

Background

In March 2004 our study team received a request from the Forest Supervisor on the Santa Fe Forest (SFNF), Gilbert Zepeda, to revisit the case study and update it. From the time of completion of our initial study in January 2003 several new developments with the Santa Fe Municipal Watershed Project (SFMWP) had occurred, which the Forest Supervisor wished to have documented. We agreed that accurately representing the Santa Fe Municipal Watershed Project Case Study was in the best interest of both our research project and the USFS in May 2004, Ginger Kunkel returned to the site to document progress, conducted additional interviews, and collected additional supporting materials.

Santa Fe Municipal Watershed Project Update

Northwest of the City resides the Santa Fe Watershed, a 17,520 acre municipal watershed, a mostly uninhabited site. Out of the 17,520 acres encompassing the watershed, the SFNF is responsible for 15,493. Half of the SFNF acreage is located in the Pecos Wilderness, where thinning is banned, and therefore off limits to any treatment. The City of Santa Fe owns 1,124 acres. The Randall Davey Audubon Society owns 135 acres and The Nature Conservancy owns 290 acres. The remaining 478 acres are owned by private residents. SFMWP Environmental Impact Statement (EIS) was the product of a stakeholder process and focused predominantly on ecosystem restoration in 7,270 acres within the watershed. The EIS was completed in 2001, and in a nutshell, the prescription thins the forest from below, followed by low intensity prescribed burning. The 7,270 acres of treatment were estimated to cost approximately \$10,000,000, with the project taking between 5-10 years. The project called for 700-1,000 acres per year to be treated. The USFS hired a contractor, Don Peterson from Montana, to carry out the mechanical and hand thinning. The USFS pays Peterson \$945/acre. The project was to be implemented in phases and the effects were to be monitored to allow an adaptive management approach to restore the watershed to sustainable conditions.

When we conducted our site visit in January 2003 only 18 acres had been treated. The biggest problems we identified were complacency within the USFS about timely and accurate implementation of the SFMWP Plan and failure of the community within and around Santa Fe to hold the Forest Service accountable. Since our visit in January 2001 much has happened with the SFMWP.

Improved Project Implementation

As of June 2004, approximately 3,000 acres have been treated in the SFMWP with another 2,800 slated for treatment in 2005-2006 (Allen-Reid 2004). Approximately 20% the acres have been mechanically thinned, while the other 80% have been hand thinned (Isackson 2004a). In addition, some 800 acres of prescribed pile burning also have taken place (Garcia 2004a; Isackson 2004a). Close to \$3 million has been spent on the project as of May 2004, with \$250,000 funding the EIS (Garcia 2004a).

Don Peterson, the contractor, uses two methods for fuels reduction. First, a fecon head is used to grind the trees into irregular-sized chunks that are spread across the forest floor. The fecon head is used mostly in areas where the slope is moderate or on about 20% of the treated acres. Hand crews are used to thin the remaining steep sloped areas (Isackson 2004). Peterson uses two subcontractors for the hand crews—Summit and Halco. Summit has two hand crews of 20

people each and can complete 20 acres per day. Halco has one crew of 12 and can treat 10-15 acres per day (Isackson 2004). The crews are primarily from Montana. Peterson wanted to hire local contractors but workman's compensation was prohibitively expensive and too few trained crews were available (Garcia 2004). New Mexico's workman's compensation is about 50% of payroll, while Montana rates are 15-18% (Grant 2004).

In accordance with the prescription laid out in the EIS, land is being thinned to 50-100 trees per acre on average. The contractor is maintaining a clumpy, irregular pattern and the actual number per acre varies depending on the landscape conditions (Garcia 2004a; Isackson 2004a). Monitoring reveals that only 1-2% of leave trees are dying, which had been expected (Allen-Reid 2004). The mortality has been caused by *Ips* bark beetles. Additionally, the USFS is perpetuating Southwest white pine as a diversity stand point because it is an increasingly rare species in New Mexico.

If the project can continue on its current trajectory, it will actually finish ahead of schedule (Grant 2004a; Garcia 2004a). Contingencies that will impact completion of the project are continued funding, the ability of the forest to remain open during the dry summer months when wildfire danger is at its height, and the ability of the contractor to hire work crews (Garcia 2004a; Isackson 2004a). Continued funding for the project looks optimistic; another \$1.5 million was appropriated for FY2004. Funding for the project comes through the regular appropriations process in Congress and has been supported by New Mexico Senators Domenici and Bingaman (Garcia 2004a). As of July 2004, the Santa Fe National Forest was closed due to an elevated risk of wildfire so it is unclear how forest closures will impact the work schedule. Work crews continue to be available.

Improved Accountability and Oversight

Multiple reasons account for the improvement in implementation of the SFMWP. These include additional personnel committed to the seeing the project through, an Implementation Team that oversees and integrates information about the project, and improved community interest. In spring 2003 Dave Isackson was appointed as the Contracting Officer's Representative (COR) for the SFMWP and interacts with Don Peterson, the thinning contractor for most of the work within the watershed. He is also the Assistant Fire Management Officer (AFMO). In January 2004 Lawrence Garcia was assigned as the Espanola District Fire Management Officer (FMO) and is the new project manager for the SFMWP. Garcia oversees the administrative elements of the project and ensures the project progresses. Cami Armantrout was appointed the Fire Prevention Technician in 2003 and works with Claudia Standish, SFNF Wildland Urban Interface Specialist, as the district fire prevention and fire information officer. While Standish works with private landowners, Armantrout works with schools and other groups informing them about wildfire urban interface issues, prescribed burning, fire restoration, and fire prevention. With the additional personnel, the USFS now has individuals who have oversight over the project and can be held accountable for the work that is (or is not) completed. Better and consistent project management appears to have resulted as a consequence.

In May 2003 a Santa Fe Municipal Watershed Project Implementation Team was established (Nolde 2003). The Implementation Team has established regular and consistent communication among the many participants involved in the SFMWP and meets monthly. Participants include

the Santa Fe Watershed Association, the Espanola District Ranger and Deputy Ranger, the Fire Management Officer and Assistant Fire Management Officer, archeologist, biologist, NEPA specialist, hydrologist, the City of Santa Fe Wildland/Urban Interface Specialist, New Mexico Environment Department, congressional staffers from Senators Bingaman's and Domenici's, and Udall's offices and others. The meetings include a "round robin" update from the technical specialists, discussions of new business, talk about outside interest in the project, discussion of on-going monitoring work and possibilities for adaptive management (Garcia 2004b; Isackson 2004b). The Espanola Ranger or Deputy Ranger was running the meetings, but Shelley Nolde, the Santa Fe Wildland/Urban Interface Specialist, has assumed the responsibilities as a quasi-manager (Grant 2004). Better integration of information from the many participants has created an atmosphere of accountability for the project. The Implementation Team has been credited with, "focusing attention on elements that need to be in place in order for the project to proceed efficiently" (Grant 2004).

Improved Community Involvement

In February 2003, Shelley Nolde was hired by the Santa Fe Fire Department as the Wildland/Urban Interface Specialist. Nolde's job has three main components including 1) liaison with the USFS on the SFMWP; 2) working with the community on fuels reduction; and 3) bringing the city fire department into the wildland arena (Nolde 2004).

While not directly related to the SFMWP, Nolde has been working to increase awareness about fire danger throughout Santa Fe. The California fires in 2003 and the high mortality rate of pinon pines in the area have created a window of opportunity to educate the public (Nolde 2004a). The Santa Fe Pinon Initiative Steering Group is a stakeholder group made up of state, county and city public officials working to provide the public with information about the changing pinon landscape and the fire hazard it poses (Nolde 2004a). Because of the large number of dead trees, the city of Santa Fe is chipping the debris and storing the woody material for use in highway stabilization projects. In December 2003 Nolde held her first community briefing and about 150 people attended (Nolde 2004b). Printed media also has been an effective way to reach the public, since Santa Fe residents are highly educated and well read. In April 2004 Nolde wrote a newspaper insert about living with drought. Nolde also prepares home assessments and has completed between 30-40 since August 2003. In 2004 Santa Fe received two National Fire Plan grants. One was a hazardous fuels reduction grant for \$156,000 that allows the Santa Fe Fire Department to survey, model and plan fuel reduction projects on city land near the southwest Watershed boundary. The Fire Department also received an \$180,000 State Fire Assistance grant that will be used for public outreach and fuels reduction on public and private property and host chipper days in neighborhoods (Nolde 2004a).

Beginning in the summer of 2003 the Santa Fe Watershed Association resumed hikes into the watershed to showcase and monitor the on-going work (Grant 2004). From 1998 through the summer of 2002 the SFWA and the City worked together to hold hikes through the SF Watershed to promote the thinning project, but they ceased after the SFMWP EIS was completed. SFWA resumed the hikes in 2003 with great success. They are scheduled for the second Saturday of each month. Don Peterson, the contractor, and Dave Isackson, the USFS contracting officer representative and assistant fire management officer, participate in the monthly hikes and talk about the project details. Anywhere from 12-30 people usually join the

hike (Grant 2004). In November 2003, representatives from a number of the environmental groups that were initially opposed to the SFMWP attended the hike. Members from the Santa Fe Forest Watch commented that they were pleased with the progress (Rankin 2003).

According to the USFS, the community is more engaged in the sense that they are more aware of fuels reduction activity in the watershed and the need for both thinning and burning (Armantrout 2004). This is a result of USFS outreach efforts, Shelley Noldes's work, as well as SFWA Executive Director Paige Grant's efforts in leading tours throughout the watershed. People have a heightened interest towards fire danger because of the national attention of recent high profile wildfires. According to Grant, the public seems to better understand the issues. The interest in the watershed hikes "suggests that a lot of people with a low-level interest in the project like to get out at least once to see for themselves what's going on" (Grant 2004).

Monitoring Concerns

A monitoring plan was developed for the SFMWP to evaluate progress of the prescription on an annual basis. The Santa Fe Watershed Association (SFWA), headed by Paige Grant, took responsibility for coordinating the monitoring plan. The Rocky Mountain Research Station (RMRS) in Albuquerque, New Mexico funded half of the monitoring plan (3,000 acres) and the SFWA is trying to find funding for the rest of plan. In 2001, SFWA received a \$45,000 Clean Water Act Section 319 grant to cover a portion of the expenses associated with the monitoring. This came to approximately \$15,000 per year for three years and ended in 2004.

The SFWA established the Technical Advisory Group (TAG), a voluntary group of scientists with expertise in fields related to the evaluation of forest management activities, to oversee the monitoring effort. Working with the SFWA the TAG coordinates the process of completing monitoring plans, data collection and analysis, and preparing quarterly/semi-annual status report on the SFMWP. It is the goal of the Santa Fe Watershed Association that third-party peer review by the TAG of monitoring and management activities in the Santa Fe municipal watershed would assist in the development and transfer of reliable information on the effects of thinning and prescribed burning on ponderosa pine and mixed conifer ecosystems in the southern Rockies; and that this information would help to build public confidence that such forest management activities can be conducted so as to protect ecosystem values while reducing the danger of crown fire. USFS representatives attend the TAG meetings where findings from scientific experts are presented. The RMRS provides annual reports and meets with the Implementation Team when asked. The team evaluates findings that may have implication for adaptive management. Isackson, the USFS contracting officer representative and assistant fire management officer, is tasked with working the contractor to incorporate any changes to the plan of work (Isackson 2004b).

The monitoring requirement as outlined in the EIS is a point of contention among some stakeholders in the Implementation Team. The USFS maintains that it is upholding its monitoring agreement. Many different entities are engaged in monitoring activities. The Rocky Mountain Research Station is conducting ground vegetation and wildlife studies. Fire behavior, forest vegetation, bark beetles, beaver colonies, key wildlife habitat, archeology, soil erosion, and air quality/smoke are monitored by the USFS. The City of Santa Fe is evaluating water quality and peak stream flow. The New Mexico Environment Department (NMED) monitors

water quality and aquatic insects (Garcia 2004a; Isackson 2004a). The work being done by the USFS and Rocky Mountain Research Station is being paid for out of the \$1.5 million annual appropriation. Other monitoring is paid for by other sources. The City has contracted out paired basin study and NMED is paying for some work.

As of July 2004, data collection continues in the area of water chemistry, riparian geomorphology, the paired basin study, ground vegetation, prescribed fire, air quality, fuel loading, insect infestations, invasive plants, key wildfire habitat features, overstory and understory vegetation, aquatic insects and fish, small mammals, birds and arthropods, and beaver (TAG 2004). When the SFWA's funding ran out in the summer of 2004, they requested \$271,865 in support from the USFS 2004 \$1.5 million appropriation to continue their monitoring coordination, TAG liaison, outreach and reporting and to contract with experts to carry out other necessary functions under the monitoring plan (SFWA 2004). In response, the new Forest Supervisor, Gilbert Zepeda, offered \$10,000 to fund the TAG (Grant 2004a). In May 2004 Grant stopped work on the SFMWP because she could not support the work financially.

Three most crucial elements from TAG's and SFWA's perspective are not being addressed in the monitoring plan. Specifically, they would like to have 1) the northern side of the project area (approximately 3,000 acres) monitored for vegetation and wildlife by the RMRS; 2) landscape-scale geomorphologic measurements are needed to serve as a baseline in the event of major soil erosion events; and 3) post-treatment monitoring by RMRS study for several years following thinning (Grant 2004a). Grant is concerned that if the monitoring does not happen, it opens up the opportunity for lawsuits from environmental groups who feel strongly about the monitoring. The USFS commitment to monitoring allowed the environmental community buy-in to the concept of the project. Without monitoring and continued public involvement brokered by the SFWA, the SFMWP Plan would have been appealed and litigated, further delaying implementation measures. Grant also feels the USFS loses an opportunity to learn the ecosystem effects of thinning since most research has studied the impacts of catastrophic wildfire, not intentional thinning projects. Finally, monitoring and adaptive management has worked well in the project thus far, resulting in significant management changes for the better (Grant 2004a).

According to Grant, the USFS has not acknowledged the soil erosion recommendations nor made any commitment to incorporate them into a revised soil erosion monitoring plan (Grant 2004b). Likewise, monitoring on the north side of the treatment areas remains undetermined. TAG presented a proposal by the Institute for Conservation Studies to collect vegetation, bird and mammal information on the north side of the riparian areas and the USFS has not acknowledged it except to say they are doing the monitoring they committed to.

From the perspective of the USFS, a great deal has been done to support monitoring and funding limits additional option. "Some of the work [SFWA] proposed is beyond the scope of the original monitoring plan and what was agreed to in the EIS. Some of the work is already being done and being paid for from the funds. We are also providing technical and data support to some of the academic researchers" (Isackson 2004b). Isackson (2004a) believes the Rocky Mountain Research Station will continue to receive funding for this project and expand their research into the northern section. "It was up to each researcher to do their research design in such a way that their work would adequately represent the study area. There are no appreciable

differences between the north and south sides of the watershed. There is no reason to think that the information obtained on the south side could not be applied to the north side” (Isackson 2004b).

No legal actions are pending with regard to monitoring issues (Isackson 2004a). “The Forest Service is following through with the monitoring agreement as outlined in the EIS. This project is moving forward, has strong support from local officials and partners as well as our Congressional delegations. There has been no indication of legal action stopping the project” (Isackson 2004b).

It is clear that the USFS is engaged in adaptive management on this project and that results from the monitoring work are being incorporated into on-going work. Examples include the decision to use the fecon head for mechanical thinning after this technology was successfully used by the contractor in the Los Alamos area and displayed to the USFS and TAG members, the favoring of Southwest white pine in the silvicultural prescription based on the aerial bug surveys, the time of burning activities after evaluating the demo plots and the first round of burning, and the finding of an alternative access in lieu of the northern route when it was found this would require more archeological survey (Garcia 2004a; Isackson 2004a). The commitment to adaptive management of the monitoring plan is what is in question for the SFWA. For Grant the spirit of the EIS embraced an adaptive management component, including adapting monitoring projects themselves. As articulated in the EIS, “This plan may continue to be refined and modified as new relevant information becomes available”.

References

Allen-Reid, Debra. 2004. "Monitoring of the Santa Fe Watershed Thinning. Report to Forest Supervisor, Santa Fe National Forest. June 2. On file with authors.

Armantrout, Cami. 2004. In person interview with Ginger Kunkel. Fire Protection Specialist. Espanola District Ranger Office. Espanola, NM. March 31.

Garcia, Lawrence. 2004a. In person interview with Ginger Kunkel. Fire Management Officer. Espanola District Ranger Office. Espanola, NM. March 31.

Garcia, Lawrence. 2004b. E-mail response to Ginger Kunkel. Fire Management Officer. Espanola District Ranger Office. Espanola, NM. May 25.

Grant, Paige. 2004a. In person interview with Ginger Kunkel. Executive Director, Santa FE Watershed Association. Santa Fe, NM. March 29.

Grant, Paige. 2004b. Email to Toddi A. Steelman. Executive Director, Santa Fe Watershed Association. April 21.

Isackson, Dave. 2004a. In person interview with Ginger Kunkel. Assistant Fire Management Officer. Espanola Ranger Office. Espanola, NM. March 31.

Isackson, Dave. 2004b. E-mail response to Ginger Kunkel. Assistant Fire Management Officer. Espanola Ranger Office. Espanola, NM. May 25.

Nolde, Shelley. 2004a. In person interview with Ginger Kunkel. Wildland Urban Interface Specialist, Santa Fe Fire Department. Santa Fe, NM. March 29.

Nolde, Shelley. 2004b. "Bark Beetle and Fire Danger Update" Prepared for Santa Fe City Council Meeting. Feb. 11.

Rankin, Adam. 2003. "Hikers Get Skinny on Forest Thinning Project". Santa Fe Journal. Sunday, Nov. 9.

Santa Fe Watershed Association. 2004. "Monitoring in the Santa Fe Municipal Watershed: a proposal by the Santa Fe Watershed Association to Santa Fe National Forest". February 6. On file with authors.

Technical Advisory Group [TAG]. 2004. "Monitoring Forest Treatments in the Santa Fe Municipal Watershed" Executive Summary. March 15. On file with authors.