A Comparison of Two Government Reports on Factors Affecting Timely Fuel Treatment Decisions September 3, 2002

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Background

President Bush announced on national television on August 22 that "we have a problem" in our national forests. The problem, as he defined it, is that administrative appeals are needlessly delaying Forest Service fuel reduction projects. The Bush Administration based this conclusion largely on a USDA Forest Service report, *Factors Affecting Timely Mechanical Fuel Treatment Decisions*, which was released to the media July 10, 2002. The Forest Service had produced this report in response to a US General Accounting Office (GAO) analysis of appeals entitled, *Forest Service: Appeals and Litigation of Fuel Reduction Projects* (August 31, 2001).

Both reports are derived from Forest Service information, yet their conclusions are drastically different. The GAO study examined 1,671 hazardous fuels reduction treatments reported by the Forest Service and found that only 1% of these projects had been appealed. In contrast, the USFS Report found that of the 326 mechanical treatments it sampled, 48% had been appealed. The USFS Report concluded that delays associated with administrative appeals add substantial time to the implementation of hazardous fuel reduction projects.

The following analysis examines both reports and accounts for the two agencies' different findings.

Summary of Findings

Two factors related to sampling bias and three factors emerging from data errors account, at least in part, for the discrepancy between the Forest Service's conclusion and that of the GAO.

Sampling Bias

1. **In conducting its audit, the Forest Service biased its sample by selecting only the projects they state "tend to be challenged most frequently.**" Specifically, the sample included mechanical treatments and excluded all other forms of fuel reduction treatment, including prescribed fire. The sampling bias makes the results unreliable by definition.

2. **The assertion that mechanical treatments are reflective of overall hazardous fuel treatment efforts is inaccurate**. **In 2001, mechanical treatments accounted for only 15% of all land treated by the Forest Service for hazardous fuels.** The USFS Report, however, only analyzes the mechanical treatment component of fuels reductions.

Reliability of Data

1. **A close inspection of the 155 appealed projects listed in the USFS Report revealed that many are not, in fact, fuel reduction projects**. The integrity of the data, even within the context of the biased sample, is therefore compromised.

2. **Further data errors appear to have occurred in that the USFS Report was based upon at least 37 fuel reduction projects that the agency did not report to the GAO.**

3. **The USFS Report does not use a consistent definition to identify mechanical treatments to reduce hazardous fuels.** The majority of appealed projects listed in the USFS Report (88%) include commercial timber sales. The Forest Service does not explain how these 116 timber harvest projects contribute to fuel reduction goals, nor does the agency explain why timber projects were included in its study and other projects that more clearly contribute to fuel reduction goals were not.

Results and Discussion

Sampling Bias

1. **In conducting its audit, the Forest Service biased its sample by selecting only the projects they state "tend to be challenged most frequently."**[1] Specifically, the sample included mechanical treatments and excluded all other forms of fuel reduction treatment, including prescribed fire. The sampling bias makes the results unreliable by definition.

Forest Service and GAO analysts had available to them two statistically sound methods to determine how administrative appeals affect hazardous fuels reduction treatments.[2] The first method was to evaluate all hazardous fuel reduction projects, as the GAO did. The second was to randomly sample from within the entire set. This latter method would select a number of projects at random from all hazardous fuels reduction treatments. The USFS Report followed neither procedure.

Instead, the USFS Report selected a biased sample. The Forest Service decided to analyze administrative appeals for only one type of fuel reduction project (mechanical treatment), and then used these data to draw conclusions about *all* hazardous fuels projects. Thus, the report's conclusions are unsupported by data and carry no statistical or scientific validity.

2. **The assertion that mechanical treatments are reflective of overall hazardous fuel treatment efforts is inaccurate**. **In 2001, mechanical treatments accounted for only 15% of all land treated by the Forest Service for hazardous fuels.** The USFS Report, however, only analyzes the mechanical treatment component of fuels reductions.

Mechanical treatments are not representative of overall hazardous fuel reduction efforts. The Forest Service reported in the *Fiscal Year 2001 Performance Report of the National Fire Plan* that it treated hazardous fuels on 1,157,420 acres.[3] Of this, 204,277 acres, or 15%, were treated by mechanical methods (Figure 1).

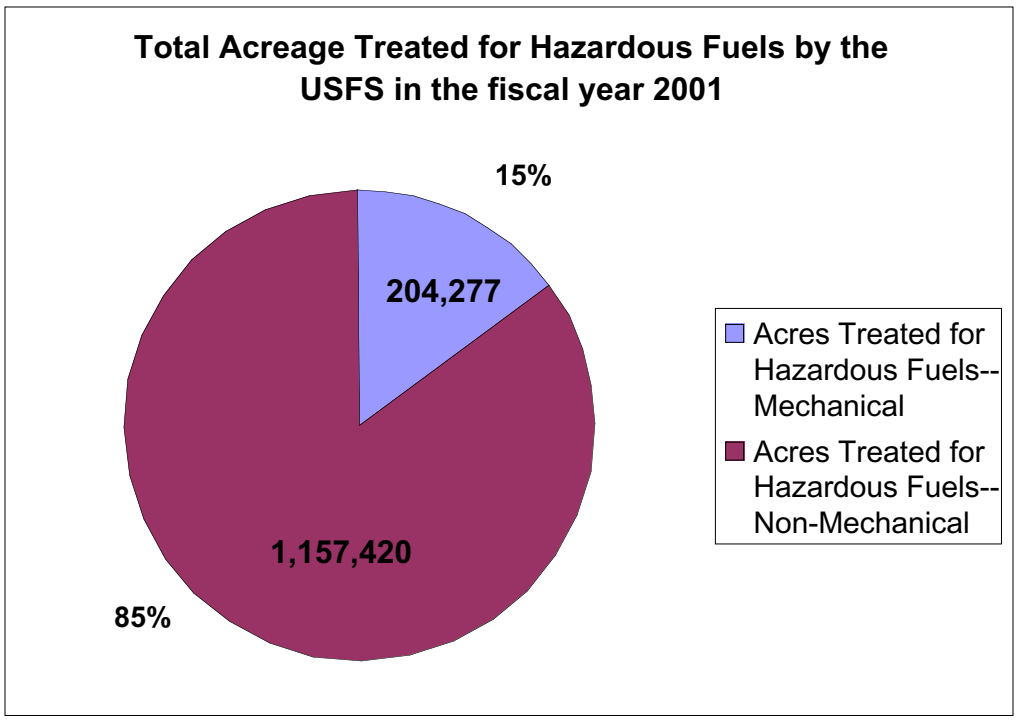

Figure 1

In spite of the fact that mechanical treatments account for only 15% of all land treated by the Forest Service for hazardous fuels, the agency drew the conclusion that appeals are holding up implementation of hazardous fuel treatment projects **in general**. The report states that the "number of mechanical fuel treatment decisions appealed shows how much this [appeals] process can contribute to the overall process timeframe for agency fuel treatment decisions."[4]

The USFS Report provided no evidence to support its generalization that many of the nation's fuel reduction efforts are delayed by appeals. However, the idea quickly found its way into the media. The front page of the July 10, 2002 Denver Post read, "Forest Service says suits delay thinning." On the same day, a cover article for the Santa Fe New Mexican read, "Report says appeals stall many plans to prevent forest fires." Discussions in Congress mirrored the media assumption that the USFS Report addressed all fuel treatment projects.

Reliability of Data

1. **A close look at the 155 appealed projects listed in the USFS Report revealed that many of them are not, in fact, fuel reduction projects**.

The USFS Report identified 155 projects that were administratively appealed, and acknowledged that the agency did not verify this number. When the list of appealed mechanical treatments cited in the report was released, the following problems were detected:

- Of the 155 appealed projects in the report, the Forest Service could identify only 150 by name;
- 1 project was a campground enlargement project;
- 9 projects were not hazardous fuels reduction treatments as described by their 'Purpose and Need' statements;[5]
- 1 project in Region 9's Chippewa National Forest was not appealed;
- 3 projects were appealed in fiscal years 1999 and 2000, which predates the time period sampled by the USFS Report;
- 1 project in the Dixie National Forest was not a mechanical treatment;
- 1 project does not qualify as a fuels reduction project as the record discloses that "this project will not substantially reduce the natural risk of wildfires in these lodgepole pine forest types."[6]

These examples do not reflect an exhaustive review of all 155 projects. Specific details of at least 24 projects were unavailable at the time of this analysis. However, given that at least 21, or 14%, of the 155 appealed projects do not meet the Forest Service's own criteria for mechanical fuel reductions, the reliability of the methods used to collect the data – and any conclusions drawn from the data – are questionable.

2. **Further data errors appear to have occurred in that the USFS Report was based upon at least 37 fuel reduction projects that the agency did not report to the GAO.**

Both the USFS Report and the GAO Report are based upon Forest Service information. The USFS Report included data from October 1, 2000 to June 27, 2002. The GAO Report included data from October 1, 2000 to July 18, 2001. In order to compare the data samples used by the Forest Service and GAO, we reviewed only those projects that

occurred in the time frame of the GAO Report – the shorter of the two timeframes. The reduced data set from the USFS Report included 54 projects.[7]

Since the Forest Service's own report used narrower project criteria (mechanical treatments instead of all hazardous fuel reduction treatments), it would be expected that the 54 projects in the USFS Report list would be a subset of the GAO list. Instead, the USFS Report includes 37 additional projects that were not reported for inclusion in the GAO Report (Figure 2).

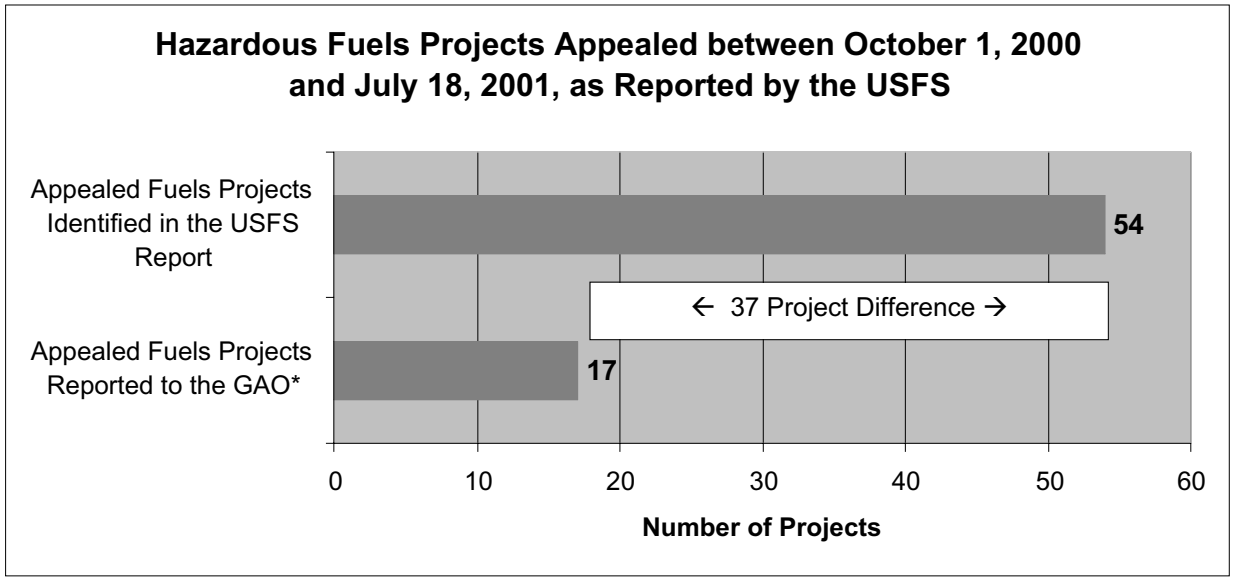

Figure 2

3. The USFS Report does not use a consistent definition to identify mechanical treatments to reduce hazardous fuels. The majority of appealed projects listed in the USFS Report (88%) include commercial timber sales.

The USFS Report's list of appealed projects includes 116 projects that include "timber sale" in the project title and/or project description (Figure 3). In fact, timber harvests are a silvicultural tool to maximize regeneration (tree seedlings), while mechanical fuel reduction treatments employ thinning, which is a tool to reduce the number of small trees.[8]

The Forest Service defined fuel reduction techniques in its first National Fire Plan document as follows: "Fuel reduction treatment techniques will range from maintenance prescribed burning, where fire is used to maintain forest conditions in lower-risk acres, to restoration treatments in higher-risk areas where mechanical thinning is followed by prescribed burning."[9] In 2002, the Forest Service and Department of Interior described their hazardous fuel reduction treatment program as, "An aggressive program to restore

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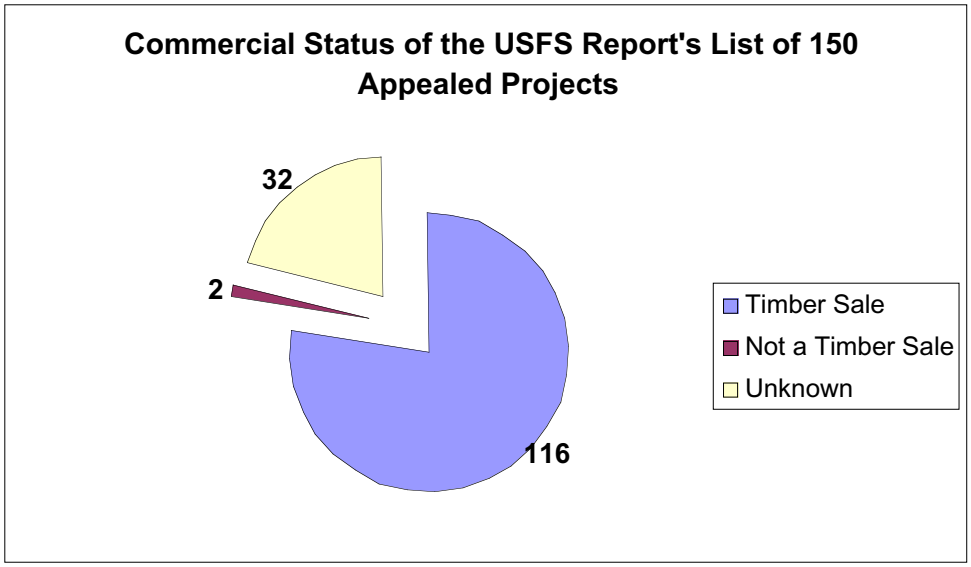
* The Forest Service reported 20 appealed projects to the GAO, but only 17 of those also appear on the USFS Report list.

and maintain fire-adapted ecosystems—through the ecologically appropriate use of mechanical thinning, fire-use, and non-fire fuel treatments—will reduce risks to communities and improve ecosystem resilience and sustainability."[10] Both definitions include mechanical thinning but neither includes timber harvest.

Figure 3



Timber sales and fuel reduction projects do not necessarily involve similar goals or methods. The Forest Service does not explain how these 116 timber harvest projects contribute to fuel reduction goals, nor does the agency explain why timber projects were included in its study and other projects that more clearly contribute to fuel reduction goals were not. Some of the project goals, drawn from the 116 timber sales in the USFS Report, that do not appear consistent with fuel reduction methods, include:

- A project that will treat 45 acres with a 'final removal harvest' that will leave 1 to 3 overstory trees in the entire harvest unit and clearcut an additional 8 acres;
- A project that allows for 5 acre openings to be created during its timber harvest and which will harvest 250 acres in a roadless area;
- A project that leaves 3 to 5 trees per acre in timber harvest;
- A project that harvests timber from 1,818 acres but only treats fuels on 895 acres.

Finally, in some instances timber sales conflict with fuel reduction goals. Commercial timber harvests can increase wildfire risk because of the slash generated.[11] Timber harvest may result in increased fire damage to the residual stand due to an altered microclimate (e.g., increased solar radiation reaching the forest floor), and the fact that timber harvests remove large, fire-resistant trees rather than the more combustible, small-diameter trees.[12] The inclusion of 116 projects that involve timber sales in the USFS

Report undermines the ability of the report to provide information about hazardous fuel reduction treatments.

Conclusion

During this extraordinary drought and fire year, Congress and the media seek reliable information about the implementation of the National Fire Plan and reduction of wildfire threats to life and property. Our analysis of the most recent Forest Service effort to provide such information reveals a sampling bias, unreliable data, and unsupported conclusions. The discrepancies between the data the Forest Service provided to the GAO and the data it used for its own report reveal that the agency lacks a consistent system for tracking and analyzing its projects. The Forest Service needs a tracking system that integrates information about project planning, environmental review, and implementation to help the nation meet the daunting challenge of reducing fire risk to acceptable levels.

Endnotes

[1] From "Factors Affecting Timely Mechanical Fuel Treatment Decisions;" USDA Forest Service, July, 2002; p. 1.

[2] Dean and Voss (1999); Design and Analysis of Experiments; Springer-Verlag, New York Inc., New York; p.3

[3] As reported by the USDA Forest Service in "FY 2001 Performance Report: The National Fire Plan;" USDA, USDOI; February 2002.

[4] From "Factors Affecting Timely Mechanical Fuel Treatment Decisions;" USDA Forest Service; July, 2002; p 1.

[5] From appeals documentation as provided through the USDA Forest Service's website: www.fs.fed.us/forests.

[6] From the Responsible Official's response on record in the document "Appeal #01-04-00-0003; http://www.fs.fes.us/r4/reading/appeals/decisions/ashley/Trout_Slope_E_215_01_0003.pdf.

[7] Projects with decision dates after July 18, 2001 but appearing on the GAO list are included.

[8] Smith, David M (1986); "The Practice of Silviculture:" John Wiley & Sons, Inc.

[9] From "Protecting People and Sustaining Resources in Fire-Adapted Ecosystems: A Cohesive Strategy" USDA Forest Service; October 13, 2000; page 17.

[10] From "Restoring Fire-Adapted Ecosystems on Federal Lands: A Cohesive Strategy for Protecting People and Sustaining Natural Resources" U.S. Department of Interior and Department of Agriculture; draft of February 7, 2002; page 18.

[11] Wilson and Dell (1917); "The fuels buildup in American forests: a plan of action;" Journal of Forestry, 69:471-47. Maxwell and Ward (1976); "Photo series for quantifying forest residues in the ponderosa pine type, ponderosa pine and associated species type, lodgepole pine type;" Gen. Tech. Rep. PNW-52; USDA, 73 pp. Anderson (1982); "Aids to determining fuel models for estimating fire behavior; USDA, USFS, GTR-INT-122, Intermountain Forest and Range Experiment Station, Ogden, UT. Vihanek and Ottmar (1993); "When logged units burn in a wildfire, does slash treatment mitigate effects?: In: 12th Conference on Fire and Forest Meteorology, October 26-28, 1993, Jekyll Island, Georgia; pages 709-714. Weatherspoon and Skinner (1995); "An assessment of factors associated with damage to tree crowns from the 1987 wildfires in Northern California; Fr. Sci. 41(3):430-451. Kalabokidis and Omi (1998); "Reduction of fire hazard through thinning/residue disposal in the urban interface; Int. J. Wildland Fire 8(1):29-35.

[12] Weatherspoon and Skinner (1995); "An assessment of factors associated with damage to tree crowns from the 1987 wildfires in Northern California;" For. Sci. 41(3): 430-451.