

---

# FIRE MANAGEMENT

## Lessons Learned From the Cerro Grande (Los Alamos) Fire

Statement of Barry T. Hill, Associate Director,  
Energy, Resources, and Science Issues,  
Resources, Community, and Economic  
Development Division



This statement was originally prepared in anticipation of a hearing  
before the Committee on Energy and Natural Resources, U.S. Senate,  
July 20, 2000.



Mr. Chairman and Members of the Committee:

We are here today to provide you with the results of our review of the circumstances surrounding the Los Alamos wildfire. Only a few months ago, this fire, now officially known as the Cerro Grande fire, caused hundreds of families in Los Alamos, New Mexico, to lose their homes and more than 18,000 residents of the state to be evacuated. Over 1,000 fire fighters were required to bring the fire under control. Estimates have placed total damages at about \$1 billion. This tragedy was the result of a prescribed fire ignited by officials of the National Park Service. Ironically, the fire was ignited in an effort to reduce some of the vegetative buildup in a forested area of Bandelier National Monument and thus help prevent the very kind of event that occurred. Their plan was to burn up to 900 acres; in the end about 48,000 acres were burned.

The policy supporting the use of prescribed or controlled burns as a forest management tool has been in place for some time. According to analyses by federal land management agencies, the use of prescribed burns has been and will continue to be a critical component of forest management if the nation wants to reduce the risk of catastrophic wildfires, particularly in the interior West. In this context, you were concerned about how well the policy was implemented at Cerro Grande and what, if any, lessons can be learned to prevent future tragedies like it.

To address your concerns, you asked us to look back at the events leading up to the prescribed fire and examine how it was managed. You also asked us to identify what fire management policies or practices need to be improved. Since we began our work over 2 months ago, we have reviewed the relevant documentation on the conduct and management of the fire, including the e-mail traffic and field notes of key staff involved in planning and implementing the prescribed burn. In addition, we reviewed the investigative report done for the Secretary of the Interior<sup>1</sup> and the associated Board of Review report<sup>2</sup> and interviewed the officials involved in various capacities for managing

---

<sup>1</sup>Los Alamos Prescribed Fire: Investigative Report, May 18, 2000

<sup>2</sup>Los Alamos Prescribed Fire, Independent Review Board Report, May 26, 2000.

and fighting the fire. We also visited the fire site at Bandelier National Monument to get a first-hand look at what happened and to review the events with local park officials and others.

Mr. Chairman, before proceeding with the specifics of what we found, I think it is important to set the proper tone and provide some context for the points we will be making. Each year, federal land management agencies carry out hundreds of prescribed burns. The vast majority of these are done without incident. However, when a prescribed fire does get out of control, like the one we are talking about today, it is imperative that the events surrounding the incident be closely reviewed to determine what can be learned to help prevent such occurrences in the future. This kind of analysis has the benefit of hindsight. We did not have the burden of making urgent, on-the-spot decisions in the midst of trying to manage an ongoing fire. With the benefit of this hindsight, we have analyzed the management of the Cerro Grande fire. Accordingly, we are not here to assign blame but to help improve the way federal land management agencies manage future prescribed burns.

In summary, we found the following:

- The Cerro Grande fire exposed policy implementation issues that need to be addressed for managing prescribed fires. Most of the issues involved procedural gaps or a lack of clarity about how policies are to be implemented. These issues affected both the planning and implementation of the burn.
- Some of the issues are specific to Bandelier National Monument and the National Park Service. However, others involve other federal agencies. Those problems that are not site--or agency--specific raise questions about the current readiness of the federal land management agencies to effectively support and administer prescribed burns as a forest management tool.

We are making a number of recommendations aimed at addressing these issues. The Department of the Interior agrees with our recommendations. The Department of Agriculture agreed with most of the recommendations and provided us with some suggested clarifications, which we incorporated as appropriate.

### **What Happened With the Cerro Grande Fire**

Before proceeding with a discussion of our specific findings, I would like to show some slides we have prepared on the Cerro Grande fire. The slides map out the progress of the fire, help describe how it was managed, and will provide a common background and understanding of the flow of events that led to the fire's getting out of control. The slides take you from the start of the fire on the evening of May 4, 2000, to its substantial containment on May 19, 2000. (See app. I.)

### **Lessons Learned From the Cerro Grande Fire**

Clearly, many important lessons are to be learned from the experience at Cerro Grande. We will be highlighting the major ones here today. These lessons, if they are applied in planning and implementing future burns, should result in more effective use of prescribed fires as a tool to accomplish resource and forest health objectives throughout the public lands enterprise.

#### Planning for the Prescribed Fire

The National Park Service, like other federal land management agencies, requires a specific plan for each prescribed fire. Essentially, the prescribed burn plan documents the objectives of the burn and specifies how it is to be carried out. In addition, the burn plan is to provide for cooperation and coordination with other agencies and, where appropriate, public involvement, and the notification of affected agencies and the public on the day of the burn.

Policy guidance and manuals on how to prepare these plans were jointly developed by the federal land management agencies, and each agency provided supplemental instructions to its staff. Once a plan is prepared, it is to be reviewed and approved by the top operating official at a park--usually a superintendent--before it is made final. However, the National Park Service guidance does not require or encourage park managers to include other knowledgeable or potentially affected parties outside of the park in the review process.

As a result of the Cerro Grande fire, we identified three important lessons to be learned about the planning process that could improve the management of future prescribed burns. First, prescribed burn plans need to be “peer reviewed” by independent, knowledgeable individuals. Second, clarification is needed on how to get additional fire-fighting resources--called “contingency resources”--for a fire once it has begun and when to make these additional resources available for prescribed fires. Finally, federal agencies and nearby jurisdictions need more effective coordination and cooperation before a prescribed burn is started.

#### **Burn Plans Need to Be Peer-Reviewed**

The prescribed burn plan for the Cerro Grande fire was developed and written by staff at Bandelier National Monument and, in accordance with Park Service and federal wildfire management policy, approved by the park superintendent. However, while the process used in preparing the plan was consistent with the existing policy guidance, the circumstances surrounding this fire indicate that the current policy should be revised. The revised policy should require that, in risky situations, prescribed burn plans be peer-reviewed by technically competent reviewers outside of the agency. This kind of independent review would provide for an objective analysis of the burn plan and would provide an additional check and balance on what is an inherently dangerous activity.

In the case of the Cerro Grande fire, the superintendent responsible for approving the plan acknowledged that he was not technically competent to analyze the plan’s contents.

Furthermore, as our analysis and others that have been done since the fire have shown, several aspects of the burn plan could have been improved.

Our analysis shows that when all the surrounding weather, seasonal, and historical data and experience are considered, the timing of the burn can be questioned. Specifically, the fire was set on May 4, the time of year when the wildfire season in the southwestern United States is just beginning. Furthermore, this time of year typically brings high winds, the area was in the midst of a 3-year drought, and it was known that there were high levels of forest fuel buildup in the immediate area. Compounding the risk of starting a prescribed fire in this particular location was the fact that the town of Los Alamos, the Los Alamos National Laboratory, and other populated areas were only a few miles from the burn area. Also, during the 2-week period before the fire was started at Bandelier, four prescribed fires got out of control in that region. While Bandelier officials acknowledge these points, they said that two additional factors need to be considered to understand the basis for their decision to proceed with the burn. First, their information indicated that the weather and moisture conditions in the area of the burn--at an elevation of 8,000 to 9,000 feet--were more favorable than the publicly available information suggested. And second, the official fire status of the entire southwest region placed no restrictions on prescribed burning at the time the Cerro Grande fire was started.

In addition to our analysis, the special investigative team and its associated board of review working for the Secretary of the Interior found numerous problems with the fire plan, including the fact that the overall complexity of the burn and the resources needed to keep it under control were underestimated. This occurred in large part because the agencywide instructions developed by the Park Service and used by the Bandelier staff in determining the complexity of the burn were incorrect. As a result, insufficient fire-fighting resources were available on site. The effect of having insufficient resources snowballed until the fire was out of control. Similarly, a post-fire analysis by staff from the Santa Fe National Forest--adjacent to Bandelier--found that the plan for managing the burn was inadequate because it did not provide for enough fire-fighting resources--

particularly considering the timing of the burn. In our view, an independent, technically qualified peer review by individuals outside the responsible agency could identify and resolve areas of disagreement before a fire is started. This process would provide an additional check and balance and would help ensure shortcomings are identified and addressed before prescribed burns are initiated.

### Policies About the Availability and Use of Contingency Resources Need to Be Clear

Another important lesson involves the availability and use of contingency resources in helping to manage prescribed fires. In this regard, one of the critical elements in determining whether to proceed with a prescribed fire is the availability of sufficient resources to assist in controlling it if and when they are needed. The Park Service's policy, as well as federal interagency fire management policies, indicates that if sufficient contingency resources are not available at the start of a prescribed fire, it should not proceed.

The Cerro Grande fire demonstrated that there is a great deal of confusion among the federal land management agencies about the availability and use of contingency resources. This confusion led to differing expectations among the Park Service personnel responsible for managing the burn, the Forest Service staff responsible for dispatching contingency resources to Bandelier, and the regional resource coordinating officials in Albuquerque. The Park Service staff believed that once they had confirmed the availability of the contingency resources identified in the prescribed burn plan, the resources would be available if and when they requested them. However, the Forest Service dispatching officer and officials at the regional coordinating center did not agree with the Park Service's view. Instead, they told us their interpretation of the policy was that contingency resources are only to be made available when a prescribed fire becomes a wildfire. As a result of this confusion, valuable time was lost in getting additional resources to the site. It was not until 7 to 9 hours after a Park Service official first requested contingency resources that they began to arrive at the burn site. Even

then, the resources arrived only after the Forest Service dispatcher circumvented the regional policy by diverting the resources from another wildfire to Bandelier.

The length of time required to get the contingency resources to the burn site highlights a significant problem. The confusion that existed about the availability and use of contingency resources during the Cerro Grande fire is reflective of all the land management agencies that currently operate under the federal interagency policy for managing wildfires. The agencies' relevant policies and procedures contain no standard definition of what contingency resources are, how they are to be identified, or when and how they are to be used. The agencies need to work together to make sure that these policies and procedures are clarified and their implementation standardized. Then, when contingency resources are identified in a prescribed burn plan, they can be provided when needed, regardless of whether the burn is a wildfire or a prescribed burn. If they cannot be provided, the burn should not proceed. If this confusion had been worked out prior to the Cerro Grande fire, it is possible that the fire would have never gotten out of control.

#### More Effective Cooperation and Coordination Among Agencies Is Needed

The third and final planning point we want to highlight as an important lesson is the need for more effective coordination and cooperation among the nearby agencies, communities, and other parties that might be affected by a prescribed burn. As I have already mentioned, introducing fire into forests under any conditions, including a prescribed burn is inherently risky. This risk is compounded in a situation like that at Bandelier, with a large fuel buildup in the park, as well as on the adjacent Santa Fe National Forest, the Los Alamos National Laboratory, and thousands of people living in Los Alamos and other communities just a few miles from the burn site.

Under such circumstances, it is critical that a prescribed burn be closely coordinated with officials from jurisdictions that could potentially be affected by it. While the park



officials at Bandelier notified representatives from potentially affected jurisdictions about their plan to conduct the prescribed burn, these notification efforts were apparently not enough in light of the concerns that have been raised since the fire occurred. Specifically, since the fire, representatives from a number of affected agencies and communities, including Los Alamos National Laboratory and the Santa Fe National Forest, have questioned the Park Service's decision to conduct the burn. Essentially, their concerns were based on the dry conditions that existed in that part of the country at the time of the burn and the heavy buildup of fuel in the area. In fact, Forest Service officials at the national forest bordering the park decided to stop all burning in the forest on the same day--May 4<sup>th</sup>--that the prescribed burn was started in Bandelier. However, the concerns expressed by these officials, including the Forest Service's decision to cease prescribed burns, were not communicated to Bandelier officials before they started the prescribed burn.

Furthermore, officials from the park, Los Alamos National Laboratory, and the Forest Service knew that the most likely wildfire threat to the town of Los Alamos and the laboratory was from the area of the prescribed burn. Yet the agencies did not work together to mitigate this threat before starting the fire. Instead, the Park Service attempted to reduce forest fuels within its boundaries and did not work with other agencies to identify, for example, possible fire breaks that could have been put in place before the fire started. Several experts we interviewed informed us that more could and should have been done to mitigate the threat to local communities and the Laboratory if there had been better cooperation and planning across jurisdictional boundaries.

These circumstances coming to light only after the fact is unfortunate and underscores the need for more substantive coordination and cooperation before prescribed burns are started. Improved coordination and cooperation need to occur in a way that puts public safety first, overcomes agency or other jurisdictional boundaries, and achieves buy-in by the affected parties. All of this needs to be done before a burn proceeds.

## Implementation of the Prescribed Fire

In addition to lessons learned in planning for the fire, we also identified a number of important lessons to be learned from the implementation of the prescribed burn. First, before an agency ignites a fire it should be assured that all the necessary preparatory steps have been completed. Second, public safety should take precedence over resource protection considerations in deciding on which fire-fighting tactics should be used. And third, guidance is needed for determining the amount of resources that should be used in managing prescribed burns.

### Better Assurance Is Needed That All Key Factors Are Considered Before Initiating a Prescribed Burn

Before proceeding with a prescribed burn, current interagency and Park Service policies and procedures call for the fire manager to determine whether all of the necessary preparatory steps have been completed. This determination is commonly referred to as the “go/no-go” decision. If the on-site fire manager determines that any important factor is not consistent with the plan, the burn is not to proceed.

Existing policy and procedural guidance available to Park Service managers and the land managers in other federal agencies provide some guidance on this decision-making process. This guidance includes the suggested use of a go/no-go checklist to help ensure that all of the key factors are addressed before starting the burn. However, current policy and procedures do not require the use of this checklist. In addition, agencies are not required to document that all of the relevant factors have been properly considered.

The fire managers at Bandelier did not use the suggested go/no-go checklist to document their decision because they were not required to do so. They told us, however, that they did review all of the factors on the checklist prior to igniting the burn but that they did not document their decision to proceed. Without such documentation, there is no record of which factors were considered in the go/no-go analysis, whether each factor was

actually reviewed, and whether all of the conditions that existed on site were consistent with the burn plan and applicable policy.

In our opinion, the events at Cerro Grande demonstrate a need to change current policy so that a documented and reviewed record of go/no-go decisions is required for every prescribed burn. Requiring the use of a checklist can serve this purpose as well as provide structure and discipline to the decision-making process.

### Policy Needs to Make Clear That Public Safety Has Priority Over Natural Resource Protection

Perhaps the most important lesson learned from this fire involves the choices that were made about the tactics used to suppress the fire once it was declared a wildfire and was still within the boundaries of Bandelier National Monument. According to current interagency fire management policy, once a prescribed fire gets out of control and becomes a wildfire, the fire-fighting strategy can change. Under this policy, the revised strategy can range anywhere from continuing to manage the fire to achieve forest thinning or other natural resource benefits to complete suppression. The change in strategy may trigger changes in the fire-fighting tactics that are employed. At Cerro Grande, some of the tactics that were employed have been questioned.

In particular, after the fire was declared a wildfire on the afternoon of May 5th, the Bandelier officials used a fire suppression tactic that required the introduction of more fire into the western section of the burn area. According to Park Service policy, agency officials must decide on the tactics that minimum costs and resource damage. According to the on-site Park Service officials, the introduction of this additional fire was done in order to establish wider, more effective fire breaks called blacklines in the western section of the burn area. The alternative was to create these fire breaks by using mechanical means such as chainsaws and bulldozers. However, this alternative was not chosen because it would have been inconsistent with Park Service policy calling for resource damage to be minimized.

During the fire, none of the on-site fire-fighting officials expressed concerns about introducing fire along the western side of the burn area. However, after the fire, the on-site Park Service official who was in charge recognized that this was a tactical error and said that if he had better information on the wind for May 7, the day the fire began to move towards Los Alamos, he would not have introduced fire into the western portion of the burn area. According to some on-site firefighters, the suppression tactics used by the Park Service fire managers appeared to be more directed at accomplishing the original objectives of the prescribed burn than in suppressing the fire. On-site Park Service officials did not agree with this assessment. They told us that once the burn was declared a wildfire, fire suppression and firefighter safety were their overriding objectives in deciding which tactics to use.

As events unfolded, the introduction of fire in the western portion of the burn area led directly to the fire's getting out of control on May 7. With fire in the western portion of the burn area on May 7, and estimated wind gusts from people on site of 20 to 50 miles per hour, the fire intensified and began moving towards the Los Alamos and White Rock communities. In light of the conflicting views and assessments, this experience provides a valuable lesson. The existing Park Service policy requiring fire managers to protect resources while trying to suppress a wildfire should be revised in instances like Cerro Grande. In these cases, where the threat of a prescribed fire's getting out of control poses direct and serious public safety risks, there should be no question that fire suppression should be the top priority.

#### Guidance Is Needed for Determining the Resources Necessary for Managing Prescribed Burns

The last major lesson that we would like to highlight involves the amount and experience of fire-fighting resources needed to implement prescribed burns. The lack of experience and inadequate fire-fighting resources was a common theme that began during the planning stage of the burn and carried through to the implementation stage.

The Secretary of Interior's investigative report raised questions about whether a more experienced team with more fire-fighting resources should have been used in light of the fire conditions and the proximity to nearby communities. This situation became more critical on May 5, the second day of the fire, when Park Service staff determined that additional resources were needed in order to keep the fire under control. As we mentioned earlier, when these additional resources were requested, it took 7 to 9 hours to get them to the site. Without this delay, the fire might never have gone out of control. Furthermore, on May 7, the day the fire began to spread toward Los Alamos and White Rock, most of the fire-fighting resources on site were being deployed on the eastern portion of the burn area because of containment concerns there. At the same time, fire had already been introduced into the western portion of the burn area without sufficient resources to monitor and control the fire in that area. As I have already pointed out, this situation resulted in the fire's burning out of control.

Currently, there is very little guidance available on the amount of, or experience of, fire-fighting resources needed to manage prescribed burns. While the current policy and procedures provide guidance on how to determine resource needs for managing wildfires, they provide no guidance for determining resource needs for managing prescribed fires. We discussed this issue with officials in both the Park Service and the Forest Service. They told us that making these kind of resource determinations for prescribed fires is "more art than science" and that the quality of these determinations is based more on experienced judgment than anything else. However, the experience at Cerro Grande suggests that just relying on the experience and judgment of individuals is not enough. While a cookbook approach to determining staffing needs for prescribed fires may not be prudent, a more structured, systematic approach can and should be adopted to assist fire managers in making resource decisions.

## **Conclusions**

The experience at Cerro Grande illustrates the inherent dangers and risks of introducing fire into the nation's forests, particularly in the western interior of the country, to accomplish forest health or other natural resource objectives. Fire is difficult to manage, and doing it properly requires a great deal of expertise, planning, knowledge, and skill.

For prescribed fires to continue to enjoy public acceptance and remain a viable tool, the lessons of this fire cannot be lost. While the Park Service is responsible for the burn that became the Cerro Grande fire, the lessons coming out of this catastrophe are not just about the Park Service, but about all federal land management agencies having fire management responsibilities. We believe that the entire federal interagency fire management organization--the National Park Service, the Bureau of Land Management, the Fish and Wildlife Service, and the Bureau of Indian Affairs in the Department of the Interior; and the Forest Service in the U. S. Department of Agriculture--needs to address these lessons. While current interagency policy is aimed at achieving this goal, as our analysis shows, more needs to be done.

However, it is important to recognize that while steps can be taken to help improve the management of prescribed fire, there will always be risks and dangers inherent in using fire as a land management tool. If nothing else, the unpredictability of weather, such as wind, will always be a factor. At Cerro Grande, the prescribed burn and ensuing wildfire encountered a variety of difficulties during planning and implementation but firefighters and managers were successful in controlling and containing the fire. It was not until the high winds arrived on May 7 that the fire began to threaten nearby communities.

## **Recommendations**

We recommend that the Secretaries of the Interior and of Agriculture require that the current interagency policy for federal wildfire management and its implementing

procedures, as well as those of the respective agencies that are signatories to it, be revised to

- require that, in risky situations like Cerro Grande, prescribed burn plans be peer-reviewed by qualified individuals outside the agency responsible for managing the burn;
- better define what is meant by the term “contingency resources,” including clarifying the circumstances under which these resources can be used, the process for getting them, and the appropriate response time;
- require that federal agencies better coordinate and cooperate in developing prescribed burn plans so that public and firefighter safety is the top priority, without regard to agencies’ administrative or jurisdictional boundaries;
- require that a decision to proceed with the ignition of a prescribed burn is fully justified by requiring the responsible officials to complete the analysis called for in the go/no-go checklist and requiring that the supporting analysis be documented and reviewed;
- make clear that, once a prescribed fire becomes a wildfire, the goal should be to suppress the fire as quickly as possible without compromising firefighter or public safety, even if suppression requires the use of mechanical means; and
- provide guidance to assist in making decisions about the amount and experience of personnel needed to properly manage and control prescribed fires.

Implementing these recommendations can be done as part of the ongoing interagency review of the federal wildfire policy.

The Department of the Interior generally agreed with the facts, conclusions and recommendations of this statement. The Forest Service agreed with most of the recommendations. However, it questioned the practicality of requiring that peer-reviews of burn plans be done by individuals outside the responsible agency, and the desirability of suppressing escaped prescribed fires without more consideration of natural resource values. We believe that the inherent risks and dangers of prescribed burning, as demonstrated at Cerro Grande, warrant the kind of check and balance that an outside peer-review would provide and calls for emphasizing quick suppression.

- - - -

This concludes my statement. I would be happy to answer questions that you or other Members of the Committee may have.

### **Contact and Acknowledgements**

For further information on this testimony, please contact Barry T. Hill at (202) 512-3841. Individuals making key contributions to this testimony included Lew Adams, Amy Sue Bunting, Linda Chu, Alan Dominicci, Cliff Fowler, Frank Kovalak, Bob Lilly, and Paul Staley.

(141456)



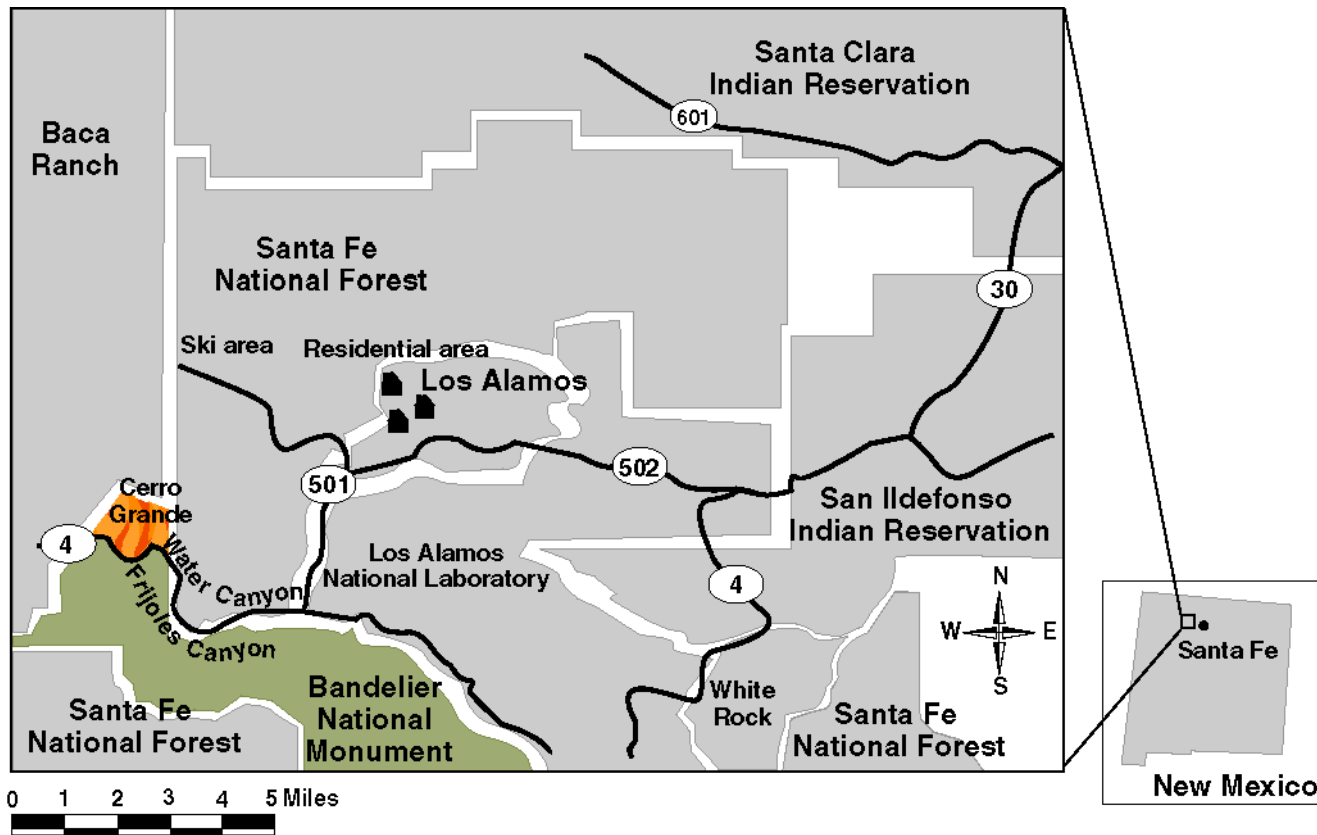
# Cerro Grande (Los Alamos) Fire

---

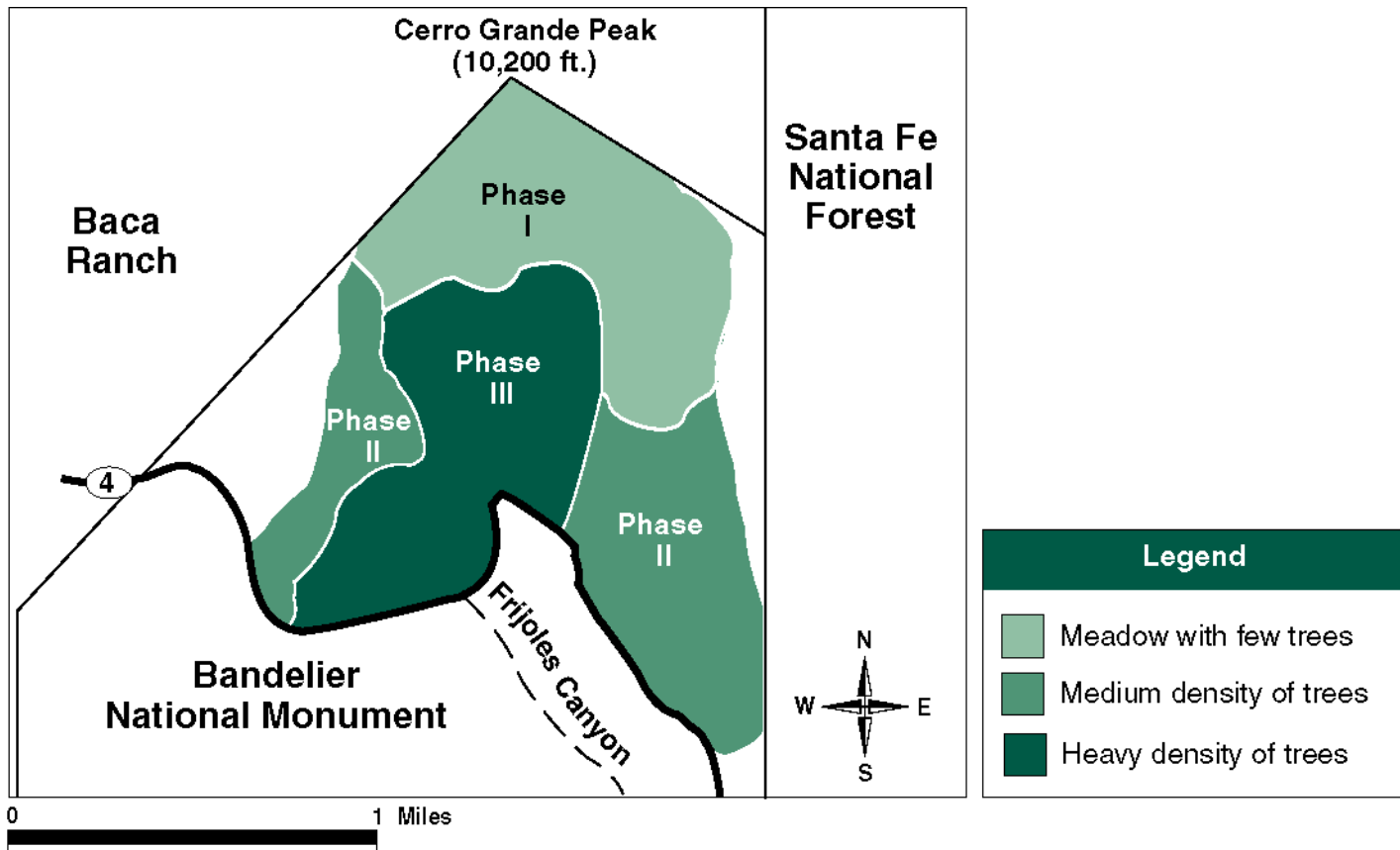
A Chronology of Events

---

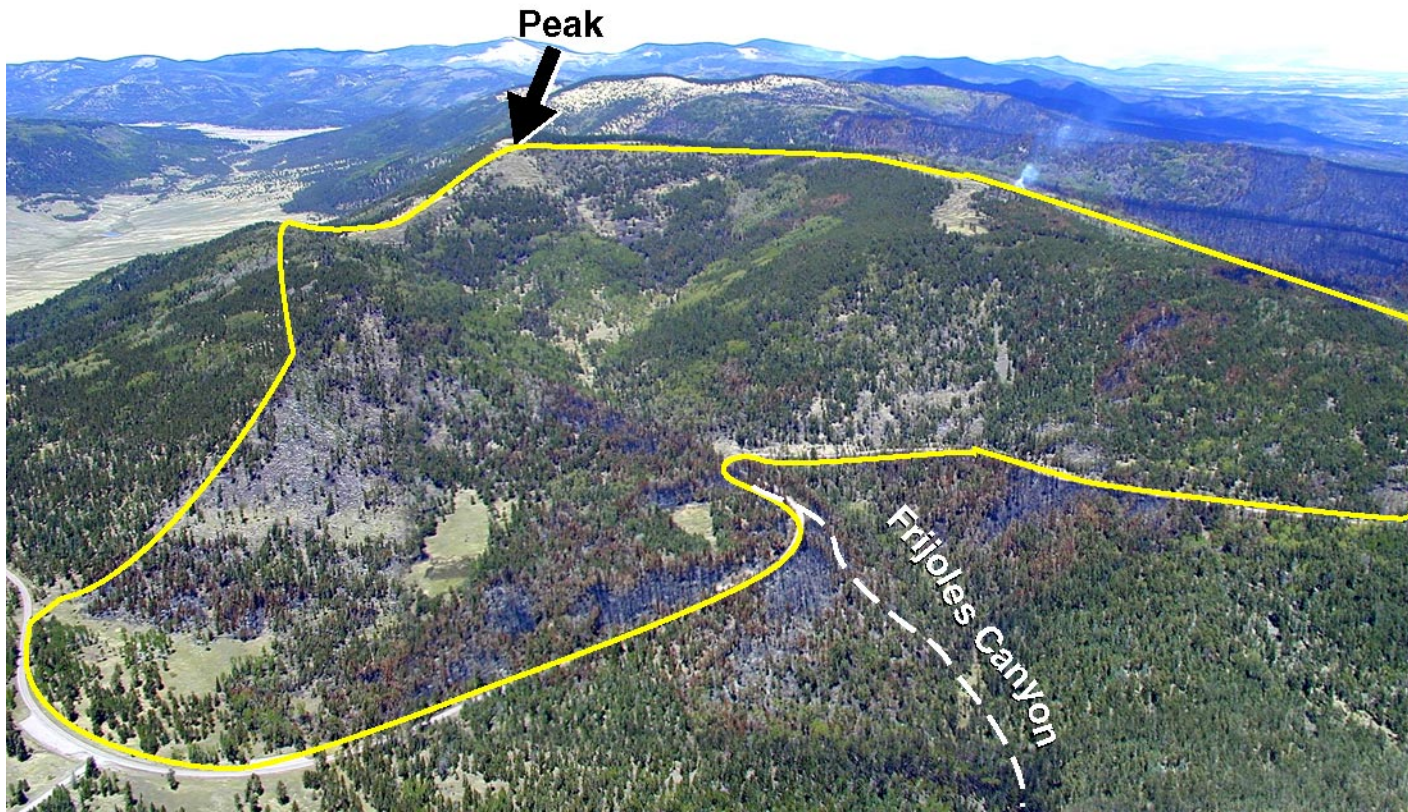
# General Area Map



# Prescribed Burn Area

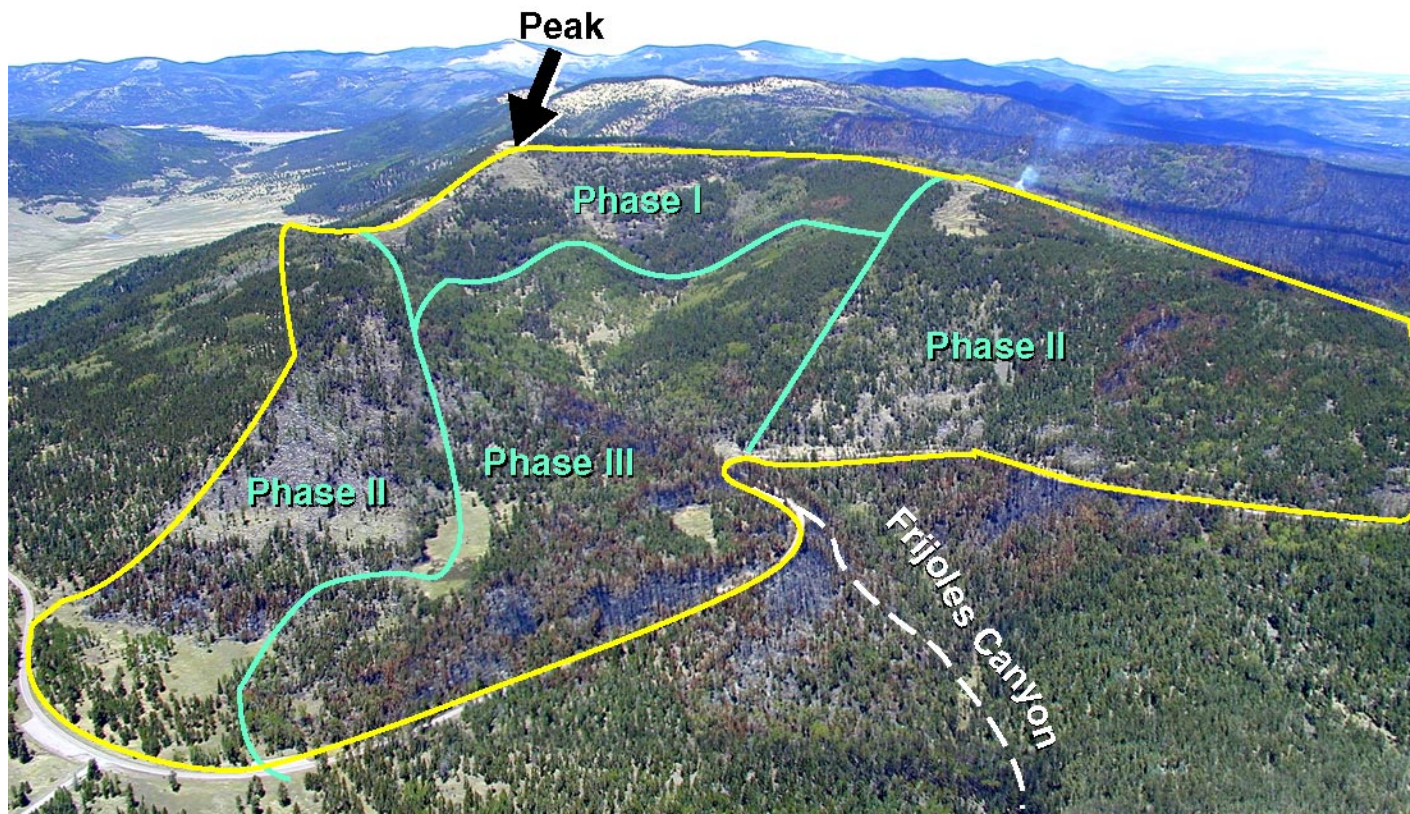


# Aerial View of Prescribed Cerro Grande Burn Area





# Proposed phases of prescribed Cerro Grande burn

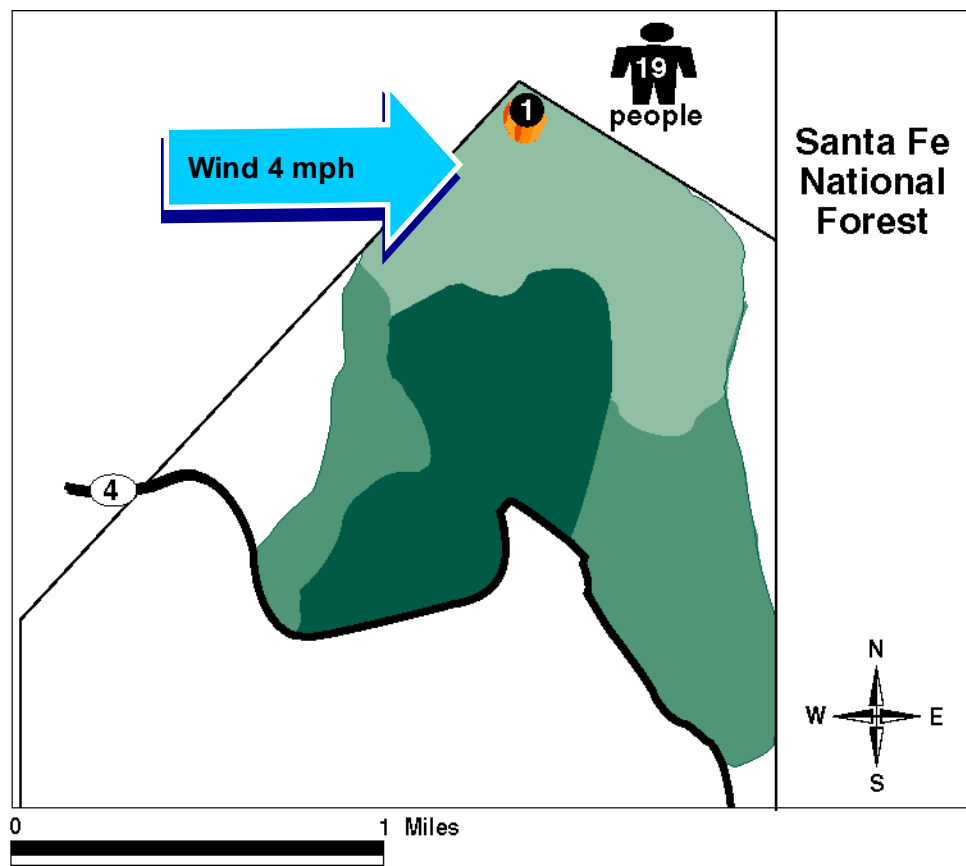




# **Phase I Vegetation Northeast Side of Peak**







# Ignited Test Fire for Prescribed Burn



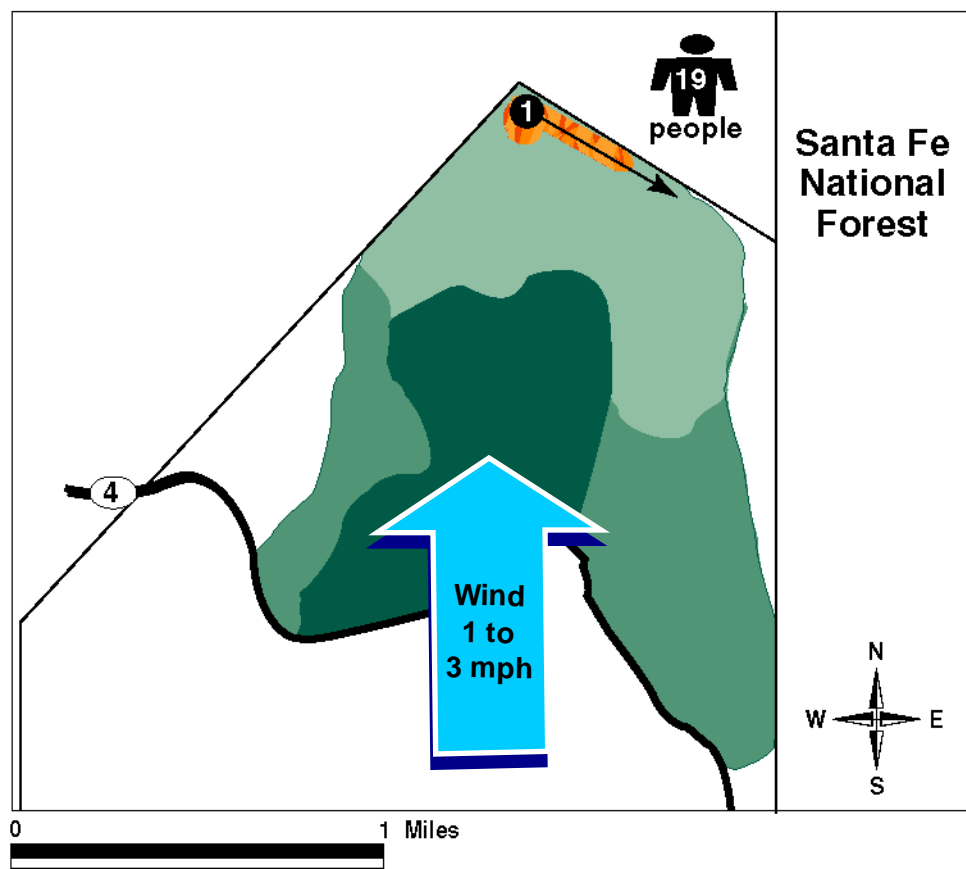
**Thursday, May 4, 2000**  
*7:20 p.m.*

**Total resources:**

- 10 BIA crew members
- 9 NPS staff





Legend	
	Meadow with few trees
	Medium density of trees
	Heavy density of trees
	Burn area

# Test Fire Completed; Burn Started on Northeast Side to Establish Black Line



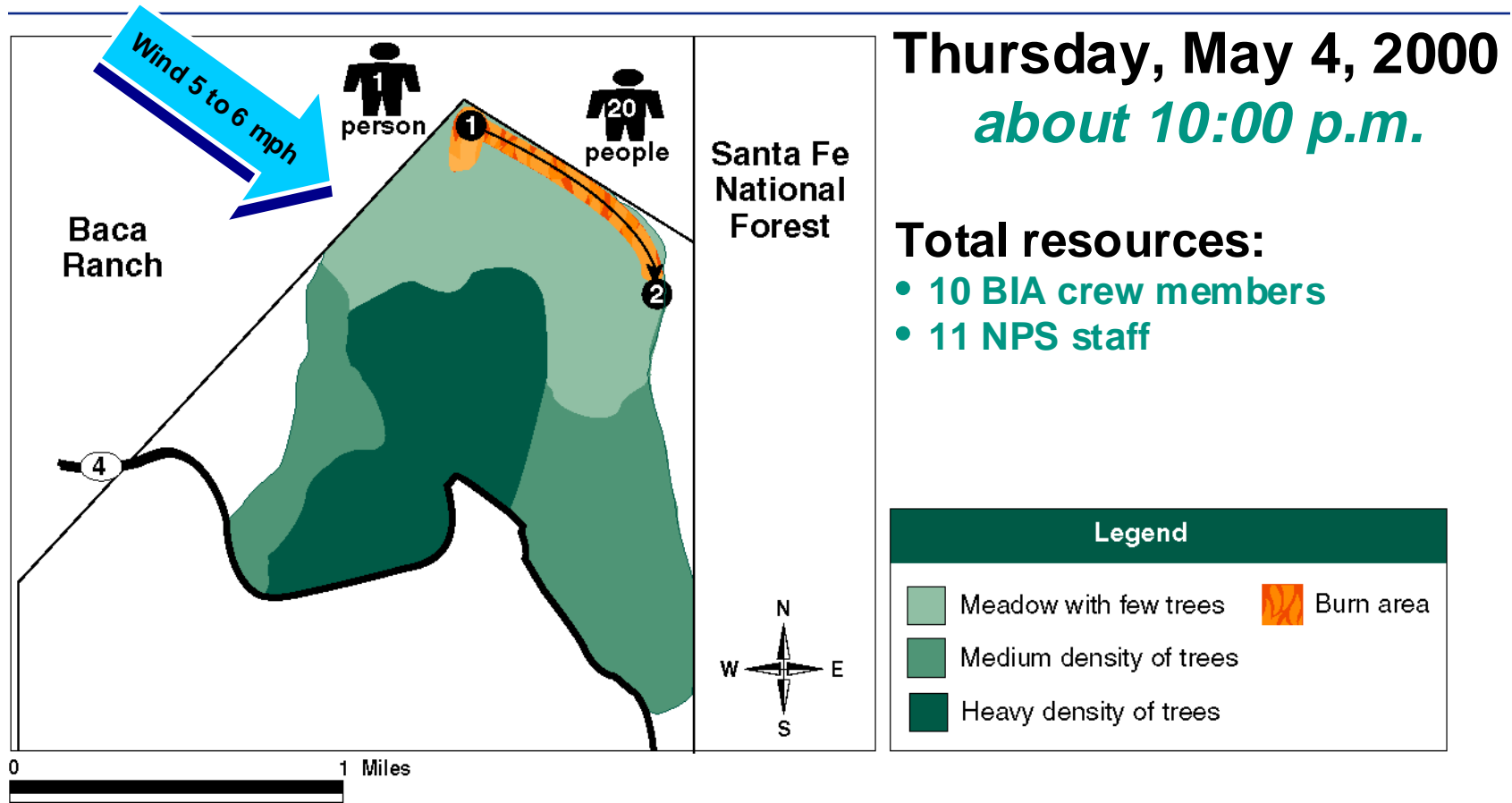
Thursday, May 4, 2000  
*8:00 p.m.*

- Total resources:**
- 10 BIA crew members
  - 9 NPS staff

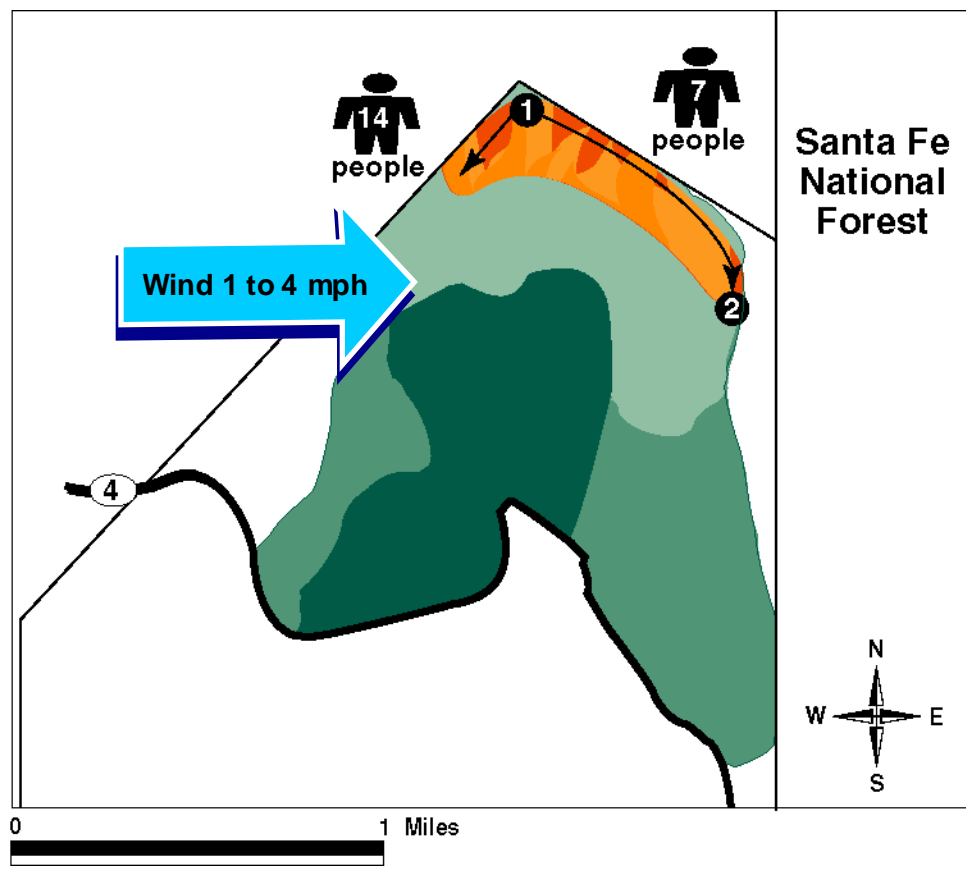
Legend	
	Meadow with few trees
	Medium density of trees
	Heavy density of trees
	Burn area



# Black Lining Stopped on Northeast Side; Fire Growing Towards Baca Ranch



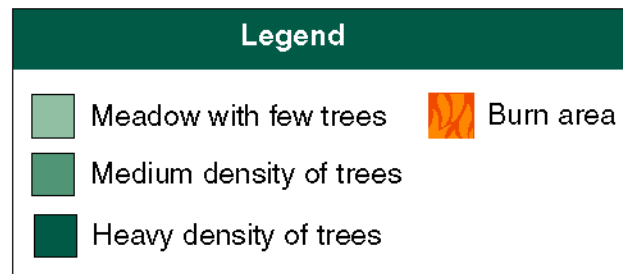
# Black Lining Started on Northwest Side



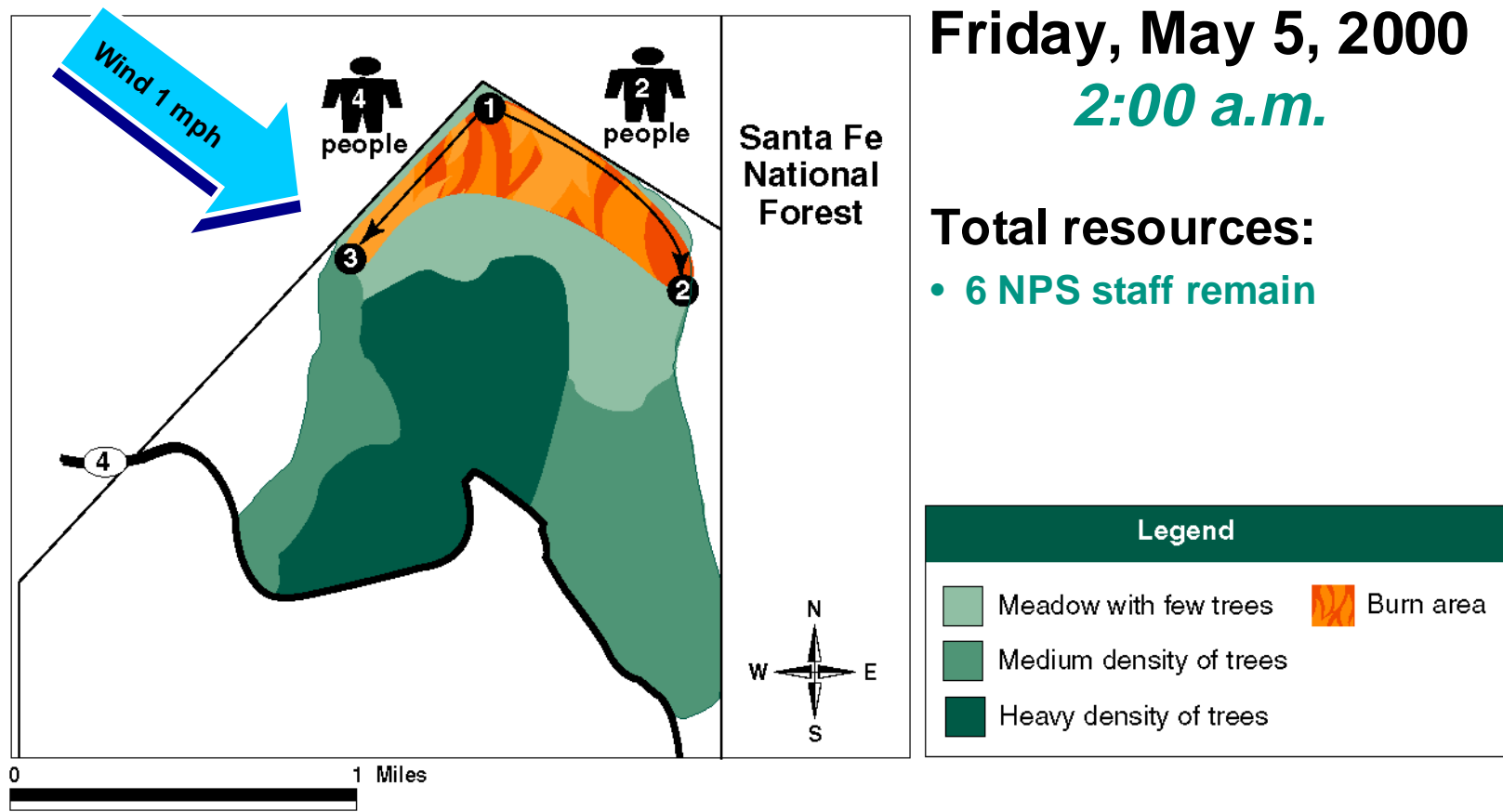
**Thursday, May 4, 2000**  
*about 11:15 p.m.*

**Total resources:**

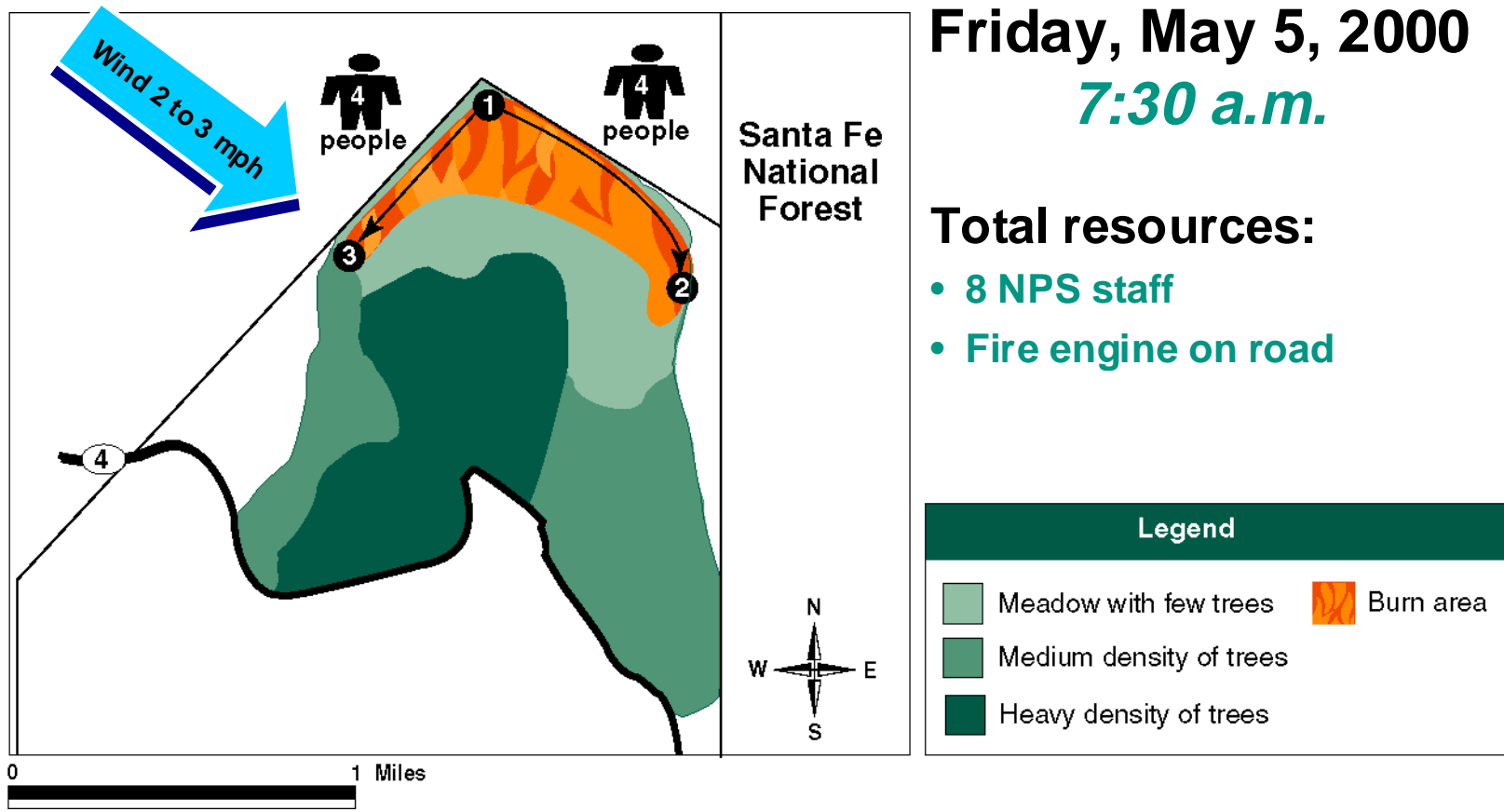
- Moved 13 firefighters to northwest side of peak
- 21 total firefighters



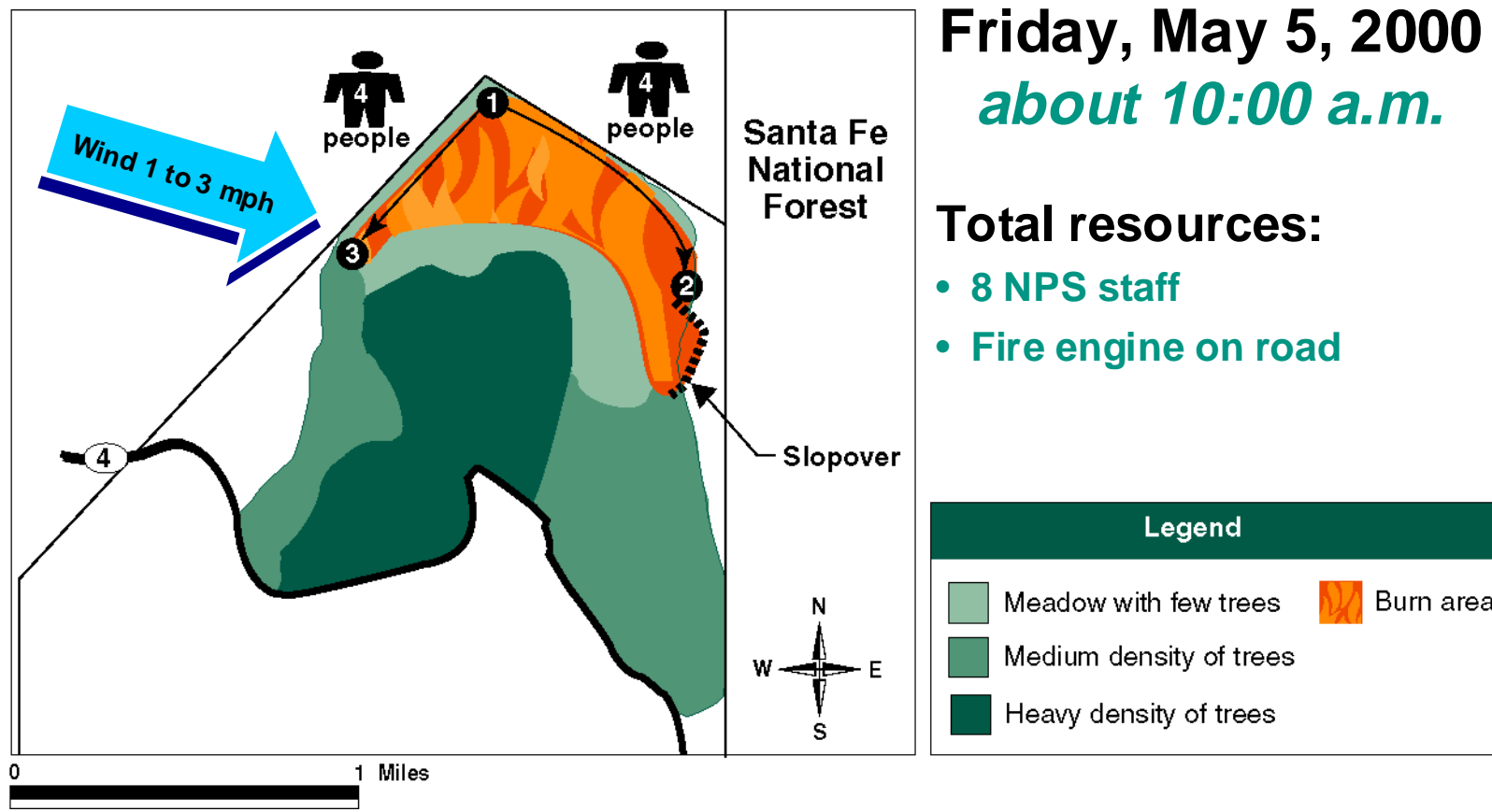
# Black Lining Stopped on Northwest Side; Most Crew Released Due to Fatigue



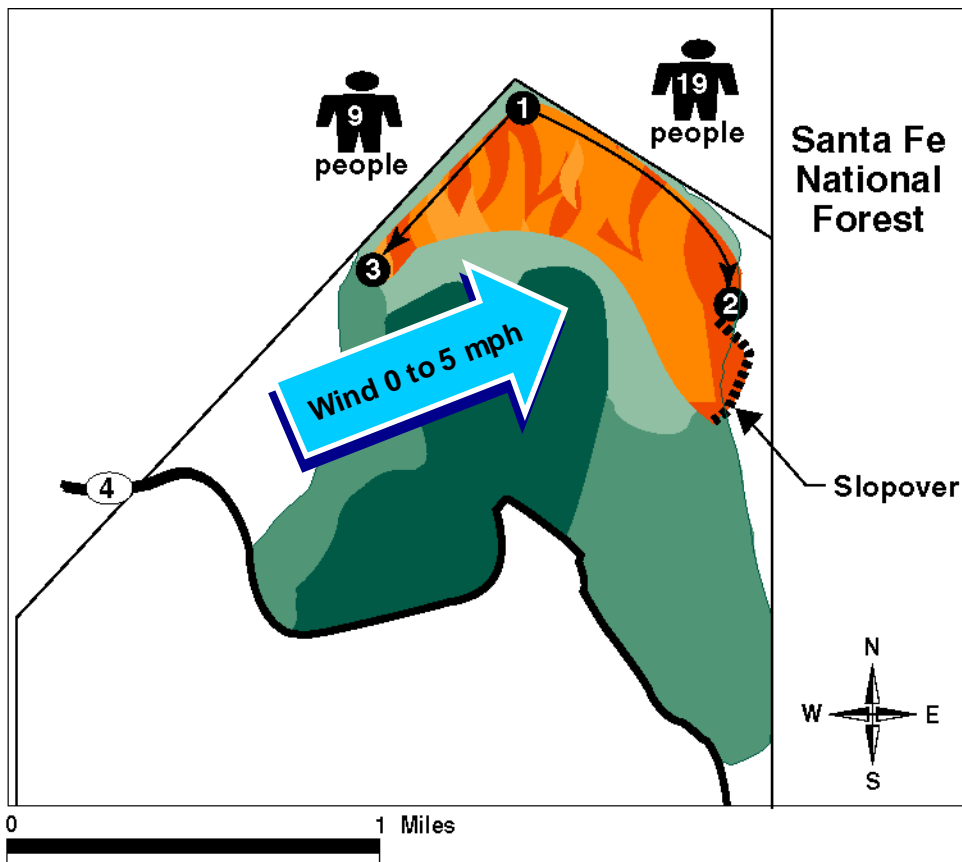
# Fire Expands Down Northeast Side; Agreement Reached on More Resources



# Burn Boss Changes; Slopover Occurs







# Additional Resources Arrive



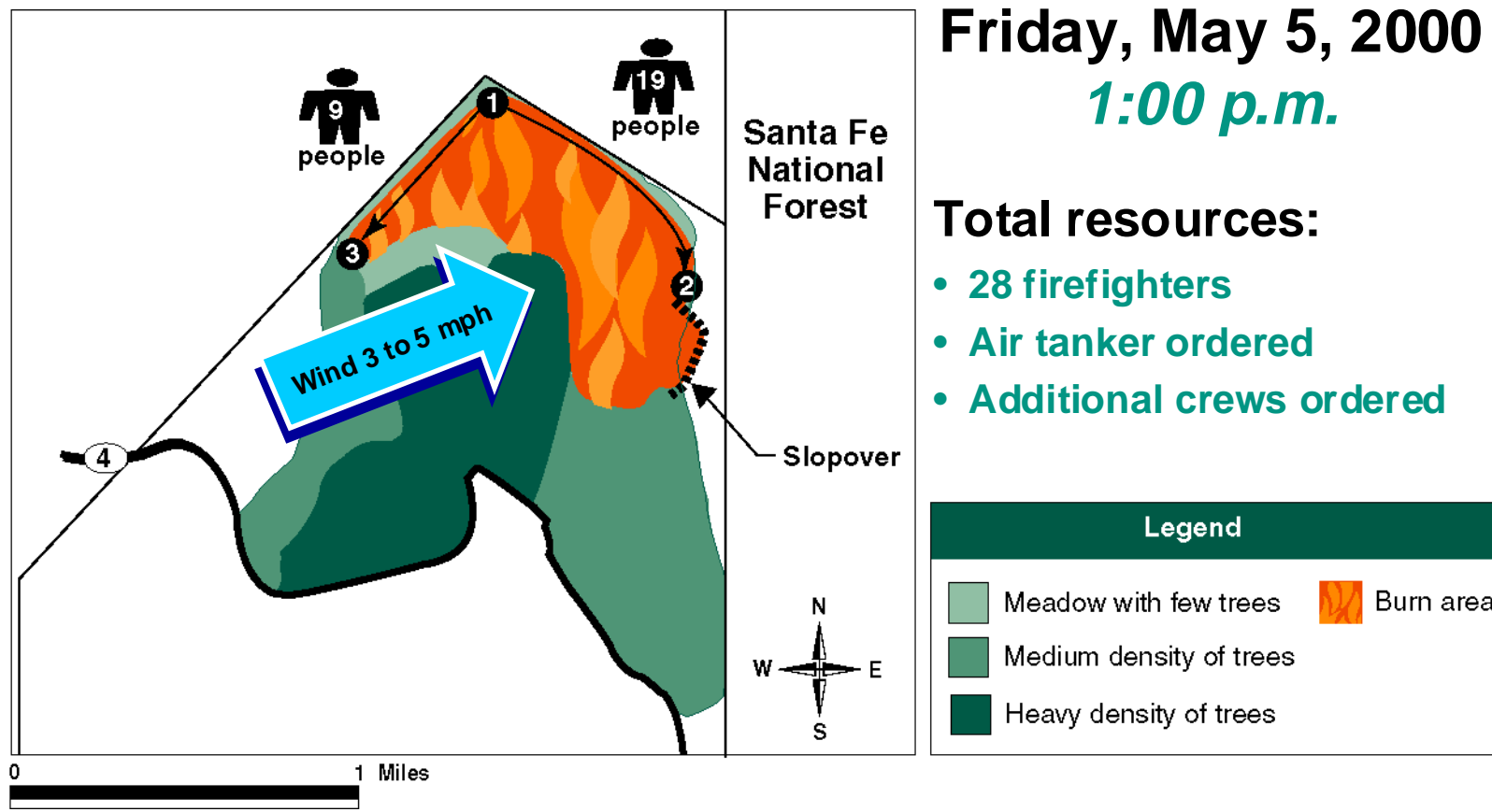
**Friday, May 5, 2000**  
*10:30 a.m. to 1:00 p.m.*

**Total resources:**

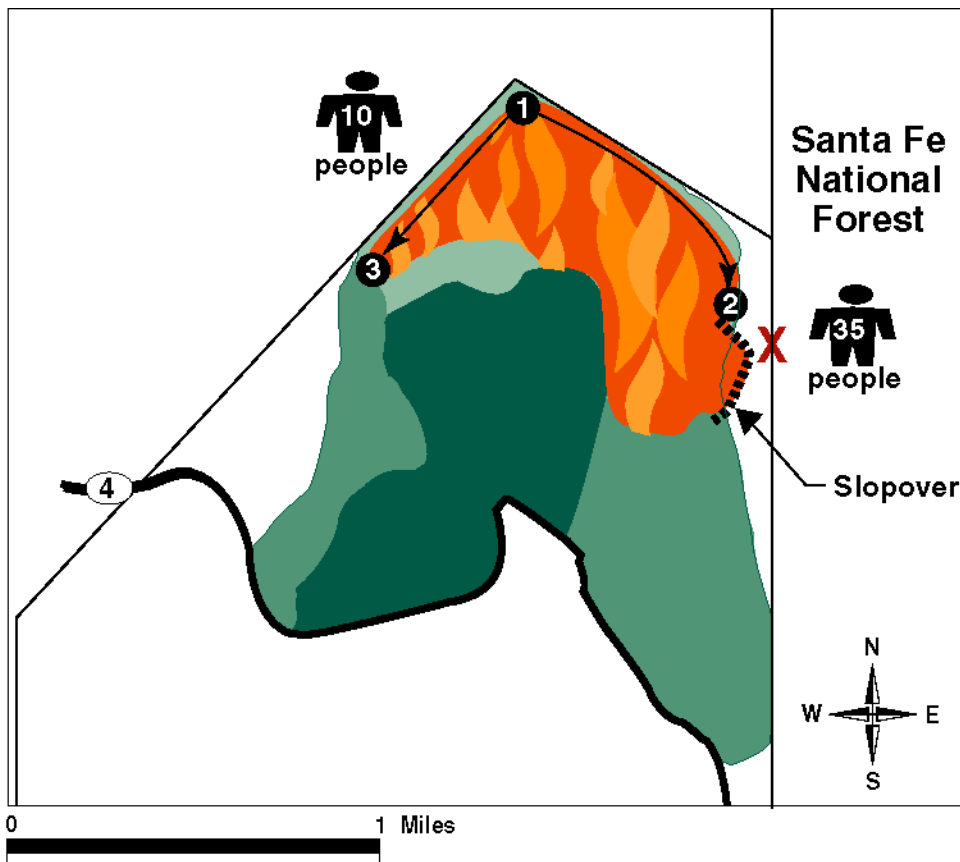
- Helicopter - 10:30 a.m.
- Hot shot crew - 12:30 p.m.
- 28 firefighters on-site

Legend	
	Meadow with few trees
	Medium density of trees
	Heavy density of trees
	Burn area

# Fire Declared a Wildland Fire








# Resources Are Added; Sloper Is Contained



**Friday, May 5, 2000**  
*4:30 p.m. to 9:15 p.m.*

**Total resources:**

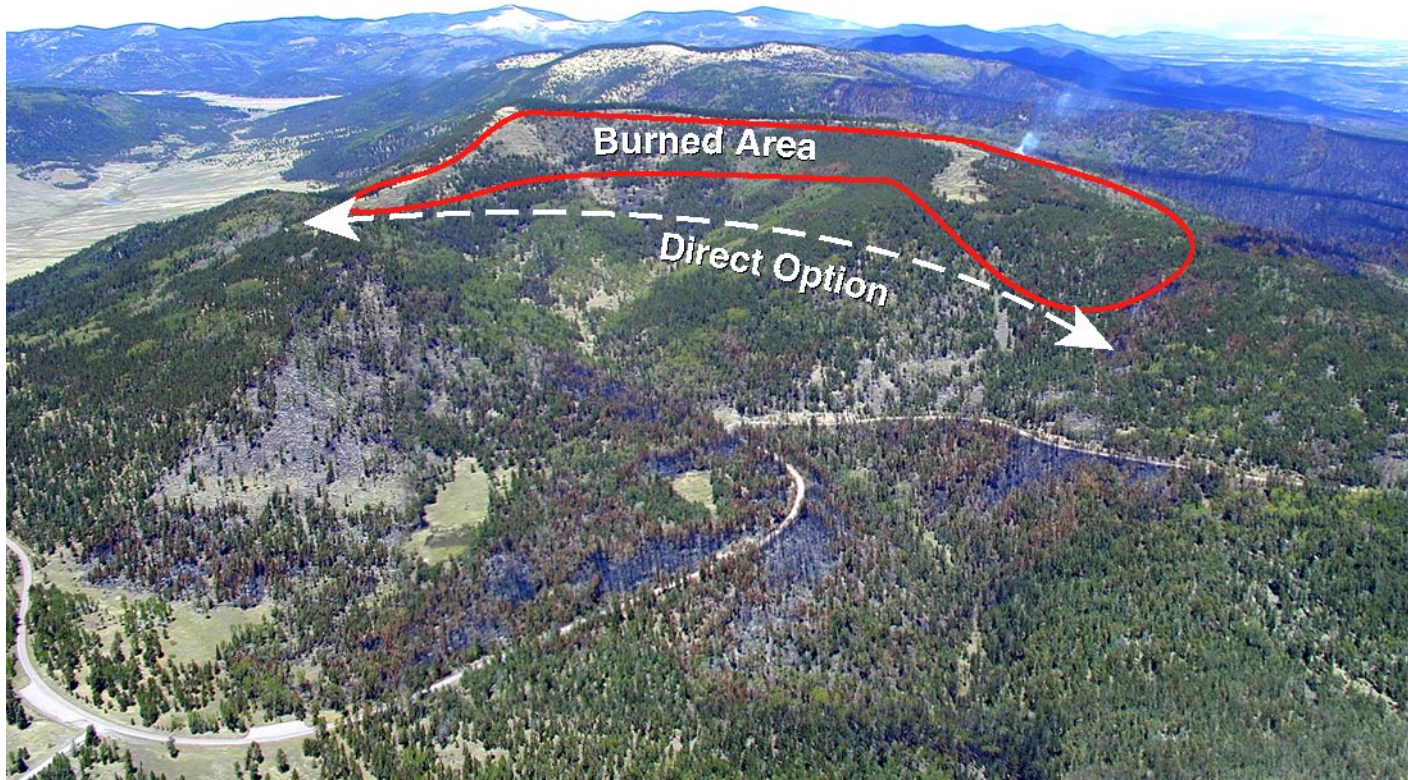
- 45 firefighters
- 2 air tankers
- 2 fire engines

Legend	
	Meadow with few trees
	Medium density of trees
	Heavy density of trees
	Burn area
	Spot fires





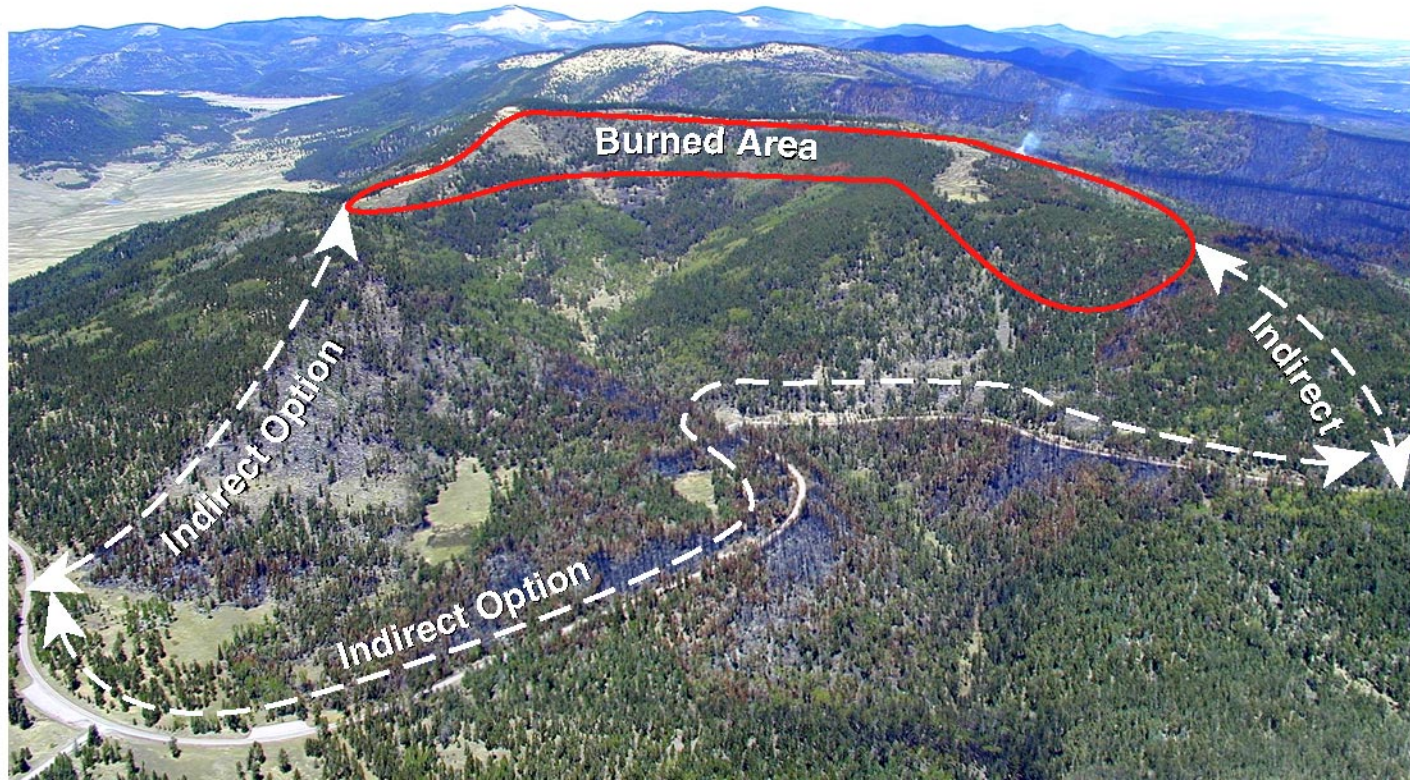
# Aerial View of Direct Option for Suppression of Fire



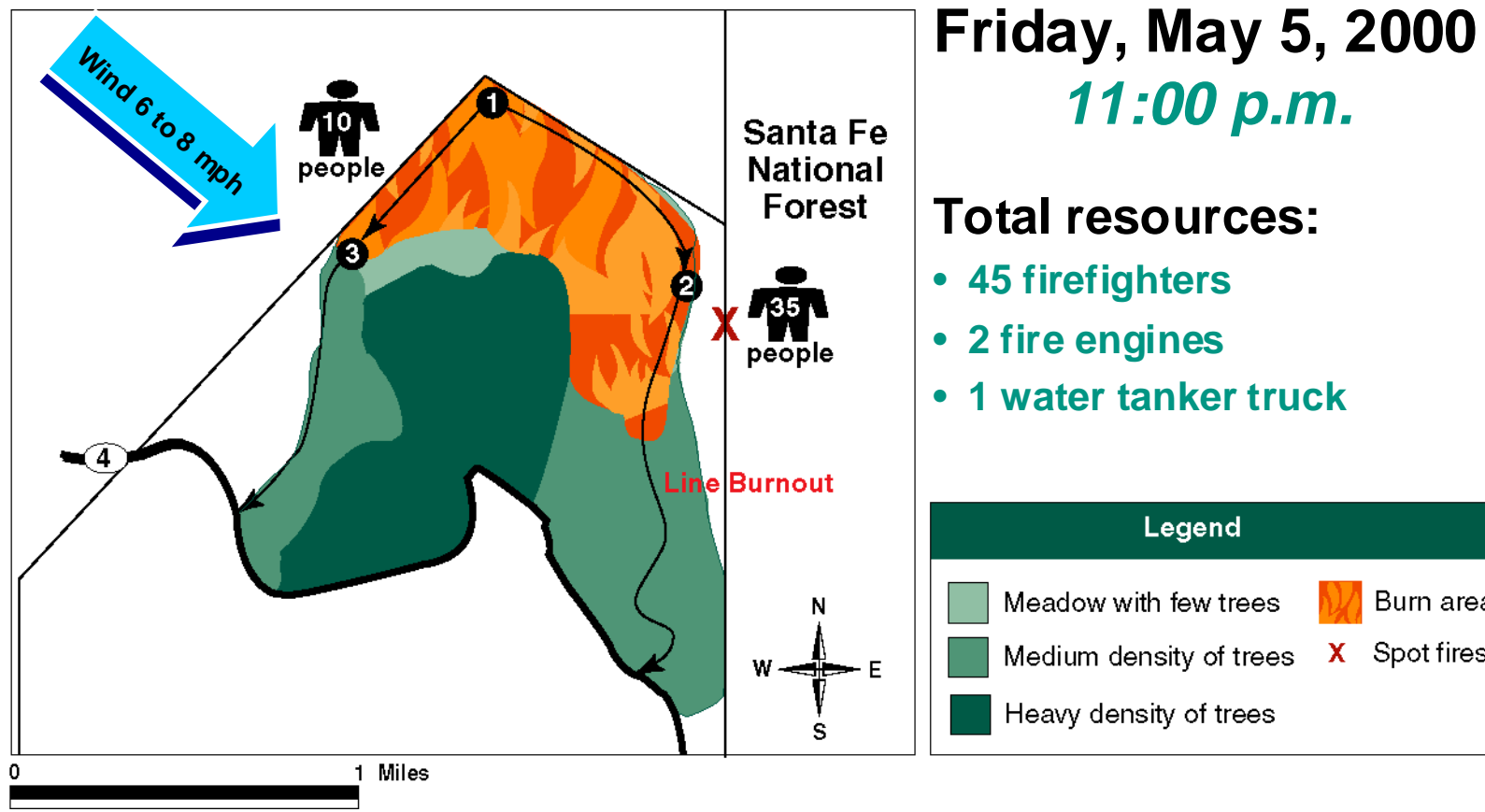


## Appendix

# Aerial View of Indirect Option for Suppression of Fire



# Firefighters Begin Blacklining East Side

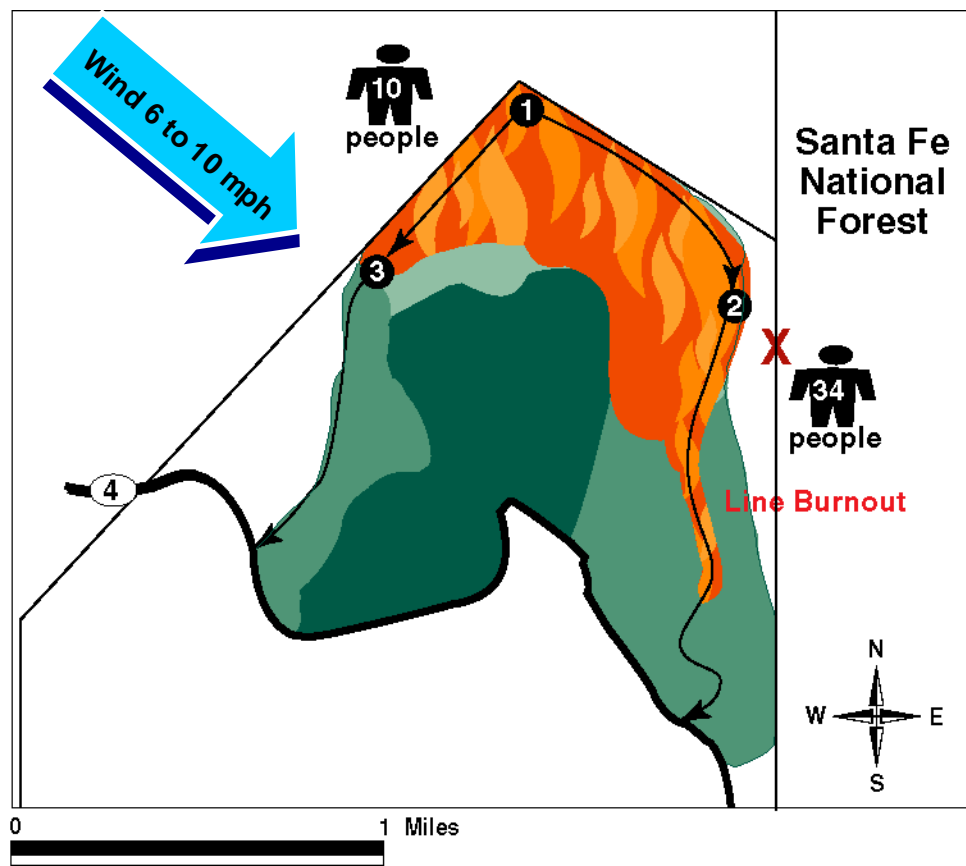




# **Transition From Phase I to Phase II Vegetation for Blacklining East Side**



# More Firefighters Ordered; Crews Improve Line on East Side

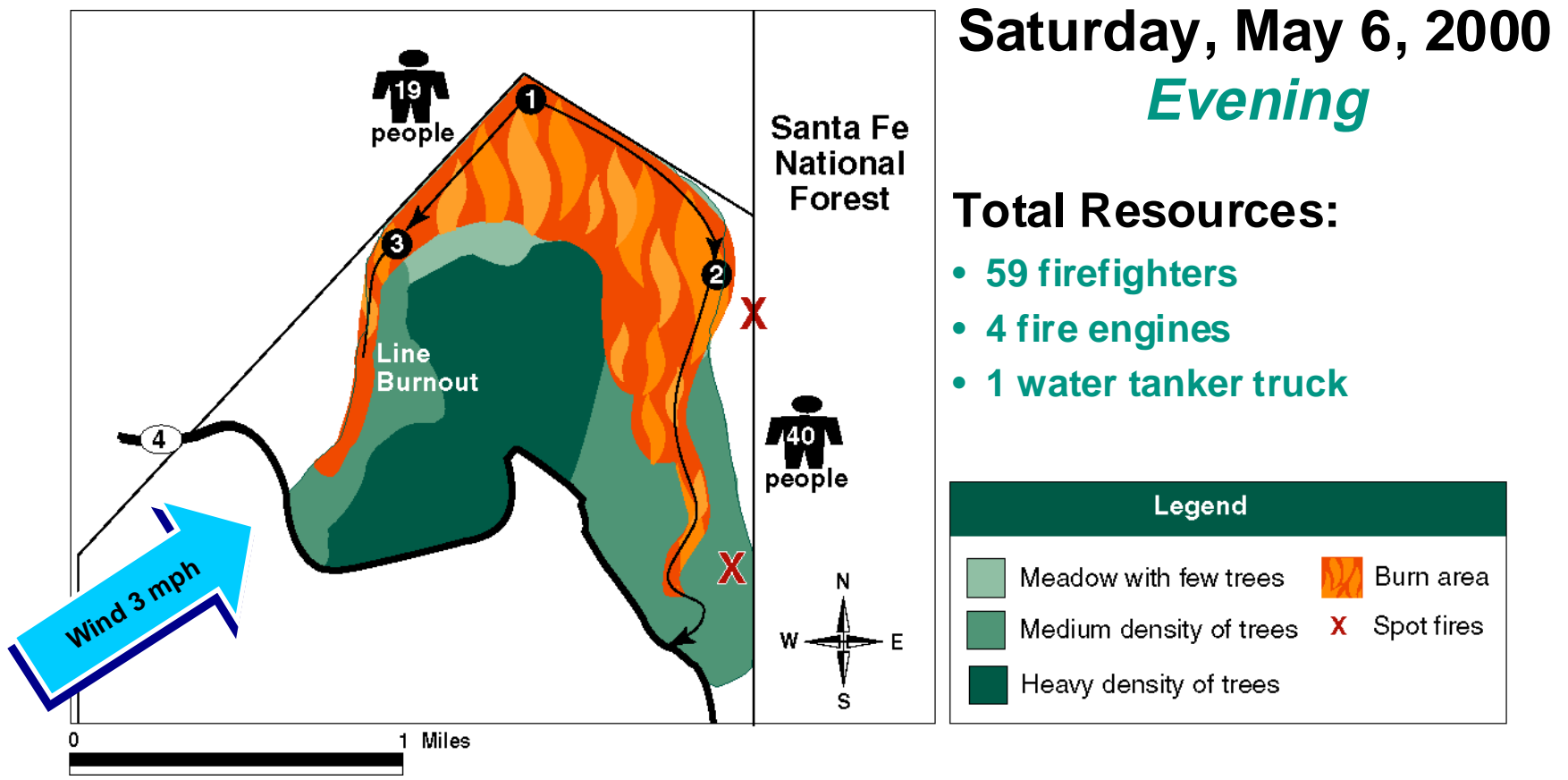


**Saturday, May 6, 2000**  
*about 9:15 a.m.*

**Total resources:**

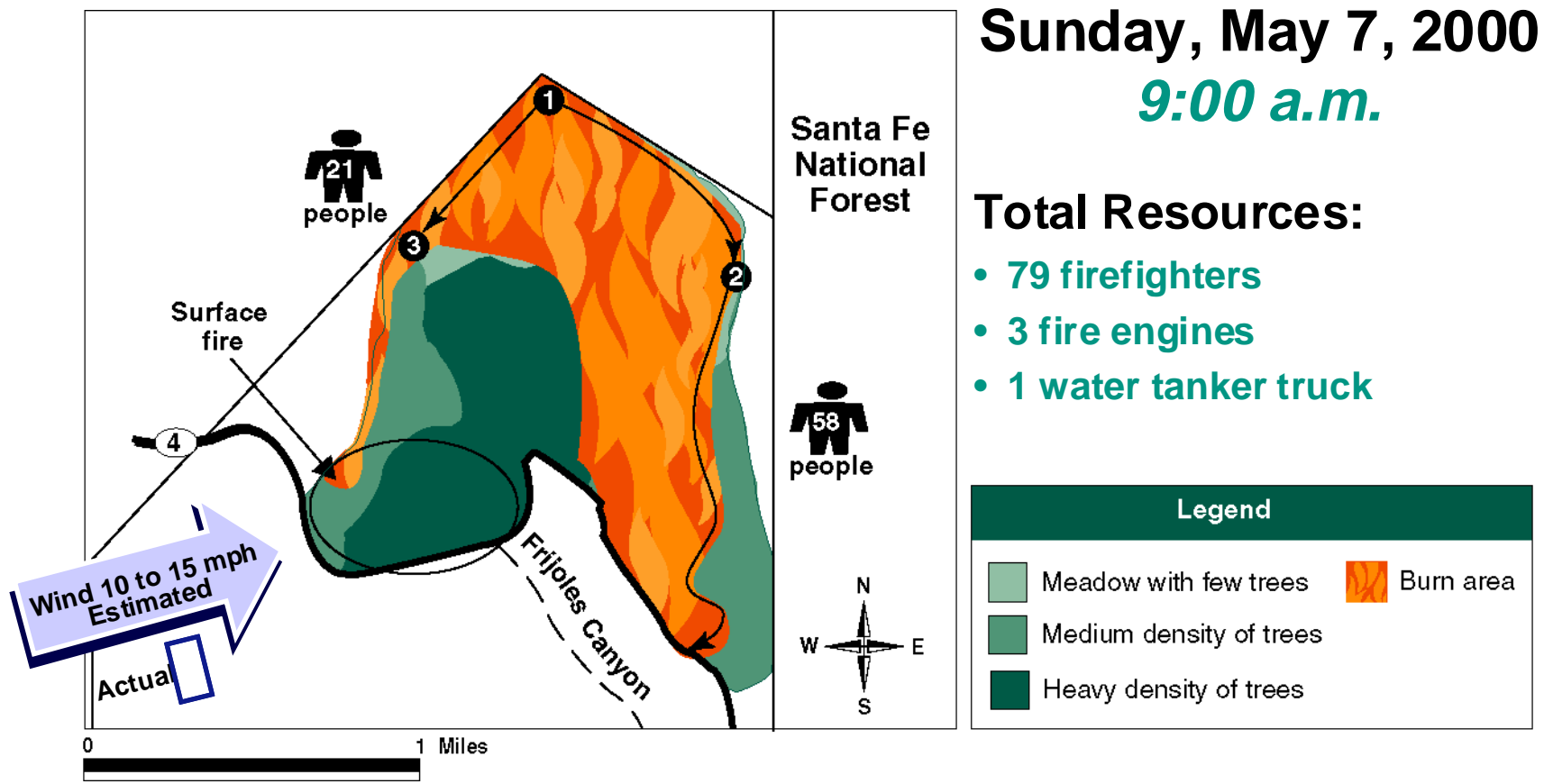
- 44 firefighters
- 3 fire engines

# New Crew Black Lines West Side



# Appendix

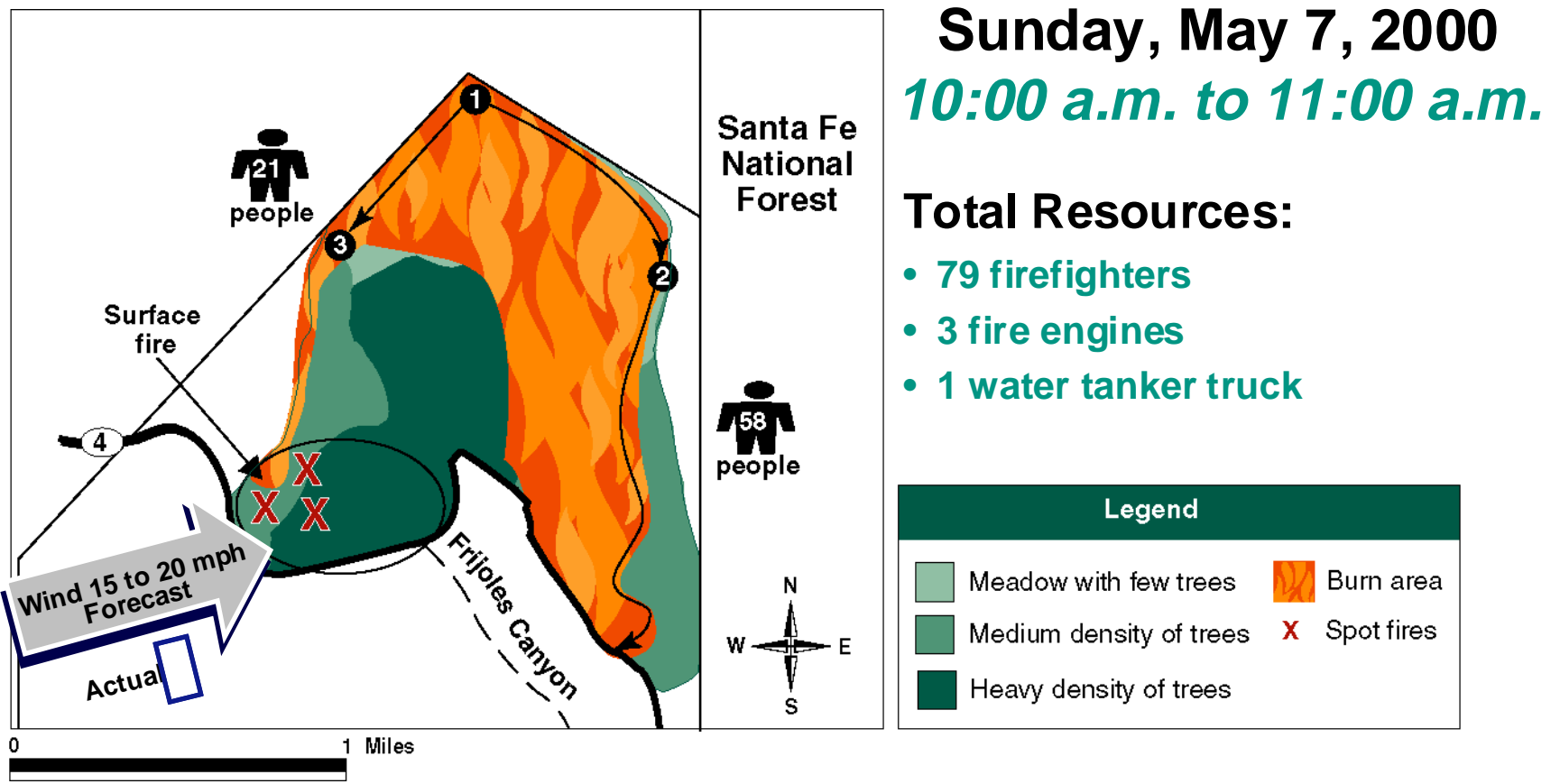
## Surface Fire Observed in Southwest Corner



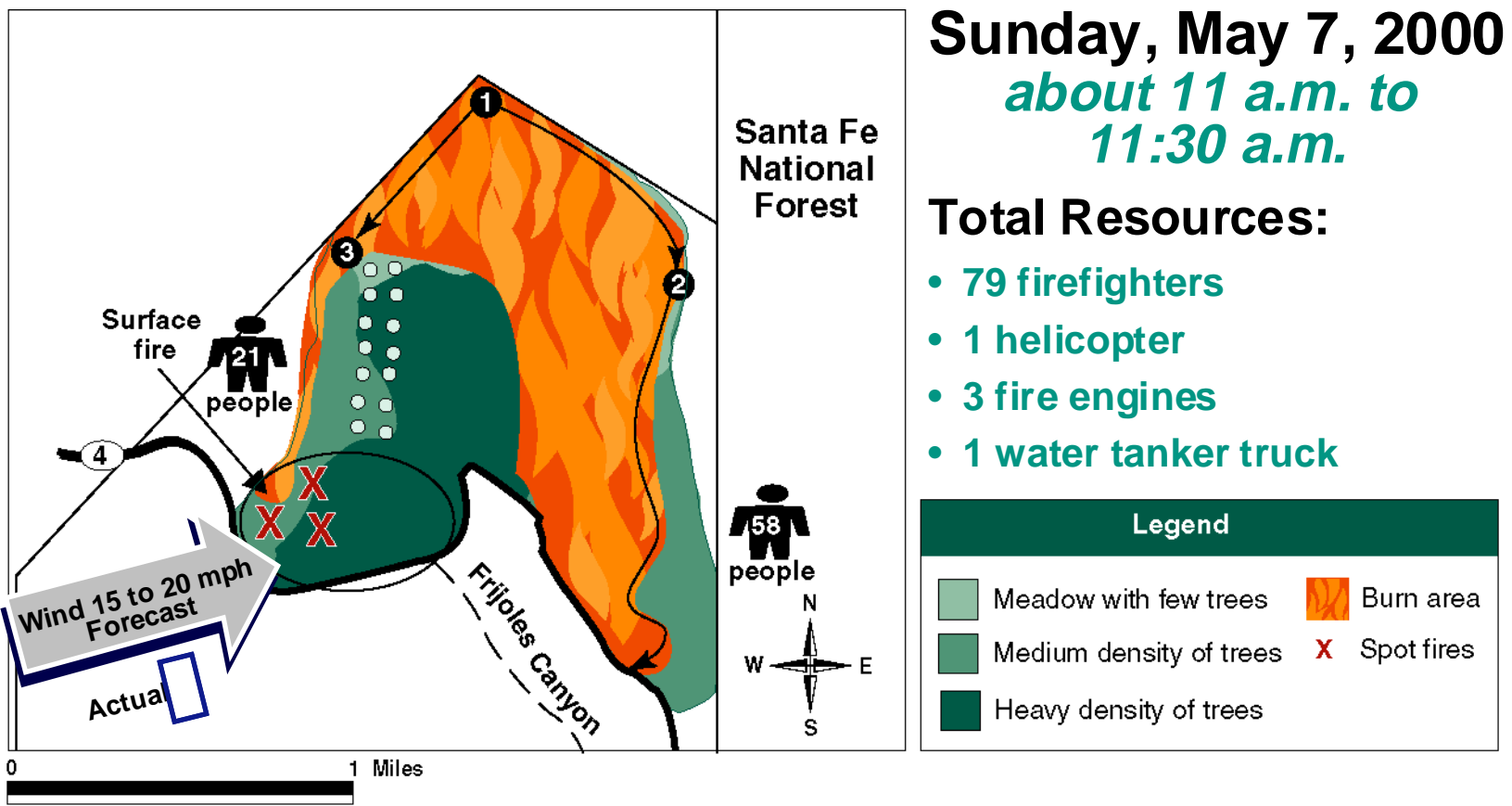


## Appendix

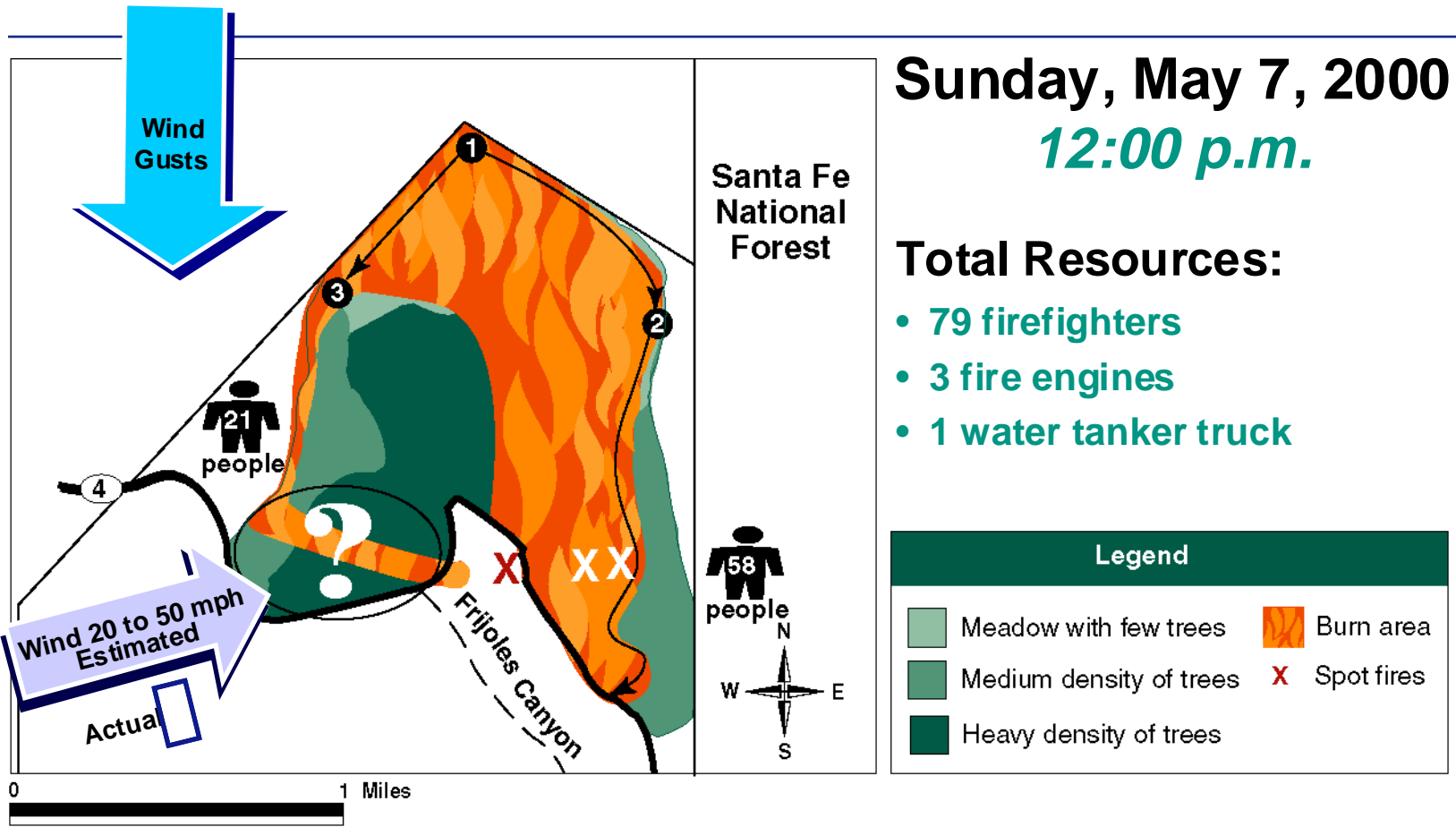
# Trees Observed Torching in Southwest Corner



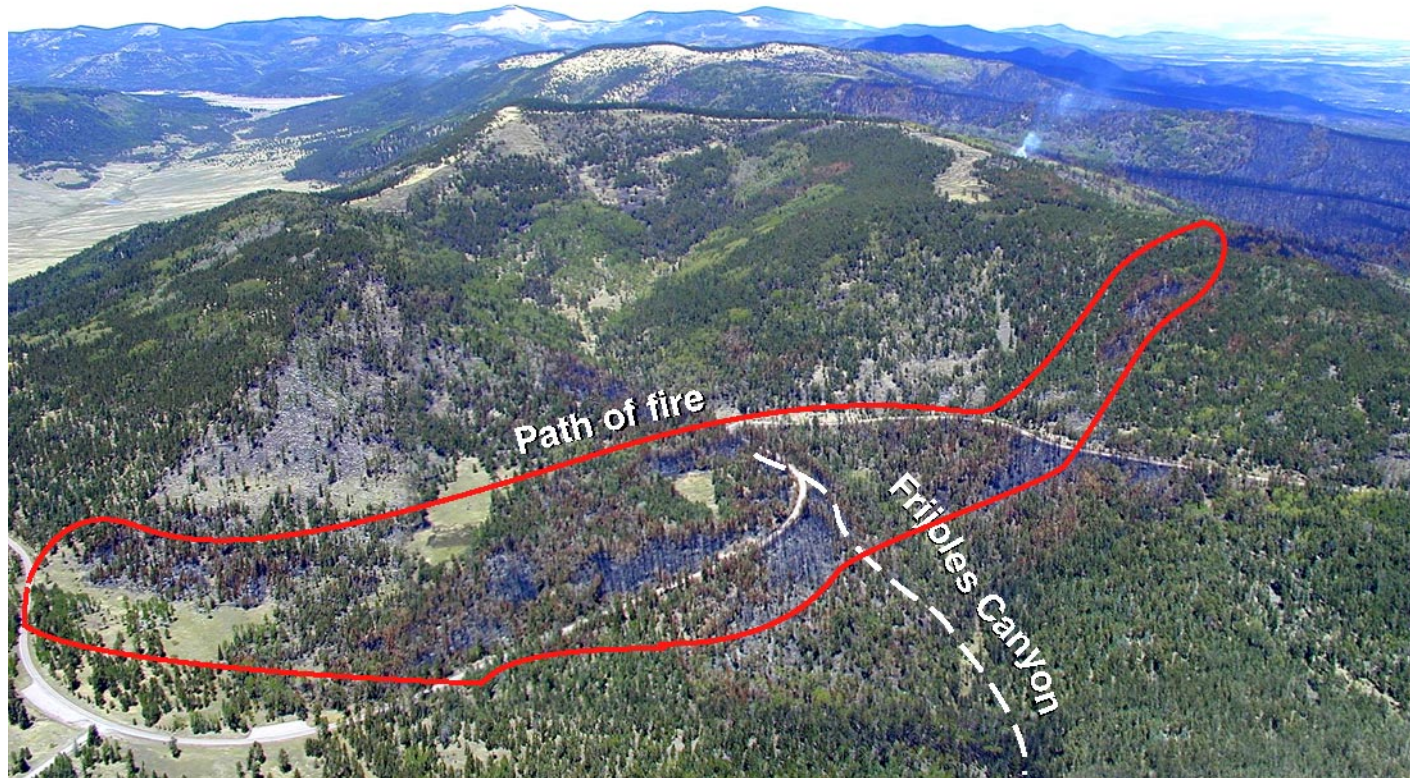
# Aerial Ignition on West Side of Burn Area



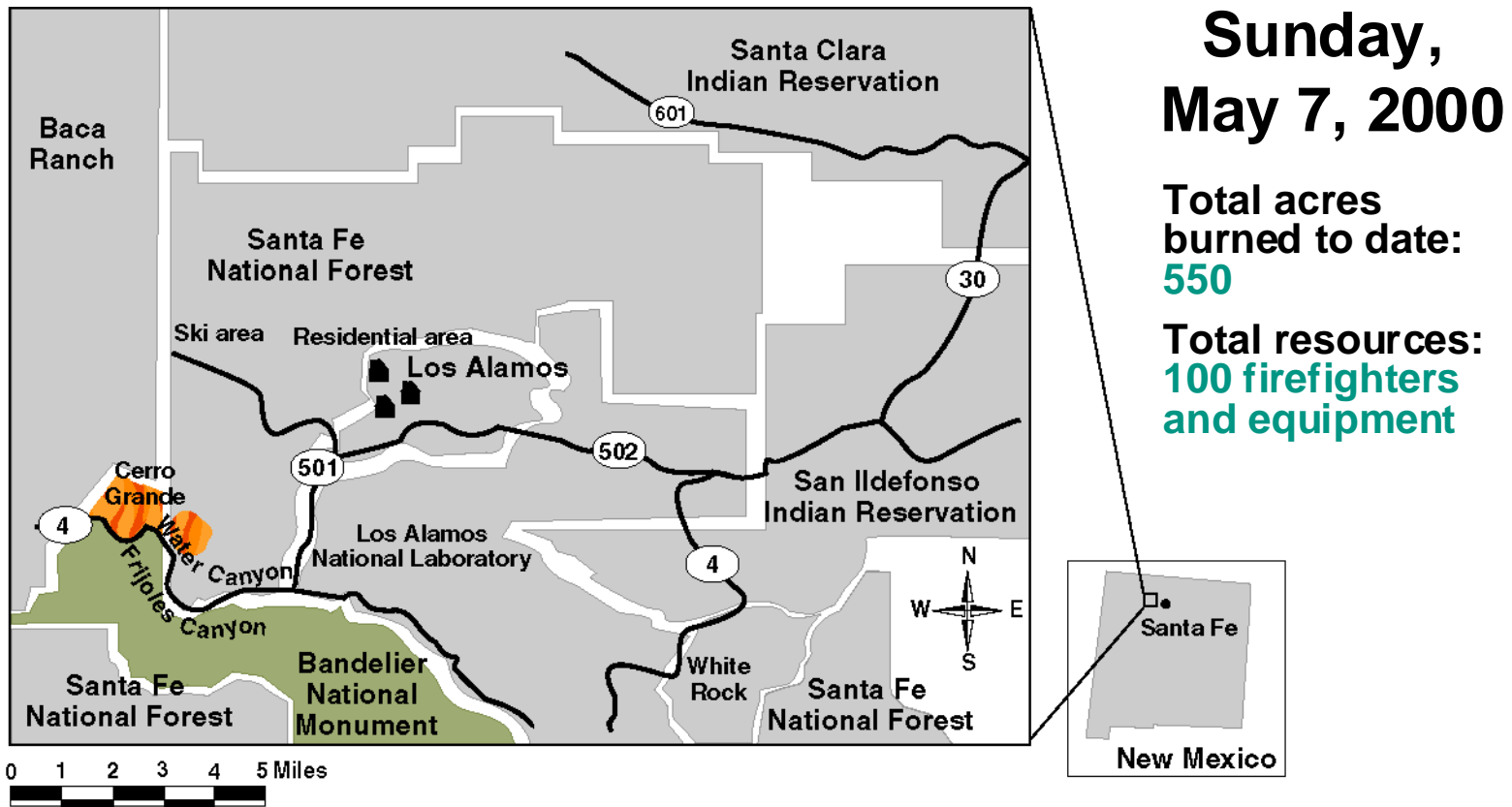
# Fire Crosses Into Frijoles Canyon



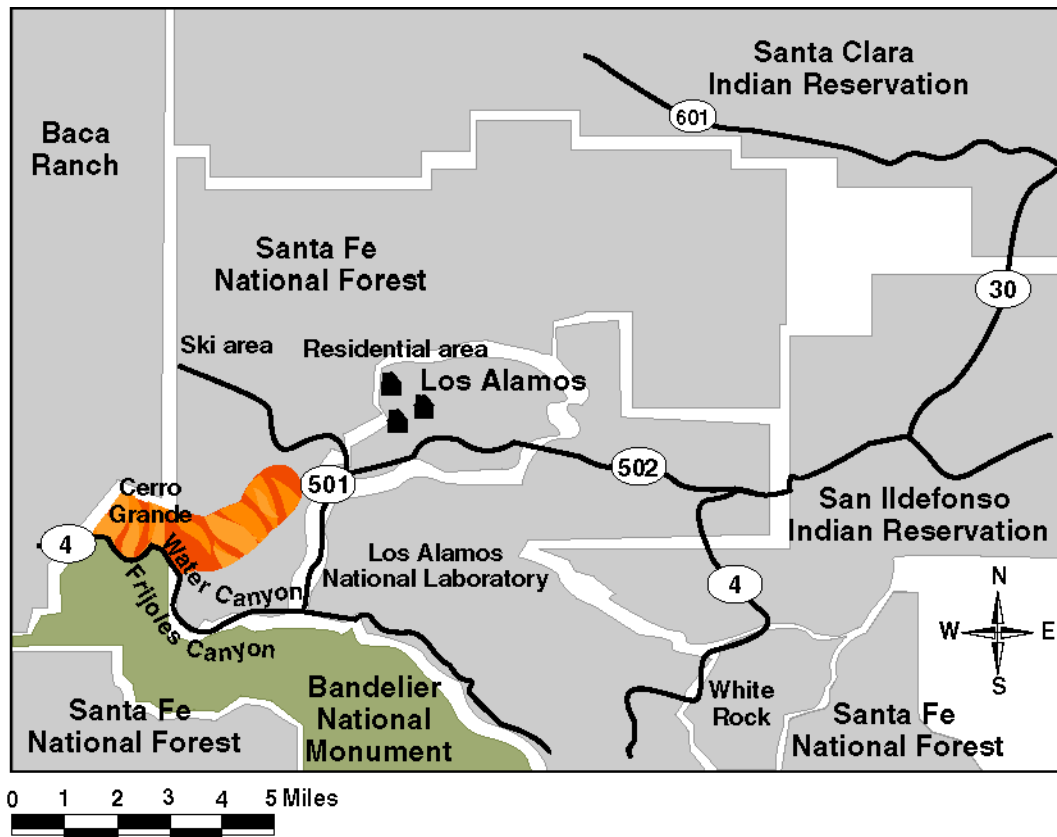
# Aerial View of May 7 Fire Run



# Progression of Fire



# Progression of Fire



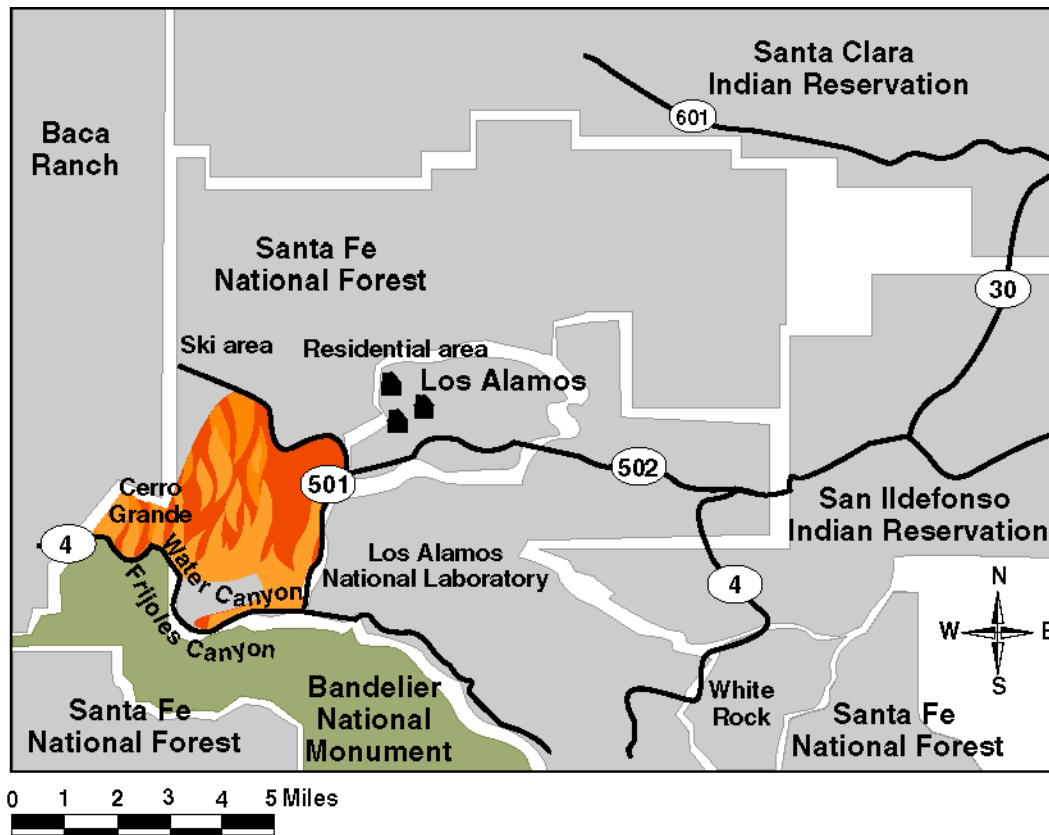
**Monday  
May 8, 2000**

Total acres  
burned to date:  
**3,040**

Total resources:  
**about 330 firefighters  
and equipment**



# Progression of Fire

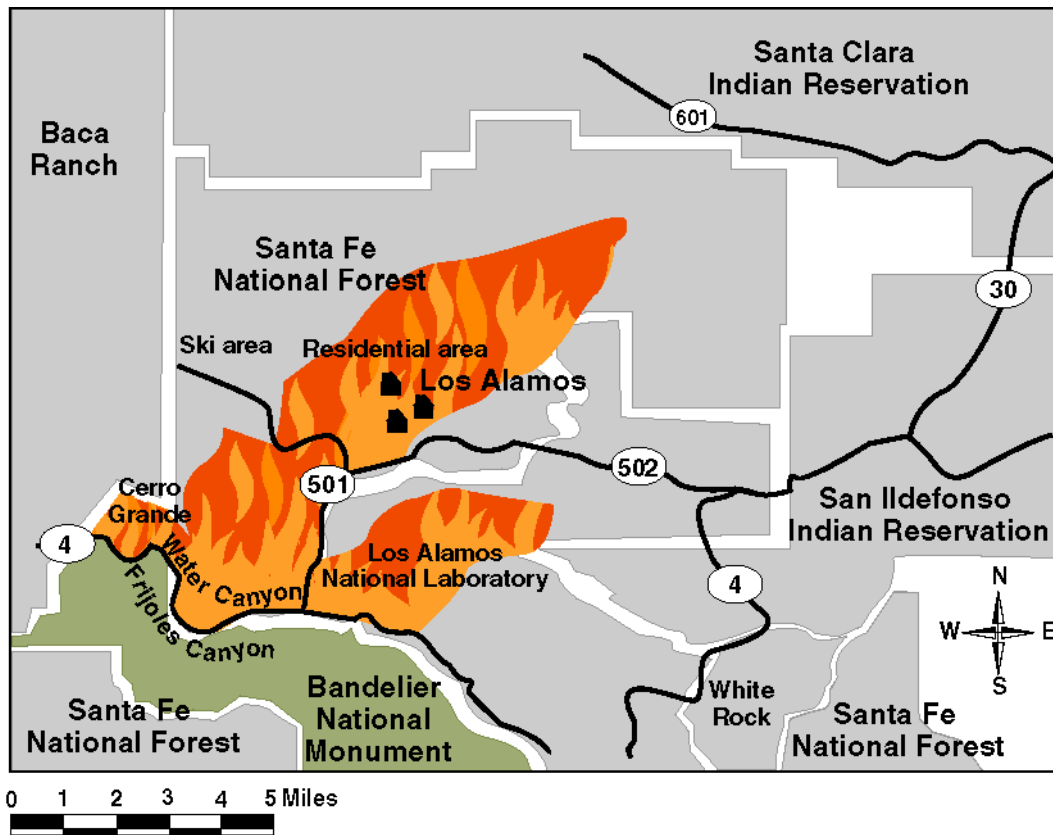


**Tuesday,  
May 9, 2000**

Total acres  
burned to date:  
**3,700**

Total resources:  
**about 500 firefighters  
and equipment**

# Progression of Fire



**Wednesday,  
May 10, 2000**

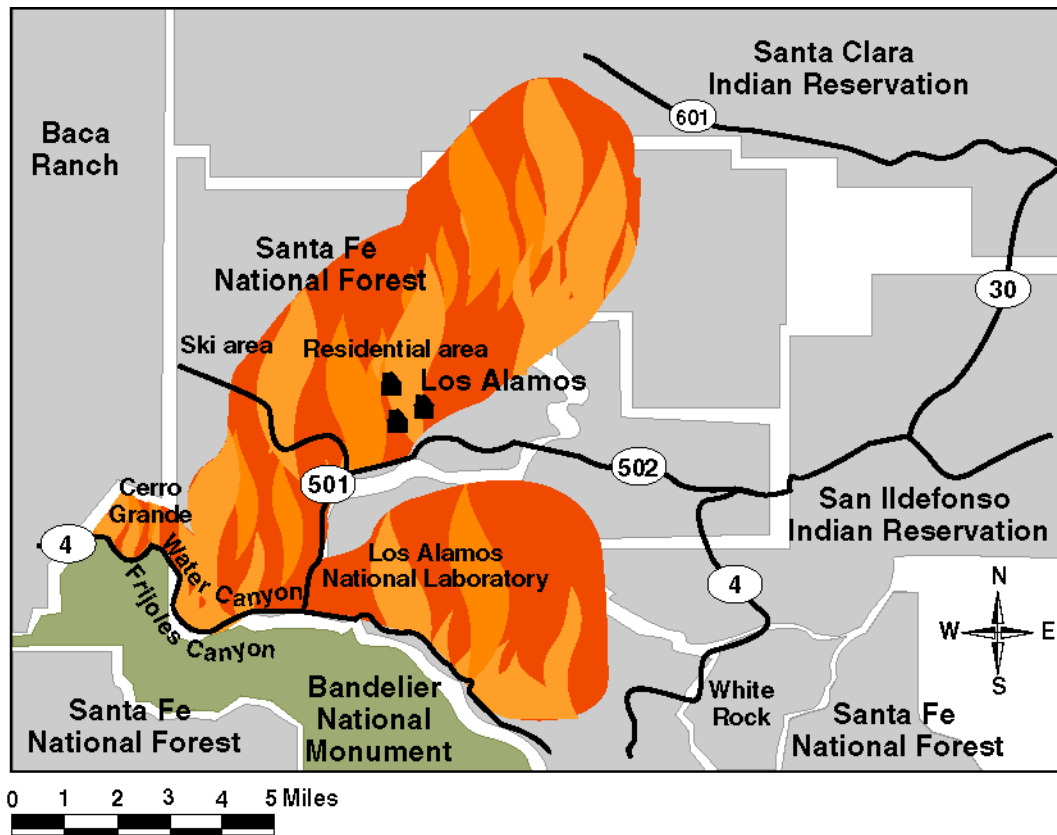
Total acres  
burned to date:  
**10,000**

Total homes burned:  
**unknown**

Total resources:  
**about 500 firefighters  
and equipment**



# Progression of Fire



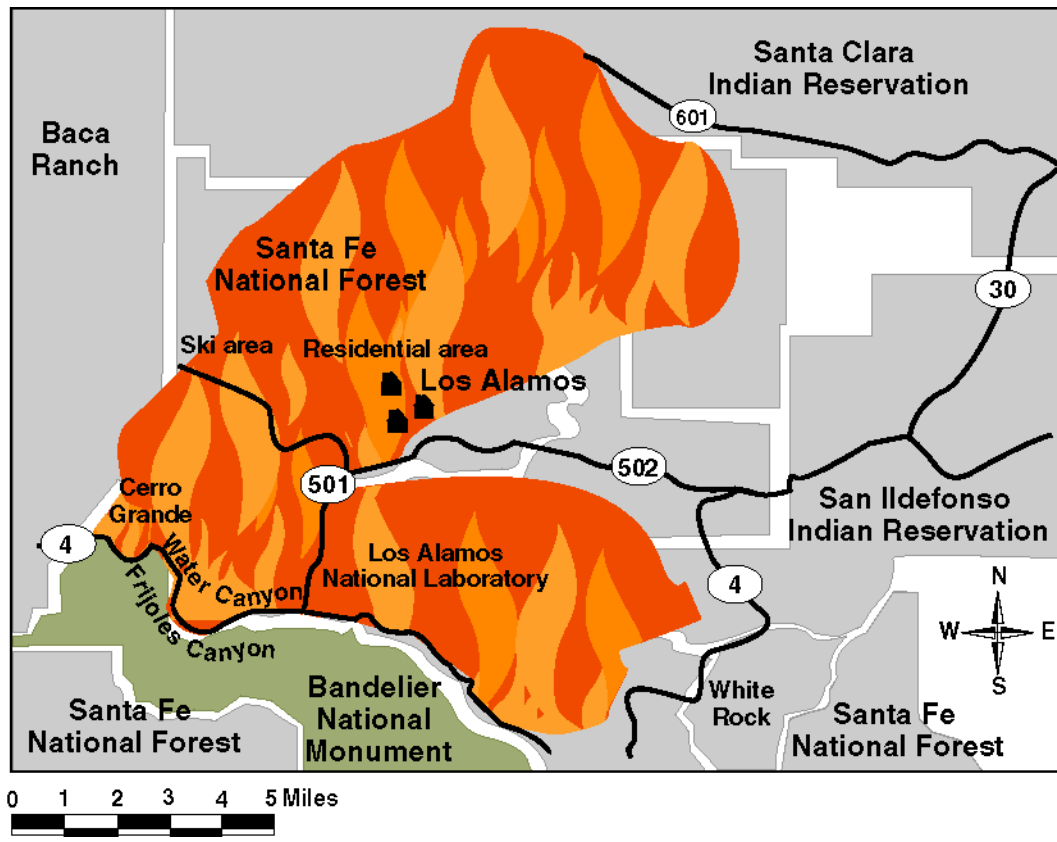
**Thursday,  
May 11, 2000**

Total acres  
burned to date:  
**19,000**

Total homes burned:  
**about 280**

Total resources:  
**about 570 firefighters  
and equipment**

# Progression of Fire



**May 12, 2000  
to May 19, 2000**

**Total resources:  
over 1,000 firefighters  
and equipment**



## **Summary of Damage**

---

- **Almost 48,000 acres burned**
- **About 280 homes destroyed or damaged and 40 laboratory structures destroyed**
- **Over 400 families displaced**
- **About \$1 billion in estimated fire damage**

# Cerro Grande (Los Alamos) Fire

---

---