

Socioeconomic Assessment of the Santa Fe National Forest

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Region 3 Office**

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Acknowledgements

This study is indebted to the collaboration and cooperation of many people.

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BU

Credits

Principal Author	Billy James Ulibarrí, M.A.
Principal Investigators	Lee A. Reynis, Ph.D. and Jeffrey Mitchell, Ph.D.
Chapter 2 (Demographic Patterns and Trends)	Richard Zimmerman
Chapter 7 (Economic Impacts)	Nicholas Potter, MA.
Database Development	Vicky Morris-Dueer, M.A. Jeremy Cook, M.A. Bob Grassberger, Ph.D. Kevin Kargacin Karma Shore Larry Compton
Cartography & GIS	Michael McDaniel
Editing	Molly Bleecker, M.A.
Students	Joshua Akers Austin Duus Erica Freese Lucinda Sydow, M.A.
Administration	Michael Byrnes Betsy Eklund Betty Lujan

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Abbreviations

AUM	Animal Unit Month
BLM	Bureau of Land Management
CFRP	Collaborative Forest Rehabilitation Program
DOD	Department of Defense
ESA	Endangered Species Act
FS	Forest Service
IRA	Inventoried Roadless Area
MSA	Metropolitan Statistical Area
NF	National Forest
NLCD	National Land Coverage Data
NMDOT	New Mexico Department of Transportation
NVUM	National Visitor Use Monitoring
OHV	Off-Highway Vehicle
RD	Ranger District
ROW	Right-of-Way
VMS	Visual Management System

Executive Summary

This report provides a socioeconomic assessment of the relationships between the five mountain Ranger Districts (RDs) of the Santa Fe National Forest (Santa Fe NF), the seven counties with boundaries within the Santa Fe NF, and neighboring communities. This includes Indian Reservations, Pueblo lands and Land Grant communities. This assessment was commissioned by the Southwestern Regional Office of the USDA Forest Service (USDA FS or FS), and serves as a source of information for the development of a revised plan for Santa Fe NF.

The assessment is based primarily on secondary data sources, including those of the United States Census Bureau, the Bureau of Land Management, the Geological Survey, the Federal Highway Administration, Bureau of Economic Analysis, and the Bureau of Labor Statistics as well as the New Mexico Department of Transportation, the NM Department of Labor, NM Department of Game and Fish, and those plans and other documents produced by county governments. The most important source of data was National Forest Service (FS) records including the Forest Service infrastructure (INFRA) database and their GIS databases. In some cases, specific information was not available in a form appropriate to this analysis, requiring BBER to make estimates, using the best available data. In other cases, data were not available at all and this fact limited the analysis possible. Information sources and analysis methods are thoroughly documented throughout the report.

The Santa Fe NF consists of mountainous terrain and many of New Mexico's highest mountains which are under FS management. Santa Fe NF spans seven New Mexico counties which are widely divergent in their socioeconomic characteristics. The assessment area includes Native American and Land Grant communities as well as Santa Fe, Española, Cuba and Las Vegas. The study area includes a dynamic mix of peoples from different socioeconomic circumstances and with different histories and cultural traditions. Depending on their background, people in the assessment area may have differing and often conflicting perspectives on the Santa Fe NF and how land is used, and may be expected to make different and at times conflicting demands on the resources of the NF.

The Santa Fe NF makes a substantial and significant contribution to the socioeconomic well-being of the assessment area, representing many elements of a superior quality of life. A major finding of this study is that visitor spending in the ski areas within the national forest is the largest and most influential contributor to the economic impact of the Santa Fe NF. Additionally, the history of tribal activity, ranching and other traditional land use in northern New Mexico has resulted in a deep-rooted desire to preserve the characteristics of rural agricultural communities.

This conclusion is the result of a socioeconomic analysis, based on seven assessment topics: demographics and socioeconomic trends in communities neighboring the Santa Fe NF, access to the NF, land cover and ownership, NF users and uses, special areas and places, economic impacts, and community relationships. In sum, the findings of these topics are as follows:

Demographic and Socioeconomic Trend:

The population of all counties in the assessment area grew between 1980 and 2000. The assessment area's population rose from 203,452 to 344,018, increasing nearly 70 percent, well above the 40 percent average for the state. Santa Fe County comprised the majority of population in the area growing by over 71 percent to 129,292. Sandoval County, which includes Rio Rancho on its southeastern edge, topped the list in growth adding 55,000 residents, a 158 percent growth rate. This growing population base has one major implication for the FS: more use. To complicate

matters, in areas with growing residential populations like Santa Fe, Española and Taos, homes are being built on private land abutting the national forest. Subdivisions near the forest raise access concerns by either obstructing traditional points of access or by facilitating access to places previously difficult to get to. Homes in or near the Forest also impact the methods and costs of fire management.

Following the national trend, the population in the assessment area counties is aging. In the more rural counties of Mora and Taos, this aging process appears to have been accelerated by both the out-migration of the young and the in-migration of those in their retirement years. An older population, with more time on their hands, may seek out the recreational and leisure opportunities of the forest; they also, however, may be willing to volunteer their time on various types of FS projects.

New Mexico was the first state in the United States with a majority minority population. The seven assessment counties vary considerably in their racial and ethnic composition, with Mora (80%), San Miguel (78%), and Rio Arriba (73%) having large proportion of their population identifying as Hispanic or Latino. The number of people identifying as Hispanic or Latino in Taos County fell 9 percent while the number identifying as white rose 7 percent between 1990 and 2000. The Hispanic population in the Santa Fe NF counties remained constant at 49 percent, while the state as a whole increased from 38 percent to 42 percent between 1990 and 2000. While most racial and ethnic compositions in the assessment area only changed slightly over the 10 year period, the percentage of those identifying as other increased – from 16 percent to 23 percent in the assessment area versus a two percent increase statewide.

Poverty in the assessment area tracks with race and ethnicity. Native Americans as a group were most likely to be in poverty in 2000, with approximately one-third of Native Americans living below the federal poverty level. Among Native Americans, poverty is greatest in the rural counties. Nevertheless, even in urban areas their rates of poverty exceed those of other racial and ethnic cohorts. The percent of population in poverty by race in the assessment area are: White Alone (52%), African Americans (1%), American Indians (18%) and “Other” (29%). The percent of race in poverty are White alone (11%), African Americans (13%), American Indians (33%) and “Other” (19%). In terms of ethnicity, 60% of Hispanics and 40% of Non-Hispanics were below the federal poverty level.

Access:

The five ranger districts in the Santa Fe NF are divided into separate contiguous areas with paved roads providing access to most forest areas. Interstate 25 (I-25), US84, NM4 and NM96 run through portions of the Santa Fe NF with I-25, a major north-south thoroughfare running through part of the Pecos-Las Vegas RD.

New Mexico’s largest airport is the Albuquerque International Sunport located in Albuquerque, New Mexico. It is the busiest airport in the state serving about six million travelers a year, with connections to major hubs and international destinations. However, it is located over 70 miles away from any part of the Santa Fe NF.

The NF is near the communities of Santa Fe, Los Alamos, Mora and Española. Santa Fe is the largest city in northern New Mexico and is a major source of visitors to the area. Outside of Santa

Fe, the area is sparsely populated. Therefore, with the exception of Santa Fe, the assessment area's roads are characterized by light traffic.

Specific problems regarding right-of-way and other access issues date back more than one hundred years, and many of these issues stem from incomplete or incorrect land records. As a result, the FS often addresses these problems as they are discovered or brought to their attention by landowners. When there are right-of-way issues, the FS tries to resolve them by purchasing easements following an existing trail or road through the property. In cases where the FS is unable to secure an easement, the FS may construct a trail or road that goes around private property. However, this method is more costly than purchasing an easement.

Forest roads provide access for both forest users and FS officials to areas of interest throughout the Santa Fe NF. . For some areas these forest roads allow the only access to complete maintenance and rehabilitative activities. Access to the forest becomes critical in the event of a forest fire or other catastrophic event. In all, the Santa Fe NF has almost 7,500 miles of forest road. The forest has the highest road density of all forests in the Southwestern Region. This road density has made it a target of environmental conservation groups.

The growing use of Off Highway Vehicles (OHVs), particularly for unmanaged recreation is viewed as one of the four major threats by the USDA FS, providing impetus for the Travel Management Directive, under which all the NFs will have to designate which roads and trails will be open to motorized vehicles.

Land Cover:

GIS data show that over 80 percent of the Santa Fe NF is evergreen forest, encompassing 1,282,151 acres. Grasslands make up most of the remaining 20 percent. Over one-third of the forest's grassland (89,376 acres) is in the Española RD.

Land cover defines land use capabilities, which strongly influence land ownership. The majority of land within the exterior boundary of the National Forests is federally owned. However, there are 137,964 acres of private land in-holdings within the administrative boundary of the National Forest, accounting for about eight percent of the total acreage within this exterior boundary. Frequently, there are parcels of forest land scattered around the boundaries of the forest that are costly and difficult to manage and can pose significant right-of-way issues. Land exchanges are one way to address this issue, allowing the Forest Service to exchange less ideally located land parcels with better suited privately owned parcels to create a more contiguous administrative unit, but such exchanges are often controversial.

Users and Uses:

The FS management strategy is guided by the multiple-use mandate.¹ However, increased usage of essentially limited resources can ultimately give rise to conflict over land use. In the Santa Fe NF, recreational uses, like hiking, camping, picnicking, skiing, off-highway vehicle (OHV) use, and rock climbing – have increasingly eclipsed the more traditional economic pursuits of grazing,

¹ Multiple-Use Sustained-Yield Act of 1960, 16 U.S.C. §§ 528-531, June 12, 1960.

timber, hunting and mining, although these latter uses are critical to the livelihood of people living in communities adjacent to the forest.

This Socioeconomic Assessment found recreation to be the primary land use of the Santa Fe NF.² Grazing is another primary use of the Santa Fe NF's and is certainly embedded in the culture and history of the local residents. It is not a major economic force, ranchers engage in this traditional activity because it is part of their heritage. The timber industry is not a major economic force in the area today, nor does it provide many jobs. However, soft saw timber accounted for about 27 percent of the total timber cut value, while small-diameter wood harvesting accounted for about 22 percent of the total timber cut value. In the Carson and Cibola NF's small-diameter wood harvesting accounted for about 85 percent of total timber cut value. Small-diameter woods are a potential source of economic development. There may be market potential for small diameter wood products, including fuel wood, heating pellets, mulch, panels, composite products, fence posts, round wood construction, and "character wood" niches.

Native American tribes make ongoing use of FS managed lands for religious and other cultural purposes. The Santa Fe NF has archaeological resources, cultural lands, and sacred sites that are unequivocally important to tribes.

One of the most public and farthest-reaching multiple-use debates is the use of OHVs. The FS acknowledges that unmanaged recreation, primarily OHV use, is one of the four largest threats facing the National Forest System.

Special Areas, Recreational Sites, and Heritage and Cultural Resources:

Special Areas in the Santa Fe NF include Wilderness areas and inventoried roadless areas (IRAs). Much of the IRAs on the Santa Fe NF exist within established Wilderness areas such as the Chama River Canyon Wilderness in the Coyote RD and the Pecos Wilderness in both the Española RD and Pecos/Las Vegas RD. Within the Santa Fe NF, there are 155,000 acres of IRAs where neither road construction nor reconstruction is allowed. These areas comprise 8% of NF System lands in New Mexico. The legal status of these lands and what may need to be done to protect them has changed with recent court decisions.

The Santa Fe NF features over 100 developed recreational sites. Developed sites include campgrounds, picnic areas, shooting ranges, visitor centers, and interpreted historical and/or archaeological sites, and are maintained with the help of volunteers.

Within the boundaries of the National Forest, there are numerous areas of cultural significance to the indigenous peoples of the surrounding areas. These places are of importance to Native American tribes and pueblos for their traditional cultural and religious activities. Maintaining the integrity and sanctity of these traditionally significant areas is a challenge for both the Forest Service and the local native peoples.³

² Refer to Chapters 4 and 5, and Section 5.1 in this document for a detailed report.

³ Russell, J. C., & Adams-Russell, P. A. (2005b). Values, Attitudes and Beliefs Toward National Forest System Lands: The New Mexico Tribal People (Issue Brief). Placerville, CA: Adams-Russell Consulting, September 11, 2005.

Economic Impact:

Analysis using the IMPLAN regional economic model indicates that visitor spending is by far the largest contributor to economic activity generated by Santa Fe NF. Ranching and USDA FS operations contribute a much smaller but significant amount. Timber harvesting plays only a minor role. Ranching is an important activity in New Mexico and plays a critical role in the economy and culture of many small rural communities. In small rural communities, the NF can be particularly critical for subsistence activities, like hunting and gathering herbs, as well as providing a source of cash income (e.g., from the sale of firewood or Christmas trees).

Community Relationships:

The FS has an extensive history of working with local communities on various projects, ranging from economic development to forest health and sustainability. Partnerships are an indispensable method of managing operations and conducting business. They are a vital means of achieving goals that might not be met by the FS alone. The most common partners are non-governmental organizations, which are typically non-profit organizations such as neighborhood associations and agricultural sustainability groups. One way the FS has been teaming up with community groups is through the Collaborative Forest Restoration Program (CFRP). This program provides cost-share grants to stakeholders for forest restoration projects on public land which are designed through a collaborative process. Santa Fe NF had the support of over 476 volunteers between 2003 and 2005.

1 Introduction

The Santa Fe National Forest (NF) is located in north central New Mexico and consists of 1,587,184 acres. It is near the communities of Santa Fe, Española, Cuba and Las Vegas, New Mexico. The Rio Chama runs along the northwest end of the forest and the Rio Grande splits the Forest from north to south. Interstate 25, US84, NM4, and NM96 all run through portions of the Santa Fe NF. Around the perimeter of the forest are Native American pueblos and reservations, areas managed by the Bureau of Land Management (BLM), the Carson National Forest and land grant communities. Refer to **Figure 1.1** for a general orientation to the Forest.

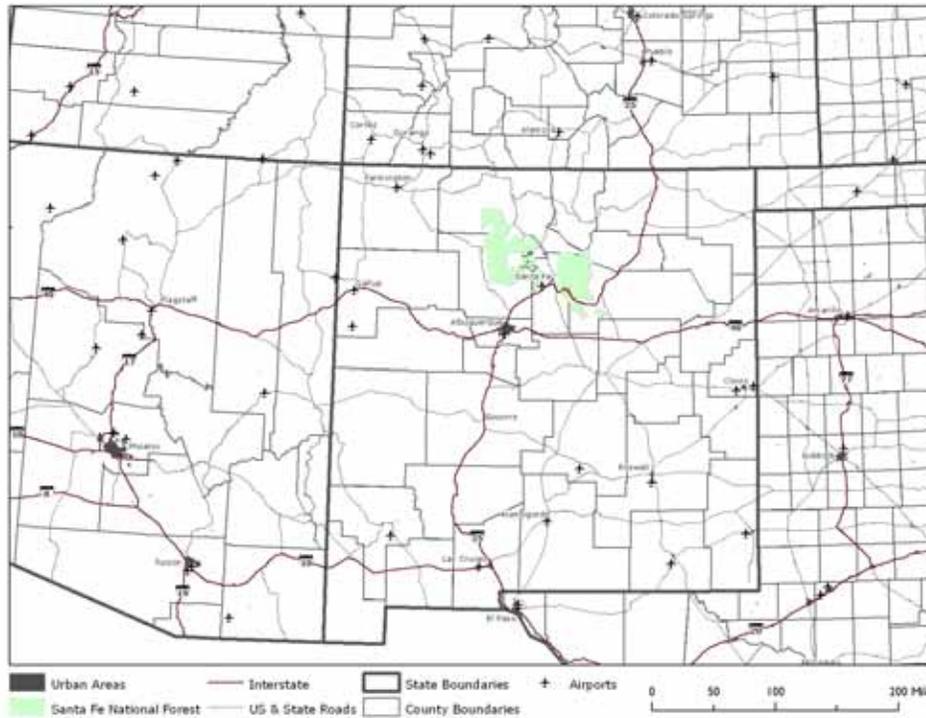


Figure 1.1: Santa Fe National Forest

The Forest includes many of New Mexico’s highest mountains, though the state’s highest peaks are located in the Carson NF, immediately to the north. The Sangre de Cristo Mountains are situated in the eastern portion of the Santa Fe NF and the Jemez Mountains are located to the west around Los Alamos. Elevation levels are from about 5,300 feet (1,600 meters) to 13,102 feet (3,993 meters) at the summit of Truchas Peak.

Though the winter weather pattern has varied over the past few years, generally speaking, northern New Mexico has regular winter weather patterns which allow for extensive winter recreation opportunities. Ski areas include Ski Santa Fe and Pajarito Ski Area, located on private land within the Santa Fe NF. More importantly, the accumulated snow-pack in these mountains is a substantial contributor to the runoff water used along the Rio Grande, Pecos River and the Jemez River for agricultural purposes. In recent years, dry winter and spring seasons have contributed to drought conditions in the region. The NF comprises some of the most productive and important watersheds in the region, including the Santa Fe Watershed. The watershed is the principal source of drinking water for the residents of Santa Fe.

1.1 Statement of Purpose

This report provides a socioeconomic assessment of the Santa Fe NF and surrounding counties and communities that comprise the assessment area. The report explores relationships and linkages between the USDA Forest Service (USDA FS or FS) managed lands, the visitors and other users of the forest, and the surrounding communities. Specifically, this report contains information and analysis intended to help the FS and the public:

1. Document and assess the current contributions of the Santa Fe NF to the socioeconomic health and cultural vitality of the communities neighboring the public land.
2. Identify opportunities and strategies to address land use conflicts arising from growing multiple use concerns.
3. Compile information and analyses that would be helpful in developing a forest management and planning framework in one place.

1.2 Sources of Information and Analytical Methods

Five ranger districts (RDs) comprise the Santa Fe NF: Coyote, Cuba, Española, Jemez and Pecos/Las Vegas. The assessment area of this report includes the seven counties that contain Santa Fe NF land: Los Alamos, Mora, Rio Arriba, Sandoval, San Miguel, Santa Fe and Taos Counties.

Information in this assessment is largely drawn from secondary data sources. Secondary data sources often involve data collected for specific purposes, but the data may be useful for other purposes. Key data sources for this report include:

- Demographic and economic data sets, such as those available from the United States Census Bureau and the Bureau of Economic Analysis;
- Administrative, land management and resource data mostly provided by the FS and the Bureau of Land Management (BLM); and
- Contextual and historical information obtained from archival sources, such as newspapers, internet sites and trade journals.

1.3 Assessment Area and Level of Analysis

The Santa Fe NF comprises 1,587,184 acres and consists of five ranger districts which span seven counties. The Santa Fe NF is adjacent to or includes lands claimed by several Indian Reservations, Pueblo lands, and land grant communities. The Santa Fe NF shares a border with the Carson NF and county coverage with the Cibola NF.

In New Mexico's seven north central counties (Los Alamos, Mora, Rio Arriba, Sandoval, San Miguel, Santa Fe and Taos), approximately 34 percent of the land is federally owned. Together, the US Department of Interior's Bureau of Land Management (BLM) and the FS manage about 52 percent of the land in Rio Arriba County and about 53 percent in Taos County⁴. Northern New

⁴ Carol Raisch and Alice McSweeney, "Livestock Ranching and Traditional Culture in Northern New Mexico," *Natural Resources Journal*, vol. 41. (2001): p713-730.

Mexico is a region with a long history of conflict over the role of state and federal agencies in land management. **Figure 1.2** is a map of the Santa Fe NF and vicinity.

Beyond the role of the federal government, it is also important to acknowledge historical events and circumstances, as they still shape forest planning and decision making today. There are ten Native American pueblos and reservations and several active land grant communities all with ties to the land that predate the United States, in the immediate vicinity of the Santa Fe NF. The mix of landowners and interests complicates the forest planning and decision making efforts of the FS. Another complex issue is the perception of many residents in surrounding communities that perceive the forest land as their own private land because it once belonged to their ancestors. As a result, these residents are often skeptical of the FS's motives and are reluctant to engage in collaborative arrangements or discussions. This history plays an important role in current land management practices and should not be left out of any analysis. For this reason, historical accounts of land ownership and land use are presented throughout this report.

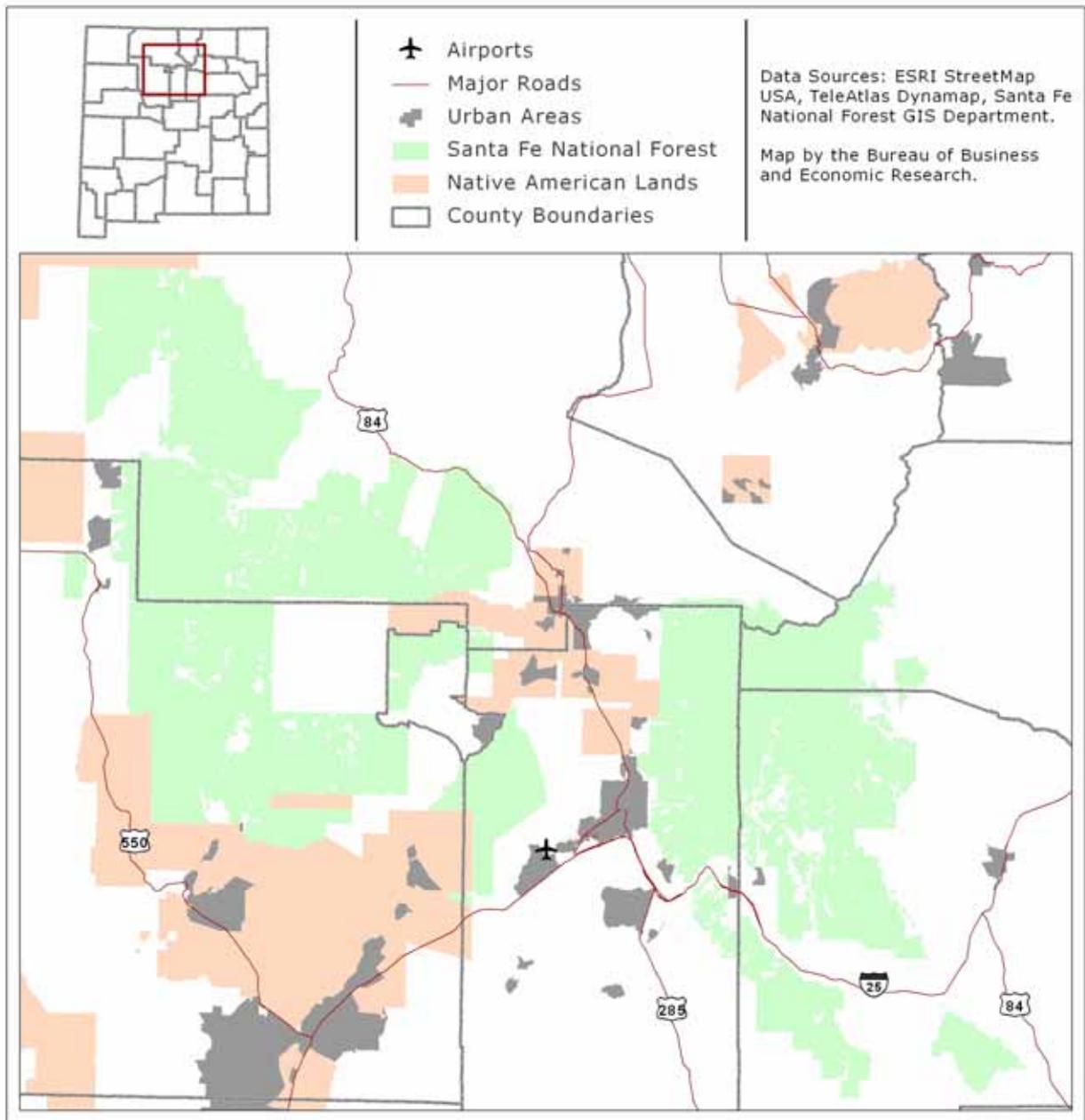


Figure 1.2: Santa Fe National Forest Assessment Area

Much of the quantitative data used for this report are available only at the county level. Thus, county boundaries define the parameters of much of the data and determine the assessment area – the area includes only New Mexico counties that are contained or touched by the five ranger districts of the Santa Fe NF. The assessment area is comprised of seven New Mexico counties (13,117,024 acres). Much of the data provided by the FS is at the aggregate forest level and is not broken out by RD. Where it is possible and appropriate, data is presented at the ranger district-level.

Table 1.1 lists the counties in the assessment area and shows the proportion of land owned by the FS.

Table 1.1: Forest Owned Land by County (Acres)

County	Acres				Forest as % of County
	County Land Area	Forest Land Area			
		USFS	Other	Forest Total	
Los Alamos	69,882.37	28,730.99	13,315.13	42,046.12	60.17%
Mora	1,236,469.19	82,884.60	17,274.67	100,159.27	8.10%
Rio Arriba	3,772,882.04	533,284.08	21,770.72	555,054.80	14.71%
San Miguel	3,028,615.73	334,497.00	44,680.63	379,177.63	12.52%
Sandoval	2,376,986.78	337,503.49	22,632.60	360,136.09	15.15%
Santa Fe	1,222,276.57	239,556.92	18,256.32	257,813.24	21.09%
Taos	1,409,912.05	7,285.30	0.00	7,285.30	0.52%

The table only shows data for the Santa Fe NF. It is important to remember that the Santa Fe NF borders the Carson NF in many areas. In fact, Sandoval County holds parts of the Santa Fe, Carson, and Cibola NFs within its boundaries. Rio Arriba County contains the most acres of the Santa Fe NF (555,055 acres) of any county and accounts for about 33 percent of the total NF. Taos County contains a very small portion of the forest, about 7,000 acres. This area is a portion of the Pecos Wilderness which is co-managed with the Carson NF. Out of the 1.6 million acres included in the Santa Fe NF, about 137,930 (~8%) acres are owned by entities other than the USAD FS. About a third of the privately held land (44,680 acres) within the forest is located in San Miguel County.

1.4 Background and Brief History of Assessment Area

The land which is now the Santa Fe NF was originally designated as the Pecos River Forest Reserve (1892) and the Jemez Forest Reserve (1905). In 1915, these reserve areas were combined to form the Santa Fe NF. The two divisions of the Forest resemble the boundaries of the original reserves. East of the Rio Grande, the southern Sangre de Cristo Mountains cover the Pecos division including the Pecos Wilderness and the 13,101 foot Truchas Peak. The Pecos division includes the Santa Fe Ski Basin, popular among forest visitors, the historic Glorieta Pass and the Old Santa Fe Trail.⁵

The region west of the Rio Grande includes the Jemez Mountains, with Chicoma Peak as the highest point at 11,561 feet. Also in the area is the Los Alamos National Laboratory, Native American pueblos and the Bandelier National Monument. The region's landscape is characterized by a large volcanic caldera and the ring of mountains surrounding the valley.⁶

Long before the Forest Service was founded and prior to Spanish conquest, the area was inhabited by Native American tribes. Today, the Santa Fe NF shares borders with several Native American pueblos and reservations. The ten tribal groups that directly surround the NF are comprised of two major language families – Keresan, spoken at Cochiti, Santo Domingo, and Zia; and Tewa, which include San Juan, Santa Clara, San Ildefonso, Tesuque, Pojoaque, and Nambe. The other

⁵ Robert D. Baker, Robert S. Maxwell, Victor H. Treat and Henry Dethloff. USDA Forest Service. Timeless Heritage: A History of the Forest Service in the Southwest. August 1988.

⁶ Ibid.

subdivision, Towa, is spoken only by the Jemez people who live along the Jemez River west of the Rio Grande.⁷ On the northeast side of the forest is the Jicarilla Apache Reservation, which also borders the Carson NF.

The Pueblos were and continue to be agriculturally-based with their inhabitants' subsistence based largely on farming, grazing, hunting, fishing, and gathering dependent upon proximity to the mountains and the adequacy of other food supplies. The NF contains many areas that are culturally significant to tribal groups and are used for ceremonial and other traditional purposes. The location and purpose of these areas are typically kept secret to preserve privacy and the sanctity of their ceremonies and practices. However, ethnographic research dating back to the 1900s has documented a few of these areas. This is explored further in **Chapter 6 "Special Places."** The following paragraphs are descriptions of the neighboring pueblos and their historical uses of the land.⁸ Refer to Figure 1.3 for a depiction of tribal land in and near the Santa Fe NF.

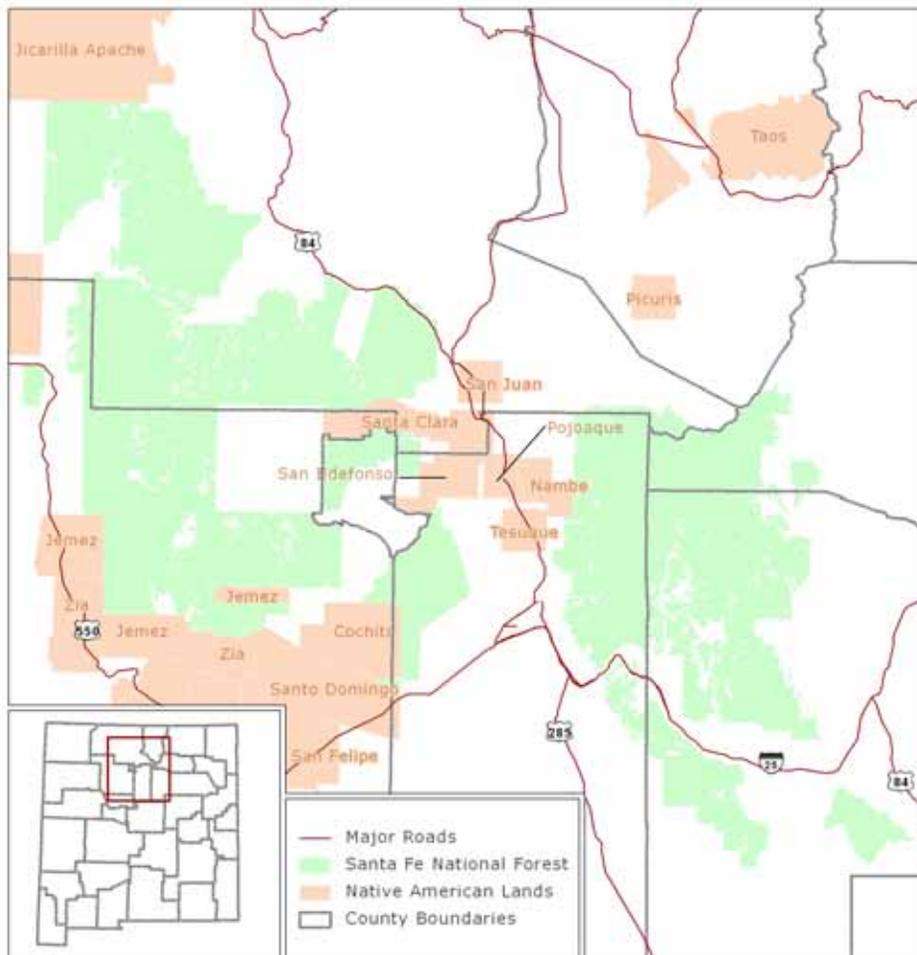


Figure 1.3 Tribal Lands in the Santa Fe National Forest

⁷ Friedlander and Pinyan (1980), Indian use of the Santa Fe National Forest: A Determination from Ethnographic Sources. Albuquerque, NM: Center for Anthropological Studies

⁸ For a comprehensive review of ethnographic research on Native American land use in the Santa Fe NF, see Friedlander and Pinyan, Ibid.

Established norms concerning land management and ownership began to change dramatically with the arrival of Spanish settlers. The Hispano ranching tradition, in what is now New Mexico, began with the first Spanish colonization of the area in 1598, but did not reach its apex until the Spanish re-conquest of the area in the late 1690s. During colonization, the Spanish brought domesticated plants and animals from Europe, including cattle, sheep, goats, and horses.⁹ In addition to these imports, they introduced new agricultural technologies and subsistence practices to the Native Americans. However, during the 1600s, Native American populations drastically decreased in the area as a result of new diseases, warfare and famine caused by droughts and raiding nomadic tribes.

During the Spanish Colonial (1598 to 1821) and Mexican (1821-1848) periods, land ownership and land use in the West was determined by land grants from the Spanish Crown or Mexican government. Various types of land grants were issued in New Mexico, but it is the community land grants, where groups of settlers used portions of the land grant area in common, that became the source of major land ownership conflicts in contemporary north-central New Mexico.¹⁰

When a community land grant was conferred, settlers generally received individually owned home sites and small plots of irrigated farm land that averaged about three to 12 acres with access to the grant's common lands for grazing, timber and livestock pasturing. Both animals and plants were part of an integrated subsistence farming strategy used by the settlers. Sheep and goats were most frequently used for food whereas cattle were used for plowing, threshing, transporting produce, and fertilizing fields. Often a community's livestock were owned by individuals who shared responsibility and land for grazing.¹¹

With the American conquest of the region after the Mexican-American War, patterns of land ownership changed dramatically with consequences that are still the subject of debate and conflict today. In 1848, the U.S. and Mexico signed the Treaty of Guadalupe Hidalgo, whereby the U.S. agreed to recognize the property rights of the former Mexican citizens to land within the new boundaries of the U.S. Property rights, however, were not automatically confirmed as claimants had to apply for title confirmation according to procedures that varied depending on the location of the land.¹²

Several active communities in the assessment area were created via land grants. Immediately east of the Pecos Wilderness is the Town of Mora Land Grant. The town of Mora is an active community, situated near the area where NM518, NM434 and NM94 converge. The entire grant area consists of 827,631 acres, which is the total number of acres claimed by the grantee. In 1860, the United States government confirmed the entire amount. The grant spans over Mora, San Miguel, Taos and Colfax Counties. Governor Albino Perez issued the grant to José Tapia and others in 1835 as a community grant.¹³

⁹ Raish, Carol. "Environmentalism, the Forest Service, and the Hispano Communities of Northern New Mexico," *Society & Natural Resources*, 13 (2000): 489-508.

¹⁰ United States General Accounting Office (January 2001), "Treaty of Guadalupe Hidalgo: Definition and List of Community Land Grants in New Mexico."

¹¹ Raish, Carol and Alice McSweeney, "Livestock Ranching and Traditional Culture in Northern New Mexico," *Natural Resources Journal*, vol. 41: p713-730.

¹² Raish, Carol. "Environmentalism, the Forest Service, and the Hispano Communities of Northern New Mexico," (2000) *Society & Natural Resources*, 13 (2000): 489-508.

¹³ SouthwestBooks.org: Center For Land Grant Studies.
http://www.southwestbooks.org/grants_co_colfax_mora.htm

Just south of the Mora Land Grant is the Las Vegas Land Grant. In 1835, Governor Mariano Martinez issued the land to Juan de Dios Maes and 28 others in order to establish a Hispano community. According to the claimants to the grant, the land covered 496,446 acres but the United States Government confirmed 461,653 in 1860.¹⁴

South of the Town of Mora Land Grant is another grant, which also abuts the Santa Fe NF; the Tecolote Grant. In 1728, 48,123 acres were granted by Governor Bartolome Baca to Salvador Montoya and five others as a private grant. Private grants were often issued to ranchers as a way to encourage settlement in a region. The entire grant was confirmed by the United States in 1858.

While the examples described above depict situations where the majority and sometimes the totality of the grant was confirmed by the United States after the Treaty of Guadalupe Hidalgo,¹⁵ in many cases, claims were rejected by the courts or claimants did not pursue the land confirmation because they could not provide required documentation or could not navigate the American bureaucracy. During the later nineteenth and early twentieth centuries, much of the land that had confirmed titles was lost as well. It was common that villagers could not afford the property taxes excised by the new American system of monetary tax payments and had to sell. Even more land was lost by corrupt speculations practices of the Anglo and Spanish, and by commercial enterprises, which were becoming more common in the region. Private land and business owners began fencing off private lands that were traditional, non-grant, parcels of land used for grazing and farming. In total, it is estimated that the U.S. settlement of the area resulted in the alienation of eighty percent of the Spanish and Mexican land grants from their original owner.¹⁶

For example, the Cañada de Cochito grant was over 104,000 acres and was given to Antonio Lucero as a private grant in 1728. However, only 19,112 acres were confirmed by the United States in 1894. Lost grant land was not limited to private landholders. The Santo Domingo and San Felipe Land Grants were given to the inhabitants of the pueblos in 1770 by Governor Pedro Fermin de Mendinueta. However, only 1,770 of the original 40,000 acres were confirmed in 1898. In a similar case, the inhabitants of Santa Ana, Jemez and Zia Pueblos were granted 382,849 acres for grazing by Domingo Jironza Petroz de Cruzate in 1766. However, the claim was summarily rejected by American courts.¹⁷

With a long history surrounding land use and land management in the areas in and around the Santa Fe NF policy and land use decisions are comprised of dynamic interactions between residents from diverse socioeconomic and cultural backgrounds. Each group represents different, and often opposing, expectations of the services and management obligations of the Forest Service.

Later chapters of this report will look at these issues and the management challenges they create. The following sections describe each of the ranger districts, including a discussion of historical

¹⁴ Ibid.

¹⁵ United States General Accounting Office (January 2001), "Treaty of Guadalupe Hidalgo: Definition and List of Community Land Grants in New Mexico,"

¹⁶V. Westphall, *The Public Domain in New Mexico 1854-1891* (Albuquerque: University of New Mexico Press, 1965).

¹⁷ SouthwestBooks.org: Center For Land Grant Studies.
http://www.southwestbooks.org/grants_co_colfax_mora.htm

In 1986, the Rio Chama, which runs through the wilderness, was designated a Wild and Scenic River. The Rio Chama is one of the main tributaries of the Rio Grande in Northern New Mexico and has provided subsistence to many Native American societies which built their settlements along its banks after the desertion of Chaco Canyon and Mesa Verde in the 1300s. The Chama River Canyon features sites such as cave dwellings, pit houses, schoolhouses and homesteads. The documented history of the area goes even further back, however. Archaeologists have found evidence of people living in the area as early as 9,500 BCC. The Rio Chama also offers recreational opportunities for scenic trips, boating, and rafting.

1.6 Cuba Ranger District

The Cuba RD is located in the western portion of the Santa Fe NF and includes the majority of the San Pedro Parks Wilderness. The District is divided into three distinct sections. The larger southern portion travels through the San Pedro Parks Wilderness. A small portion of the Cuba RD is separated from the other two sections by US550. In total, the Cuba RD covers 254,410 acres, making it the second smallest RD in the forest.

There are two developed campground sites in the district: Clear Creek and Rio de las Vacas campgrounds two developed recreation areas, Clear Creek Group Area and Clear Creek Picnic Area, as well as nine hiking trails, ranging from 2 to 11 miles. The trails are also suitable for horseback riding. The Jemez and Zia Pueblos and the Jicarilla Apache Reservation all neighbor the RD and are dependent upon many of the natural resources in the region. Many residents in the local communities, including Cuba, San Pablo and the pueblos use the land adjacent to and within the forest to graze cattle and sheep.

A small portion of the San Pedro Parks Wilderness is located in the southern part of the Coyote RD with the majority of the wilderness located in the northern portion of the Cuba RD. The San Pedro Parks Wilderness has a history dating back to 1931 when the Chief of the Forest Service classified 41,132 acres in the San Pedro Mountains as a primitive area. Ten years later, the Secretary of Agriculture recognized the land as a Wild Area. A year after the Wilderness Act of 1964 was passed, the land was officially designated a Wilderness Area.

1.7 Jemez Ranger District

The land in this region was designated as the Jemez Forest Reserve in 1905, ten years before the Santa Fe NF was established. The Jemez Mountains are central to the culture, history and heritage to the people of Jemez Pueblo. The NF typically works with the Pueblo to protect and preserve cultural sites. Jemez is the smallest RD in the Santa Fe NF, with only 250,912 acres.

The Jemez RD contains the Dome Wilderness, the smallest wilderness area in the Southwestern Region with only 5,200 acres. It is located within the Bandelier Wilderness in the Bandelier National Monument.¹⁸ The trail system into the area provides access to the west side of the Bandelier Wilderness via several designated trailheads situated along Forest Road 289.

The Jemez Hot Springs have attracted visitors for hundreds of years. Spence Springs and San Antonio Springs, and McCauley Warm Springs continue to be major destinations for both bathers

¹⁸ In Figure 1.3, the Bandelier Monument appears as the white box in between the Jemez and Española RDs

and hikers. Seven Springs Ice Pond is a destination for anglers and hikers. Additionally, there are five developed campgrounds in the district. Two of them, Jemez Falls and Redondo Campground, contain amphitheatres.¹⁹ The Vista Linda campground is accessible to those with disabilities and plans are in the works to make the San Antonio campground accessible as well.

The Jemez Mountain Trail National Scenic Byway is also in the District, stretching 163 miles from San Ysidro through the Jemez Mountains. The Byway includes NM4, NM216 and NM44, providing access to Soda Dam, Seven Springs, the cliff dwellings in Bandelier and other attractions.

1.8 Española Ranger District

The Española RD is home to the Sangre de Cristo Mountains. This RD is split into four sections and shares the Pecos Wilderness with its neighbor, the Pecos/ Las Vegas RD. The Española RD is the second largest RD in the Forest, with 376,339 acres. Located near the towns of Santa Fe, Española and Los Alamos, the large district attracts many visitors. There are four campgrounds in the RD, three of which are located along scenic byway NM475. There are two campgrounds open year-round: Aspen Basin, located off NM475 and Borrego Mesa, located about nine miles off of NM503. Thirty-three trails crisscross the district, ranging from half a mile to 12 miles. Cross country skiing and snow-shoeing are common activities in the district, which features 9 sites for winter recreation activities, including Ski Santa Fe and the Pajarito Ski Area, which is on privately-owned land within the RD. Both sites are described in further detail in later sections.

Also in the Española District is the Santa Fe National Forest Scenic Byway; a 16 mile stretch starting in Santa Fe's downtown and ending at the Santa Fe Ski Area. The byway is a stretch of NM475 and provides views of the fall foliage and access to campgrounds and picnic areas along the way.

1.9 Pecos/ Las Vegas Ranger District

When it was founded in 1892, the Pecos/ Las Vegas RD was called the Pecos River Reserve. It was combined with the Jemez Forest Reserve to form the Santa Fe National Forest in 1915. The land east of the Rio Grande was designated the Pecos district. The Las Vegas District was separate until the late 1980s when its administration was combined with the Pecos RD. The Pecos/ Las Vegas RD is the largest in the Santa Fe NF, spanning 544,955 acres.

For centuries, the Pecos high country has been a resource for Native Americans. It was used as a place to hunt, fish, cut fuel wood and timber, and gather medicinal and edible plants. To the west, lived Tewa and Keresan Pueblo peoples; to the north lived Tiwa Pueblos and nomadic mountain tribes such as the Utes; to the east Plains Indians roamed; and to the south Towa speaking people inhabited the pueblo the Spaniards called Pecos, from a Keresan word meaning "place where there is water."²⁰

Spaniards arrived in the district in 1540 and established villages around the perimeter of what is now the Pecos Wilderness Area. The grazing of livestock became common as early as 1825, but

¹⁹ USFS Camping Guide. <http://www.forestcamping.com/> Accessed May 6, 2006.

²⁰ Ibid.

its impact on the land was relatively small. That changed, however, when English-speaking settlers arrived after the United States annexed New Mexico in 1846, bringing with them vastly more powerful agricultural technologies. With the new government also came the philosophy that emphasized market economics over subsistence economics.

Recreation is a major draw to the area, such as hunting, stream and lake fishing, camping, hiking, mountain biking, four-wheeling, motorcycling, sledding, snowshoeing, snowmobiling and cross country skiing. The district has a vast trail system featuring about 250 miles of trails. The district is within a short driving distance of Pecos, Las Vegas, and Santa Fe. The district attracts day-trippers, picnickers, backpackers, and overnight campers.

The wilderness area was not able to sustain its wildlife after more and more people began accessing the area. By 1888, elk had been exterminated in what is now the Pecos Wilderness. By 1900, they were gone from the rest of the state. Rocky Mountain bighorn sheep had disappeared by 1900. The last Grizzly Bear in the Pecos Wilderness was killed in 1923.

While there are portions of the Pecos Wilderness that receive very heavy use (85 percent of hikers use 15 percent of the wilderness) other areas receive very few visitors. The most frequently traveled trails are those leading to Beatty's Cabin, Puerto Nambe, Hermits Peak, the high peaks, the lake basins, and even Pecos Falls. But after Labor Day, visits to these areas decline precipitously.²¹ The wilderness area is a major draw for recreational purposes, but it also has a long history of over-grazing and loss of wildlife.

In 1892 President Harrison proclaimed the upper Pecos watershed a timberland reserve for watershed protection (a proclamation not implemented until 1898). The area was withdrawn from every use including logging, grazing, and mining, and it was closed completely to the public. The Pecos Primitive Area of 133,640 acres was established by the Chief of the Forest Service in 1933. It was declared a Forest Service Wilderness in 1955 and became part of the National Wilderness Preservation System on September 3, 1964, when President Johnson signed the Wilderness Act. In 1980, the New Mexico Wilderness Act added 55,000 acres to include more lands with wilderness character. There are 15 lakes and eight major streams in the wilderness which sustain both plant and animal health including the native Rio Grande Cutthroat Trout. In summer months, the area is a popular destination for fishing enthusiasts and hikers. In the winter, cross-country skiing and snowshoeing is popular.

1.10 Organization of the Report

The organization of this assessment is based on the collection and analysis of data pertinent to seven individual assessment topics. Chapter 2 provides information on demographic trends and economic characteristics of the counties located within the assessment area. Chapter 3 discusses the access and travel patterns within the area. Chapter 4 examines the Forest's land cover and uses, including descriptions of historical conveyances and exchanges, invasive species, fire and fuels. Chapter 5 explores major types of land use and describes conflicts arising from multiple use. Chapter 6 examines special management areas in the forest including recreational sites and inventoried roadless areas. Chapter 7 provides an assessment of the economic impacts the Santa Fe NF has on surrounding communities. Chapter 8 explores relationships between the Santa Fe

²¹ New Mexico Wilderness Alliance, "Pecos Wilderness," <http://www.nmwild.org/wilderness/pecos> (accessed April 19, 2006).

NF and various communities at the local and regional levels. Chapter 9 identifies opportunities, risks, and special circumstances facing the National Forest lands and their management.

2 Demographic and Socioeconomic Trends

The chapter examines the changing demographic characteristics of those living in the seven county assessment area of the Santa Fe National Forest. .

2.1 Population Growth

Table 2.1 shows population density varies by county in the assessment area, ranging from 2.7 persons per square mile in Mora County to 168.3 in Los Alamos County. Santa Fe County is the most populous county in the assessment area.

Table 2.1: 2000 Population Density (sq. mile)

Population Density	
Los Alamos	168.3
Mora	2.7
Rio Arriba	7.0
San Miguel	8.1
Sandoval	16.3
Santa Fe	67.9
Taos	13.6

Source: US Census Bureau, 2000 Decennial Census.

Note: Population Density calculated as per square mile of land area.

Table 2.2 shows about 344,000 people lived in the assessment area in 2000, approximately one in five people in the state. Between 1980 and 2000, the area added 141,000 new residents, for a growth rate of 69 percent which surpasses New Mexico's 40 percent average rate of growth. The assessment area has faced a number of economic changes.

Santa Fe County, the largest county in population, comprised over one-third of the assessment area's population in 2000. During 1980-2000 the county's population increased about 54,000. Sandoval County's population, the second largest and fastest growing (158%), increased 55,000 during the historical period. Rio Arriba and Taos counties had above average growth rates for the state while Mora, San Miguel and Los Alamos counties were below the New Mexico average growth rate. Together, these five counties added 32,000 new residents. Wealthy retirees attracted by recreational amenities have been relocating in and around mountain communities in the assessment area. Taos and Santa Fe counties are attractive for those seeking cultural amenities as well.

A projected 588,000 residents will live in the assessment area by 2030. The population is projected to increase 38 percent, or by 163,000, between 2010 and 2030. Once again, the assessment area is expected to grow faster than the state average. As in the historical period, Sandoval and Santa Fe counties will grow more quickly. Following state trends, growth rates will taper for all counties throughout the projected period. Refer to **Table 2.2** which illustrates changes in growth rates. Santa Fe County is projected to reach about 226,000 residents, adding 67,000, and Sandoval County is projected to add 71,000 people for approximately 197,000 residents by the year 2030.

Table 2.2: Historical & Projected County Population, 1980-2030

	Historical			Projected		
	1980	1990	2000	2010	2020	2030
Los Alamos	17,599	18,115	18,343	19,114	20,060	20,749
Mora	4,205	4,264	5,180	6,205	7,137	7,862
Rio Arriba	29,282	34,365	41,190	45,058	48,630	50,996
San Miguel	22,751	25,743	30,126	34,746	38,847	42,190
Sandoval	34,799	63,319	89,908	126,294	162,409	197,182
Santa Fe	75,360	98,928	129,292	158,624	191,403	226,012
Taos	19,456	23,118	29,979	35,097	39,442	42,678
TOTAL SANTA FE COUNTIES	203,452	267,852	344,018	425,138	507,928	587,669
TOTAL NM	1,303,303	1,515,069	1,819,046	2,112,986	2,383,116	2,626,553

	Percent Change					
	80-90	90-00	00-10	10-20	20-30	
Los Alamos		3%	1%	9%	5%	3%
Mora		1%	21%	38%	15%	10%
Rio Arriba		17%	20%	18%	8%	5%
San Miguel		13%	17%	29%	12%	9%
Sandoval		82%	42%	81%	29%	21%
Santa Fe		31%	31%	48%	21%	18%
Taos		19%	30%	32%	12%	8%
TOTAL SANTA FE COUNTIES		32%	28%	24%	19%	16%
TOTAL NM		16%	20%	16%	13%	10%

Source: US Census Bureau, Decennial Census, 1980, 1990, 2000. Calculations done by UNM-BBER.

Table 2.3 displays a selected list of ten of the larger communities in northern New Mexico and the populations of each. A complete list of incorporated communities and unincorporated places that meet the criteria for Census Designated Places (CDP's) is shown in **Appendix Table 1**.

In both 1990 and 2000 these ten communities accounted for about three-fourths of the population in all places within the assessment area. The population increased 58 percent between 1990 and 2000 compared to 18 percent during 1980-1990. The cities of Santa Fe and Rio Rancho had the largest populations in 2000. Eldorado at Santa Fe CDP grew the fastest (157%) during 1990-2000. Rio Rancho also grew quickly, at 59 percent. During the 1980's the population of Bernalillo and Corrales nearly doubled, though from small bases, and both slowed markedly during the following decade.

Table 2.3: Population in Larger Places, 1990-2000

Santa Fe Places	County	1980	1990	2000	% Change 80-90	% Change 90-00
Bernalillo town	Sandoval	3,012	5,960	6,611	97.9	10.9
Corrales village	Sandoval	2,791	5,453	7,334	95.4	34.5
Eldorado at Santa Fe CDP	Santa Fe	NA	2,260	5,799	NA	156.6
Espanola city	Rio Arriba	6,803	8,389	9,688	23.3	15.5
Las Vegas city	San Miguel	14,322	14,753	14,565	3.0	-1.3
Los Alamos CDP	Los Alamos	11,039	11,455	11,909	3.8	4.0
Rio Rancho city	Sandoval	NA	32,505	51,765	NA	59
Santa Fe city	Santa Fe	48,953	55,859	62,203	NA	NA
Taos town	Taos	3,369	4,065	4,700	20.7	15.6
White Rock CDP	Los Alamos	6,560	6,192	6,045	-5.6	-2.4
LARGER SANTA FE PLACES		96,849	146,891	180,619	51.7	23.0

Source: US Census Bureau, Decennial Census, 1980, 1990, 2000. Calculations by UNM-BBER.

2.2 Racial/Ethnic Composition

New Mexico was the first state in the United States with a total minority population exceeding that of the White Non-Hispanic population. **Table 2.4** and **Table 2.5** show race-ethnicity by county for 1990 and 2000. The population increased for most race-ethnic groups in the assessment area between 1990 and 2000. Rio Arriba County was a significant exception, where the number who self-identified as White actually fell. This happened while the “other” race category added over 7,000 people. While the White population increased about 33,000, it dropped seven percentage points to 68 percent of the total and the White share of the population decreased in all counties, except Mora County. The “other” group increased a corresponding seven percentage points. The assessment area had an increase of about 36,000 – in the number of people who self-reported as “other” when asked about racial identity. This “other” includes individuals who self-identify with more than one racial group, but it also includes those, fairly numerous in New Mexico, who self-identify with some racial group not listed. Many of those who so identify are Hispanic. While the White population increased in Taos County, there was a large increase as well, over 4,000 people, who self-reported as “other.” Despite growing by over 5,000 people, the share of Hispanics in Taos County fell from 65 percent to 58 percent.

In the assessment area, all other races maintained the same share of the total population in 2000 as in 1990. The African American population increased about 900 in the area and constituted a tiny share the population. American Indians increased as a share of the New Mexico population between 1990 and 2000 and during the same period increased about 4,500 in the assessment area. American Indians comprised 16 percent of the 2000 population in Sandoval County, 14 percent in Rio Arriba County, and 7 percent in Taos County. The American Indian population declined from 14 percent to 12 percent of the total population in Rio Arriba County despite a modest population gain. Rio Arriba County contains the Jicarilla Apache Reservation in the northwest and several pueblos in the eastern part of the county. In Taos County, American Indians retained a stable 7 percent share of the county population, the majority largely members of Taos Pueblo. (Refer to **Appendix Table 1** for pueblo CDP populations.)

Between 1990 and 2000, the Hispanic share of the total population in New Mexico rose from 38 percent to 42 percent. The Non-Hispanic and Hispanic share of the population in the assessment

area stayed at 51 percent and 49 percent, respectively. Only small shifts, if any, in ethnic share occurred in the counties between 1990 and 2000, except in Taos County where the Hispanic share of the total population fell 7 percentage points. While not shown in the table, White Non-Hispanics added about 31,000 people overall. White Non-Hispanics increased over 13,000 and 12,000, respectively, in Sandoval and Santa Fe counties. White Non-Hispanics maintained their 41 percent share of the total between 1990 and 2000.

As indicated above, population trends for race and ethnicity varied by county. These shifting demographics have social and political implications that will inevitably affect interactions between the Santa Fe NF and the surrounding communities.

Table 2.4: Race / Ethnicity by County, 1990 and 2000

	ETHNICITY		RACIAL GROUP					TOTAL
	NON-HISPANIC	HISPANIC	WHITE	AFRICAN AMERICAN	AMERICAN INDIAN	ASIAN OR PACIFIC ISLANDER	OTHER	
Year 1990								
Los Alamos	16,107	2,008	17,064	96	126	428	401	18,115
Mora	641	3,623	2,423	2	21	3	1,815	4,264
Rio Arriba	9,410	24,955	24,323	138	5,225	58	4,621	34,365
San Miguel	5,252	20,491	16,392	170	222	151	8,808	25,743
Sandoval	45,947	17,372	43,440	939	12,491	503	5,946	63,319
Santa Fe	49,989	48,939	79,390	615	2,822	513	15,588	98,928
Taos	8,110	15,008	16,868	63	1,571	86	4,530	23,118
TOTAL SANTA FE COUNTIES	135,456	132,396	199,900	2,023	22,478	1,742	41,709	267,852
Year 2000								
Los Alamos	16,188	2,155	16,556	67	107	700	913	18,343
Mora	951	4,229	3,050	5	59	6	2,060	5,180
Rio Arriba	11,165	30,025	23,320	143	5,717	103	11,907	41,190
San Miguel	6,639	23,487	16,938	236	549	188	12,215	30,126
Sandoval	63,471	26,437	58,512	1,535	14,634	992	14,235	89,908
Santa Fe	65,887	63,405	95,053	826	3,982	1,227	28,204	129,292
Taos	12,609	17,370	19,118	105	1,975	149	8,632	29,979
TOTAL SANTA FE COUNTIES	176,910	167,108	232,547	2,917	27,023	3,365	78,166	344,018

Source: US Census Bureau, Decennial Census, 1990 and 2000. Calculations done by UNM - BBER.

Note: Hispanic can be of any race. The "Other" group includes two or more races.

Table 2.5: Race / Ethnic Composition by County, 1990 & 2000

	ETHNICITY		RACIAL GROUP					TOTAL
	NON-HISPANIC	HISPANIC	WHITE	AFRICAN AMERICAN	INDIAN	ASIAN OR PACIFIC ISLANDER	OTHER	
Year 1990								
Los Alamos	89%	11%	94%	1%	1%	2%	2%	100%
Mora	15%	85%	57%	0%	0%	0%	43%	100%
Rio Arriba	27%	73%	71%	0%	15%	0%	13%	100%
San Miguel	20%	80%	64%	1%	1%	1%	34%	100%
Sandoval	73%	27%	69%	1%	20%	1%	9%	100%
Santa Fe	51%	49%	80%	1%	3%	1%	16%	100%
Taos	35%	65%	73%	0%	7%	0%	20%	100%
TOTAL SANTA FE COUNTIES	51%	49%	75%	1%	8%	1%	16%	100%
TOTAL NM	62%	38%	89%	2%	8%	1%	0%	100%
Year 2000								
Los Alamos	88%	12%	90%	0%	1%	4%	5%	100%
Mora	18%	82%	59%	0%	1%	0%	40%	100%
Rio Arriba	27%	73%	57%	0%	14%	0%	29%	100%
San Miguel	22%	78%	56%	1%	2%	1%	41%	100%
Sandoval	71%	29%	65%	2%	16%	1%	16%	100%
Santa Fe	51%	49%	74%	1%	3%	1%	22%	100%
Taos	42%	58%	64%	0%	7%	0%	29%	100%
TOTAL SANTA FE COUNTIES	51%	49%	68%	1%	8%	1%	23%	100%
TOTAL NM	58%	42%	86%	2%	9%	1%	2%	100%

Source: US Census Bureau, Decennial Census, 1990 and 2000. Calculations done by UNM - BBER.

Note: Hispanic can be of any race. The "Other" group includes two or more races.

2.3 Age of Population

Table 2.6 presents the age of the population by county in the assessment area. Shown are the percentages of those within each cohort as derived from the 2000 Census and followed by projections of each age cohort in 10-year increments until 2030. Corresponding with the national trend, growth will occur in all counties in the population aged 65 and older.

The 15 to 64 aged cohort represents those of working age, but its share of the area total is expected to shrink from 67 percent to 59 percent between 2000 and 2030. All counties will experience the trend of proportionally fewer working age people. Several counties have mid-sized populations and cities (for New Mexico) but they also have less economic activity and diversity than urban centers in the state. With limited opportunities for employment, some younger people migrate to larger cities with more diversified economic bases. However, Santa Fe and Los Alamos are within commuting distance of many workers in North Central New Mexico.

The 65 and older cohort is projected to increase from 11 percent to 25 percent of the total Santa Fe NF population between 2000 and 2030. This cohort will reach at least 30 percent of the total population in Mora, Taos and Los Alamos counties. These three counties will also see approximately 18 percentage point increases in this cohort's share of the total. Rio Arriba and Sandoval counties will have the smallest representation of the aged, with the former the only county lower than the state average and the latter about at the state average.

Aging populations will present new challenges for governments as those retiring from the workforce expect to receive services funded by revenues from a workforce that is a shrinking portion of the total population. These retirees will compete for federal and state funds as they seek services such as Medicaid and Social Security. The consequence for federal agencies like the USAD FS may be increased competition for funding in an era of flat or declining government revenues.

Table 2.6: Age Distribution by County, 2000-2030

County	Age	Percent Distribution			
		2000	2010	2020	2030
Los Alamos	0 - 14	21.0	16.9	14.9	13.0
	15 - 64	66.9	68.2	63.2	56.7
	65 yrs. & over	12.1	15.0	21.9	30.3
Mora	0 - 14	20.6	16.0	16.0	12.7
	15 - 64	64.0	63.8	63.8	53.8
	65 yrs. & over	15.4	20.2	20.2	33.5
Rio Arriba	0 - 14	23.8	20.7	20.9	19.4
	15 - 64	65.3	66.8	62.6	60.5
	65 yrs. & over	10.9	12.4	16.5	20.1
San Miguel	0 - 14	22.2	17.8	17.0	15.8
	15 - 64	66.1	66.9	62.3	58.0
	65 yrs. & over	11.7	15.3	20.7	26.1
Sandoval	0 - 14	24.6	18.9	18.2	17.5
	15 - 64	64.8	67.6	63.7	59.9
	65 yrs. & over	10.6	13.5	18.1	22.7
Santa Fe	0 - 14	19.8	16.9	16.2	15.5
	15 - 64	69.4	68.8	62.9	59.1
	65 yrs. & over	10.8	14.3	20.9	25.4
Taos	0 - 14	19.9	16.3	15.8	14.6
	15 - 64	67.7	66.3	58.9	55.0
	65 yrs. & over	12.3	17.3	25.4	30.4
Total Santa Fe Counties	0 - 14	21.8	17.9	17.2	16.3
	15 - 64	67.1	67.8	62.7	59.0
	65 yrs. & over	11.1	14.3	20.0	24.7
New Mexico	0 - 14	23.0	20.0	19.2	17.9
	15 - 64	65.3	66.1	62.6	59.7
	65 yrs. & over	11.7	13.9	18.2	22.4

Source: New Mexico County Population Projections: July 1, 2000 to July 1, 2030; UNM-BBER, April 2004.

2.4 Income and Poverty

Table 2.7 depicts per capita income in 1990 dollars by county in the assessment area for 1990 and 2000. Real per capita income in the area measured \$16,181 in 2000, nearly \$2,100 above the New Mexico average. Between 1990 and 2000, real per capita income nearly doubled in the state but grew 34 percent in the assessment area. Real per capita income was higher than the state average for Los Alamos, Sandoval, and Santa Fe counties but lower than the state average for the remaining counties in both 1990 and 2000. Los Alamos County, the location of Los Alamos National Laboratory, boasts one of the higher per capita incomes in the U.S. The Intel plant lifts per capita income in Sandoval County, and many of the county's residents commute to jobs in Albuquerque and some to Santa Fe. There is a large amount of commuting between adjacent counties in the assessment area.

The molybdenum mine in Taos County, formerly the county's largest private employer, closed in the Questa area in the early 1990's. Sawmill closures around Española contributed to economic difficulties in that area. However, several casinos opened within a short drive of Española and the local economy was supported by housing development, partly for commuters to employment centers in Santa Fe (state government) or Los Alamos (national lab). Many of these people seek housing outside employment centers because it is difficult to find affordable housing in areas such as Santa Fe and Los Alamos.

Table 2.7: Per Capita Income and Persons in Poverty, 1990 & 2000

	1990			2000		
	Per Capita Income	Persons Below Poverty	% Persons Below Poverty	Per Capita Income	Persons Below Poverty	% Persons Below Poverty
Los Alamos	22,900	433	2%	28,268	534	3%
Mora	7,021	1,540	36%	10,068	1,305	25%
Rio Arriba	7,859	9,372	27%	11,637	8,303	20%
San Miguel	8,149	7,357	29%	10,825	7,110	24%
Sandoval	10,849	9,852	16%	15,644	10,847	12%
Santa Fe	15,327	12,564	13%	19,250	15,241	12%
Taos	9,158	6,335	27%	13,138	6,232	21%
TOTAL SANTA FE COUNTIES	12,067	47,453	18%	16,181	49,572	14%
TOTAL NM	7,542	NA	21%	14,083	NA	18%

Source: US Census Bureau, Decennial Census, 1990 and 2000. Calculations done by UNM - BBER.

Note: The poverty line is the federal established poverty level. Per capita income is in 1990 dollars.

Table 2.7 also shows the relationship between income and poverty in the counties, presenting the number and percent of persons living below the federal poverty level for each county. Nearly 50,000 persons lived in poverty in the assessment area in 2000, an over 2,000 increase from 1990, and the poverty rate dropped from 18 percent to 14 percent. Poverty rates fell in all counties, except in Los Alamos County where the rate increased slightly. Three counties, Los Alamos, Sandoval and Santa Fe, had poverty rates below the state average of 18.4 percent, and four, Mora, Rio Arriba, San Miguel and Taos, were above the average rate for New Mexico in both 1990 and 2000. The poverty rate in Mora County, once the poorest in the state, dropped 11 percentage points.

As previously stated, poverty in the assessment area was moderate (14%) in 2000 and generally tracked with race and ethnicity. **Table 2.8** shows 50,000 persons lived in poverty in 2000 in the assessment area. Poverty percentages by race in the assessment area were: Whites (52%), African Americans (1%), American Indians (18%), Asians and Pacific Islanders (0%), and Other (29%). American Indians comprised a higher share of the total number of persons in poverty in Sandoval (48%) and Rio Arriba (19%) counties than in other counties. The percent of race in poverty in the assessment area, not shown in the table, was: White alone (11%), African Americans (13%), American Indians (33%) and “Other” (19%).

In the assessment area the poverty rate differed by ethnicity for Non-Hispanics (40%) and Hispanics (60%). Hispanics were a large majority of those in poverty in five counties and were the minority in two counties. Generally Hispanics were more likely than Non-Hispanics to live in poverty in rural counties throughout the state. Not shown in the table was the lower poverty rate for White Non-Hispanics (21%) in the assessment area.

Table 2.8: Poverty by Race and Ethnicity, 2000

	RACIAL GROUP					ETHNICITY		TOTAL
	WHITE	AFRICAN	AMERICAN	ASIAN &	OTHER	NON-	HISPANIC	
		AMERICAN	INDIAN	PACIFIC				
Los Alamos	480	0	14	6	34	470	64	534
Mora	605	0	20	0	680	265	1,040	1,305
Rio Arriba	4,530	39	1,550	19	2,165	2,270	6,033	8,303
San Miguel	3,581	52	137	31	3,309	1,279	5,831	7,110
Sandoval	3,657	116	5,251	59	1,764	7,790	3,057	10,847
Santa Fe	9,340	151	1,074	91	4,585	4,998	10,243	15,241
Taos	3,653	4	639	35	1,901	2,604	3,628	6,232
TOTAL SANTA FE COUNTIES	25,846	362	8,685	241	14,438	19,676	29,896	49,572
Percent of Total Group								
Los Alamos	90%	0%	3%	1%	6%	88%	12%	100%
Mora	46%	0%	2%	0%	52%	20%	80%	100%
Rio Arriba	55%	0%	19%	0%	26%	27%	73%	100%
San Miguel	50%	1%	2%	0%	47%	18%	82%	100%
Sandoval	34%	1%	48%	1%	16%	72%	28%	100%
Santa Fe	61%	1%	7%	1%	30%	33%	67%	100%
Taos	59%	0%	10%	1%	31%	42%	58%	100%
TOTAL SANTA FE COUNTIES	52%	1%	18%	0%	29%	40%	60%	100%

Source: US Census Bureau, Decennial Census, 2000. Calculations done by UNM - BBER.

Note: Ethnicity can be of any race. The "Other" group includes two or more races.

The poverty line is the federal established poverty level. Per capita income is in 1990 dollars.

2.5 Household Composition

Table 2.9 presents household composition by type of household for 1990 and 2000. Households in the assessment area are exhibiting the same trend as seen in the US, as there are proportionally more single households and female-headed households. Total households in the area grew 37 percent, or 36,000, and numbered 132,000 in 2000.

Single households are non-family households headed by a single person. Female-headed family households are households that are headed by a female with children or other dependents and no husband is present. For example, in 2000 Santa Fe County has 52,481 total households, of which 15,418 (29%) are single households and 5,803 (11%) are female-headed family households.

Female-headed family households in the assessment area in 2000 increased 45 percent, or nearly 5,000, and totaled 16,000. The proportion of female-headed households in the assessment area (12%) increased slightly and was a bit lower than the state average (13%) in 2000. Female-headed households showed only slight changes in their share of total households in both decennial years, except in San Miguel County where female-headed households rose 4 percentage points to 18 percent.

Similarly single households have become increasingly common and continue to grow partly because of a trend in marrying at later ages and longer life expectancy. Roughly one-third of single person households in the state are over 65 years of age. In the assessment area, single households increased 57 percent, totaling nearly 35,000 in 2000. The percent of single households in the assessment area (26%) grew 3 percentage points between 1990 and 2000 and was comparable to the state average (25%). In Taos County, single households accounted for nearly one-third of all households in 2000 and Santa Fe County was not far behind.

Table 2.9: Type of Household, 1990 & 2000

	Number of Households			Percent of Total Households	
	Total	Single	Female Headed, Family	Single	Female Headed, Family
Year 1990					
Los Alamos	7,211	1,654	405	23%	6%
Mora	1,516	360	212	24%	14%
Rio Arriba	11,525	2,254	1,636	20%	14%
San Miguel	8,622	1,947	1,232	23%	14%
Sandoval	20,925	3,486	2,252	17%	11%
Santa Fe	37,787	10,105	4,172	27%	11%
Taos	8,811	2,210	1,155	25%	13%
TOTAL SANTA FE COUNTIES	96,397	22,016	11,064	23%	11%
Year 2000					
Los Alamos	7,495	1,862	389	25%	5%
Mora	2,015	543	271	27%	13%
Rio Arriba	15,015	3,545	2,248	24%	15%
San Miguel	11,133	2,965	1,950	27%	18%
Sandoval	31,412	6,255	3,733	20%	12%
Santa Fe	52,481	15,418	5,803	29%	11%
Taos	12,701	4,066	1,631	32%	13%
TOTAL SANTA FE COUNTIES	132,252	34,654	16,025	26%	12%

Source: US Census Bureau, Decennial Census, 1990 and 2000. Calculations done by UNM-BBER.

Note: Single households are non-family households headed by a single person. Female headed family households include children.

2.6 Educational Attainment

Table 2.10 and **Table 2.11** present educational attainment for the 25-year and older population in 1990 and 2000. Attainment levels have generally advanced in 2000 compared to a decade earlier, as the share of the population with at least some college or with a college degree increased while those with high school or less declined. The share of the population in the assessment area with at least some college education increased from 51 percent to 58 percent between 1990 and 2000. Meanwhile, the proportion of adults without a high school degree or equivalent decreased from 22 percent to 17 percent. The assessment area was better educated than the state average. All counties moved in a similar direction, with a higher share of the better-educated and lower share

of the less educated, between 1990 and 2000. At the low end of the educational spectrum were Mora and Rio Arriba counties and at the high end were Los Alamos and Santa Fe counties. In Mora County, low education levels were an aspect of the high number of elderly there. Both Santa Fe and Taos counties saw an influx of educated, wealthier migrants relocating from out of state.

Educational attainment is closely tied to one's ability to generate income, as the average earnings of a college degree holder are almost twice that of an adult with a high school diploma. As educational attainment increases, the likelihood of poverty decreases. This correlation usually holds in the assessment area. However, Taos and Rio Arriba counties displayed higher poverty rates and relatively higher educational levels. As previously mentioned, Taos County also had a large proportion of single households.

Table 2.10: Educational Attainment by County

	Less than 9th Grade	9th to 12th Grade	HS Grad or GED	Some College; No Degree	Assoc., BA. Or More	Total
Year 1990						
Los Alamos	146	521	1,957	2,529	7,390	12,543
Mora	559	512	866	296	422	2,655
Rio Arriba	3,412	3,409	6,550	3,470	3,173	20,014
San Miguel	2,963	1,913	4,479	3,028	3,051	15,434
Sandoval	3,169	4,793	11,976	8,866	9,660	38,464
Santa Fe	4,503	6,840	15,366	14,071	24,236	65,016
Taos	1,982	2,146	4,338	2,780	3,384	14,630
TOTAL SANTA FE COUNTIES	16,734	20,134	45,532	35,040	51,316	168,756
Year 2000						
Los Alamos	170	300	1,549	2,215	8,588	12,822
Mora	481	530	1,061	602	674	3,348
Rio Arriba	3,030	3,971	8,110	5,271	5,548	25,930
San Miguel	2,218	2,508	4,740	3,964	5,101	18,531
Sandoval	2,575	5,326	16,157	14,104	18,317	56,479
Santa Fe	5,799	7,831	17,308	19,421	37,511	87,870
Taos	1,532	2,752	5,462	4,420	6,360	20,526
TOTAL SANTA FE COUNTIES	15,805	23,218	54,387	49,997	82,099	225,506

Source: US Census Bureau, Decennial Census, 1990 and 2000. Calculations done by UNM-BBER.

Table 2.11: Educational Attainment Percentage by County

	Less than 9th Grade	9th to 12th Grade	HS Grad or GED	Some College; No Degree	Assoc., BA. Or More	Total
Year 1990						
Los Alamos	1%	4%	16%	20%	59%	100%
Mora	21%	19%	33%	11%	16%	100%
Rio Arriba	17%	17%	33%	17%	16%	100%
San Miguel	19%	12%	29%	20%	20%	100%
Sandoval	8%	12%	31%	23%	25%	100%
Santa Fe	7%	11%	24%	22%	37%	100%
Taos	14%	15%	30%	19%	23%	100%
TOTAL SANTA FE COUNTIES	10%	12%	27%	21%	30%	100%
TOTAL NM	11%	14%	29%	21%	25%	100%
Year 2000						
Los Alamos	1%	2%	12%	17%	67%	100%
Mora	14%	16%	32%	18%	20%	100%
Rio Arriba	12%	15%	31%	20%	21%	100%
San Miguel	12%	14%	26%	21%	28%	100%
Sandoval	5%	9%	29%	25%	32%	100%
Santa Fe	7%	9%	20%	22%	43%	100%
Taos	7%	13%	27%	22%	31%	100%
TOTAL SANTA FE COUNTIES	7%	10%	24%	22%	36%	100%
TOTAL NM	9%	12%	27%	23%	29%	100%

Source: US Census Bureau, Decennial Census, 1990 and 2000. Calculations done by UNM-BBER.

2.7 Housing

Table 2.12 illustrates the number of housing units and the occupied status of these units in each county in the assessment area. As would be expected, the number of dwellings in all counties increased as the population grew. **Table 2.12** shows the housing stock expanded by over 40,000 units, increasing 36 percent, during 1990-2000 in the assessment area. Fourteen percent of houses were vacant in 1990 and 2000.

Table 2.12: Housing Units and Occupation of Housing

	1990			2000		
	Housing Units: Total	Housing Units: Occupied	Housing Units: Vacant	Housing Units: Total	Housing Units: Occupied	Housing Units: Vacant
	Los Alamos	7,565	7,213	352	7,937	7,497
Mora	2,486	1,519	967	2,973	2,017	956
Rio Arriba	14,357	11,461	2,896	18,016	15,044	2,972
San Miguel	11,066	8,701	2,365	14,254	11,134	3,120
Sandoval	23,667	20,867	2,800	34,866	31,411	3,455
Santa Fe	41,464	37,840	3,624	57,701	52,482	5,219
Taos	12,020	8,752	3,268	17,404	12,675	4,729
TOTAL SANTA FE COUNTIES	112,625	96,353	16,272	153,151	132,260	20,891

Source: US Census Bureau, Decennial Census, 1990 and 2000. Calculations done by UNM-BBER.

Table 2.13 and **Table 2.14** display vacant housing by county. About half of the nearly 21,000 vacant homes in the assessment area in 2000 compared to almost one-third in 1990 were for seasonal or recreational use. Nearly one-quarter of vacant houses were for rent or for sale. In Taos County seasonal or recreational use accounted for nearly two-thirds of vacant housing. Both Taos and Rio Arriba counties gained a large number of vacant houses for seasonal or recreational use.

Table 2.13: Vacant Housing by Type Of Vacancy

	Rented or			For			Total vacant
	For rent only	For sale only	sold, not occupied	Seasonal or rec use	migrant workers	Other vacant	
Year 1990							
Los Alamos	101	42	68	89	0	52	352
Mora	7	36	305	348	3	268	967
Rio Arriba	326	128	200	658	7	1,577	2,896
Sandoval	318	396	235	710	13	1,128	2,800
San Miguel	349	93	129	1,141	14	639	2,365
Santa Fe	927	354	309	788	2	1,244	3,624
Taos	373	137	210	1,127	7	1,414	3,268
TOTAL SANTA FE COUNTIES	2,401	1,186	1,456	4,861	46	6,322	16,272
Year 2000							
Los Alamos	201	100	16	100	9	14	440
Mora	15	19	135	489	3	295	956
Rio Arriba	209	204	105	1,177	4	1,273	2,972
Sandoval	690	579	263	1,282	8	633	3,455
San Miguel	402	188	143	1,558	0	829	3,120
Santa Fe	908	612	211	2,688	0	800	5,219
Taos	562	195	216	2,946	36	774	4,729
TOTAL SANTA FE COUNTIES	2,987	1,897	1,089	10,240	60	4,618	20,891

Source: US Census Bureau, Decennial Census, 1990 and 2000. Calculations done by UNM-BBER.

Table 2.14: Percent of Total Vacant Housing

	Rented or		For				Total vacant
	For rent	For sale only	Seasonal or rec use	migrant workers	Other vacant		
Year 1990							
Los Alamos	29%	12%	19%	25%	0%	15%	100%
Mora	1%	4%	32%	36%	0%	28%	100%
Rio Arriba	11%	4%	7%	23%	0%	54%	100%
Sandoval	11%	14%	8%	25%	0%	40%	100%
San Miguel	15%	4%	5%	48%	1%	27%	100%
Santa Fe	26%	10%	9%	22%	0%	34%	100%
Taos	11%	4%	6%	34%	0%	43%	100%
TOTAL SANTA FE COUNTIES	15%	7%	9%	30%	0%	39%	100%
Year 2000							
Los Alamos	46%	23%	4%	23%	2%	3%	100%
Mora	2%	2%	14%	51%	0%	31%	100%
Rio Arriba	7%	7%	4%	40%	0%	43%	100%
Sandoval	20%	17%	8%	37%	0%	18%	100%
San Miguel	13%	6%	5%	50%	0%	27%	100%
Santa Fe	17%	12%	4%	52%	0%	15%	100%
Taos	12%	4%	5%	62%	1%	16%	100%
TOTAL SANTA FE COUNTIES	14%	9%	5%	49%	0%	22%	100%

Source: 2000 US Census Bureau, Decennial Census, 1990 and 2000. Calculations by UNM-BBER.

Table 2.15 depicts the housing stock in the assessment area was 29 years old in 2000, ranging from 17 years old in Sandoval County to 38 in Mora County. The state's average age of housing rose from 22 to 27 years. Also shown is the percent of households that lack complete plumbing. There is usually a correlation between counties of high poverty and the lack of plumbing in a dwelling. The proportion of households in the assessment area without plumbing dipped from 4 percent to 3 percent during 1990-2000. The number of houses that lacked plumbing facilities increased by nearly 300 units between 1990 and 2000, to over 5,000 units in 2000. In most counties, except in Mora County, the proportion of houses without plumbing declined. The percent of houses without plumbing in 2000 ranged from less than 1 percent in Los Alamos and Santa Fe counties to 12 percent in Mora County. Taos and Rio Arriba counties featured a younger housing stock while Mora County had an older inventory.

Table 2.15: Age of Housing Stock and Plumbing Availability

	Average Age of Housing Stock		Lacking Complete Plumbing Facilities	
	1990	2000	1990	2000
Los Alamos	26.1	32.5	0.0%	0.1%
Mora	37.9	37.8	9.5%	12.4%
Rio Arriba	26.2	28.8	6.7%	5.7%
San Miguel	31.5	32.8	6.0%	5.2%
Sandoval	15.2	17.2	5.6%	3.6%
Santa Fe	22.6	24.6	1.5%	0.7%
Taos	28.4	28.3	8.0%	7.1%
TOTAL SANTA FE COUNTIES	26.8	28.9	4.2%	3.3%
TOTAL NM	22.2	27.0	3.0%	3.0%

Source: US Census Bureau, Decennial Census, 1990 and 2000. Calculations by UNM BBER.

2.8 Net Migration

Table 2.16 illustrates net migration into the assessment area at the county level. In each decennial Census, respondents are asked about their county and state of residence five years previous.

Table 2.16 shows only those in New Mexico who are five years of age or older. For the assessment area in 2000, 41 percent of those in the area were movers (had changed addresses in the past five years). Of these approximately 133,000 movers, 55,000 moved within the same county. Also, over 30,000 moved from other counties in New Mexico. While there was an increase of over 7,000 in movers originating from out-of-state, a slight decline occurred in the percent of these movers between 1990 and 2000 censuses. About 40,000 persons, or about one of three movers, came to the area from other states in 2000, which was similar to the percent in 1990. And of those who moved from other states, the region of origin in 2000 (as a percent of the total) was Northeast (2%), Midwest (2%), South (3%), and West (5%) -- (Texas is in the South region and California dominates the West region). One percentage point declines occurred in each category of movers from the South and West.

Table 2.16: Net Migration for New Mexico and Total Santa Fe Counties

	NEW MEXICO				TOTAL SANTA FE COUNTIES			
	1990	2000	Percent	Percent	1990	2000	Percent	Percent
			of Total	of Total			of Total	of Total
TOTAL	1,390,048	1,689,911	100%	100%	246,241	322,023	100%	100%
Same House	719,628	919,717	52%	54%	136,964	189,200	56%	59%
Different House	670,420	770,194	48%	46%	109,277	132,823	44%	41%
in the United States	645,519	731,488	46%	43%	106,595	124,982	43%	39%
Same County	345,469	400,128	25%	24%	47,601	54,880	19%	17%
Different County	300,050	331,360	22%	20%	58,994	70,102	24%	22%
Same State	107,289	126,093	8%	7%	26,717	30,466	11%	9%
Different State	192,761	205,267	14%	12%	32,277	39,636	13%	12%
Northeast	14,311	15,329	1%	1%	4,125	5,062	2%	2%
Midwest	28,270	29,457	2%	2%	4,545	5,936	2%	2%
South	73,548	72,497	5%	4%	9,735	11,169	4%	3%
West	76,632	87,984	6%	5%	13,872	17,469	6%	5%
Puerto Rico	110	398	0%	0%	10	64	0%	0%
Elsewhere	24,791	38,308	2%	2%	2,672	7,777	1%	2%

Source: US Census Bureau, Decennial Census, 1990 and 2000. Calculations by UNM BBER.

2.9 Opportunities, Risks and Special Circumstances

The demographic data developed in this chapter for the seven counties in the assessment area generally follow the demographics of the U.S. as a whole – the population is aging, more racially diverse, has higher educational attainment, and increasing per capita incomes. More households are headed by women and are single person households.

These general demographic trends between the U.S. and the Santa Fe NF counties, however, miss some important developments over the past two decades. Some of the economic changes relate to the natural resources of the area and to changing policies regarding use of the national forests. Over the past two decades, some businesses in the logging industry, such as sawmills, shut down in Rio Arriba County near Española. Furthermore, grazing on public lands has been curtailed and ranchers are reporting harder times (see Chapter 5, “Land Use and Users”).

The Santa Fe NF has many recreational uses, featuring two big attractions – Santa Fe Ski Basin and the Pecos Wilderness. As a result, the local tourism industry has expanded, as has amenity migration into the area by retirees and others investing in vacation and second homes. There was only a small decrease in the percent of people who had lived in a different state when comparing the 1990 and 2000 censuses. The housing stock expanded by about 40,000 units during 1990-2000, as the stock increased 36 percent in the assessment area. In 2000, one of six houses was vacant in the assessment area and almost half of these were seasonal or vacation homes. The assessment area and the Santa Fe NF offer many activities, including camping, hiking, skiing, fishing, and hunting.

Within the assessment area, the population increased in all counties between 1980 and 2000 and real per capita income also rose in the counties between 1990 and 2000. More people with more income in the assessment area may be expected to impact forest uses. In rural economies, more dependent on agriculture and other land uses involving extraction from the forest lands (e.g., grazing, wood gathering, piñon harvesting, etc.), management decisions could have lasting impacts on the economic well-being of portions of the population. It will become increasingly important that the desires of a more diverse population be represented in decisions concerning the Santa Fe NF.

The nation is aging and life spans are increasing. With the early edge of the Baby Boom generation reaching age 60, this massive generation is likely to have more leisure time to spend in the Santa Fe NF. As the healthier and wealthier Boomers retire, more demand for recreation could increase stress on the forest. Yet Boomers have indicated they will seek alternatives to retirement, which include volunteering, possibly benefiting Santa Fe NF. In fact, data show that about 41 percent of volunteers for the Santa Fe NF are aged 55 and older. Older Americans also desire cultural and heritage tourism, so they could take advantage of these offerings in the forest. Therefore, the retired and semi-retired may add to workloads of the Santa Fe NF personnel, but could be a target market for interpretive events. Aging Boomers will place heavy demand on federal benefits and entitlements, such as Medicare and Social Security, and therefore intensify competition for federal dollars. This could mean flat or reduced funding levels for federal agencies, including the USAD FS.

Finally, those seeking to live or retire in more peaceful forest surroundings are increasingly choosing to build houses within or adjacent to National Forests. This is happening in the Santa Fe NF. These homeowners may seek to block the access of other forest users or enterprises. Housing at the urban-wildland interface also impacts the Santa Fe NF as it shapes policies about handling fire and the reduction of fuel loads. Strategies for fighting fires when there are dwellings in the forest require additional resources to protect lives and property in or near the forest. Residents at the forest's edge may oppose thinning and thinning methods. Housing in the forest also can alter access and impact forest use. New roads built to developments can impact forest health by creating runoff problems and access to new areas where unmanaged recreation can occur. Controlling invasive weed species is another serious problem in the forest.

Diversity does not only mean different races but changes in the mix of people in the area. These changes give rise to possible conflicts between new arrivals and long time landholders. This conflict occurs in growing places throughout the West (and nation). The newcomers have different expectations and less traditional ties to the land, which impacts land use and land values. Additionally, the presence of Native American pueblos and reservations adds another layer of complexity to decisions regarding land use and policies within the Santa Fe NF.

3 Access and Travel Patterns

This chapter discusses current and potential access issues in each of the Santa Fe National Forest Ranger Districts. The analysis considers current traffic patterns along major routes and future trends, including planned capital outlays, to identify potential limitations as well as expansions to future access.

The analysis is based wholly on secondary data, including information from the New Mexico Department of Transportation (NMDOT). The data on average annual daily traffic come from the Highway Performance Monitoring System (HPMS), maintained by the Federal Highway Administration (FHWA). These data can be accessed online at the Bureau of Transportation Statistics²². Estimates of the projected growth of vehicle miles traveled for counties in the assessment area are provided by the Environmental Protection Agency (EPA) and are based on 1996 HPMS data.²³ Geographical data on national roads are obtained from the ESRI ArcGIS StreetMap USA 2004

3.1 Location of Major Transportation Routes

By examining transportation and traffic patterns, we may gain insight into where visitors are coming from, as well as identify any major barriers to access the Santa Fe NF. This section describes the transportation routes typical of visitors or others traveling to and from the forest. Because the Santa Fe NF is comprised of several contiguous land masses, there are multiple access points to various areas of the forest. Several areas of the forest, including campgrounds, are accessible via paved highways.

Figure 3.1 provides an illustration of the major transportation routes in the area. Interstate 25 runs through the forest, in a crescent connecting Santa Fe to Las Vegas, NM, and is the main route carrying travelers from Albuquerque and the southern part of the state. In the northwestern quadrant of the Forest a triangle of principal roadways surrounds the Chama Wilderness Area, providing access to most of the region. The point at which NM112 and US84 meet creates the apex of the triangle, where NM112 runs southwest from Tierra Amarilla through El Vado to an area near Gallina, NM (close to the Sandoval- Rio Arriba County border). Accordingly, US84 creates the opposite edge of the triangle, and runs southeast from Tierra Amarilla until it meets NM96 near the Abiquiu Reservoir. Finally, NM96 creates the bottom edge of the triangle between the point at which NM112 and NM96 meet just north of Regina, N.M. and the point where US84 and NM96 meet near the Abiquiu Reservoir.

²² Bureau of Transportation Statistics: The Intermodal Transportation Database, TranStats. (2006). Highway Performance Monitoring System - Core Data. Retrieved from <http://www.transtats.bts.gov/databases>

²³ U.S. Environmental Protection Agency. (2000, March 24) VMT Growth Factors by State, Website: Technology Transfer Network Ozone Implementation. Retrieved from <http://www.epa.gov/ttn/naaqs/ozone/areas/vmt/stindex.htm>

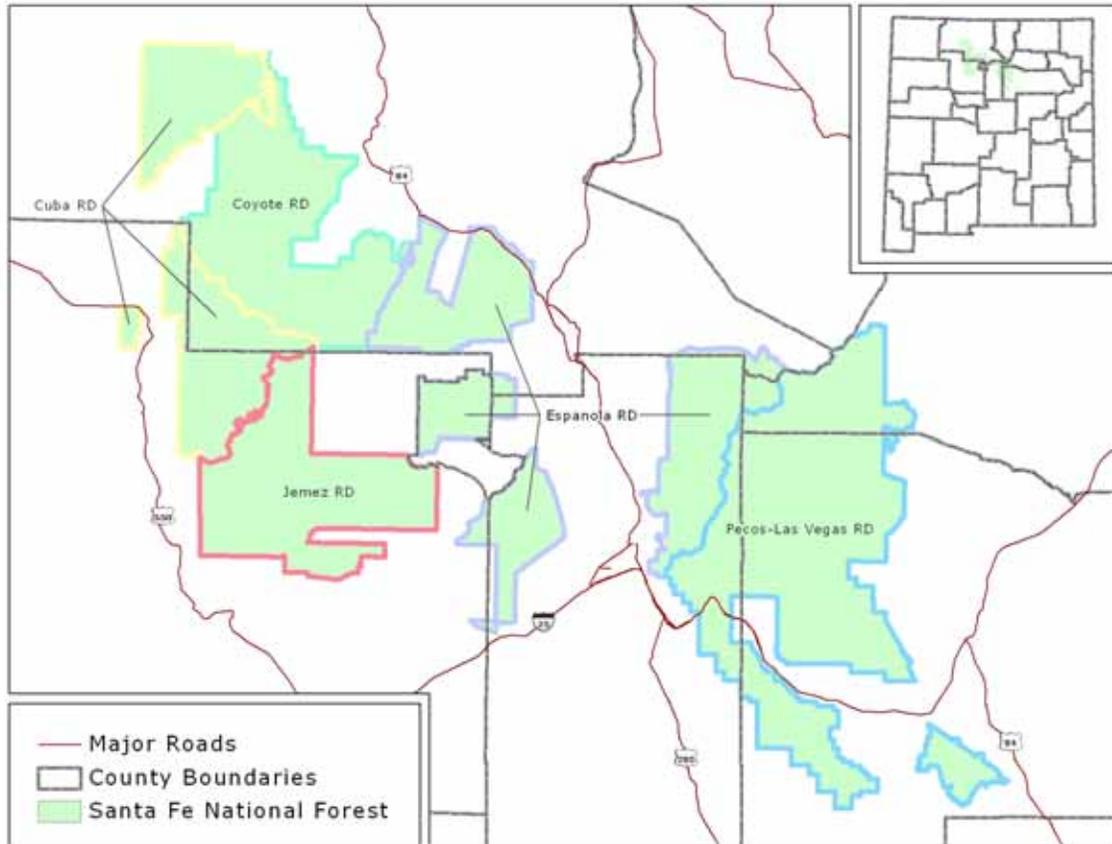


Figure 3.1: Map of Principal Highways in Region

In addition, the portion of NM4 that runs between the village of San Ysidro and Los Alamos, connecting the south central and northeast trails of the Jemez Mountain Trail National Scenic Byway, winds through the Jemez Mountains while passing the Valles Caldera National Preserve and Bandelier National Monument along the way. NM4 also passes Jemez Pueblo, Jemez Springs, and the Jemez State Monument, among several other recreational and historical sites (see Figure 3.2).



From <http://www.jemezmountaintrail.org/>, downloaded 1/28/07

Figure 3.2: Jemez Mountain Trail National Scenic Byway

The south central and northeast trails of the Jemez Mountain Trail National Scenic Byway meet at the town of La Cueva, N.M., where the northwest trail curves northwesterly along NM126 up to Cuba, N.M., then returns south along NM550 back to the village of San Ysidro. The northwest trail provides access to Fenton Lake State Park, the San Pedro Wilderness, and Cabezon Peak to name a few historical and recreational areas.



Figure 3.3 Access to the Santa Fe Ski Basin

As seen in Figure 3.3, the Santa Fe Ski Basin is accessible via NM475, which passes through the Little Tesuque Picnic Area and Big Tesuque Campground, and also provides access to Windsor Trail. NM63 runs from I-25 to Cowles, in the center of the eastern portion of the forest, with several campgrounds and easy access to the Pecos Wilderness.

Table 3.1 the major roadways surrounding the Santa Fe NF. The table shows which major roadways are most commonly used to travel to and through each of the ranger districts.

Table 3.1: Roadways Around Santa Fe National Forest

	Coyote	Cuba	Española	Jemez	Pecos/Las Vegas
Interstate				25	25
US Route	84	550	84 285	550	84 285
State Road	96 554	4 96 197	30 74 76 126 502 503	4 126 290 485	3 63 65 223 283

Table 3.2 shows the distance from major southwestern cities to the ranger districts in the Santa Fe NF. The nearest major population center is Santa Fe, NM. Santa Fe residents are closest to the Española RD and the Santa Fe Ski Area. Residents of the second closest population center, Albuquerque, are closer to areas of the Cibola NF, especially the Sandia RD which also has ski areas and abundant hiking trails.

Table 3.2: Distance in Miles from Major Cities to Santa Fe NF Ranger Districts

City	Coyote	Cuba	Española	Jemez	Pecos/Las Vegas
Albuquerque, NM	115	92	62	64	153
Amarillo, TX	357	375	299	364	267
Denver, CO	387	504	413	455	356
El Paso, TX	380	357	333	346	418
Farmington, NM	126	111	209	164	300
Las Cruces, NM	336	313	290	302	374
Lubbock, TX	391	409	333	398	301
Phoenix, AZ	578	555	531	544	616
Pueblo, CO	273	390	299	341	242
Roswell, NM	270	288	212	253	228
Santa Fe, NM	78	118	26	90	96
Tempe, AZ	591	568	545	557	629
Tucson, AZ	617	594	571	583	655

Source: <http://www.mapquest.com>

The Sonoran Institute found that the longer the drive between public lands and the nearest metropolitan area, the lower the potential for economic growth (particularly personal income).²⁴ Public lands that are far away from metropolitan areas do not receive as many visitors as public lands near metropolitan areas (such as the Sandia RD in the Cibola NF).

Table 3.3 shows lane miles in each county in the assessment area by road classification. In all seven counties, there are about 2,200 miles of urban roads, compared to over 23,000 miles of rural roads. NMDOT defines rural areas as areas where the population is under 5,000 persons.²⁵

²⁴ R. Rasker, B. Alexander, J. van den Noort, and R. Carter (July 2004), "Prosperity in the 21st Century," The Sonoran Institute.

²⁵ Bureau of Transportation Statistics, http://www.transstats.bts.gov/Tableinfo.asp?Table_ID=1102

Table 3.3: Lane Miles of Road by County and Classification

Rural					
County	Interstate	Other Principal			County Total
		Arterial	Minor Arterial	Collector & Local	
Los Alamos	0	3	6	2,319	2,328
Mora	154	0	0	982	1,136
Rio Arriba	0	84	490	7,254	7,828
Sandoval	103	388	94	4,280	4,865
San Miguel	237	53	0	2,703	2,993
Santa Fe	156	214	10	2,160	2,540
Taos	0	112	227	1,047	1,386
Total	649	853	827	20,747	23,076
Urban					
County	Interstate	Other Principal			County Total
		Arterial	Minor Arterial	Collector & Local	
Los Alamos	0	22	0	327	348
Mora	0	0	0	0	0
Rio Arriba	0	11	14	64	89
Sandoval	10	75	55	105	245
San Miguel	9	21	11	134	175
Santa Fe	33	201	62	1,076	1,374
Taos	0	0	0	11	11
Total	53	330	143	1,716	2,242

Source: US Department of Transportation HPMS Database

The vast majority of roads in the assessment area are collector and local roads. According to the NMDOT Strategic Plan, the primary function of collector and local roads is to provide access to homes and businesses. In contrast, the function of interstate and arterial roads is to move people and goods efficiently. With the exception of I-25 and US84, the roads near the Santa Fe NF are not designed to handle heavy traffic. In the Santa Fe NF, there are about 700 miles of interstate, of which 649 miles are classified as rural.

3.2 Airports

The largest airport in the vicinity of the Santa Fe NF is the Albuquerque International Sunport in Albuquerque, New Mexico. It is the largest and busiest airport in New Mexico with roughly six million travelers per.²⁶ However, it is located over seventy miles away from any part of the Santa Fe NF.

Smaller airports, some with commercial flights, are located in the vicinity of the Santa Fe NF. The Taos Regional airport has about 35 aviation operations a day with about 11 percent as

²⁶ City of Albuquerque, "Albuquerque International Sunport," <http://www.cabq.gov/airport/>

commercial flights. Most of the flights in this airport (65%) are private transient flights.²⁷ The Santa Fe Municipal Airport is about nine miles southwest of Santa Fe and has over 200 aviation operations a day. About half of all flights are local general aviation and about forty percent are transient general aviation,²⁸ meaning small commuter flights to mostly other parts of the state. This airport has six runways, although some are in disrepair with cracking asphalt. There are general aviation airports in Española, Los Alamos and Las Vegas, but each offers little or no commercial flights and each is primarily used for general aviation.

Research conducted by the Sonoran Institute found that rural counties that are within an hour's drive of a mid-sized airport reap more economic benefits from public lands,²⁹ since visitors have more convenient access to the area. Airports that have the most influence are those with daily commercial flights to major hubs, and more than 25,000 passengers a year. The Albuquerque International Sunport is the only airport in New Mexico that qualifies.

3.3 Traffic Flows

Table 3.4 shows estimated daily vehicle miles traveled (VMT) and VMT per lane mile by county for all counties in the assessment area. VMTs are calculated by multiplying the Average Annual Daily Traffic (AADT)³⁰ by road length in an area. VMT per lane-mile offers a useful measure of the intensity of road traffic, and is highly correlated with population density. The measure is also useful to compare traffic density among geographical areas.

Table 3.4: Daily Vehicle Miles Traveled

County	Estimated VMT	VMT per Lane-Mile
Los Alamos	179,861	67
Mora	387,063	341
Rio Arriba	1,251,928	158
Sandoval	2,575,967	504
San Miguel	886,649	280
Santa Fe	3,719,914	951
Taos	712,677	510

Note: VMT is calculated as AADT*Section_Length

Source: US Department of Transportation (2001), HPMS Database, Calculated by UNM-BBER

With the exception of Santa Fe, the assessment area is characterized by small populations and thus, light traffic. At the high end, Santa Fe has about 950 vehicles traveling any given stretch of road on a typical day. Los Alamos has the lightest traffic with only 67 VMT per lane mile. In

²⁷ <http://www.airnav.com/airport/SKX>

²⁸ <http://www.airnav.com/airport/SAF>

²⁹ R. Rasker, B. Alexander, J. van den Noort, and R. Carter (July 2004), "Prosperity in the 21st Century," the Sonoran Institute.

³⁰ The daily flow of motor traffic is averaged out over the year to give an AADT, a useful and simple measurement of how busy the road is.

comparison, the 2001 VMT for Bernalillo County was 11.9 million with a VMT per lane mile of over 2,000.

3.4 Capital Outlays and Transportation Infrastructure Improvements

As part of Governor Richardson's Investment Program (GRIP), money has been allocated for transportation infrastructure improvements throughout northern New Mexico. Many of the projects relevant to the Santa Fe NF are along US64, US84 and US285, all of which are major access routes, connecting northern New Mexico with much of the rest of the state. Below is a description of three GRIP projects near the Santa Fe NF.³¹

3.4.1 US64, Rio Arriba County Line - E. to US84 (\$23.1 million)

The project includes the reconstruction of lanes and the widening of shoulders of various sections along 20 miles of roadway. Improvements include bridge replacement, drainage structure replacement, and pavement replacement. This route serves as the primary route for tourism to Chama and Pagosa Springs from US550 and Dulce. The bridge joints are non-functioning with advanced section loss throughout. There is up to 20 ft. of exposed rebar on several girders. This project is in progress and ends December 2010.

3.4.2 US84, Pojoaque to Española (\$30.5 million)

This project includes new construction of a four-lane alternate route to bypass Española and reconstruction of US84 at tie-ins to the relief route. The US285 corridor is the gateway to north central New Mexico. This segment of the corridor has experienced rapid growth in residential and commercial enterprises. The result is a congested roadway with numerous access points. The NMDOT completed the initial study of the corridor to begin design development. The proposed plan is to complete the study process which will address improvements necessary to accommodate the through-traffic volume as well as the access needs of the developed areas. It is anticipated the final improvements will be consistent with those currently under construction within this corridor.

3.4.3 US285, Clines Corners to Lamy

US285 is the designated route for the Waste Isolation Pilot Project (WIPP) from Los Alamos to Carlsbad. This stretch is the only remaining two-lane segment of the entire corridor. The proposed improvements include reconstruction and widening to four-lanes. This will complete the 4-lane from Carlsbad to I-25. This segment also provides a link from I-25 to I-40 and carries a notable amount of commercial truck traffic. Reconstruction and rehabilitation of the existing northbound lanes to include replacement of drainage and pavement structures will also be completed. The northbound lanes in this section were not addressed on previous projects.

Outside of the GRIP projects, there are over 100 transportation infrastructure projects taking place in the assessment area. The largest capital outlay in the area is for the planning, design and

³¹ Information and descriptions obtained from the NMDOT Strategic Plan 2004-2005.

construction of a commuter rail system, the Rail Runner, which will run between Albuquerque and Santa Fe. Completion of the project isn't expected until 2008.

For an exhaustive list of capital improvement projects in the assessment area, refer to **Table A.4** in the appendix.

3.5 Forest Roads and Trails

Forest roads provide access for both forest users and FS officials and staff to areas within the Santa Fe NF. Access to the forest becomes critical in the event of a forest fire or other catastrophic event.

In all, the Santa Fe NF has almost 7,500 miles of forest road. Comparatively, the Carson NF has over 11,000 miles of forest road. However, according to the Forest Guardians, a self-described environmental protection organization, the Santa Fe NF has the highest road density of any forest in the Southwest Region and exceeds the recommended road density set by the Department of the Interior of 1.5 km/km² (2.5 mi/ mi²) for properly functioning watersheds.³² Because roads have been shown to contribute significantly to impacts on soil, water quality, wildlife habitats and increased human fire ignitions, some groups, such as the Forest Guardians, have called for reducing road density. In the spring of 2005, under the Community Forest Restoration Act, the Forest Guardians proposed to collaborate with the Coyote RD to decommission any roads not essential for management of the district's resources or maintaining traditional uses, in order to bring the RD into compliance with the recommended road density in the USAD FS management plan.³³

As part of a recent forest restoration agreement between environmental groups, such as Forest Guardians and Sierra Club, the USAD FS, other government agencies, and land managers will try to avoid a net increase in roads. Further, if a new road is absolutely necessary, an existing road would be closed as compensation.³⁴

Table 3.5 shows the length and type of forest roads throughout the Santa Fe NF. About 65 percent of the forest's roads are in the western half of the forest, as the eastern half is largely comprised of the Pecos Wilderness.

³² Forest Guardians. http://www.fguardians.org/sf/issue_santa-fe-national-forest.asp

³³ Ibid.

³⁴ Tania Soussan. Albuquerque Journal. (May 17, 2006) "Restoration Agreement Reached."

Table 3.5: Length of Forest Roads and Road Types in The Santa Fe NF

Coyote	Surface Type	Segment Length Miles	Cuba	Surface Type	Segment Length Miles	Jemez	Surface Type	Segment Length Miles
	Asphalt	2		Asphalt	1		Asphalt	6
	Crushed Aggregate	130		Crushed Aggregate	153		Crushed Aggregate	55
	Bituminous Surface	1		Bituminous Surface	0		Bituminous Surface	0
	Improved Native	20		Improved Native	13		Improved Native	70
	Native Material	989		Native Material	1,240		Native Material	1,204
	Paved	0		Paved	0		Paved	0
	Other	8		Other	0		Other	0
TOTAL		1,150	TOTAL		1,407	TOTAL		1,335

Pecos-Las Vegas	Surface Type	Segment Length Miles	Espanola	Surface Type	Segment Length Miles	Other	Surface Type	Segment Length Miles
	Asphalt	11		Asphalt	3		Asphalt	34
	Crushed Aggregate	22		Crushed Aggregate	31		Crushed Aggregate	77
	Bituminous Surface	0		Bituminous Surface	0		Bituminous Surface	28
	Improved Native	61		Improved Native	27		Improved Native	91
	Native Material	1,261		Native Material	919		Native Material	1,082
	Paved	0		Paved	0		Paved	0
	Other	0		Other	0		Other	0
TOTAL		1,355	TOTAL		980	TOTAL		1,312

SF Forest Total	Surface Type	Segment Length Miles
	Asphalt	57
	Crushed Aggregate	468
	Bituminous Surface	29
	Improved Native	282
	Native Material	6,695
	Paved	0
	Other	8
TOTAL		7,539

Source: USDA Forest Service INFRA Roads Database. Calculations done by UNM-BBER.

According to data provided by the USAD FS, the Cuba RD has the most forest road miles (1,400) followed closely by Pecos-Las Vegas (1,355 miles) and Jemez (1,335). The roads make up an intricate web of access to the Santa Fe NF, especially in areas southwest of the Valles Caldera National Preserve. Forest Road (FR) 266 provides access to the Paliza and Paliza Group campgrounds and runs through a small portion of the Jemez Pueblo. Similarly, FRs 6, 7 and 8 crisscross the area just west of the Chama River Canyon Wilderness in the Coyote RD.

The FS maintains designated areas of forest wilderness as roadless areas, where roads cannot be constructed or reconstructed. These areas are the subject of national debates among environmental groups, forest resource interests and state and federal governments. This particular use of land is discussed further in Chapter 6, “**Special Areas.**”

Table 3.6 presents the number of miles of trails by each RD. In all, the Santa Fe NF has over 900 miles of trails, which is almost twice the amount of trails in the neighboring Carson NF. The Española RD has the greatest number of trail miles with over 360 miles, accounting for more than one third of the total trail miles in the forest. More than half of the forest’s trails are designated as hiking trails and nearly a third are suitable for pack and horseback.

Table 3.6: Length of Forest Trails and Trail Types in The Santa Fe NF

Coyote	Managed Use	Segment Length (in miles)	Cuba	Managed Use	Segment Length (in miles)	Jemez	Managed Use	Segment Length (in miles)
	Hike	131		Hike	59		Hike	52
	Pack/Saddle	0		Pack/Saddle	0		Pack/Saddle	0
	ATV	0		ATV	0		ATV	0
	Bicycle	13		Bicycle	0		Bicycle	0
	X/C Ski	0		X/C Ski	0		X/C Ski	0
	Other	29		Other	0		Other	0
Total		173	Total		59	Total		52

Pecos-Las Vegas	Managed Use	Segment Length (in miles)	Espanola	Managed Use	Segment Length (in miles)	Other	Managed Use	Segment Length (in miles)
	Hike	192		Hike	60		Hike	7
	Pack/Saddle	49		Pack/Saddle	243		Pack/Saddle	0
	ATV	0		ATV	7		ATV	0
	Bicycle	0		Bicycle	0		Bicycle	0
	X/C Ski	0		X/C Ski	34		X/C Ski	0
	Other	7		Other	23		Other	0
Total		248	Total		367	Total		7

SF Forest Total	Managed Use	Segment Length (in miles)
	Hike	501
	Pack/Saddle	292
	ATV	7
	Bicycle	13
	X/C Ski	34
	Other	59
Total		906

Source: USDA Forest Service Infra Trails Database. Calculations by UNM-BBER.

Cuba and Jemez have the fewest miles of trails with a combined total of 111 miles. A complete list of all trails in the Santa Fe NF is provided in the appendix (**Table A.3**).

One issue regarding roads and trails relates to the access. Private property owners within or along the boundary of the forest may decide to put up a fence, lock a gate, and/or post no trespassing signs to curtail public access through their property. Securing a permanent public right of way may be time-consuming and expensive.

The roads and trails catalogued above do not include all the roads and trails that have been created in the forest by people taking their motorized vehicles, including off-highway vehicles (OHVs) "off road". In part to address the problem of OHVs, the National Forest Service has promulgated a new management directive, the Travel Management Rule, requiring each of the NF's to designate those roads, trails, and areas that are open to motor vehicle use.³⁵ (See discussion in the next section.)

³⁵ USDA FS. (2005, November 9). Travel Management; Designated Routes and Areas for Motor Vehicle Use. The Federal Register / Vol. 70, No. 216/ Wednesday, November 9, 2005/ Rules and Regulations, P. 68264. Retrieved March 18, 2006, from <http://www.fs.fed.us/recreation/programs/ohv/final.pdf>

3.6 Right-of-Way and Other Access Issues

Specific problems facing the FS regarding right-of-way and other access issues date back more than one hundred years. Most of the problems stem from incomplete and incorrect land records. Mostly, the FS has adopted a “let it ride” approach to handling access issues, as they do not have the time or the resources to invest in time-consuming investigations. FS personnel react only to major problems brought up by landowners.

As an example, FS staff described a situation where a landowner died and an heir approached the FS requesting easements and other accommodations. This process is often difficult because the deeds are unregistered or maps are incorrect further complicating any sort of transaction. Short term effects of property conflicts may include the erection of fences or blocking access to visitors. In most cases, private landowners do allow access, but with changes in property ownership that could easily change.

Right-of-way and access conflicts often result in owners erecting fences to block access of visitors and visitors tearing down those fences. Forest visitors may be unpleasantly surprised when they encounter a locked gate or sign denying them access to the public forest. The Santa Fe NF officials describe this as the most common problem concerning access and right-of-way.

The FS is mobilizing to establish a protocol that will allow them to handle new requests (easements, etc) while still addressing long-term problems. The Santa Fe NF is forming a committee to create a protocol that will identify and prioritize access issues so that they can be addressed in a way that is consistent and systematic.

3.7 Off-Highway Vehicles and the Travel Management Rule

One of the most heated multiple-use debates is over the use of OHVs. The FS acknowledges that unmanaged recreation, primarily OHV use, is one of the four largest threats facing the National Forest System. According to the National Forest Service, OHV ownership has grown from 5 million in 1972 to 36 million in 2002.³⁶ On November 2, 2005, the FS announced its Travel Management Rule on OHV use in National Forests and Grasslands.³⁷ New guidelines provide different strategies to deal with the growing consequences of OHV use in the forests. The new rules went into effect on December 9, 2005.³⁸ Overall, these policy revisions call for the re-designation of trails and routes, including creating designated route maps to show which trails are designated for different types of uses.

Responses to the legislation, however, are mixed. OHV advocates, such as the Southwest Four Wheel Drive Association, believe the regulations leave too many unanswered questions about OHV use.

³⁶ Jeffers, A., (2006). *Four Threats to the Health of the Nation's Forests and Grasslands*, USDA FS Website: Four Threats. Retrieved November 2006, from <http://www.fs.fed.us/projects/four-threats/>

³⁷ USDA FS. (2005, November 2). USDA Forest Service Releases Final Rule for Motorized Recreation in National Forests & Grasslands, US Forest Service Press Release. Retrieved November 11, 2006, from <http://www.fs.fed.us/news/2005/releases/11/travel-management.shtml>

³⁸ USDA FS. (2005) Travel Management; Designated Routes and Areas for Motor Vehicle Use. The Federal Register / Vol. 70, No. 216/ Wednesday, November 9, 2005/ Rules and Regulations, P. 68264. Retrieved March 18, 2006, from <http://www.fs.fed.us/recreation/programs/ohv/final.pdf>

*Our major concerns ... include failure to provide a time period for which emergency closures can be effective; confusion over the use of the term OHV, 4-wheel drive vehicle, and SUV; lack of clarity that a "trail" can be used for 4-wheel drives and other vehicles over 50" in width; lack of clarity that non-street legal vehicles may be used on "roads" where appropriate; and lack of certainty that the agency will conduct a robust route inventory.*³⁹

Aside from recreational vehicle users, ranchers are concerned the rules do not go far enough in limiting the use of recreational vehicles. Adams and Russell-Adams described the concerns of ranchers who graze livestock.⁴⁰ The ranchers wanted stricter limits on OHV use, including use permits, speed limits and enforcement of rules. They were concerned that remapping is not enough to curtail what they see as dangerous behavior. OHVs have practical uses, and many ranchers use them in their own work. Local residents, however, perceive non-resident OHV users as a problem and want to promote "responsible use."⁴¹

In another study by Adams and Russell-Adams, representatives from New Mexico's indigenous populations raised other concerns about OHV use.⁴² Native American representatives said they felt left out of the decision-making process on OHV use. They perceived the FS as opening and creating trails that would increase access to lands adjacent to tribal lands and to sacred areas within the forest. They claim "first-among equals" as a right to "more authority" in guiding the decision-making process.⁴³

Environmental groups have posed the strongest opposition saying that the new maps legitimize user-created trails.⁴⁴ In a 2004 article in the *Albuquerque Journal*, an environmental activist is quoted "it's a great first step ... what needs to come with it is some ... enforcement capability."⁴⁵

Since legislation was finalized so recently, all interested parties are waiting to see the results before issuing formal statements on the new laws. OHV remains a volatile debate among users in the National Forest.

3.8 Opportunities, Risks and Special Circumstances

Northern New Mexico is considerably distant from the largest and most-connected airport in the state which is more than 70 miles from any RD. There are a number of smaller, municipal airports in the area (Taos, Santa Fe, Los Alamos, etc), but their flight schedules may be too

³⁹ Southwest Four Wheel Drive Association. (2004). Land Use Issues. SFWDA Website. Retrieved October 2006, from <http://www.swfwda.org/index.php?des=landuseinfo>

⁴⁰ Russell, J. C., & Adams-Russell, P. A. (2005a). Values, Attitudes and Beliefs Toward National Forest System Lands: The Cibola National Forest (Issue Brief). Placerville, CA: Adams-Russell Consulting, September 23, 2005, p. 27.

⁴¹ Ibid

⁴² Russell, J. C., & Adams-Russell, P. A. (2005b). Values, Attitudes and Beliefs Toward National Forest System Lands: The New Mexico Tribal People (Issue Brief). Placerville, CA: Adams-Russell Consulting, September 11, 2005, p. 24, 41.

⁴³ Ibid., p. 21.

⁴⁴ Associated Press. (2005, November 3). Forest Service to corral off-road vehicles: Regulation aims to stop proliferation of illegal trails by motor enthusiasts. MSNBC. Washington. Retrieved from <http://www.msnbc.msn.com/id/9899401>

⁴⁵ Soussan, T. (2004, September 9). U.S. Plans To Limit Off-Highway Vehicles. *Albuquerque Journal*, p. 1.

limited for tourist use. Distance from a large airport and the distance from the state's major population center make attracting visitors to the area more difficult for the Santa Fe NF. However, forest lands that lack access to larger markets typically have greater influence on economic growth in rural counties,⁴⁶ because forest lands become one of the few substantial economic forces in the area, including FS operations.

Major highways near the Santa Fe NF are mostly around the perimeter of the forest. Local and collector roads and an extensive network of forest roads provide most access through the forest. Forest officials and local residents use forest roads as the primary way of accessing various points of interest within the forest. As such, it is imperative that these roads are kept in good condition. Many forest roads, especially near the Sangre de Cristo range, are often closed during the winter months because they are not plowed or maintained in the winter. In addition to the major highways and local roads, the forest has an abundance of forest roads.

Since the population in the area, outside of Santa Fe, is quite small, traffic is fairly light. Together, population and traffic predictions indicate that it is unlikely that there will be any significant increases in traffic through the area. The forest itself is divided into several contiguous areas with major highways running through them.

The key concerns regarding access and right-of-way to forest land are systemic in nature and require a coordinated policy to bring resolution. As it stands, the FS is only able to address problems when they become dire (lawsuits, and so on.). Conflicts over access and right-of-way are long-standing problems and may require the efforts of more than district staff, especially if resolution involves conflicting land records. In some areas, the Santa Fe NF should attempt to increase the number of visitors to the area by marketing recreational and cultural sites and increasing access, especially in the more rural regions. However, increasing access in the Santa Fe NF is a proposition that should be approached carefully. Increasing access to areas in the forest may be viewed with disapproval by tribal groups (and other traditional users) that desire to preserve the privacy and sanctity of their religious and cultural sites and practices. A study of tribal peoples' attitudes, beliefs, and values toward the land found that as long as land management policies are significantly influenced by economics, they are going to create conflict with native groups. Native American communities have attachments to the land that pre-date the FS and considering their needs and expectations regarding land use is essential to finding an appropriate balance.

⁴⁶ Rasker, Ray, Ben Alexander, Jeff van den Noort and Rebecca Carter, "Prosperity in the 21st Century West: The Role of Protected Public Lands," The Sonoran Institute, July 2004.

4 Land Cover and Ownership

This chapter examines issues related to land cover and land ownership in the Santa Fe NF. The first section examines the various types of land cover in each of the ranger districts. The second section discusses recent land exchanges and the policy environment for future conveyances. The third and fourth sections discuss specific forest issues relating to land cover: invasive species and forest fires.

The geographic data for this section is taken from the United States Geological Survey National Land Coverage Data set (NLCD), a raster based Landsat imagery. The data is obtained for each county with a 30 meter resolution making the data fairly accurate. The Arc Info Geographic Information Systems software is used to extract the necessary data for each contextual geographic area. The USAD FS provided land exchange and conveyance data and invasive species and fire information was obtained from discussions with forest officials and archival sources.

4.1 Land Cover on Santa Fe National Forest

Table 4.1 provides land cover classifications for each ranger district based on data compiled in the NLCD. About two thirds of the Santa Fe NF (1,282,151 acres) is covered with evergreen forest. Another 15 percent (252,759 acres) is covered by grasslands. **Figure 4.1** is a map illustrating land cover types on the Santa Fe NF.

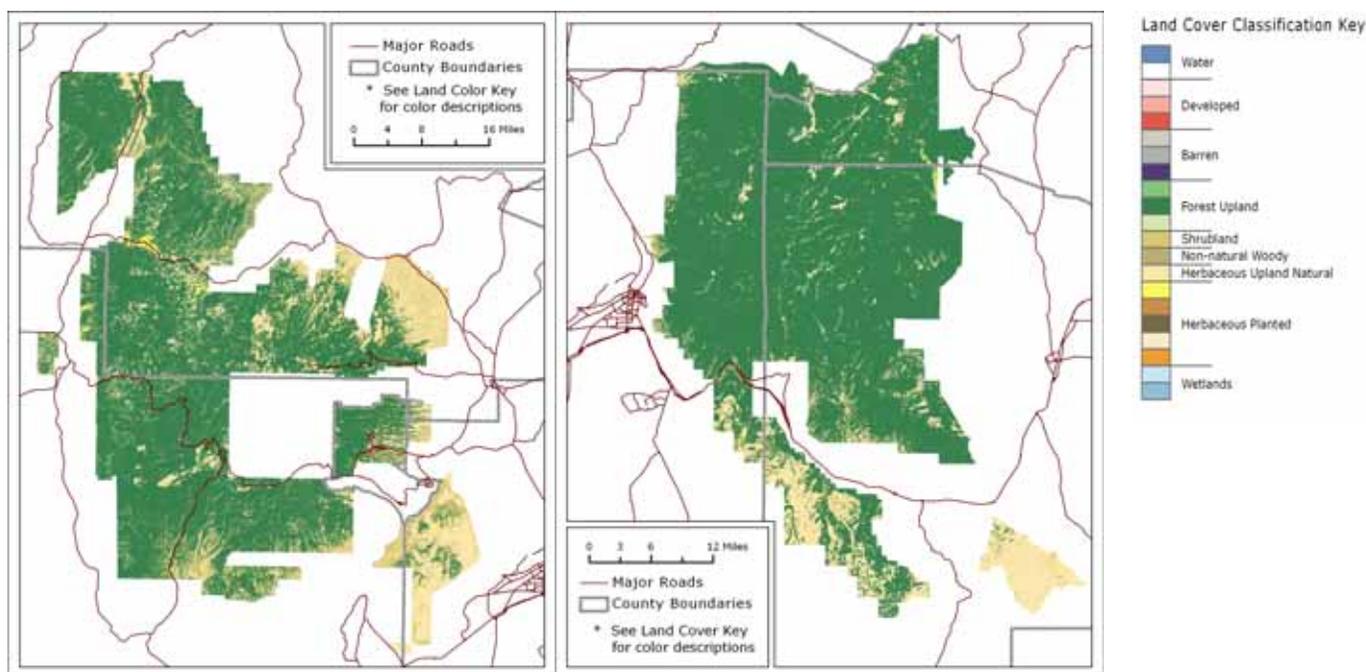


Figure 4.1: Land Cover on The Santa Fe National Forest (East and West)

The largest RD, Pecos-Las Vegas, makes up about a third (544,956 acres) of the whole forest. About 81 percent (439,808 acres) of the district is covered with evergreen forest and another 15 percent (80,274 acres) by grasslands. The Pecos-Las Vegas RD also includes a long strip of land just south of Interstate 25. This area's landcover is a mixture of evergreen forest and grasslands. The RD also includes a small area of grassland and shrub land located south of I-25 and east of NM3.

4 Land Cover and Ownership

The Española RD is divided into four separate sections; in total the district covers 376,399 acres, or about 22 percent of the forest. The RD spans both sides of US84. On the east side, the district includes a portion of the Pecos Wilderness and the Santa Fe Municipal Watershed, which is closed to all human occupancy to protect the drinking water of Santa Fe residents. On the west side, three sections are separated by Santa Clara Pueblo and the Bandelier National Monument. The Española RD is separated from the Jemez RD by the Valles Caldera National Preserve. The Preserve is shown by the white box in the left panel of Figure 4.1.

The Española RD has the largest number of grassland acres, (89,376 acres), accounting for about 35 percent of the forest's grasslands. About 4,200 acres are owned by entities other than the FS. Much of the grassland is located in the region surrounding the Town of Abiquiu Land Grant, just south of US84. Another section of the district covered by grassland is the area southeast of the Bandelier National Monument and south of White Rock Canyon. This area borders Cochiti Pueblo, to the west. The grassland and shrub lands are characterized in Figure 4.1 with light-brown shading.

The Cuba RD is divided into two large sections and one small section. In the large southern portion, the border of the Cuba RD travels through the San Pedro Parks Wilderness. The region of the district just south of the wilderness area is crisscrossed with forest roads, traveling through Sierra Nacamiento. The small portion of the Cuba RD is separated from the other two sections by US550

In the middle of the two large sections of the Cuba RD, is the Coyote RD, covering 267,688 acres (about 16% of the whole forest). The Coyote RD contains the entirety of the Chama River Canyon Wilderness. The Chama Scenic River runs through the Wilderness. On the northeast side of the Wilderness area is the Santa Fe NF's border with the Carson NF.

Table 4.1: Land Cover on Santa Fe National Forest (Acres)

	Coyote	Cuba	Espanola	Jemez	Pecos-Las Vegas	Total Santa Fe
Bare Rock/Sand/Clay	68	57	574	54	644	1,418
Commercial/Industrial/Trans	2	3	1,022	73	87	1,187
Deciduous Forest	144	0	1,383	641	6,729	8,896
Emergent Herbaceous Wetlands	1	1	0	0	0	2
Evergreen Forest	201,042	215,968	224,294	201,014	439,808	1,282,151
Fallow	0	0	1	0	1	2
Grasslands Herbaceous	40,139	23,058	89,376	19,835	80,274	252,759
High Intensity Residential	0	0	25	0	0	25
Low Intensity Residential	2	7	778	39	26	850
Mixed Forest	1,631	2,574	0	867	0	5,069
Open Water	266	37	458	56	37	779
Orchards/Vineyards/Others	25	0	0	0	0	25
Pasture/Hay	3,109	645	158	219	627	4,751
Quarries/Strip Mines/Gravel Pits	7	160	489	76	0	732
Row Crops	4	0	346	100	0	450
Shrubland	21,217	11,900	57,272	27,929	16,722	135,041
Small Grains	25	1	0	8	0	33
Urban/Recreational/Grasses	0	0	163	0	0	164
Woody Wetlands	5	0	0	0	0	5
Total	267,688	254,410	376,339	250,912	544,956	1,694,340

In addition to land cover, land ownership is an important consideration in land use and planning policies.

4.2 Land Ownership

Overall, there are 137,964 acres within the Santa Fe NF which are privately owned, making up only about eight percent of the entire forest. This proportion is similar to the seven percent of privately owned land in the neighboring Carson NF. In the Cibola and Carson NFs, the two most common land covers, evergreen forest and grasslands, have differing proportions of land owned by private interests. For example, in the Carson NF, only four percent of evergreen forest acres are owned by private landowners, whereas 12 percent of the grasslands are owned by private interests. Generally, economically viable land outside of tourist attractions, particularly grazing land, is more likely to be owned by private interests. This was also the case in the National Grasslands. However, this was not the case for the Santa Fe NF. About eight percent of all evergreen forest, grassland and shrubland are owned by private landowners, indicating no variance in land ownership and land cover. **Table 4.2** shows, in great detail, the breakout of publicly and privately owned land in the Santa Fe NF.

Table 4.2: Land Cover of Publicly and Privately Owned Land in Santa Fe NF

	Coyote			Cuba			Española		
	NFS	Private	Total	NFS	Private	Total	NFS	Private	Total
Bare Rock/Sand/Clay	59	9	69	38	19	57	574	0	574
Commercial/Industrial/Trans	1	1	2	2	0	3	170	854	1,023
Deciduous Forest	74	70	143	0	0	0	1,294	92	1,386
Emergent Herbaceous Wetlands	1	0	1	1	0	1	0	0	0
Evergreen Forest	194,459	6,582	201,041	210,602	5,374	215,976	212,902	11,383	224,285
Fallow	0	0	0	0	0	0	1	0	1
Grasslands Herbaceous	36,332	3,835	40,167	193	3,388	3,581	85,095	4,279	89,374
High Intensity Residential	0	0	0	0	0	0	0	25	25
Low Intensity Residential	0	1	2	0	7	7	2	776	778
Mixed Forest	1,553	77	1,630	2,494	80	2,574	0	0	0
Open Water	251	13	264	35	2	37	359	93	452
Orchards/Vineyards/Others	0	24	25	19,668	0	19,668	0	0	0
Pasture/Hay	305	2,811	3,116	1	449	450	158	0	158
Quarries/Strip Mines/Gravel Pits	7	7	7	148	13	161	365	127	492
Row Crops	0	4	4	0	0	0	346	0	346
Shrubland	19,552	1,666	21,218	10,846	1,055	11,901	54,031	3,251	57,282
Small Grains	0	25	25	0	0	0	0	0	0
Urban/Recreational/Grasses	0	0	0	0	0	0	24	139	163
Woody Wetlands	0	5	5	0	0	0	0	0	0
Total	252,595	15,123	267,719	244,029	10,388	254,417	355,322	21,017	376,339
	Jemez			Pecos/ Las Vegas			Santa Fe Total		
	NFS	Private	Total	NFS	Private	Total	NFS	Private	Total
Bare Rock/Sand/Clay	51	3	54	644	1	644	1,367	32	1,399
Commercial/Industrial/Trans	32	41	73	8	79	87	213	974	1,187
Deciduous Forest	582	60	642	4,997	1,731	6,728	5,652	1,953	7,605
Emergent Herbaceous Wetlands	0	0	0	0	0	0	2	0	2
Evergreen Forest	189,248	11,758	201,006	379,227	60,586	439,813	1,186,539	95,685	1,282,224
Fallow	0	0	0	0	2	2	1	1	2
Grasslands Herbaceous	17,552	2,286	19,837	71,501	8,771	80,272	230,236	22,524	252,760
High Intensity Residential	0	0	0	0	0	0	0	25	25
Low Intensity Residential	4	35	39	1	25	25	7	844	851
Mixed Forest	751	117	867	0	0	0	4,797	273	5,069
Open Water	2	54	56	30	7	37	677	169	846
Orchards/Vineyards/Other	0	0	0	0	0	0	0	24	25
Pasture/Hay	6	212	219	0	627	627	655	4,098	4,753
Quarries/Strip Mines/Gravel Pits	72	4	76	0	0	0	591	143	734
Row Crops	0	100	100	0	0	0	346	103	450
Shrubland	25,635	2,297	27,932	14,046	2,677	16,724	124,119	10,937	135,056
Small Grains	0	8	8	0	0	0	1	32	33
Urban/Recreational/Grasses	0	0	0	0	0	0	24	139	164
Woody Wetlands	0	0	0	0	0	0	0	5	5
Total	233,935	16,975	250,910	470,453	74,506	544,959	1,555,226	137,964	1,694,344

Note: Small errors in calculations are the result of 'edge rounding' associated with the use RASTER based NLCD.

Source: USGS EROS, National Land Cover Data (NLCD), Date 1992 (New Mexico). Calculations by UNM-BBER.

The Pecos-Las Vegas RD has the highest percentage of privately owned land (about 14%). About 16 percent of the district's shrubland is privately owned, but it is insignificant compared to the rest of the forest.

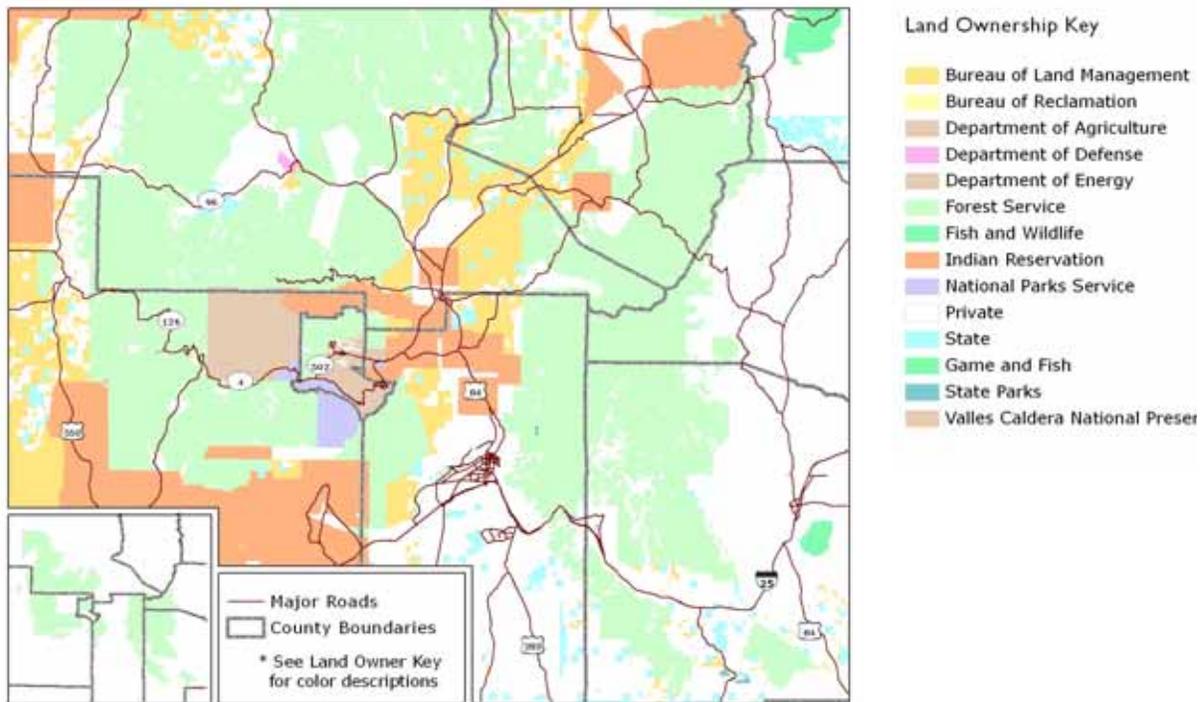


Figure 4.2: Land Ownership on Santa Fe National Forest

4.3 Land Conveyance and Exchanges

The Forest Service provided BBER with data concerning land conveyances and exchanges in the Santa Fe NF. Generally speaking, isolated parcels of forest land scattered around the boundaries of the Forest are often costly and difficult to manage and pose significant right-of-way issues. However, these parcels can still hold leverage. FS officials have often expanded contiguous forest areas by trading isolated parcels for land more desirable to the FS on the edge of or inside FS boundaries.

The last major land exchange related effort began in January 2005, when the Pecos National Historical Park Land Exchange Act of 2005 was introduced to the Senate. In July 2005, the bill was referred to the House Subcommittees on Forest and Forest Health and on National Parks where no action was taken. The bill was reintroduced in January 2007, was passed out of the Senate Energy and Natural Resources Committee and is awaiting action by the full Senate⁴⁷ It has not been scheduled for a vote and there is no companion bill in the House of Representatives.⁴⁸

In 2004, after a few years of negotiations, the Santa Fe NF acquired 1,600 acres of private land adjacent to the northeast side of the Pecos Wilderness. The land was bought with \$4.7 million from the Federal Land and Water Conservation Fund, with support from a non-profit and the United States Congress. The USAD FS wanted to purchase the land to create an eastern access to

⁴⁷ [http://thomas.loc.gov/cgi-bin/bdquery/z?d110:S.216:](http://thomas.loc.gov/cgi-bin/bdquery/z?d110:S.216)

⁴⁸ Information provided by Sen. Jeff Bingaman's Albuquerque office, June 27, 2007.

the Gascon Trail.⁴⁹ Before the purchase, there was no road to the trail, but the FS had an easement to the trail. Before the road is built, the FS must complete an environmental impact study, including a public comment period.

Data provided by the Forest Service describes other examples of land exchange in the past. For example, land was exchanged under the auspices of the Weeks Act in fiscal year 1994. The FS exchanged 111 acres and \$32,000 for about 640 acres of non-federal land. President William Howard Taft signed the Weeks Act into law on March 1, 1911. The law authorizes the federal government to purchase lands for stream-flow protection, and to maintain the acquired lands as national forests. Initially, the law was used to acquire eastern lands along navigable watersheds. As the years progressed however, the Forest Service acquired select western lands under the aegis of the Weeks Law.⁵⁰

According to forest historians, transfers of land *from* national forests, even for public purpose, have been viewed as disappointments by land administrators in Region 3.⁵¹ They view the transfer of public lands, which are available for the general public's use and enjoyment, to exclusive use of a certain segment of the population (without suitable recompense to the public), as contrary to the general public interest. This was the underlying issue in the transfer of two areas from the Santa Fe NF to Taos Pueblo; the Blue Lake area during the Kennedy administration and the Rio Pueblo Drainage during the Nixon administration.⁵²

4.4 Forest Health

Forest health is a central concern the FS and forest users. Healthy forests provide important resources, such as clean water and air to villages, towns and cities. FS research shows that 80 percent of fresh groundwater in the United States originates from federal forest lands. The role of forests in absorbing carbon from the air is also well documented.⁵³ Forests also provide safe refuge for wildlife and some of the most endangered species of plants and animals. However, the strategies implemented to protect forest health are often at the center of conflicts. For example, environmental groups heavily advocated for the end of logging in order to protect endangered wildlife, such as the Mexican Spotted Owl. After the reduction of heavy logging, other forest users became concerned with the resulting overgrowth and fire danger.

At the national level, the USDA FS has indicated four areas of major concern that are overarching issues for all NF lands. Presented as the "Four Threats," these areas are: fire and fuels, invasive species, loss of open space and unmanaged recreation. Growing populations and increased use adds to the difficulty of reducing these threats on public lands. All of these critical management issues are relevant to the Santa Fe NF, and some are discussed in more detail in other chapters. The specific threats and possible impacts in the Santa Fe NF are briefly described below.

⁴⁹ Staci Matlock. Santa Fe National Forest Expands. Staci Matlock. The New Mexican. December 4, 2004.

⁵⁰ The Forest History Society. <http://www.lib.duke.edu/forest/> Accessed June 5, 2006.

⁵¹ Robert D. Daker, Robert Maxwell, Victor Treat, and Henry Dethloff. *Timeless Heritage: A History of the Forest Service in the Southwest*. (College Station, TX: USDA Forest Service, 1988).

⁵² Ibid.

⁵³ R. K Monson, A. A Turnipseed, J. P Sparks, P. C Harley, L. E Scott-Denton, K Sparks, T. E Huxman (2002) Carbon sequestration in a high-elevation, subalpine forest *Global Change Biology* 8 (5), 459–478.

4.4.1 Fire and Fuels

Much of the West has been under drought conditions over the last several years. Continued drought conditions combined with high fuel loadings have created dangerous conditions for much of the West.⁵⁴ Some 26 million acres in the West have been identified as fuels treatment “hot spots” or high priority areas. Many of these areas are classified as FRCC3, “significantly altered from the normal range.” These are areas that have missed multiple cleansing fires. FRCC3 areas where there is a high risk of large and destructive fires that can be dangerous and difficult to control.

Uncontrolled fires can result in substantial environmental and economic impacts. Wildfire devastation impacts lives, property, wildlife habitat, fragile ecosystems, water, and soils, and timber resources.⁵⁵ Fires and the corresponding reduction of tree cover can result in deterioration of fresh water supplies and collateral damage because of increased runoff, increased flooding and aquifer depletion.⁵⁶

Of the 21 acres of National Forest lands in the Southwestern Region, more than 80 percent is at moderate to high risk of “uncharacteristic” wildfire. These fires are larger and more intense than naturally occurring wildfires. They can alter soils, reducing their ability to retain moisture, accelerate erosion and compromise water quality. Further, wildlife habitats and the forests’ aesthetic quality are damaged. Prevention strategies are not inexpensive and are not always well received by the public. An article in the Albuquerque Journal in September 2005 describes a scaling back of a thinning project because of community resistance.⁵⁷ However, others are concerned with the heavy undergrowth and dry brush which are major fuels.

Treatments to reduce fuels and restore ecosystems involve various techniques, including thinning, prescribed burning, and clearing the forest of debris. Treatments can be biological, mechanical or chemical.⁵⁸ Costs for treatment in 2004 were roughly \$120 per acre although estimates of costs using mechanical means are cited in a range of \$500 to \$1,000 per acre (USDA FS, 2003).

In 2007, due to high levels of precipitation in the winter and spring, fire restrictions in the Santa Fe NF did not go into effect until late June. This is a change from the previous year when fire restrictions were put in place for much of the Santa Fe NF in April due to the lack of precipitation during the winter.⁵⁹ Beyond closing the forest to recreational visitors, forest closures can have economic impacts as well. Outfitters, rafting companies and other businesses that rely on forest recreation were hurt by a major forest closure in 2002.⁶⁰

⁵⁴ USDA FS. (2004, June). *Fire and fuels*. Retrieved from <http://www.fs.fed.us/projects/four-threats/documents/firefuels.fs.pdf>

⁵⁵ USDA FS. (2006, October). Fire and fuels: Quick facts. USDA FS Website: Four Threats. Retrieved Novem16, 2006, from <http://www.fs.fed.us/projects/four-threats/facts/fire-fuels.shtml>

⁵⁶ Sedell, J., Sharpe, M., Apple, D.D., Copenhagen, M., & Furniss, M. (2000, January). Water and the forest service. USDA FS Document FS-660. Retrieved from <http://www.fs.fed.us/publications/policy-analysis/water.pdf>

⁵⁷ Journal Staff. (2005, September 15). Cibola Forest Trims Thinning Project Near Tajiue. Albuquerque Journal.

⁵⁸ USDA FS. (2003). Position paper: Fire and fuels build up. Retrieved from <http://www.fs.fed.us/publications/policy-analysis/fire-and-fuels-position-paper.pdf>

⁵⁹ The Associated Press. Entire Santa Fe Forest to be under Fire Restrictions.” April 26, 2006.

⁶⁰ John Arnold “Fire Restrictions Likely Despite Snowfall, Precipitation has Delayed Action.” Albuquerque Journal, March 22, 2006.

Restoring fire-adapted ecosystems is of utmost priority in Region 3. The urgency is felt statewide, but there are conflicts over how to thin the forests – using fire, mechanical means or not intervening at all. The FS has the task of considering impacts on wildlife, habitat, effects on visual quality, and tribal concerns.

Wildfires in the Santa Fe NF pose a special threat to the watersheds in the region. Some officials are worried because a written comprehensive strategy to address the watersheds in case of a fire does not exist.⁶¹ For some time after a fire, water would be unusable for drinking because of the ash and sediment that would accumulate in it.

4.4.2 Invasive Species

Invasive species have been characterized as a “catastrophic wildfire in slow motion.”⁶² Non-native, invasive plants and insects can cause major disruptions in ecosystem function. Invasive species can reduce biodiversity and degrade ecosystem health in forest areas. The damage caused by invasive organisms affect the health of not only the forests and rangelands but also of wildlife, livestock, fish, and humans.⁶³

Invasive plant life, such as bull thistle, bindweed and salt cedar, is a concern complicating forest management all over New Mexico. However, some forest managers have come under heated criticism for the use herbicides to kill these noxious weeds.⁶⁴ Critics argue that herbicides pose risks to fragile aquatic life and sensitive wildlife pollinators, such as butterflies.

Salt cedar (tamarisk) is a tree that grows along rivers and streams, absorbing and transpiring large amounts of water making it an invasive species that greatly impacts watersheds and riparian systems. FS personnel mechanically remove the tamarisk in sensitive areas or where infestations are small. However, mechanical removal is considered unpractical for infested areas with many miles of stream or covering hundreds of acres. Unfortunately, the use of herbicides over large areas means more herbicides in the watershed. Tribal and pueblo peoples have also expressed concern over the use of herbicides that can make their way onto their lands.⁶⁵

The fire danger in the Cibola NF is often times intrinsically linked to the bark beetle. Forests are at risk of beetle infestations due to recent drought conditions in the area.⁶⁶ Bark beetles infest piñon and other pine varieties distressed from already existing drought conditions. The result is rapid mortality of large stands of trees, resulting in higher fuel levels. The beetles typically have a two-year life cycle and regulate their own population. However, they can cause extensive damage to forests. Traditional wisdom dictates “once you see the beetles, it’s already too late.”

⁶¹ Martin Salazar. Severe Fire Danger: Officials search for water, evacuation plans to prepare for a dry summer.” Albuquerque Journal. May 7, 2006.

⁶² Fred Norbury, Assoc. Deputy Chief, FS. (2005). Statement before the Subcommittee on Public Lands and For Committee on Energy and Natural Resources. Retrieved from http://energy.senate.gov/public/index.cfm?FuseAction=Hearings.Testimony&Hearing_ID=1500&Witness_ID=4269

⁶³ USDA FS (2006, March 24). Invasive Species Program. USDA FS Website. Retrieved October 2006, from <http://www.fs.fed.us/invasivespecies/definition.shtml>

⁶⁴ Berdie, J. (2006, January 14). Letter to Editor. Santa Fe New Mexican.

⁶⁵ Russell, J. C., & Adams-Russell, P. A. (2005). Values, Attitudes and Beliefs Toward National Forest System Lands: The New Mexico Tribal People (Issue Brief). Placerville, CA: Adams-Russell Consulting.

⁶⁶ Sharpe, T. (2006, February 21). Preparing for the worst. *The Santa Fe New Mexican*.

4.4.3 Loss of Open Space and Pristine Areas

Forest areas located at the edges of growing towns and cities, or in prime recreation areas popular for second-home development are the most at-risk of losing open space. Increases in housing density and associated development (such as power lines, septic and sewer systems, and shopping centers) can result in changes in wildlife habitats, changes in forest health, reduced opportunities for outdoor recreation and greater loss of life and property to wildfire. The development of private lands in and surrounding the Santa Fe NF can result in a decrease in open space. As houses are built closer to the base of mountains access to trails and forest lands may be limited. Also at risk are the traditional uses of forest land as newcomers have different interests in the land as compared to local residents who depend on the land for their livelihood.

Road construction in wilderness areas is a potential threat to pristine forest areas. The debate over the preservation of inventoried roadless areas (IRAs) and the wilderness areas represents active and current struggles over the conservation of pristine areas. Community and activist groups advocate for the preservation of “pristine” forest areas that are not permanently altered by human interference. Other stakeholders argue that roads are needed to provide access for resource extraction as well as for fire prevention and control.

4.4.4 Unmanaged Recreation

Off-highway vehicle (OHV) use is the primary form of unmanaged recreation in the Santa Fe NF. The growing use of OHVs has major implications for forest planning and management. The effects of OHV use include miles of unplanned trails and roads, erosion, recreational use conflicts, spread of invasive species, damage to cultural resources and historical sites, disturbance to wildlife, destruction of habitats, and risk to public safety.

As discussed in Chapter 3, the FS implemented the Travel Management Rule for OHV use in National Forests and Grasslands which went into effect in December of 2005.⁶⁷ New guidelines provide re-designation of trails and routes for different types of uses. Response to the plan has been mixed, and it has been suggested that there may be a need for more clarity in the designations.

4.5 Opportunities, Risks and Special Circumstances

The most pressing issues facing the Santa Fe NF regarding land cover and land ownership is directly related to forest health, namely fire danger. Drought conditions have left much of the southwestern region of the United States a tinderbox waiting for a spark. The danger is exacerbated by invasions of bark beetles, noxious weeds and the lack of adequate tree thinning.

Even though the danger is imminent, various land interests have yet to agree on methods in restoring forest health. It is a difficult position for the FS, its attempts to mechanically thin the forest have met with opposition from some outside groups, but attempts to use herbicides also have been met with opposition from other groups. While the conflict goes on, conditions in the forest become more and more dire.

⁶⁷ USDA FS. (2005). USDA Forest Service Releases Final Rule for Motorized Recreations in National Forests & Grasslands. FS Press Release. Retrieved November 10, 2006, from <http://www.fs.fed.us/news/2005/releases/11/travel-management.shtml>

4 Land Cover and Ownership

Federal and private land managers must work together to eradicate invasive plant species. Otherwise, efforts on one side will prove ineffective. In the case of local businesses, such as the raising of organic beef or organically grown herbs, the businesses and FS should collaborate on an effective treatment and prevention plan. Local residents should be educated on how to keep invasive plant species under control on their property.

These problems and the FS's limited options in resolving the situation could erode public confidence in the Forest Service's ability to manage forest resources. Since the FS manages a significant portion of forested lands in the Southwest, the public expects the agency to take action to resolve the beetle situation, especially since tree mortality increases the risk of wildfire. Many expect that the FS will remove dead trees from around communities and adjacent to private lands. Where dead trees become a threat to people and or property, removing the problematic trees becomes a major expenditure for both the agency and the public. The results have the potential for far-reaching impacts on forests, communities and private lands in New Mexico.

5 Forest Uses and Users

The purpose of this chapter is to describe how different parts of the forest are used and by whom they are used. The USAD FS allows land to be accessed for a variety of uses including: recreation, tourism, subsistence, and grazing, as well as providing scenic resources for the surrounding communities and forest visitors. It is a group of diverse individuals and groups which use forest resources, manage and plan the forest, and own forest dependent businesses. Each of these people use and interact with the forest environment in a broad assortment of ways that have significant consequences for forest ecosystems and the people who depend on them.⁶⁸

When asked, officials with the Santa Fe NF had a difficult time identifying a primary land use, or “niche,” for the forest, noting that its users are extremely diverse and various uses are concentrated in different areas of the forest. In some areas, grazing is the primary use, whereas recreation and non-traditional timber products are common in others. Without a common “vision” or “identity” for the forest, it can be difficult to identify guiding principles which assist in formulating land use policies and help direct decision-making. In late June 2006, the Santa Fe NF staff gathered to discuss what the “vision” of the Santa Fe NF is in an attempt to gain a better understating of what the forest is “all about.”⁶⁹

Historically, the identification and implementation of principles to guide land management policies have been successful in the Santa Fe NF. For example, the Santa Fe NF has established guidelines regarding acceptable methods and circumstances for forest thinning. Forest thinning projects have often been a point of contention among the FS and outside groups. On one hand, there are the self-named environmental groups which argue that thinning threatens wildlife habitats and jeopardizes endangered species. On the other hand, forest managers are worried that an overgrown forest increases the risk for catastrophic fire. The guidelines established by the FS are the product of collaboration and compromise among a variety of groups with different interests. Also, the guidelines have the support of environmental preservation groups and other interests which can greatly reduce the threat of lawsuits and conflicts over thinning and other timber projects that impede any action to improve forest health.

This chapter explores some of the major issues facing the Santa Fe NF and its users. The following sections discuss the forest’s multiple use mandate and current conflicts among users. It also outlines the predominant uses of the forest currently.

5.1 Forest Use and Users

This chapter discusses how different parts of the forest are used, in terms of land cover and land use, as well as the users themselves. The Forest Service manages the land for a variety of purposes from recreation and tourism to grazing and resource extraction. The Forest Service also manages scenic resources for the neighboring communities and visitors. Many diverse individuals and groups own, manage, and use forest resources, and they interact with the forest environment

⁶⁸ J. F. Dwyer, “Integrating social sciences in ecosystem management: People-forest interactions in the urban forest,” in H.K. Cordell (Ed.), *Integrating social sciences and ecosystem management: A National Challenge*: Athens, GA: USDA, Forest Service, Southern Research Station, 1995).

⁶⁹ Personal Communication. June 5, 2006.

in a broad assortment of ways that have significant consequences for forest ecosystems and the people who depend on them.⁷⁰

While traditionally the national forests supported resource-based industries, like wood-products, mining, and grazing, recreational use of the forest is growing. Recreational uses include activities such as hiking, picnicking, camping, skiing, bird-watching, hunting, OHV use, and rock climbing. Spending by recreational users is estimated to have the largest economic impact on the Santa Fe NF assessment area. (See Chapter 7) Moreover, these estimates do not include the substantial economic benefit derived by the individual recreational user.⁷¹

The FS is guided by a multiple-use mandate to administer lands for the purpose of recreation, grazing, timber, watershed, fish and wildlife.⁷² However, the multiple-use principle is not without challenges. With increased usage from growing populations, an inherent dilemma in the multiple-use rule is clear. Inevitably, there is an increased likelihood that one type of use will impinge on another, creating the potential for conflict. Land-use conflict is a major challenge for FS officials because it is inherent in practically every forest planning decision. While many forest users are hesitant to suggest limiting access, increasing attention is being given to how some users, like those using recreational Off Highway Vehicles (OHVs), are degrading the land and the experiences of others.⁷³ See discussion on Off Highway Vehicles in Section 2.6 of the chapter on Travel and Access.

Multiple-use issues are especially sensitive when they involve Native American communities. FS managed lands are used by tribes for religious and cultural purposes. The Cibola NF contains archaeological sites, lands of cultural significance, traditional hunting grounds, and sacred sites, which are unequivocally important to tribes. Tribal communities are concerned with protecting sacred sites and with limiting outsider knowledge both of their special areas and of how these areas are used by the tribes.

Officials with the Santa Fe NF provided descriptions of common conflicts between forest users. For example, the relationship between tribal groups and the FS is often strained as forest officials attempt to plan forest maintenance and restoration efforts while preserving the integrity of cultural sites. However, many of the most significant cultural sites are not known to the FS making it difficult, if not impossible, to make adequate allowances. Still, tribal groups are reluctant to disclose their special sites and expect the FS to be sensitive to their cultural practices and requirements.⁷⁴ Recently, the most significant battle between tribal groups and the Santa Fe

⁷⁰ Dwyer, J.F. (1995). Integrating social sciences in ecosystem management: People-forest interactions in the urban forest. In H.K. Cordell (Ed.), *Integrating social sciences and ecosystem management: A national challenge*. Athens, GA: USDA Forest Service, Southern Research Station.

⁷¹ See, for example Fix, P and J. Loomis (1997) *Journal of Leisure Research*. 23(3). P. 342-352. These researchers found that the economic benefit, as measured in terms of consumer surplus, for mountain bikers in Moab, Utah, was upwards of \$200 per visit. This means that mountain bikers would pay up to \$200 over and beyond actual travel expenses to ride the mountain trails, because of the benefits they gain from their recreation.

⁷² Multiple-Use Sustained-Yield Act of 1960, 16 U.S.C. §§ 528-531, June 12, 1960.

⁷³ Russell, J. C., & Adams-Russell, P. A. (2005a). *Values, Attitudes and Beliefs Toward National Forest System Lands: The Cibola National Forest (Issue Brief)*. Placerville, CA: Adams-Russell Consulting, September 23, 2005, p. 27.

⁷⁴ J. C. Russell and P. A. Adams-Russell, *Values, Attitudes and Beliefs Toward National Forest System Lands: The New Mexico Tribal Peoples* (Placerville, CA: USDA Forest Service, 2005).

NF is a lawsuit filed by the Tesuque Pueblo to halt the construction and operation of a ski lift in the Santa Fe Ski Basin. The Pueblo claims that the chair lift risks damage to culturally significant sites located in the area. The details of this conflict are discussed in a later section of this chapter.

In addition to recent developments in recreation, the history of the northern New Mexico region has had an influence on how land is used and shapes the debate in many of the current land-use conflicts. Changes in the economy have contributed to changes in the roles of the forests' stakeholders. Russell succinctly described how the stakeholders were once dominated by the interest of ranchers, farmers and extractive industries, but now it is the recreation and tourism industries that have a larger stake in decisions regarding forest land use.⁷⁵ This shift from traditional to recreational uses has also created a distinction between the **types** of users that access the forest.

There is difference in usage between newcomers to the area and those whose families have lived in the area for generations. The conflict between newcomers and longer term residents often deal with disagreements on the appropriate use of the land and natural resources. New arrivals are often perceived as not appreciating or not tolerating traditional uses, such as grazing. A anecdote told by long-time ranchers described affluent newcomers as complaining about, "cows on their Kentucky blue grass lawns."⁷⁶

5.2 Recreation

In many of the national forests in New Mexico, including the Cibola and Carson NF, dollars spent by recreational visitors provide the forests' most significant economic impact in their surrounding areas. The Santa Fe NF is no exception. When compared to other economic activities such as timber and oil extraction, visitor spending has by far the greatest economic impact. Typically, visitors are attracted to the areas within the Santa Fe NF for skiing, hiking, and camping. The Santa Fe NF has over 100 designated recreational sites, including 34 developed campgrounds and 25 trail heads. However, it is the ski areas that have the greatest annual impact.

Table 5.1 provides an estimate of how many people visit the forest for recreation and wildlife related purposes. Data collected by the Forest Service indicates that at least 1.3 million people have visited the Santa Fe NF in 2002-2003. Recreational visitors access the forest for purposes such as hiking, camping, backpacking, and picnicking. The wildlife data includes hunters, anglers, and wildlife "watchers" (photographers, birdwatchers, etc). Unfortunately, the data is limited in that BBER is unable to determine the number of visitors for each ranger district or to identify where visitors are coming from. The data do show, however, that more than half of all visitors (822,046 visitors) are local residents who travel to the forest on a day trip. It can be assumed that these visitors come from the nearby towns of Santa Fe, Los Alamos and Española. Residents of areas further south (Albuquerque, Bernalillo) may be more likely to visit the Cibola NF, as it is closer.

Accessed June 8, 2006

⁷⁵ Ibid.

⁷⁶ Ibid.

Table 5.1: Number of Recreational & Wildlife Forest Visitors of Santa Fe NF

Type of Visit	Recreation	Wildlife
Non-local Day Travel to Forest	233,176	10,393
Non-local Overnight Stay on Forest Land	102,015	4,547
Non--Local Overnight Without Stay on Forest Land	160,309	7,145
Local Day Travel to Forest	786,970	35,076
Local Overnight with Stay on Forest Land	58,294	2,598
Local Overnight Without Stay on Forest Land	0	0
Total Santa Fe Forest Users	1,340,763	59,760

Source: NVUM Santa Fe 2003. UNM-BBER

As mentioned earlier, it is the skiers that have the most economic impact in the Santa Fe NF. BBER estimates that 182,076 skiers visited the forest in 2003. This will be discussed in full detail in Chapter 7, “**Economic Impacts.**” The Pajarito Ski Area, a private ski area within the Santa Fe NF and the Santa Fe Ski Basin are located in the Española RD. The Pajarito Ski Area is the smaller of the two, with 290 acres cleared for skiing. It is located on the eastern edge of the Jemez Mountains, near where the Valles Caldera National Preserve and the Bandelier National Monument meet. The area is owned by Los Alamos Ski Club Inc, a non-profit organization. There is a small paid staff that runs the facility, as most work is performed by volunteers. Also, the Pajarito Mountain Ski Patrol is the only all-volunteer ski patrol in the state, with about 60 volunteers. There are about 40 runs in the area.

Ski Santa Fe opened in 1948 and began operating under a special use permit from the FS in 1978. In 1997, the FS issued a new 40-year special use permit to the ski company allowing it to pursue expansion plans. The Ski Basin has about 67 trails on 660 acres. The ski basin is owned by the Abruzzo family and is operated as a private business. Currently, there are seven chair lifts in the ski area, in addition to the new “Millennium Triple” chair lift scheduled to begin operation in Winter 2006. The new chair lift was originally scheduled to open in late 2005, but a lack of snowfall kept it idle. The chair lifts have the capacity to transport more than 10,000 skiers per hour.⁷⁷ Since the ski area attracts so many visitors, communities are concerned about the impacts of heavy traffic on special areas, especially culturally significant sites., Located near the ski area is the Tesuque Pueblo, which has filed a lawsuit against the Forest Service, claiming the new chair lift will allow unlimited access to the tribe’s holiest shrines and most revered religious ceremonies. This is discussed in further detail in the next section.

5.2.1 Santa Fe Ski Basin and the Tesuque Pueblo

According to Ski Santa Fe, skiers and snowboarders are pleased by the area’s newest expansion, which includes a new lift to the upper ski-basin trails at Deception Peak. However, groups such as Tesuque Pueblo and the Sierra Club have fought against the expansion for cultural and environmental reasons.⁷⁸ The Tesuque Pueblo sued the FS in August 2005 and the Nambé Pueblo joined the suit in November of the same year.⁷⁹ Tesuque Pueblo agreed to dismiss its claims in the lawsuit in March 2007. Nambé Pueblo dropped four of its six claims and is working on a

⁷⁷ Ski Santa Fe. <http://www.skisantafe.com/facts/html> . Accessed May 10, 2006.

⁷⁸ Staci Matlock. “Making Way for New Lift.” The Santa Fe New Mexican. October 13, 2005.

⁷⁹ John Arnold. “Chairlift Future Up in the Air.” Albuquerque Journal. November 25, 2005.

memorandum of agreement with the Forest Service that would enforce a similar memorandum of agreement signed nearly a decade earlier.⁸⁰

The new chair, “The Millennium Chairlift”, opened in late 2006. It is the eighth lift at Ski Santa Fe and is over one mile long on the north side of the ski basin with a vertical rise of 1,530 feet and is 12,075 feet at its highest point. The chairlift is estimated to boost the number of riders by up to 1,500 per hour in addition to the area’s previous capacity of 9,350 riders per hour.⁸¹

5.2.2 Hunting and Wildlife

The wildlife in the Santa Fe NF attracts visitors ranging from hunters to wildlife watchers. In 2001, 595,000 New Mexico residents participated in hunting, fishing, or wildlife watching, contributing about \$1 billion to the state’s economy.⁸² NVUM data show that almost 60,000 people visited the Santa Fe NF to see or hunt wildlife in 2003. Refer back to **Table 5.1**. Many game animals roam the Santa Fe NF, including mule deer, elk, turkey, black bear, mountain lion, and bighorn sheep. Elk is a premier game animal in the state. Additionally, the Santa Fe NF has ample fishing opportunities. The forest has more than 620 miles of streams and lakes. Many of these areas are stocked with Rainbow Trout and the native Cutthroat Trout.⁸³

Under federal mandate, hunting is regulated by the states which are responsible for issuing permits and licenses. In New Mexico, permits for elk, deer, and antelope are issued on a lottery basis to New Mexico residents and non-residents. The seasons and hunting dates are highly regulated on the Santa Fe NF. A full description of elk and deer hunting regulations can be found in the appendix, **Table A.6**.

In New Mexico, small geographical areas in the national forest are designated as hunting management “units,” by the state. The units are used to designate hunting areas, as regulations regarding hunting dates and limits are set at the unit-level. Elk is a popular game animal and Elk hunts are popular in Units 6 (Sandoval County, near Jemez Pueblo), 44 and 45 (in the Pecos Wilderness). Hunting opportunities are also available on private land in Mora County, east of US85 (Unit 46). Deer hunts often take place in Mora County, north of NM120 (Unit 48).

Elk hunting is popular in the Valles Caldera National Preserve in September and October, but the area’s elk population is causing concern. Approximately 4,500 elk populate the Jemez Mountains and about two-thirds of that herd spends 6-8 months in the Valles Caldera National Preserve.⁸⁴ The population is half the size of what it was in the late 1990s and the calf to cow ratio is alarmingly low⁸⁵. Further, the number of elk calves that live to adulthood is half of what it is

⁸⁰ Mark Oswald. “Pueblos Agree to Abandon Suits.” *Journal Santa Fe*. March 13 2007.

⁸¹ Staci Matlock. “Making Way for New Lift.” *The Santa Fe New Mexican*. October 13, 2005.

⁸² U.S. Department of the Interior, Fish and Wildlife Service, 50 State Reports, 2001 National Survey of Fishing, Hunting and Wildlife-Associated Recreation, <http://fa.r9.fws>.

⁸⁴ John Arnold, “Possible Elk Decline Studied, Animals could be Changing behavior,” *Albuquerque Journal*, December 30, 2005.

⁸⁵ Staci Matlock, “Form Water to Elks, Lead Scientist Coordinating Projects,” *The Santa Fe New Mexican*, December 11, 2005.

elsewhere.⁸⁶ Research is currently being conducted to investigate the role of coyotes in the decreasing elk population.⁸⁷

5.3 Grazing

Approximately 95 million acres, accounting for 65 percent of the entire National Forest System, are used for grazing in the western states. Twenty-two percent of all grazing on public land occurs in the southwest region of the NF system. In the Santa Fe NF grazing is an activity that is embedded in the culture and history of the local residents. Even though it is not a major economic force, ranchers engage in this traditional activity because it is part of their heritage. Livestock animals are important components of household economies, but most of the small ranchers no longer depend on their crops and animals as their sole source of income. Many ranchers in northern New Mexico have a different profit orientation than ranchers in other parts of the state. They do not do it to improve economic conditions, but do it in spite of them. Local ranchers have maintained their way of life over generations even when it would make more economic sense to sell their land to developers or subdivide.⁸⁸ The animals are typically used as a partial subsistence and as a means for special expenses or emergencies. Despite the fact that livestock are not the primary means of support for most ranching families, they do make a substantial contribution to the household economy.⁸⁹

The majority of ranches in New Mexico are small, cow-calf operations with between one and ninety-nine head of cattle. Ranches of this size constituted 70 percent of the state's 8,313 ranches in 1996. That same year, in the north-central region of the state, small operations (less than 99 head) made up 82 percent of the 1,804 ranches. Large ranches in the north central region make up three percent of the total ranches, whereas statewide, large ranches account for seven percent of the total.⁹⁰

In the context of the Santa Fe NF, **Table 5.2** shows the number of permits and allotments that are currently active. There are about 300 current permits and 75 active grazing allotments. About a third of the active permits are on the Coyote RD, but the Cuba RD has the greatest number of grazing allotments.

⁸⁶ Ibid.

⁸⁷ Staci Matlock, "Form Water to Elks, Lead Scientist Coordinating Projects," *The Santa Fe New Mexican*, December 11, 2005.

⁸⁸ Jack Ward Thomas and Stephanie Lynn Gripne, "Maintaining Viable Farms and Ranches Adjacent to National Forests for Future of Wildlife and Open Space," *Rangelands*, 24(1), 2002.

⁸⁹ Carol Raish and Alice McSweeney, "Livestock Ranching and Traditional Culture in Northern New Mexico," *Natural Resources Journal*, vol. 41 (2001): 713.

⁹⁰ Ibid.

Table 5.2: Number of Grazing Permits and Allotments on Santa Fe National Forest

Ranger District	# Permits	# Allotments		
		Active	Closed	Vacant
Coyote	101	11	0	0
Cuba	41	19	0	0
Española	60	9	3	0
Jemez	16	11	0	1
Pecos- Las Vegas	75	25	2	2
Forest Total	293	75	5	3

Source: USDA Forest Service Grazing Permits and Grazing Allotment Databases

The cost of permits to graze on public land is subject to change and to considerable public scrutiny. There are those who believe that ranchers are paying less than fair market value for grazing fees. Comparisons are frequently drawn between the fees for grazing on private land versus the fees for grazing on federal land. According to a study of ranchers in the Santa Fe NF, the permittee is sometimes criticized as being “subsidized” by the federal government. Others argue, to the contrary, that the additional costs associated with a grazing permit, such as maintenance and improvements make up for the difference in fees. Expenses associated with grazing on public land due to public access (theft, vandalism and disruption of ranching operations) also increase operational costs for public land ranchers. As populations and recreation visits to public lands increase, such costs are expected to rise.⁹¹

Grazing fees are charged per animal-unit-month (AUM). The AUM is the amount of forage needed to sustain one cow and her calf, one horse or five sheep or five goats for a month. The grazing fee for Western public lands was raised to \$1.43 per AUM from \$1.35 in 2003.⁹² The 2005 fee is \$1.79 per AUM.⁹³ The INFRA database had substantial amounts of missing grazing fees data, so BBER was unable to calculate the total permit value.⁹⁴ **Table 5.3** shows the AUMS present in the Santa Fe NF over the last 15 years.

⁹¹ Carol Raish and Alice McSweeney, “Economic, Social, and Cultural Aspects of Livestock Ranching on the Española and Canjilon Ranger Districts of the Santa Fe and Santa Fe National Forests: A Pilot Study,” USDA Forest Service, September 2003.

⁹² USDA Forest Service News Release: FS-0406, February 20, 2004.

⁹³ <http://www.blm.gov/nhp/efoia/wo/fy05/im2005-067.htm>

⁹⁴ The INFRA database also contained data indicating the acreage of grazing allotments. However, BBER staff was informed that the data represented “ballpark estimates” of acreage and the figures may include additional acreage such as BLM, private land and in-holdings. BBER was unable to determine how many acres of grazing were in each RD.

Table 5.3: Animal Unit Months on Santa Fe National Forest, 1985-2002⁹⁵

Year	Santa Fe AUM
1985	NA
1986	NA
1987	100,865
1988	121,406
1989	92,183
1990	93,105
1991	100,484
1992	85,805
1993	93,828
1994	96,272
1995	92,811
1996	91,058
1997	89,079
1998	90,247
1999	NA
2000	88,906
2001	81,801
2002	76,961

The data show that the AUMs have been on a steady decline since 1994. One of the greatest concerns for ranchers is the tendency for ranch land to be sold and subdivided rather than continuing as agricultural land. When farms and ranches located near the NF are no longer economically viable, ranchers may be more likely to sell or subdivide their land to developers and new-comers. It is usually sheer determination to hold on to traditions that often keeps them from selling. An article by forest researchers described the importance of keeping farms and ranches viable, or the open spaces near the forest will be in jeopardy.⁹⁶ A common element in the studies cited in this report was the ranchers' frustration with newcomers and visitors who want to recreate the land to suit their own notions of civilization rather than adapting to their surroundings.

5.4 Timber

Timber has long been a traditional use of the Santa Fe NF, but is not a significant economic presence. **Table 5.4** shows the value of timber sales from 2000 to 2004. The "Sales" column shows the amount collected by the USFS for rights to harvest the forest, such as permits and other fees. The "Cut" column indicates how much was collected from the sales of the cut timber. The data show that cut timber brought in about \$200,000 each year between 2000 and 2004.

⁹⁵ Note: Data obtained from forest-level hard copy records. Reliability of the data is unknown as only available records were utilized. Records may be missing for any given year. Cells with data missing indicate data is not available. Reliability of the data is unknown as only available records were utilized. Records may be missing for any given year.

⁹⁶ Jack Ward Thomas and Stephanie Lynn Gripne, "Maintaining Viable Farms and Ranches Adjacent to national Forests for Future of Wildlife and Open Space," *Rangelands* 24(1), 2002.

Table 5.4: Timber Sales on Santa Fe National Forest, 2000-2004

Year	Sales	Cut
2000	\$244,036.44	\$267,933.43
2001	\$215,844.60	\$197,195.58
2002	\$191,273.77	\$164,317.05
2003	\$220,430.93	\$283,081.13
2004	\$207,757.57	\$150,395.55
Total	\$1,079,343.31	\$1,062,922.74

Source: TIMS Database, USFS.

According to the TIMS database, the most profitable forest product was soft sawtimber, with about \$57,000 in sales. Soft sawtimber accounts for 27 percent of the total timber cut value for 2004. Fuelwood accounted for about 22 percent of the total timber cut value with about \$45,860 in 2004. This is different from findings in the Carson and Cibola NFs where fuelwood accounted for more than 85 percent of the total timber cut value. The timber industry is not a major economic force in the area, nor does it provide many jobs, as Chapter 7 will show.

Currently, efforts are underway to devise a plan to supply a steady source of fuel for a new 35-mega watt biomass plant being operated by Public Service Company of New Mexico (PNM). The plant will need about 735 tons of woody material a day. Supplying the plant with a steady source of fuel will be part of a larger forest restoration project; thinning out small-diameter trees without risking wildlife habitats.⁹⁷

5.5 Oil and Gas

In the Santa Fe NF, there were 12 active oil and 24 active gas wells, plus numerous inactive wells. The data show that many revenues produced by oil and gas development are not integrated back into the local economy, as many of the extraction companies are not local. Additionally, oil and gas extraction does not require many employees and often outside labor is used to maintain equipment. Although there is unlikely to be any significant economic impact directly from the extraction of oil and gas, the local region does receive benefit in the form of state and local taxes and forest service tax disbursements for transportation and road costs. Chapter 7, “**Economic Impacts,**” discusses oil and gas exploration in full detail.

5.6 Special Use Permits

The Santa Fe NF sanctions use of the national forest lands by issuing special use permits. Permits authorize occupancy, usage, rights to and privileges on the forest lands. The permits allow for a wide range of activity on the forest as a whole, but each district is utilized for only a few purposes. As **Table 5.5** shows, each RD appears to have a different concentration of special uses. Also reported below is the amount of “rent” collected for each permit category.

There are currently 425 active special use permits on the forest, with a total of \$186,570 collected in rent. About 45 percent of the total active permits are issued for recreational purposes. The rent

⁹⁷ Tania Soussan. Restoration Agreement Reached. Albuquerque Journal. May 17, 2006.

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collected from recreational permits, \$114,305, accounts for about 60 percent of all rent collected in the forest. Similar results were found in the Cibola and Carson NFs, where recreation-related permits accounted for the majority of special uses. This reflects the shift in the FS's mission, from extractive uses to recreational uses.⁹⁸ Three fourths of all active recreation permits (114) were issued in the Pecos-Las Vegas RD.

It is also interesting to note that many of the recreational permits were issued to outfitter and guide operations. About a fourth of the active recreational permits are for outfitters and guides, also accounting for about 18 percent of all rent (\$20,392) collected on recreation permits.

About half of all active communications permits are located on the Española RD.

⁹⁸ Paul Sutter. A Blank Spot on the Map: Aldo Leopold, Wilderness and US Forest Service Recreational Policy, 1909-1924. *The Western Historical Quarterly*, Vol. 29(2). 1998.

Table 5.5: Special Use Permits on Santa Fe National Forest (1949-2005)

Permit Category	Coyote			Cuba			Española		
	# Active	# Closed	Rent Total	# Active	# Closed	Rent Total	# Active	# Closed	Rent Total
Recreation	6	3	\$4,128	9	3	\$8,471	19	19	\$36,971
Agriculture	4	0	\$121	0	0	\$0	1	0	\$0
Community/Public Information	1	0	\$0	0	0	\$0	1	0	\$0
Feasibility, Research, Training, Cultural Resources, & Historical Industry	0	0	\$0	0	0	\$0	5	0	\$0
Energy Generation/Transmission	0	0	\$0	1	0	\$0	1	1	\$150
Transportation	1	0	\$0	2	0	\$5,013	7	0	\$8,874
Communications	4	1	\$61	10	0	\$303	6	0	\$0
Water (Non-Power Generating)	3	1	\$61	5	0	\$7,161	21	0	\$11,709
	5	1	\$120	10	0	\$471	10	0	\$7,113
TOTAL	24	6	\$4,430	37	3	\$21,419	71	20	\$64,817

Permit Category	Jemez			Pecos-Las Vegas			Unknown		
	# Active	# Closed	Rent Total	# Active	# Closed	Rent Total	# Active	# Closed	Rent Total
Recreation	12	9	\$1,352	144	8	\$63,383	0	0	\$0
Agriculture	0	0	\$0	2	0	\$196	0	0	\$0
Community/Public Information	3	3	\$61	1	0	\$0	0	0	\$0
Feasibility, Research, Training, Cultural Resources, & Historical Industry	4	2	\$0	2	3	\$0	20	5	\$1,186
Energy Generation/Transmission	1	0	\$50	0	0	\$0	0	0	\$0
Transportation	0	0	\$0	2	0	\$0	1	0	\$1,743
Communications	18	0	\$573	50	0	\$2,712	0	0	\$0
Water (Non-Power Generating)	4	0	\$12,940	6	0	\$8,627	3	0	\$2,596
	10	0	\$0	9	1	\$486	1	0	\$0
TOTAL	52	14	\$14,975	216	12	\$75,404	25	5	\$5,525

Permit Category	Total		
	# Active	# Closed	Rent Total
Recreation	190	42	\$114,305
Agriculture	7	0	\$317
Community/Public Information	6	3	\$61
Feasibility, Research, Training, Cultural Resources, & Historical Industry	31	10	\$1,186
Energy Generation/Transmission	3	1	\$200
Transportation	13	0	\$15,631
Communications	88	1	\$3,649
Water (Non-Power Generating)	42	1	\$43,032
	45	2	\$8,189
TOTAL	425	60	\$186,570

Source: USDA Forest Service 2005 Special Use Permit Database (SUDS). Calculations by UNM-BBER..

5.7 Illegal Uses

Table 5.6 lists the most common violations on the Santa Fe NF. In 2005, the FS recorded less than 60 violations in their LEIMARS⁹⁹ database. The Carson NF also recorded less than 60 violations for the same year. In forests, illegally taking timber and forest products was the most common offense. Improper occupancy and use of fires are also common offenses.

⁹⁹ Law Enforcement and Investigations Management Attainment Reporting System.

Table 5.6: Violations on Santa Fe National Forest

Code	# Incidents	Violation Description
36CFR261.6	19	Timber and other forest products
Unknown	12	
36CFR261.10	5	Occupancy and use
36CFR261.5	4	Fire
36CFR261.9	4	Property
36CFR261.11	2	Sanitation
36CFR261.54	2	Forest development roads
18USC1361	1	Government property or contracts
18USC1856	1	Fires left unattended and unextinguished
21USC841	1	Prohibited Acts
Total	51	

Source: USDA Forest Service, LEIMARS, 2005

A qualitative study of the nearby Carson NF users found that local residents perceive increased enforcement and education to be the best way to address several problems that can adversely affect forest resources and user experiences: growing vandalism, litter, off-trail riding by OHV and mountain biker riders, and tree and wildlife poaching. Most interestingly, many residents believe the problematic behavior is more common among visitors and recreational users.¹⁰⁰

5.8 Opportunities, Risks and Special Circumstances

The Multiple-Use Sustained Yield Act ended the traditional forest service role of concentrating on the production and preservation of forest products and imposed upon the service the obligation to balance the many competing interests to each other. Key issues for forest planning and management regarding land use are deeply entrenched in the conflicts among forest users, especially between long-term traditional residents, new-comers and visitors. Each group of users carries with it a collection of different expectations, values and attitudes regarding the public land and the Forest Service. In extreme cases, a group of users may initiate a lawsuit against the forest service, as can be seen in the case of the Tesuque Pueblo.

Collaboration can be used as a way diffuse conflicts. The collaborative arrangement between the Santa Fe FS, Forest Guardians and others regarding the tree thinning project offers hope that collaborative agreements are possible. However, collaboration and cooperation often involves compromise on all sides. In the case of the Santa Fe NF, many traditional users feel their attachments to the land have priority over visitors and newcomers and therefore, they should not have to compromise.

While grazing is not the primary economic activity on the Santa Fe NF, it is still one of the most culturally significant uses. Conflicts between ranchers and environmentalists (among others) are causing the public and the FS to evaluate the impacts of grazing on public land. Environmental groups (and even FS staff¹⁰¹) argue that grazing causes soil compaction, reducing the absorption of rainfall and also the recharge of aquifers and water tables. Others will argue that grazing allows livestock to trample much of the overgrown brush that has become a fire danger. Ranching

¹⁰⁰ J. C. Russell and P. A. Adams-Russell, Values, Attitudes and Beliefs Toward National Forest System Lands: The Santa Fe National Forest (Placerville, CA: USDA Forest Service, 2005).

¹⁰¹ See Letter to Editor by ex FS Biologist Leon Fager in Albuquerque Journal 07/10/98.

interests often perceive environmental groups as ‘non-local’ entities who do not understand the land and its condition as well as those who depend on it for their livelihood. Traditional users often have a sense of entitlement to the use of forest resources because of traditional and long-standing ties to the land and agreements with the FS.¹⁰² Further, they are often critical of FS plans, and believe the agency is letting the political agenda of a few drive decisions that will have long term effects, and only for short term gain. Rather, the residents believe that their traditional use has resulted in a body of knowledge and beliefs about forest conditions and health, which is better suited to inform decision making.

Changes in land uses follow a shift in the economy. As principal economic activities shift from traditional uses such as grazing and timber to service-based uses such as recreation and tourism there is a change in stakeholders that results. Stakeholders were once the ranchers, farmers, loggers and others who worked to extract natural resources from the forest. Now, recreation and tourist-based industries have a more vested interest in the decision making and planning of forest uses. Much of the debate over the use of federal lands are based on a perception that land management agencies have not adequately accounted for socio-cultural values and attitudes toward land valuation and use.

¹⁰² J. C. Russell and P. A. Adams-Russell, Values, Attitudes and Beliefs Toward National Forest System Lands: The Santa Fe National Forest (Placerville, CA: USDA Forest Service, 2005).

6 Special Management Areas, Recreational Sites, Heritage and Cultural Resources

This chapter describes the National Forest system's abundant offerings in the way of unique places for recreation, education, research, preservation, and quality outdoor experiences. The Forest Service inventories and manages sites as Special Areas, Recreational Sites, and as Heritage Resources. This section will discuss Special Areas and Recreational Sites and their benefits to visitors, researchers, educators, and to local communities.

6.1 Special Areas, Wilderness and IRAs

Special Areas are places designated by Congress or by top level administration within the National Forest Service, as unique because of the special characteristics and the opportunities they provide. The designations include Wilderness, National Historic Landmark (NHL), National Scenic Area (NSA), and National Monument (NM). Other Special Areas include Inventoried Roadless Areas (IRAs), Research Natural Areas, Wild and Scenic Rivers, National Recreation Trails, and National Scenic Byways, of which one example is the Santa Fe NF National Scenic Byway in the Española RD.¹⁰³

Wilderness areas, established by the Wilderness Act of 1964, are part of a system of wild lands that contribute significantly to the ecological, educational, and social health of its users and surrounding communities. The Wilderness Area designation protects water and other natural resources and culturally significant sites; as well as providing shelter for endangered species and offering a living laboratory for research. Beyond community benefits, Wilderness areas provide unique resources for individuals, such as an opportunity to explore personal values while experiencing risk, reward, and self-reliance.¹⁰⁴ The Act describes a wilderness as *"an area where the earth and its community of life are untrammelled by man, where man himself is a visitor who does not remain."*¹⁰⁵ Within the Santa Fe NF there are over 314,000 acres of wilderness. The Wilderness areas are: Chama River Canyon, Dome, Pecos and San Pedro Parks. A small portion of the Pecos Wilderness is co-managed with the Carson NF. For specific information on each of the wilderness areas, refer back to Chapter 1.4.]

Figure 6.1 shows the special management areas, including the wilderness areas.

¹⁰³ USDA FS (2004, February 4). Congressionally Designated Special Areas. USDA FS Website: *Recreational Activities*. Retrieved October 2006, from http://www.fs.fed.us/recreation/programs/facts/special_areas.shtml

¹⁰⁴ Recreation.gov. (2004, May 1). USDA FS Website, Apache Kid Wilderness. Retrieved from <http://www.recreation.gov/detail.cfm?ID=4476>

¹⁰⁵ US Congress, Wilderness Act of 1964, Public Law 88-577 (16.S. C. 1131-1136), 88th Congress, Second Session. (1964, September 3).

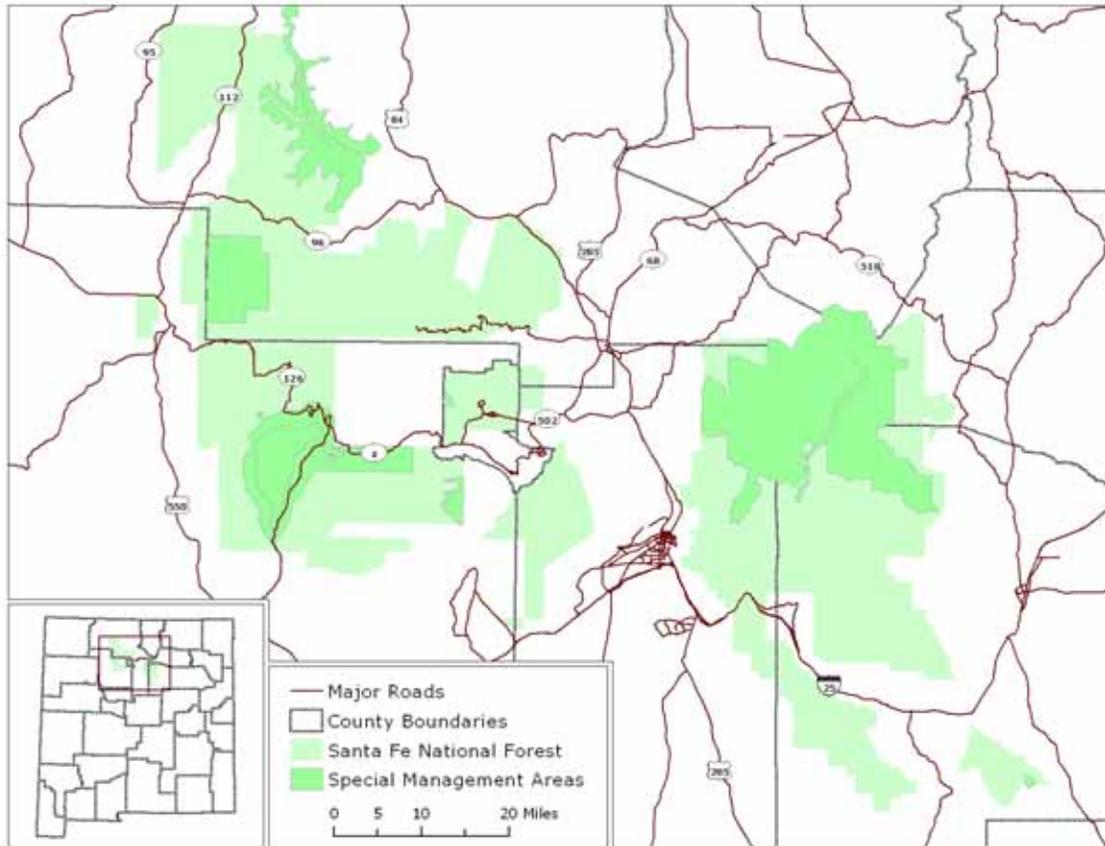


Figure 6.1: Special Management Areas

In January 2001, the Clinton administration enacted the Roadless Area Conservation Rule (“The Roadless Rule”), protecting 58.5 million acres of wild national forest land from most commercial logging and road building.^{106,107} Since that time, The Roadless Rule has been challenged by nine lawsuits in U.S. Federal District Courts in Idaho, Utah, North Dakota, Wyoming, Alaska, and the District of Columbia, and it’s implementation has been delayed by the Bush Administration.¹⁰⁸ In July of 2003, The Roadless Rule was deemed in violation of the National Environmental Policy Act and the Wilderness Act by the U.S. District Court. Consequently, in 2005, the USDA Forest Service announced a national Advisory Committee to help implement a “new” roadless rule.¹⁰⁹ This new rule, supported by the Bush Administration, was aimed to create a collaborative

¹⁰⁶ NMPIRG. (2006). Battle Over Roadless Areas Goes to States. *NMPIRG Citizen Update*. Retrieved November 2006, from <http://nmpirg.org/newsletters/summer06/story4.html>

¹⁰⁷ USDA FS (2005, May). Roadless Area Conservation Rule – Timeline. Available from <http://roadless.fs.fed.us/xdocuments.shtml> and http://roadless.fs.fed.us/documents/m-05/04_26_05_roadless_rule_timeline.html

¹⁰⁸ Wilderness Society, The. (n.d.). *National Forest Roadless Areas: Background and History*. Retrieved October 10, 2006, from <http://www.wilderness.org/OurIssues/Roadless/background.cfm?TopLevel=Background>

¹⁰⁹ USDA (2005, May 13). USDA Forest Service Acts to Conserve Roadless Areas in National Forests. USDA Newsroom, *News Release*. Release No. 0148.05. Retrieved October 10, 2006, from

process with states on regulations specific to the needs and requirements of each state. This new rule created a petition process allowing governors to determine which areas would continue to be protected. Governors could also petition to open IRAs to mining and logging. If a governor chose not to petition, the area could be opened to development. Critics argued the bureaucratic requirements involved in the petition process provided little incentive for governors to participate, which could result in the opening of IRA lands to commercial interests. In May of 2006, New Mexico Governor Bill Richardson submitted the first western state petition, requesting protection of all IRAs within New Mexico. On September 20, 2006, a federal judge in California struck down the Bush Administration rules and reinstated The Roadless Rule established by the Clinton Administration.¹¹⁰ It is unknown at this time whether this decision will be appealed by the current administration.

In New Mexico, there are 1,102,000 acres of IRAs which do not allow road construction or reconstruction), making up about 12% of the National Forest System land in the state.¹¹¹ In addition, there are 66,000 acres of IRA that do not allow road construction and reconstruction that the FS Forest Plan recommends as wilderness.¹¹² In the Santa Fe NF, much of the roadless land is in the eastern section of the Española RD and just south of the Pecos Wilderness in the Pecos/Las Vegas RD. In total, 155,000 acres (10%) of the Santa Fe NF is designated as roadless areas, where construction and reconstruction is not allowed.¹¹³ **Figure 6.2** shows the inventoried roadless areas.

http://www.usda.gov/wps/portal/!ut/p/_s.7_0_A/7_0_1OB?contentidonly=true&contentid=2005/05/0148.xml

¹¹⁰ Kenworthy, T. (2006, September 20). Judge reinstates ban on forest development. *USA TODAY*. Retrieved from http://www.usatoday.com/news/washington/2006-09-20-forest-rule_x.htm

¹¹¹ USDA FS map of NM Inventoried Roadless Areas on NF lands.

¹¹² USDA FS (2001, January). *Inventoried Roadless Area Acreage, Categories of NFS Lands Summarized by State*. Retrieved March 27, 2006, from http://roadless.fs.fed.us/documents/feis/data/sheets/acres/appendix_state_acres.html

¹¹³ A Forest Service map of Inventoried Roadless Areas is available at <http://roadless.fs.fed.us/states/nm/cars.pdf>

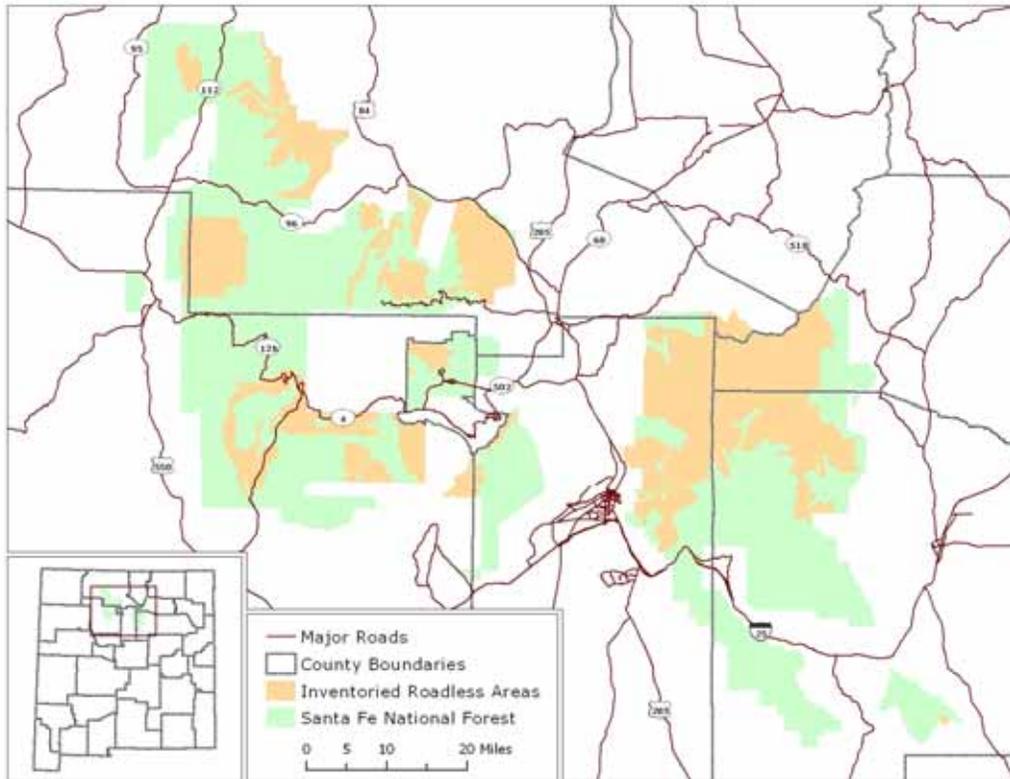


Figure 6.2: Inventoried Roadless Areas on Santa Fe National Forest

6.2 Recreational and Heritage Sites

The Santa Fe NF features over 100 designated recreational sites. For a complete list of recreational sites, please see **Table A.5** in the appendix. **Table 6.1** lists the number of designated recreation sites in each district, according to the INFRA database. The Pecos- Las Vegas RD has 34 recreational sites, which is the most of any RD in the Santa Fe NF.

Table 6.1¹¹⁴ below shows a summary of recreation site types found over the whole forest. Table A.4 in the appendix lists all designated recreational sites on the forest, sorted by ranger district. Many areas of the forest are not “fee areas,” meaning visitors can access the site without charge. User fees were removed at the Iron Gate and Black Canyon trailheads because they did not meet the requirements set for trailheads under the 2004 Federal Lands Recreation Enhancement Act. The act allows federal agencies to charge fees if sites have features such as permanent toilets, trash bins, picnic tables and security services.¹¹⁵ Data collected by the Forest Service indicates that at least 1.3 million people visited the Santa Fe NF in 2002-2003.

¹¹⁴ These figures came from the USFS INFRA database, which is assumed to be the best source of data regarding recreational sites.

¹¹⁵ Staci Matlock. “Forest Service Ends Fees for Recreational Areas.” *The Santa Fe New Mexican*. June 14, 2005.

Table 6.1: Types of Recreation Sites on The Santa Fe NF

Designated Site Category	Number of Sites
Campground	25
Trailhead	19
Picnic Site	16
Fishing Site	14
Group Campground	7
Recreation Residence	7
CUA Trailhead	6
Interpretive Site (Minor)	4
Boating Site	3
Observation Site	2
CUA Camping Area	2
Information Site	1
Group Picnic Site	1
Horse Camp	1
Ski Area Alpine	1
TOTAL	109

Source: USDA Forest Service, INFRA

Recreational sites are classified as either developed or dispersed sites. A developed site is a discrete place containing a concentration of facilities and services used to provide recreation opportunities to the public. Recreation sites are developed within different outdoor settings to facilitate desired recreational use. Developed sites include campgrounds, picnic areas, visitor centers and historic sites. Dispersed recreation are activities that occur outside of developed recreation sites such as boating, camping, hunting, fishing, hiking and biking. In other words, dispersed sites are popular areas that have no facilities or services.

6.3 Wild and Scenic Rivers

In 1968, Congress passed the National Wild and Scenic River Act, providing to protect certain rivers to remain in their natural state. There are three waterways in the Santa Fe NF that have received this formal designation. The waterways can be classified in three categories: wild, scenic and recreational. The definitions¹¹⁶ are:

Wild: Those rivers or sections of rivers that are free of impoundments and generally inaccessible except by trail, with watersheds or shoreline essentially primitive and waters unpolluted. These represent vestiges of primitive America.

Scenic: Those rivers or sections of rivers that are free of impoundments, with shorelines or watersheds still largely primitive and shorelines largely undeveloped, but accessible in places by roads.

Recreational: Those rivers or sections of rivers that are readily accessible by road or railroad, that may have some development along their shorelines, and that may have undergone some impoundment or diversion in the past.

¹¹⁶ US Department of the Interior. *Federal Register* Vol. 47, No. 173. September 7, 1982. <http://www.nps.gov/rivers/guidelines.html> Accessed June 8, 2006.

The **East Fork Jemez River** was designated in 1990. The East Fork originates in the Valles Caldera as a small meandering stream in a vast crater. On its way to its confluence with the Rio San Antonio, the river passes through the heart of the Jemez Mountains' most popular recreation area. The designated area is 11 miles long, with 4 “wild” miles, 5 “scenic” miles and 2 “recreational”.

The **Pecos River** flows out of the Pecos Wilderness, through rugged granite canyons and waterfalls, and passes small, high-mountain meadows. It is one of New Mexico's most heavily used trout streams. The designation includes 20.5 miles, with 13.5 miles classified as “wild” and 7 miles as “recreational.”

The **Rio Chama**, which is a major tributary of the Rio Grande in northern New Mexico, was designated as a Wild and Scenic River in 1988. It flows through a multi-colored sandstone canyon which is at times is 1,500 feet deep and through areas that are designated as wilderness or as wilderness study areas. Co-managed by the Bureau of Land Management (BLM) and the U.S. Forest Service, the Rio Chama was classified as: 19.8 “wild” miles; 4.9 “scenic” miles, for a total of 24.7 miles.

The largest of the Wild and Scenic Rivers is the **Rio Grande**. The designated area extends from the Colorado state line downstream about 68 miles. The Rio Grande designation was among the original eight rivers designated by Congress as Wild and Scenic in 1968. The designation was extended by legislation in 1994 to include an additional 12 miles of the Rio Grande. The designated area includes 60 miles of the Rio Grande from the Colorado/New Mexico state line to just beyond BLM's County Line Recreation Site, and also includes the lower 4 miles of the Red River. The classification of the Rio Grande is 53.2 “wild” miles; 3 “recreational”; 12 “scenic”.

6.4 Cultural Resources

In addition to formally designated areas, there are areas of cultural significance to indigenous peoples. These places are of importance to Native American tribes for their traditional cultural and religious activities. Out of respect for the privacy of tribal activities and uses, the identity and other information about these places are kept strictly confidential. However, the location and nature of many of these sites are not revealed by the tribes, even to FS personnel, in an effort to protect their privacy and the sanctity of the site.¹¹⁷ The fact that many of these sites are unknown complicates managing multiple uses of the forest and its resources.

6.5 Opportunities, Risks and Special Circumstances

The Forest Service maintains special areas in the Forest that offer unique opportunities for visitors, traditional forest users, and wildlife. The key issues concerning special management areas are similar to those presented in Chapter 5. The FS is in the difficult position of mediating different (and adamant) perspectives on what is the best and most appropriate use of land. In basic terms, one can see the line drawn between supporters of the FS's old mission, which was to extract economically viable resources from the forests and the more contemporary mission:

¹¹⁷ Russell, J. C., & Adams-Russell, P. A. (2005b). Values, Attitudes and Beliefs Toward National Forest System Lands: The New Mexico Tribal People (Issue Brief). Placerville, CA: Adams-Russell Consulting, September 11, 2005, pgs. 19-20.

conserve and protect the forest for generations to come. In some cases, like the Valle Vidal, the disagreements often grow into something bigger than just a land use decision. Rather, it becomes a symbolic rallying point for the Forest's various stakeholders, making the FS's duties even more difficult.

With growing population pressures and increasing conflicts between government bureaucracy and forest users, the management of special areas promises to become more complicated. As stated in the Wilderness Act of 1964, *...increasing population, accompanied by expanding settlement and growing mechanization, [the Act helps to] "secure for the American people of present and future generations the benefits of an enduring resource of wilderness."*

Opportunities exist for the FS in regards of managing special areas. The substantial public response to forest management issues demonstrates that various stakeholders are deeply invested in land use decisions and look to the FS for support. Here again, the FS has the opportunity to demonstrate its mission, facilitate discussion and create collaborative relationships among different stakeholders. The tribal groups in the area pose a special management opportunity.

Northern New Mexico is home to many tribal groups, each representing a potential source of knowledge and management assistance, which can be of tremendous benefit to the FS. Russell's study on the northern tribes revealed a willingness among tribal members to be involved in forest management and decision-making processes. The FS has the opportunity to directly address tribal interests in management decisions by delegating some of the management responsibilities to the tribes.

In terms of further developing Forest land, such as road construction, the FS has the opportunity to increase visitor access to the forest, maintain adequate access routes for emergency personnel. In many cases, allowing development can possibly increase much needed economic activity in rural areas, as in the case of mineral extraction. Again, the difficulty lies in balancing land use among a broad spectrum of stakeholders.

Special areas pose many risks and challenges to the FS as well. In regards to recreational sites, maintaining them requires significant amounts of labor and other resources that may not be available to the FS. In the past, the agency has addressed this issue with the use of volunteers.

The FS is often caught in the middle of decision making at the federal level (such as the Roadless Rule) and demands from users at the local level. If locals perceive the federal government as interfering with New Mexico land issues, the FS can be accused of being influenced by "Washington" and not being sensitive to the cultural and ecological contexts of open space in New Mexico. Any decision the FS makes runs the risk of upsetting another group of stakeholders.

When working with tribal groups, the FS is in a complicated situation. As described earlier, there are about ten tribal groups surrounding the Carson NF. To each of these groups, the land is the nexus of history, way of life, culture and future generations. Special areas are used for religious and cultural purposes, and these places are not always known by the FS. This complicates Forest management because the agency runs the risk of implementing projects on ceremonial land without knowing it. Further, the tribes all use different special areas. One tribe may give the go ahead to clear trees from one area, when another tribe uses it for ritual practices. The only way to be completely sure is to survey all the tribes individually. The FS works to preserve the integrity of tribal special areas, but it becomes very difficult when they do not know where they are.

7 Economic impacts

7.1 Santa Fe National Forest Regional Economy

The Santa Fe National Forest is situated in the center of New Mexico, falling mainly within Rio Arriba, San Miguel, and Sandoval Counties, but also laying partly in Santa Fe, Mora, and Los Alamos Counties. Taos County is also included in the region, since a small part of the Pecos Wilderness is co-managed by the Santa Fe and Carson NFs. The relevance of Taos County is minute in terms of determining the economic contribution of the Santa Fe NF. This region contains several of the larger metropolitan areas in the state as well as Santa Fe and Los Alamos Counties, the two richest counties per capita in the state. Significant settlements in the region include the state capitol of Santa Fe, Los Alamos, which is home to Los Alamos National Laboratory and boasts the highest per capita income in New Mexico, and Rio Rancho, one of the fastest growing cities in the state, as well as Las Vegas, Española, and Taos. The economic contribution of the Santa Fe NF, composed largely of visitor spending, varies significantly by county, creating a complex picture.

The bulk of the regional economic activity occurs in Santa Fe, Los Alamos and Sandoval Counties account for 73 percent of the region's employment. However, most of the forest lies in other counties, with more than 30 percent of the forest contained by Rio Arriba County. Santa Fe and Los Alamos County contain only 15 and 2 percent respectively. This does not imply that the bulk of the forest impacts are felt in Rio Arriba County. The city of Santa Fe is adjacent to a portion of the Santa Fe NF and garners a significant amount of economic activity from various forest uses. Furthermore, the city of Santa Fe is largely dependent on the forest setting provided by the Santa Fe NF which creates the scenic beauty for which the city is famous for as a tourist destination. While a larger degree of logging or ranching activity may occur in counties such as Sandoval, San Miguel, or Rio Arriba, Santa Fe County is the primary benefactor of the visitor spending impacts.

The economy in the majority of New Mexico's counties can be characterized as rural and relatively poor. This characterization is certainly true for some areas that contain parts of the Gila or Cibola NF. In the Santa Fe NF there are areas, such as Mora County that are similarly poor. But overall, the region is comparatively wealthy. This wealth is centered in Santa Fe and Los Alamos County, the only two counties in New Mexico that have per capita incomes above the national average, but even the other counties in the assessment are fairly well off when compared with most New Mexico Counties. These trends are shown in **Table 7.1**.

Table 7.1: Total Employment and Income by County, 2003

	Employment (#)	Percent of Region	Per Capita Income (\$)	Relative to US
Los Alamos	21,417	11%	49,581	1.57
Mora	2,016	1%	15,867	0.50
Rio Arriba	17,535	9%	20,720	0.66
Sandoval	33,451	18%	24,746	0.79
Santa Fe	84,070	44%	32,999	1.05
San Miguel	13,569	7%	19,708	0.63
Taos	17,267	9%	21,694	0.69
Santa Fe Region	189,325	100%	26,474	0.84
New Mexico	1,015,365	--	24,892	0.79
United States	167,488,500	--	31,484	1.00

Source: Bureau of Economic Analysis, 2003

The industrial composition of employment in each county from 1980 to 2000 is shown in **Table 7.2**. In general, the region, as with New Mexico and the United States, is characterized by an increase in the relative importance of the service sector in the overall economy. This is particularly true in Los Alamos, Santa Fe, and Taos, while other counties are less dependent on the retail and service sectors.

The Los Alamos economy, as the home of one of the largest military and science research centers in the country, is almost entirely composed of government, retail, and service sector jobs. These three sectors combined make up more than 90 percent of the county's employment. From 1980 to 2000, Los Alamos has been steadily gaining service sector jobs, while other sectors have remained relatively stable. This has led to an increased reliance on services as a main employment provider. Though government still provides just over half of the county's jobs. Los Alamos is somewhat unique in its lack of farming and other "core" industry sectors such as construction and manufacturing. While the non-farm primary industry sectors have been growing over the last 20 years, it is only in minute amounts, and certainly much slower than the growth in services.

Mora County is by far the smallest county in the region, in terms of size as well as economy. It is fitting then that Mora County has experienced the largest changes in employment composition over the past 20 years from 1980 to 2000. In particular, while farm employment increased slightly, the relative size of the farm sector decreased by 9 percent from 1990 to 2000, while services increased 12 percent in the same period. The government sector as a whole also shows declining relative size. With only 1,767 jobs in 2000, these changes can represent a small number of employees, but the resulting percent changes in sector composition can be quite large.

In Rio Arriba County, strong growth primarily in the services sector, but also in retail trade, has buoyed employment levels significantly, though no sector shows decreases in employment. The relative size of services and retail trade has been increasing while the relative size of farm and government has been decreasing; but again, this is due more to the extraordinarily strong growth in services and retail trade rather than any decrease in farm or government.

Sandoval County contains part of the Albuquerque MSA and the state's fast-growing city Rio Rancho, as well as the town of Bernalillo, and a significant stretch of Interstate 25 between Albuquerque and Santa Fe. Much of the economic activity in the county is centered in its southeastern corner, and is directly involved with the Albuquerque MSA and travel to Santa Fe. As such, Sandoval County has the second largest economy in the Santa Fe NF region. As with the other counties, the largest employment sectors are retail, services, and government, but in Sandoval County there is also a substantial degree of manufacturing¹¹⁸, construction, transportation, and utilities employment. The relative size of these sectors is larger in Sandoval County than in any other county in the Santa Fe NF region. Furthermore, in Sandoval County more than any county in New Mexico, the growth of the manufacturing and other primary industries has kept pace with growth in retail, services, and government. All of this suggests that Sandoval County receives a significant benefit from its close proximity to Albuquerque and Santa Fe. Finally, a large portion of Sandoval County is composed of several Native American pueblos, which effectively border the Santa Fe NF throughout much of the county.

¹¹⁸ Manufacturing in Sandoval is dominated by Intel in Rio Rancho, which is why employment numbers are subject to non-disclosure.

Santa Fe County, which contains the state capitol of Santa Fe and the associated economic activity, has by far the largest employment in the Santa Fe NF region. It also contains one of the state's largest ski resorts, as well as a thriving tourist industry. Hence, it is no surprise that employment in Santa Fe County is nearly as consolidated in retail, services, and government as Los Alamos County. The exception to this is the larger portion of employment that the construction industry makes up in Santa Fe County. However, the relative compositions can be misleading. Santa Fe County has larger employment numbers in the primary industries than any of the other counties in the region except Sandoval. While the percent contribution of those sectors to total employment in Santa Fe is small, they are still larger in absolute terms than in the other counties. Thus, Santa Fe County is both the geographic and economic center of the region; even setting government aside it exerts great influence on the rest of the area. Over time the employment trends in Santa Fe have exhibited only small changes in the relative composition of the sectors, with services becoming a larger portion of the economy, but most sectors showing only small gains or losses in relative composition.

In contrast, San Miguel County is fairly small, and farm employment makes up a larger portion of overall employment there than in any other county in the region except Rio Arriba. As in other counties, retail, services, and government make up the lions share of employment, but the relative size of government has been decreasing over the years as growth in other sectors has been much faster. San Miguel also contains Las Vegas, the largest population center in New Mexico east of Santa Fe and Albuquerque and a significant location on Interstate 25 as visitors travel from the north to Santa Fe.

Taos County shares some of the traits of Colfax and Rio Arriba County. Like Santa Fe and Los Alamos County, the service sector in Taos County makes up a huge portion of employment. In 2000, the services made up 37 percent of the total employment in the county. This is consistent with Taos' heavily tourist based economy. Like Santa Fe, Taos County has also experienced strong, though not as disproportionately large, growth in services and retail trade. In addition to the drop in mining from 1980 to 1990, Taos County also experienced relative losses in state and local government and farming. This was mainly due to increases in services rather than any decrease in those sectors. From 1990 to 2000, there was not a substantial change in the sector composition of Taos County. The relative size of services grew slightly, as did construction and state and local government, while manufacturing, mining, and transportation and utilities fell slightly.

Table 7.2: Total Employment in Primary Sectors by County in 1980, 1990, and 2000

Los Alamos	1980	1990	2000	1980%	1990%	2000%	Change in % 1980-1990	Change in % 1990-2000
TOTAL	14,116	18,481	19,832	100%	100%	100%	0%	0%
Farm Employment	0	0	0	0%	0%	0%	0%	0%
Non-farm Employment	14,116	18,481	19,832	100%	100%	100%	0%	0%
Private Employment	5,342	8,093	9,706	38%	44%	49%	6%	5%
Agricultural services, forestry, and	28	54	(D)	0%	0%	(D)	0%	-
Mining	0	33	43	0%	0%	0%	0%	0%
Construction	278	279	297	2%	2%	1%	0%	0%
Manufacturing	64	128	151	0%	1%	1%	0%	0%
Transportation and utilities	74	112	(D)	1%	1%	(D)	0%	-
Wholesale trade	33	157	141	0%	1%	1%	1%	0%
Retail trade	1,146	1,430	1,332	8%	8%	7%	0%	-1%
Services	3,269	5,326	6,722	23%	29%	34%	6%	5%
Government and government	8,774	10,388	10,126	62%	56%	51%	-6%	-5%
Federal, civilian	417	178	193	3%	1%	1%	-2%	0%
Military	90	106	63	1%	1%	0%	0%	0%
State and local	8,267	10,104	9,870	59%	55%	50%	-4%	-5%
State government	7,354	9,001	(D)	52%	49%	(D)	-3%	-
Local government	913	1,103	(D)	6%	6%	(D)	0%	-

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Mora	1980	1990	2000	1980%	1990%	2000%	Change in % 1980-1990	Change in % 1990-2000
TOTAL	1,061	1,120	1,767	100%	100%	100%	0%	0%
Farm Employment	407	429	515	38%	38%	29%	0%	-9%
Non-farm Employment	654	691	1,252	62%	62%	71%	0%	9%
Private Employment	324	380	853	31%	34%	48%	3%	14%
Agricultural services, forestry, and	(D)	35	76	(D)	3%	4%	-	1%
Mining	(L)	(D)	(L)	(L)	(D)	(L)	-	-
Construction	37	43	93	3%	4%	5%	0%	1%
Manufacturing	(D)	36	(D)	(D)	3%	(D)	-	-
Transportation and utilities	46	63	102	4%	6%	6%	1%	0%
Wholesale trade	12	(L)	(D)	1%	(L)	(D)	-	-
Retail trade	116	68	112	11%	6%	6%	-5%	0%
Services	86	120	405	8%	11%	23%	3%	12%
Government and government	330	311	399	31%	28%	23%	-3%	-5%
Federal, civilian	41	39	46	4%	3%	3%	0%	-1%
Military	19	22	17	2%	2%	1%	0%	-1%
State and local	270	250	336	25%	22%	19%	-3%	-3%
State government	68	56	58	6%	5%	3%	-1%	-2%
Local government	202	194	278	19%	17%	16%	-2%	-2%
Rio Arriba	1980	1990	2000	1980%	1990%	2000%	Change in % 1980-1990	Change in % 1990-2000
TOTAL	8,387	11,088	15,537	100%	100%	100%	0%	0%
Farm Employment	874	986	1,059	10%	9%	7%	-2%	-2%
Non-farm Employment	7,513	10,102	14,478	90%	91%	93%	2%	2%
Private Employment	4,252	6,526	9,821	51%	59%	63%	8%	4%
Agricultural services, forestry, and	116	114	192	1%	1%	1%	0%	0%
Mining	48	68	78	1%	1%	1%	0%	0%
Construction	464	677	953	6%	6%	6%	1%	0%
Manufacturing	256	507	648	3%	5%	4%	2%	0%
Transportation and utilities	346	518	528	4%	5%	3%	1%	-1%
Wholesale trade	117	199	209	1%	2%	1%	0%	0%
Retail trade	1,240	1,563	2,484	15%	14%	16%	-1%	2%
Services	1,377	2,532	4,153	16%	23%	27%	6%	4%
Government and government	3,261	3,576	4,657	39%	32%	30%	-7%	-2%
Federal, civilian	350	406	416	4%	4%	3%	-1%	-1%
Military	135	175	136	2%	2%	1%	0%	-1%
State and local	2,776	2,995	4,105	33%	27%	26%	-6%	-1%
State government	860	678	850	10%	6%	5%	-4%	-1%
Local government	1,916	2,317	3,255	23%	21%	21%	-2%	0%

Sandoval	1980	1990	2000	1980%	1990%	2000%	Change in % 1980-1990	Change in % 1990-2000
TOTAL	5,583	14,723	32,379	100%	100%	100%	0%	0%
Farm Employment	448	416	411	8%	3%	1%	-5%	-2%
Non-farm Employment	5,135	14,307	31,968	92%	97%	99%	5%	2%
Private Employment	3,851	12,052	26,710	69%	82%	82%	13%	1%
Agricultural services	141	230	308	3%	2%	1%	-1%	-1%
Mining	34	44	110	1%	0%	0%	0%	0%
Construction	596	1,063	2,531	11%	7%	8%	-3%	1%
Manufacturing	643	2,831	(D)	12%	19%	(D)	8%	-
Transportation and utilities	201	397	2,306	4%	3%	7%	-1%	4%
Wholesale trade	74	288	(D)	1%	2%	(D)	1%	-
Retail trade	698	2,835	5,368	13%	19%	17%	7%	-3%
Services	1,063	3,474	6,719	19%	24%	21%	5%	-3%
Government	1,284	2,255	5,258	23%	15%	16%	-8%	1%
Federal, civilian	212	389	347	4%	3%	1%	-1%	-2%
Military	159	323	298	3%	2%	1%	-1%	-1%
State and local	913	1,543	4,613	16%	10%	14%	-6%	4%
State government	130	106	206	2%	1%	1%	-2%	0%
Local government	783	1,437	4,407	14%	10%	14%	-4%	4%
Santa Fe	1980	1990	2000	1980%	1990%	2000%	Change in % 1980-1990	Change in % 1990-2000
TOTAL	37,471	58,881	81,875	100%	100%	100%	0%	0%
Farm Employment	365	368	462	1%	1%	1%	0%	0%
Non-farm Employment	37,106	58,513	81,413	99%	99%	99%	0%	0%
Private Employment	26,345	45,559	63,789	70%	77%	78%	7%	1%
Agricultural services	239	387	1,145	1%	1%	1%	0%	1%
Mining	444	393	507	1%	1%	1%	-1%	0%
Construction	2,471	4,275	5,514	7%	7%	7%	1%	-1%
Manufacturing	1,528	2,587	2,310	4%	4%	3%	0%	-
Transportation and utilities	1,002	1,176	1,485	3%	2%	2%	-1%	0%
Wholesale trade	577	1,268	1,596	2%	2%	2%	1%	-
Retail trade	6,544	11,457	15,498	17%	19%	19%	2%	-1%
Services	10,869	19,747	28,836	29%	34%	35%	5%	2%
Government	10,761	12,954	17,624	29%	22%	22%	-7%	0%
Federal, civilian	1,405	1,523	1,414	4%	3%	2%	-1%	-1%
Military	371	518	435	1%	1%	1%	0%	0%
State and local	8,985	10,913	15,775	24%	19%	19%	-5%	1%
State government	6,690	7,628	9,494	18%	13%	12%	-5%	-1%
Local government	2,295	3,285	6,281	6%	6%	8%	-1%	2%
San Miguel	1980	1990	2000	1980%	1990%	2000%	Change in % 1980-1990	Change in % 1990-2000
TOTAL	7,727	9,932	12,281	100%	100%	100%	0%	0%
Farm Employment	627	737	849	8%	7%	7%	-1%	-1%
Non-farm Employment	7,100	9,195	11,432	92%	93%	93%	1%	1%
Private Employment	3,645	5,195	7,011	47%	52%	57%	5%	5%
Agricultural services	28	77	120	0%	1%	1%	0%	0%
Mining	15	11	41	0%	0%	0%	0%	0%
Construction	336	534	585	4%	5%	5%	1%	-1%
Manufacturing	104	302	188	1%	3%	2%	2%	-
Transportation and utilities	203	184	287	3%	2%	2%	-1%	0%
Wholesale trade	148	135	117	2%	1%	1%	-1%	-
Retail trade	1,204	1,612	1,968	16%	16%	16%	1%	0%
Services	1,318	2,000	3,171	17%	20%	26%	3%	6%
Government	3,455	4,000	4,421	45%	40%	36%	-4%	-4%
Federal, civilian	202	179	177	3%	2%	1%	-1%	0%
Military	106	131	99	1%	1%	1%	0%	-1%
State and local	3,147	3,690	4,145	41%	37%	34%	-4%	-3%
State government	2,016	2,390	2,497	26%	24%	20%	-2%	-4%
Local government	1,131	1,300	1,648	15%	13%	13%	-2%	0%

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Taos	1980	1990	2000	1980%	1990%	2000%	Change in % 1980-1990	Change in % 1990-2000
TOTAL	8,351	11,434	15,918	100%	100%	100%	0%	0%
Farm Employment	432	472	494	5%	4%	3%	-1%	-1%
Non-farm Employment	7,919	10,962	15,424	95%	96%	97%	1%	1%
Private Employment	6,355	9,402	13,173	76%	82%	83%	6%	1%
Agricultural services, forestry, and	46	124	188	1%	1%	1%	1%	0%
Mining	737	362	271	9%	3%	2%	-6%	-1%
Construction	519	780	1,330	6%	7%	8%	1%	2%
Manufacturing	440	594	410	5%	5%	3%	0%	-3%
Transportation and utilities	207	333	363	2%	3%	2%	0%	-1%
Wholesale trade	86	218	226	1%	2%	1%	1%	0%
Retail trade	1,563	2,379	3,310	19%	21%	21%	2%	0%
Services	2,400	4,005	5,944	29%	35%	37%	6%	2%
Government and government	1,564	1,560	2,251	19%	14%	14%	-5%	0%
Federal, civilian	295	318	312	4%	3%	2%	-1%	-1%
Military	91	118	99	1%	1%	1%	0%	0%
State and local	1,178	1,124	1,840	14%	10%	12%	-4%	2%
State government	206	147	365	2%	1%	2%	-1%	1%
Local government	972	977	1,475	12%	9%	9%	-3%	1%

Notes: (D) Non-disclosure of confidential information, but included in totals, (L) Less than 10 jobs, and (N) Data not available for this year.

Source: Bureau of Economic Analysis

On the whole the Santa Fe NF is comprised of the large economy surrounding the city of Santa Fe, surrounded by a variety of urban and rural regions that are altogether more widely populated and active than in most other areas of New Mexico. While most of the forest itself lies in Rio Arriba and Sandoval County, the economic base of the region, and the greatest degree of recreational use, is centered on the city of Santa Fe. In all cases, the data indicate that the Santa Fe NF regional economy is composed of a large degree of government, retail, and service employment, and is not heavily dependent on primary industry uses of the forest such as logging, oil and gas extraction, and rock and mineral extraction. This is likely to be different on a sub-county level where small communities have formed around the use of forest resources for ranching or logging, but the observation for the region as a whole fits quite well.

To complete the picture, **Table 7.3** shows private employment by percent of occupation for each county and the region as a whole. The occupation data supports the data from previous tables, showing a large percent of jobs in management, sales and services occupations, with construction representing a substantial portion as well. Most notable in this case is that 50 percent of employment in Los Alamos County is professional, while the rest of the region has values closer to 20 percent. This is due to the unique nature of Los Alamos County as a scientific center as discussed above.

Table 7.3: Private Employment by Occupation for Region Counties in 2000

	Los		Rio				San Miguel County	Taos County	Santa Fe Region
	Alamos County	Mora County	Arriba County	Sandoval County	Santa Fe County				
Management and Professional	68%	28%	30%	36%	42%	34%	32%	39%	
Professional and related	50%	19%	19%	23%	26%	23%	20%	25%	
Education, training, and library	7%	8%	7%	5%	6%	9%	6%	6%	
Healthcare practitioners and technical	5%	2%	2%	4%	4%	6%	3%	4%	
Service	9%	22%	21%	15%	16%	22%	22%	17%	
Sales and office	15%	18%	25%	28%	26%	25%	25%	25%	
Farming, fishing, and forestry	0%	6%	2%	0%	0%	1%	1%	1%	
Construction, extraction, and maintenance	4%	17%	13%	10%	10%	11%	13%	10%	
Production and transportation	3%	8%	9%	11%	6%	7%	7%	8%	
Total Private Employment	9,656	1,686	16,563	38,870	64,930	11,372	13,556	156,633	

Source: US Census 2000. Calculations by UNM-BBER.

Finally, **Table 7.4** shows the unemployment rates for each of the counties and the region as a whole from 1995 to 2004. The most striking trend in **Table 7.4** is the much higher unemployment rates of Mora County when compared with the other counties in the region. This trend is true to a lesser degree for Rio Arriba, Taos, and San Miguel County. However, Los Alamos, Santa Fe, and Sandoval County, as the region's more developed areas, had consistently lower unemployment rates than New Mexico as a whole.

Table 7.4 : Average Annual Unemployment Rate for Region Counties, 1995-2004

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Los Alamos	3.2	1.9	1.6	1.5	1.3	2.3	2	2	2.3	2.5
Mora	24.1	21.4	20.4	18.6	14.8	10.5	9.6	10.6	11.1	11.7
Rio Arriba	14	12.9	10.4	7.7	6.6	5.7	6	6.5	6.4	6.2
Sandoval	4.1	5	4	4.8	2.8	3.6	4.7	5.5	5.1	4.9
Santa Fe	4.7	4.7	3.7	2.9	2.4	3.2	3.3	3.7	3.9	3.9
San Miguel	9.6	11.8	9.9	6.8	5.8	5.5	5.9	6.2	6	6.3
Taos	15.8	14.5	13	9	10.2	6.3	6.4	6.4	7	6.4
Santa Fe Region	10.8	10.3	9.0	7.3	6.3	5.3	5.4	5.8	6.0	6.0
NM TOTAL	6.4	7.4	7.1	6.3	6	5.2	4.8	5.2	5.8	5.9

Source: Bureau of Labor Statistics, Local Area Unemployment Statistics (LAUS).

7.2 Methodology and Organization of Santa Fe National Forest Impact

In estimating the contribution of the Santa Fe NF to the regional economy, we consider both the operations of the USAD FS in the region as well as the various uses of forest related products. The IMPLAN software is used to determine total economic value of each activity and the operations of the USAD FS. IMPLAN uses county-level input-output (I-O) data to determine the extent to which these activities contribute to the local economy. In doing so, IMPLAN distinguishes between direct, indirect, and induced impacts, where:

Direct impacts include the economic value generated by the activity itself, such as the value of cattle grazed on the Santa Fe NF land.

Indirect impacts include the value generated by purchases to support that activity and the corresponding purchases to support those activities, in perpetuity. For example, indirect impacts would include the value of fencing purchased for ranching, the value of steel purchased to make the fencing, and so on.

Induced impacts capture the value of economic activity generated from spending by employees that produce the direct and indirect goods. The ranch employees will purchase food, pay for electricity, etc...all of which generates additional value from the purchases, as well as sparking new rounds of indirect and induced value.

The IMPLAN region is the same region used throughout this report, consisting of all counties containing or bordering any of the Santa Fe NF districts. These counties include: Los Alamos, Mora, Rio Arriba, San Miguel, Sandoval, Santa Fe, and Taos County. This single region, containing the above seven counties, makes up the area considered as “local,” and the results shown from IMPLAN are for this region of seven counties as a whole.

As discussed in **Chapter 5: Uses and Users**, the principal economic value generating activities related to the forest land itself include recreation and wildlife visits as well as smaller degrees of ranching, logging, and oil and gas extraction. Oil and gas production generates a fairly high economic value in the region, but the impacts of this activity on the local region are limited. For each activity, we estimate the direct impact, and use IMPLAN to estimate the total economic value by direct, indirect, and induced impacts. The USAD FS is unusual in that it does not directly produce a good or service, and so there is no easy measure of its direct economic value. Instead, we look at USAD FS expenditures, and salaries, and wages to estimate the first round of indirect and induced impacts of the USAD FS, and the corresponding economic activity generated by each. The indirect activity is captured by USAD FS expenditures, and the induced activity is captured by the disposable income of USAD FS employees. Of course, in examining the contribution of the USAD FS, we also consider direct employment by the USAD FS.

This analysis draws on a wide range of data and information sources. Data on the structure of the local economies and characteristics of the workforce come largely from the 2000 Decennial Census summary file 3 and the US Department of Labor Local Area Unemployment Statistics. The USAD FS provided data on the specific activities that occurred on the Forest. Specific sources included INFRA (grazing); NVUM (recreation and wildlife); and Region 3 Office (procurement, wages & salaries). The US Department of Agriculture National Agricultural Statistics Service (NASS) was the source of data on agricultural land values and cattle stocking rates. Oil and gas production values are from the ONGARD database provided by the Oil Conservation Division at the New Mexico Energy, Minerals and Natural Resources Department and the New Mexico Taxation and Revenue Department. Oil and gas prices are from GO-TECH at New Mexico Institute of Mining and Technology.

7.3 Direct Impact of the Santa Fe National Forest on the Local Economies

The principal economic activities on the Santa Fe NF include ranching, timber harvests, oil and gas extraction, recreation and wildlife visits, and the operation activities of the USAD FS. Some of these activities are quite large economically, though their benefit to the local region can vary substantially. For example, oil and gas extraction generates a significant value of output, the benefits of which for the most part do not accrue to the local region (this is discussed further below). Additionally, there are large impacts particularly due to ski visitors that are examined here as a subsection of visitor impacts.

To maintain consistency, data for 2004 was used wherever possible. However, if data for that year did not exist, or more recent data was more easily available, we used that instead, making sure to adjust values back to 2004. Data for USAD FS salaries and wages is from fiscal year 2005 adjusted to 2004 dollars. Data on grazing land is from 2002. Visitor estimations are derived from the 2003 NVUM survey. All other data is from 2004 unless noted.

The USAD FS provided data on cattle grazing from the INFRA database in terms of Animal Unit Months (AUMs), and we estimated the number of employees needed per AUM. Together these values provide an estimated number of employees needed to produce the 2002 AUMs. Using the IMPLAN value for output per employee, we derive a ranching output for grazing on the Santa Fe NF. This is the direct value of ranching on the Santa Fe NF land.

Similarly, timber harvesting data was derived from the TIMS database provided by the USAD FS. We use 2004 timber prices to derive the total value of timber cut, which measures the direct value of timber harvested in the Santa Fe NF in 2004.

For recreation and wildlife visitors, we use estimates of visitors from NVUM data, broken out into several categories based on locality (local or non-local), the type of trip (day, overnight on the forest, overnight off the forest), and the reason for the visit (recreation or wildlife). The USAD FS provided an average expenditure profile for each type of visitor, which estimates the direct economic value of visitor spending to the local economy.

Oil and gas production values come from the Oil Conservation Division of the New Mexico Energy, Minerals and Natural Resources Department. The data list production for 2004 and the geographic location of each well, so we were able to match well locations to find those wells located on the Santa Fe NF. Using 2004 oil and gas prices gives us a market value for the production on forest land.

Rock and mineral extraction data was provided by the USAD FS and the market value of the production was calculated using an average of prices from relevant surveyed New Mexico businesses.

Finally, for USAD FS operations, the FS provided data on salaries and wages for its Santa Fe NF employees and total spending with an associated expenditure profile for use in IMPLAN. Since the direct economic value associated with the USAD FS is unknown, we use expenditures to capture the first round indirect impacts and salaries and wages to capture the first round induced impacts. In both cases, the associated later round indirect and induced impacts are calculated by the IMPLAN model.

Table 7.5 is a summary of the output, employment and labor incomes directly associated with these activities.¹¹⁹ These direct impacts are, in effect, ‘what you see’ – a measure of activities and their economic value as they actually occur on the Santa Fe NF. For example, there is the equivalent of approximately 19 full-time annual jobs harvesting lumber from the Santa Fe NF, and similarly 58 jobs in the ranching industry. In the case of the FS, employment is the number of employees directly employed by the FS in the Santa Fe NF, and labor income is the wages paid to those employees. Output for the FS is actually FS spending on operations, and does not include the costs of fighting wildfires, which is broken out separately. Finally, while mineral and rock extraction data is available, its permit value is only \$50,829 and though the market value is likely

¹¹⁹ Labor income is the sum of employee compensation and proprietor income.

to be quite a bit higher, it is still a fairly small impact and it is not included in the following tables or discussion.

Looking at this direct level of activity, we can see that the contribution of recreation and wildlife visitors is by far the largest source of impact from the Santa Fe NF. As a subsection of visitor impacts, the economic activity generated by ski visitors is more than a quarter of total visitor impacts, and by itself is larger than other activities generated by the forest. Forest Service operations are the second largest contributor, providing 336 jobs in the region and a large amount of labor income. Other direct activities are comparatively small.

Table 7.5: Direct Inputs of the Santa Fe National Forest, 2004 (000S OF 2002 \$, except employment)

	Output	Employment	Labor Income
Ranching	2,630	58	175
Timber Harvesting	2,494	19	212
Oil & Gas	6,493	18	1,570
Visitors & Recreation	100,331	--	--
Skiers	27,552	--	--
Forest Service Operations¹	13,880	336	9,979
Wildfire Suppression¹	789	--	1,474

¹ Forest service operations output is actually the first round of indirect spending, while labor income is disposable employee income.

7.4 Economic Impacts and Multipliers

The direct activities associated with the Santa Fe NF shown in **Table 7.5** create indirect and induced impacts as businesses and workers make expenditures and purchases, and these funds cycle through the local economy. The sum of the direct, indirect, and induced expenditures constitutes the total impact that the Santa Fe NF has on the economies of the neighboring communities. These impacts, in terms of employment, income and total output, are summarized in **Table 7.6**. Economic multipliers are shown in **Table 7.7**. Economic multipliers, equal to the total impact divided by the direct impact, indicate the effectiveness of the industry in generating growth in the local economy.

In total, the Santa Fe NF contributes directly or indirectly an estimated 2,379 jobs and \$69.2 million in income to the economies of the seven counties included in this study. This is equivalent to about 1.25 percent of the 189,325¹²⁰ jobs in the region in 2003. Visitor spending is by far the largest source of activity, contributing a total of 69.3 percent of the employment and 66 percent of the labor income impacts. The FS is the second largest contributor in terms of both employment and income, while ranching, and logging have smaller impacts.

There are three impacts shown in **Table 7.6** that warrant detailed discussion. Ski visitors, oil and gas extraction, and wildfire spending contain various complications that in general limit their usefulness as a measured impact. In the case of ski visitor spending as a sub-category of

¹²⁰ 2003 employment for the region as a whole from Table 7.1.

recreation and wildlife visitor spending, the level of spending is drawn from NVUM estimates of the proportion of visitors that are downhill skiers. This compensates for the unavailability of the number of ski visitors to the Santa Fe Ski Area. Hence, this value is just an approximation, and may vary substantially. Oil and gas extraction is problematic for different reasons. Though the data for the value of extracted oil and gas are reliable, the economics of oil and gas extraction suggest that little if any of the benefits from the extraction accrue to the Santa Fe NF region. In particular, revenues from sales are sure to leave the region, as extraction companies are rarely local. Furthermore, the extraction process uses very little labor, and often workers may be transported in and out of an area to maintain equipment, which does not add anything to the economic activity of the region except for what is spent there by employees during their stay. Hence, it is likely that the contribution from oil and gas shown in **Table 7.6** overstates the actual benefit to the region. There is one area that oil and gas extraction does benefit the region, and that is from local taxes, which typically support school districts and transportation projects. These impacts are discussed more thoroughly below. Finally, wildfire spending fluctuates widely in any given year. Beyond that, such impacts are difficult to measure because a large amount of the labor involved in wildfire suppression is brought in from outside the region. A similar process occurs in the purchase and use of equipment¹²¹. The only tangible impact that wildfire suppression has on the local region is derived from worker spending while in the region. In **Table 7.6** the values shown include all disposable income, and probably overstate the impacts of spending to some degree.

Table 7.6: Direct, Indirect and Induced Impacts of the Santa Fe National Forest, 2004

TOTAL OUTPUT IMPACTS (000s of 2002 \$)				
	Direct	Indirect	Induced	Total
Ranching	2,630	1,835	244	4,709
Timber Harvesting	2,283	1,025	142	3,451
Oil & Gas Extraction	5,940	927	746	7,612
Visitors & Recreation	86,280	13,878	16,221	116,379
Skiers	25,438	4,154	4,940	34,532
Forest Service Operations	--	16,850	8,565	25,416
Wildfire Operations	--	970	990	1,960
Total	97,132	35,486	26,908	159,526

¹²¹ Though this should be accounted for to some extent by the use of spending profiles that include wildfire spending and hence adjust for spending that occurs outside the region. These are forest wide profiles, and should be relatively accurate.

TOTAL EMPLOYMENT IMPACTS (#)

	Direct	Indirect	Induced	Total
Ranching	58	27	3	88
Timber Harvesting	17	8	2	27
Oil & Gas Extraction	17	7	9	32
Visitors & Recreation	1315	138	196	1649
Skiers	404	42	60	505
Forest Service Operations	336	130	101	567
Wildfire Operations	--	8	8	16
Total	1743	317	319	2379

TOTAL LABOR INCOME IMPACTS (000s of 2002 \$)

	Direct	Indirect	Induced	Total
Ranching	175	417	81	674
Timber Harvesting	194	150	47	391
Oil & Gas Extraction	1,436	368	248	2,052
Visitors & Recreation	35,668	4,666	5,403	45,738
Skiers	10,890	1,397	1,646	13,933
Forest Service Operations	9,979	5,617	2,761	18,357
Wildfire Operations	1,474	321	201	1,996
Total	48,927	11,539	8,742	69,208

As discussed above, the gains from oil and gas extraction may be much smaller than the impacts in **Table 7.6** suggest. Though the oil and gas does come from forest land and is then sold off, it is unlikely that the benefits of that activity accrue to the local region. In the first place, only in the extremely rare case that a local extraction company is performing the extraction will some portion of profits remain in the local region. Secondly, equipment and other purchases to supply the extraction industry come almost exclusively from outside the local area, so indirect impacts are likely to be negligible. Finally, extraction is very capital intensive, requiring only a minimal amount of labor to maintain production levels. Even the 17 direct employees suggested by IMPLAN are probably much higher than the real value. However, the output impacts are acceptable, and can be relied on as an appropriate estimate of the contribution to output from oil and gas extraction within the Santa Fe NF. As stated above, the unique characteristics of the oil and gas extraction industry lead us to conclude that the economic activity generated directly from oil and gas is quite small.

Though there is unlikely to be any significant economic impact directly from the extraction of oil and gas, the local region does receive benefit in the form of state and local taxes and forest service tax disbursements for transportation and road costs. The Santa Fe NF oil and gas extraction occurs exclusively in the Cuba Ranger District in Rio Arriba County. Using 2005 tax rates, the estimated tax benefit to Rio Arriba is about \$42 thousand (2004 \$). In the region as a whole, the 2005 forest service disbursements amounted to more than \$580 thousand in additional funds given to the region's county governments. In total these funds equal almost \$600 thousand

in additional tax revenues for the Santa Fe NF region. There are of course indirect and induced impacts that occur as the county governments spend these revenues. Additionally, state taxes generate about \$450 thousand in revenues from oil and gas extraction on the Santa Fe NF, but these funds are not tied to the Santa Fe NF region, so it is difficult to estimate their benefit to the region itself.

The economic multipliers shown in **Table 7.7** offer additional insights into the economic dynamics of the Santa Fe NF. Most of the multipliers fall in a range we would expect, but the multiplier for ranching income is rather high. This is due to the extremely low direct income generated per worker (only around \$3,000) that is a result of low employee compensation and proprietor income in the base year data. Many of the other higher multipliers are an artifact of high output to employment ratios (in the case of oil and gas) or very low income to employment ratios (in the case of ranching and timber).

Table 7.7: Economic Multipliers for the Santa Fe National Forest, 2004

	Output	Employment	Income
Ranching	1.79	1.51	3.85
Timber Harvesting	1.51	1.59	2.02
Oil & Gas	1.28	1.94	1.43
Visitors & Recreation	1.35	1.25	1.28
Skiers	1.36	1.25	1.28
Forest Service Operations	--	1.69	1.84
Wildfire Suppression	--	--	1.35

7.5 Opportunities, Risks and Special Circumstances

Looking strictly at economic impacts, it is estimated that the Santa Fe NF contributes to about 1.25 percent of the regional economic activity in terms of employment. Compared to the other national forests, this value is relatively small. However, the distribution of forest land throughout the counties, and the differences in the size of the economy in each county suggest different degrees of reliance on the Santa Fe NF as a source of economic activity. In this case, the unmeasured aesthetic value of the forest in creating a scenic environment for the city of Santa Fe is probably quite large. As the major cultural and economic center, Santa Fe County receives the majority of visitor spending impacts, though smaller amounts are likely felt throughout the rest of the counties. In the counties with smaller economies and a generally poorer population, the dependence on the use of forest products is probably more acute. As mentioned earlier, the impacts of the Santa Fe NF on Taos County are probably negligible.

San Miguel and Mora County contain minor, though substantial, sections of the Santa Fe NF. These two counties, as the smaller and poorer economies of the region, likely rely more heavily on the benefits of the forest as a provider of primary products such as fuel wood and food, as well as land for ranching and logging. This is not to say that the populations of the other counties don't also make significant use of the forest as a resource for these products, but rather that those areas have easier access to alternative heating methods and are generally wealthier and hence make less

use of the forest as a food source¹²². San Miguel may gain some benefit from visitors to the forest who are traveling through the county on their way to Santa Fe.

Sandoval County, as the intersection between Santa Fe and Albuquerque, has a relatively large economy, and most of its population is focused in that southeast quadrant of the County along Interstate 25. However, the presence of a number of Native American pueblos and their access to the forest suggest that a substantial number of Native Americans may make use of primary forest products. Sandoval itself probably sees little gain from visitor spending, except as they are passing through on the way between Santa Fe and Albuquerque.

Rio Arriba contains the largest portion of the forest of any of the region's counties, but its benefits are probably felt most strongly in terms of additional revenues from oil and gas extraction. Additionally, it is likely that a significant number of Rio Arriba residents make use of the forest as a source of fuel wood and food.

Santa Fe County is the most complicated. As the largest economy, the geographical center, and the prime tourist destination, Santa Fe County likely realizes a large majority of the benefits from visitor spending. The attraction of Santa Fe is extremely dependent on the beauty of its location, and hence the benefits of the forest extend far beyond the visitor spending impacts, probably playing a substantial role in the continued vitality of the service sector, Santa Fe's largest industry sector. Furthermore, it is likely that residents of Santa Fe County, especially those that live further away from the city of Santa Fe, make good use of primary forest products. The difference between these uses in Santa Fe County versus smaller counties such as Mora and San Miguel is that the inability to make use of primary forest products in Santa Fe County would affect a relatively small proportion of its population, while the same thing in Mora or San Miguel County could conceivably affect a significant portion of their population.

In addition to the strictly economic contributions discussed above and in section 7.4, there are several less strictly economic impacts that are nevertheless capable of causing a significant difference in the economic activity of the region. One particularly good example is the water retention and generation properties of the forest, but other factors such as the role the forest (and more appropriately the minerals underneath it) played in the initial founding of settlements are important. In arid southwest regions such as this, the presence of a river is crucial to enabling the survival of local populations. The economic implications of this are drastic, but how removing the Santa Fe NF would affect the local water table and consequently the current settlements is beyond the scope of this report. Suffice it to say that there are ecological impacts from the forest that leads to supporting economic activity in the region beyond the activities that have been measured here.

In examining forest planning and management issues, the region containing the Santa Fe NF consists of some of the wealthier counties in New Mexico as well as some of the poorer counties. The importance of primary forest products in these poorer regions is likely substantial, especially considering the presence of a number of Native American pueblos and reservations. Santa Fe serves as a large attractor, keeping a large portion of the visitor benefits within Santa Fe County.

¹²² This again comes down to relative sizes. The larger population of Santa Fe County may mean that a greater number of people make use of the forest's primary products than in the smaller counties, but relatively, it is likely that a greater percentage of the population in Mora and San Miguel are dependent on the use of these products than in Santa Fe and Sandoval County.

Hence, Santa Fe sees the greatest benefit from the forest, though it makes up only a small portion of the economy of the region as a whole.

8 Community Relationships

This chapter describes the relationships between communities surrounding the Santa Fe NF, the Forest Service and other federal and state agencies. The Forest Service has an extensive history of working with local communities and other government agencies on various projects, ranging from economic development to forest health and sustainability. These partnerships are an indispensable method of managing operations and conducting business. They play a vital role in achieving goals that the FS might not meet alone. Data provided by the FS shows that over 200 community organizations and businesses partner with the FS on various projects throughout New Mexico. **Table 8.1** below lists the types of partners the FS worked with in 2005.

Table 8.1: Partnership Types for All New Mexico National Forests, 2005

Partner Type	Example	Number of Partnerships
Federal	US Fish and Wildlife	15
State Government	NM Youth Conservation Corps.	22
Local Government	Village of Questa	38
Tribal	Taos Pueblo	19
Non Governmental Org.	Mora County Livestock Assoc.	48
Private	Pecos Baldy Enterprises	36
Universities/ Public Schools	Western New Mexico University	28

Source: USDA Forest Service

The most common partners are non-governmental organizations, which are typically non profit organizations such as neighborhood associations and agricultural sustainability groups. State government agencies are also common partners, including Children, Youth and Families and the New Mexico State Land Office. These fruitful partnerships work to benefit both the forest land and the users.¹²³

As one example, the NM Department of Game and Fish entered into a mutual agreement with the FS to help fund wildlife preservation projects on NM public lands through a program called the New Mexico Habitat Stamp Program (HSP). Since its statewide implementation in 1991, all trappers, anglers, and licensed hunters must buy a five dollar habitat stamp when purchasing a permit. The monies obtained from the stamp are used to fund wildlife and fishery habitat improvement projects.¹²⁴

When asked to discuss relationships with other organizations, the Santa Fe NF staff described situations where collaborative relationships were tenuous at best. Mostly, the Santa Fe NF works with other government agencies, such as BLM and the State Land Office. The FS is able to accomplish much in these relationships, even if there is some conflict.

The more problematic relationships are between the FS and other community groups and non-profit organizations. FS officials describe these relationships as “reactive and not proactive.” Staff Described situations where the FS tried to proactively reach out to groups such as the Forest Guardians in hopes to establish collaborative relationships **before** policies that are perceived problematic are made, but it appears that these organizations are more interested in litigation than with actual corroboration.

¹²³ USDA Forest Service, Southwestern Regional Collaboration Newsletter, February 2006.

¹²⁴ USDA Forest Service, Santa Fe National Forest, http://www.fs.fed.us/r3/Santa_Fe/press_releases/03-12-03_partnerships.htm (accessed April 12, 2006).

Considering the social and cultural history of northern New Mexico, it is not surprising that some communities do not want to cooperate with the FS. Within traditional communities, the FS is seen by some as representatives of the government that “stole” their land over one hundred years ago. This historical and cultural attachment of traditional users to the forest land has resulted in a sense of ownership among traditional users that proceeds and overrides the jurisdiction of the FS System. These traditional users rely on their own values and beliefs regarding access to and use of forest lands rather than following FS management plans and directives.¹²⁵ A study on the attitudes, values, and beliefs towards the FS illustrates that this issue still remains a barrier to relations between FS and traditional users.

8.1 Grants and Agreements

The Forest Service provided a list of 67 grants issued to various entities since 2000.¹²⁶ The total grants and agreements amount for the same time period is \$12,029,607. Of this total amount, the FS contributed \$6,686,567 in cash and in-kind contributions. The range of partner organizations is broad, including environmental advocacy groups, utility companies and citizen involvement organizations. Some of the larger grants and agreements amounts are with agencies such as Jemez Mountain School (\$1,037,866), the City of Santa Fe (\$1,500,000) and the Conservation Fund (\$360,000). The full list provided by the FS can be found on **Table A.7** in the appendix.

8.2 Collaborative Forest Rehabilitation Program (CFRP)

One of the most significant ways the forest has been teaming up with communities is through the Collaborative Forest Rehabilitation Program (CFRP). The Community Forest Restoration Act of 2000 (Title VI, Public Law 106-393) established a cooperative forest restoration program in New Mexico. The program provides cost-share grants to stakeholders for forest restoration projects on public land that are designed through a collaborative process. Projects must address specific issues, such as wildfire threat reduction, ecosystem restoration, preservation of old and large trees, and increased utilization of small diameter wood products. The Act authorizes up to \$5 million annually. State, local and tribal governments, educational institutions, landowners, conservation organizations and other interested public and private entities are all eligible to apply for funds.¹²⁷

In New Mexico, about 13 projects were funded between 2001 and 2005; at least three were in the Santa Fe NF. An example of a funded CFRP project, the Inter Tribal Bosque Restoration Along the Rio Grande, is managed by the Pueblo of San Juan. As part of this project, the San Juan Pueblo and Santa Clara Pueblo will collaborate in a three year restoration project over 120 acres on the *bosque* along the Rio Grande on tribal land above and below Española. The goal is to remove fire-prone non-native trees from the *bosque* and replant native vegetation in an effort to restore ecosystem function, species composition and forest structure. This project is the first time any of the Rio Grande Pueblos have worked together on a forest restoration project.

¹²⁵ J. C. Russell and P. A. Adams-Russell, Values, Attitudes and Beliefs Toward National Forest System Lands: The Santa Fe National Forest (Placerville, CA: USDA Forest Service, 2005).

¹²⁶ A list of G&A Incoming and Outgoing Funds was provided to BBER. BBER is unable to know if this list is exhaustive, but it appears to be the best data available.

Research examining attitudes and beliefs toward the Carson and Santa Fe NFs found that many local residents are satisfied with the CFRP as it is a successful way to mesh ecological values with local economic benefits.¹²⁸

8.3 Volunteers

According to data collected from the USAD FS, the Santa Fe NF benefited from the work of about 476 volunteers between 2003 and 2005. **Table 8.2** outlines the age and gender composition of the Santa Fe NF volunteers over the past three years. In 2005, forty-one percent of volunteers were over 55 years of age, implying older people are more likely to have the time, willingness, and interest to donate their services to the NF. This is a change from the years 2004 and 2005 where seven percent and eighteen percent of volunteers were over 55, respectively. It is also interesting to note that 67 percent of the 2005 volunteers were female.

Table 8.2: Age and Gender of Santa Fe NF Volunteers, 2003-2005

	2005				2004				2003			
	< 18	18-54	55+	TOTAL	< 18	18-54	55+	TOTAL	< 18	18-54	55+	TOTAL
Male	1	52	39	92	0	71	7	78	1	106	30	137
Female	4	24	17	45	6	66	4	76	0	43	5	48
Total	5	76	56	137	6	137	11	154	1	149	35	185

Source: USDA Forest Service Volunteer Data (Human Resource Department)

The data also show that the total number of volunteers dropped consistently every year as reflected in both the number of volunteers and their accumulated hours. Curiously, as the **Table 8.3** shows, the value of the volunteer service was much lower in 2003 despite the highest number of volunteers. The value of volunteers is calculated based on their accumulated hours multiplied times their estimated government pay grade determined by the type of volunteer work performed. The larger volunteer base in Wildlife, Fish, & Rare Plants, Heritage Program, and Watershed & Air Management could explain the difference in the appraised value of volunteers between 2003 and the other years.

There is no doubt that volunteers comprise a major source of labor for the FS, allowing the agency to take on more projects than it ever could without such support. Volunteers perform a long list of tasks, including maintaining recreation sites and trails, litter pick up and wildlife restoration. In the Santa Fe NF, the most common volunteer activities involve recreation services. Volunteers provided more than \$109,290 worth of labor in this resource category. The relationships between volunteers and the forest service not only benefit the NF, but the volunteers themselves are provided opportunities learn about maintaining and sustaining forest wildlife health.

The Forest Service estimates the appraised value of 7,705 volunteer hours at just over \$111,000 in 2005, as shown in **Table 8.3**. In comparison, the Carson NF estimated the value of volunteers

¹²⁸ J. C. Russell and P. A. Adams-Russell, Values, Attitudes and Beliefs Toward National Forest System Lands: The Santa Fe National Forest (Placerville, CA: USDA Forest Service, 2005).

to be over \$400,000 and the Cibola NF estimated over \$400,000 for the same year. The data accounts for the “skill-level” of volunteers, adjusting appraised value to the Government Pay Grade scale. The “person years” column illustrates how many years worth of work was subsidized by the efforts of volunteers. Over the past three years, the FS has received the most benefit from volunteer efforts related to wildlife and recreation related activities, equivalent to over \$109,000. Similarly, volunteers provided over \$102,000 worth of work in the forest’s heritage program.

Table 8.3: Volunteer Hours for the Santa Fe National Forest, 2003-2005

Resource Category	2005			2004			2003		
	Accum. Hours	Appraised Value (Dollars)**	Person Years*	Accum. Hours	Appraised Value (Dollars)**	Person Years*	Accum. Hours	Appraised Value (Dollars)**	Person Years*
Recreation	5139	\$70,635.00	2.85	864	\$8,908.00	0.48	14410	\$29,747.00	8.01
Heritage Program	80	\$1,004.00	0.04	6176	\$100,640.00	3.43	0	\$0.00	0.00
Wildlife, Fish & Rare Plants	610	\$10,675.00	0.34	0	\$0.00	0.00	0	\$0.00	0.00
Range Management	80	\$945.00	0.04	0	\$0.00	0.00	48	\$480.00	0.03
Forest Management	0	\$0.00	0.00	0	\$0.00	0.00	0	\$0.00	0.00
Watershed & Air Mgt	16	\$280.00	0.01	112	\$1,155.00	0.06	0	\$0.00	0.00
Protection	0	\$0.00	0.00	0	\$0.00	0.00	0	\$0.00	0.00
Research	0	\$0.00	0.00	396	\$4,083.00	0.22	0	\$0.00	0.00
Business & Finance	16	\$189.00	0.01	440	\$5,361.00	0.24	24	\$240.00	0.01
Facilities Const (Off-Center)	0	\$0.00	0.00	0	\$0.00	0.00	0	\$0.00	0.00
Facilities Const (On-Center)	0	\$0.00	0.00	0	\$0.00	0.00	0	\$0.00	0.00
Other Facilities	0	\$0.00	0.00	0	\$0.00	0.00	0	\$0.00	0.00
Other	1764	\$27,347.00	0.98	896	\$20,990.00	0.50	0	\$0.00	0.00
TOTAL	7,705	\$111,075	4.27	8884	\$141,137.00	4.93	14,482	\$30,467	8.05

Source: USDA Forest Service Volunteer Data (Human Resource Department)

Note: **"Accum Hours/1800 Hours" (Expressed in Years) and ***"Accum Hours*Estimated Government Pay Grade"

8.4 Opportunities, Risks and Special Circumstances

The Santa Fe NF relies on local communities for critical resources, such as volunteers and collaborative relationships. It is through these arrangements that the forest is able to facilitate innovative projects aimed at improving forest health and reducing threats, such as fires and non-native species. Even though the FS actively tries to develop collaborative relationships with other organizations, other groups may be reluctant to step up because their function is more of a “watchdog” rather than a community partner.

The local communities can potentially provide a healthy supply of volunteers for the forest, especially near the city of Santa Fe. Generally speaking, however, recruiting volunteers may be difficult because northern New Mexico is a sparsely populated region of the state. It may be more fruitful to solicit organizations (forest advocates or social groups) for volunteers rather than seek them out as individuals.

As volunteers, people can experience personal benefits by working in the forest, such as learning about forest health, wildlife conservation and the value of forest maintenance. As such, it may be a reasonable venture to actively recruit younger volunteers with the goals of developing their enthusiasm about the forest and transferring forest-related knowledge and wisdom to the next generation. This may be especially valuable in areas where families’ livelihood and culture are directly tied to the land.

Traditional users and long-term residents may be reluctant to work with the FS because they may perceive their attachment and “land ethic” to be beyond the bureaucratic entanglements of the FS. The FS, in this case, must convince skeptics that it is also committed to serving the land and honoring its cultural significance before the agency will be accepted as legitimate land managers.

Native American tribes and long-time ranchers hold a traditional wisdom about the land and its health, which can be a valuable resource for forest management. As people who have lived with the land and have depended on it for their livelihood, they feel they can tell when forest health is being compromised and can help predict possible outcomes of forest planning activities. The FS can use this knowledge as a resource for planning. Traditional users may be more willing to cooperate if they know their knowledge and information will be used in a meaningful way.

The relationships between the Forest Service, as an agency, and the local communities are crucial. Communities often look to the FS to make decisions regarding land use conflicts. Native American tribes can easily view the FS as both an advocate and also a threat, especially when it comes to protecting special areas. Consequently, environmentalists often influence FS decisions that are in opposition to the interests of local landowners. This mismatch of interests can create tension between the two groups. It would be beneficial to the FS to construct planning policies that reflect at least some concerns of each group.

9 Principal Findings, Challenges and Opportunities

“Success of the Forest Service in the 21st century will be measured by the Agency’s ability to sustain the flow of social and economic benefits to the American people while also ensuring that the capacity of the nation’s forests and grasslands to provide ecological benefits is undiminished.”¹²⁹

Initially started in 1905, the mission of the USDA Forest Service was to manage and allocate the resources of the National Forests. Today the mission is *“to sustain the health, diversity, and productivity of the Nation’s forests and grasslands to meet the needs of present and future generations”*.

9.1 Economic Impacts of the Santa Fe NF

The Santa Fe NF directly and indirectly accounts for an estimated \$160 million in output, \$69 million in labor and 2,300 jobs, equal to about 1.3 percent of employment in the seven county assessment area. Visitor and recreational activities, including skiing, account for about 2 of 3 jobs and an equivalent share of labor income; FS operations and wildfire operations make up much of the remainder. Oil and gas extraction, ranching and timber harvesting together account for less than ten percent of the value of all economic activity on the Santa Fe NF, and a much lower share of employment and wages. This study does not measure the role of the Forest in creating markets for residential development, including second homebuyers and amenity migrants, but there is every reason to believe that this may account for one of the most significant impacts of the Forest on the regional economy.

In all likelihood, the trend toward a greater importance of recreation based activities and a corresponding decline in resource based activities will continue and even accelerate during the foreseeable future. The share of national income received by the top tiers of income earners has increased significantly over the past two decades, creating a pool of funds available for leisure spending and second home purchase. Further, the retirement of the ‘baby boomers’ will be reaching its apex over the next two decades, broadening the market for amenity rich residential development. The areas surrounding Santa Fe NF, particularly in the Espanola and Pecos RDs nearest the City of Santa Fe, are attractive locations for these populations and activities. On the flip side, economic strategies traditionally employed in the Santa Fe NF assessment area, typically combining ranching, *acequia* agriculture, wood collection and other communal land uses, appear to be less viable in the context of rising land values and declining prices for primary commodities. Consequently, many of these traditional users are party to the transformation of land use patterns, as ranches and agricultural lands are sold for residential and second home development.

9.2 Cultural and Socioeconomic Diversity and Conflicting Demands for Forest Management

Perhaps more than any other National Forest area in New Mexico, the Santa Fe NF is characterized by extreme socioeconomic and cultural diversity. The cities of Santa Fe and Los Alamos include some of the most affluent populations in the State, if not the nation. Communities such as Espanola, and even parts of Santa Fe, have very high levels of urban poverty. The

¹²⁹ USDA FS. (2006, October). *Four Threats: Questions and Answers*. Retrieved November 17, 2006, from <http://www.fs.fed.us/projects/four-threats/questions-answers.shtml>

assessment area includes no fewer than 11 Native American pueblos, and a number of Hispano land grant communities. Far from static, this socioeconomic and cultural mix is undergoing continuous change. No doubt, this remarkable diversity mix is central to the area's attraction, but it also makes the challenges of resource management that much greater.

Each of these groups approach the Forest with very different sets of values, needs and expectations regarding resource management; the more affluent populations, particularly the most recent arrivals, view the Forest as recreational resource, offering amenities to individual households and business opportunities to the local economy. Environmental groups sometimes align with these interests, strongly favoring policies that benefit wildlife and wilderness. Hispanic land grant communities see the Forest as an extractive resource that supports traditional subsistence economies. Economically marginal urban communities view the land as offering supplemental income, whether in timber harvesting, rock extraction or occasionally grazing. Native American populations share many of these economic needs, but also see the Forest land in historical cultural and religious context.

In this context, the Forest Service functions as an arbitrator of land use conflicts. Too often, however, the Forest Service is perceived by the various groups as lacking impartiality, favoring the interests of one group or another. For instance, the FS is often seen by traditional groups as favoring the powerful interests of environmentalists and the affluent, who are typically better organized and more conversant in the administrative language of the Federal bureaucracy. Conversely, many within the affluent communities argue that the FS tries to avoid controversy by compromising with what are seen as unsustainable practices of traditional communities. Beyond these very general divisions, the role of the FS is further complicated on a local basis, where it is required to make decisions with very immediate consequences.

Balancing these myriad and often incompatible demands is arguably the greatest challenge facing the Santa Fe NF staff. There is no perfect solution but language must be part of the equation. The FS would establish a more credible position as arbiter and land manager by clearly stating its policies and rationale in language that is consistent and equally accessible to all groups. Too often, administrators use highly technical language for the purposes of clarity, but the result can be interpreted as favoring one or another group.

9.3 Managing Forest Access

Access to Santa Fe NF is uneven and complex, stressing FS resources. Many of these problems are due to the long and complex relationship between local communities and the land that now forms the Santa Fe NF. For instance, many communities have developed unique ways of accessing the Forest, but because of the complexity of land tenure and even the lack of clear legal documentation the FS now finds it difficult to ensure rights-of-way to the public at large. Similarly, because of the long history of Forest use, Santa Fe NF has excessive number of access points, including forest roads, making it difficult to regulate access to areas that require protection. More recently, the growing use of off-highway-vehicles (OHVs) has created an estimated 1,000 miles of user created roads in the Santa Fe NF, again allowing access to areas that require protection. Common and significant changes in Federal policy regulating Forest access, such as roadless area policy, likewise complicate the job of local FS officials.

Underlying the questions of access are broader questions of Forest use. Once access is established, the capacity of FS officials to regulate use is compromised. Conversely, by making clear decisions regarding use FS officials can address questions of access, limiting access to areas that require protection and facilitating access (by land conveyances, right of way agreements, road improvements and so on) to areas that best meet demands for use.

9.4 Land Development and Ecological Management

The Santa Fe NF faces a number of challenges to Forest health – risk of catastrophic fire, bark beetle, and invasive species are among the most pressing. To be sure, drought and decades of fire suppression have contributed to these problems, but as in many parts of the U.S. the rapid rate of land development along Forest boundaries has exacerbated these threats. Land development has long been an issue along the edges of Santa Fe and Los Alamos, but has more recently emerged as a problem in more remote areas in the Pecos and Jemez RDs. Because of remote locations, the costs and complexity of managing ecological hazards are increased.

Although land development is pronounced along the boundaries of the Santa Fe NF, the problem is attenuated by the relatively low levels of private landownership in the Forest. Only about 8 percent of land within the boundaries of Santa Fe NF is privately owned, and in most cases private land is in relatively large parcels. By contrast, nearly one-quarter of Cibola NF land is privately-managed, often in small parcels. Further, land use patterns on publicly and privately-held land in the Santa Fe NF vary only slightly, in sharp contrast to other Forests in New Mexico. The pattern of landownership Santa Fe NF and similarities in patterns of land use offer officials an opportunity to implement sound ecological management policies, with minimal interference and the possibility of significantly effecting tendencies in adjacent lands.

9.5 Community Partnerships

Faced with federal mandates and declining resources, the FS is turning increasingly to community partnerships and collaboration as a way of achieving its goals. During recent years, there has been a lull in such activities at Santa Fe NF. The number and diversity of community partnerships is less than what might be expected compared to other NFs in New Mexico, especially considering the relative access of the Forest to large populations. Further, the number of volunteers has declined during recent years, particularly among younger populations.

The value of such programs goes well beyond the direct labor-saving benefits, as they serve as valuable mechanism to educate various groups about the decision-making process that FS engages in, while building a sense of ownership in the community. In particular, Santa Fe NF managers should continue to pursue opportunities to develop similar programs and relationships with traditional land users, including Hispanos and Native Americans. Failing to develop such programs poses the risk of further alienating traditional groups, as they may perceive the strength of partnerships with environmental, urban and business groups as further evidence of bias in forest policy. To this end, one possible strategy may be to involve traditional communities in decision making in the area of sustainable forest management practice. This may help to bring together long established and newly expanding communities in a common effort while at the same time passing along local knowledge about sustainable land management.

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Appendices

Table A.1: Population of Places in Assessment Area, 2000

Santa Fe Places	1980	1990	2000	% Change 80-90	% Change 90-00
Agua Fria CDP	.	3,717	2,051	NA	-44.8
Alcalde CDP	.	308	377	NA	22.4
Algodones CDP	.	.	688	NA	NA
Angel Fire village	.	93	1,048	NA	1026.9
Bernalillo town	3,012	5,960	6,611	97.9	10.9
Canada de los Alamos CDP	.	.	358	NA	NA
Cedar Grove CDP	.	.	599	NA	NA
Chama village	1,090	1,048	1,199	-3.9	14.4
Chamisal CDP	.	272	301	NA	10.7
Chimayo CDP	1,993	2,789	2,924	39.9	4.8
Chupadero CDP	.	.	318	NA	NA
Cochiti CDP	.	434	507	NA	16.8
Corrales village	2,791	5,453	7,334	95.4	34.5
Cuaratez CDP	.	.	452	NA	NA
Cuba village	609	760	590	24.8	-22.4
Cundiyo CDP	.	.	95	NA	NA
Cuyamungue CDP	.	329	421	NA	28.0
Dulce CDP	1,648	2,438	2,623	47.9	7.6
Edgewood town	.	.	1,893	NA	NA
Eldorado at Santa Fe CDP	.	2,260	5,799	NA	156.6
El Rancho CDP	.	.	817	NA	NA
El Valle de Arroyo Seco CDP	.	.	1,149	NA	NA
Espanola city	6,803	8,389	9,688	23.3	15.5
Galisteo CDP	.	.	265	NA	NA
Glorieta CDP	.	.	859	NA	NA
Jaconita CDP	.	375	343	NA	-8.5
Jemez Pueblo CDP	1,503	1,301	1,953	-13.4	50.1
Jemez Springs village	316	413	375	30.7	-9.2
La Cienega CDP	.	1,066	3,007	NA	182.1
La Jara CDP	.	.	209	NA	NA
Lamy CDP	.	.	137	NA	NA
La Puebla CDP	.	.	1,296	NA	NA
Las Vegas city	14,322	14,753	14,565	3.0	-1.3
Los Alamos CDP	11,039	11,455	11,909	3.8	4.0
Los Cerrillos CDP	.	.	229	NA	NA
Madrid CDP	.	.	149	NA	NA
Mosquero village	197	164	120	-16.8	-26.8
Nambe CDP	1,017	1,246	.	22.5	NA
Pecos village	885	1,012	1,441	14.4	42.4
Pena Blanca CDP	.	300	661	NA	120.3
Penasco CDP	.	648	572	NA	-11.7
Picuris Pueblo CDP	.	.	86	NA	NA
Placitas CDP	.	1,611	3,452	NA	114.3
Pojoaque CDP	.	1,037	1,261	NA	21.6
Ponderosa CDP	.	.	310	NA	NA
Pueblo of Sandia Village CDP	.	.	344	NA	NA

Table A.1 Cont'd: Population of Places in Assessment Area, 2000

Questa village	1,202	1,707	1,864	42.0	9.2
Ranchos de Taos CDP	1,411	1,779	2,390	26.1	34.3
Red River town	332	387	484	16.6	25.1
Regina CDP	.	.	99	NA	NA
Rio Chiquito CDP	.	.	103	NA	NA
Rio en Medio CDP	.	.	131	NA	NA
Rio Lucio CDP	.	.	379	NA	NA
Rio Rancho city	.	.	51,765	NA	NA
San Felipe Pueblo CDP	1,465	1,557	2,080	6.3	33.6
San Ildefonso Pueblo CDP	.	447	458	NA	2.5
San Juan CDP	.	465	592	NA	27.3
Santa Ana Pueblo CDP	.	476	479	NA	0.6
Santa Clara Pueblo CDP	.	1,156	980	NA	-15.2
Santa Cruz CDP	.	2,504	.	NA	NA
Santa Fe city	48,953	55,859	62,203	14.1	11.4
Santo Domingo Pueblo CDP	2,082	2,866	2,550	37.7	-11.0
San Ysidro village	199	233	238	17.1	2.1
Sombrillo CDP	.	.	493	NA	NA
Taos town	3,369	4,065	4,700	20.7	15.6
Taos Pueblo CDP	.	1,187	1,264	NA	6.5
Taos Ski Valley village	.	.	56	NA	NA
Tesuque CDP	1,014	1,490	909	46.9	-39.0
Torreon CDP (Sandoval County)	.	.	297	NA	NA
Vadito CDP	.	283	242	NA	-14.5
Wagon Mound village	416	319	369	-23.3	15.7
White Rock CDP	6,560	6,192	6,045	-5.6	-2.4
Zia Pueblo CDP	.	637	646	NA	1.4
TOTAL SANTA FE PLACES	114,228	153,240	233,201	34.2	52.2

Source: US Census Bureau, Decennial Census, 1980, 1990, 2000. Calculations by UNM-BBER.

Table A.2 Net Migration for the Santa Fe National Forest Counties, 1990 and 2000

	SAN MIGUEL COUNTY				SANTA FE COUNTY			
			Percent of Total	Percent of Total			Percent of Total	Percent of Total
	1990	2000	1990	2000	1990	2000	1990	2000
TOTAL	23,671	28,186	100%	100%	91,923	121,557	100%	100%
Same House	14,346	17,812	61%	63%	47,309	64,899	51%	53%
Different House	9,325	10,374	39%	37%	44,614	56,658	49%	47%
in the United States	9,029	9,961	38%	35%	43,296	51,510	47%	42%
Same County	4,652	5,379	20%	19%	21,015	26,104	23%	21%
Different County	4,377	4,582	18%	16%	22,281	25,406	24%	21%
Same State	2,215	2,636	9%	9%	7,747	8,453	8%	7%
Different State	2,162	1,946	9%	7%	14,534	16,953	16%	14%
Northeast	108	192	0%	1%	2,172	2,500	2%	2%
Midwest	266	143	1%	1%	1,778	2,689	2%	2%
South	702	594	3%	2%	4,710	4,791	5%	4%
West	1,086	1,017	5%	4%	5,874	6,973	6%	6%
Puerto Rico	0	0	0%	0%	0	30	0%	0%
Elsewhere	296	413	1%	1%	1,318	5,118	1%	4%
	RIO ARRIBA COUNTY				SANDOVAL COUNTY			
			Percent of Total	Percent of Total			Percent of Total	Percent of Total
	1990	2000	1990	2000	1990	2000	1990	2000
TOTAL	31,229	38,419	100%	100%	57,103	83,382	100%	100%
Same House	20,770	27,410	67%	71%	29,383	47,166	51%	57%
Different House	10,459	11,009	33%	29%	27,720	36,216	49%	43%
in the United States	10,337	10,487	33%	27%	27,202	35,258	48%	42%
Same County	6,768	5,500	22%	14%	6,269	9,710	11%	12%
Different County	3,569	4,987	11%	13%	20,933	25,548	37%	31%
Same State	2,096	3,015	7%	8%	11,842	13,325	21%	16%
Different State	1,473	1,972	5%	5%	9,091	12,223	16%	15%
Northeast	107	139	0%	0%	1,312	1,607	2%	2%
Midwest	168	204	1%	1%	1,762	2,054	3%	2%
South	347	493	1%	1%	2,167	3,392	4%	4%
West	851	1,136	3%	3%	3,850	5,170	7%	6%
Puerto Rico	0	8	0%	0%	0	14	0%	0%
Elsewhere	122	514	0%	1%	518	944	1%	1%
	LOS ALAMOS COUNTY				MORA COUNTY			
			Percent of Total	Percent of Total			Percent of Total	Percent of Total
	1990	2000	1990	2000	1990	2000	1990	2000
TOTAL	16,999	17,275	100%	100%	3,988	4,857	100%	100%
Same House	9,293	10,300	55%	60%	2,750	3,364	69%	69%
Different House	7,706	6,975	45%	40%	1,238	1,493	31%	31%
in the United States	7,435	6,590	44%	38%	1,238	1,470	31%	30%
Same County	3,340	3,037	20%	18%	606	482	15%	10%
Different County	4,095	3,553	24%	21%	632	988	16%	20%
Same State	1,343	1,034	8%	6%	387	601	10%	12%
Different State	2,752	2,519	16%	15%	245	387	6%	8%
Northeast	240	257	1%	1%	12	5	0%	0%
Midwest	418	486	2%	3%	21	29	1%	1%
South	1,084	813	6%	5%	107	105	3%	2%
West	1,010	963	6%	6%	105	248	3%	5%
Puerto Rico	0	0	0%	0%	0	0	0%	0%
Elsewhere	271	385	2%	2%	0	23	0%	0%

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	TAOS COUNTY				TOTAL SANTA FE COUNTIES			
	1990	2000	Percent of Total	Percent of Total	1990	2000	Percent of Total	Percent of Total
			1990	2000			1990	2000
TOTAL	21,328	28,347	100%	100%	246,241	322,023	100%	100%
Same House	13,113	18,249	55%	65%	136,964	189,200	56%	59%
Different House	8,215	10,098	35%	36%	109,277	132,823	44%	41%
in the United States	8,058	9,706	34%	34%	106,595	124,982	43%	39%
Same County	4,951	4,668	21%	17%	47,601	54,880	19%	17%
Different County	3,107	5,038	13%	18%	58,994	70,102	24%	22%
Same State	1,087	1,402	5%	5%	26,717	30,466	11%	9%
Different State	2,020	3,636	9%	13%	32,277	39,636	13%	12%
Northeast	174	362	1%	1%	4,125	5,062	2%	2%
Midwest	132	331	1%	1%	4,545	5,936	2%	2%
South	618	981	3%	3%	9,735	11,169	4%	3%
West	1,096	1,962	5%	7%	13,872	17,469	6%	5%
Puerto Rico	10	12	0%	0%	10	64	0%	0%
Elsewhere	147	380	1%	1%	2,672	7,777	1%	2%

Source: US Census Bureau, Decennial Census, 1990 and 2000. Calculations by UNM BBER.

Table A.3 Designated Trails on Santa Fe NF

Trail Name	Trail Type	Seg. Length	Trail Name	Trail Type	Seg. Length
Coyote District			Cuba District		
Canada Gonzales	Standard/Terra Trail	3	Anastacio	Standard/Terra Trail	3
Canones Cr National	Standard/Terra Trail	9	Continental Divide	Standard/Terra Trail	0
Cecilia	Standard/Terra Trail	3	Continental Divide	Standard/Terra Trail	1
Chavez Springs	Standard/Terra Trail	2	Continental Divide	Standard/Terra Trail	1
Chihuahuenos	Standard/Terra Trail	7	Continental Divide	Standard/Terra Trail	2
Continental Divide	Standard/Terra Trail	1	Continental Divide	Standard/Terra Trail	3
Continental Divide	Standard/Terra Trail	2	Continental Divide	Standard/Terra Trail	4
Continental Divide	Standard/Terra Trail	2	Continental Divide	Standard/Terra Trail	4
Continental Divide	Standard/Terra Trail	2	Continental Divide	Standard/Terra Trail	4
Continental Divide	Standard/Terra Trail	0	Damian	Standard/Terra Trail	2
Continental Divide	Standard/Terra Trail	4	Los Pinos	Standard/Terra Trail	5
Continental Divide	Standard/Terra Trail	7	Lucero	Standard/Terra Trail	4
Continental Divide	Standard/Terra Trail	6	Nogales	Standard/Terra Trail	1
Continental Divide	Standard/Terra Trail	6	Palomas	Standard/Terra Trail	4
Continental Divide	Standard/Terra Trail	13	Penas Negras	Standard/Terra Trail	4
Corralitos	Standard/Terra Trail	3	Penas Negras	Standard/Terra Trail	1
Coyote Admin	Standard/Terra Trail	1	Penas Negras	Standard/Terra Trail	1
Coyote Canyon	Standard/Terra Trail	5	Perchas	Standard/Terra Trail	2
Dry Lake	Standard/Terra Trail	3	Rattlesnake	Standard/Terra Trail	1
Encino	Standard/Terra Trail	5	Rio Capulin (Cdt)	Standard/Terra Trail	0
Gallina Bench	Standard/Terra Trail	2	San Jose	Standard/Terra Trail	1
Hart Canyon	Standard/Terra Trail	1	San Pedro	Standard/Terra Trail	3
Jarosa Canyon	Standard/Terra Trail	3	Vacas	Standard/Terra Trail	10
Maestas	Standard/Terra Trail	3	Vacas	Standard/Terra Trail	1
Mesa Del Medio	Standard/Terra Trail	7	Jemez District		
Mogote	Standard/Terra Trail	1	Alamo	Standard/Terra Trail	3
Ojitos Canyon	Standard/Terra Trail	8	Alamo Spring Trail	Standard/Terra Trail	1
Pelones	Standard/Terra Trail	3	Bearhead Peak	Standard/Terra Trail	1
Penas Negras	Standard/Terra Trail	3	Bearhead Ridge	Standard/Terra Trail	7
Piedra Lumbre	Standard/Terra Trail	1	Big Spring Peak	Standard/Terra Trail	1
Pinabetal	Standard/Terra Trail	2	Bland Frijoles	Standard/Terra Trail	1
Polvadera Creek	Standard/Terra Trail	2	Boundary Peak	Standard/Terra Trail	1
Potrero	Standard/Terra Trail	4	Capulin	Standard/Terra Trail	2
Puerco Canyon	Standard/Terra Trail	5	East Fork	Standard/Terra Trail	10
Questa Navajo	Standard/Terra Trail	2	Medio Dia	Standard/Terra Trail	5
Rincon Spring	Standard/Terra Trail	2	Peralta Canyon	Standard/Terra Trail	8
Rio Capulin	Standard/Terra Trail	7	Peralta Ridge	Standard/Terra Trail	4
Rio Capulin (Cdt)	Standard/Terra Trail	6	Quemazon	Standard/Terra Trail	3
Rio Gallina	Standard/Terra Trail	4	Rio Cebolla	Standard/Terra Trail	1
Rio Puerco	Standard/Terra Trail	6	St. Peter'S Dome	Standard/Terra Trail	6
Rito De Las Sillas	Standard/Terra Trail	5	Turkey Spring	Standard/Terra Trail	2
San Jose	Standard/Terra Trail	4			
Tsi'Pin	Standard/Terra Trail	1			
Upper Gallina	Standard/Terra Trail	3			
Vega Redonda	Standard/Terra Trail	2			
West Tank	Standard/Terra Trail	2			

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Trail Name	Trail Type	Seg. Length	Trail Name	Trail Type	Seg. Length
Pecos-Las Vegas					
Agua Fria	Standard/Terra Trail	14	Tecolote Loop	Standard/Terra Trail	9
Arroyo Hondo	Standard/Terra Trail	3	Valle Medio	Standard/Terra Trail	2
Beattys Baldy	Standard/Terra Trail	2	Winsor National Rec	Standard/Terra Trail	6
Beaver Creek	Standard/Terra Trail	5	Winsor Ridge	Standard/Terra Trail	6
Blue Bell	Standard/Terra Trail	0	Espanola District		
Bob Grounds	Standard/Terra Trail	4	Agua Condida	Standard/Terra Trail	2
Bordo Del Medio	Standard/Terra Trail	6	Agua Piedra	Standard/Terra Trail	3
Burro Basin	Standard/Terra Trail	5	Agua Piedra	Standard/Terra Trail	3
Carraton Canyon Ski	Standard/Terra Trail	2	Agua Sarca	Standard/Terra Trail	6
Cave Creek	Standard/Terra Trail	3	Agua Sarca	Standard/Terra Trail	2
Chaves	Standard/Terra Trail	4	Alamitos	Standard/Terra Trail	1
Chimayosos	Standard/Terra Trail	3	Apache	Standard/Terra Trail	10
Dockwiller	Standard/Terra Trail	8	Aspen Loop	Standard/Terra Trail	2
East Baldy	Standard/Terra Trail	1	Aspen Ranch Loop	Standard/Terra Trail	3
Gascon	Standard/Terra Trail	5	Aspen Ranch Shortcu	Standard/Terra Trail	1
Gascon	Standard/Terra Trail	7	Atalaya	Standard/Terra Trail	3
Glorieta Baldy	Standard/Terra Trail	5	Bancos Loop	Standard/Terra Trail	13
Harvey	Standard/Terra Trail	9	Barranca	Standard/Terra Trail	6
Hermits Peak	Standard/Terra Trail	10	Bear Wallow	Standard/Terra Trail	1
Hollinger	Standard/Terra Trail	2	Bear Wallow	Snow Trail	1
Horseshoe	Standard/Terra Trail	2	Black Canyon	Standard/Terra Trail	2
Horsethief	Standard/Terra Trail	2	Borrego	Standard/Terra Trail	12
Jacks Creek	Standard/Terra Trail	15	Borrego	Snow Trail	12
Lake Johnson	Standard/Terra Trail	2	Caballo	Standard/Terra Trail	6
Lark Spur	Standard/Terra Trail	3	Caballo	Standard/Terra Trail	1
Las Dispensas	Standard/Terra Trail	4	Caballo	Standard/Terra Trail	6
Lone Pine	Standard/Terra Trail	2	Caballo	Standard/Terra Trail	1
Lost Lake	Standard/Terra Trail	2	Cabra Loop	Standard/Terra Trail	3
Middle Fork	Standard/Terra Trail	6	Cabra Loop	Standard/Terra Trail	3
Mora Flats	Standard/Terra Trail	2	Capulin	Standard/Terra Trail	11
Mora Flats	Standard/Terra Trail	7	Chamisa	Standard/Terra Trail	3
Nawa Ka	Standard/Terra Trail	3	Cienega Redonda	Standard/Terra Trail	2
North Fork	Standard/Terra Trail	3	Cienega Redonda	Standard/Terra Trail	2
Otto	Standard/Terra Trail	1	Cuesta Colorada	Standard/Terra Trail	1
Pecos Baldy Lake	Standard/Terra Trail	10	Dome	Standard/Terra Trail	5
Pecos Baldy Lake	Standard/Terra Trail	0	East Aspen Ranch Sh	Standard/Terra Trail	0
Pecos Falls	Standard/Terra Trail	11	Espinosa	Standard/Terra Trail	8
Pecos River	Standard/Terra Trail	2	Frijoles Canyon	Standard/Terra Trail	9
Pecos Santa Barbara	Standard/Terra Trail	7	Guaje Canyon	Standard/Terra Trail	6
Porvenir Divide	Standard/Terra Trail	13	Guaje Canyon	Standard/Terra Trail	5
Rio Mora Loop	Standard/Terra Trail	22	Guaje Canyon	Standard/Terra Trail	6
Rio Valdez	Standard/Terra Trail	8	Guaje Canyon	Standard/Terra Trail	5
Rito Perro	Standard/Terra Trail	1	Guaje Ridge	Standard/Terra Trail	5
Santiago Lake	Standard/Terra Trail	2	Guaje Ridge	Standard/Terra Trail	5
Santillanes	Standard/Terra Trail	3	Hard Atalaya	Standard/Terra Trail	2
Sebadillosos	Standard/Terra Trail	2	Highline	Standard/Terra Trail	2
Spirit Lake	Standard/Terra Trail	3	Horsethief	Standard/Terra Trail	6
Stewart Lake	Standard/Terra Trail	1	Joe Vigil	Standard/Terra Trail	1
			Juan	Standard/Terra Trail	3
					2

Trail Name	Trail Type	Seg. Length	Trail Name	Trail Type	Seg. Length
Lemitas	Standard/Terra Trail	5	Valle	Standard/Terra Trail	3
Los Alamos Canyon	Standard/Terra Trail	2	Vallecitos	Standard/Terra Trail	6
Lower Nambe	Standard/Terra Trail	2	Vallecitos Creek	Standard/Terra Trail	0
Madera	Standard/Terra Trail	3	Vallecitos Creek	Standard/Terra Trail	1
Mitchell	Standard/Terra Trail	3	Vegas Capulin	Standard/Terra Trail	6
Mitchell	Standard/Terra Trail	1	Viejo	Standard/Terra Trail	3
Mitchell	Standard/Terra Trail	3	Vigil Lake	Standard/Terra Trail	1
Mitchell	Standard/Terra Trail	1	Water Canyon	Standard/Terra Trail	2
Nambe Lake	Standard/Terra Trail	1	Water Canyon	Standard/Terra Trail	2
Neblina'S	Standard/Terra Trail	2	Winsor National Rec	Standard/Terra Trail	2
Norski	Standard/Terra Trail	2	Winsor National Rec	Standard/Terra Trail	11
Norski	Snow Trail	2			
Ojitos Polvadera	Standard/Terra Trail	3			
Pachuela West	Standard/Terra Trail	2			
Pajarito	Standard/Terra Trail	3			
Pajarito	Standard/Terra Trail	3			
Pajarito Canyon	Standard/Terra Trail	4			
Pajarito Canyon	Standard/Terra Trail	4			
Palacio	Standard/Terra Trail	5			
Palo Quemador	Standard/Terra Trail	5			
Polvadera Creek	Standard/Terra Trail	2			
Po-Shu-Oinge'	Standard/Terra Trail	3			
Puerco Espin	Standard/Terra Trail	4			
Ranchos	Standard/Terra Trail	2			
Rechuelos	Standard/Terra Trail	5			
Redondo Peak	Standard/Terra Trail	4			
Rendija	Standard/Terra Trail	1			
Rio En Medio	Standard/Terra Trail	7			
Rio Medio	Standard/Terra Trail	10			
Rio Moleno	Standard/Terra Trail	7			
Rio Nambe	Standard/Terra Trail	8			
Rio Nambe	Standard/Terra Trail	1			
Rio Quemado	Standard/Terra Trail	11			
Rio Quemado	Snow Trail	11			
Rito 'Quemado	Standard/Terra Trail	3			
Rito 'Quemado	Standard/Terra Trail	0			
San Lorenzo	Standard/Terra Trail	2			
Scout	Standard/Terra Trail	6			
Seco	Standard/Terra Trail	2			
Sierra Mosca	Standard/Terra Trail	12			
Sierra Mosca	Standard/Terra Trail	3			
Sky Line	Standard/Terra Trail	5			
Sky Line	Snow Trail	5			
Soda Springs	Standard/Terra Trail	3			
St. John'S	Standard/Terra Trail	2			
Tesuque Creek	Standard/Terra Trail	2			
Trailriders	Standard/Terra Trail	1			
Upper Nambe	Standard/Terra Trail	1			
Upper Nambe	Snow Trail	1			

Table A.4: Capital Outlays for Counties in Assessment Area

Counties	Road	Terminus	Year	Amount	Description
Rio Arriba	LOCAL	Espanola Railroad Museum	2007	\$532,000	Miscellaneous Construction
Rio Arriba	LOCAL	Lindriith Rds	2006	\$25,000	Road Improvements
Rio Arriba	LOCAL	Canones Creek Bridge	2006	\$20,000	Bridge Rehabilitation
Rio Arriba	LOCAL	JCT US 64 / J8 South Pedestrian Facilities	2009	\$585,000	Pedestrian Facilities
Rio Arriba	LOCAL	JCT US 64 South in Dulce	2011	\$325,000	Miscellaneous Construction
Rio Arriba	LOCAL	Transit Mix Road NM 584 to Lowdermilk Lane	2006	\$614,667	Road Improvements
Rio Arriba		390035 County Road 35	2006	\$5,000	Road Improvements
Rio Arriba		390036 County Road 36	2006	\$5,000	Road Improvements
Rio Arriba	LOCAL	Guardrail Installation	2006	\$77,000	Guardrail, Safety
Rio Arriba		390073 County Roads 69 and 73	2006	\$50,000	Road Improvements
Rio Arriba		390089 County Road 89A	2006	\$55,000	Road Improvements
Rio Arriba		390107 County Rds 107 / 108 in La Mesilla	2006	\$10,000	Road Improvements
Rio Arriba		390107 County Rds 144, 107, 108, 44, and 4	2006	\$100,000	Road Improvements
Rio Arriba		390108 Commission District 2 Roads	2006	\$25,000	Road Improvements
Rio Arriba		390162 Guardrail Installation	2006	\$27,000	Guardrail, Safety
Rio Arriba	FL5345	Various Espanola Streets`	2006	\$50,000	Road Improvements
Rio Arriba	FL5349	Onate St. Bridge	2007	\$1,622,000	Bridge Replacement
Rio Arriba	FL5349	Onate St. Bridge	2008	\$1,654,000	Bridge Replacement
Rio Arriba	FL5349	Espanola Main St. (Paseo De Onate)	2006	\$5,400,000	Pavement Rehabilitation
Rio Arriba	FL5349	Paseo de Onate / NM-30	2006	\$75,000	PE and R-O-W
Rio Arriba	NM0017	NM 17 / US 64 / 84	2006	\$200,000	Lighting -Safety
Rio Arriba	NM0068	JCT 84/285 to JCT NM 291	2006	\$750,000	Signalization
Rio Arriba	NM0068	Fairview Lane North 3 Miles	2007	\$3,000,000	Reconstruction
Rio Arriba	NM0068	R-O-W Fencing	2006	\$300,000	Fencing
Rio Arriba	NM0068	JCT NM 74 to Velarde	2007	\$5,200,000	Reconstruction
Rio Arriba	NM0068	Velarde to Pilar	2010	\$5,300,000	3R & Reconstruction
Rio Arriba	NM0068	Velarde to the Horseshoe Curve	2006	\$250,000	Professional Services
Rio Arriba	NM0074	JCT NM 68 to JCT Old NM 74	2010	\$750,000	Pedestrian Facilities
Rio Arriba	NM0076	1.1 Miles east of JCT NM0503 - East	2007	\$6,000,000	Reconstruction
Rio Arriba	NM0096	R-O-W Fencing	2006	\$175,000	Fencing
Rio Arriba	NM0537	Deer Crossing Beacons	2006	\$150,000	Safety
Rio Arriba	NM0584	Fairview Lane Drainage Improvements	2006	\$1,000,000	Drainage Improvements
Rio Arriba	US0064	San Juan / Rio Arriba C/L to JCT US 84	2008	\$8,000,000	Pavement Rehabilitation
Rio Arriba	US0064	San Juan / Rio Arriba C/L to JCT US 84	2009	\$2,000,000	Bridge Replacement
Rio Arriba	US0064	San Juan / Rio Arriba C/L to JCT US 84	2007	\$5,300,000	Pavement Rehabilitation
Rio Arriba	US0064	San Juan / Rio Arriba C/L to JCT US 84	2009	\$750,000	Bridge Replacement
Rio Arriba	US0064	San Juan / Rio Arriba C/L to JCT US 84	2009	\$7,700,000	Pavement Rehabilitation
Rio Arriba	US0064	San Juan / Rio Arriba C/L to JCT US 84	2006	\$3,000,000	Bridge Replacement
Rio Arriba	US0064	San Juan / Rio Arriba C/L to JCT US 84	2006	\$7,000,000	Pavement Rehabilitation
Rio Arriba	US0064	San Juan / Rio Arriba C/L to JCT US 84	2006	\$390,000	Right-of-Way Acquisition
Rio Arriba	US0064	San Juan / Rio Arriba C/L to JCT US 84	2006	\$10,000,000	Reconstruction
Rio Arriba	US0064	Forest Boundary E of US0084 - East	2006	\$7,500,000	Pavement Rehabilitation
Rio Arriba	US0084	Intersection with Paseo de Onate	2006	\$5,400,000	Pavement Rehabilitation
Rio Arriba	US0084	Intersection with Paseo de Onate	2006	\$800,000	Intersection Improvements
Rio Arriba	US0084	JCT NM0096	2007	\$2,000,000	Overlay

Table A.4 Cont'd: Capital Outlays for Counties in Assessment Area

Counties	Road	Terminus	Year	Amount	Description
Rio Arriba	US0084	Echo Ampitheatre to Cebolla	2009	\$8,000,000	3R & Reconstruction
Rio Arriba	US0084	MP 249 to MP 254 Tierra Amarilla South	2007	\$6,000,000	3R & Reconstruction
Rio Arriba	US0084	US0550 Warranty Work in District 5	2006	\$100,000	Field Supplies
Rio Arriba	US0550	US0550 Warranty Work in District 5	2006	\$1,400,000	Contract Maintenance
Sandoval	LOCAL	Regina Roads	2006	\$40,000	Road Improvements
Sandoval	LOCAL	Vincente Road	2006	\$140,000	Miscellaneous Construction
Sandoval	LOCAL	Navajo Route. N7048 Bridge Across Canados	2006	\$310,000	Bridge Rehabilitation
Sandoval	NM0004	JCT US0550 - North	2006	\$1,435,557	Preliminary Engineering
Sandoval	NM0004	JCT US0550 - North	2006	\$500,000	Preliminary Engineering
Sandoval	NM0004	Bridges in Jemez Springs	2008	\$1,500,000	Bridge Replacement
Sandoval	NM0004	Bridges in Jemez Springs	2009	\$500,000	Bridge Replacement
Sandoval	NM0004	Jemez Mountain Scenic Byway	2006	\$20,000	Sidewalks/Bikeways
Sandoval	NM0004	Jemez Mountain Scenic Byway	2006	\$200,000	Sidewalks/Bikeways
Sandoval	NM0004	Jemez Mountain Scenic Byway	2006	\$100,000	Sidewalks/Bikeways
Sandoval	NM0004	Jemez Mountain Scenic Byway	2007	\$150,000	Sidewalks/Bikeways
Sandoval	NM0096	Rockfall Mitigation	2006	\$16,000	Rockfall Mitigation
Sandoval	NM0126	Intersection US-550 / NM 126 - East	2006	\$500,000	Overlay
Sandoval	NM0126	Intersection US-550 / NM 126 - East	2006	\$186,151	Safety
Sandoval	NM0126	Rockfall Mitigation	2006	\$421,000	Rockfall Mitigation
Sandoval	NM0126	Fenton Lake to the Fish Hatchery Road	2006	\$150,000	Construction Engineering
Sandoval	NM0197	JCT US 550 West for 1.2 Miles	2009	\$1,200,000	Bridge Replacement
Sandoval	NM0197	JCT US 550 West for 1.2 Miles	2009	\$100,000	Intersection Improvements
Sandoval	NM0197	JCT US 550 West for 1.2 Miles	2009	\$1,500,000	Overlay
Sandoval	NM0290	1.5 Miles East of JCT NM4	2010	\$1,200,000	Bridge Replacement
San Miguel	LOCAL	El Cerrito Rd	2006	\$75,000	Road Improvements
San Miguel	LOCAL	Cinder Rd	2006	\$25,000	Road Improvements
San Miguel	LOCAL	El Llano Rd	2006	\$50,000	Road Improvements
San Miguel	LOCAL	Las Dispensas Rd	2006	\$40,000	Road Improvements
San Miguel	LOCAL	Camp Luna Vista de Vegas Rd	2006	\$70,000	Road Improvements
San Miguel	LOCAL	La Joya Del Padre Rd	2006	\$50,000	Road Improvements
San Miguel	LOCAL	Tyson Rd in Rowe	2006	\$50,000	Road Improvements
San Miguel	LOCAL	Conchas Roads	2006	\$50,000	Road Improvements
San Miguel	LOCAL	Ribera Bridge	2006	\$50,000	Bridge Construction
San Miguel	LOCAL	Luna Drive	2006	\$50,000	Road Improvements
San Miguel	LOCAL	Legion Drive From Calle El Dorado St. to Old I	2006	\$201,777	Road Improvements
San Miguel	LOCAL	Pedestrian Bridge at United World College	2007	\$550,000	Miscellaneous Construction
San Miguel	47B026	County Rd B-36	2006	\$20,000	Road Improvements
San Miguel	47B29A	County Rd B-29	2006	\$50,000	Road Improvements
San Miguel	47B31A	County Rd B-31 A	2006	\$50,000	Road Improvements
San Miguel	47B47A	County Rds	2006	\$30,000	Road Improvements
San Miguel	FR2135	Pecos River Bridge # 1818, Telcote Creek Bric	2010	\$2,000,000	Bridge Replacement
San Miguel	I25	Santa Fe/San Miguel C/L - North Various I25 C	2008	\$1,000,000	Bridge Deck Replacement
San Miguel	I25	Santa Fe/San Miguel C/L - North Various I25 C	2009	\$1,000,000	Bridge Deck Replacement
San Miguel	I25	Rowe I/C Bridges #'s 6451 & 6452	2007	\$2,000,000	Bridge Rehabilitation
San Miguel	I25	Las Vegas South Interchange	2007	\$2,200,000	Bridge Rehabilitation
San Miguel	I25	Las Vegas to Watrous	2006	\$4,000,000	Pavement Preservation
San Miguel	I25	Rumble Strips	2006	\$116,000	Rumble Strips
San Miguel	L00015	Grand Avenue in Las Vegas	2009	\$5,000,000	Reconstruction
San Miguel	NM0003	JCT Old NM 484 - North	2006	\$4,000,000	Reconstruction
San Miguel	NM0063	NM 63 Project	2006	\$2,000,000	Overlay
San Miguel	NM0065	North of NM 329	2008	\$250,000	Pedestrian Facilities
San Miguel	NM0094	JCT NM 518 - NW	2009	\$2,000,000	Pavement Rehabilitation
San Miguel	NM0104	University and I25 Interchange	2009	\$335,000	Landscaping
San Miguel	NM0104	Conchas Arroyo, Pino Creek, and Lamanga C	2007	\$2,000,000	Bridge Rehabilitation
San Miguel	NM0329	New Mexico Avenue/Grand Avenue	2009	\$500,000	Miscellaneous Construction
San Miguel	NM0419	Canadian River Bridge, 20.3 Miles North of of	2007	\$1,000,000	Bridge Rehabilitation
San Miguel	NM0518	NM 518 From Mills Avenue to Legion Dr.	2008	\$350,000	Pedestrian Facilities

Table A.4 Cont'd: Capital Outlays for Counties in Assessment Area

Counties	Road	Terminus	Year	Amount	Description
San Miguel	US0084	South of Romeroville	2006	\$7,592,000	Reconstruction
San Miguel	US0084	Guadalupe County Line - North	2007	\$1,000,000	Pavement Preservation
San Miguel	US0084	11.5 Miles south of I25 Interchange North	2007	\$1,500,000	Pavement Preservation
Santa Fe	VAR	Santa Fe Railyard Bikeways and Walkways	2006	\$992,000	Bicycle Lanes/Trails
Santa Fe	490055	County Road 55	2006	\$140,000	Road Improvements
Santa Fe	490066	Aqua Fria / San Isidro Crossing	2006	\$50,000	Road Improvements
Santa Fe	490072	Tano Road	2006	\$50,000	Paving
Santa Fe	490084	County Road 84	2006	\$100,000	Low-Water Crossings
Santa Fe	490084	County Road 84	2006	\$66,272	Low-Water Crossings
Santa Fe	490098	Bike and Pedestrian Facilities	2010	\$750,000	Pedestrian Facilities
Santa Fe	49P003	South Meadows Road	2006	\$20,000	Road Improvements
Santa Fe	49P015	North Estrella Road	2006	\$50,000	Road Improvements
Santa Fe	I25	I-25 Corridor Study/ Traffic Analysis	2006	\$250,000	Study
Santa Fe	I25	I-25 Corridor Study/ Traffic Analysis	2006	\$250,000	Study
Santa Fe	I25	St. Francis Interchange	2010	\$7,500,000	Interchange Rehabilitation
Santa Fe	I25	Valencia Overpass	2011	\$1,700,000	Bridge Replacement
Santa Fe	I40	Edgewood Interchange Landscaping	2011	\$350,000	Landscaping
Santa Fe	NM0030	NM0502 to Espanola	2006	\$500,000	Preliminary Engineering
Santa Fe	NM0030	NM0502 to Espanola	2008	\$4,500,000	Four-Lane Construction
Santa Fe	NM0030	NM0502 to Espanola	2008	\$4,000,000	Four-Lane Construction
Santa Fe	NM0041	Galesteo to South to Clark Hill	2008	\$5,500,000	3R & Reconstruction
Santa Fe	NM0041	San Cristobal Arroyo	2009	\$1,654,000	Bridge Replacement
Santa Fe	NM0041	Galesteo River	2006	\$1,600,000	Bridge Replacement
Santa Fe	NM0291	Espanola Relief Route	2006	\$100,000	Study
Santa Fe	NM0333	Intersection With NM0344	2006	\$2,910,000	Intersection Improvements
Santa Fe	NM0333	Intersection With NM0344	2006	\$110,000	Signalization
Santa Fe	NM0344	.4 Mile North of I-40 Interchange North	2006	\$5,000,000	Four-Lane Construction
Santa Fe	NM0344	Dinkle Road to Venus Road	2011	\$1,100,000	Four-Lane Construction
Santa Fe	NM0344	Dinkle Road to Venus Road	2011	\$3,400,000	Four-Lane Construction
Santa Fe	NM0502	Rock Slide Prevention on NM0502 (MP 5 to M	2006	\$610,000	Safety
Santa Fe	NM0599	NM 599 Corridor / Safety Study	2006	\$500,000	Study
Santa Fe	US0084	ADA Sidewalk Upgrades	2006	\$500,000	Pedestrian Facilities
Santa Fe	US0084	Guadalupe Overpass	2010	\$1,671,000	Bridge Replacement
Santa Fe	US0084	Pojoaque to Espanola	2006	\$4,000,000	Road Improvements
Santa Fe	US0084	Pojoaque to Espanola	2006	\$19,000,000	Reconstruction
Santa Fe	US0084	Pojoaque to Espanola	2006	\$20,000,000	Reconstruction
Santa Fe	US0084	Pojoaque to Espanola	2006	\$3,000,000	Road Improvements

Table A.5: Designated Recreational Sites on Santa Fe NF

Site Name	Site Type	Operational Status	ROS Class
Coyote District			
Rio Puerco	Campground	Open	Roaded Natural
Rio Chama	Campground	Open	Roaded Natural
Big Eddy Take-Out	Boating Site	Open	Roaded Natural
Resumidero	Campground	Open	Roaded Natural
Chavez Canyon Boater Access	Boating Site	Open	Roaded Natural
Coyote Canyon	Picnic Site	Open	Roaded Natural
Ojitos	Trailhead	Open	Roaded Natural
Tsi'Pin	Interpretive Site (Minor)	Open	Roaded Natural
Rio Chama	Group Campground	Open	Roaded Natural
Tea Kettle Rock	Interpretive Site (Minor)	Open	Roaded Natural
Skull Bridge Boating Access	Boating Site	Open	Roaded Natural
Cuba District			
Clear Creek	Campground	Open	Roaded Natural
Rio De Las Vacas	Campground	Open	Roaded Natural
Nogales Cliff House	Interpretive Site (Minor)	Open	Roaded Natural
Rattlesnake Ridge	Interpretive Site (Minor)	Open	Roaded Natural
Clear Creek	Picnic Site	Closed	Roaded Natural
Clear Creek	Group Campground	Closed	Roaded Natural
San Gregorio	Trailhead	Open	Roaded Natural
Los Pinos	Trailhead	Open	Roaded Natural
Las Palomas	Cua Trailhead	Open	Roaded Natural
Jemez District			
Paliza (Old)	Campground	Closed	Roaded Natural
Paliza Group (Old)	Group Campground	Closed	Roaded Natural
Rincon (Old)	Fishing Site	Closed	Roaded Natural
Battleship Rock (Old)	Picnic Site	Closed	Roaded Natural
Dark Canyon (Old)	Fishing Site	Closed	Roaded Natural
San Antonio	Campground	Open	Roaded Natural
Seven Springs	Picnic Site	Open	Roaded Natural
La Cueva	Picnic Site	Open	Roaded Natural
Redondo	Campground	Open	Roaded Natural
Jemez Falls	Campground	Open	Roaded Natural
Las Conchas (Old)	Campground	Closed	Roaded Natural
Horseshoe Springs	Group Campground	Closed	
East Fork	Trailhead	Open	Roaded Natural
La Junta	Fishing Site	Open	Roaded Natural
San Diego	Fishing Site	Open	Roaded Natural
Las Casitas	Fishing Site	Open	Roaded Natural
River'S Bend	Fishing Site	Open	Roaded Natural
Vista Linda	Campground	Open	Roaded Natural
Spanish Queen	Picnic Site	Open	Roaded Natural
The Bluffs	Fishing Site	Open	Roaded Natural
Horseshoe Springs	Recreation Residence	Open	Roaded Natural
Spence Hot Springs	Cua Trailhead	Open	Roaded Natural
Jemez Falls	Trailhead	Open	Roaded Natural
Nra Gateway	Information Site	Open	Roaded Natural
San Diego Overlook	Observation Site	Open	Roaded Natural
Battleship Rock (Old)	Trailhead	Closed	Roaded Natural
Las Conchas	Trailhead	Open	Roaded Natural
Jemez Falls	Group Picnic Site	Open	Roaded Natural
Battleship Rock Trailhead (New)	Trailhead	Open	Roaded Natural
Battleship Rock Picnic Area (New)	Picnic Site	Open	Roaded Natural
Dark Canyon (New)	Fishing Site	Open	Roaded Natural
Las Conchas (New)	Fishing Site	Open	Rural
Rincon (New)	Fishing Site	Open	Roaded Natural
Paliza Family (New)	Campground	Closed	Roaded Natural
Paliza Group (New)	Group Campground	Closed	Roaded Natural

Table A.5 Cont'd: Designated Recreational Sites on Santa Fe NF

Pecos-Las Vegas District			
Baker Flat	Picnic Site	Open	Roaded Natural
Big Pine	Picnic Site	Open	Roaded Natural
Ev Long	Campground	Open	Roaded Natural
Oak Flats	Picnic Site	Open	Roaded Natural
El Porvenir	Campground	Open	Roaded Natural
Cow Creek	Campground	Closed	Roaded Natural
Gallinas Trailhead	Cua Trailhead	Open	Roaded Natural
Dalton	Picnic Site	Open	Roaded Natural
Field Tract	Campground	Open	Roaded Natural
Windy Bridge	Picnic Site	Open	Roaded Natural
Holy Ghost	Campground	Open	Roaded Natural
Cowles	Campground	Open	Roaded Natural
Iron Gate	Campground	Open	Roaded Natural
Panchuela	Picnic Site	Open	Roaded Natural
Winsor Creek	Trailhead	Open	Roaded Natural
Jacks Creek	Campground	Open	Roaded Natural
Glorieta	Picnic Site	Open	Roaded Natural
Gallinas	Recreation Residence	Open	
Holy Ghost	Recreation Residence	Open	
Winsor	Recreation Residence	Open	
Lower Grass Mountain	Recreation Residence	Open	
Upper Grass Mountain	Recreation Residence	Open	
Cowles	Recreation Residence	Open	
Johnson Mesa	Cua Camping Area	Open	Roaded Natural
Links Tract	Campground	Open	Roaded Natural
Holy Ghost	Group Campground	Open	Roaded Natural
Cowles Ponds	Fishing Site	Open	Roaded Natural
Dalton Fishing Access	Fishing Site	Open	Roaded Natural
Panchuela	Trailhead	Open	Roaded Natural
Iron Gate	Trailhead	Open	Roaded Natural
Jacks Creek	Group Campground	Open	Roaded Natural
Jacks Creek	Trailhead	Open	Roaded Natural
Jacks Creek	Horse Camp	Open	Roaded Natural
Cowles	Trailhead	Open	Roaded Natural
Holy Ghost	Trailhead	Open	Roaded Natural
Espanola District			
Aspen Basin	Campground	Open	Roaded Natural
Aspen Vista	Picnic Site	Open	Rural
Big Tesuque	Campground	Open	Roaded Natural
Black Canyon	Campground	Closed	Roaded Natural
Borrego Mesa	Cua Camping Area	Open	Roaded Natural
Little Tesuque	Picnic Site	Open	Roaded Natural
Los Alamos Reservoir (Old)	Fishing Site	Closed	Roaded Natural
Vista Grande Overlook	Observation Site	Open	Roaded Natural
Chamisa	Trailhead	Open	Roaded Natural
Borrego	Cua Trailhead	Open	Roaded Natural
Winsor	Trailhead	Open	Roaded Natural
Atalaya- Lower	Trailhead	Open	Roaded Natural
Poshuouinge	Interpretive Site (Minor)	Open	Roaded Natural
Santa Fe Ski Area	Ski Area Alpine	Closed	Urban
Black Canyon Th (Old)	Trailhead	Closed	Rural
Atalaya - Upper	Cua Trailhead	Open	Semi-Primitive Motorized
Los Alamos Reservoir (Disposed)	Fishing Site	Closed	Roaded Natural
Norski Trailhead	Cua Trailhead	Open	Roaded Natural
Black Canyon Th (New)	Trailhead	Closed	Roaded Natural
Black Canyon (New)Cg	Campground	Closed	Rural

Table A.6: Hunting Regulations on Santa Fe NF

Big Game						
Species	License/Permit Type	Hunt Dates	Special Arms	Units	Permits	
Deer	Private Land	10/28-11/1; 11/4-11/8	Any Legal Sporting Arm	Unit 46	Unlimited	
Deer	Private Land	9/1-9/22	Bows Only	Unit 46	Unlimited	
Deer	Private Land	9/23-9/29	Muzzleloader and Bows	Unit 46	Unlimited	
Deer	Public Draw	Varies per unit 10/28-11/8	Any Legal Sporting Arm	Units 42, 44, 48, 51, 53	Units range 75-300	
Deer	Public Draw	9/1-9/22 & 1/1/2007-1/15/2007	Bows Only	Units 4, 5A, 6A, 6C, 8, 9	Units range 30-220	
Deer	Public Draw	9/1-9/22	Bows Only	Units 42, 44, 48, 51, 53	Units range 20-100	
Deer	Public Draw	9/23-9/29	Muzzleloaders	Units 4, 6, 8, 42, 44	Units range 10-100	
Deer	Public Draw	9/23-9/29	Restricted Muzzleloaders	Unit 9	10	
Elk	Public Draw	Varies per unit 9/2-9/13	Bows Only	Valles Caldera National Preserve	12 or 17	
Elk	Public Draw	9/16-9/20	Muzzleloaders	Valles Caldera National Preserve	16	
Elk	Public Draw	Varies per unit 9/30-11/20	Any Legal Sporting Arm	Valles Caldera National Preserve	Units range 8-30	
Elk	Public Draw	10/21-10/23	Mobility Impaired	Valles Caldera National Preserve	30	
Elk	Private Land	Varies per unit 9/30-12/31; 1/1/2007-1/31/2007	Any Legal Sporting Arm	Units 4, 5A, 5B, 6A, 6C, 9, 42, 44, 46, 48, 51, 53	n/a	
Elk	Private Land	Varies per unit 9/1-9/24	Bows Only	Units 5A, 5B, 6A, 6C, 9, 42, 44, 53	n/a	
Elk	Private Land	Varies per unit 9/30-12/31	Muzzleloaders	Units 6A, 6C, 9, 44, 53	n/a	
Elk	Private Land	11/4-11/8	Mobility Impaired	Unit 9	n/a	
Elk	Public Draw	Varies per unit 9/30-12/6	Any Legal Sporting Arm	Units 4, 5, 9, 44, 48, 51, 53	Units range 5-250	
Elk	Public Draw	9/1-9/22	Bows Only	Units 5A, 5B, 6A, 6C, 9, 44, 48, 51, 53	Units range 5-395	
Elk	Public Draw	Varies per unit 9/30-11/15	Muzzleloaders	Units 6A, 6C, 9, 44, 53	Units range 5-300	
Elk	Public Draw	Varies per unit 9/30-11/8	Mobility Impaired	Units 9, 51	30	
Antelope	Public Draw	8/26-8/28, 9/16-9/17	Any Legal Sporting Arm	Units 42, 43, 44-49, 53	300	
Antelope	Public Draw	Varies per unit 8/12-8/23	Bows Only	Units 42-49	100 or 200	
Antelope	Public Draw	8/19-8/22	Muzzleloaders	Unit 52	175	
Antelope	Public Draw	8/5-8/7	Mobility Impaired	Units 42-49	25 or 45	
Bighorn Sheep	Public Draw	Varies per unit 8/26-9/18	Restricted	Units 44, 53	2 or 8	
Bear	OTC	Varies per unit 8/16-11/15	Bows Only or Any legal	Units 4, 8, 9, 42, 44, 46, 48, 51, 53	Until harvest is reached	
Bear	Public Draw for WMA	8/1-8/31	Restricted	Unit 4	10	
Turkey	Public Draw	11/11-11/19	Restricted	Unit 4	5	
Cougar	OTC	10/1-3/31	Restricted	Units 4, 6, 8, 9, 42-44, 46, 48, 51, 53	Until harvest is reached	
Cougar	Public Draw for WMA	Varies per unit 10/1-3/31	Restricted	Units 4, 9	Varies 5-unlimited	
Furbearers	OTC	Varies per furbearer from 4/1/05-3/31/06	Dogs, firearms, bows, traps/s	Not well-specified; certain areas closed	n/a	
Small Game/Waterfowl						
Species	License/Permit Type	Hunt Dates	Special Arms	Units/Counties/Zones	Permits	
Quail	OTC	11/15-2/15	Any Legal Sporting Arm	Statewide	n/a	
Quail	OTC	9/1-10/30	Any Legal Sporting Arm	North Zone	n/a	
Dove	OTC	Varies 9/1-12/30	Any Legal Sporting Arm	Statewide	n/a	
Band-Tailed Pigeon	OTC	9/1-12/16	Any Legal Sporting Arm	Statewide (except Southwest)	n/a	
Grouse & Squirrel	OTC	9/1-10/31	Any Legal Sporting Arm	GS-1	n/a	
Sandhill Crane	OTC	11/5-11/6	Any Legal Sporting Arm	Estancia Valley Hunt (Santa Fe County)	n/a	
Pheasant	OTC	12/8-12/11	Any Legal Sporting Arm	Statewide (except Valencia County)	n/a	
Duck/American	OTC	10/8-1/11	Any Legal Sporting Arm	Central Flyway/North Zone	n/a	
Common Shrike	OTC	10/8-1/22	Any Legal Sporting Arm	Central Flyway	n/a	
Mountain Quail	OTC	10/8-1/22	Any Legal Sporting Arm	Central Flyway	n/a	
Sora/Virginia Peewee	OTC	9/17-1/1	Any Legal Sporting Arm	Central Flyway	n/a	
Light Goose	OTC	10/17-1/31	Any Legal Sporting Arm	Central Flyway	n/a	
Dark Goose	OTC	10/17-1/31	Any Legal Sporting Arm	Central Flyway	n/a	
Pintail/Canvasback	OTC	10/8-11/15	Any Legal Sporting Arm	Central Flyway/North Zone	n/a	

Source: New Mexico Department of Game and Fish, *Big Game & Trapper Rules & Information 2006-2007 License Year and 2005-2006 Small Game & Waterfowl Rules & Information*.
<http://www.wildlife.state.nm.us/recreation/hunting/index.htm> accessed May 31, 2006.

Table A.7: Grants and Agreements on Santa Fe NF

Grant & Agreement Number	Cooperator Cash Contribution	Cooperator Other Contribution	Cooperator Total Contribution	F&S Cash Contribution	F&S Other Contribution	Total Contribution	F&S	Total G&A Amount
00-IA-11031000-026	\$40,000.00	\$0.00	\$40,000.00	\$0.00	\$0.00	\$0.00	\$0.00	\$40,000.00
	Cooperator/ Contributors: U S D I, BUREAU OF LAND MANAGEMENT							
01-DG-11031000-054	\$613,866.00	\$24,000.00	\$637,866.00	\$400,000.00	\$0.00	\$400,000.00		\$1,037,866.00
	Cooperator/ Contributors: JEMEZ MOUNTAIN SCHOOL, JEMEZ MOUNTAIN SCHOOLS							
01-IA-11031000-011	\$0.00	\$0.00	\$0.00	\$5,069.08	\$0.00	\$5,069.08		\$5,069.08
	Cooperator/ Contributors: BUREAU OF LAND MGMT, U S D I, BUREAU OF LAND MANAGEMENT							
01-MU-11031000-060	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00		\$0.00
	Cooperator/ Contributors: SANTA FE, CITY OF							
02-CO-11031000-018	\$642,664.00	\$0.00	\$642,664.00	\$0.00	\$0.00	\$0.00		\$642,664.00
	Cooperator/ Contributors: SANTA FE, CITY OF							
02-CO-11031000-020	\$213,876.00	\$0.00	\$213,876.00	\$0.00	\$0.00	\$0.00		\$213,876.00
	Cooperator/ Contributors: SANTA FE COUNTY							
02-CO-11031000-021	\$236,390.00	\$0.00	\$236,390.00	\$0.00	\$0.00	\$0.00		\$236,390.00
	Cooperator/ Contributors: LAS CAMPANAS LIMITED PARTNERSHIP							
02-CO-11031000-044	\$78,000.00	\$0.00	\$78,000.00	\$0.00	\$27,400.00	\$27,400.00		\$105,400.00
	Cooperator/ Contributors: NEW MEXICO DEPARTMENT OF TRANSPORTATION							
02-DG-11031000-001	\$94,654.00	\$0.00	\$94,654.00	\$341,375.00	\$0.00	\$341,375.00		\$436,029.00
	Cooperator/ Contributors: THE UNIVERSITY OF ARIZONA, UNIVERSITY OF ARIZONA							
02-DG-11031000-002	\$0.00	\$83,040.00	\$83,040.00	\$344,271.00	\$0.00	\$344,271.00		\$427,311.00
	Cooperator/ Contributors: PUEBLO OF JEMEZ							
03-CO-11031000-021	\$72,894.00	\$0.00	\$72,894.00	\$0.00	\$0.00	\$0.00		\$72,894.00
	Cooperator/ Contributors: STATE OF NEW MEXICO, ENVIRONMENT DEPARTMENT							
03-CO-11031000-043	\$125,686.53	\$0.00	\$125,686.53	\$0.00	\$0.00	\$0.00		\$125,686.53
	Cooperator/ Contributors: NEW MEXICO DEPARTMENT OF GAME & FISH							
03-DG-11031000-008	\$0.00	\$90,000.00	\$90,000.00	\$359,979.00	\$0.00	\$359,979.00		\$449,979.00
	Cooperator/ Contributors: PUEBLO OF SAN JUAN							
03-DG-11031000-011	\$0.00	\$75,000.00	\$75,000.00	\$309,712.00	\$0.00	\$309,712.00		\$384,712.00
	Cooperator/ Contributors: AMERICAN FOREST PRODUCTS, AMERICAN METAL WORKS							
03-DG-11031000-012	\$0.00	\$182,724.00	\$182,724.00	\$344,652.00	\$0.00	\$344,652.00		\$527,376.00
	Cooperator/ Contributors: PUEBLO OF SANTA CLARA							
03-DG-11031000-034	\$0.00	\$72,000.00	\$72,000.00	\$270,247.60	\$0.00	\$270,247.60		\$342,247.60
	Cooperator/ Contributors: PUEBLO OF TESUQUE							
03-DG-11031000-035	\$0.00	\$89,140.00	\$89,140.00	\$356,563.00	\$0.00	\$356,563.00		\$445,703.00
	Cooperator/ Contributors: EL GRECO, EL GRECO C/O MAX CORDOVA							
03-DG-11031000-036	\$0.00	\$91,186.00	\$91,186.00	\$358,696.00	\$0.00	\$358,696.00		\$449,882.00
	Cooperator/ Contributors: THE NATURE CONSERVANCY, THE NATURE CONSERVNCY							
03-DG-11031000-037	\$0.00	\$90,000.00	\$90,000.00	\$245,286.19	\$0.00	\$245,286.19		\$335,286.19
	Cooperator/ Contributors: PUEBLO OF POJOAQUE							
03-DG-11031000-038	\$0.00	\$90,000.00	\$90,000.00	\$267,840.75	\$0.00	\$267,840.75		\$357,840.75
	Cooperator/ Contributors: PUEBLO OF ILDEFONSO							
03-IA-11031000-009	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00		\$0.00
	Cooperator/ Contributors: VALLES CALDERA TRUST							
03-PA-11031000-003	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00		\$0.00
	Cooperator/ Contributors: SANTA FE, CITY OF							
04-CO-11031000-001	\$1,500,000.00	\$0.00	\$1,500,000.00	\$0.00	\$0.00	\$0.00		\$1,500,000.00
	Cooperator/ Contributors: LOS ALAMOS COUNTY FIRE DEPARTMENT							
04-CO-11031000-024	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00		\$0.00
	Cooperator/ Contributors: LOS ALAMOS COUNTY							
04-DG-11031000-031	\$71,760.00	\$0.00	\$71,760.00	\$349,269.00	\$0.00	\$349,269.00		\$421,029.00
	Cooperator/ Contributors: TIERRA Y MONTES S&W CONSER, TIERRA Y MONTES SOIL & WATER CONSERVATION DISTRICT							
04-DG-11031000-032	\$90,000.00	\$0.00	\$90,000.00	\$360,000.00	\$0.00	\$360,000.00		\$450,000.00
	Cooperator/ Contributors: THE CONSERVATION FUND							
04-DG-11031000-033	\$90,000.00	\$0.00	\$90,000.00	\$360,000.00	\$0.00	\$360,000.00		\$450,000.00
	Cooperator/ Contributors: COUNTY OF SANTA FE, SANTA FE COUNTY FIRE DEPARTMENT							
04-DG-11031000-034	\$46,329.00	\$0.00	\$46,329.00	\$184,538.00	\$0.00	\$184,538.00		\$230,867.00
	Cooperator/ Contributors: EARTH WORKS INSTITUTE, EARTHWORKS INSTITUTE							
04-DG-11031000-035	\$89,506.00	\$0.00	\$89,506.00	\$358,663.00	\$0.00	\$358,663.00		\$448,169.00
	Cooperator/ Contributors: PUEBLO OF JEMEZ, WALATOWA WOODLANDS INITIAT							
04-IA-11031000-005	\$15,000.00	\$8,000.00	\$23,000.00	\$0.00	\$0.00	\$0.00		\$23,000.00
	Cooperator/ Contributors: U S D O T, FEDERAL HIGHWAY ADMINISTRATION							

Table A.7 Cont'd: Grants and Agreements on Santa Fe NF

Grant & Agreement Number	Cooperator Cash Contribution	Cooperator Other Contribution	Cooperator Total Contribution	F8 Cash Contribution	F8 Other Contribution	Total Contribution	F8	Total G&A Amount
04-MU-11031000-008	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
	Cooperator/ Contributors: DEPARTMENT OF THE ARMY, U.S. ARMY CORPS OF ENGINEERS, PUEBLO DE COCHITI, U S D I, BUREAU OF LAND MANAGEMENT							
04-PA-11031000-011	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
	Cooperator/ Contributors: NEW MEXICO ENERGY, MINERALS, & NATURAL RESOURCES DEPARTMENT							
04-PA-11031000-014	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
	Cooperator/ Contributors: ROCKY MOUNTAIN YOUTH CORPS							
04-PA-11031000-037	\$158,170.00	\$0.00	\$158,170.00	\$0.00	\$0.00	\$0.00	\$0.00	\$158,170.00
	Cooperator/ Contributors: NEW MEXICO ENVIRONMENT DEPARTMENT							
05-CO-11031000-001	\$85,460.00	\$0.00	\$85,460.00	\$0.00	\$0.00	\$0.00	\$0.00	\$85,460.00
	Cooperator/ Contributors: NEW MEXICO DEPARTMENT OF GAME & FISH							
05-CO-11031000-041	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
	Cooperator/ Contributors: ROCKY MOUNTAIN ELK FOUNDATION							
05-CO-11031000-042	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
	Cooperator/ Contributors: NEW MEXICO DEPT. GAME & FISH							
05-CO-11031000-043	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
	Cooperator/ Contributors: NEW MEXICO ENVIRONMENT DEPARTMENT							
05-CS-11031000-012	\$0.00	\$0.00	\$0.00	\$131,000.00	\$0.00	\$131,000.00	\$131,000.00	\$131,000.00
	Cooperator/ Contributors: TREE NEW MEXICO, TREE NEW MEXICO INC							
05-CS-11031000-016	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
	Cooperator/ Contributors: NEW MEXICO DEPARTMENT OF TRANSPORTATION							
05-DG-11031000-045	\$90,000.00	\$0.00	\$90,000.00	\$359,957.00	\$0.00	\$359,957.00	\$359,957.00	\$449,957.00
	Cooperator/ Contributors: PUEBLO OF SAN JUAN							
05-DG-11031000-046	\$0.00	\$0.00	\$0.00	\$187,863.00	\$0.00	\$187,863.00	\$187,863.00	\$187,863.00
	Cooperator/ Contributors: NEW MEXICO RECYCLING COALITION							
05-DG-11031000-047	\$0.00	\$0.00	\$0.00	\$360,000.00	\$0.00	\$360,000.00	\$360,000.00	\$360,000.00
	Cooperator/ Contributors: JEMEZ MOUNTAIN SCHOOLS							
05-IA-11031000-006	\$0.00	\$0.00	\$0.00	\$16,000.00	\$0.00	\$16,000.00	\$16,000.00	\$16,000.00
	Cooperator/ Contributors: BUREAU OF LAND MGMT, U S D I, BUREAU OF LAND MANAGEMENT							
05-IA-11031000-018	\$0.00	\$0.00	\$0.00	\$10,012.00	\$0.00	\$10,012.00	\$10,012.00	\$10,012.00
	Cooperator/ Contributors: FEDSOURCE							
05-IA-11031000-019	\$0.00	\$0.00	\$0.00	\$224,000.00	\$0.00	\$224,000.00	\$224,000.00	\$224,000.00
	Cooperator/ Contributors: BUREAU OF LAND MANAGEMENT							
05-IA-11031000-022	\$5,125.00	\$0.00	\$5,125.00	\$0.00	\$0.00	\$0.00	\$0.00	\$5,125.00
	Cooperator/ Contributors: VALLES CALDERA TRUST							
05-IA-11031000-026	\$10,000.00	\$0.00	\$10,000.00	\$0.00	\$0.00	\$0.00	\$0.00	\$10,000.00
	Cooperator/ Contributors: VALLES CALDERA TRUST							
05-IA-11031000-028	\$1,406.00	\$0.00	\$1,406.00	\$0.00	\$0.00	\$0.00	\$0.00	\$1,406.00
	Cooperator/ Contributors: VALLES CALDERA TRUST							
05-IA-11031000-030	\$30,750.00	\$0.00	\$30,750.00	\$0.00	\$0.00	\$0.00	\$0.00	\$30,750.00
	Cooperator/ Contributors: VALLES CALDERA TRUST							
05-IA-11031000-031	\$15,375.72	\$0.00	\$15,375.72	\$0.00	\$0.00	\$0.00	\$0.00	\$15,375.72
	Cooperator/ Contributors: VALLES CALDERA TRUST							
05-IA-11031000-032	\$11,037.36	\$0.00	\$11,037.36	\$0.00	\$0.00	\$0.00	\$0.00	\$11,037.36
	Cooperator/ Contributors: VALLES CALDERA TRUST							
05-IA-11031000-049	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
	Cooperator/ Contributors: USDI							
05-LE-11031000-007	\$0.00	\$0.00	\$0.00	\$1,471.32	\$0.00	\$1,471.32	\$1,471.32	\$1,471.32
	Cooperator/ Contributors: RIO ARRIBA COUNTY, RIO ARRIBA COUNTY SHERIFF'S DEPARTMENT							
05-LE-11031000-009	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
	Cooperator/ Contributors: NEW MEXICO STATE POLICE, NM STATE FORESTRY DIV							
05-MU-11031000-011	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
	Cooperator/ Contributors: TREE NEW MEXICO							
05-PA-11031000-017	\$0.00	\$0.00	\$0.00	\$6,397.00	\$0.00	\$6,397.00	\$6,397.00	\$6,397.00
	Cooperator/ Contributors: STUDENT CONSERVATION ASSOCIATION, THE STUDENT CONSERVATION ASSOCIATION, INC. (SCA)							
05-PA-11031000-040	\$0.00	\$0.00	\$0.00	\$18,990.00	\$0.00	\$18,990.00	\$18,990.00	\$18,990.00
	Cooperator/ Contributors: STUDENT CONSERVATION ASSOCIATION, INC.							
06-CO-11031000-014	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
	Cooperator/ Contributors: NEW MEXICO DEPARTMENT OF TRANSPORTATION							
06-IA-11031000-001	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
	Cooperator/ Contributors: VALLES CALDERA TRUST							

Appendices

Table A.7 Cont'd: Grants and Agreements on Santa Fe NF

Grant & Agreement Number	Cooperator Cash Contribution	Cooperator Other Contribution	Cooperator Total Contribution	FS Cash Contribution	FS Other Contribution	FS Total Contribution	Total G&A Amount
06-IA-11031000-005	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
	Cooperator/ Contributors: VALLES CALDERA TRUST						
06-IA-11031000-006	\$0.00	\$0.00	\$0.00	\$30,000.00	\$0.00	\$30,000.00	\$30,000.00
	Cooperator/ Contributors: NATIONAL PARK SERVICE						
06-LE-11031000-018	\$0.00	\$0.00	\$0.00	\$4,000.00	\$0.00	\$4,000.00	\$4,000.00
	Cooperator/ Contributors: NEW MEXICO STATE POLICE						
06-PA-11031000-003	\$0.00	\$0.00	\$0.00	\$80,000.00	\$0.00	\$80,000.00	\$80,000.00
	Cooperator/ Contributors: THE QUIVERA COALITION						
06-PA-11031000-012	\$0.00	\$0.00	\$0.00	\$6,658.00	\$0.00	\$6,658.00	\$6,658.00
	Cooperator/ Contributors: STUDENT CONSERVATION ASSOCIATION, INC.						
06-PA-11031000-013	\$0.00	\$0.00	\$0.00	\$6,658.00	\$0.00	\$6,658.00	\$6,658.00
	Cooperator/ Contributors: STUDENT CONSERVATION ASSOCIATION						
01-IA-11031006-026	\$20,000.00	\$0.00	\$20,000.00	\$0.00	\$0.00	\$0.00	\$20,000.00
	Cooperator/ Contributors: DEPARTMENT OF ENERGY						
Grand Totals:	\$4,447,949.61	\$895,090.00	\$5,343,039.61	\$6,659,167.34	\$27,400.00	\$6,686,567.34	\$12,029,607.55
G&A Count:	67						