watershed that we own was far more than the Forest Service was able to do. I think they were in full agreement with what we were doing, but they did not have the manpower or the money to do it. So we spent about 10 times as much money per acre.

Mr. WALDEN. Right. But what I want to get to is in addition to money, we know that process differences—you are not bound by the same sort of NEPA processes, are you?

Mr. BARRY. No, we are not.

Mr. WALDEN. And so how fast could you operate? Can you compare what you were able to do, to put together your plans and implement them, compared to what you see happening across the line that you are concerned about?

Mr. BARRY. I thought that after the fire, the Forest Service did not appear to be hamstrung as they were before the fire, by excessive rules and regulations and process. I did not find that their ability to move was particularly hamstrung by their own regulations and litigation, as it is before the fire. And we had some experience with that and so did they. I thought afterwards, they could do almost everything they needed to do. They just did not have the manpower and the money.

Mr. WALDEN. We are sure seeing something different in Oregon, where 400,000 to 500,000 acre perimeter burned in the Biscuit fire. The counties and private landowners have gone in, they have gotten out the dead trees, they have replanted, they are doing a lot of things. The Forest Service is still writing the plan that they know will take another year to be appealed. We are going to be three years in, you are not going to end up with a conifer forest unless you spend a fortune to put it in there, because the brush is going to come up and overtake it.

Mr. BARRY. I guess my experience in Colorado has been a little bit better than that.

Mr. WALDEN. Good.

Mr. BARRY. But it is either that I am misinformed or not sufficiently informed or that things are a little bit different. I cannot tell you which.

Mr. WALDEN. Thank you. Thank you, Mr. Chairman.

Mr. POMBO. Mr. Lewis.

Mr. LEWIS. Thank you, Mr. Chairman. I too would like to say that the testimony of both of you has been very helpful, a lot of imagination and stimulated at least me.

Mary Bono mentioned earlier that she and I a long time ago, with some people with forest expertise spent some time on the ground but also flying around the forest, her portion of the San Bernardino National Forest as well as this. Yesterday, I flew in helicopter from here all the way down through the L.A. County line to see the huge front that is there. And above that fire line, of course, the very problems that you have been discussing—soil erosion, the potential for sediment movement, what it can do to the people who live in the pathway of that movement—all of that is of great concern.

But the line I remember from that one trip from these timber experts was that in the San Bernardino National Forest, unless we get a handle on these bark beetle trees, if we have that major fire, that chances are very, very great with the geology, the steep slopes and otherwise, that erosion could very well eliminate the ability of those who care to ever bring back the kind of tall tree, fir forest, that we all love and know, and perhaps we will be left with scrub oak. The prospect of that was enough to stimulate me to get involved as early as possible.

But in the meantime, as you are talking about items—I never heard of hydro-axing before. I do not know if, Peter, we have been thinking about that, but this mix of possibilities in terms of a very rapid action plan over the next 12, 18, 24 months is sure intriguing to me and I do want to follow through on it. Would you both comment on that scrub oak forest that I am worried about in this huge front?

Mr. BRIERTY. The concern I have is exactly that, the watershed is extremely important to our ability to regenerate this forest. Personally, I still drink tap water, so the watershed protection is extremely important to anybody who lives on this mountain and we need to work on that as fast as possible.

Mr. BARRY. I do not have too much to add other than that the catastrophe in Colorado appears to me to be less because there are fewer people living in the area that has burned or immediately

downstream of it. And that our slopes are less steep and we are talking mostly about ball-bearing size decomposed granite sediment, not big boulders. When I read John McFee's book, he talks about Volkswagen sizes boulders crashing through people's houses. That seems to me to be a bigger problem. And I agree that unless we get a handle on it and you see big rainstorms with perhaps change in the meteorological conditions of the earth, there are some serious problems ahead, I would guess. But again, I want to be very careful, that I am not an expert in southern California. Practically the last time I was here was when I was born here 59 years ago. So I am no expert.

Mr. BRIERTY. With the heat that the fire caused as it burned, many areas that we have are basically moonscape and somewhat of moon dust on them. It is not an issue of when the rain comes, the dust storms that we have had, you can see alluvial deposits coming off the hillsides of the fines, the things necessary for the small plants to grow that would encourage the other larger plants. So if we do not move fast—we do not have to wait for rain here, we have got wind conditions that will cause the problem to exacerbate.

Mr. BARRY. We have seen some success—remember, I talked about two fires. Buffalo Creek in 1996, our movement after that fire was not as aggressive, but we have seen reasonably decent revegetation of grasses, very little of trees. That has helped slow down erosion in that area, has not stopped it, but it has helped. It gives me hope that if you can get a reasonable degree of revegetation, mostly grasses and sedges, brush, not trees because trees take a long time, in a five to 10 year period, you may be able to reduce sediment flows by quite a bit. But as I said, we are the poster boy for what you do, but it has not rained hard in the drainage yet and after it does, we may be the poster boy for something else.

Mr. LEWIS. Well, we want to keep very close to what you are about and what does happen. The testimony here on the part of both of you has been very valuable. Thank you, Mr. Chairman.

Mr. POMBO. Ms. Bono.

Ms. BONO. Thank you, Mr. Chairman. I actually just want to compliment both gentlemen on their testimony and say, Mr. Barry, it certainly does not seem like much stands in your way and I applaud you for that, because the answers are usually outside of the box, and I appreciate you way of thinking.

I really just have a quick comment, and that is to Mr. Brierty, that during the fires, Congressman Calvert and I toured, along with Secretary Veneman, the California Department of Forestry's I guess response center in Riverside, or command center.

Mr. BRIERTY. Right.

Ms. BONO. And we were very—I believe I speak for Ken as well, interrupt me if I do not—but we were very impressed with how the agencies came together. And certainly in this post 9-11 world, where we have heard so much criticism about our agencies not talking to one another, we were very impressed and encouraged by your ability to walk in the door, and the famous line was of course, "to check their egos at the door" and they sat down, rolled up their sleeves and they attacked these fires extremely successfully and we were encouraged, because we know that your charge is larger than

just this, but heaven forbid 1 day when we have that large catastrophic earthquake or terrorist attack, we will be in very much the same situation. So my hat is off to you for doing such a great job and we witnessed first-hand how effective you were. So that is not a question, but sometimes we do not dish out enough compliments around here, so I hope you will take that instead of a question.

Mr. BRIERTY. Thank you very much. And on behalf of the chiefs that made that happen, there is a lot of vision in Tom O'Keefe, Gene Zimmerman, Peter Hills, Bill McNall and Bill Smith from Running Springs, that made those types of things happen. So thank you very much for that kind compliment.

Ms. BONO. Thank you. I yield back, Mr. Chairman.

Mr. POMBO. Thank you.

Mr. Barry, just I guess briefly in your opinion, what were some of the impediments to the work that you did in terms of Federal rules, policy, laws that stopped you from being able to move forward?

Mr. BARRY. Let me give you two different answers for the time period. When we were trying to do forest thinning and forest treatment before—after the Buffalo Creek fire but before the Hayman fire, where we wanted to go in and treat, reduce the density of fuel loads in the forest, we had cooperation from the Forest Service, but we did get sued, there was dispute about rewriting the forest management plan. That process moved more slowly and less completely than we would have liked. I do not—I did not bone up on all that before I came out today, so I cannot give you a complete answer, but I would say there were some impediment, they may have been citizen initiated and not Forest Service driven, in our ability to thin and treat the forest as we thought necessary prior to that fire.

After the fire, I would say we have gotten a great deal of interest and complete cooperation from all the Federal agencies. And I do not have any—other than lack of funding and their need to pay attention to other people's problems elsewhere in the country, which they need to do—other than that, I do not have any complaints about how the Forest Service has handled our situation post-fire.

Mr. POMBO. You said you were sued before the fire started. You were not sued after the fire?

Mr. BARRY. Correct. We were sued before the fire, or the Forest Service was, I cannot remember which, as we tried to put in place our plan to thin and treat some of our forested acreage in the area that later was in fact burned.

Mr. POMBO. So when you had trees alive, you were sued but after they were all dead, they let you go in and do the work?

Mr. BARRY. That is correct.

[Laughter.]

Mr. POMBO. Mr. Brierty, I know this is relatively soon for you in terms of dealing with the aftermath of this fire, but do you have suggestions for the Committee for things that we could do at this point that would make it easier for you to do the work that you need to do at this point?

Mr. BRIERTY. In terms of tree removal, fire response?

Mr. POMBO. The after-effects.

Mr. BRIERTY. After-effects.

Mr. POMBO. Yeah.

Mr. BRIERTY. The direction that the Committee is going is very, very helpful. The assistance that Congressman Lewis and Feinstein's actions have been able to provide. The incentivization to remove the trees, helping us get the trees on the ground, helping the citizens who are total victims in this. They did not do anything wrong here, they have done nothing wrong, but they are incurring costs of tens of thousands of dollars, and your assistance and Congress' assistance to those citizens and to those fire safe councils would be more than I could ask for.

Mr. POMBO. Well, I want to thank both of you. Your testimony has proven to be extremely valuable for the Committee. If there are further questions that the members have, they will be submitted to you in writing and if you can answer those in writing for the Committee, it would be appreciated, so that we could include them as part of the hearing record.

Mr. BARRY. Be pleased to do so.

Mr. BRIERTY. Thank you very much.

Mr. POMBO. Thank you very much. I am going to excuse this panel and I would like to call up our third panel.

[Applause.]

Mr. POMBO. We have Dr. Thomas Bonnicksen, Mr. Alan Barrett accompanied by Dave Nenna; Dr. Scott Stephens and Mr. Joseph Grindstaff.

Before you get too comfortable, if I could just have you gentlemen stand and raise your right hands.

[Witnesses sworn.]

Mr. POMBO. Let the record show they all answered in the affirmative.

I want to welcome our third panel here. I appreciate your patience and your perseverance in staying with us. I know that this has proven to be a long day. We will start with Dr. Bonnicksen.

STATEMENT OF THOMAS BONNICKSEN, PH.D., PROFESSOR, DEPARTMENT OF FOREST SCIENCE, TEXAS A&M UNIVERSITY

Dr. BONNICKSEN. Thank you, Mr. Chairman. My name is Dr. Thomas Bonnicksen, I am Professor of Forest Science at Texas A&M University. I have spent my entire professional career studying the history of North America's native forests and ways to restore them.

I find this to be a sad occasion. I have been working in these mountains for quite some time. We all know the losses, the numbers of acres, lives lost and so on. I was here during the fires as a matter of fact, at the request of this Committee. But I cannot possibly imagine how the people here actually felt when these fires occurred. I was an observer, I did not experience it. I do remember driving into Lake Arrowhead and Crestline after the evacuation, and to me it was eery and depressing because there was not a single soul, it was silent. Things were left behind right where they had been used. I could imagine barely how people below felt, not knowing if they would come back to a home and all the things they cared about.

And then I went into Cedar Glen and then I saw where those people could not come back to a home. It was gone. This was, to

me, a terrible tragedy and I can barely understand how those people felt, many of which may very well be in this room.

I will also say that when I drove up Highway 18, it was clear to me that the firefighters saved Lake Arrowhead. It was heroic and it was skillful and I was very impressed.

But we have known what to do to prevent this problem for a very long time. And I think it has gotten to the point now where the lives and property and our heritage that is being lost goes beyond arguments. I think it now is at the point where we as a society have a moral obligation to use what we know to prevent any further loss of life and property and natural resources.

I started working in southern California's forests 30 years ago, in the chaparral. I remember then that we knew what to do, I remember then people were frustrated because they could not do it.

Then in 1994, I was asked to come up to Lake Arrowhead and help a large group of professionals find a way to deal with the overgrown forest problem, and they drafted a plan that they all agreed on. Nothing happened. If something had been done, based on that plan, the beetle outbreak probably would have been contained and would not have destroyed 474,000 acres of forest, an entire forest.

Then I was asked to go down into San Diego County and do the same thing for chaparral in 1995. We had 59 professionals, all of whom came to agreement on what to do to prevent a next big fire in San Diego County. Nothing happened.

Then I came here 2 months ago and testified before this Committee and I was really hopeful. It represented the Congress' interest in a problem that has been festering for a century. And there were many solutions suggested. But there was too little time, nothing could be done between then and the October fires. So here we are again.

And here, I think things have changed. Not only have you shown twice that you are committed to solving this problem, but now things are different too because we have the Healthy Forest Restoration Act. I was there, as were you, when the President signed the Act. I was there because I thought it was truly historic. This is several decades before we have had the opportunity to do something to solve this problem. And I say opportunity, the Act is not the solution. The Act makes it possible for us to solve the problem, but now the test is will we solve the problem? That is the real test now—do we have the money, the manpower and the will? And you helped make this possible, Mr. Chairman and Mr. Walden. And for that I am grateful and I think our nation is grateful. Thank you.

Now, I think in order to make this work, we have to focus the resources that the Congress provides where the problem is most serious. I cannot think, in my understanding of the entire western United States, a place where this problem is more serious than it is right here. So rather than sprinkling the money around to solve problems every place in the west, I think we ought to focus our attention here where we can make a real difference. But we are going to have to act quickly.

I think, given the fact that we have 95 percent of this beetle-killed forest out here, that we have less than 8 months to make a difference on the ground, to keep Lake Arrowhead, Crestline, Big

Bear, Idyllwild from burning next fall. We just have 8 months, and that is it. And we had best use our time wisely.

We have to remove the dead trees and we have to start near the communities, because that is where it will be most effective, given the time we have available. Then we have to work outward, of course, into the forests where the problem is most severe. But we have to do so in a way that rebuilds the next forest at the same time and does not just level the forest that is here. So that means we have to protect the trees that are still alive, even young trees that are going to be part of the new forest. We have to leave snags for wildlife, three or so per acre, we have to leave logs on the ground, five to nine per acre. We have to do many things to make sure that when we reduce the fire hazard, we do it in a way that ensures that the new forest can be rebuilt quickly and effectively so that 50 years from now, our children, my grandchildren, can enjoy this again.

Now I want to point out that this is not just about forests. Chaparral is also a big part of our problem and obviously that is most of the area that was burned. Now in the case of our forests, fires were light, so we can I think rebuild a forest where fires would be light again. In the case of chaparral, fires were hot historically, and they will be hot from now on.

Even so, the solution is the same. We have to isolate those parts of the forest that are overgrown, and should be overgrown. Part of this forest was overgrown historically, but those are the parts that burned. We have to isolate them from one another, with the other parts of the forest that do not burn as hot—younger trees, large trees with nothing underneath. Chaparral is exactly the same situation. If chaparral is less than five years old, it will not burn. If it is 20 to 40 years old, it will not burn very hot unless it is the most extreme conditions and it is usually a very good fuel break. After 40 years, it starts to become decadent and by 50 and 60 years, it is explosive. We have to isolate those explosive parts of the chaparral from one another with the younger parts that do not burn so hot.

Now an example of this is in the testimony I provided. If you look at the last figure, Figure 2, you can see in that figure that—and it was at my request that San Diego County prepared that map just for this hearing, it shows the areas by age class that burned in the fire, the Cedar fire and so on. You can see, with the explanations on the map, that the fire followed the older age classes. It was suppressed at the boundaries of recent fires and areas where the chaparral was younger.

Now if you also look at Figure 1 in my testimony, you will see the difference between southern California and Baja California in terms of the size of the fires, and thereby the size of the older patches of chaparral that burned the hottest. And it was provided by Dr. Richard Minnick from UC-Riverside. That is an outstanding map because it shows we have hundred thousand-plus acre patches of aged and flammable chaparral on our side of the border and there is a straight line, whereas in Baja, there are 5,000 acre and smaller patches. Why? Because they have been burning for this same century we have tried to stop all the fires, and they have suc-

cessfully isolated the older, more flammable patches from one another with the less flammable younger patches.

And it turns out that what it looks like in Baja California is the way southern California used to look and did look for thousands of years. So it is the same problem, same solution, just a slightly different way of going about it.

But let me conclude by saying there are a couple of lessons I think we have to learn from this. The first is anywhere that forests are overgrown could end up like this, either killed by beetles or destroyed by fire. The Sierra Nevada is, I think, a prime example of a place where this could happen again. And where the chaparral is aged, the same thing. In fact, San Diego County created a map of aged classes of chaparral and all you have to do is look at that map to see where the next big fire is going to be or where the next lives are going to be in jeopardy. The map tells you everything.

So the next lesson? We have to thin our forests and reduce the density of aged chaparral and we have to make sure—and we have, I think, a moral obligation that what happened this year does not happen again.

Thank you, Mr. Chairman.

Mr. POMBO. Thank you. Mr. Barrett.

[The prepared statement of Dr. Bonnicksen follows:]

Statement of Dr. Thomas M. Bonnicksen, Professor, Department of Forest Science, Texas A&M University, Visiting Scholar and Board Member, The Forest Foundation, Auburn, California

INTRODUCTION

My name is Dr. Thomas M. Bonnicksen. I am a forest ecologist and professor in the Department of Forest Science at Texas A&M University. I am also a visiting scholar and board member of The Forest Foundation in Auburn, California. I have conducted research on the history and restoration of America's native forests, especially California's forests and brushlands, for more than 30 years. I have written over 100 scientific and technical papers and I recently published a book titled "America's Ancient Forests: From the Ice Age to the Age of Discovery" (Copyright January 2000, John Wiley & Sons, Inc., 594 pages). The book documents the 18,000-year history of North America's native forests.

MORAL IMPERATIVE

Mr. Chairman, members of the Committee, this is a sad day for all of us. The Southern California fires of 2003 burned 739,597 acres, took 22 human lives, caused $2.2 billion in losses, and cost taxpayers more than $250 million to contain. In the San Bernardino Mountains alone, six people lost their lives, 993 homes and 10 businesses were destroyed, and over 90,000 acres burned.

Equally important, and often ignored, are the millions of tons of pollutants generated by these monster fires that fill the air and impair human health. Furthermore, few people realize that the aftermath of a fire can be just as devastating as the fire itself. Total runoff in just this area (the Santa Ana River Watershed) is likely to increase by more than 10 percent and peak storm flows will increase about five times the average. Sediment loads carried downstream could be 30 to 50 times normal, and as much as 20,000 tons of nutrients, nitrates, and phosphorus formerly bound in soil will probably be released and make its way into groundwater. Uranium and other radioactive materials also will be transported downstream with toxic organics and carcinogenic compounds from partial combustion of forest materials. This will decrease the usability of one of this region's primary water sources. It is estimated that 1.7 billion cubic yards of rock, sand, and debris will clog water control structures and dams as well.

These horrific fires are a warning. We can anticipate similar catastrophes in overgrown forests throughout the West if we do not change our ways. We have already seen this happen in Arizona and Colorado. The Sierra Nevada may be next.

Nothing done by management to the environment would come close to the ecological and social costs of monster fires. There is no argument, no matter how compelling or well-meaning, that justifies allowing uncontrolled and unnatural wildfires to

kill human beings, destroy homes, forests, and the habitat of millions of animals, pollute the air and water, and strip irreplaceable soil from the land. We know how to prevent these catastrophic fires and we have a moral obligation to prevent them in the future.

IMPRESSIONS OF DISASTER

I have been working on restoring beetle-killed forests in these mountains with Forest Service professionals almost continuously for most of this year, and I had warned of a possible tragedy as early as 1994. I know many of the people who live here. That makes this tragedy even more personal. Under the auspices of this Committee, I was able to see the devastation firsthand while the fires were still burning. I will never forget what I saw, experienced, and felt at the time.

Shortly after passing through the police roadblock, I could not believe how barren the soils were as I drove up Waterman Canyon. Nothing remained except smoldering embers and a smell like burned newspaper. The only life I saw was a single yellow jacket. The fire was so hot that rocks exploded and flames left behind only stubs of the thickest branches on the shrubs. There is no doubt; soil erosion must be addressed because it could be severe.

I also remember driving up this same road through Waterman Canyon many times this year talking with Jon Regelbrugge, Doug Pumphrey, and other Forest Service professionals about the need to use prescribed burning to break up the overgrown brushlands below Lake Arrowhead. They were frustrated by a lack of resources that made it difficult to protect Lake Arrowhead and Running Springs from a fire that came up the canyon. We know all too well the consequences of not having adequate means to take preventative action.

My second impression was how well firefighters planned their defense of Lake Arrowhead. They used backing fires from Highway 18 to deprive the fire coming up Waterman Canyon of fuel. There is no doubt that their actions saved Lake Arrowhead. I only saw the smoldering ruins of one home on that ridge; the rest of Lake Arrowhead was spared, except for Cedar Glen.

I had seen Cedar Glen before it burned. I knew that the people living there were in serious trouble. They lived in a narrow canyon, thickly overgrown with trees of all sizes, and surrounded on the ridges above with a half-dead forest.

Tragically, the fires this fall looped around the East side of the firefighter's defensive line and swooped across the half-dead forest into Cedar Glen. I saw the homes that it destroyed, still smoking in the aftermath of the fire. It was a terrible sight. I will never forget seeing a garden hose laid across a railing where the owner had left it after trying to protect their home and then fleeing before a wall of flames. Nearby, a child's wooden swing set stood untouched by the fire while the house lay in ruins 50 feet away.

The fire passed through the Los Angeles Council of Boy Scouts Camp before reaching Cedar Glen. I saw half the forest on their lands destroyed and still smoking. The western pine beetle had killed thousands of the trees before the fire. The trees were still draped with dead pine needles when the fire reached them, so they burned with extreme heat, and many were reduced to charred spikes. Not even a branch was left on many of the burned trees, and the ground was barren underneath.

I had warned a Boy Scout leader at the camp, and officials in Los Angeles, that this could happen when I was there in late summer. However, they had too little time to take action to prevent it. The pool where Boy Scouts were swimming this summer was untouched, but everything else was gone. Their headquarters lay in ruins, and a barracks was reduced to a chimney and the twisted metal wreckage of bunk beds where Boy Scouts had slept just a month earlier. What saved them was the time of year when the fire passed through their camp. They were safely at home in October.

My final impression was of the depressing emptiness of Crestline and Lake Arrowhead. Where before I saw a forest community full of people going about their daily lives, now, there was nothing but silence. People left in haste and could take only one car, so other cars were parked as if someone was home. Empty chairs were sitting by tables with drinks still on them. Occasionally, I would hear a hungry stray dog barking abandoned in the rush to safety. People who left their homes behind had no idea if they would ever see the things they cared about again. We cannot imagine how they must have felt. I only know that we should have acted sooner to help prevent these people from experiencing such trauma.

TRAGEDY FORETOLD

I, and several other panelists, appeared before the House Resources Committee in this very place about two months ago to help prevent the tragic fires that today's

hearing is addressing. I said then that history will judge us by how we respond to the crisis caused by overgrown and beetle-ravaged forests. I should have added our overgrown and aged chaparral. History really means that our children and our grandchildren will judge us. Did we take the action needed to protect the lives and homes of their parents, them as children, and their children? Did we protect the forests that we enjoyed, so that they could share our experiences and receive their forest heritage unimpaired?

The answer is no, at least so far. We did not act swiftly enough to prevent the loss of an entire forest—474,000 acres—in the San Bernardino and San Jacinto Mountains to the ravages of the western pine beetle, or the wildfires that followed in October of 2003. We also failed to prevent the chaparral fires that took so many lives and destroyed so many homes in San Diego County and elsewhere in Southern California.

I was honored to be invited to witness President Bush signing the Healthy Forest Restoration Act of 2003 this past Wednesday in Washington, D.C. This historic Act will help prevent future disasters, but it came too late to prevent the fires this year.

I have been working in the San Bernardino Mountains with Forest Service professionals almost continuously this year. We knew that we faced a crisis and that dramatic action was needed to prevent a disaster. Not only were beetle-killed trees about to fall on people, houses, powerlines, and cars, but a catastrophic fire could sweep into communities from any direction at any time. Something had to be done. However, the Forest Service was hampered in its efforts to prevent a disaster. They had too few people and too little money, and they faced too many restrictions to reduce fuels over a large enough area to decrease the fire threat significantly.

Sadly, the insect infestations and wildfires were predictable and preventable. We did not look after our forests. Meanwhile, trees grew and forests became overgrown and unhealthy.

I conducted a workshop in 1994 in which 27 specialists representing many interests and agencies came together in Lake Arrowhead to do something about the unnaturally thick forests in the San Bernardino Mountains that led to this disaster. We knew that communities like Lake Arrowhead, Big Bear, Crestline, Idyllwild, and Wrightwood were in imminent danger from wildfire. The workshop produced a report charting a course to improve the safety and health of forests surrounding these communities. Unfortunately, bark beetles got there before anyone took action to thin the forest and make it more resistant to bark beetles and fires.

The highest priority recommendation in the 1994 report for the San Bernardino Mountains called for developing "a comprehensive and integrated fire protection program consisting of":

- A fuels management program (mechanical removal and prescribed fire);
- Strategically located park-like fuel breaks;
- A public information and education program dealing with structural (residential and business) modifications and landscape design; and
- Effective enforcement.

In addition, the report emphasized "private sector and government partnerships to carry out this alternative, including funding, because government agencies alone cannot solve wildfire problems." Subsequent recommendations elaborated and expanded these ideas.

Brushlands in Southern California face the same problem as forests. They have grown old and thick. Hundreds of thousands of acres of brush are ready to burn. We know where the next big fires will be due to the age of the chaparral, but we have done almost nothing to prevent them. We also know how to break up the fuels and save lives and property, but we seem incapable of taking action. As a result, we have lost many lives this year, thousands of homes, and hundreds of thousands of acres of forest and brushland.

Again, I wrote a report in 1995 documenting the severe fire hazard in the brushlands of San Diego County. A total of 59 specialists representing many interests and agencies participated in preparing the recommendations. Like the San Bernardino Mountains report, we had a plan for preventing catastrophic wildfires. Unfortunately, we failed to act, and that is where most of the lives and property were lost this year.

Selected recommendations in the 1995 report include:

- Design a prescribed burn pattern or mosaic based on vegetation and wildlife surveys, fire history, and public outreach programs;
- Encourage the construction of community fuel breaks;
- Conduct public meetings with private and public landowners and solicit information on their needs and opinions regarding wildfire control and prescribed burning;
- Conduct education programs to reduce the public's risk from wildfires; and

- Encourage the public to assume greater responsibility for self-protection from wildfires.

There is no doubt that the recommendations in the 1994 and 1995 reports, if implemented when proposed, would have dramatically reduced the death and destruction caused by the horrific fires of 2003.

PAY NOW OR PAY MORE LATER

It is prophetic that the Healthy Forest Restoration Act of 2003 requires weighing the risk of action against the risk of inaction when making management decisions. Think of the terrible human, financial, and ecological losses suffered in Southern California this year and weigh them against the minor risks of having used scientific management to prevent them.

We cannot put a price on lives lost and human suffering, which, by itself, justifies fire prevention. In addition, economic losses could be higher than $2.2 billion in just Southern California. Using the most comprehensive and expensive methods, that is enough money to restore over seven million acres of chaparral to a more fire-resistant and natural condition, which is far more than is needed. Similarly, that money could pay to remove most of the beetle-killed trees in Southern California and rebuild new fire-resistant forests that are more natural and sustainable than those that were lost.

Here in the San Bernardino Mountains, we can restore about half the 474,000 acres of forest devastated by the western pine beetle, perhaps more. The remainder is inaccessible because of steep slopes and the lack of roads. It is tragic to know that we cannot restore so much of this forest. Especially since most of the historic pine and mixed-conifer forests will convert to unnatural oak-shrub forests. Wildlife will suffer as well, and an endless cycle of severe and unnatural wildfires is likely.

It is even questionable if we can restore much of the accessible forest because of the high cost. I estimate that it will take as much as $1 billion to do the job right on 237,000 acres. Probably less, as we become more efficient. That means providing immediate fire protection and rebuilding the new forest.

This is far more money than taxpayers will bear. However, if private companies could harvest and thin only the trees required to restore and sustain a healthy, fire-resistant forest, it could be done. In exchange, companies would sell the wood and, thereby, significantly reduce public expenditures.

The problem is finding someone to buy the wood. There is no biomass or wood processing facility nearby. That means the initial public expenditure will have to include providing subsidies to build the infrastructure needed to make the restoration of fire-resistant forests financially feasible.

The inescapable truth is that we will pay now for prevention, or we will pay far more later to deal with disaster and its aftermath. On average, it costs only one-seventh as much to prevent a catastrophic wildfire than it does to fight it, mitigate the damage, and pay to replace what is lost. This does not include the loss of forests, wildlife habitat, soil, and the degradation of our precious supplies of water.

CLEAR CHOICES FOR THE FUTURE

There are two choices for the future of Southern California's forests and brushlands, and no middle ground for debate. First, leave them alone, or the "hands-off" option. This means dooming hundreds of thousands of acres of beetle-killed forests. No longer will people in this region enjoy shady forests of huge pines and firs. Instead, they will see thickets of oak and brush, and many animals will disappear. Not only that, but this option will pass to future generations an unending cycle of death and destruction from fire and insects, as well as accelerating costs for firefighting, and rehabilitating forests, brushlands, and communities.

Our second option is to restore the natural fire- and insect-resistant forests, and diverse natural brushlands, through active management. This would enhance watersheds and water quality, improve habitat for a diverse range of native wildlife, and expand scenic and recreational opportunities. Most importantly, it would secure a safe future for the people of Southern California by protecting communities and breaking the cycle of monster fires.

Both options cost money. However, the "hands-off" option will cost taxpayers at least seven times as much as the "management" option, not including the cost in lives and destruction of public and private property. The ratio in favor of management could be even higher when subtracting the economic value that might be derived from selling wood products and clean biomass energy.

There is no question. Active management is essential if we are to secure a safe and sustainable future for our forests and brushlands, and the people who depend on them.

WHAT WE NEED TO DO

Active management means using the history of a forest or brushland as a model for its future. That does not involve a futile effort to duplicate the past. It means learning from the past. The most important lesson we can learn is that historic forests and brushlands were sustainable, diverse, and far less susceptible to the monster fires we see today.

Historically, most of California's forests were open because Native American and lightning fires burned regularly. These gentle fires stayed on the ground as they wandered around under trees. You could walk over the flames without burning your legs even though they occasionally flared up and killed patches of trees. Such scattered hot spots kept forests diverse by creating openings where young trees and shrubs could grow.

Brushlands like chaparral and coastal sage burned hotter. These hot fires often swept over thousands of acres. They were stand-replacing fires that renewed the brush on about a 40-year cycle. Even so, they were much smaller than today's brush fires. They usually burned patches of a few thousand acres, sometimes larger, but seldom, if ever, hundreds of thousands of acres as we see today.

The patchiness of historic forests and brushlands is the key to their restoration and the solution to the wildfire problem. They consisted of mosaics of patches. Some patches were freshly burned, others were young or old, depending on how many years passed since fire created a new opening where plants could grow.

The variety of patches in historic forests and brushlands helped to contain hot fires. Freshly burned areas, patches of young trees or shrubs, and patches of old trees with little underneath, did not burn well and served as fuelbreaks. In chaparral, patches five years old or younger will not carry a fire, and patches 20 years old or younger are effective fuelbreaks. These less flammable patches isolated more flammable older or denser patches of trees or shrubs, so that hot fires could not spread over vast areas. Thus, nature developed an ingenious pattern of natural fuelbreaks that kept most historic forests and brushlands immune from monster fires.

Today, the patchiness of our forests and brushlands is gone, so they have lost their immunity to monster fires. Fires now spread across landscapes because we let most patches grow old and thick, and there are few less-flammable patches left to slow the flames.

Some people believe that horrific brushland fires are wind-driven events. They are wrong. Science and nearly a century of professional experience shows that they are fuel-driven events. Wind contributes to the intensity of a fire, but no fire can burn without adequate fuel, no matter how strong the wind. Wind, topography, and drought play an important role in fire behavior, but continuous heavy fuels are the fundamental cause for the outbreak of monster fires plaguing the West, especially California.

This is even more serious because monster fires create even bigger monsters. Huge blocks of seedlings that grow on burned areas become older and thicker at the same time. When it burns again, fire spreads farther and creates an even bigger block of fuel for the next fire. This cycle of monster fires has begun. Today, the average fire is nearly double the size it was in the last two decades, and it may double again.

We can see this in Figures 1 and 2. Figure 1, created by Dr. Richard Minnich, from UC Riverside, in 1971, shows the difference in the size of fires in Southern California and Baja California. The difference is striking because of the political border that separates the two countries. There is no ecological reason for this dramatic difference. On the Mexican side, patches are very small, a few thousand acres, because fires burn as they did when Native Americans lived there. Farmers set fires regularly to maintain the mosaic of small patches that provide habitat for game and livestock, and keep fires small and safe. They also let lightning fires burn because less flammable patches easily contain them.

In contrast, we have been putting out fires for over a century in Southern California. Even longer if one considers the proclamation by Don Jose Joaquin de Arrillaga, Captain of Cavalry, Interim Governor and Inspector Comandante of Upper and Lower California, in 1793, which was strictly enforced in Alta California. He said, "With attention to the widespread damage which results...I see myself required to have the foresight to prohibit...all kinds of burning, not only in the vicinity of the towns, but even at the most remote distances..." It only takes 30-40 years for chaparral to grow old enough to create large areas of highly flammable fuel. Even though ranchers changed burning practices when California became a state, this simple proclamation helped start the cycle of monster fires long before some people believe that fire control became effective.

More than two centuries of efforts to control fires increased the size of chaparral patches in Southern California. They grew to more than 10 times the size of patches in Baja California where fire controls were not enforced. It is not surprising that our fires are also more than 10 times the size of those in Mexico. This year our fires are becoming even larger because we know that monster fires create bigger monsters.

Figure 2, which was graciously created at my request by San Diego County for this Congressional hearing, shows that the October fires of 2003 were concentrated in older brushlands. As expected, firefighters also found it easier to stop the fires at the boundaries of younger less-flammable patches of chaparral, even in Santa Anna winds.

The evidence is clear. We cannot blame people for living in fire-prone rural areas because they want a more enjoyable lifestyle for their families. Fires may be inevitable, but not the monster fires that we created by failing to be good stewards of our forests and brushlands.

We must restore our forests and brushlands to a more fire-resistant condition by recreating the historic mosaic of patches. The less-flammable younger patches will contain hot fires and make them easier to extinguish. This, in combination with modern and effective firefighting organizations and less flammable structures, will break the cycle of monster fires. Consequently, the lives and property of the people of Southern California will be protected as well.

GETTING TO WORK

Addressing the wildfire problem in Southern California brushlands is obvious and relatively simple. Science shows that brushlands are resilient, no matter how often fires burn, or how hot the fire. They recover fully and in the same way. That is, the same plant species will grow after a fire in the same order that they grew before. All that we need to do to restore diversity and naturalness to brushlands is to create the more fire-resistant historic mosaic. This will solve the fire problem if communities and individuals also assume their responsibility for providing defensible space and less flammable structures.

The problem is more difficult in San Bernardino Mountain forests. The scope and magnitude of devastation from the bark beetle outbreak is unprecedented in recorded history. We have lost an entire forest because there are simply too many trees. Drought has contributed to the crisis, but it is not the underlying cause. Forest density is 10 times what is natural—200 to 500 large trees stand on an acre where 50 would be natural and sustainable.

The fires of 2003 did little to reduce the number of trees or remove dead trees killed by bark beetles. About 85-90 percent of the forest was untouched by the fires and is ready to fuel the next one. At least 60 percent of the trees are dead in this forest, and as many as 90 percent of the trees will be dead by next year when the bark beetle epidemic slows down for lack of food.

We must remove the dead and dying trees and restore the forest in strategic areas during the next eight months. Otherwise, the enormous amount of fuel that remains in these forests will likely generate fires next year that are far worse than this year.

The desired future condition is a native mixed-conifer forest that approximates the historic range of variation characteristic of this forest type. The desired restored forest will provide opportunities for economically sustaining the forest and all of its values.

The long-term restoration goal should be to develop a patchy forest mosaic consistent with the open historical forest. That means a patch size of one acre, a smallest patch size of 0.2 acres, and at least 68 percent of patches less than 1.8 acres. In addition, approximately 42 percent of the mosaic should consist of patches of mature and large mature trees of which no more than 47 percent should contain a multi-layered understory.

Mechanical methods are the most important tools we have to restore this forest and reduce fire hazards. Mechanical methods followed by prescribed fire may also be effective when used together, but safety and air quality restrictions are major constraints. Prescribed fire alone will not be effective because it is too unpredictable and dangerous in overgrown forests.

The approach for restoring San Bernardino Mountain forests involves cutting the dead and dying trees in a way that minimizes damage to live trees and other vegetation desired to meet the long-term restoration and protection goals. Then, remove, or chip the slash to reduce fuels, and leave enough snags and logs for wildlife. That means approximately 2-3 snags per acre in groups and 5-9 logs 24 inches or larger oriented across slope so that they also control soil erosion. The surviving trees must be thinned as well so that they grow quickly and to protect them from fire because they will become the oldest trees in the future forest.

Next, begin rebuilding the forest by planting native trees in gaps left by beetle-killed trees. Additional gaps will have to be opened and planted at different times and places to ensure that the restored forest has groups of trees of different ages. This will take five or more decades. By then seeds from adjacent trees will fill new gaps and the forest will look relatively natural since some sites will grow trees 120 feet tall in 50 years.

When complete, and even during the early phases of restoration, the restored forest will reduce threats to local communities from wildfire by providing a system of fire-resistant patches that act as fuelbreaks strategically dispersed throughout the forest mosaic. In short, the restored forest will look and behave in much the same way as historic forests. It also will be healthy, diverse, sustainable, attractive, resistant to insects and drought, and nearly immune from monster fires.

STATEMENT OF ALAN L. BARRETT, COUNCIL MEMBER, VIEJAS BAND OF KUMEYAAY INDIANS, ACCOMPANIED BY DAVE NENNA, TRIBAL ADMINISTRATOR, TULE RIVER TRIBE

Mr. BARRETT. Chairman Pombo, distinguished guests, thank you for allowing me to speak today. My name is Alan Barrett, I am an elected official of the Viejas Tribal Government. The Viejas Band of Kumeyaay Indians is located in Alpine, California, in San Diego County. The Viejas Reservation is bordered by Cleveland National Forest, BLM land and within a corridor of state and county parklands.

Our neighbors include a number of unincorporated suburban and rural communities. In late October, the Cedar fire destroyed entire communities, thousands of acres of park and woodlands, burning more than 280,000 acres and 2,320 homes, at the cost of 12 lives. Eleven were civilians and one was a firefighter. The price to extinguish the fire was $27 million.

As you may have read, the fire also devastated tribal reservations. San Diego County has 18 reservations, located in rural unincorporated areas of northern and eastern San Diego County. Many are adjacent to the Cleveland National Forest. Eleven reservations were evacuated due to the proximity of the fire and immediate danger. Four reservations suffered 75 to 100 percent damage to land, structures and hundred of homes.

I am shortening up my testimony here so I can get down the hill and get back to my family.

Mr. LEWIS. Good for you.

Mr. BARRETT. That is a priority.

We are able to show our gratitude and assist in fire management efforts to provide food, water, generators and other necessities to operate in camps which housed more than 100 units of Federal, state and local firefighters.

The Viejas Band also shares our original reservation—Capital Grande—with the Barona Band. The Barona Reservation lost 37 homes and both of us lost our entire 17,000 acres of Capitan Grande. This is a great loss to both tribes and the county, as the land was a prime undeveloped wildlife habitat. It serves as a natural conservation corridor between El Capitan Dam, the San Diego River, the Cleveland National Forest and the Laguna and Cuyamaca Mountain Ranges. Plus it is also home and burial grounds of our ancestors.

Today, we have major concerns about replanting. We worry about infestation of invasive species and non-indigenous growth attacking and altering the terrain of this beautiful natural resource. We face

major problems with erosion on roads, hillsides, wells and waterways.

And we have been warned the fire danger is not past. Large tracts of Federal and state forest lands, disease infested and drought weakened, are now littered with burnt trees and charred ground cover, are ripe kindling for yet more fires.

I want to thank you for this hearing and all of the distinguished speakers, for the sincere interest in recovery of the aftermath of the terrible disaster. Recovery is urgent, lagging, and going to be expensive.

But today, I would like to take a few minutes to discuss future prevention.

The one thing that we have learned from this tragic fire in San Diego County is the importance of prevention. Nothing does more for prevention of wild fires than the Health Forest Restoration Act, recently signed by President Bush. I congratulate you, Chairman Pombo, on the bill and your sponsorship.

Today I would like to ask you to apply the key provisions to tribal trust lands. You can do this by adding the Tribal Forest Asset Protection Amendment to H.R. 1904.

We need a tribal amendment to H.R. 1904. Very little has been done on Federal lands to clear dead excessive overgrowth and reduce threats that disease infested vegetation pose to our borders. We can help the Federal government manage these lands if allowed. In San Diego County, tribal governments are one of the largest owners of undeveloped land. We are also located in rural areas where fire protection is an expensive luxury and clearing is non-existent.

This amendment to the Healthy Forest Restoration Act will assure tribes that we can take actions necessary to help the U.S. safeguard tribal trust forests and woodlands.

I can only hope that the recent devastation to tribes in San Diego County will create a sense of urgency about this issue. The reservation is our home and it represents who we are and have been as Indian people. We cannot just pick up and move because it is too expensive to rebuild, the insurance cost is too high.

Help us help ourselves. Preventing wildfire is critical to our lives and our existence.

I not only speak for California tribes, but also for the White Mountain Apache, for the Crow, the Oneida, the Lumini Nations and tribal nations throughout the United States. Tribes must be given the opportunity to participate in managing Federal lands so that the next year another Congressional Committee will not have to face a daunting economic and ecological challenge we face today.

We stand ready to assist you in support of the Tribal Forest Asset Protection Amendment. I brought copies of our local newspaper for you to read when you have a few extra minutes of time.

Thank you for chairing this hearing and again allowing me to address the Committee.

Mr. POMBO. Thank you.

Dr. Stephens.

[The prepared statement of Mr. Barrett follows:]

Statement of Alan L. Barrett, Councilmember,
Viejas Band of Kumeyaay Indians

Chairman Pombo and distinguished guests.

Thank you for allowing me to speak today. My name is Alan L. Barrett. I'm an elected official of the Viejas Tribal Government. The Viejas Band of Kumeyaay Indians is located in Alpine, California, in San Diego County. The Viejas Reservation is bordered by the Cleveland National Forest, BLM land, and within a corridor of state parklands.

Our neighbors include a number of unincorporated suburban and rural communities. In late October, Cedar Fire destroyed entire communities of homes, thousands of acres of park and woodlands, burning more than 280,000 acres and 2,320 homes. The cost was 12 fatalities, 11 were civilians and one was a firefighter. The cost to extinguish the fire was $27 million.

As you may have read, the fire also devastated tribal reservations. San Diego has 18 reservations, located in rural unincorporated areas of North and East San Diego County. Many are adjacent to the Cleveland National Forest. Eleven reservations were evacuated due to the proximity to the fire and immediate danger. Four reservations suffered 75 percent to 100 percent damage to land and structures, including hundreds of homes. Even though the fire roared through the Viejas reservation, we were fortunate. We were able to defend our homes and managed to protect other structures, including our businesses. We own and operate a casino, retail outlet center, and bank. All were evacuated safely, but were closed for a week, due to the fact we had no electricity or power, other than generators.

We were also fortunate in that we had time to prepare, as we were alerted to the progress of the fire. Other reservations and homeowners, who were caught by surprise, had only minutes to get to safety. Many did not make it.

Fire crews from Northern California arrived at the same time as the 200-foot wall of flame, clouds of black smoke and swirling debris, hit our reservation. Additionally, we are grateful we had the resources to house the U.S. Forest Service and California Department of Forestry Cedar East Fire Camp and heliport on our reservation.

We were able to show our gratitude and assist in the fire management efforts by providing food, water, generators and other necessities to the operation and camp, which housed more than 100 units of federal, state and local fire crews.

The Viejas Band shares our original reservation—Capitan Grande—with the Barona Band. The Barona Reservation lost 37 homes, and we both lost the entire 16,000 acres of Capitan Grande. This is a great loss to both tribes and the county, as this land was a prime and undeveloped wildlife and species habitat.

It serves as a natural corridor between El Capitan Dam, the San Diego River, the Cleveland National Forest, and the Laguna and Cuyamaca Mountain Ranges. Plus, it's the home and burial ground of our ancestors.

Today, we have major concerns about replanting. We worry about invasive species and non-indigenous growth, attacking and altering the terrain of this beautiful, natural resource. We face major problems with erosion on roads, hillsides, wells and waterways.

And, we have been warned the fire danger is not past. Large tracts of federal and state forest lands, disease infested and drought weakened, and now littered dead and burned trees and charred ground cover, are ripe kindling for yet more fires.

Like my father and uncles, I have been employed as a fireman. I know wildfires, and have seen many, including the Viejas Fire, which burned an area of our reservation and neighboring communities in 2001. But, I have never seen, heard or felt anything as truly frightening as this fire. The Santana winds drove it. The dead and drought-weakened trees, thousands of acres infested with beetle disease, fueled it. Woodlands and forests suffocating with dead and dry groundcover, which have never been cleared or removed, continued to feed it for weeks.

I want to thank you for this hearing and all of your distinguished speakers for the sincere interest in recovery in the aftermath of this terrible disaster. Recovery is urgent, lagging, and going to be expensive.

But, today, I would like to take a few minutes of your time to discuss future prevention.

The one thing we learned from this tragic fire in San Diego County is the importance of prevention. Nothing does more for prevention of wild fires than the Healthy Forrest Restoration Act, recently signed by President Bush. I congratulate you, Chairman Pombo, on this bill and your sponsorship.

Today, I would like to ask you to apply its key provisions to tribal trust lands.

You can do this by adding the Tribal Forest Asset Protection Amendment to H.R. 1904.

In Southern California, our lands are a tribe's most important asset, and until gaming for some, our only asset. Because most of our reservations are small, every acre is precious. The Healthy Forest Restoration Act was written to assist private property owners and unincorporated communities protect their assets, yet tribal governments, with assets held in trust by the Federal Government, were not included in the bill.

We need a tribal amendment to H.R. 1904. Very little has been done on federal lands to correct the fire, disease of infestation threats these lands pose to our borders. We can help the federal government manage these lands if we are allowed to do so. In San Diego County, tribal governments are one of the largest owners of undeveloped land, we are also located in rural areas, where fire protection is an expensive luxury and clearing is non-existent.

We can provide firebreaks to protect our lands and federal lands from fires and spreading to our neighboring communities. Or, we can continue to provide fuel for wild fires.

This amendment to the Healthy Forest Restoration Act will assure tribes that we can take the actions necessary to help the U.S. safeguard tribal trust forests and woodlands.

Could the Cedar Fire have been prevented? Maybe not. But the damage could have been reduced or contained by taking actions to reduce fuel and establish buffer zones of Forest Service or BLM land and keeping adjacent forests and woodlands healthy. These are key features of the Healthy Forest Restoration Act. These are the key features of the Tribal Forest Asset Protection Amendment.

I speak not just for California tribes, but also for the White Mountain Apache, the Crow, the Oneida, the Lummi Nation and tribal nations throughout the United States. Tribes must be given the opportunity to participate in managing federal lands so that next year another Congressional committee will not to have to face the daunting economic and ecological challenge we face today.

We stand ready to assist you in support of the Tribal Forest Asset Protection Amendment.

Thank you for chairing this hearing, and again for allowing me to address the Subcommittee.

STATEMENT OF SCOTT STEPHENS, PH.D., ASSISTANT PROFESSOR OF FIRE SCIENCE, DEPARTMENT OF ENVIRONMENTAL SCIENCE, POLICY AND MANAGEMENT, UNIVERSITY OF CALIFORNIA, BERKELEY

Dr. STEPHENS. Mr. Chairman and members of the Committee and other Representatives, I am privileged to be here today.

The 2003 wildfires in southern California were tragic in many respects. We have heard about it from further testimony—losses of life, impacts to communities, negative impacts to forests and ecosystems.

In the future, an idea that I might have is it would be nice to have a hearing such as this to actually talk about some successes relative to wildland fire. I think a lot of hearings occur when we have tragedies with fire, and they are very real, but there actually are some times when we have successes and it would be nice to have a forum for them some day.

I want to give a brief discussion about chaparral forests in southern California, ideas on how you might be able to mitigate hazard, mitigate some of the post-fire outcomes and also a real brief discussion on urban interface.

Chaparral and coastal state scrub was the majority of the fire area. We know, we have heard this from several speakers. Some people estimate 70 percent of the area, some 80 percent, forests maybe five percent. We also have heard from the Fire Marshal of San Bernardino County that there was a heroic effort to stop the fire on the ridge, there is no doubt about that.

But when you look at the fire in these two communities, you have to really look at them because they are fundamentally absolutely different. If you look at fire in chaparral, as Dr. Bonnicksen has said this is a crown fire adapted ecosystem, it is just that simple. This system burns on slopes, under high winds and under drought and you produce flame lengths 60, 80 feet, and fires move up canyons at incredible rates of spread. I have done actually 22 prescribed fires in chaparral in the last seven years in northern California actually. We burn this stuff under prescription and we get flame lengths of 60, 70 feet in our research. So this is a very volatile fuel type and it actually does burn and regenerates well after a high severity fire.

If you look at the erosion off these systems, it absolutely is a concern for management because erosion is downhill and we have communities, but erosion is actually part of the natural system, just as the fire is unfortunately. This means that living near chaparral is an absolute challenge because you have erosion and you have fire hazard that are really part of the ecosystem. They can be mitigated to some point.

I think in response to fire in these areas, we started to do things like annual rye grass seeding and other methods back in the 1930s and 1940s. Some research has been done right here, several research scientists for the Forest Service and USGS looked at some of the effectiveness of this and it has been shown to be fairly ineffective unless you have rain that comes in very slowly, comes in and wets the grown, gets the seedlings established, and that maybe can help a little bit, but also has some negative impacts for displacing native flora and impacting biodiversity. There is also a problem if we get grasses in these systems and they keep in here, that we cannot increase fire frequency to the point where we can take the scrub out and then create a grassland. And that actually can make more problems for slopes because of higher erosion.

I think if we were going to look at the southern California example, I would say that the best place to put most of the efforts are right on the urban interface, and I think we have heard this from the other speakers. I would say that these are the places where you will probably get the biggest bang for your investment, trying to create some more defensible space in these areas. The large lands, certain chaparral in this area, trying to put fire on the ground for huge areas is an absolute challenge. I am a very big fire proponent, but I also know it is very challenging to put fire on the ground and try to get these systems to work.

Now I want to shift over to the ponderosa pine, mixed conifer and the forests up here on top of the mountain. These systems are not adapted to high severity fire whatsoever, at least at scales that are large. These are systems that are adapted to high severity fire maybe the size of half an acre. Regeneration in the past has been in these clumps and there is no doubt that these systems have changed.

I have done some research down in northern Mexico, Sierra San Pedro Martir. If we could jump in an airplane and went 300 miles south, we would actually end up at the end of this peninsula mountain range and that is actually the Sierra San Pedro Martir Mountains. The place never had fire suppression until 1970, it has also

never been harvested. Today the average tree per acre down there is six feet above one inch diameter, ranges from about 20 to 125, incredible spatial heterogeneity in that system. Fires still occur down there and the outcomes of these fires generally retain most of the forest overstory. It is just that simple. It is must more resilient and it is really a desired condition for many areas, it is not a complete surrogate for this place by any means, but it is an amazing place in terms of what the forest structure is.

So we have changed these systems. We know that tree mortality in this area is nothing less than extraordinary. When I come up here, we have got a research study here, Rick Everett, a person working in my lab at Berkeley, is doing a study here and it is extraordinary. What needs to be done is really restoration.

If we look at fuels, I would just like to say a couple of things about fuels. You have got four different fuel systems that you really look at—ground fuels, surface fuels, ladder fuels and crown fuels.

Ground fuels are the litter and dust layer right on the surface of the soil. Surface fuels are the dead and down material on the forest floor, and also small shrubs. Ladder fuels, small trees and taller shrubs provide continuity, many of you have heard this. And the crown fuels are the things above our heads.

If you look at the systems that used to burn frequently, like most of the systems here, most of the hazard is in the surface fuel area. The second most one in my opinion is the ladder fuels, the third most is the crown fuels. This means if we want to do some work to really do some restoration which is critically needed, we have to really evaluate surface fuels, how we are going to treat them, what are we going to do with them, and it is an absolute priority.

The great challenges around here is the infrastructure. One of the real problems with infrastructure is, as we have talked about, there is very little biomass utilization capacity here. You heard some comments earlier about maybe more biomass mills being put here, potentially a small sawmill. I actually think that is a great idea because I think you need more options to do work here that needs to be done.

If you just do biomassing and chipping onsite, you are going to have a terribly expensive operation and also probably very limited capacity.

I think the forest management needs to be flexible, very flexible, because the systems on the ground are so variable. Flexibility unfortunately takes trust in the agency and the Chief talked about that a little bit that there is some sort of disconnect there a little bit. One way that I think you could actually move forward on this is a system of adaptive management large scale, so you can learn from adaptive management, put this on the ground, learn from it, go forward as a collaborative with all sorts of people engaged. I think this could happen in many scales.

If you look today in the national forest system, we really never had a priority for fuels management for national forest system, it did not occur until about 1995 when Federal wildland policy changed. You have done work on this to amend this through the other legislative acts. I would not say it became a priority until 1997, which simply means there are no places we can go that have large landscape level areas that have had fire management as a

priority—simply does not exist. We could point to some national parks where maybe that has been occurring for 30 years. Without having that place to learn and to have a discourse in, it causes I think a lot of uncertainty and I think you could learn a lot from actually trying to do adaptive management.

There is a new bill in Congress that I have become aware of, H.R. 2696, the Fire Institute bill. This bill is basically written to promote the use of adaptive ecosystem management to reduce the risk of wildfires and improve forest health. I think it is absolutely a powerful idea, a great idea, I fully support it. I am actually a little concerned that it only has three states involved and California is not one of them. There is no state in this nation that has got a bigger fire issue than this state. I am biased, I am a Californian, but when you look at vegetation here, you look at the number of people, the number of wildland interfaces, you have to a problem that is extraordinary.

Urban/wildland interface, just quickly I will sum up, I am over time a little bit. I think that urban interface is a huge issue across the west. I also would say that we need to do more in the urban interface for the large landowner to reduce hazards, absolutely critical. Equally, we need to do as much on the private side. If we take fire resilient landscape on the urban interface, large landowner—BLM, Forest Service, Park Service—and a fire still comes up through there, which they are going to do and they lob embers into the communities, fire does not discriminate, fire takes the thing that is going to burn the easiest and burns it up. If it turns out to be a house, it turns out to be a house. You have got to do more on the private side. That is a collaborative effort. Actually my dad lives in the woods and we are constantly facing this challenge, so I would just say that yes, we need to do urban interface on the wildland side on the big landowner, but it has to go along with the private side. The private side is probably more of a state issue and a county issue. But it is paramount.

Mr. CALVERT. I thank the gentleman for his testimony.

Mr. Grindstaff.

[The prepared statement of Dr. Stephens follows:]

Statement of Dr. Scott L. Stephens, Assistant Professor of Fire Science, Division of Ecosystem Science, Department of Environmental Science, Policy, and Management, College of Natural Resources, University of California, Berkeley

Chairman McInnis, distinguished members of the Committee, it is a privilege to have the opportunity to present my testimony to you today.

The 2003 wildfires in Southern California were tragic in respect to losses of life, their impacts on communities, and how they affected the forested ecosystems in this region.

In the future, I look forward to the day when a hearing such as this can be held to discuss successes relative to wildland fire and ecosystem restoration. Certainly, more work must be done in this area, but it would be useful to have a forum where positive aspects of wildland fire could be presented.

I will present a discussion of wildland fire in chaparral, coastal sage scrub, and forests in the southern California region. This will include the benefits and risks associated with the different methods used to reduce fire hazards and the effectiveness of post-wildfire mitigation methods. I finish with a discussion on the urban-wildland intermix.

Chaparral and Coastal Sage Scrub

Chaparral and coastal sage scrub are the vegetation types that were most affected by the 2003 southern California wildfires. Approximately 90-95 percent of the area burned was in these two shrubland vegetation types. The remaining area was in coniferous forests.

It is important to distinguish between shrublands and forests in regard to the 2003 wildfires. Chaparral and coastal sage scrub are vegetation types that are adapted to high intensity crown fires at intervals of approximately 25-50 years. They produce extensive live fuel beds as they develop and almost always burn as high intensity crown fires when successfully ignited. Under extreme fire weather, such as when the Santa Ana winds occur, the resulting fire behavior is phenomenal with flame lengths over 75 feet and rates of spread greater than 6 feet/second. This type of fire behavior is not uncharacteristic or uncommon, it is simply how these vegetation types burn under extreme weather conditions. After such fires, native vegetation will recover relatively quickly by resprouting and from the germination of a soil-stored seed bank. I have conducted 22 research chaparral prescribed fires in northern California since 1995 and the vegetation in the areas burned 7-8 years ago is approximately one-half to two-thirds of what it was before burning. These ecosystems can respond quickly after high severity wildfires.

After wildfire, there is a real management concern concerning erosion impacts. Erosion is a natural part of this ecosystem, just as fire is. Immediately after fire, dry ravel erosion increases greatly as surface barriers to soil movement are removed. Dry ravel moves downslope under gravity and fills in stream channels. Early post-fire rains can promote on-slope rill networks, enabling large amounts of water and soil to move rapidly off of steep burned slopes.

Erosion tends to be high for the first few years after fire, and then gradually decreased with time, normally returning to prefire levels in 5-10 years as the increases in plant cover and root biomass help stabilize surface material.

In response to the need to protect downstream structures and resources after fire, managers began to explore ways of establishing rapid vegetation cover on burned hill slopes. Starting in the 1930's, Los Angeles County foresters first tried to seed native shrubs, then later experimented with herbaceous species such as mustards and grasses. By the 1940's, managers were routinely using annual ryegrass (Lolium multiforum) in an attempt to stabilize slopes after fire.

Evaluation of seeding effectiveness was based primarily on the level of grass cover established, with little attention given to any effects on native vegetation recovery. At this time, little or no attempts to quantify the success of this practice at reducing erosion were attempted.

Questions about the impact of seeding with annual grasses on natural vegetation recovery in chaparral and coastal sage scrub have been raised for years. Some research has observed a negative relationship between ryegrass cover and native herb cover. Lower species richness has been reported for ryegrass seeded plots. Reseeding of non-native species after fire in chaparral does not affect the long-term, post-fire recovery of native shrubs.

Seeding also has the potential to increase fire frequency in chaparral and coastal sage scrub as flammable, exotic grasses provide a continuous fuel structure in a very short time period. If these systems burn frequently, a vegetation type conversion from shrublands to grasslands can occur and this can further exacerbate erosion problems because grasses provide little soil stabilization on steep slopes.

The most likely scenario for maximum effectiveness of post-fire seeding at reducing erosion would be one where rainfall is of low intensity and regularly spaced in the fall and early winter, allowing good grass cover to establish before heavy rains. However, this weather pattern does not appear to be a reliable or frequently occurring scenario on southern California chaparral sites.

In years of even moderately favorable weather conditions, seeded grasses appear to compete with the natural post-fire herbaceous flora rather than enhancing total plant cover. This competition decreases both species richness and percent cover of the native, herbaceous species. Research on the long-term effects of reseeding on the chaparral seed banks continues but it seems seed banks are also affected by introduced annuals.

New methods to reduce erosion, such as aerial straw mulching, polyacrylamide, and aerial mulching, have never been rigorously field tested. The lack of information argues for a standardized program of treatment effectiveness monitoring, as pointed out in a recent General Accounting Office report on this subject.

Today, even though the best scientific information on the effects of post-fire seeding of exotic grasses tells us there are few or no positive affects, some agencies continue to promote the practice in southern California. This is slowly changing.

I believe federal and state managers should focus chaparral fuel treatments in the urban-wildland intermix. These treatments have been proven to be effective during wildfires in southern California. An example is the 1995 West Ridge prescribed fire in the San Bernardino National Forest. This chaparral prescribed fire was done below the town of Idyllwild. Two years later, the Bee wildfire burned uphill towards Idyllwild and was successfully suppressed because of the impacts of the previous burning.

Mixed Conifer, Ponderosa and Jeffrey Pine Forests

The ponderosa pine, mixed conifer, and Jeffrey pine forests that burned in 2003 are not adapted to large, high intensity fires. Most of these forests, area denser and more spatially uniform, have many more small trees and fewer large trees, and have much greater quantities of surface fuels than did their pre-settlement counterparts. Causes include fire suppression, past livestock grazing and timber harvests, and possibly changes in climate. The results include a general deterioration in forest ecosystem integrity and an increased probability of large, high-severity wildfires. Such conditions are prevalent nationally, especially in forests that once experienced short-interval (<15 years), low to moderate-severity fire regimes.

The tree mortality that occurred in many forested areas prior to the southern California wildfires is extraordinary. I visited this region several times before the 2003 fires and in some areas, the mortality was the most severe that I have ever witnessed. The mortality is the result of several factors, including past management activities, that allowed more trees to become established over the last 100 years, a multi-year drought, stress from smog that is transported to this area from the Los Angeles basin, and the impacts of native bark beetles. Past management actions set the stage for a dramatic change in this forested ecosystem. I should note that the past drought has been severe and trees have died at the lower forest-shrub ecotone, and this has not been witnessed in the last 70-100 years. Still, droughts are part of the natural ecosystem stresses that have and will continue to affect California. I think one of the central messages that should be learned from the forests of southern California is an active management philosophy is needed in these forested ecosystems.

Before beginning my discussion of the different methods that can be used to reduce fire hazards in these forests, I want to spend a moment on what I believe is the critical issue, the definition of desired future conditions for our diverse ecosystems. Once this is done we can then decide what management tools are appropriate to achieve and maintain the desired conditions. I believe the debate on whether we should use silviculture to manage our national forests is unproductive, the real issue is the definition of desired future conditions, and how are we going to get there, and once there, how they will be maintained.

When discussing fuel hazards in coniferous forests we must examine four different fuel systems:

1) Ground fuels (leaf litter and decomposed organic materials on the soil surface);
2) Surface fuels (dead and down woody materials, herbaceous fuels, live shrubs);
3) Ladder fuels (small trees and shrubs that can provide vertical continuity to move a fire into tree crowns); and
4) Crown fuels (vertical and horizontal distribution of tree crowns).

Each area of the country is unique but in most forest types that historically had frequent, low-moderate intensity fire regimes, such as most of those in the mountains of southern California, the most critical fuel complex from a fire hazard standpoint is the surface fuels, followed by the ladder fuels, and then the crown fuels. Ground fuels are relatively compact (low surface area to volume ratio) and contribute little to flaming combustion or fireline intensity.

If one is designing a fuels treatment strategy it must focus on surface fuels. Commercial and pre-commercial thinning operations can reduce ladder fuels and crown fuels but without combining these treatments with surface fuel reductions, the overall program will not reduce potential fire behavior. In fact, operations that lop and scatter the slash fuels produced after thinning operations will increase fire hazards for a decade or more until decomposition reduces fuel loads. Mechanical removal of ladder and crown fuels will reduce the probability of crown fires in an area, but if surface fuels are not reduced, a high severity surface fire can be produced, and it will kill the majority of the remaining trees by scorching (production of lethal thermal injuries to all exposed leaf and meristem tissues). Only when these treatments are coupled with a surface fuel treatment will this result in a reduction in potential fire behavior. One of the most effective surface fuel treatments is prescribed burning which can be used with or without prior mechanical treatments to produce the overall objective. A limitation of mechanical treatments is the need of road networks which are not available in all areas, especially in the mountains of southern

California. Whatever treatment is selected, it must target the surface fuel layer, followed by ladder fuels, and then the crown fuels. Surface fuel reduction cannot be an afterthought of fuel treatments in these forests, it must be the central objective.

One of the great challenges of producing a fire hazard reduction program for the forests in southern California is the lack of infrastructure in this area. The closest sawmill to this area is in the southern Sierra Nevada. This is outside the economic range of most materials that should be removed to reduce fire hazards in this region. Presently, the National Forests in this area are chipping dead trees on site and dispersing the chips locally over the forest floor. This is an improvement in terms of fire hazard reduction but it is a very slow, expensive alternative. The large chipper that worked in the forest around Lake Arrowhead this summer cost $580/hour to operate. In addition to this machine and its operator, tree fallers and skidder operators were needed to move the dead materials to the large chipper. I watched this machine operate this summer and it could only chip approximately 1-2 acres per day in areas where tree mortality was heavy. There is a real need to have a local mill in this region that could efficiently process materials removed to improve forest health.

Another critical question is the definition of desired future conditions for the forests in this region. One forested ecosystem exists that can be compared to those found in southern California, this is the Sierra San Pedro Martir (SSPM) in northwestern Mexico. This forest is composed of mixed conifer forests and shrublands of the Californian floristic province that occur nowhere else in Mexico. The SSPM is unique within the California floristic province in that its forests were never harvested and a policy of large-scale fire suppression did not begin until 1970. I have been conducting research in this area since 1998 and it can provide information that can assist in the production of desired future conditions in the forests of southern California. There is a great amount of spatial heterogeneity in the forests of the SSPM. Average surface fuel loads are small (6 tons/acre). Over the last four years, the forests of the SSPM have experienced a similar drought to that experienced in the forests of southern California. I have a set of forest inventory plots in this region and snag density increased from 1.7/acre to 2.6/acre over the last three years. This is a large mortality event for this region but is orders of magnitude smaller than what occurred in southern California. One of the goals of forest management should be to produce resilient forest structures that can incorporate natural disturbances such as fire, insects, diseases, and drought without catastrophe (tree mortality outside desired conditions). Forest management plans should be flexible to allow managers enough space to propose creative field-based solutions to address our current fire problems. There is presently mistrust in many sectors of federal forest management and this has impeded the ability to allow flexibility. A vigorous system of adaptive management at large spatial scales would reduce these barriers.

California has huge challenges to overcome in terms of wildland fire. The state has a Mediterranean climate (dry hot summers) and almost all of its vegetation is fire adapted. The exclusion of fire and past management practices has produced ecosystems that are not sustainable. California also has the largest population in the nation and the number of people moving into the urban-wildland intermix is increasing. The USFS has been attempting to produce a plan to manage the National Forests of the Sierra Nevada since 1990 and wildland fire has been one of the central issues. After 13 years of debate, we still don't have a final plan. The ecosystems in southern and northeastern California have similar management challenges.

Since fire hazard reduction has never been the main objective of USFS land management, we have no large-scale research to support such a management philosophy. There simply are no places to go in California to get information on the tradeoffs (economic, social, ecological) of large-scale management treatments designed to reduce fire hazards and improve forest health. I have become aware of a new bill in Congress, H.R. 2696 (Fire Institute Bill), that attempts to fill this need. It proposes 3 new Fire Institutes that would "promote the use of adaptive ecosystem management to reduce the risk of wildfires and improve forest health." The new institutes would be funded for five years and would be created with the consultation of the Secretary of Agriculture. I fully support this idea because of the real need for increased information but am distressed that California is not one of the states that would receive such an institute. There is no state in our nation that has more complex fire and forest health issues than California.

Urban-Wildland Intermix

Land management agencies throughout the country are increasingly aware of the difficulties of managing in the urban-wildland intermix. This is a very complicated landscape with homes, subdivisions, and towns all mixed into or adjoining wildland areas. The number of people who choose to live in this area continues to increase

and many wildland fire agencies, such as the California Department of Forestry and Fire Protection, believe this is the area where their fuels treatments should be focused.

I believe this area requires partnerships between home owners and the public or private organizations that have responsibility for the adjoining wildlands. Strategic fuel reduction zones can be created in the urban wildland intermix to allow for more effective and safe suppression activities when wildfires are moving from the wildlands toward homes or from the homes into the wildlands.

Private home owners share responsibility in this area. Homes must be built with combustion-resistant roofs and siding materials. Defensible space must be created around each structure to increase the probability that it will survive a wildfire. Fine fuels and needles must be removed annually from roofs and around houses to reduce the chance of spot fire ignition during wildfires. To reduce losses in this area, a shared partnership must occur between the private landowner and the manager of the adjoining wildlands. Currently, most of the debate is focusing on what large land managers must do to reduce risk, but an equal amount of responsibility rests on the private side of the intermix. Counties and states must take action to ensure that individual home owners reduce their potential for catastrophic fire.

Thank you for the opportunity to speak to you today.

STATEMENT OF P. JOSEPH GRINDSTAFF, GENERAL MANAGER, SANTA ANA WATERSHED PROJECT AUTHORITY

Mr. GRINDSTAFF. Thank you very much. I appreciate the opportunity to be here. You have a copy of my testimony and copy of the burn report here. I think I will answer a couple of questions that I have heard asked here specifically about the impacts to this watershed.

Two major fires impacted the Santa Ana River Watershed. The Old fire and the Grand Prix fire. An example, the Old fire, we are expecting that that will generate 300,000 acre feet of debris. Now those of you that know what an acre foot is, that is a lot of debris. So will there be a problem? Yes, there will be a major problem over the next probably four or five years. Most of this fire—about 80 percent of the fire was on very steep slopes. So mulching, doing anything like that is impossible. We have very, very steep slopes. We are going to have a lot of that debris come down and there is not much we can do about it except enlarge the debris basins down at the bottom of the hill, try and empty them out every time they get full and be prepared to evacuate people if in fact we have problems.

I know that is hard to say. But the day when the BAER team came together we were sitting in this room, the incident command center, and Ken Miller, who is the flood control director for San Bernardino County, was sitting there and we asked the question what level of storm is going to cause a problem for you. He said one inch will cause problems in this watershed today. I am hoping that as time goes by and we get more things in place that number will go up, but it is a significant, significant problem. You are talking about an order of magnitude change after a fire. So the flows that you might expect from a one-inch storm will in fact be 10 times higher. The peak flows will be 10 times higher than what you would get in a normal one-inch storm. So that carries a lot more debris with it. If you will remember about a week or 2 weeks ago there was a big storm down in Los Angeles. If that storm cell had hit one of the burn areas we would have had a massive problem in this region.

So fire has very real costs. It will probably cost just for the debris problem we believe on the order of $190 million in this watershed. So when we talk about the costs of thinning and managing the forests well, there are very real reasons why we should do that.

Let us talk about water supply. In this watershed we estimate because of this fire we are going to lose approximately 60,000 acre feet of water per year for the next few years. That is a significant amount of water that we will be importing because we are not able to capture it and use it locally. So we have had a long-term program here to try and reduce the amount of imports for the watershed that is 5.5 million people. Over the next few years we are actually going to be increasing the amount of water we import because we are not going to be able to capture it all. There are impacts to small agencies that have a treatment plant, whether it is Cucamonga County Water District that cannot take water through their treatment plant now because there is too much sediment, too much ash there. That ranges all the way across the whole part of the mountains, this whole part of the watershed.

Water quality. I am going to give another example that is probably different, of a potential kind of problem we have. The largest constructed wetlands in the western United States are located on the Santa Ana River. They were built by the Orange County Water District as treatment wetlands, and half of the flow of the Santa Ana River goes through those wetlands. If we get indeed the sediment that we are expecting to get, we are going to fill them all up. So the water quality benefits, the habitat benefits that we get from those—and the principal reason for them was to reduce nitrate in the water—that is gone and they have to go in and rebuild them essentially after the event is over. So that is an example of the kinds of impacts, and they are going to happen. I hope that over the next 8 months we can do something that prevents fires—further fires in this watershed. But now that San Jacinto and Idyllwild are also a part of this watershed, I am not hopeful honestly. As a planner—somebody that has to lay out what might happen—I am not hopeful that we are really going to prevent the kinds of fires that certainly look likely today next year. So that is—and we will have similar kinds of impacts when that happens.

Probably one of the things that I understand more now than I ever understood before—and I have managed water agencies for most of my career—managing the forest has a real financial impact in ways that we do not normally think about, that we have not normally cataloged as we as water agencies move ahead. I am sure that is true in many other areas. That, I think, just increases the urgency for us to find ways to manage those forests properly.

Thank you.

[The prepared statement of Mr. Grindstaff follows:]

Statement of P. Joseph Grindstaff, General Manager, Santa Ana Watershed Project Authority

Chairman Pombo and members of the Committee on Resources, thank you for providing me this opportunity to address the significant impacts to our water supply and quality throughout the Santa Ana Watershed from the October wildfires in the San Bernardino, San Gorgonio and San Jacinto Mountains.

Also, I thank you for addressing the needs of the watersheds in California. The forests provide significant groundwater recharge for our region and their health is

important to millions. Federal funding for fire impacts will significantly reduce the "urban drought" that is likely to follow the recent fires.

SAWPA was honored to be asked by Tom O'Keefe and Gene Zimmerman to participate in the Burn Area Emergency Response (BAER) team. We were impressed by the individuals and teamwork of the group to assess the devastation. In parallel, we developed the report we have provided to you. Our staff worked with dozens of the nearly 100 agencies in the watershed to integrate the broad needs resulting from the recent fires. These needed improvements range from flood control enhancements and habitat restoration to salt removal from groundwater. This collaboration enabled us to quickly assemble this information and bring a large portion of the effected agencies up to speed.

These efforts follow the model that Santa Ana Watershed Project Authority (SAWPA) created for the Integrated Watershed Program (IWP). The IWP has been very successful in collectively working with all agencies in the watershed to drought proof the Santa Ana Watershed. Through this program, the region will not require imported water during drought years. With help from funding in Proposition 13, the program is creating almost 300,000 acre feet of new water at an average cost to the state taxpayer of less than $100 per acre foot. The $235 million is being matched with local funding to build almost $800 million in infrastructure. Additionally, it will improve and protect almost 10,000 acres of river habitat and wetlands.

We believe the IWP is a model that will work for regions throughout the state and will likely be a model to mitigate water quality impacts associated with fire. This model will address flood control problems, and enhance the environment through desalting, groundwater cleanup, improve water supply storage, storm and flood control management, water recycling, environmental and habitat restoration and conservation measures.

From our information, this same scenario is likely to be repeated throughout the state in the foothills and forest of the Sierras in California. Action is needed to prevent these disasters from repeating throughout the state.

Background

The Santa Ana Watershed provides a majority of the drinking water for over 5 million residents from the rainfall in and around the San Bernardino, San Gorgonio and San Jacinto Mountains' forest areas. Rainfall in these mountainous areas provides surface water flows and groundwater recharge throughout the region via the Santa Ana River and its tributaries.

Recent fires in these areas were large and difficult to contain. The aftermath of these fire events have resulted in extraordinary impacts on the forests and the watershed. The recent Grand Prix, Old and Padua Fires burned over 120,000 acres (more than 185 square miles) in the Santa Ana Watershed of wildland habitat, primarily in the San Bernardino National Forest.

These fires will have significant impacts on the Santa Ana River and its associated water quality for an extended period and these impacts will occur in areas far from the burned sites. While the fires were confined to the top of the watershed, virtually the entire watershed is impacted by the fires, or will be impacted. It is estimated that the fires' effects will impact an additional 430 square miles beyond the burn area for a total impact to over one-quarter of the watershed. Without intervention, most of the associated costs will be borne by local government.

The area burned will significantly complicate our efforts to drought-proof the watershed. As presented above to prepare for greater water demands that are projected to increase nearly 30% within 20 years and seeking to drought proof the region so that no imported water would be required during drought years, SAWPA developed a 10-year IWP to address the water needs of the region. Over 200 water resource-related projects were identified as part of this program to date. Three billion dollars was initially estimated to implement the 10-year IWP. In 2000, SAWPA successfully contracted with the State Water Resources Control Board to use $235 million in Proposition 13 Water Bond funds to begin construction of over $800 million in projects that directly support the IWP. Costs borne by local agencies in responding to problems arising from recent fire events will significantly impact the ability of the agencies cooperating in implementing the SAWPA IWP to reduce the region's dependence on imported water and, therefore, will have a lasting impact on water supplies statewide.

Water Supply and Quality, Habitat, and Flood Control Impacts

An "urban drought," caused by the inability of the forests to capture and percolate water into the ground and water basins, will likely damage water supply and quality. Significant conservation efforts are needed now. Federal and state funding are also needed to avert the disaster after the disaster.

The following areas of risk have been identified:

- Future Fires: Less than 5% of the trees with drought-induced severe mortality have burned in the recent fires, which leaves more than 150,000 acres unburned. More fires are likely, further exacerbating the impacts;
- Flooding and Debris: In the Old Fire alone about 300,000 acre feet (AF) of mud, rock and water are anticipated to fill streams, basins, and flood facilities. Removal of sediment and facilities improvements to mitigate flood impacts could cost $190 million;
- Mud and Rock Flows: From even a moderate (10-year storm), mud and rock flows would cause 100 sub-watersheds to produce 4,500 cubic feet per second or more of runoff, well over ten times the average year flows;
- Threatened and Endangered Species: Threatened and endangered species are negatively impacted not just in the burned area, but by sediment, and pollutants that occur for years after the burn in areas throughout the watershed;
- Groundwater: Seventy percent of the water used by its 5 million residents in the watershed is groundwater; much of this is percolated rain water in the forest, or within approximately five miles of the forest;
- Percolation: More than 70 groundwater percolation basins will likely be impacted by mud and rock reducing recharge;
- Ash Impacts: As much as ten million cubic yards of ash are expected to be washed into creeks, streams, rivers and percolation basins as far as Orange County and eventually the ocean;
- Water Loss: With these basins out of commission, as much as 60,000 AF of water will be lost to the ocean each year, instead of percolated and used for drinking water. The cost of replacement water, if it is available, could be $15 million per year;
- Contaminants: Runoff water will likely bring contaminants—manganese, lead, phosphorus, mercury nitrates, total organic carbon, and uranium requiring treatment and removal before use; and
- Stress on State Water Supplies: Without mitigation from the fires' impact, the region will become more dependent on imported water from the Colorado River and the Bay-Delta, rather than less as is planned through the IWP. The impacts of the fires will be felt statewide.

For additional information, please reference a report entitled, Old, Grand Prix, and Padua Fires (October, 2003) Burn Impacts to Water Systems and Resources dated December, 2003, prepared by SAWPA in support for the United States Forest Services Burn Area Response Team working in the area. This report has been prepared to inform and aid decisionmakers and other interested parties throughout the watershed.

Fire Impact Cost Estimates

Costs of mitigating the effects of recent fires within the watershed are estimated to be nearly $450 million, and are summarized below:

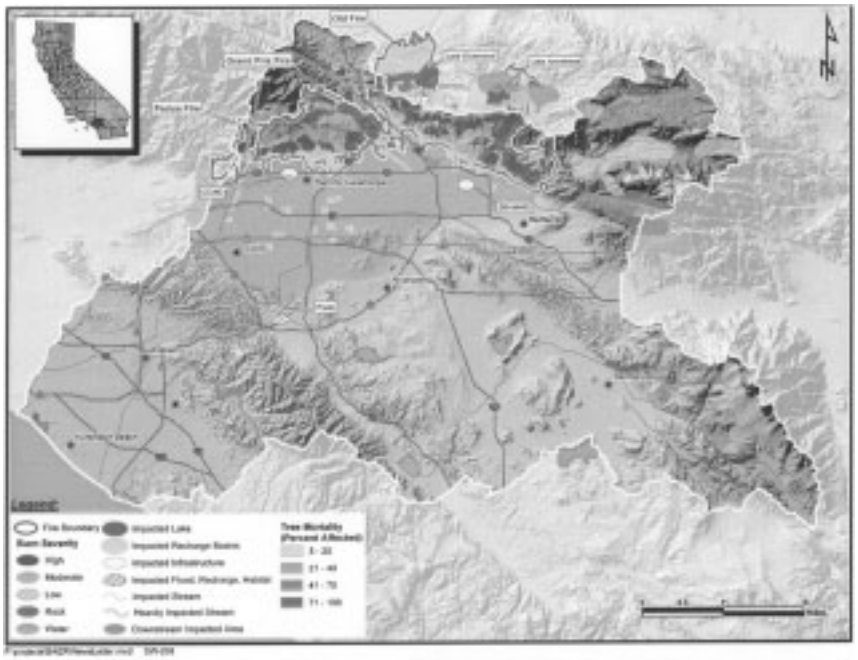
Fire Impact Cost Estimates

Impact Type	Total Cost	First Year
Sediment Removal (5 years)	$ 125,250,000	$12,525,000
Flood Control Improvements (56 basins)	$ 56,000,000	$5,600,000
Basin Percolation Restoration (25 basins)	$ 6,250,000	$1,250,000
Habitat Restoration (7,500 Acres)	$ 15,000,000	$1,500,000
Toxic or Radiological Treatment	$ 13,000,000	$500,000
Inorganic Salt Removal (Capital and 20 yrs. Op)	$ 182,000,000	$18,200,000
River and Basin Quality Monitoring	$ 8,850,000	$1,770,000
Water Supply Emergency	$ 35,350,000	$3,535,000
Wetland Restoration (2,500 acres)	$ 5,000,000	$500,000
TOTAL	**$446,700,000**	**$45,380,000**

In addition, local water agencies have expressed concern over direct damage to infrastructure such as wells and access roads resulting from increased debris and sediment flow from storm events following fires.

Although the fires did not burn all of the areas anticipated in earlier calculations, these impacts are likely to be severe over the next five or more years, depending on rainfall and storm intensity.

In addition, as much of the unburned area is still at extreme risk of a catastrophic fire, costs are likely to be higher than those projected from the recent fire events.



Requested Actions/Funding Recommendations

We urge the Committee to:

- Continue to fund the restoration of the forest as it is the top of the watershed and from where the highest quality drinking water in the watershed comes;
- Continue to support sustainable land use in the forest and the watershed;
- Provide funding and support for immediate flood and debris measures to protect the area from additional disasters at the first heavy rains; and
- Understand the close connection that exists between the forest and the watershed below and provide support and funding for the mitigation of the fire impacts on the groundwater basins of the watershed.

The following table summarizes specific watershed improvements to mitigate the effects of the recent fires. These improvements are individually identified, as well as their benefits.

Table 1
Recommended Improvements to Mitigate Fire Impacts

Project or Activity	Agency/ Organization	Capital Cost ($ millions)	Ongoing Impact Cost ($ millions)	Project Description	Project Benefits											
					Groundwater					Surface Water					Sensitive Species	
					salt intrusion/ saline	nitrates	uranium/ perchlorate	well production	recharge water supply	silt	debris	organics	turbidity	possible water supply	fish species	bird species
BUNKER HILL BASIN																
Desalter	SBVMWD	60	2.00	A 15 mgd desalination facility is proposed at the southwest corner of Bunker Hill Basin and the lower Pressure Zone.												
Silt and Debris Removal	San Bernardino Valley Water Conservation District, San Bernardino County Flood Control District, Lytle Creek Water Conservation Association	9.25	22.7	Silt and Debris Removal Activities of Debris and Recharge basins located in the Bunker Hill Basin												
Flood Control Improvements	San Bernardino County Flood Control District	56		Improvements to Flood Control Facilities to make permanent improvements needed to alleviate flooding impacts. Costs included for all San Bernardino County basins												
Basin Treatment Facility	SBVMWD	4	0.28	With increased radon levels expected due to uranium runoff deposits, an air-stripping treatment facility is proposed.												
Purchase of Imported Recharge Water	SBVMWD, Lytle Creek Water Conservation Association		5.00	Water that will not recharge basin due to increased silt and debris loads is proposed to be replaced with increased purchases of imported recharge water. An estimated 20,000 AF per year is assumed to be lost and will need to be purchased. Avg. MWD recharge water rate $150/AF												
Well Repairs	San Bernardino Municipal Water District	0.1		Repairs are needed to water production well pumps and appurtenances												
Pipeline Appurtenance Repair	San Bernardino Valley Municipal Water District	0.1		Repairs are needed to above ground pipeline appurtenances damaged by fire such as hydrants, air valves, etc.												
CHINO BASIN																
Desalting Facility	Chino Basin Desalting Authority, IEUA	44	1.00	A 10 mgd desalination facility expansion is proposed at the Chino Desalter to remove water contaminants that infiltrate the basin from the burn area runoff.												
Silt and Debris Removal	San Bernardino Flood Control District, Chino Basin Water Conservation District, Six Basins Watermaster		1.65	Silt and Debris Removal Activities of Debris and Recharge basins located in the Chino Basin												
Radon Treatment Facility	IEUA	6	0.20	With increased radon levels expected due to uranium runoff deposits, an air-stripping treatment facility is proposed.												
Purchase of Imported Recharge Water	IEUA		5.00	Water that will not recharge basin due to increased silt and debris loads is proposed to be replaced with increased purchases of imported recharge water. An estimated 20,000 AF per year is assumed to be lost and will need to be purchased. Avg. MWD recharge water rate $150/AF												
Reservoir Repairs	Cucamonga County Water District	0.5		Minor repairs around 5 water reservoirs is proposed												

Table 1
Recommended Improvements to Mitigate Fire Impacts

Project or Activity	Agency/ Organization	Capital Cost ($ millions)	Ongoing Impact Cost ($ millions)	Project Description	Project Benefits											
					Groundwater					Surface Water					Sensitive Species	
					real discharge costs	increase pollutant loads	well production	recharge water supply		silt	debris	organics	turbidity	potable water supply	fish species	bird species
Pipeline Appurtenance Repairs	Costamesa County Water District	0.2		Minor repairs to above ground pipeline appurtenances is proposed along Foothill Feeder and CCWD 15" Line				■						■		
Treatment Plant Repairs	Costamesa County Water District	0.1		Emotional and appurtenance repairs are proposed about 3 water treatment plants				■						■		
SILT AND DEBRIS REMOVAL																
Silt and Debris Removal	CCWD		0.2	Silt is likely to impair the innate loss processes of the Peralta wetlands. Consequently, silt and debris removal in the existing CCWD 445 acre Peralta wetlands is proposed					■	■	■	■	■	■	■	■
ORANGE COUNTY BASIN																
Desalter	CCWD, Orange County Sanitation District (OCSD)	25	0.65	A 5 mgd desalination facility expansion is proposed as the CCWD/OCSD Groundwater Replenishment Desalting Facility to remove water contaminant that will infiltrate the Orange County Basin from upper watershed burn areas	■	■		■								
Silt and Debris Removal	CCWD, Orange County Public Facilities and Resource Dept.		0.4	Silt and debris removal activities of located in the Orange County recharge basins located along the Santa Ana River						■	■	■	■	■	■	■
Radon Treatment Facility	CCWD	5	0.15	With increased radon levels expected due to uranium runoff deposits, an airstripping treatment facility is proposed			■	■								
Purchase of Imported Recharge Water	CCWD, MWDOC		0.05	Water that will not recharge basin due to increased silt and debris loads is proposed to be replaced with increased purchases of imported recharge water. An estimated				■						■		
SANTA ANA WATERSHED																
Water Quality Monitoring Program	OCF, SAWPA		1.77	With increased levels of water quality contaminants, additional water quality monitoring is proposed working in conjunction with OCF	■	■	■			■	■	■	■	■	■	■
Habitat Restoration	SAWPA, CDF, CCWD	13		Restoration of burned habitat (estimated 7500 acres) around the river and tributaries for species recovery											■	■
Wetland Restoration	SAWPA, CDF, CCWD	3		Restoration of wetlands areas (estimated 2000 acres) along the river and tributaries for species and wetlands recovery		■						■			■	■
Costs		302.8														
Total Costs		446.7														

Mr. CALVERT. Thank you, Mr. Grindstaff, for your testimony.

This entire panel is extremely interesting. I want to get into this issue of prescription burns. I was also intrigued by our friends from the Native American community, because Native Americans have a history of managing property through the history of their residency here in America, especially the Plains Indians where we have historical data of the Plains Indians setting fire to their property on the plains in order to bring grasses back for their buffalo population.

But on the issue of prescriptive burns, our friend from Texas, welcome to California. How difficult is it here in California to get a permit for a prescriptive burn? Are you familiar with that?

Dr. BONNICKSEN. Are you asking me?

Mr. CALVERT. Yes, sir.

Dr. BONNICKSEN. How difficult——

Mr. CALVERT. You can use that mike.

Dr. BONNICKSEN. Oh, I am sorry.

How difficult is it to get a prescription to burn? To tell you the truth, I probably do not—I do not know, but I think Scott may have some idea.

Mr. CALVERT. Well, I will ask Scott.

Dr. STEPHENS. Yes, we have done quite a bit of burning. Actually it is a—I call it almost a Master's thesis. It is probably about the scale of document of about 40 pages or so. You have a smoke management plan that actually is written and then put to the agency that has air shed quality control over the area. It has to be approved by the smoke management plan. Then you also have a prescribed fire plan that actually is submitted to the fire agency that has jurisdiction over your area. If it is the Forest Service, you send it to them. If it is BLM, you do it with them. If it is CDF—the whole thing turns out to be probably on the scale of maybe about 45 or 50 pages. The first one is really a challenge. The second and third gets a little easier. But there is no doubt it is an effort—it is an effort and it has gone up quite a bit. My predecessor at Berkeley, Bob Martin, used to have a prescribed burn plan that was on two pages of paper. It has gone up substantially.

Mr. CALVERT. You burn up a lot of trees to get a permit. As I understand it, I spent some time with some fire marshals and some firefighters and they told me it is virtually impossible—as a matter of fact, some of the areas that burned in this most recent fire, that they had put some applications in for some controlled fires and they could not get permission to do so. In fact, all of that area now is gone, of course, and the habitat that they were trying to protect is gone with it, as I understand it. So I just want to put that on the record.

The other issue, of course, is the water supply. Mr. Grindstaff, I was interested when you said 60,000 acre feet of water. To put that in perspective for the audience, 60,000 acre feet of water is 20 percent of the water supply for the entire State of Nevada, which is lost because it is—because of the problems in this watershed. I know my friend from Oregon will tell you we go into great battles and wars in the Congress over less water than that. So it is going to be lost. If you take that 60,000 a year for at least five years, that is a lot of water.

Mr. GRINDSTAFF. Yes, that is a lot of water. We are fortunate that we have some alternate sources. I do not imagine that the people in northern California would think that we are fortunate that we have that alternate source to take water from.

Mr. CALVERT. And for our friends from—I know that the San Diego fires were devastating. Our friend and colleague that lives in your area, Alpine, Duncan Hunter, lost his home. As a matter of fact, he told me the fire was so hot because the growth and the thickness and the way the fire burned, that his pot-bellied stove actually melted, everything was gone. That is how devastating and hot that fire was.

Maybe for testimony, do you remember the last time they did a control burn to manage—like our friends in Mexico are apparently doing—but to manage old growth, which is done naturally in history, but apparently we have not been able to do it. Can you remember the last time they did such a thing in the San Diego area?

Mr. BARRETT. I know that the National Forest Service in Cleveland National Forest last spring was doing controlled burns in the Laguna Mountains area. Part of the Cedar fire had burned back around on itself and burned east and when it hit that prescribed

burn area it stopped at that point and then continued to burn north, which was into the Julian area where they had made a big stand up there and saved the town up there. That is where the one firefighter was killed, up in that area.

Mr. CALVERT. Thank you. Thank you for your testimony.

Mr. POMBO. Mr. Baca.

Mr. BACA. Thank you, Mr. Chairman.

Mr. Grindstaff, you mentioned—and I am trying to imagine 300 acres of debris. And as I look at the watershed and I look at the Santa Ana winds in the area, and you mentioned the cost. What effects then will the Santa Ana winds do as well, because that has to be taken into account as we look at the debris and the ashes. I know every time I leave my window open there in Rialto I see a lot of the ashes just coming right into the house, draining into the water as well. Have you taken into consideration the Santa Ana winds that will be picking up between now and then based on this fire and the cost it is going to be to us as we look at not only the quality of water and the quantity of water as well?

Mr. GRINDSTAFF. I cannot tell you a specific number but I can tell you anecdotally that in fact the Santa Ana winds have already scoured a lot of the ash off of the upper parts of the slopes and moved it down. In fact, it is in the water. I can tell you that in fact ash is in the water in Orange County, the water that they are percolating into the ground. So it has already made its way down river—downstream and has impacts.

Mr. BACA. And this probably has impact not only on Arrowhead drinking water that comes from here too as well, or Bear water as well.

Mr. GRINDSTAFF. Lake Silverwood is a major supply source for the east branch of the state water project and that is impacted by the Old fire. It is a major source of supply for southern California, and certainly the ash, they are trying to protect and stop it from getting in there. But we expect some will get in there and there will be some treatment problems with that.

Mr. BACA. One of the other areas—it is safe to say that the wildfires greatly affected tribes in southern California. We all realize that. In our area, San Manuel Reservation lost about 98 percent of its vegetation. Without the vegetation all that is left is the bare soil where the chances for flooding are greatly increased. What is being done on the reservations to provide—provided by the local, state and Federal government to help prepare for any flooding such as the result of wildfire? Does anyone know? And what is being done in terms of fostering thinning near reservations and what more can be done?

Mr. BARRETT. We had several Federal agencies, FEMA BAER Team—we had the U.S. Forest Service BAER Team and also—actually we had two BAER teams working on the reservations in San Diego County. The problem with the two agencies is they did not communicate with each other. They stayed in the same hotel but they did not communicate. They have two different BAER reports and both of them are doing different things on Federal lands.

Mr. BACA. And I noticed that during the wildfires we did not see very much coverage of the effects that wildfires had on our local Indian reservations. From your experience, do you believe that

your tribes had adequate access to government relief services? That is question number one. And to your knowledge, do you know of any Native Americans who were turned away from relief centers? In the Cavazon Newsletter they stated that tribal members in San Diego County were being turned down for help by relief centers in Riverside County. They thought that the Red Cross was insufficient in providing immediate services. Can you share your experiences? Either one of you. You, too, as well, David.

STATEMENT OF DAVE NENNA, TRIBAL ADMINISTRATOR, TULE RIVER TRIBE

Mr. NENNA. I would love to. If I could go ahead and provide my testimony with the rest of the panel.

First off, thank you, Mr. Chairman and honorable members for allowing me to give testimony on behalf of my tribal government.

The Tule River Indian Reservation was created by executive order in 1873 and the land base consists of 55,341 acres which is located in the Sierra Nevada foothills and the mountains of central California and Tulare County. The Tule River Tribe is the second largest timber tribe in the State of California. We are surrounded on three sides by the newly designated Giant Sequoia National Monument administered by the Department of Agriculture. The Forest Service classifies this Federal lands along our common boundaries very high fire hazard and risk index.

The tribe has over 17,000 acres of productive forest land including five groves of giant sequoyas, and 30,000 acres of native oak woodlands. Three of these groves cross administrative boundaries with U.S. Forest Service. There are 253 homes and over 1,000 residents within the reservation boundaries that are located within our wildland and urban interface.

The tribe has an established natural resource and forestry program, along with a forest management plan in place and approved by the Department of Interior. The tribe manages its own wildland fire department and has cooperative agreements in place with the U.S. Forest Service, the California Department of Forestry and Tulare County Fire Departments and also the Bureau of Indian Affairs. The tribe also has a fire management plan awaiting final approval.

The tribe has taken a very proactive management approach in trying to protect and enhance its forest assets and natural resources. This will not be enough. The tribe has always had grave concerns about continuous fuel loads along the reservation boundaries. We keep our fingers crossed year after year that we are not the victims of catastrophic fire. We were extremely fortunate last year during the course of the 150,000 acre plus McNalley fire which burned on adjacent forest lands. The fire came within two miles of our reservation boundaries. The potential of losing such great national treasures as the giant Sequoias looms daily. The tribe's concern has not changed over the years. The fuel problem still exists. Until the issue of fuels are addressed and the risk of large stand replacing fire will remain. The tribe is open to alternatives such as joint management, stewardship or some plan or course of action that would help us address the fuel and the fuel hazards on Federal lands.

During the 2003 fire season we suffered through another year with minimal rainfall. When conifer trees are weakened from drought and overcrowding, they become susceptible to insect infestation. Without timely action the fuel problem magnifies. Any potential timber recovery from dead and dying trees is lost. This past season the tribe completed a salvage timber harvesting effort to address an abundance of dying trees due to bark beetle attack. Trying to remedy our forests health and fire concerns does not do much good if the same effort to reduce similar hazards does not happen on the national monument side. We pray for some type of relief, that we do not have to wait for the inevitable to happen before any action occurs. The problems have been identified on numerous occasions and now it has to be addressed.

Along with these same concerns, as the honorable councilman had mentioned, of having something to address or amendment to the Healthy Forest Initiative that would help address this with tribes that are heavily forested. I would also like to submit as part of my testimony a letter from the Council on Energy Resource Tribes which represents 53 tribes throughout the Nation supporting some type of amendment to the Healthy Forest Initiative to address these so we can work in a cooperative effort to address the heavy fuel loadings for those of us that are surrounded by other Federal lands where these fuel loads are not being addressed at the present time.

I would like to thank you very much for allowing me to offer my testimony, Mr. Chairman. Thank you.

Mr. BACA. Mr. Chairman, if I may reclaim my time?

Mr. POMBO. Absolutely.

Mr. BACA. Alan, would you like to answer the question?

Mr. BARRETT. I cannot speak for other tribes because I did not participate in their meetings with the BAER committees that came on. But for us, we did have adequate resources. At Viejas we had a strike team from northern California, which mostly consisted of San Jose area Fire Departments that came in right when the fire got to our reservation. We did work very closely with the Red Cross. We had—two days after the fire, we did sit down with the Red Cross and start discussing avenues and ways to get resources to actually the entire San Diego—the community of San Diego.

Mr. BACA. Would you want to add anything else, David? If not, I have another question.

Mr. NENNA. I will wait for your next question, Congressman.

Mr. BACA. Thank you. Just one final question to both of the tribal members. You have painted a clear picture of just how at risk Indian tribes are and what we have had to deal with this fire season. America's reservations are the repositories of countless archeological and cultural and historical sites and artifacts. Could you discuss the seriousness of the permanent loss of these national resources to wildfires, and do we even have an adequate inventory of such sites?

Mr. NENNA. I would like to say on behalf of my tribe and several tribes up through the foothills, most tribe do catalog a lot of their cultural and archeological resources. Sometimes these resources are exposed that we are not aware of. During the McNalley fire and the Manteur fire the previous year there was sites that were

heavily saturated in archeological findings that are now being cataloged. But we—with the limited resources on our reservation and the limited personnel to do this that are trained in this field, we have only been able to catalog about 50,000 acres of our reservation and know all of our archeological sites. They are very susceptible to damage and destruction depending on the intensity of the fire.

Like I mentioned on some of the treasures, irreplaceable things that we could never recover are the 2,000- and 3,000-year-old giant Sequoia groves that we have. Also our commercial timber, it is replaceable but not in our lifetime. It will take many generations to regrow a lot of these natural beauties that we have.

And destruction of—the possibility of our river. I keep hearing water. I was very interested in the one gentleman's comments on what had happened, because our only water source or domestic water supply is a single river where all the watersheds are created on the reservation. So it would take many, many years, if ever, in generations to recover from a catastrophic fire.

Mr. BACA. Thank you.

Mr. POMBO. Mr. Radanovich.

Mr. RADANOVICH. Thank you, Mr. Chairman.

I was intrigued by the information on chaparral and the age of chaparral and the age depending on its susceptibility to fire and the difference between the way it is managed between California and Mexico. Dr. Bonnicksen, can you tell me, is it because of controlled burning that is allowed in Mexico that is not here? You mentioned in California and the United States it was just complete fire suppression. But how did they get the nice mosaic that you are wanting to achieve there? Is it just by nature or what?

Dr. BONNICKSEN. No. It was a combination of active burning by small farmers to provide room for livestock grazing and habitat for game. Also, they do not put out wildfires, lightning fires. So that combination over many decades has allowed the chaparral to retain its mosaic and fire-resistant structure and this makes it a relatively safe place for people to live.

Mr. RADANOVICH. I know in southern California, as well as my part of the state in the Central Valley, which is soon to be one of the most—will probably overcome the Los Angeles basin for bad air quality. The idea of burning which—you know, I am in favor of burning for forest management except for when it is used to exclude logging as well. But do you think that the amount of fire necessary to create this mosaic in California would significantly impact the air quality in the basin?

Dr. BONNICKSEN. First of all, the amount of pollutants that go into the air from prescribed burning would be small doses, whereas a wildfire would give you all of those small doses at once. We seem to be better at tolerating the big dose than we are, you know, enduring some hazy skies on a regular basis. So I do think it is a problem. It is one of the constraints—major constraints to solving the problem. Frankly—I mean we either deal with the chaparral by burning it in a way that restores the historic mosaic and fire resistance of that vegetation or we find in addition to that economic uses of it, perhaps biomass energy, perhaps the fiber itself could be used for certain products to defray the cost and reduce the amount of

burning. I think the point is though, we have got to stop saying we cannot and we have to start saying we will and we will find a way.

Mr. RADANOVICH. Thank you.

Dr. Stephens, you have mentioned as well the conifer aspect of that in Mexico. Now what are they doing to get a good mosaic? You mentioned that, but I was not sure if it was by natural burning or what.

Dr. STEPHENS. This area of northwestern Mexico did not have a road built until 1970. So before that there really was no management up there except for livestock grazing which has been there for 200 years. So the fire regime by lightning was uninterrupted until 1970. So it really was functionally complete. In 1970, actually they began to use fire suppression. You go up there today and there are two pickups with two four-person hand crews and they are putting out fires and they are pretty good at it because the fuel loads are so low. It is a lot like we did in 1905. A lot of us are talking about this as maybe not a great idea. But theirs is actually a lightning-induced fire regime. Native Americans actually live on this side as well. We do not have as much information about their burning practices but they very well could have been part of the regime as well.

Mr. RADANOVICH. And it is possible—and you can both speak to that if you want to—to achieve that kind of mosaic pattern, which is desirable because it does not—fires when they start do not spread over a massive area. They somewhat contain themselves because of the fuel load restrictions. It is possible to achieve that, I think, in conifer forests as well as chaparral through either burning or logging frankly, right?

Dr. BONNICKSEN. In conifer forests in California, especially the short return interval fire forests, I think they have gotten to the point where they are so overgrown that fire is not really our option as a way to thin these forests. It is beyond that. We have to use mechanical means supplemented with fire. Fire does play a very important role ecologically in these forests. But there, too, I seriously doubt even after we use mechanical methods that we will be able to use fire on a scale that will maintain the forest and we will have to continue to use mechanical methods as well.

Mr. RADANOVICH. I agree. But mechanical methods can achieve the same thing, right?

Dr. BONNICKSEN. They can achieve almost all the same things structurally in terms of the forest itself, but fire supplements that because there are some plants that actually are regenerated by fire that would be important as well. So light prescribed fires as a supplement to the thinning effort would, I think, help to keep the entire ecological system functioning.

Mr. RADANOVICH. Thank you.

I have another quick question, if I may. Mr. Nenna, welcome to the Committee. I remember not fondly—I remember the McNalley fire a couple of years ago and how there was concern about that moving into your tribe. Can you describe for me the management of your tribal forests compared to the management of what is now the monument which surrounds your reservation as far as it relates to forest health? For example, how do you take care of your tribal lands? Do you think that they are better managed and less

resistant to fire once it starts because of your management practices? Do you notice a difference between the two forests?

Mr. NENNA. Very much so, Congressman. There is a very, very distinct difference when you drive up to where the boundary is separated between the Forest lands and the reservation lands. We are very aggressive in doing fuels reductions. We want to introduce fire back in, but it is extremely difficult because of the fuel loads on the Giant Sequoia National Monument side. That was our fear because of the heavy fuel loads. We did what we could to attempt to do a shaded fuel break on our side on the reservation land and protect what little assets we do have. But even that is going to be impossible should catastrophic fire or should the McNalley fire have burned even closer. Then it would have—we would have been looking at the destruction of not just the five groves of giant Sequoias on the reservation, but many of the groves of the giant Sequoias which are irreplaceable.

But the introduction of fire, this is one of the things—it is funny that we should hear this. Fire is needed for the natural generation of the giant Sequoia trees. That is what cracks open the cones and allows the seed to fall on the ground and germinate.

Mr. RADANOVICH. But as of now, there is so much fuel buildup that you cannot even think of using fire as a management tool, at least on public lands, Federal lands.

Mr. NENNA. No, sir. Year after year the tribe has had the same concern. Working with the Forest Service they were limited in funding or limited in personnel and at times we have went over and done joint projects and thinning projects when we could. But they are very sporadic and extremely sparse. It is not doing enough. A lot more needs to be done to reduce that fuel load.

Mr. RADANOVICH. You say thinning, but you also log as well, do you not?

Mr. NENNA. On the reservation many, many years ago the tribe logged for substance. That is the only source of revenue the tribe had. But for many years since, we have been very fortunate, the only thing we do is, we go in—and it is for forest health—so we do select harvest.

Mr. RADANOVICH. It is OK to use the logging word, too.

Mr. NENNA. Thank you.

[Laughter.]

Mr. RADANOVICH. That is OK.

Thank you for the time.

Mr. POMBO. Mr. Walden.

Mr. WALDEN. Thank you, Mr. Chairman.

I was intrigued by somebody's comment here about the forest in Mexico and that grazing was—cattle grazing there 200 years, I think, livestock grazing?

Dr. STEPHENS. Yes, that is correct. They came in there with the Jesuit missions were actually created there, just like in coastal California. So they started grazing about 200 years ago.

Mr. WALDEN. And what effect did that have on the health of that forest?

Dr. STEPHENS. That is a great question. We think it actually has degraded some of the meadows because they have not really reformed the grazing. At least in my view it is still overgrazed mead-

ows. But the forests looks like possibly some fine fuel has been removed but not a lot. We think that the forest still has effective regeneration and other aspects that seem to be quite sustainable. It is actually an area of research that we are working on right now, so I have not got the conclusive answer. But they have been there for a couple of hundred years.

Mr. WALDEN. OK. Dr. Bonnicksen, I am really concerned. I get what we need to do. All you have got to do is look at this picture and it is pretty obvious. I do not know why it takes eight, 10, 20 years for government to move, or whoever to move, to get rid of dead trees. It is what we do after the fires now that I want to get focused on. Have you read the Sessions Report out of Oregon State University on the Biscuit fire?

Dr. BONNICKSEN. I have read some papers on the Biscuit fire.

Mr. WALDEN. And part of what that report found was that if we do not get in and replant conifer forests we will get hardwood forests. That is what will naturally come back first. You will get the brush and the alder and such, and that it will be a cycle of a couple of hundred years before you get conifer forests back. I am concerned about areas like this, if they burn—if we do not get in and replant quickly what kind of forest we get back. In these northwest forests they basically say there is a clear line of demarcation, private and Federal, and private replants quicker and you have gorgeous big evergreen trees growing, and at the Federal line they are still debating what to do and we have brush and it is going to burn again. I am not picking on the Forest Service and its laws, rules and regulations. It is two or three years in appeals. But I want to figure out what we do to fix that. What happens in these forests if you do not replant?

Dr. BONNICKSEN. Well when I was up here during the fire, I went to the Boy Scout camp, the UCLA—the U.C.—I mean the L.A. Council of Boys Scouts Camp, because I had been concerned about that and I wanted to see what happened. Sure enough, half the Boy Scout camp was burned. That is where some of the fires were the hottest, and that is where the fire came from that went down into Cedar Glen. In that case, in part of that forest where the trees had been killed by the beetles, those trees obviously had exploded in the fire because all they were were charred spikes, no branches. In a case like that, and over a large area, there are no seed trees, so what is going to come back is brush around the standing dead trees. Now if that happens on a large scale—the kind of scale we see up here in this poster—where we have no seed trees nearby and all we have is brush and oak coming up underneath the snags that were killed, what we are doing is setting ourselves up for what we call a reburn. Which in about 15 years, when the snags start tumbling into the brush, you know, stacking up like jackstraws and the brush is five feet tall, that is a prime candidate for another fire that could be worse than the original fire or equally bad. If that happens, all you have done is convert a forest into a brush field, and it would take human intervention to turn it back into a forest.

Mr. WALDEN. Part of the issue on the Biscuit fire in southern Oregon—this is the one that two years ago burned 400,000 acres. It burned something on the order of 80,000 acres of endangered spotted owl habitat. If we do not get in and replant that in conifer and

you get a hardwood forest, it is not spotted owl habitat. I am curious, in these fires, what kind of habitat has been eliminated and what do you anticipate comes back and what happens to those species?

Dr. BONNICKSEN. Well in the case of the spotted owl, we know all of the structural characteristics of the stands that are appropriate as nesting habitat for spotted owls. Basically there will be no nesting habitat. And one of the things that concerns me is the community of Big Bear. That community is at great risk from a fire coming from—I think it is the southeast side. That is spotted owl habitat. If a fire gets in there, it could destroy the community of Big Bear, along with the spotted owl habitat and you cannot do anything about the problem because the spotted owls are there. But they will not be there in a year or so anyway because the beetles will have taken care of their habitat for us.

Mr. WALDEN. This gets to my own bias and frustration. The same people who do not want us to do anything out in the woods are the ones who are saying we cannot do anything because we have got to protect this habitat for whatever. The mere action of taking no action has a consequence that can do more to damage the habitat and the communities and the forests that some claim they are trying to protect that anything else we do.

[Applause.]

Mr. WALDEN. I am trying to figure out how post-fire we get in and do the right thing for the community, the right thing for the environment, the right thing for those of us who actually love forests that are healthy. At some point we need to figure out that one in a responsible way.

Thank you, Mr. Chairman.

Mr. POMBO. Mr. Lewis.

VOICE. What classification does human species fall under?

Mr. LEWIS. I appreciate the rhetorical question. I think there is a good deal of empathy in the audience regarding the question and the answer.

Mr. Chairman, I want to say for all of those who spent much time with us today, the citizens, especially from my own district in the mountains, I very much appreciate the attention that the United States Congress' Interior Committee has paid to the challenges that we have here. It is a reflection of a national challenge and responsibility, but we are a case study that was not—it was at one time looking for somewhere to happen and it has happened now and provides fodder for lots of thought in the months and the years ahead.

Dr. Bonnicksen, I remember your last time with us and your testimony then, and very much appreciate your sense of frustration about the reality of what we are dealing with.

The gentlemen from the tribes who are with us are expressing a view and interest that is so fundamental to our nature that it is very important that you be with us. Mr. Nenna, I was asking about your formal testimony and some way or another, I think maybe my own staff thought that the two of you were going to share testimony or something, so please do not have the Tule River Tribe suggest that we were really suggesting Mr. Barrett could speak for everybody.

Dr. Stephens, thank you very much for your help and appreciation. And the same with you, Mr. Grindstaff.

Mr. Chairman, the only closing comment I would make is that we have experienced tragedy here and all of us have raised this concern and question and the need for long-term action as the highest priority. I think we should all remember that America by its nature it seems is a crisis-oriented society and out of sight out of mind. And as time goes forward, unless we continue to keep the pressure on and insist that these voices continue to be heard, these fires will have had little long-term effect in terms of our changing and implementing further national policy. So your personal attention to this is very much appreciated, and I suggest to all of my friends in the audience that we ought to help keep that pressure on.

Thank you very much, sir.

Mr. POMBO. Thank you, Mr. Lewis.

I will tell the panel that your testimony was very much appreciated and very helpful to the Committee.

Dr. Bonnicksen, I want to personally thank you for the work that you have done over the years in providing information to this Committee. Both your testimony before this Committee before the fire happened. You have been extremely helpful in that regard. During the fire, at the Committee's request, you monitored the fire, you provided us with information that was very valuable to us, and we look forward to continuing to work with you in both dealing with the forest that is still there and the issues that we have to deal with, as well as in the recovery stages. I appreciate a great deal the work that you have done on our behalf over the years.

Dr. BONNICKSEN. Thank you, Mr. Chairman.

Mr. POMBO. Mr. Barrett, both you and Mr. Nenna, as you both know, I supported the provisions that would have included the tribal governments as part of the Healthy Forest Bill. Unfortunately the way things unfolded as we were moving forward with that bill, we were not able to get that done. I will tell you that one way or another we will get it done, whether it is with a stand-alone bill or whether we are able to include that as part of other legislation that will be moving. We will get that done.

I would point out to you and to everyone else there was a very interesting article that ran December 2nd in the Arizona Republic talking about how work that was done on tribal lands saved three communities in Arizona because of thinning and work that they did on those lands, and the people in those communities are forever in the debt of that particular tribe for the work that they did because they were able to stop a fire when it hit the tribal lands. When it went across Forest Service lands it got out of control and there was no way they were going to stop it before it burned those communities.

Obviously when you look at the landscape of the west, tribal lands are extremely important in terms of maintaining an environment and they have to be included in anything that we do. There is no way around it. It is a major part of the environment in the west and we have to recognize that. We will continue to work with both of you gentlemen to make sure that that happens.

Before I excuse this panel, I will just say that, you know, it is nice to be in Lake Arrowhead. I have always loved coming up here, but I wish it was under different circumstances. The last time that we were here, just a couple of short months ago, it was with the hope of passing the Healthy Forest bill and being able to do something before these lands burned. Coming back here after a fire was not what any of us had in mind, but I think it was important that we do it. It was important that the members of the Committee have an opportunity to listen to you, to listen to the testimony that we had today, but I think just as importantly to see for themselves what happened in these fires and to fly over and actually look at the fire patterns and the impact that they had. That will help us do a better job in the future in terms of drafting legislation.

I will tell the members of the panel that if there are things that we need to do—the Federal government needs to do to change policy, to change rules, regulations, to work with the bureaucracy, let us know. Let us know what those changes are and how we can do a better job of managing the public trust, the public lands that are out there and to help private property owners in dealing with the challenges that they have. Because that is something that we have as a responsibility on this Committee and as members of Congress that we do.

I will say that for those of you that stuck with us all day in the audience, I appreciate your willingness to be here, your willingness to participate in this hearing. We are going to hold the Congressional record open, the Committee record open for 10 days so that if members of the audience wish to submit testimony to be included in the record, we will give you the opportunity to do that. It can be submitted to the House Resources Committee. That record will be held open.

I want to thank Mr Lewis again for hosting us in his district. I wish it was not in your district, Jerry, but——

Mr. LEWIS. But it is.

Mr. POMBO. —it is. And it is greatly appreciated, the hospitality that we always have had up here. So I thank you for doing that.

Is there any further business to come before the Committee?

[No response.]

Mr. POMBO. Hearing none, we are adjourned.

[Whereupon, at 2:41 p.m., the Subcommittee was adjourned.]

[Additional material submitted for the record follows:]

[A statement submitted for the record by Congressman Dreier follows:]

Statement of The Honorable David Dreier, a Representative in Congress from the State of California

Chairman McInnis, thank you for holding this field hearing on fire recovery. I also want to thank Chairman Richard Pombo and all my colleagues on the House Resources Committee for coming to Southern California to discuss this timely and critical issue of recovery from the recent California wildfires.

These fires devastated Southern California in October, including parts of Los Angeles, San Bernardino, Riverside, Ventura, and San Diego counties. We are already working toward rebuilding, mitigating for potential mud slides and erosion during the rainy season, and looking at every opportunity to prevent another disaster of this magnitude.

Federal agencies including the U.S. Forest Service, the Federal Emergency Management Agency, the Small Business Administration, the Army Corps of Engineers, and the U.S. Department of Agriculture's Natural Resources Conservation Service are working with local and state agencies on fire recovery efforts.

With this many agencies involved, it is absolutely critical that response at all levels be seamless and without regulatory burden for fire victims. Working cooperatively rather than shirking jurisdictional responsibility by citing obscure technicalities is the last thing we need in this crucial period. Fire victims still have debris in their yards and homes. Before the rainy season begins, we must do all we can to expedite the delivery of federal disaster assistance dollars, to coordinate with federal, state, and local agencies to assist in the recovery effort, and, most importantly, to engage in preventing further damage from potentially damaging winter storms.

In addition to the hands-on recovery work that is currently underway and must continue, we must also take a hard look at our preventative policies in mitigating for disease-infested trees and managing our forests. One major step in improving these policies was spearheaded by this Committee with the enactment of the Healthy Forests Restoration Act (HFRA). With President Bush signing this landmark legislation this week, we can finally move toward sensible management of our national forests as one component of preventing the catastrophic wildfires that just swept through our region.

Our past failure to maintain the forests has had dangerous and devastating consequences. The uncontrolled growth, left by years of neglect, chokes off nutrients from trees and provides a breeding ground for insects and disease. Only in the aftermath of the Southern California fires was Congress able to reach a bipartisan agreement to deal with what had obviously become a serious problem.

The primary focus of the HFRA is to streamline the decisionmaking process inside the U.S. Forest Service. A major factor in the widespread destruction caused by wildfires has been the Forest Service's inability to take action that might have made fires more manageable. The National Association of Public Administration found that the Forest Service spends 40 percent of its manpower and 20 percent of its funding on planning and process activities. Some of this inaction is due to bureaucratic requirements the HFRA was designed to reduce. Some of it is also attributable to what some would say is the wrong approach to forestry management. Without a doubt, freeing up some of the resources expended on such bureaucracy will only help the Forest Service reorganize and become more effective in its mission.

Bureaucracy does not ensure public input, and it most certainly does not ensure success. But, as many in our area know, managing forests can have a significant effect on a community. Because of this fact, the HFRA creates unprecedented processes for public input. The legislation includes a ten year strategy for public involvement outlined by the Western Governors Association and endorsed by environmental groups such as the Wilderness Society. It also makes permanent the public notice and comment requirements currently required during the environmental analysis phase for a wildlife mitigation project.

Mr. Chairman, by holding this hearing today, you are providing a valuable forum for oversight of the fire recovery process. Thank you.

[A statement submitted for the record by Congressman Issa follows:]

Statement of The Honorable Darrell Issa, a Representative in Congress from the State of California

Mr. Chairman, thank you for holding this important hearing today in Lake Arrowhead, California, on "Recovering From the Fires: Restoring and Protecting Communities, Water, and Wildlife and Forests in Southern California." I hope that after we hear from the witnesses, we can learn from this devastating experience and minimize the loss of damage of possible future fires.

I would like to thank Chairman Jerry Lewis for his leadership in attaining much-needed emergency funding to assist in the recovery efforts. I also want to thank all the firefighters and every entity, including local, state and federal agencies that coordinated efforts to suppress the fires, save lives, and limit the damage caused to structures and other personal property. Finally, I want to thank the witnesses here today for taking time out of their busy schedules to testify for this hearing, so that we may better-educate ourselves in preventing the type of catastrophe we witnessed a few short weeks ago.

As a child, I remember my parents providing me with some very sound advice, "an ounce of prevention is worth a pound of cure." This is precisely the mind-set that Resource Chairman Richard Pombo and Subcommittee Chairman Scott McInnis (R-Colo.) had when they drafted the "Healthy Forest Restoration Act" in order to prevent catastrophic wildfires. Last Wednesday, President George W. Bush signed this bill into law.

This year, California was the victim of horrific wildfires. Arizona was victimized last year. A major reason for the extensive fire damage in both California and Arizona was limited preventative maintenance on federal lands. "The Healthy Forest Restoration Act" will provide the means with which to thin out the forests on federal lands that are at the highest risk of wildfires.

The numerical data released by the United States Forest Service regarding the total destruction caused by the Southern California wildfires is staggering. The fire left approximately 740,000 acres of national forests, tribal lands, state forests and private lands charred, 4,676 structures (3,661 homes) destroyed, and 22 people killed, including a firefighter. In San Diego County alone, three fires burned 383,284 acres and caused $28 million in agricultural crop losses. I surveyed the damage in my district and visited three of the Indian Reservations in my district that were most impacted by the fires. The San Pasqual Band of Mission Indians lost close to 80% of the homes on their reservation. It comes as no surprise that this was the most destructive and costly wildfire to ever impact California, with the damage certain to exceed $2 billion.

The impacts of the fire extend beyond the individuals and families who lost physical property in the fire. The fires in Southern California caused irreversible environmental damage. The fires have impacted air quality, water quality, soil erosion, sensitive habitat, and endangered species. San Diego County was one of the hardest hit of all the fire-ravaged counties. Dry and strong Santa Ana winds and the low humidity are part of the explanation for the severity of the fires, as they fueled and exacerbated the burning of dried shrubs and chaparral. These, however, are annual conditions that were not unexpected. In the future, once the vegetation grows back, we will again be caught in a similar dilemma if we do nothing to prevent future wildfires.

Implementing the "Healthy Forest Restoration Act" will be one part of the solution in protecting communities and businesses from future conflagrations. Streamlining the administrative offices and giving forest managers the tools they need to maintain a healthy environment are just two examples of the important programs in this act. Working with environmental groups and resource agencies, we can begin to restore much of the burned areas. Never again should California, or anywhere else in the United States, be subjected to the kinds of wildfires that raged in Southern California this year.

Again, Mr. Chairman, thank you for the opportunity to speak at this field hearing, and I look forward to hearing the testimony from the panel of witnesses.