

**A Baseline Social Assessment for Communities of Navajo and Apache Counties**

**Conducted for**

**White Mountain Stewardship Contract Multi-Party Monitoring Board**

**Conducted by**

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## **Introduction.**

Forest management activities associated with the White Mountain Stewardship Contract (Contract) are currently being undertaken in Arizona's Apache-Sitgreaves National Forests. The goal of the Contract is to implement harvesting plans to improve forest health, reduce forest susceptibility to destructive and unmanageable fires, and assure a flow of harvested material to meet the needs of processing industries. To meet the goals of a cross-section of Contract stakeholders, The "White Mountain Stewardship Multi-Party Monitoring Board" (Board) was created to oversee the adaptive management of the Contract.

The study which is the subject of this report was commissioned by the Board based on their recognition that increasing public knowledge and acceptance of stewardship activities is as critical to the Contract's success as are the goals of improving ecological and economic conditions. The idea is to have a baseline social assessment that quantitatively describes residents' perspectives on forest management, fire hazards and community values in the White Mountains, and to help the board engage in community-supported forest stewardship activities.

## **Scope of the Project.**

The social assessment is founded on a household survey of local residents that was first administered as part of a dissertation study in the communities of Linden, Show Low, Lakeside, and Pinetop, located in Navajo County (adjacent to Sitgreaves NF) Arizona, and in cooperation with The Eastern Counties Natural Resources Working Group (see survey instrument in Appendix A). Members of the Board were aware of the study and determined that if the survey study was extended to the communities of

Springerville, Eagar, Nutrioso, Alpine, and Greer, Arizona, located in Apache County (adjacent to Apache NF), it would provide an informative and useful baseline social assessment.

The study seeks to systematically document residential attitudes toward forest management, fire hazard and community values. This report presents study findings with the goal of informing forest management efforts. The study has several more specific emphases each of which is focused on in the household survey:

Residential status: community of residence; residential setting (e.g., single family home, apartment, etc.); full-time vs. part-time residency; and housing tenure (owner or renter).

Values of place: place attachment; reasons for living in the White Mountains; and the importance of forest health.

Perceptions of fire hazard: perceptions of fire hazard (e.g., low, moderate, high, very high, extreme) at multiple spatial scales (near home, within property, neighborhood, community).

Knowledge of fire ecology: knowledge of ecological restoration in ponderosa pine forests (based on a seven-question quiz developed by scholars at Northern Arizona University's Ecological Restoration Institute).

Perspectives on forest management approaches: assessment of the level public support for the use of prescribed fire, forest thinning, and the implementation of fire safety/forest health ordinances (based on questions developed by United States Forest Service research scientists).

Perspectives on forest management and fire insurance institutions: perceptions of the quality of forest management conducted by the United States Forest Service, the

Bureau of Indian Affairs/White Mountain Apache Tribe, local government, and local private property owners; perspectives on the role of fire insurance in residential decision-making regarding property fire hazards/forest management; and fire insurance status (e.g., whether or not households maintain fire insurance).

*Preferences for home site characteristics*: whether or not fire safety, aesthetics, the environment, cost, and social relations were important considerations in household choices of their current White Mountain home sites.

*Property fire hazard adjustments*: self-reported fire hazard mitigation at the property-level and whether implementation of fire-safety measures is 'active' (i.e. implemented by households during occupancy) or 'passive' (implemented before household occupied the home site); and reasons for and against household hazard adjustment.

*Socio-economic characteristics*: total household income; educational attainment; and race/ethnicity.

### **The Study Region and Research Design.**

This project is focused on Arizona's White Mountain Region. For purposes of this study the White Mountain Region is the area anchored on the east by the communities of Springerville, Eagar, Alpine, Nutrioso, and Greer, and on the west by Linden, Show Low, Lakeside, and Pinetop. The household survey was not administered in communities within the bounds of the White Mountain Apache Reservation, and caution should be exercised in attempting extrapolate findings of the study to that area.

The findings reported in this study come from a structured household survey (Appendix A) that was developed in the spring of 2004 and first administered June through August 2005 in Navajo County communities (Linden, Show Low, Lakeside,

Pinetop). The Navajo County sample was obtained using a spatial sampling approach and door-to-door distribution in full-time and part-time resident neighborhoods (see pp. 51-53 of "Collins Dissertation"). The survey was distributed along with a postage paid return envelope to 1,050 households primarily at their places of residence (~100 surveys were distributed at community meetings). Of the surveys distributed, 563 were completed and returned, translating into a 53.6% rate of response.

The Stewardship Board commissioned the second phase of the study, which involved administering the household survey October 2005 through February 2006 in Apache County communities (Springerville, Eagar, Alpine, Nutrioso, Greer). In contrast to the Navajo County sample, the Apache County sample was obtained using a mail-out approach. Postmasters representing the United States Postal Service offices serving each of the study communities were contacted and asked first to receive boxes containing 200 stamped envelopes (containing the household survey and postage paid return envelopes), and second to randomly place 133 surveys in full-time residents' PO boxes and 67 in part-time residents' PO boxes. All postmasters agreed to do this except the Postmaster in Greer, who stated that First Class Mail could not be placed in boxes with a forwarding address (e.g., part-time residents' PO boxes). The Greer Postmaster instead placed 49 of the 67 surveys intended for part-time residents in the remaining boxes of full-time residents. Accounting for another 13 surveys "returned to sender," a total of 969 surveys were distributed to Apache County residents, of which 209 were completed and returned, equaling a response rate of 21.6%. In total, 2,019 surveys were distributed to White Mountain residents in Navajo and Apache Counties, 772 of which were returned, leading to a 38.2% overall response rate (Table 1).

**Table 1. White Mountain Household Survey**

	<b># Distributed</b>	<b># Returned</b>	<b>Response Rate</b>
<b>Navajo Co.</b>	1,050	563	53.6%
<b>Apache Co.</b>	969	209	21.6%
<b>Total</b>	2,019	772	38.2%

Questions were designed to provide information on the topics described above in a format that could enable quantification. Question topics include:

- Residential status
- Values of place
- Perceptions of fire hazard
- Knowledge of fire ecology
- Perspectives on forest management approaches
- Perspectives on forest management and fire insurance institutions
- Preferences for home site characteristics
- Property fire hazard adjustments
- Socio-economic characteristics

In this report, findings are presented as descriptive statistics for individual variables that correspond to survey questions. All data are self-reported by members of households.

### **Looking Ahead.**

It is anticipated that the study will be conducted again with a subset of the 256 respondents who consented to future participation as well as others White Mountain residents who did not participate in the initial baseline study that is the focus of this report. Inasmuch as most questions will remain the same it will be possible to measure change in resident's values and attitudes toward forest management as the Contract is implemented. Based on the interests of the Stewardship Board, it is possible that

particular questions will be changed (and improved) while others are added or removed in subsequent iterations, and that a suite of other methods might be employed. It is also possible that the study could be extended to other parts of the White Mountains, including the communities of Heber/Overgaard and vicinity to the west.

### **Findings.**

Study findings are presented in this section as descriptive statistics for variables derived from household survey data (inferential statistical results from analyses of household fire hazard exposure and self protection are reported in the “Collins Dissertation” document; some inferential statistical results are included in the ‘Conclusions and Recommendations’ section of this report). The household survey database and data documentation are included in digital form in the White Mountain Social Assessment CD (folder: “Collins Survey Data”) in Microsoft Excel and SPSS formats. Results for the Apache and Navajo components are reported in the tables below independently (“Nav.” and “Ap.”) and in combination (“Tot.”).

**Residential Status.** Survey items that characterize the residential status of respondents – reported in Tables 2 and 3 – include place of residence, residential setting (e.g., single family home, apartment, etc.), full-time vs. part-time residency, and housing tenure (i.e., owner or renter occupancy). Large populations of the communities of Pinetop, Show Low and Lakeside are represented in the sample, and all of the target communities are well-represented except for Springerville, where the response rate was less than 10%.

The sampling strategy produced a useful distribution of full-time (56%) and part-time residents (44%) in the Navajo sample; the Apache sample contains a smaller

percentage of part-time residents (24%) (Table 3). The Navajo sample also consists of 137 renters, the majority of whom reside in mobile home parks. Most mobile home park residents maintain a unique tenure arrangement whereby they rent small lots, but own the permanent structures. Because they maintain landlord-tenant arrangements, I include them in the renter group. There are few renters (9) in the Apache sample. The single family subdivision is the prototypical residential setting in the Navajo and Apache County samples. In comparison, the Navajo sample contains more households who live in mobile home parks, apartment and condo complexes, and gated enclaves, while many more households in the Apache sample reside in isolated settings. The White Mountain region is a popular destination for the retiree group, whose population burgeons in summer and is particularly conspicuous on weekdays. Statistics from the United States Bureau of the Census do not accurately represent this fluid retirement population; thus, it is difficult to ascertain if retirees are overrepresented as 66% of sample households. In any manner, the question of how many retirees live in the area has not one answer, but many, dependent on seasonal and weekly cycles.

**Table 2. Results: Place of Residence**

<b>Place of Residence</b>	<b>N</b>	<b>Percent</b>
<b>Navajo County</b>	563	72.9
<b>Lakeside</b>	157	20.3
<b>Linden/Timberland Acres</b>	27	3.5
<b>Pinetop</b>	175	22.7
<b>Show Low</b>	173	22.4
<b>Apache County</b>	209	27.1
<b>Alpine</b>	62	8.0
<b>Eagar</b>	37	4.8
<b>Greer</b>	33	4.3
<b>Nutrioso</b>	51	6.6
<b>Springerville</b>	14	1.8
<b>Other</b>	8	1.0

**Table 3. Results: Residential Status**

Survey item (response value)	N			Percent			Mean			Median			St. deviation		
	Nav.	Ap.	Tot.	Nav.	Ap.	Tot.	Nav.	Ap.	Tot.	Nav.	Ap.	Tot.	Nav.	Ap.	Tot.
<b>Residential setting</b>							NA	NA	NA	NA	NA	NA	NA	NA	NA
<b>Isolated cabin</b>	68	99	167	12.2	47.6	21.8									
<b>Mobile home park</b>	118	5	123	21.1	2.4	16.1									
<b>Apartment complex</b>	22	0	22	3.9	0	2.9									
<b>Condominium complex</b>	25	0	25	4.5	0	3.3									
<b>Single family subdivision</b>	301	103	404	53.9	49.5	52.7									
<b>Gated enclave</b>	20	0	20	3.6	0	2.6									
<b>Are you a full-time resident?</b>							.56	.76	.61	1.00	1.00	1.00	.497	.431	.487
<b>Yes (1)</b>	316	158	474	56.2	75.6	61.5									
<b>No (0)</b>	246	51	297	43.8	24.4	38.5									
<b>Do you own your residence?</b>							.75	.96	.81	1.00	1.00	1.00	.431	.204	.393
<b>Yes (1)</b>	420	199	619	75.4	95.7	80.9									
<b>No (0)</b>	137	9	146	24.6	4.3	19.1									
<b>Are you currently retired?</b>							.67	.66	.67	1.00	1.00	1.00	.471	.475	.472
<b>Yes (1)</b>	372	138	510	66.8	66.0	66.1									
<b>No (0)</b>	185	71	256	33.2	34.0	33.2									

**Values of Place.** Using methods validated through previous studies of place attachment a series of five questions were posed. Results indicate that while people are generally attached to the White Mountains, they most strongly identify with the region’s natural environment (Table 4). A second survey item asked households to identify reasons why they live in the White Mountains. Results reveal that households reside in the White Mountains primarily for “land, forests, climate” (i.e., the environment), and secondarily for social relations (i.e., family, friends), while cost and work are typically not important reasons for living in the area (Table 4). Another survey question focused on the importance of White Mountain forests to local living. Findings suggest that forest landscapes are important to nearly everyone, choices to live in the White Mountains depend on healthy forests, forest dependence is linked to lifestyle values, and that, for some households, forests provide the basis for economic livelihood (Table 4).

**Table 4. Results: Values of Place**

Survey item	N			Mean			Median			St. deviation		
	Nav.	Ap.	Tot.	Nav.	Ap.	Tot.	Nav.	Ap.	Tot.	Nav.	Ap.	Tot.
<b>Place Attachment<sup>1</sup></b>												
Emotionally attached	553	205	758	1.16	1.20	1.17	1.00	2.00	1.00	1.012	1.040	1.019
Identify with natural landscape	551	206	757	1.52	1.72	1.57	2.00	2.00	2.00	.769	.606	.734
Identify with people	548	205	753	1.07	1.02	1.06	1.00	1.00	1.00	.931	1.091	.977
Willing to invest time/effort	550	205	755	.95	1.19	1.02	1.00	1.00	1.00	.919	.862	.910
Willing to sacrifice money	549	205	754	.43	.69	.50	.00	1.00	.00	1.052	1.098	1.070
<b>Why do you live in the White Mountains?<sup>2</sup></b>												
Land, forests, climate	548	206	754	1.32	1.28	1.31	1.00	1.00	1.00	.730	.631	.705
Friends, family	546	206	752	2.38	2.53	2.42	2.00	2.00	2.00	1.058	1.039	1.054
Cost	547	206	753	3.28	3.24	3.27	3.00	3.00	3.00	.837	.826	.834
Work	549	207	756	3.51	3.35	3.47	4.00	4.00	4.00	.933	1.087	.979
<b>How important are White Mountain Forests?<sup>3</sup></b>												
Not important	554	207	761	.01	.01	.01	.00	.00	.00	.119	.120	.119
Living here depends on healthy forests	556	206	762	.86	.88	.87	1.00	1.00	1.00	.346	.327	.341
Lifestyles depend on healthy forests	550	207	757	.87	.91	.88	1.00	1.00	1.00	.340	.289	.327
Livelihoods depend on healthy forests	540	207	747	.34	.24	.31	.00	.00	.00	.472	.426	.462
<sup>1</sup> Place attachment scale ranges from "completely disagree" (-2) to "completely agree" (2) <sup>2</sup> Scale ranges from "most important reason" (1) to "least important reason" (4) <sup>3</sup> Scale is "true" (1) and "false" (0). Mean values are the equivalent of the proportion of "true" responses.												

Together these results indicate that residents primarily value the natural amenities offered by White Mountain landscapes, and that they secondarily value social aspects of place. Most notable is the fact that the vast majority (87%) of respondents indicated that their living in the area depended on healthy forests.

**Perceptions of Fire Hazard.** Four questions were posed to assess residential fire hazard perceptions at ascending spatial scales: the home structure and surrounding three meters; the property landscape beyond three meters of the home; the neighborhood; and the community. Results in Table 5 show that mean perceived wildfire hazard significantly increases with increasing scale in both the Navajo and Apache County samples.

**Table 5. Results: Perceptions of Fire Hazard**

Survey item <sup>1</sup>	N			Perceptions of wildfire hazard								
				Mean			Median			St. deviation		
	Nav.	Ap.	Tot.	Nav.	Ap.	Tot.	Nav.	Ap.	Tot.	Nav.	Ap.	Tot.
What is the level of fire hazard for ...												
... your home and within 10'	560	208	768	1.84	1.58	1.77	2.00	1.00	2.00	.924	.870	.916
... your property beyond 10'	558	208	766	2.31	2.31	2.31	2.00	2.00	2.00	1.013	1.126	1.044
... your neighborhood	560	208	768	2.68	2.90	2.74	3.00	3.00	3.00	1.005	1.192	1.063
... your community	560	208	768	3.04	3.12	3.06	3.00	3.00	3.00	.941	1.129	.996

<sup>1</sup> Response scale ranges from "low" (1) to "extreme" (5)

**Knowledge of Fire Ecology.** The aim of survey design was to assess ecological knowledge. An 8-question item was included from a previously administered survey on knowledge about ecological restoration in ponderosa pine forests. Results reveal that households generally have good basic knowledge of ecological benefits of restoration and prescribed fire, while they have relatively less knowledge of the evolutionary role of fire in ponderosa pine ecosystems, linkages between fire suppression and subsequent increases in wildfire magnitude (in Navajo Co. only), and how restoration decreases fire hazards (Table 6). Nearly 80% of household responses are "correct." Residents are typically not ecologically ignorant. Many have good knowledge of restoration, and some have deeper experiential knowledge of ponderosa pine forests.

**Table 6. Results: Knowledge of Fire Ecology**

Survey question <sup>1</sup>	N			Mean			Median			St. deviation		
	Nav.	Ap.	Tot.	Nav.	Ap.	Tot.	Nav.	Ap.	Tot.	Nav.	Ap.	Tot.
Restoration reduces fire risk	553	206	759	.71	.68	.70	1.00	1.00	1.00	.453	.466	.456
Ponderosa pine forests are not fire-dependent	554	206	760	.56	.72	.60	1.00	1.00	1.00	.497	.451	.490
Prescribed fire is a restoration tool	553	206	759	.94	.95	.94	1.00	1.00	1.00	.237	.225	.234
Restoration benefits wildlife	554	206	760	.88	.85	.87	1.00	1.00	1.00	.328	.354	.335
Restoration helps reestablish native plants	555	205	760	.83	.83	.83	1.00	1.00	1.00	.377	.373	.376
Large fires result in part from suppression	554	207	761	.73	.84	.76	1.00	1.00	1.00	.444	.371	.428
Removing most pine needles reduces risk	556	203	759	.91	.92	.91	1.00	1.00	1.00	.291	.278	.288
<b>Total ecological knowledge</b>	550	199	749	.79	.83	.80	1.00	1.00	1.00	.203	.198	.202

<sup>1</sup> For each item, scale is "correct" (1) and "incorrect" (0). Mean values are the equivalent of the proportion of responses that are correct.

**Perspectives on Forest Management Approaches.** Three survey questions were designed to measure levels of public support for the use of alternative forest and fuel management approaches in the White Mountains. The questions were posed as follows: “If you were given the opportunity to vote for or against allowing prescribed burning / mechanical fuel reduction / stronger enforcement of a fire safety and forest health ordinance in White Mountain forests, how would you vote?” Results in Table 6 indicate that there are high levels of public support for each of the management approaches in both Navajo and Apache County. 94% of respondents support the use of mechanical fuel reduction (i.e., forest thinning), 92% support the use of prescribed burning, while 83% support idea of enforcing a fire safety and forest health ordinance in the White Mountains.

**Table 7. Results: Perspectives on Forest Management Approaches**

Survey question <sup>1</sup>	N			Mean			Median			St. deviation		
	Nav.	Ap.	Tot.	Nav.	Ap.	Tot.	Nav.	Ap.	Tot.	Nav.	Ap.	Tot.
Would you for or against the use of ... ... <b>prescribed burning</b>	550	205	755	.91	.94	.92	1.00	1.00	1.00	.288	<b>.244</b>	<b>.277</b>
... <b>mechanical fuel reduction</b>	539	207	746	.94	.94	.94	1.00	1.00	1.00	.229	<b>.234</b>	<b>.231</b>
... <b>forest health/fire safety ordinance</b>	538	205	743	.85	.77	.83	1.00	1.00	1.00	.360	<b>.421</b>	<b>.379</b>

<sup>1</sup> For each item, scale is “would vote for it” (1) and “would vote against it” (0). Mean values are the equivalent of the proportion of respondents that “would vote for it.”

Respondents were provided space and encouraged to fill-in reasons for their responses. Figure 1 provides examples of fill-in explanations for why residents might be *against* each of the management approaches. In the case of prescribed burning, concerns about fires escaping control and effects on air quality (particularly among those with respiratory healthy problems) were the primary reasons why respondents “voted” against the approach. Concerns about thinning centered on whether the approach would be guided by profit seeking or ecological and aesthetic goals; while

reasons against the ordinance were rooted in the strong property rights beliefs held by some residents.

### **Figure 1. Why Respondents “Voted Against” Forest Management Approaches**

#### **Reasons against prescribed burning:**

- “Because “who” can say it won’t go out of control ... it has happened before, it can turn bad quick.”
- “I do not like burning because it is a health issue for me; however, I feel it is important to maintain forest health.”
- “Fall burns – yes... spring burns NO! Many fires start from spring “controlled burns.”

#### **Reasons against mechanical fuel reduction:**

- “Probably cost prohibitive.”
- “Only if done without profit as a prime motivator – could be manageable but probably won’t be.”
- “Small trees – yes...mature trees or clear cutting – NO.”

#### **Reasons against ordinance**

- “I am against mandatory compliance but encourage educational efforts and voluntary compliance.”
- “Don’t want or need more government regulation of my lifestyle/property.”
- “Private property owners should not be forced or fined. Voluntary basis only. I built here for the trees.”
- “To follow the rules imposed would leave us with no trees.”

**Perspectives on Forest Management and Fire Insurance Institutions.** Three survey questions asked respondents about their perspectives on, and engagement with, forest management and fire insurance institutions. The first asked respondents about their perspectives on the performance of the four primary forest management institutions in the White Mountains: the United States Forest Service (USFS), Bureau of Indian Affairs / White Mountain Apache Tribe (BIA / WMAT), local governments, and private property owners. Respondents had neutral perspectives on the USFS, positive perceptions of the BIA / WMAT, and negative perspectives on local government and private property owners (Table 8). Survey fill-in responses revealed that respondents’ more positive perspectives of the BIA / WMAT were associated with their approval of the highly visible

landscape-scale forest thinning projects near Hon-dah and adjacent to Pinetop and Lakeside.

**Table 8. Results: Perspectives on Institutions**

Survey item	N			Mean			Median			St. deviation		
	Nav.	Ap.	Tot.	Nav.	Ap.	Tot.	Nav.	Ap.	Tot.	Nav.	Ap.	Tot.
<b>Performance of forest mgmt. institution<sup>1</sup></b>												
<b>USFS</b>	542	207	749	.03	-.10	-.01	.00	.00	.00	1.238	1.307	1.258
<b>BIA / WMAT</b>	540	206	746	.87	.60	.79	1.00	1.00	1.00	1.139	1.147	1.147
<b>Local government</b>	539	206	745	-.14	-.41	-.22	.00	.00	.00	1.168	1.113	1.159
<b>Local property owners</b>	544	206	750	-.33	-.40	-.35	.00	.00	.00	1.138	1.090	1.125
<b>The role of fire insurance<sup>2</sup></b>												
<b>It provides security</b>	547	206	753	.84	.60	.78	1.00	1.00	1.00	1.238	1.375	1.281
<b>It is a substitute</b>	546	206	752	-1.31	-1.36	-1.33	-2.00	-2.00	-2.00	1.158	1.095	1.141
<b>Wouldn't live here without it</b>	550	205	755	1.19	1.00	1.13	2.00	2.00	2.00	1.227	1.341	1.261
<b>Companies should offer incentives</b>	549	206	755	1.46	1.53	1.48	2.00	2.00	2.00	.961	.859	.935
<b>Companies should require compliance</b>	547	205	752	.11	.39	.18	.00	.00	.00	1.340	1.258	1.323
<b>Does your household have fire insurance?<sup>3</sup></b>	521	188	709	.93	.92	.92	1.00	1.00	1.00	.263	2.72	.265

<sup>1</sup> Scale ranges from "completely disagree" (-2) to "completely agree" (2) with statement that institution "does a good job managing forests"  
<sup>2</sup> Scale ranges from "completely disagree" (-2) to "completely agree" (2)  
<sup>3</sup> Scale is "yes" (1) and "no" (0). Mean values are the equivalent of the proportion of respondents that have fire insurance.

Responses to the survey items on fire insurance reveal that most respondents would not live at their White Mountain home site without the availability of insurance to protect against wildfire losses, and that fire insurance companies might stimulate households in implementing property fire safety measures by offering incentives rather than threatening to terminate coverage (Table 8). Results also indicate that approximately 92% of households maintain fire insurance to compensate for property losses to wildfire (Table 8); however, considering that 63 respondents reported that they did not know whether they maintained fire insurance, the actual proportion of uninsured households in the White Mountains is likely greater.

**Preferences for Home Site Characteristics.** Another question instructed respondents to think about considerations influencing their decision to reside in their current White Mountain home. The question had 23 items, to assess degree of household attachment

to aspects of White Mountain communities, which I grouped into 6 indices for interpretive purposes (Table 9). Along with ubiquitous concerns about cost, aesthetic and environmental considerations are most important. This result corresponds to the ‘Values of Place’ results. Survey items gauging household consideration of fire hazards (i.e., home ignitability and fire suppression capability) have the potential to illicit socially acceptable responses, and results are perhaps influenced as such. Even so, fire safety considerations are, in general, significantly less important than cost and environmental aesthetics, which underscores the importance of the housing market and environmental values in residential decision-making. Being close to school, work, and family were generally not important considerations in residential choices.

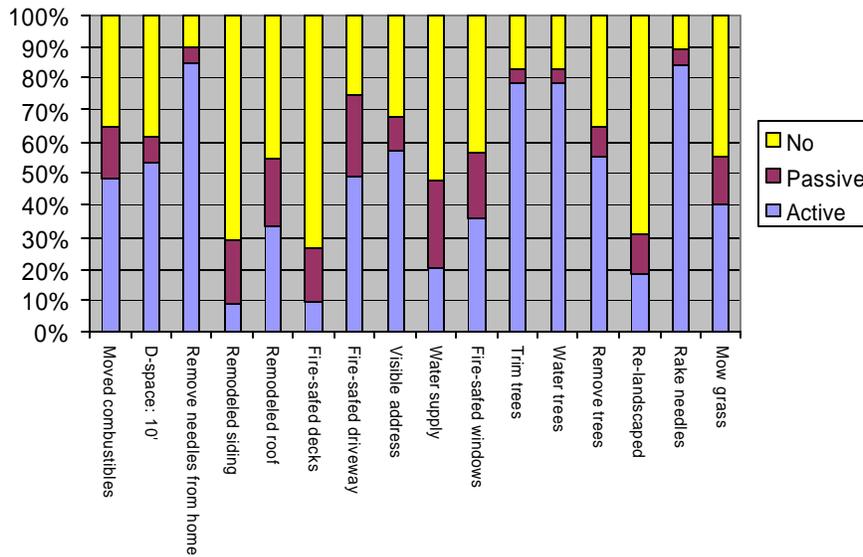
**Table 9. Results: Preferences for Home Site Characteristics**

Survey item	N			Mean			Median			St. deviation		
	Nav.	Ap.	Tot.	Nav.	Ap.	Tot.	Nav.	Ap.	Tot.	Nav.	Ap.	Tot.
<b>In choosing your home, how important was ...<sup>1</sup></b>												
... the environment	510	202	712	2.58	2.10	2.45	2.67	2.00	2.67	.968	.886	.970
... cost	531	204	735	3.29	3.07	3.23	4.00	3.50	4.00	2.082	1.193	1.880
... being close to work, school, and family	505	199	704	1.18	.84	1.09	1.00	.67	.67	1.263	.947	1.192
... aesthetics	506	200	706	2.56	2.86	2.64	2.80	3.00	2.8	.932	.890	.929
... fire safety	494	204	698	1.85	1.95	1.88	1.86	2.00	1.86	1.063	.940	1.029

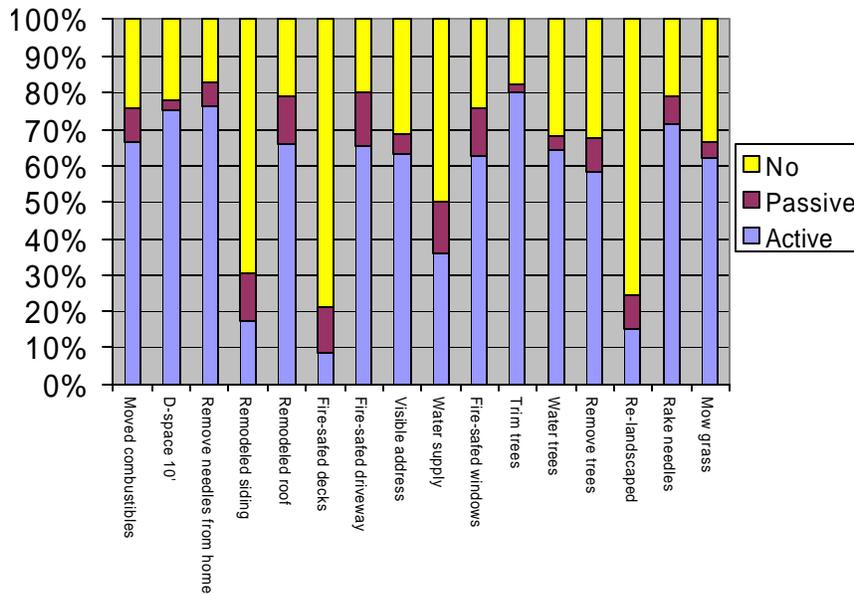
<sup>1</sup> Scale ranges from “not a consideration” (0) to “very important consideration” (4)

**Property Fire Hazard Adjustments.** Four survey items were designed to allow respondents to self-report fire hazard mitigation at the property-level. First, respondents were provided a checklist with 16 fire safety measures and they were asked to indicate whether the measures were implemented at their White Mountain home site, and whether implementation of fire-safety measures was ‘active’ (i.e. implemented by households during occupancy) or ‘passive’ (implemented before household occupied the home site). The results in Figures 2 and 3 for Navajo and Apache Counties reveal variability in fire hazard adjustment by specific fire safety measure.

**Figure 2. Property Fire Hazard Adjustments, Navajo County**



**Figure 3. Property Fire Hazard Adjustments, Apache County**



Certain fire safety measures are easier for residents to implement during occupancy (e.g., removing pine needles from home and property, or trimming trees), while others are much more difficult (e.g., remodeling a home’s siding or roof with fire resistant materials, or creating a fire-safe driveway or landscape). These results, along others reported in the “Collins Dissertation” document (see results from the regression

analysis of household hazard exposure, p. 117), indicate that “active” adjustments (i.e., mitigation) by households during occupancy are less important to reducing fire hazards than “passive” adjustments (i.e., prevention) implemented by developers/property owners when home sites are initially built.

Three questions were designed to ascertain respondents’ reasons for and against implementing fire safety measures. The first asked respondents to identify influences (from an 8-item list) on their decisions to implement fire safety measures. The most important influence on household mitigation was the Rodeo-Chediski Fire (Table 10). Rodeo-Chediski was a more important influence in the Navajo County communities, probably due to the greater spatial and temporal proximity of the Navajo sample to the Fire (in the Apache sample, personal experience with fire was the most important influence). Notably, government agency outreach was the second most important influence on household decisions to mitigate property fire hazards.

A second question asked about the primary methods used by households in implementing fire-safety measures. Results indicate that the vast majority of respondents ‘do the work themselves’ (74%), while smaller proportions ‘pay others’ (17%), or rely on ‘property management’ (13%) or ‘friends/family/neighbors’ (9%) to implement fire safety measures. Very few households receive fire hazard mitigation assistance from the government or a community group.

A third question instructed respondents to select from a 16-item list the primary reasons for not implementing the fire protection measures listed in question 33 (see Appendix A). While many residents identified that they were ‘not responsible or legally prohibited’ (20%) and that ‘financial cost’ (18%) was an important barrier, the most

important constraint identified was that the measures were ‘not applicable to this property’ (25%). In the case of some respondents this represents a legitimate reason; undoubtedly in others it reflects denial. In nearly 10% of the cases respectively, respondents reported they were ‘physically incapable’ of implementing measures or they were concerned about the effects of mitigation on the aesthetics of their property. Notably, only 6% of respondents claimed that they lacked the knowledge needed to implement the measures.

**Table 10. Reasons For and Against Fire Hazard Adjustment**

Survey item <sup>1</sup>	N			% Yes			Mean			Median			St. deviation		
	Nav.	Ap.	Tot.	Nav.	Ap.	Tot.	Nav.	Ap.	Tot.	Nav.	Ap.	Tot.	Nav.	Ap.	Tot.
<b>Influences on hazard adjustment</b>															
Rodeo-Chediski fire	549	201	750	54	34	49	.54	.34	.49	1.00	.00	.00	.50	.47	.50
Another fire event	549	201	750	10	20	13	.10	.20	.13	1.00	.00	.00	.30	.40	.33
Suggestions of govt. agency	549	201	750	26	29	27	.26	.29	.27	1.00	.00	.00	.44	.46	.44
Neighbors actions	549	201	750	9	5	8	.09	.05	.08	1.00	.00	.00	.29	.23	.27
City ordinance	548	201	749	11	2	9	.11	.02	.09	1.00	.00	.00	.31	.16	.28
Insurance incentive	549	201	750	11	14	12	.11	.14	.12	1.00	.00	.00	.32	.35	.33
Personal experience	549	201	750	16	39	22	.16	.39	.22	1.00	.00	.00	.37	.49	.42
<b>Methods of hazard adjustment</b>															
Do work ourselves	397	178	575	71	85	74	NA	NA	NA	NA	NA	NA	NA	NA	NA
Friends / family / neighbors help	48	18	66	9	9	9	NA	NA	NA	NA	NA	NA	NA	NA	NA
Property management does it	95	7	102	17	3	13	NA	NA	NA	NA	NA	NA	NA	NA	NA
Community group helps	4	1	5	1	0	1	NA	NA	NA	NA	NA	NA	NA	NA	NA
Government helps	4	2	6	1	1	1	NA	NA	NA	NA	NA	NA	NA	NA	NA
We pay others	103	26	129	18	12	17	NA	NA	NA	NA	NA	NA	NA	NA	NA
<b>Barriers to hazard adjustment</b>															
Financial cost	106	31	137	19	15	18	NA	NA	NA	NA	NA	NA	NA	NA	NA
Time constraints	2	5	7	0	2	1	NA	NA	NA	NA	NA	NA	NA	NA	NA
Physically incapable	51	11	62	9	5	8	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aesthetic conflicts	42	16	58	7	8	8	NA	NA	NA	NA	NA	NA	NA	NA	NA
Don't know how	43	7	50	8	3	6	NA	NA	NA	NA	NA	NA	NA	NA	NA
Skeptical about utility	55	32	87	10	15	11	NA	NA	NA	NA	NA	NA	NA	NA	NA
N/A to this property	118	76	194	21	36	25	NA	NA	NA	NA	NA	NA	NA	NA	NA
Already implemented	41	15	56	7	7	7	NA	NA	NA	NA	NA	NA	NA	NA	NA
Not responsible / leg. prohibited	139	13	152	25	6	20	NA	NA	NA	NA	NA	NA	NA	NA	NA

<sup>1</sup> Scale for all items is "yes" (1) and "no" (0)

**Socio-economic Characteristics.** Items in Table 11 characterize household socio-economics. They include: household income, educational attainment, and race/ethnicity. In terms of annual household income (the Navajo sample reported for the year 2003, the Apache sample 2004), the mean for the entire sample is \$53,100. Mean household income for the Apache County sample (\$64,800) is considerable higher than for the Navajo County sample (\$48,400). In terms education, the mean for the sample is 15.2 years of education, meaning that on average respondents have completed just over 3 years of postsecondary education. The difference in mean level of education between the Navajo (lower level of education) and Apache samples corresponds to the difference in mean household income. As the survey was not distributed to communities of the White Mountain Apache Reservation, there exists little racial/ethnic differentiation in the sample, which is comprised of only 7% non-whites.

**Table 11. Result: Socio-economic Characteristics**

Survey item	N			Mean			Median			St. deviation		
	Nav.	Ap.	Tot.	Nav.	Ap.	Tot.	Nav.	Ap.	Tot.	Nav.	Ap.	Tot.
<b>Total household income<sup>1</sup></b>	460	185	645	5.84	7.48	6.31	5.00	7.00	6.00	3.20	3.02	3.23
<b>Education<sup>2</sup></b>	552	205	757	14.96	15.83	15.20	15.00	16.00	15.00	2.87	2.73	2.86
<b>Race/Ethnicity</b>												
<b>White (1)</b>	525	196	721	NA	NA	NA	NA	NA	NA	NA	NA	NA
<b>Non-white (0)</b>	38	13	51	NA	NA	NA	NA	NA	NA	NA	NA	NA

<sup>1</sup>Mean values correspond to the following levels of income: 1-2 = <\$20,000; 3-10 = \$20,000-\$99,000; 11 = \$100,000-\$149,999; 12 = >\$150,000. For example, the Apache sample mean of 7.48 corresponds to approximately \$64,800.

<sup>2</sup>Mean values equal the number years of education completed.

**Conclusions and Recommendations.**

In accordance with the adaptive management approach guiding the Contract’s implementation, the current study was designed as a pilot project; it is intended to provide a baseline social assessment component to inform a work in progress. The baseline element is constituted by the 772 households surveyed and the base social data which have been collected. This study was designed to be replicated in a way that

assures comparability from one point in time to another and the power to see changes residents' attitudes toward forest management, fire hazards and community values longitudinally. A series of conclusions – some more general and certain, others more specific and tentative – can be drawn from the study results. Conclusions are presented below followed by a series of corresponding recommendations.

**Conclusions.** Three general conclusions are (1) residents value the White Mountain forest environment more than other aspects of place; (2) they have basic knowledge about fire ecology and White Mountain forests; and (3) they overwhelmingly support the use of mechanical fuel reduction and prescribed fire, as well as the idea of enforcing a mandatory fire safety/forest health ordinance.

Based on the results reported above, as well as findings/conclusions/recommendations presented in the “Collins Dissertation” document, we can forward the following additional conclusions, some of which may be identified as tentative and preliminary:

- Having an objective basis for measuring the social impacts of the Stewardship Contract over time is essential for sound management.
- Having 772 households respond (38.2%) to the request to participate in the Social Assessment survey provides an objective basis for management and also suggests substantial public interest in the Contract.
- The ‘Residential Status’ variables – e.g., residential setting, full-time vs. part-time residency, and housing tenure – are important predictors of attitudes and behaviors regarding forest management and fire hazards.

- Residential setting is the strongest determinant of the level of property fire hazard. Households living in isolated cabins and mobile home parks are confronted with significantly higher hazards than those in single-family subdivisions.
  - Full-time residency is a significant predictor of decreasing fire hazard and increasing 'active' property fire hazard adjustment. In general, part-time residents implement fewer fire safety measures and maintain more hazardous properties than full-time residents.
  - Renters are less able to mitigate (i.e., 'actively' adjust to) property fire hazards than home owning residents.
- While residents generally maintain accurate hazard perceptions and adequate ecological knowledge, these qualities do not directly translate into less hazardous or more ecologically-sensitive household behaviors.
  - These findings support the assertion that accurate hazard perceptions and adequate ecological knowledge are necessary, but not sufficient, conditions to motivate responsible household decisions.
- While households support thinning in the general White Mountain region, they are ambivalent about cutting trees near their own homes because they associate a suite of values with local forest environments. It is easy for households to recognize trees in remote and abstract White Mountain forests as hazardous fuels, but it is difficult for them to recognize one of their own trees as a fuel that poses an extreme fire hazard. Obstacles to hazard reduction are produced in part because each household generally values trees nearer their dwelling much more than ones farther

away. This spatial aspect to residents' environmental values influences differences in near-home versus away-from-home risk assessments reported in Table 5, attributions of blame for forest problems, conflict between neighbors, and managerial constraints in stimulating household action. In general, residents believe their properties are safer from fire than their neighbors and they tend to blame others for forest problems. These tendencies present obstacles in efforts to motivate residents to better manage community forests.

- Residents have neutral perceptions of the quality of forest management conducted by the United States Forest Service, positive perceptions of the Bureau of Indian Affairs/White Mountain Apache Tribe, and negative perceptions of local government and private property owners.
  - This question and results provide the Board with valuable baseline measures to assess future changes in public perceptions of the USFS as a result the Contract's forest management activities.
- Households view cost-sharing programs as a complement to fire hazard reduction and fire suppression and fire insurance programs as substitutes for hazard reduction.
- In general, residents' environmental amenity values may conflict with the goals of forest management and fire hazard reduction.
  - Residential preferences for the 'environment' and 'aesthetics' (i.e., shade, forests, climate, privacy) in process of choosing a home site lead to increasing property-level fire hazards.

- In contrast, preferences for ‘fire-safety’ and ‘cost’ are significant predictors of decreasing fire hazards.
- The most important influences on property-level fire hazards in the White Mountains relate to the residential development process (i.e., residential setting) and the hazardousness of households’ initial residential choices (i.e., ‘passive’ fire hazard adjustment) rather than the number of mitigation measures they implement post-occupancy (i.e., ‘active’ fire hazard adjustment).
- Working and long-time residents are confronted with significantly lower property fire hazards than retired and recently arriving households.
- Home owning and higher income households, in addition to those who have lived in the White Mountains longer, implement significantly more mitigation measures than their counterparts.

**Recommendations.** At this point in the evaluation process some recommendations are made. To some extent, these recommendations represent the perspectives and interpretations of the author and should not be read as management prescriptions. They may more productively be treated as empirically-supported ideas to stimulate thinking and discussion among members of the Board and residents of White Mountain communities.

- Because residents place the utmost value on the White Mountain forest environment (rather than other aspects of place), the Board should strive to justify and explain all aspects of the Contract’s implementation in relation to the ultimate goal of improving and sustaining forest health in the White Mountains.

- The Board should be confident in implementing the Contract as residents overwhelmingly support the use of mechanical fuel reduction and prescribed fire, as well as the idea of enforcing a mandatory fire safety/forest health ordinance.
  - While resistance to the Contract’s forest management activities – e.g., forest thinning and prescribed burning – should be expected (and treated seriously and transparently), it will likely be localized, temporary, and representative of the perspectives of minority of White Mountain residents.
  - The results of this study provide support for arguing this point.
- Owners of mobile home parks in particular should be made aware of the unsafe conditions that exist on their lands, which pose extreme hazards to the typically vulnerable tenants and their possessions.
- Public outreach programs should continue to be used as a means to reorient residents’ aesthetic and environmental values in a manner that is consistent with the goals of sustainable forest management and fire hazard reduction. To more closely align residents’ values with the goals of forest health and fire hazard reduction, managers should strive to shape residential preferences by emphasizing the aesthetic, environmental, and economic benefits of fire safe landscapes.

Specifically, public outreach programs should:

- Rely on scientific knowledge about people, forests, and fire;
- Highlight the positive environmental aesthetics of official and unofficial demonstration sites;
- Draw attention to the economic rationality of implementing property fire safety measures to residents and agents of the real estate industry.

- Well-designed cost-sharing programs and programs offering other forms of assistance (e.g., free chipping and/or vegetation disposal) should be widely implemented in White Mountain communities, as they would stimulate residential adoption of fire safe practices.
  - In contrast, the unconditional provision of fire insurance and fire suppression will continue to deter many households from adopting fire safe practices.
  - Programs should prioritize the delivery of hazard reduction assistance to vulnerable social groups, which in the White Mountains include those with low- or fixed-incomes, renters, and full-time residents in particular.
- Some experts have suggested that fire insurance companies should require fire safe practices as a condition of insurability. In the aftermath of the Rodeo-Chediski Fire, this approach has been implemented by fire insurance companies in the White Mountains.
  - There is a danger in terminating insurance policies due to noncompliance: already marginal groups, without access to the resources required to adopt fire safe practices, will lose the security provided by insurance coverage and become more vulnerable.
  - Rather than rely on negative reinforcement, insurance companies would influence higher levels of ‘active’ property hazard adjustment through positive reinforcement. The results in Table 8 reveal that residents prefer the idea of fire insurance companies offering incentives that encourage mitigation to the alternative of mandating mitigation as a requirement for

continuing provision of coverage. By reducing premiums for policyholders who implement fire safety measures, insurance companies would provide financial incentives to insured households – including those of limited means – and would increase their profit margins through reduced claims over time.

- Scientists, land managers, and policymakers are currently focusing on a lack of household mitigation (i.e., ‘active’ fire hazard adjustment) as a primary source of residential fire hazards.
  - Results suggest the household mitigation management approach will fail to considerably reduce residential fire hazards. Even if household mitigation-based approaches are adopted by managers, they will not curtail hazardous residential development because prevailing environmental amenity values will continue to promote high hazard forms of residential construction in hazardous ecological landscapes.
  - The management focus should be broadened from households to real estate and local government planning institutions, which guide hazardous patterns of residential development.
  - In addition to being a more effective influence in reducing fire hazards, incorporating fire safety in the residential development process will be far less complex and costly than current attempts to coordinate retrofitting programs with a multiplicity of individual property owners.
  - For future residential development, planning rules (e.g., building codes, fire hazard zoning controls) should be adopted and enforced so that the

communities grow with the combined goals of fire hazard reduction and sustainable forest management in mind.

## Appendix A: Household Survey Instrument

### Forests and Fire in Arizona's White Mountains... ... WHAT DO YOU THINK?



A survey about forest management, fire hazard, and community values

Dear White Mountain Resident:

We need your help! I am a graduate student at Arizona State University working in cooperation with local land managers. In an effort to better understand the issues and feelings surrounding forest management and fire hazard in communities of the White Mountains, we are conducting a survey of local residents. You are most affected by land management actions and therefore your opinion is extremely important in the process of making White Mountain community forests safe and healthy. This survey is designed to help land managers develop and implement community-supported forest management projects.

We are requesting your participation, which will involve your responding to a questionnaire that will take approximately 30 minutes. Answer by filling out the items on the questionnaire. For most answers, check the box, circle the item, or fill in the blank. Special instructions are given where other responses are called for. Your participation in this study is voluntary. If you choose not to participate or to withdraw from the study at any time, there will be no penalty. The information you provide will remain **strictly confidential**. Results of the research study may be published, but your name will not be used. The benefit of your participation is improved management of forests in your community and improved understanding of experiences of fire hazard in forested communities.

If you are interested in participating in a future phase of this study or if you would like to obtain a summary of research results, make sure to fill out the last page of the survey. If you have any questions concerning the research study, please call Tim Collins at (480) 557-9543.

Please begin the questionnaire on the next page. When you are finished, put the questionnaire in the stamped, self-addressed return envelope provided, and place it in your outgoing mail.

Your responding to the questionnaire will be considered your consent to participate. Thank you very much for your time and cooperation.

Sincerely,

Tim Collins  
Doctoral Candidate in Geography, Arizona State University



12. Do you participate in any community organizations or groups in the White Mountains (for example, social, volunteer, educational, cultural and/or religious activities)?

? No

? Yes → Which community organizations or groups? (please fill in all groups): \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

How many events of this type did you participate in during the last year? (please X ONE)

? 1 to 4 times

? More than 4 time, but less than 12

? 12 (monthly) to 51 times

? 52 times (weekly) or more

13. Do you have family members (parents, siblings, children, in-laws, etc.) living in the White Mountains?

? No

? Yes → How many family members? (please list the total number): \_\_\_\_\_

How many of them are ... (please write the number clearly in the space)

full-time residents \_\_\_\_\_

part-time residents \_\_\_\_\_

14. Do you have close friends living in the White Mountains?

? No

? Yes → How many close friends? (please list the total number): \_\_\_\_\_

How many of them are ... (please write the number clearly in the space)

full-time residents \_\_\_\_\_

part-time residents \_\_\_\_\_

**Section 2. The following questions pertain to your views about living in the White Mountains.**

15. Please indicate the extent to which each statement below describes your general feelings about the White Mountain community (or town) where you live. Please circle the ONE response that best fits your level of agreement with each statement, ranging from “-2” for completely disagree to “2” for completely agree.

	Completely Disagree		Neutral		Completely Agree
--	---------------------	--	---------	--	------------------

I have an emotional attachment to this community – it has special meaning to me.

-2      -1      0      1      2

I identify with the natural landscape of this community.

-2      -1      0      1      2

I identify with the lifestyles and values of the people who live in this community.

-2      -1      0      1      2

I am willing to invest more time or effort to make this community even better.

-2      -1      0      1      2

I am willing to make financial sacrifices to make this community even better.

-2      -1      0      1      2

16. Why does your household live in the White Mountains? Please rank the following reasons by writing numbers in the spaces, with “1” being the most important reason, and “4” being the least important reason.

- \_\_\_\_\_ Land, forests, climate, and other natural features here.
- \_\_\_\_\_ Friends, family, or other social relationships we have here.
- \_\_\_\_\_ Cost - the money we have goes a long way here.
- \_\_\_\_\_ Work - we make a good living doing what we like here.

17. What is the importance of nearby federal, tribal and community forests to your household? Please indicate whether the following statements are true (T) or false (F). Please circle only ONE answer per statement. “Lifestyle” means the activities that members of your household enjoy. “Livelihood” means earning a living in the local economy.

	True	False
White Mountain forests <u>are not</u> important to us.	T	F
Our choice to maintain a residence here <u>depends</u> on healthy White Mountain forests.	T	F
Our <b>lifestyles</b> <u>depend</u> on healthy White Mountain forests.	T	F
Our <b>livelihoods</b> <u>depend</u> on healthy White Mountain forests.	T	F

**Section 3. The following questions are about your views on fire hazard and forest management where you live in the White Mountains.**

18. In your mind, what was the **PRIMARY** reason for the size and scope of the Rodeo-Chediski Fire?  
*(please answer by stating your belief in the space provided)*

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19. The level of fire hazard for your home and areas within 10 feet of your home is:  
 ? Low            ? Moderate            ? High            ? Very High            ? Extreme

20. The level of fire hazard for the area surrounding your residence (beyond 10 feet from your home) is:  
 ? Low            ? Moderate            ? High            ? Very High            ? Extreme

21. The level of fire hazard for your surrounding neighborhood is:  
 ? Low            ? Moderate            ? High            ? Very High            ? Extreme

22. The level of fire hazard for your community is *generally*:  
 ? Low            ? Moderate            ? High            ? Very High            ? Extreme





**Section 4. The following questions ask about measures your household has taken to protect your home and property from fire.**

**32. What level of consideration was given to the following features when you constructed, purchased or rented your house in the White Mountains? (please circle only ONE for each statement)**

Property feature.....	Very					Not Sure
	Not a Consideration		Important Consideration			
... Fire-resistant roofing materials	0	1	2	3	4	?
... Good views from home	0	1	2	3	4	?
... Flammable vegetation and materials were not near the home	0	1	2	3	4	?
... Home was visually attractive	0	1	2	3	4	?
... Central heating and/or air conditioning	0	1	2	3	4	?
... Shade	0	1	2	3	4	?
... Wood burning stove	0	1	2	3	4	?
... Cost	0	1	2	3	4	?
... Climate/weather	0	1	2	3	4	?
... Residential lot was visually attractive	0	1	2	3	4	?
... Wide roads and driveways	0	1	2	3	4	?
... Highly visible street signs and address labeling	0	1	2	3	4	?
... Close to good schools	0	1	2	3	4	?
... Privacy/seclusion	0	1	2	3	4	?
... Quality fire protection	0	1	2	3	4	?
... Close to recreation	0	1	2	3	4	?
... Water supply for fire fighting purposes	0	1	2	3	4	?
... Close to work	0	1	2	3	4	?
... Fire-safe landscaping	0	1	2	3	4	?
... Property densely forested	0	1	2	3	4	?
... Close to friends/family	0	1	2	3	4	?
... Location of home in relation to past fires	0	1	2	3	4	?
... Lake front property	0	1	2	3	4	?

**33. Which of the following measures have been actively used to protect this residential property and home from wildfire? By actively used we mean measures taken to improve fire safety on this residential property and home since you have been living here. Please X ALL that apply. Write NA by the box if the measure was already implemented when you moved in.**

- |  |   |
|--|---|
| ? Moved all combustible materials (propane tanks, woodpiles) at least 30 feet from home. | ? Maintain a 10 foot clearance around your home free of flammable vegetation.                               |
| ? Regularly remove leaves, pine needles, and other material from rain gutters and roof.  | ? Remodeled/intentionally built exterior walls with fire-resistant or non-combustible materials.            |
| ? Remodeled/intentionally built roof with fire-resistant or non-combustible materials.   | ? Removed or enclosed/rebuilt decks attached to your home with fire-resistant or non-combustible materials. |
| ? Created an easily accessible driveway.   | ? Made home address easier to identify from the street.   |
| ? Created a water supply for fire fighting.  | ? Installed dual-paned windows.   |
| ? Regularly trim trees or shrubs on property.  | ? Regularly water trees, plants and grasses on property.  |
| ? Remove/rearrange trees/shrubs on property.   | ? Re-landscaped using fire safe plants and materials.   |
| ? Regularly rake/remove pine needles on property.  | ? Regularly mow grasses to less than 6 inches in height.  |
| ? None   | ? Other (please specify): _____   |

**If you answered “None” to this question, skip to question 36. Otherwise, continue to question 34.**

**34. What influenced you to use the fire protection measures listed in question 33 on your property?**

(please X ALL that apply)

- ? The Rodeo-Chediski Fire
- ? Suggestions by government agency
- ? City ordinance
- ? Personal experience with wildfire (for example, property damaged, fire fighting experience)
- ? Other (please explain): \_\_\_\_\_
- ? Another fire event
- ? Neighbors' actions motivated your household
- ? Insurance incentive

**35. Of the methods listed below, what is the ONE method that your household has usually relied on to protect this property and home from fire. (please X ONE)**

- ? We physically do the work on our own.
- ? Family members/friends not living in our home help us.
- ? Neighbors help us.
- ? Our \_\_\_\_\_ has a regular schedule of maintenance. (please X the ONE that best completes the sentence)
  - ? landlord
  - ? community management
  - ? homeowners association
- ? People from a community group or organization we participate in help us. *If yes, which group:* \_\_\_\_\_
- ? People from the government help us. *If yes, which government agency:* \_\_\_\_\_
- ? We pay others to do it. *If yes, who do you pay:* \_\_\_\_\_

**36. For the fire protection measures listed in question 33 that are not actively used on your property, please identify the primary reason for not using them? (please X the ONE that applies best)**

- ? Costs too much money.
- ? Not able to do the work physically.
- ? Not sure what needs to be done.
- ? Doesn't apply to this property and home.
- ? Not my responsibility. (please explain): \_\_\_\_\_
- ? We are legally prohibited from implementing measures because... (please X the ONE that applies best)
  - ? ... of codes, covenants, and restrictions.
  - ? ... we do not own the property.
  - ? ... we do not own the home.
- ? Other (please explain): \_\_\_\_\_
- ? Takes too much time.
- ? Would take away from the property's appearance.
- ? Don't think the measures will decrease fire danger.
- ? Measure was implement before we moved in.

**Section 5. This section asks for information about your household. This information will be kept in the strictest confidence and used for statistical purposes only.**

**37. Which ONE of the following best describes your total 2004 annual household income (before taxes and including non-employment monies from social security, retirement, investment interest, rentals, etc.)? (please X only ONE)**

- ? Less than \$9,999
- ? \$30,000 - \$39,999
- ? \$60,000 - \$69,999
- ? \$90,000 - \$99,999
- ? \$10,000 - \$19,999
- ? \$40,000 - \$49,999
- ? \$70,000 - \$79,999
- ? \$100,000 - \$149,999
- ? \$20,000 - \$29,999
- ? \$50,000 - \$59,999
- ? \$80,000 - \$89,999
- ? \$150,000 or more

38. How many people (including yourself) live in your household? \_\_\_\_\_

39. For all adult members (18 and older) of your household, how many have held jobs most of their working lives in the following industries... (please write numbers in the spaces provided)

... Agriculture \_\_\_\_\_      ... Forestry \_\_\_\_\_      ... Mining \_\_\_\_\_  
... Ranching \_\_\_\_\_      ... Health/medical \_\_\_\_\_      ... Tourism/recreation \_\_\_\_\_  
... Manufacturing \_\_\_\_\_      ... Education \_\_\_\_\_      ... Retail or commercial services \_\_\_\_\_  
... Government \_\_\_\_\_      ... Other (please specify): \_\_\_\_\_

40. What is the highest grade or level of education you have completed? (please circle only ONE number)

1 2 3 4 5      6 7 8      9 10 11 12      13 14 15 16      17 18 19 20 21 22  
Elementary      Middle School      High School      College/Tech. School      Graduate School

41. What racial or ethnic category best describes the people in your household? (please X one or more boxes)

? American Indian      ? Latino/Hispanic      ? White/Euro-American  
? African American      ? Asian American      ? Other (please specify): \_\_\_\_\_

**THANK YOU VERY MUCH FOR TAKING TIME TO PARTICIPATE IN OUR STUDY OF FORESTS AND FIRE IN THE WHITE MOUNTAINS**

In the next six months or so I will be conducting brief in-person or telephone interviews with residents to explore their experiences living in White Mountain community forests, which will be linked to data from the first phase of the study. We hope you can participate in this next phase of research. **Would you be interested in participating in future research or would you like to obtain a summary of research results?**

? Yes! I would like to be interviewed in the future. Please contact me.

**My name is:** \_\_\_\_\_

**My daytime phone number(s) are:** \_\_\_\_\_

**My mobile phone number is:** \_\_\_\_\_

**My email address is:** \_\_\_\_\_

? Yes! Please send me a summary of the results.

? I do not want to be interviewed, but send me a summary of the results.

**Is there anyone else you recommend we talk with about forests and fire in the White Mountains?**

Name and Contact Information: \_\_\_\_\_

**Is there anything else you would like to share with us, regarding your community forests, including your feelings and experiences? (please fill in the blank):** \_\_\_\_\_

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