



*Watershed Restoration in
Sugarite Canyon*

Presented by Amy Ewing

September 28, 2010

Project Location



Project History

- Initial project began in 2005
 - ◆ Organized initial collaborator group.
 - ◆ Developed Canadian Headwaters Watershed Restoration Action Strategy (WRAS).
 - ◆ Developed forest prescription.
 - ◆ Selected first thinning site.
 - ◆ Developed and issued thinning contractor request for proposals.
 - ◆ Performed archaeology and biology surveys.
 - ◆ Thinned the first 200 acres.



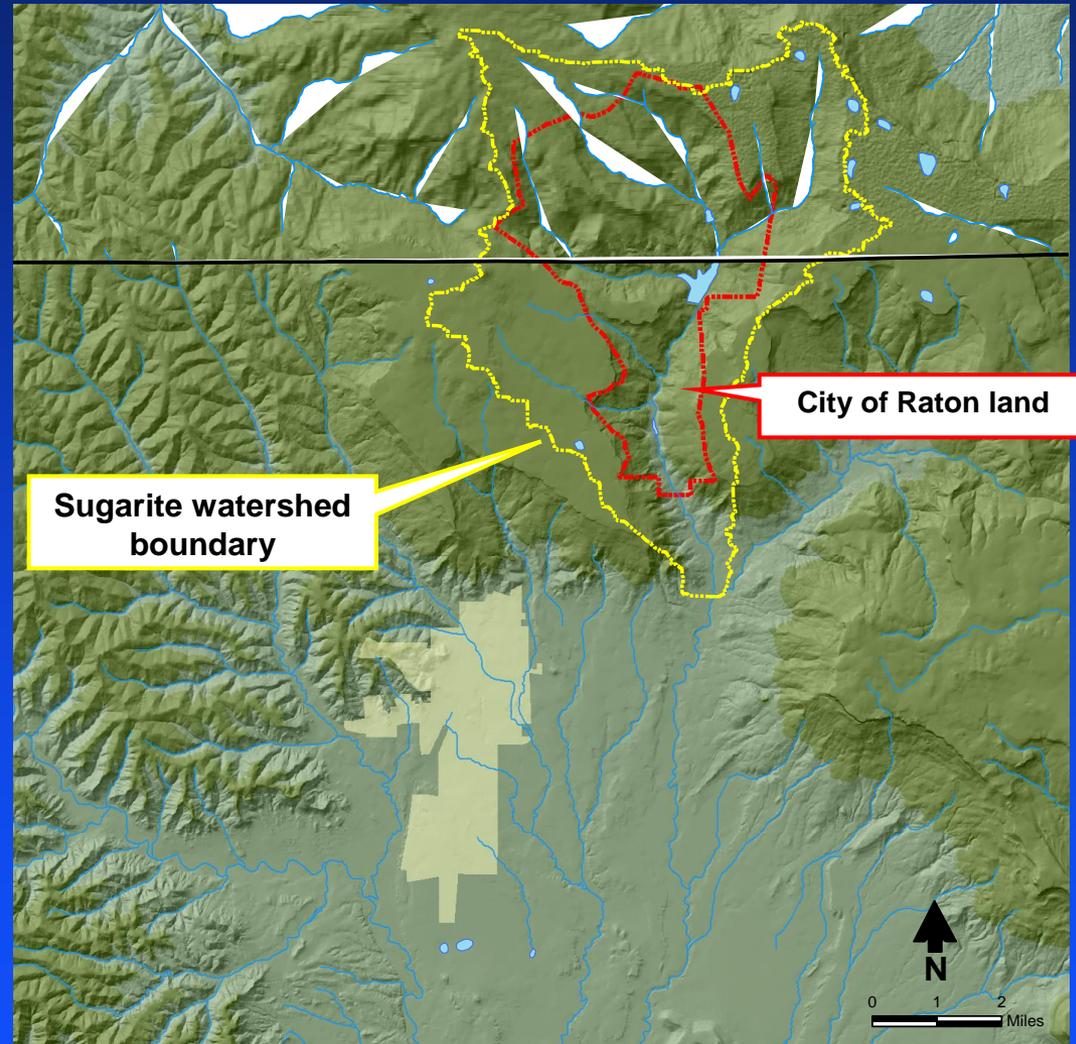
Project History

- Supplemental projects have been specific to the Sugarite subwatershed
 - ◆ Collaborator group coordination
 - ◆ Grant applications and management
 - ◆ Contractor selection and oversight for thinning and clearance work
 - ◆ Sugarite Stewardship Plan and NEPA clearance on 1,200 acres in New Mexico
 - ◆ Water quality sampling of three streams (fall and spring 2007 through 2009)
 - ◆ More than 2,000 acres thinned to date



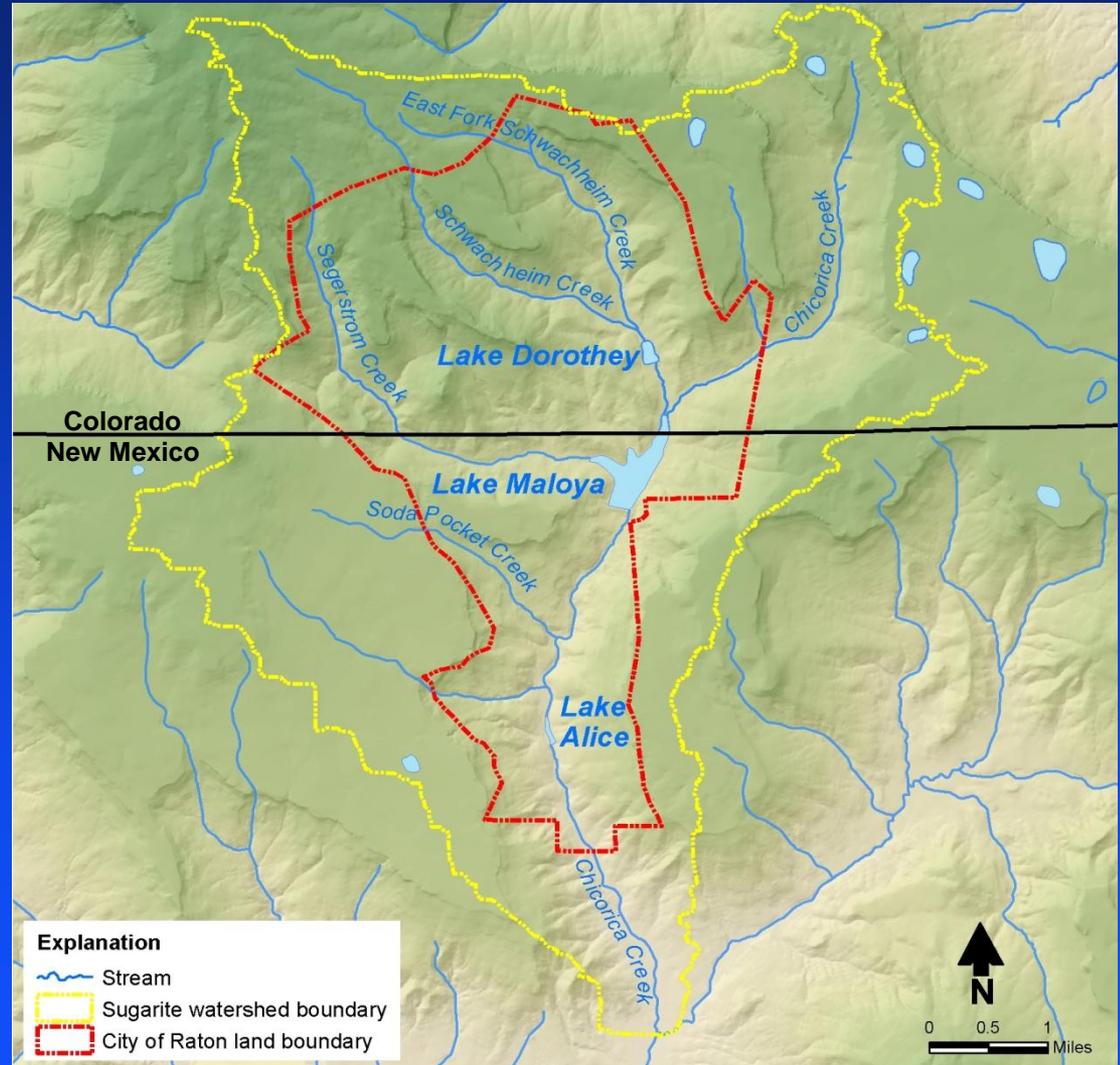
Sugarite Watershed

- Popular recreation area
- Upper watershed is in Colorado
- Lower watershed is in New Mexico



Sugarite Watershed

- Lake Maloya, supplemented by Lake Dorothy and Lake Alice, provides the primary water supply for the 9,000 residents of Raton.



Sugarite Collaborators

- Carson National Forest
- City of Raton
- Colfax County
- Colfax Soil and Water Conservation District
- Colorado Division of Wildlife
- Colorado State Forest Service
- The Nature Conservancy
- New Mexico Department of Agriculture
- New Mexico Forest and Watershed Restoration Institute
- New Mexico Game and Fish
- New Mexico State Forestry
- New Mexico State Parks
- NRCS Colorado
- NRCS New Mexico
- Vermejo Park Ranch
- Western Wood Products



Sugarite Collaborators

- Group has been actively working together since 2005.
- Most recent field trip (May 4, 2010) was attended by 21 people.



Sugarite Collaborators

- Collaboration among stakeholders is the key to securing funding and to successful watershed treatment.



Project Goals

- Reduce density of trees.
- Thin understory to reduce threat of crown fire, protecting the City of Raton water supply.
- Integrate hydrologic best management practices to minimize erosion.
- Protect wildlife habitat.



Impacts of Crown Fire

- Influx of ash and sediment into lakes impacts lake capacity and treatment plant
 - ◆ Lake Maloya: 5,200 acre-foot storage capacity
 - ◆ Lake Dorothy: 212 acre-foot storage capacity
 - ◆ Lake Alice: 100 acre-foot storage capacity
- Impacted water quality affects aquatic life.
- High-intensity fires have long recovery times.



Vegetation Density

- Dense understory of oak:
> 5,000 stems per acre
- High density of small
adult ponderosa pine trees:
~ 300 trees per acre



Prescription

- Thinning should not result in a homogeneous, evenly spaced tree pattern, but rather a mosaic of denser groups of trees surrounded by sparser areas.
- Oak thickets should be crushed, groves of adult oaks larger than 6 inches in diameter left untreated.
- Fuel breaks may be established in very dense fuel areas.



Prescription

- Don't cut trees of any species that are larger than 12 inches in diameter at breast height.
- Leave a small proportion of the treated forest stands unthinned in order to
 - ◆ Retain heterogeneity
 - ◆ Encourage regeneration
 - ◆ Provide temporary wildlife habitat
- Leave 60 to 80 of the largest adult trees per acre uncut and aspen stands untreated.



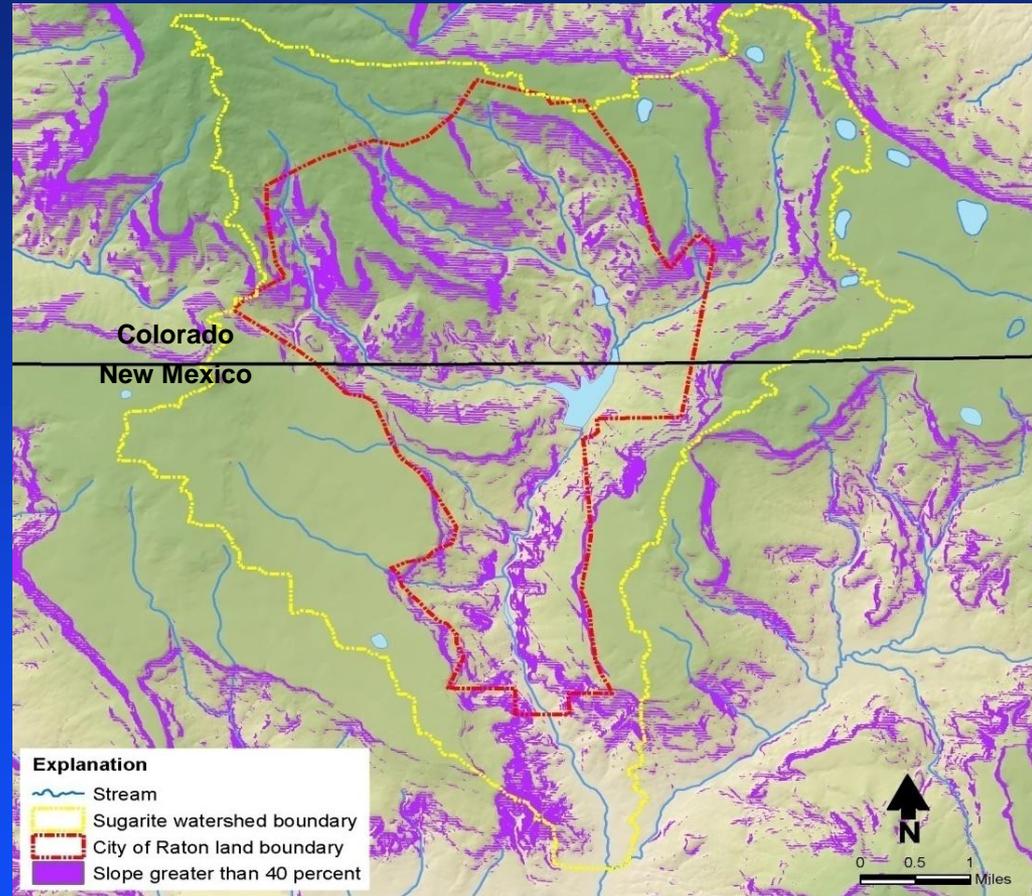
Thinning Method

- Mechanical treatment to date (chunking material with a HydroAx).
- Mechanical treatment and hand cutting will likely be used in the future.



Slope Limitation

- Slopes steeper than 40% are not treated.
- Fire breaks created below steep slopes:
 - ◆ 200 to 250 feet wide
 - ◆ 30 to 40 trees per acre



Cultural Resource Considerations

- State Historic Preservation Act requires field surveys in New Mexico.
- No formal surveying required on private land in Colorado, but completed nonetheless.
- A number of very large culturally modified trees have been identified.
 - ◆ Prescription calls for leaving larger trees.
 - ◆ Trees are flagged and mapped for avoidance.
- Other sites are mapped and flagged for avoidance.



Wildlife Considerations

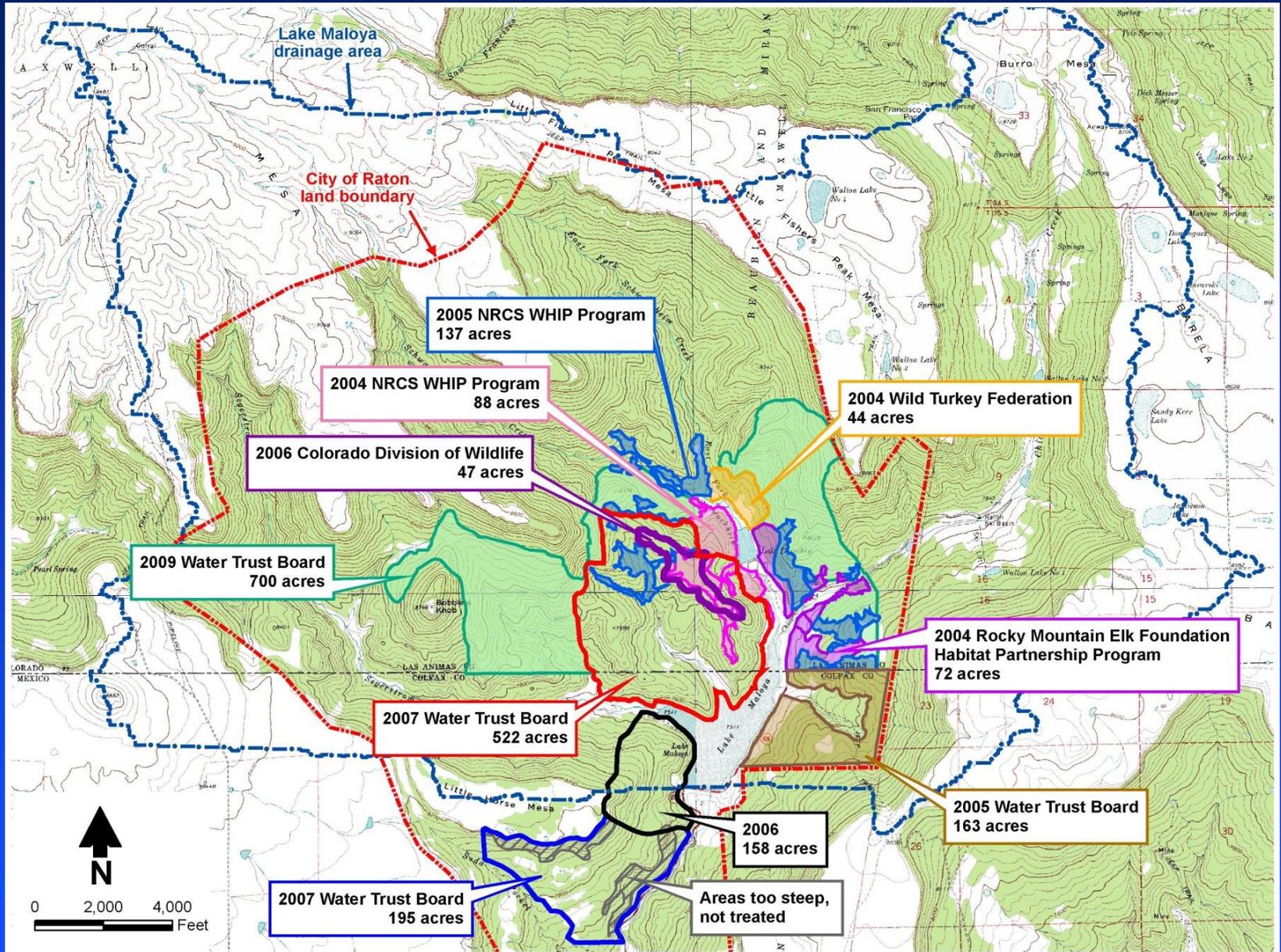
- Avoid southwestern willow flycatcher habitat.
- Leave up to five of the largest dead standing trees per acre uncut for wildlife habitat.
- Avoid squirrel middens.
- Conduct Mexican spotted owl surveys where NEPA is required.
- Be aware that moist grassy meadows are potential New Mexico jumping mouse habitat (State of New Mexico threatened species).



Timing of Treatments

- Ideally, treatment should not conflict with
 - ◆ High-ignition periods
 - ◆ High-rainfall periods
 - ◆ Migratory bird breeding season
- Soils and understories are least likely to be damaged in late autumn and early winter, before the snows are deep.
- Fiscal year end funding expiration may conflict with breeding season.





Treated Area East of Lake Maloya



Thinning Reduces Ladder Fuels

Before



After





Mosaic Cutting of Gambel Oak



Lower Density Along Ridgetops



Current Funding

- New Mexico Water Trust Board Grant
 - ◆ City of Raton is the fiscal agent
 - ◆ Expires in November 2011
 - ◆ Remainder to be used in Colorado
- Competitive Grant from the USDA-Forest Service State and Private Forestry Program
 - ◆ Awarded to New Mexico State Forestry and Colorado State Forest Service

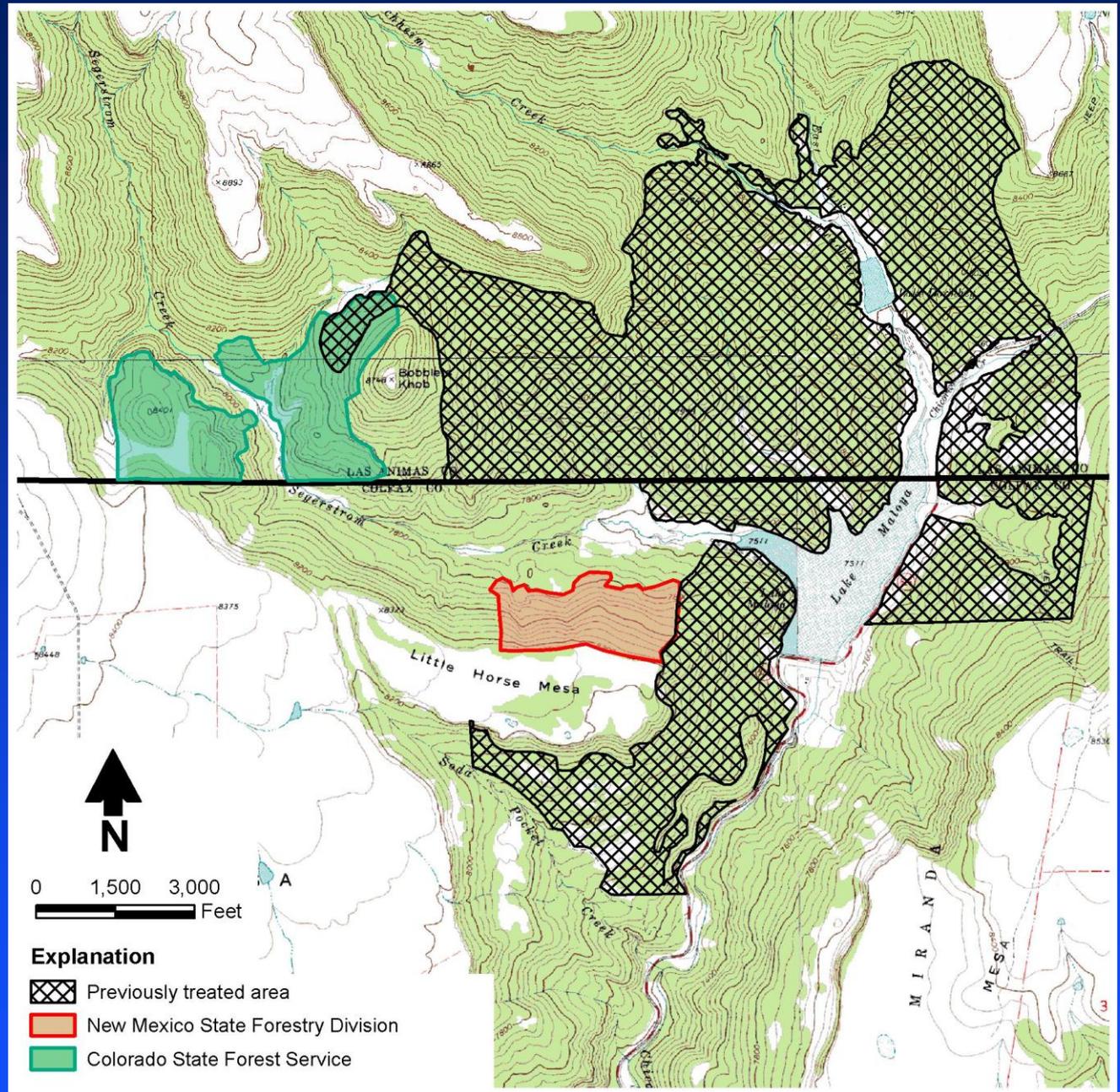


Next Steps

- New Mexico State Forestry project
 - ◆ 80- to 100-acre area in New Mexico
- Colorado State Forest Service
 - ◆ 800-acre area in Colorado
 - ◆ The remaining Water Trust Board funding will be used on this project.
- Apply for a new Water Trust Board grant to thin additional acreage.



Planned Thinning Areas



Conclusions

- Project success is due in large part to the success of our collaborative effort.
- Treatment has successfully cleared ladder fuels on more than 2,000 acres in the watershed.
- Additional treatment is necessary to address the larger watershed.



A scenic landscape featuring a large body of water in the foreground, with a rocky shoreline. In the background, there are forested mountains under a cloudy sky. The scene is captured in a slightly desaturated, naturalistic style.

Questions?

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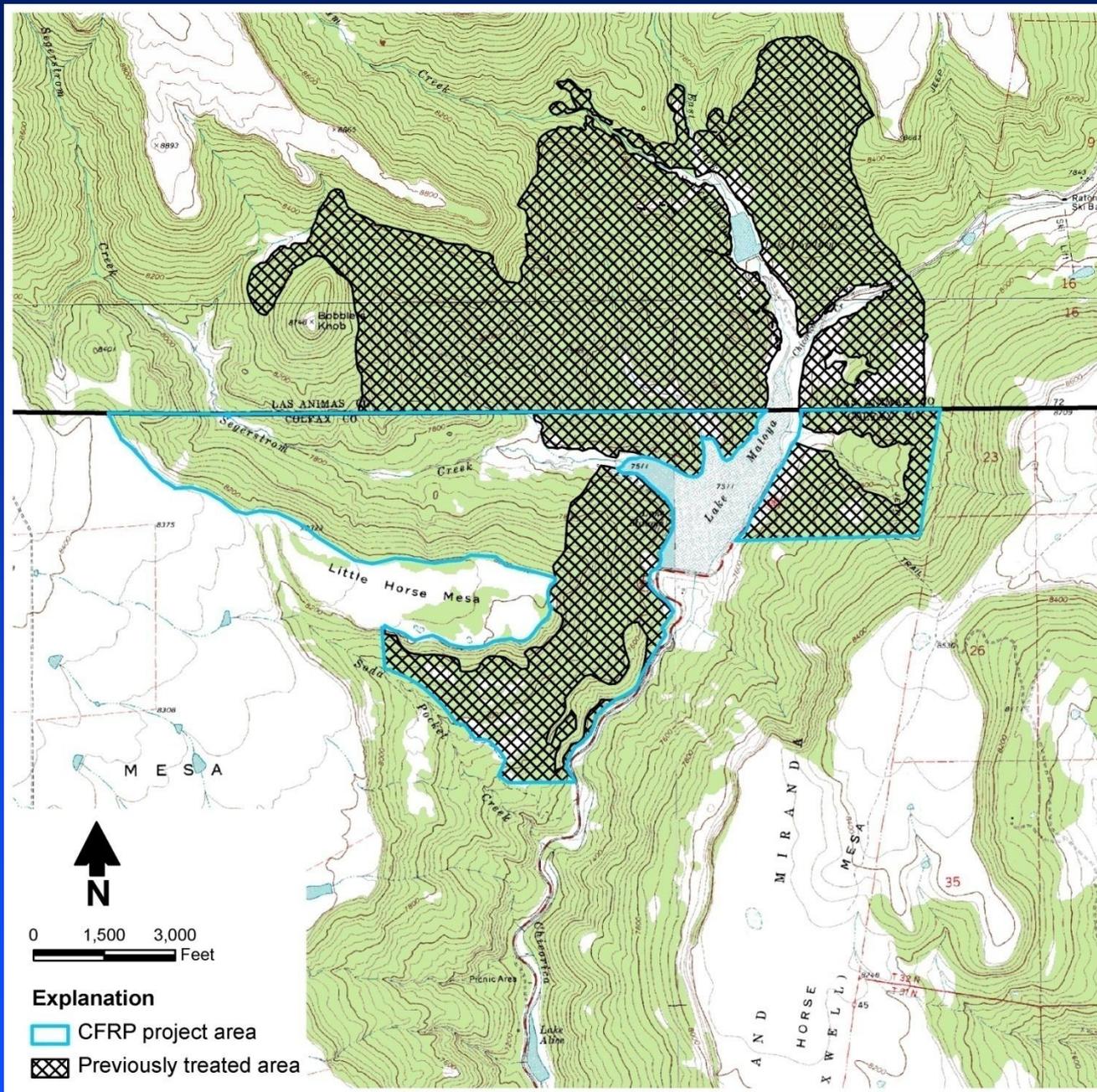
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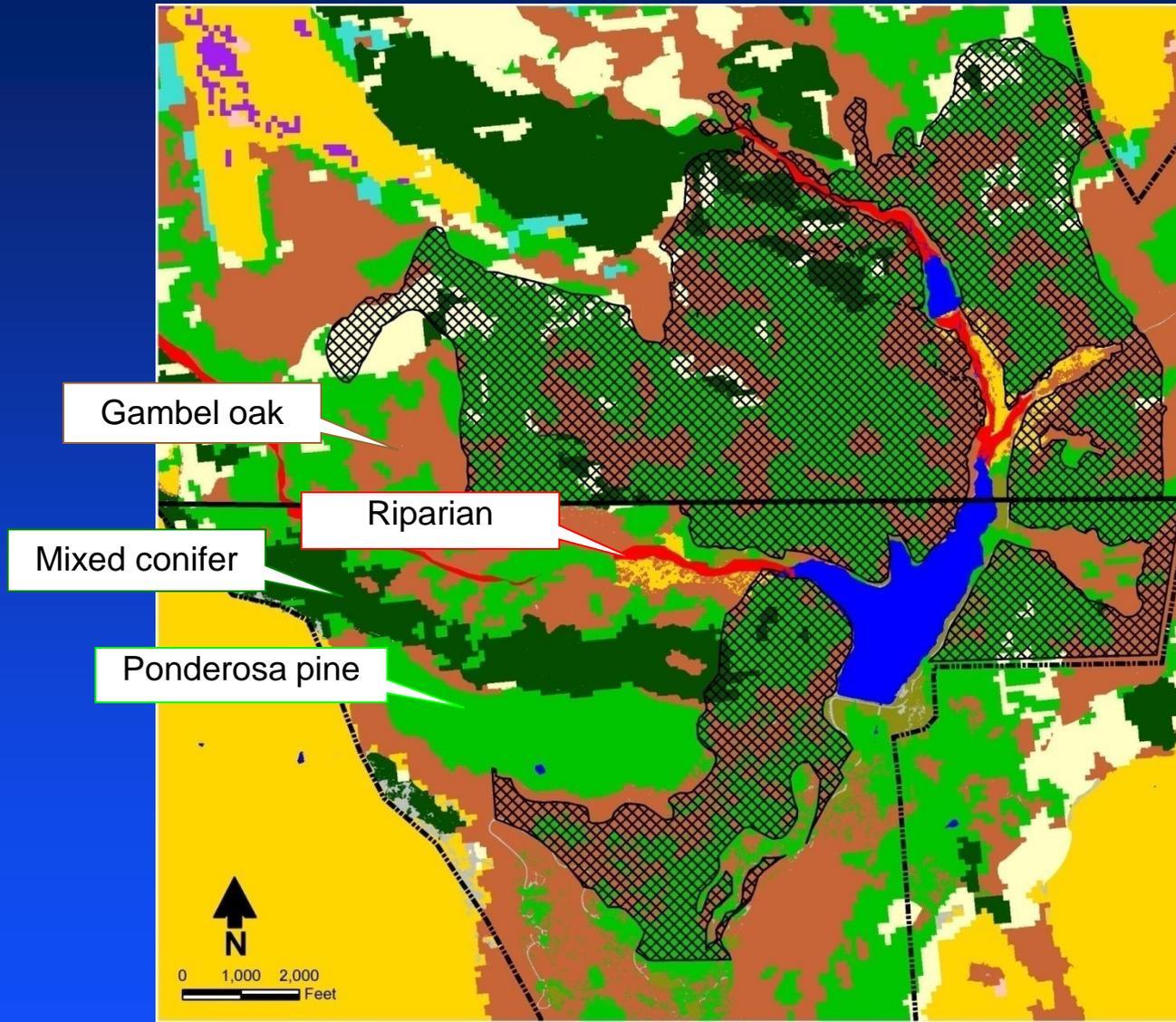
CFRP Project Area



Stewardship Plan

- Included vegetation maps prepared by the Nature Conservancy.
- Summarized existing vegetation conditions throughout the watershed.
- Provided prescriptions by vegetation type.
- Identified wildlife concerns and mitigation measures.
- Included a monitoring and adaptive management plan.





Source: The Nature Conservancy



Wildlife Considerations

- Avoid disturbing wetland areas (potential jumping mouse habitat)



Wildlife Considerations

- Disturbance of red squirrel middens impairs their ability to find and store enough food for the winter.



Permitting and Funding Issues

- Water Trust Board funding can be used for treatment in New Mexico or Colorado.
- CFRP funding cannot be used for treatment in Colorado, even to benefit a New Mexico community.
- NRCS funding limitations in Colorado do not allow for coverage of the full treatment cost (supplemental funding through the City of Raton and Water Trust Board has been used to supplement the thinning cost per acre).



Permitting and Funding Issues

- Requirements and funding sources differ across the state line
 - ◆ State Historic Preservation Act compliance requires field surveys in New Mexico.
 - ◆ No formal surveying required on private land in Colorado, but completed nonetheless,
 - ◆ NEPA process required for projects receiving federal funding (e.g., Collaborative Forest Restoration Program funding).



Project Funding to Date

- WTB 2005 \$295,000 Colfax County
- WTB 2006 \$350,000 City of Raton
- CFRP 2006 \$101,250 Colfax County
- WTB 2008 \$630,000 City of Raton



Wildlife Considerations

- Avoid disturbing habitat in streams, riparian areas, and wet meadows for protection of sensitive species.
- Map and establish buffer zones around sensitive wildlife habitat.
- Leave wildlife travel corridors and hiding habitat untreated along riparian zones and other difficult-to-treat areas.

