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# Forest Health Improvement Projects

2011 Sustaining Colorado Watersheds  
Conference

*The First Drop Lands Here*

October 5, 2011

Michael McHugh, P.G.

Permitting Coordinator, Aurora Water



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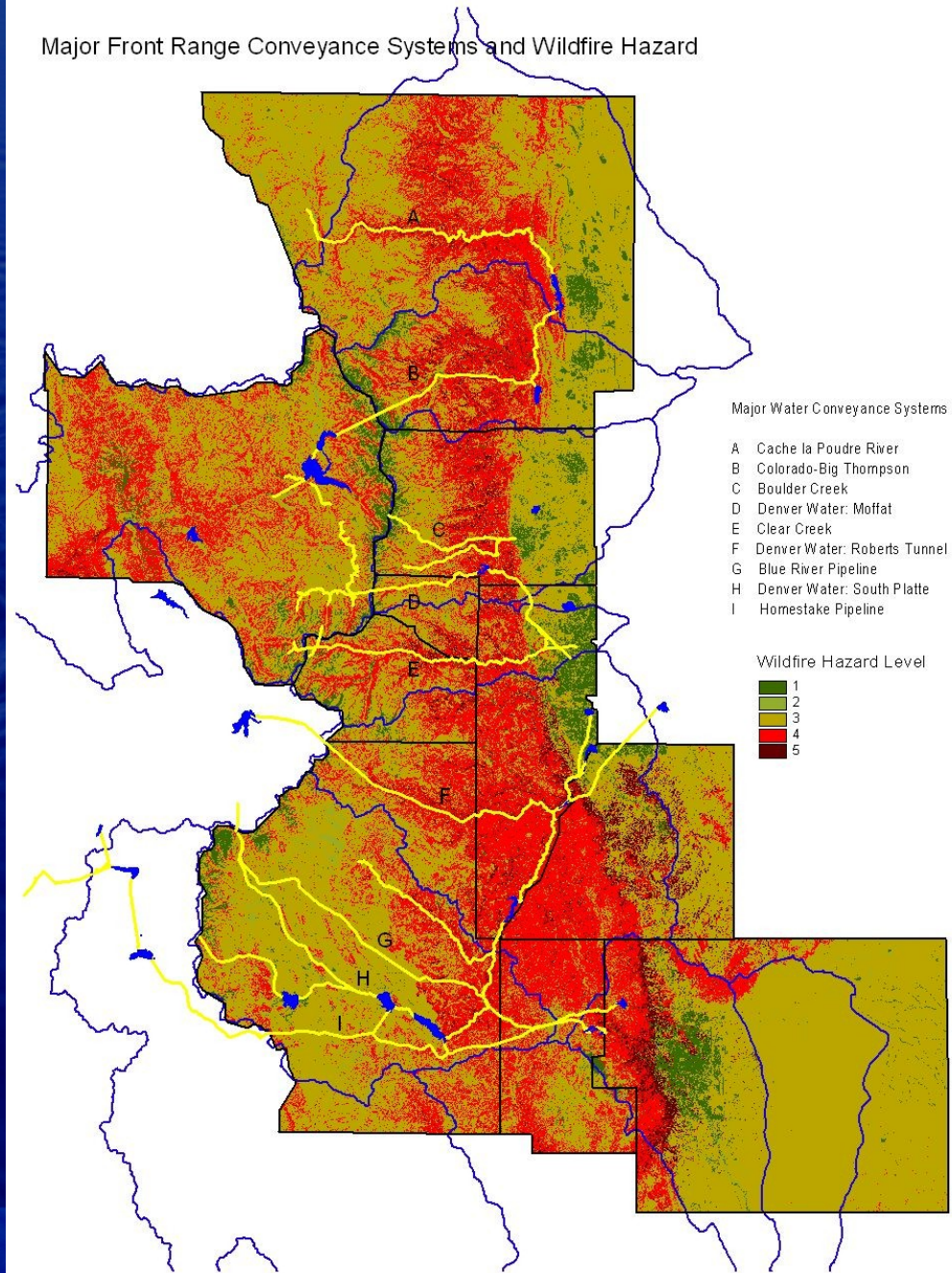
# Water Supply Susceptibility

Pinchot Report  
Highlights  
Vulnerabilities



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Major Front Range Conveyance Systems and Wildfire Hazard



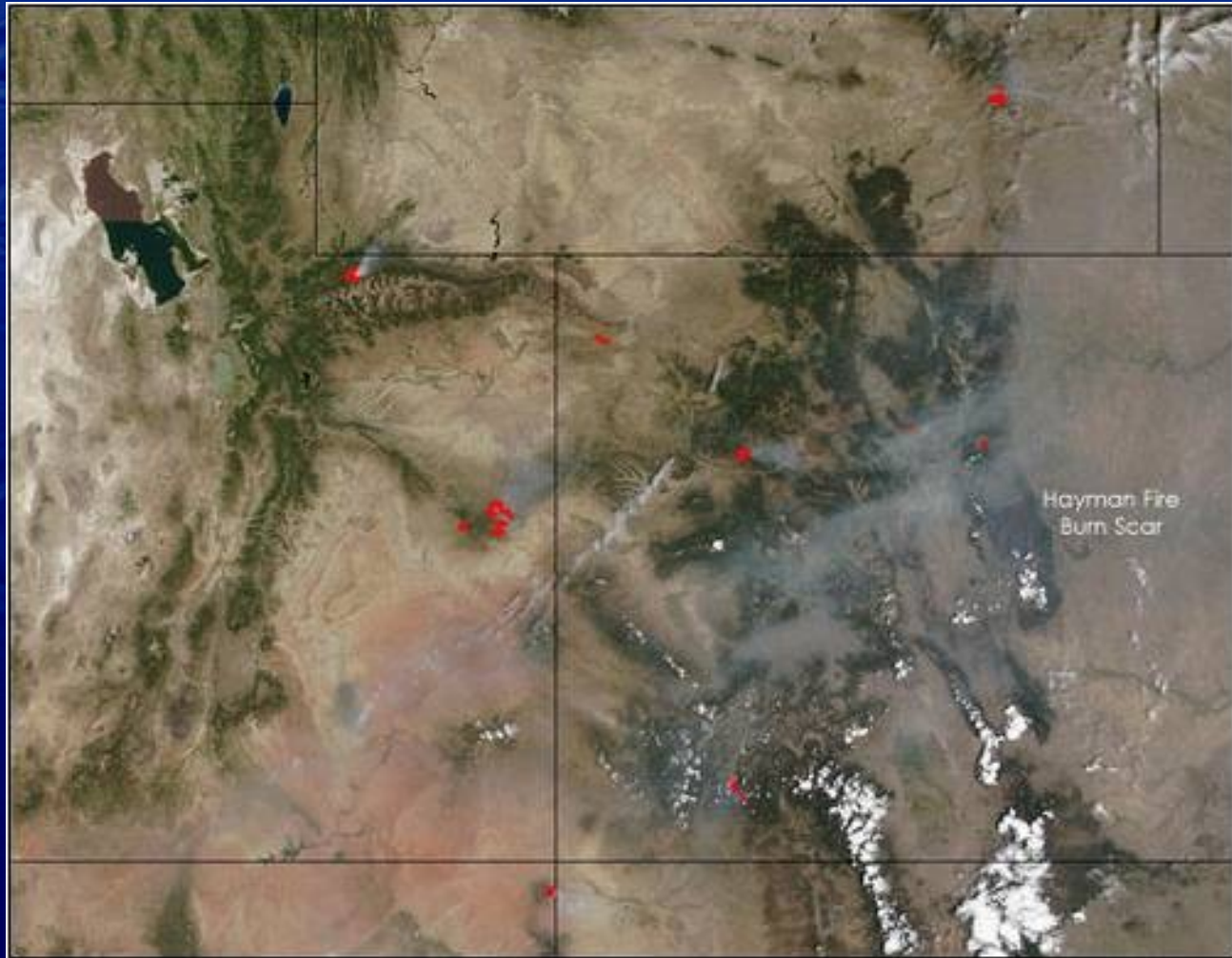


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# 2002 Smoke from Space



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# Hayman Fire Approaching Woodland Park



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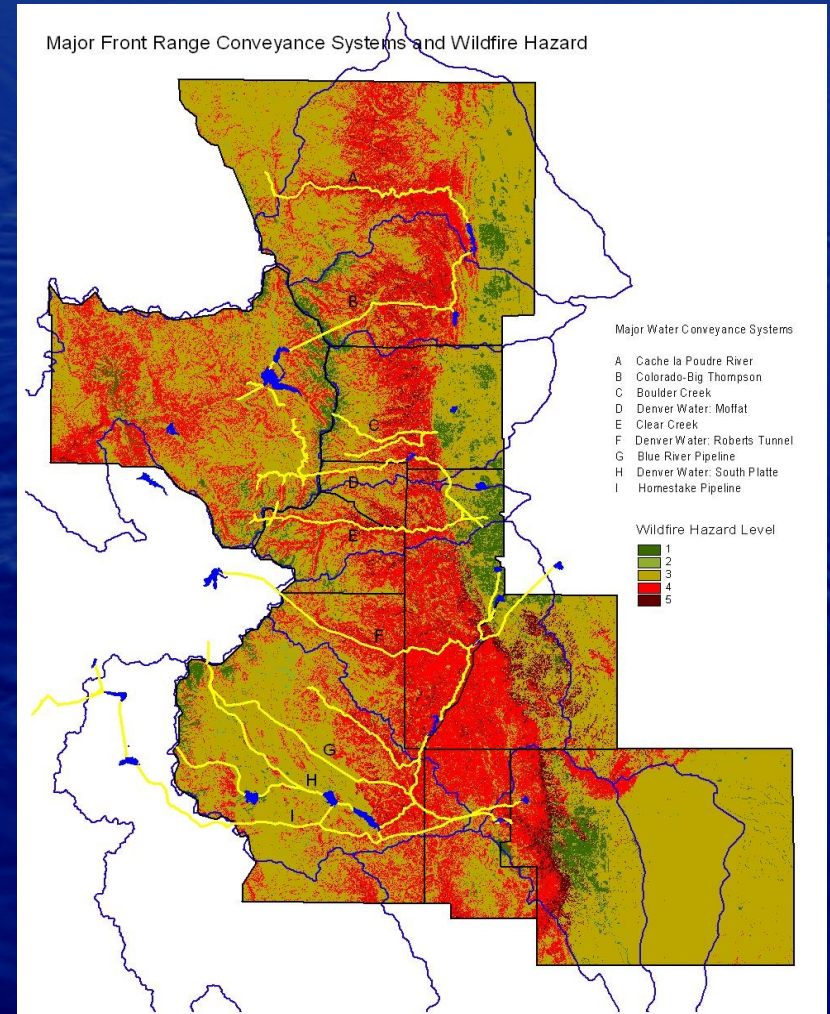
## Bottom Line

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- Major Front Range Water Supply Systems Cross High Hazard Areas
- 7 Front Range Providers serve  $\frac{3}{4}$  Colorado's Population
- Nowhere Near Enough Has Been Done



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# Analysis

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**Wildfire Risk**

**Flooding or  
Debris Flow Risk**

**Soil Conditions**

**Composit  
e Hazard  
Ranking**



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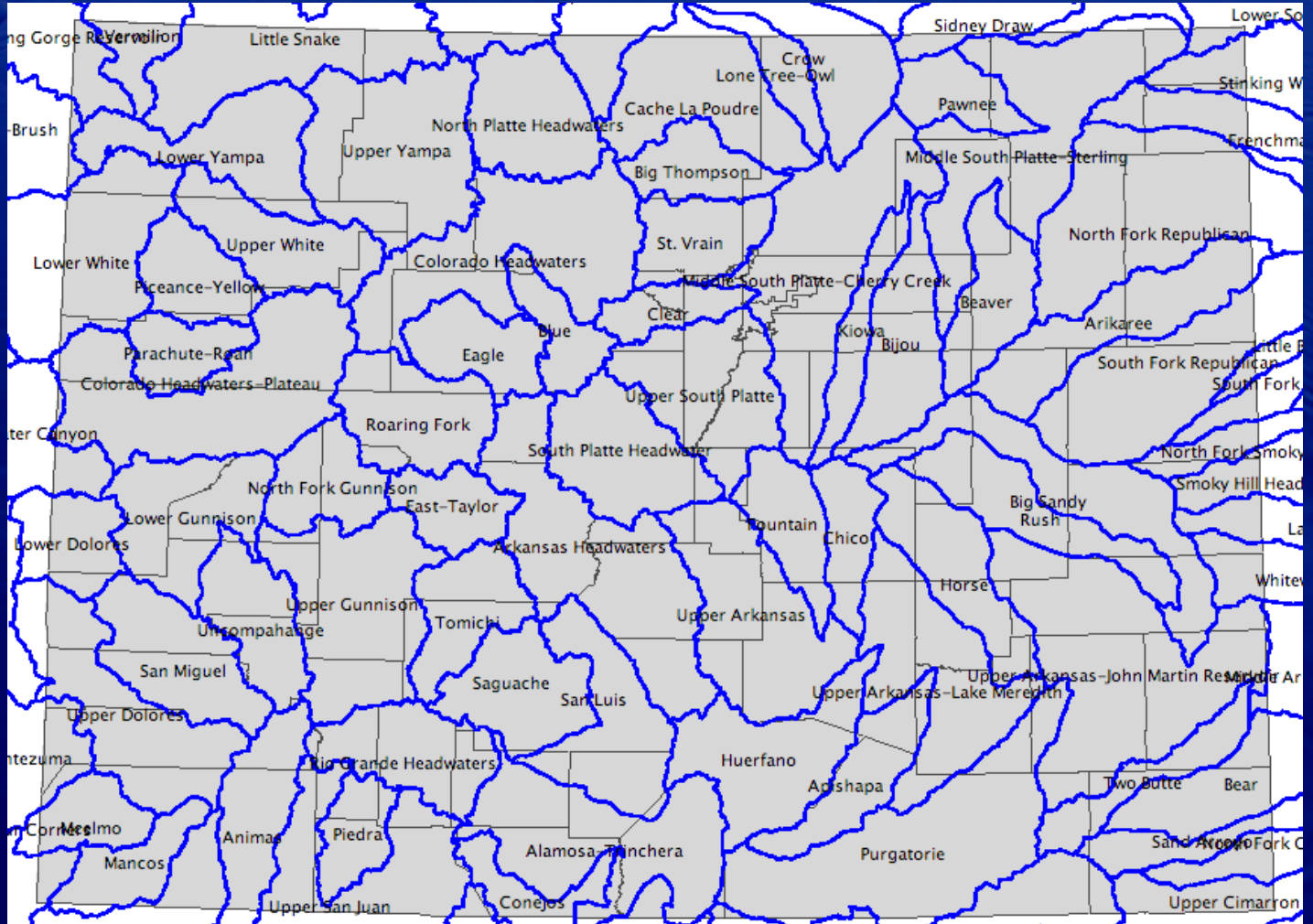


# Fourth Level Watersheds

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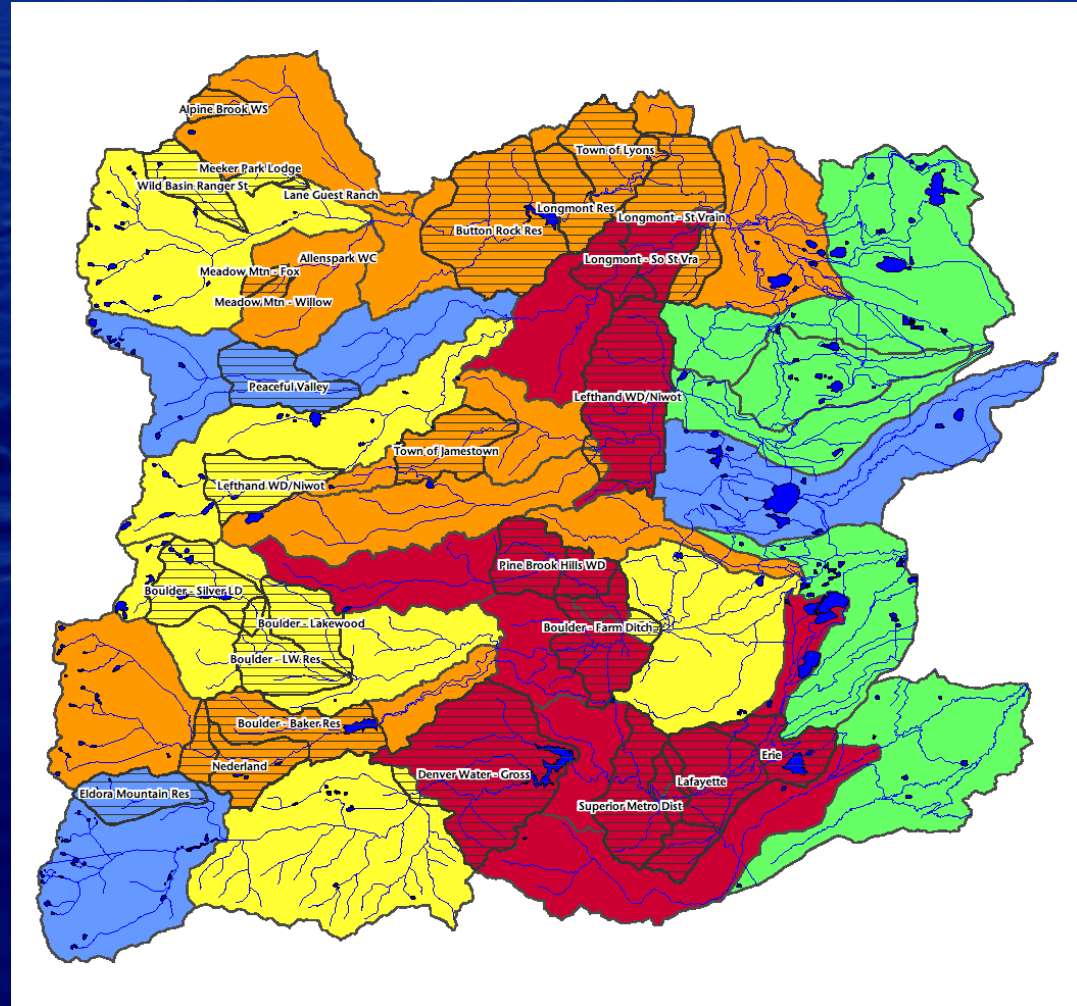
# Add Zones of Concern

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**Saint  
Vrain  
Watersh  
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with 5-  
mile  
upstrea  
m  
distance**



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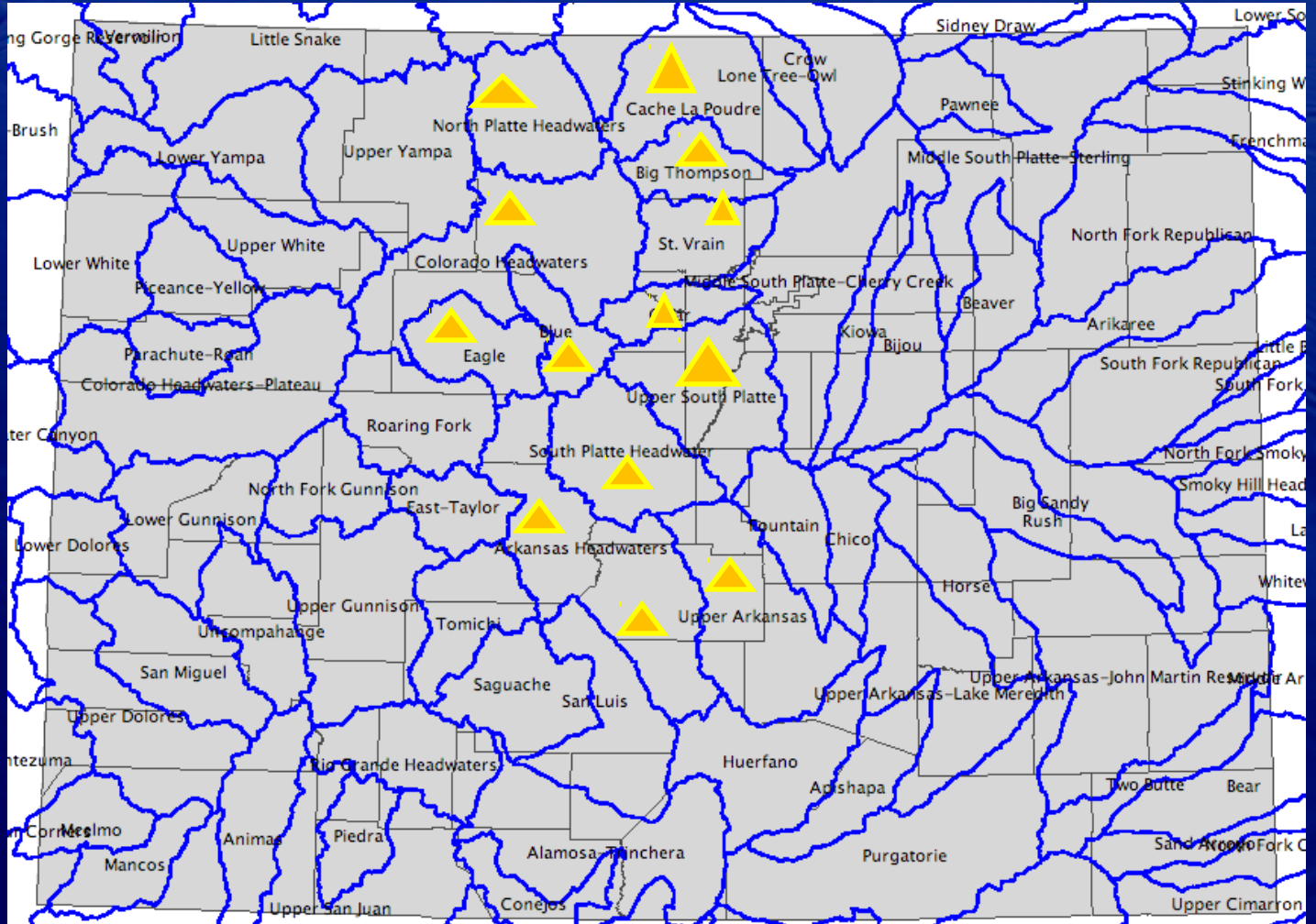


# Completed Assessments

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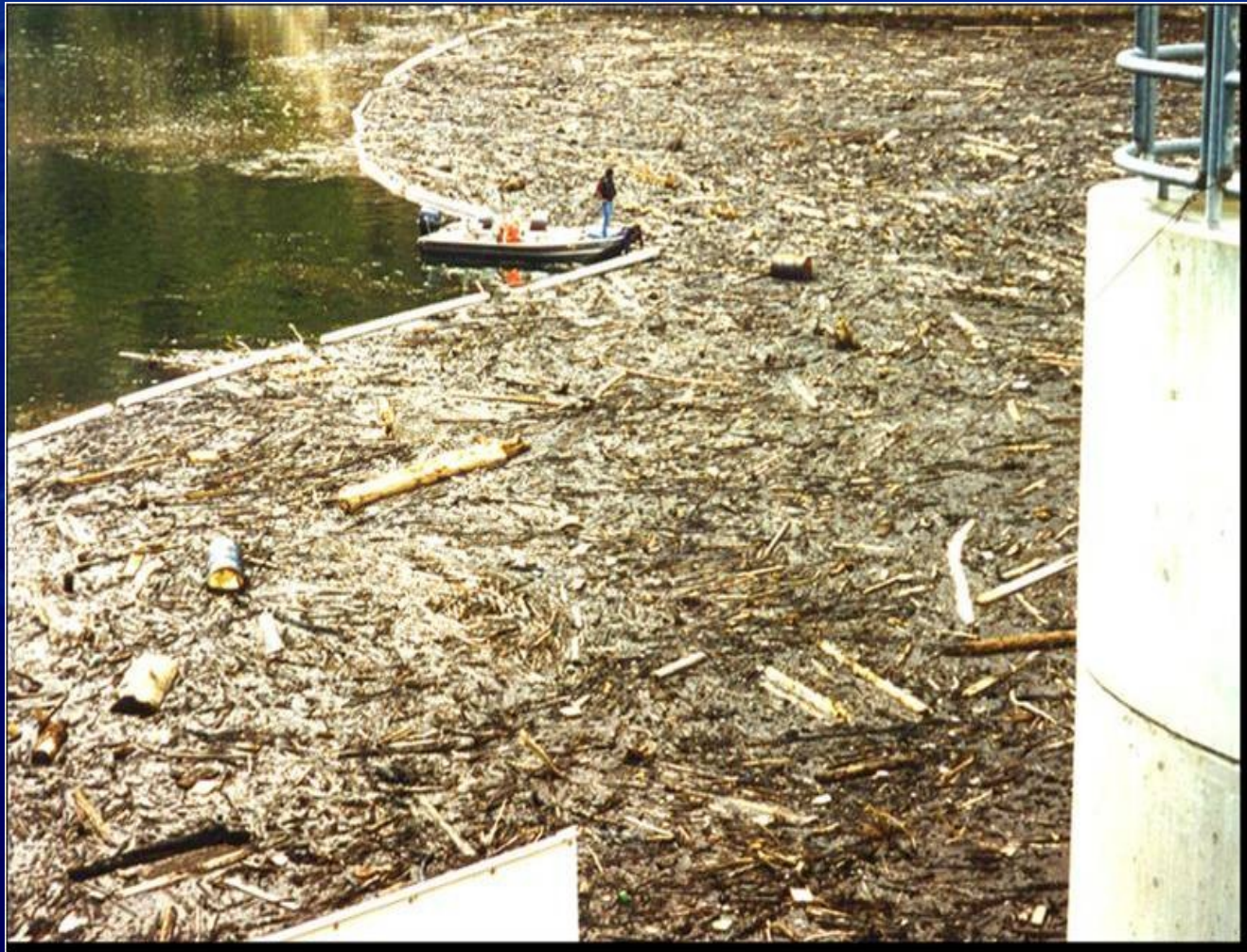


# Debris in Strontia Springs

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# Highly Erodeble Pikes Peak Granite



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# Sparse Grasses

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# Heavy Sediment Load



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# Devastated Riparian Zone

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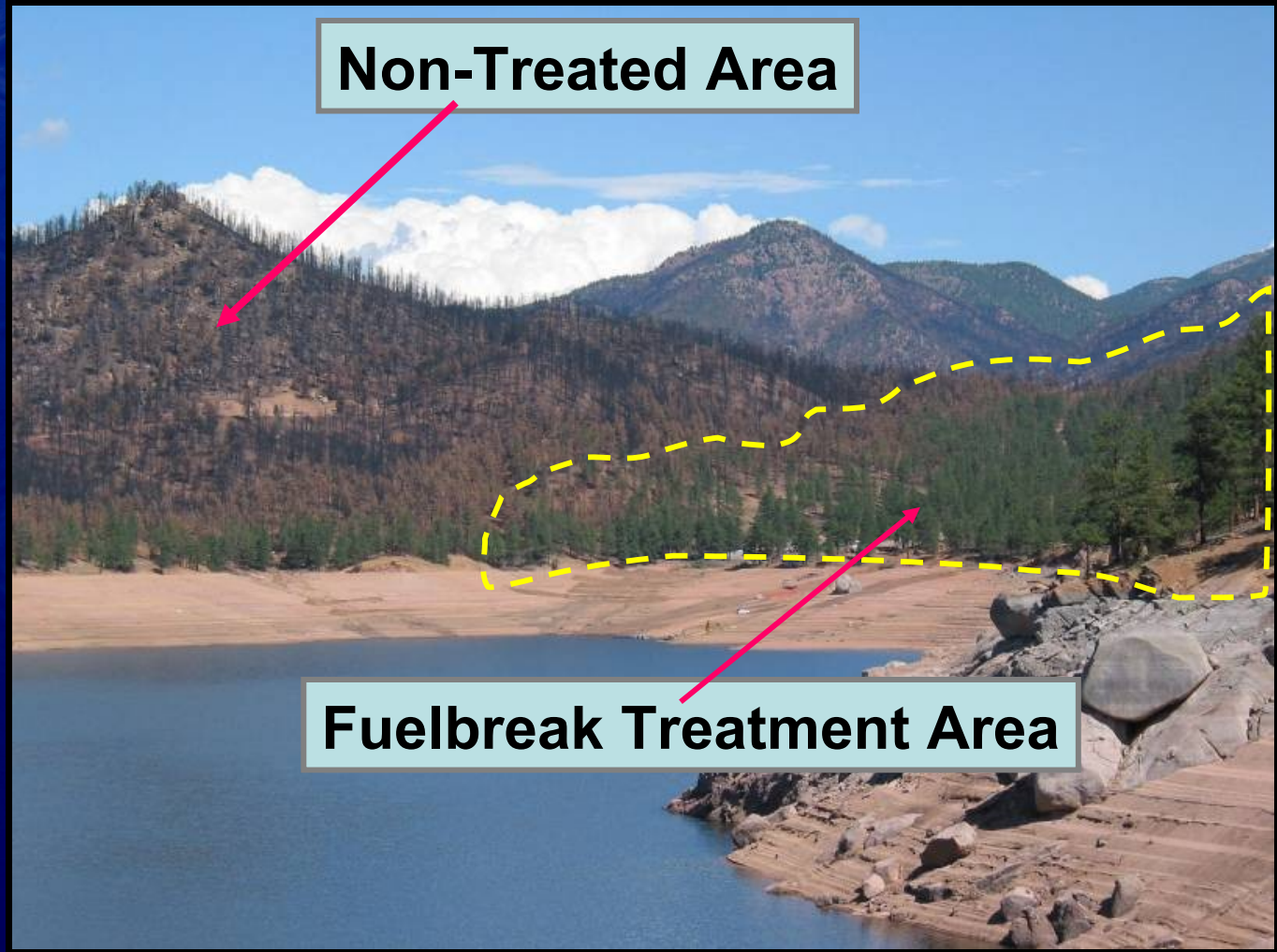


# Importance of Treatment

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**Non-Treated Area**

**Fuelbreak Treatment Area**



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# Next Steps

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## The Power of GIS

- Roadless
- Wilderness
- Steep Slopes
- Previously Burned
- Previously Treated
- Ownership
- Social License
- etc



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# New Challenges:

## Mountain Pine Bark Beetle

Or I've seen the beetle and  
the damage done



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# The Attack



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A red tree  
is a dead tree



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# Exit Wounds



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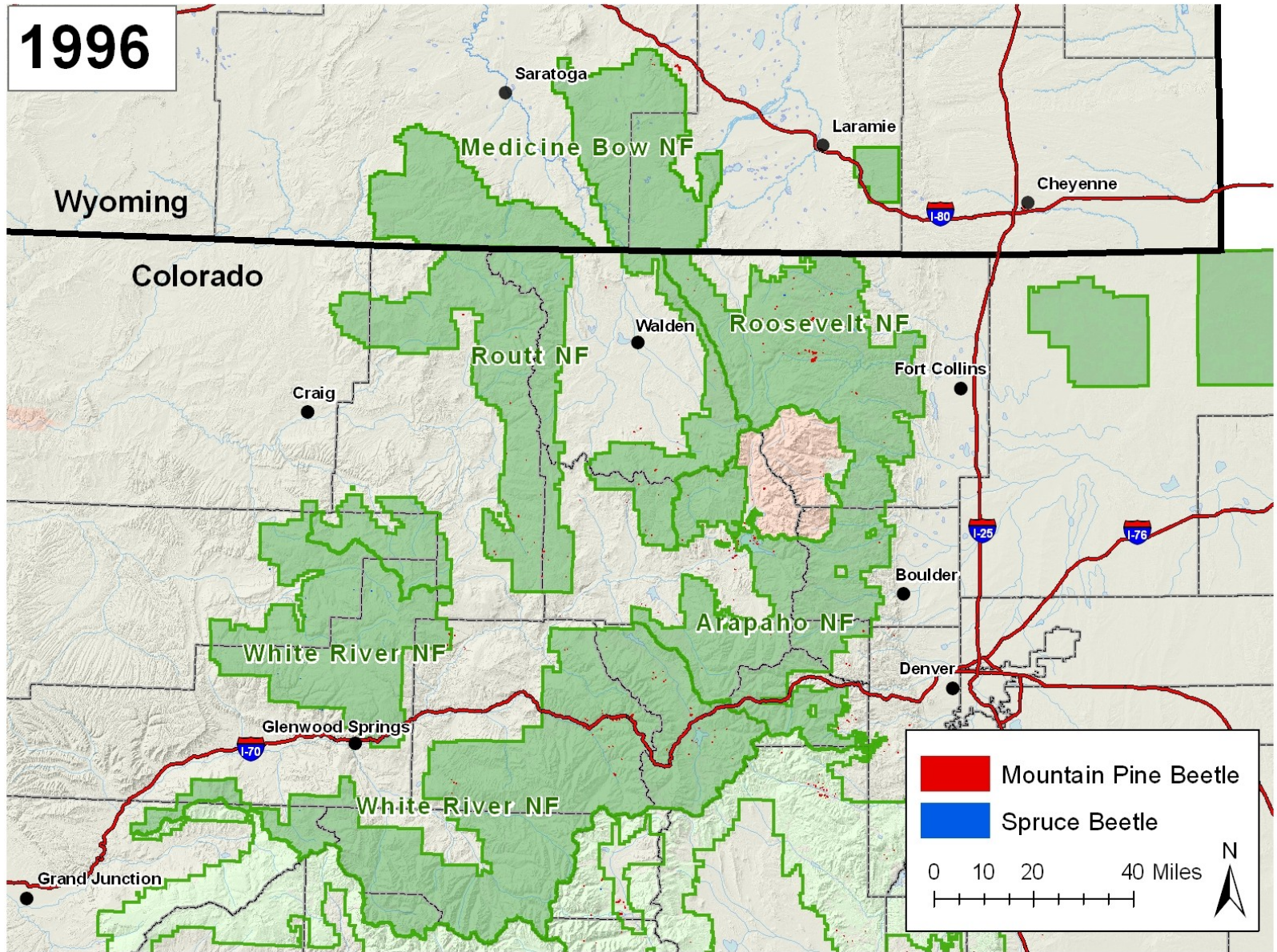
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1996





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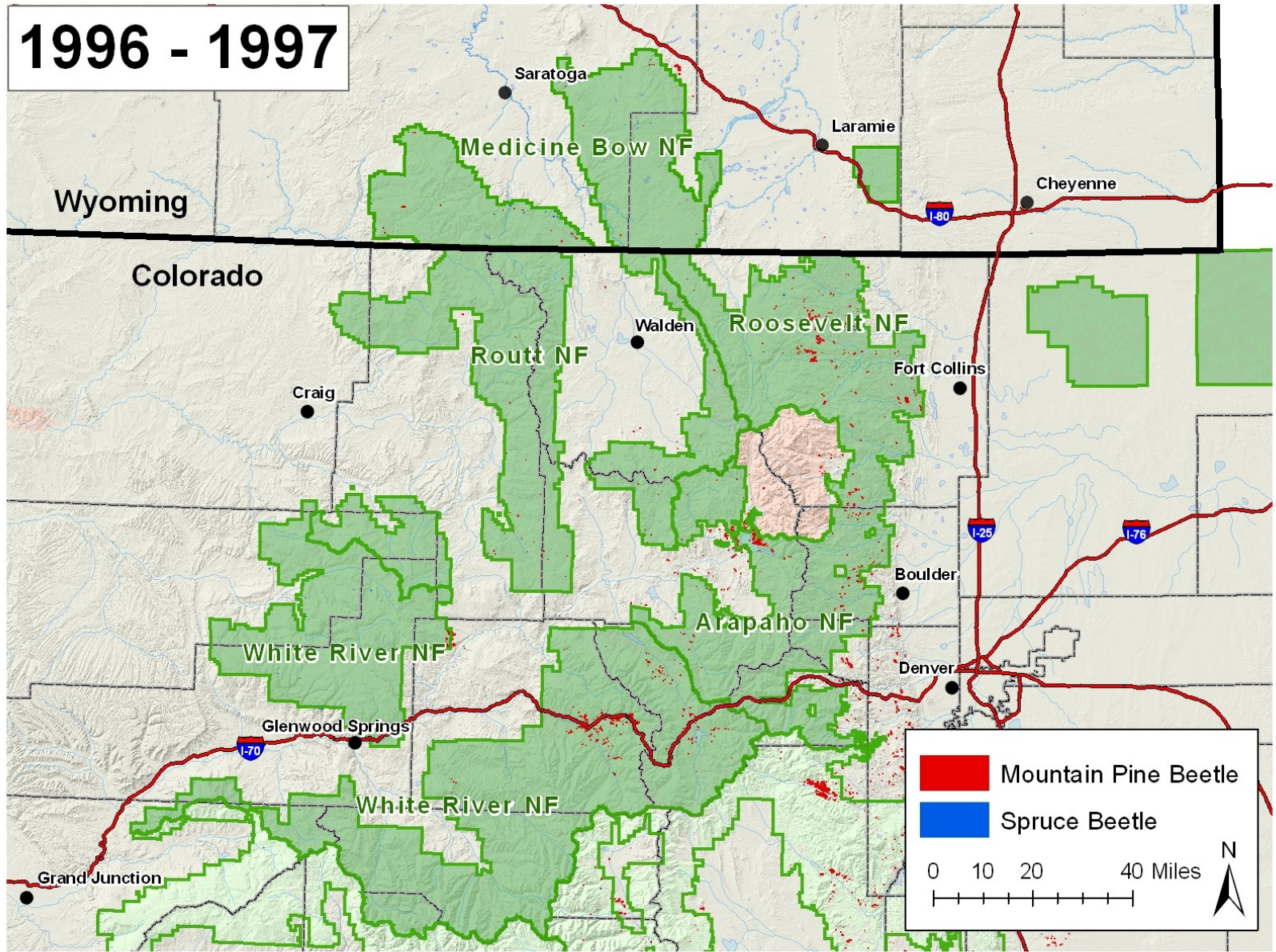
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1996 - 1997







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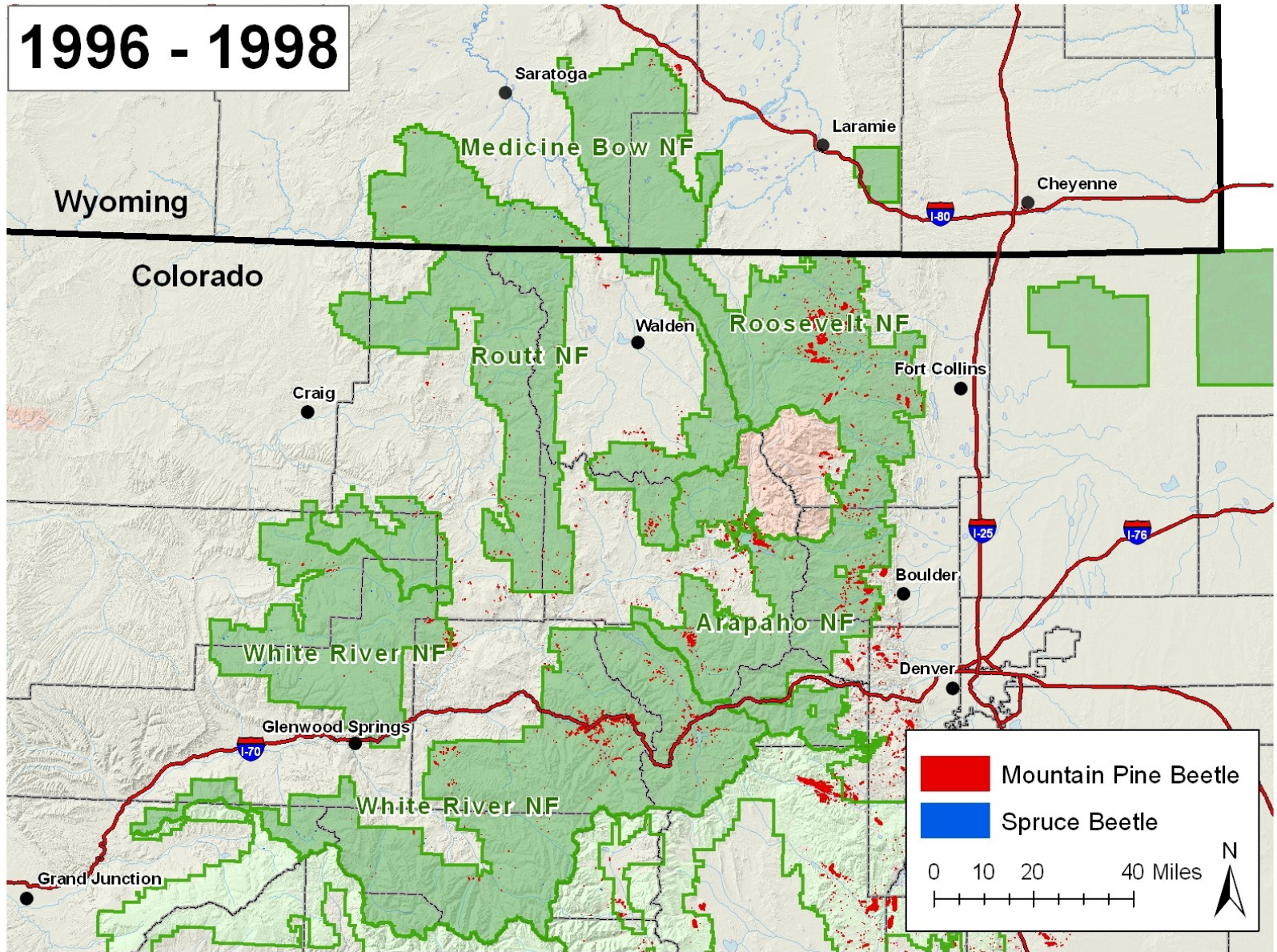
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1996 - 1998





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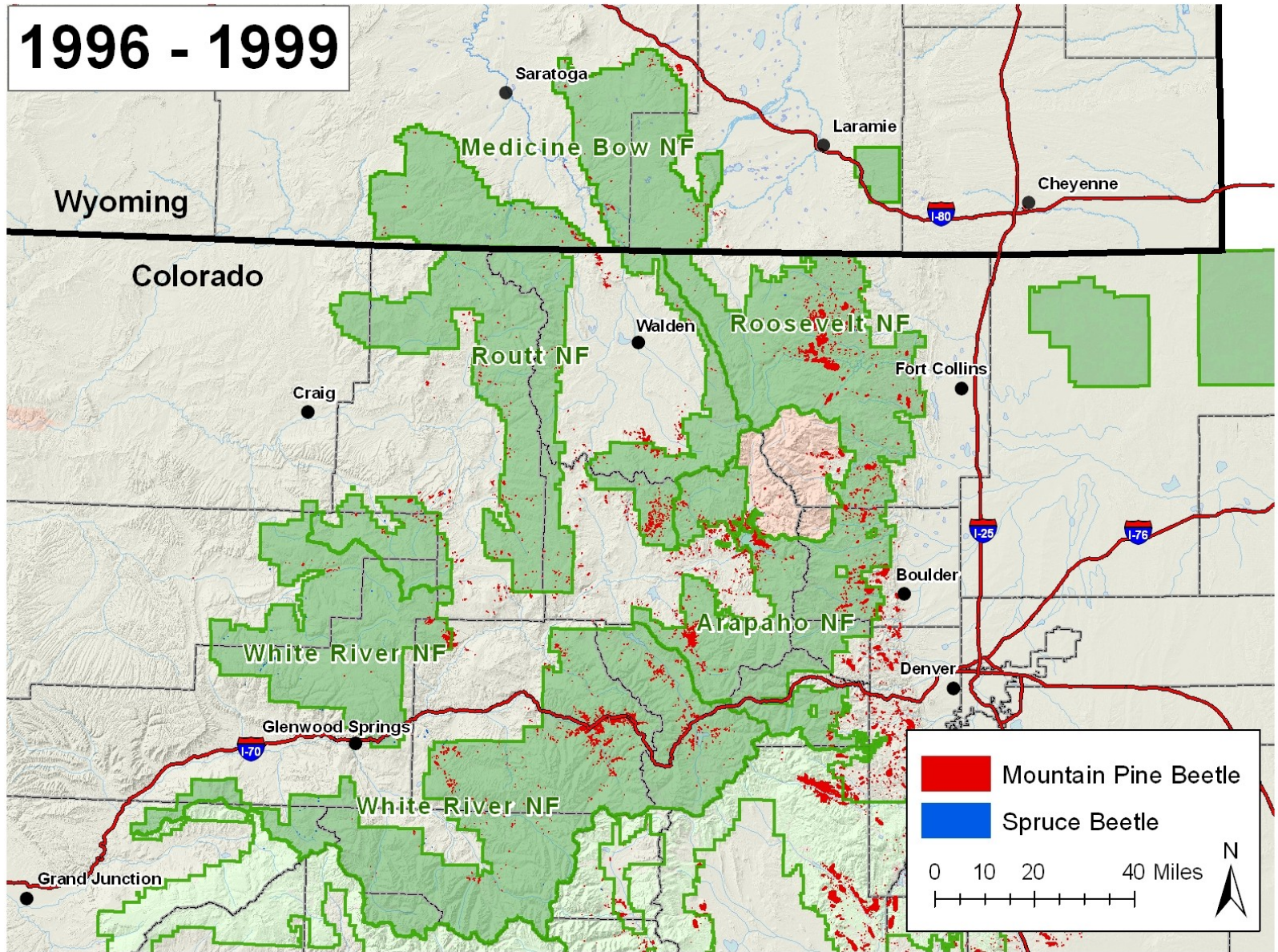
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1996 - 1999





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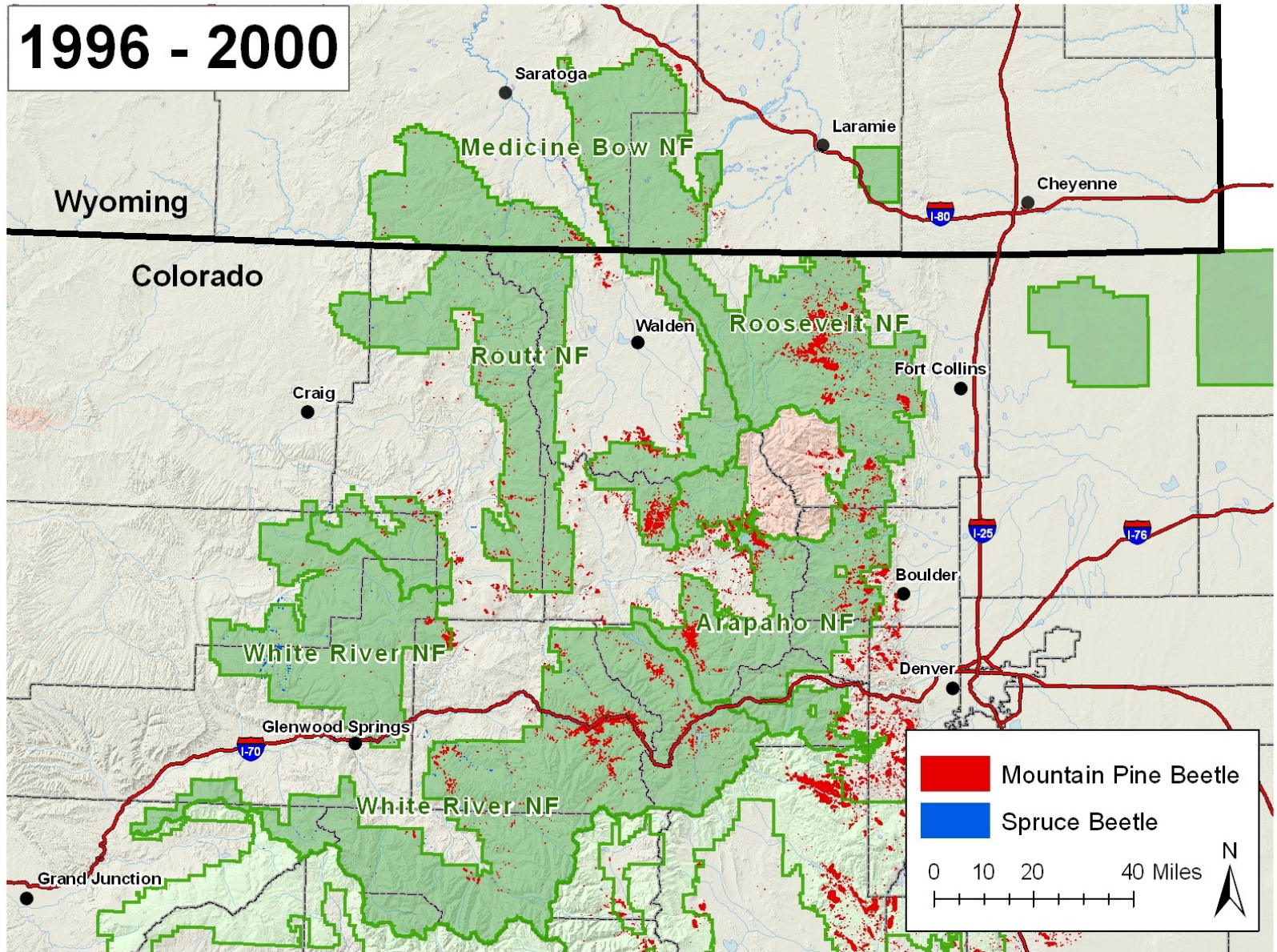
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1996 - 2000





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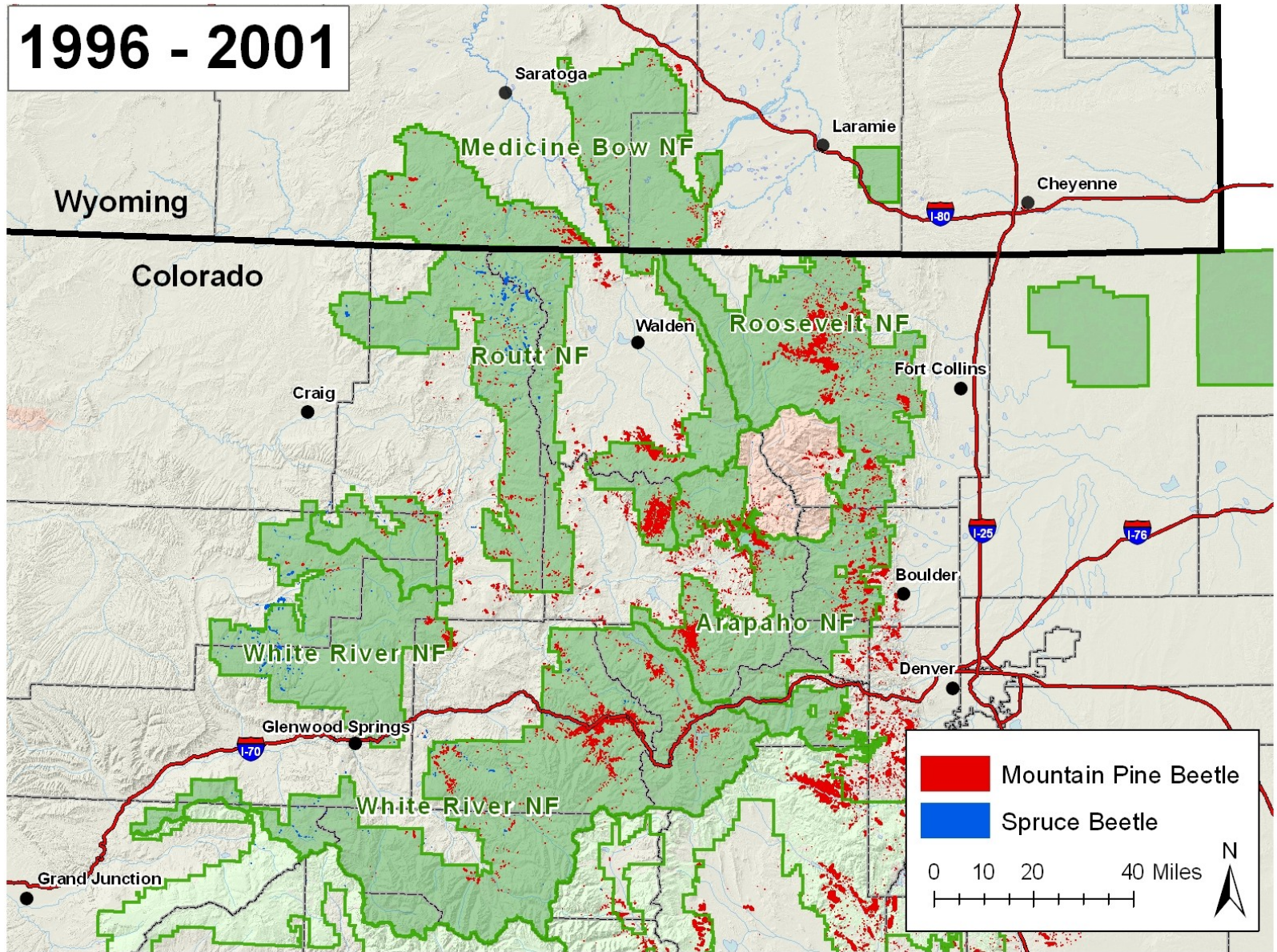
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1996 - 2001





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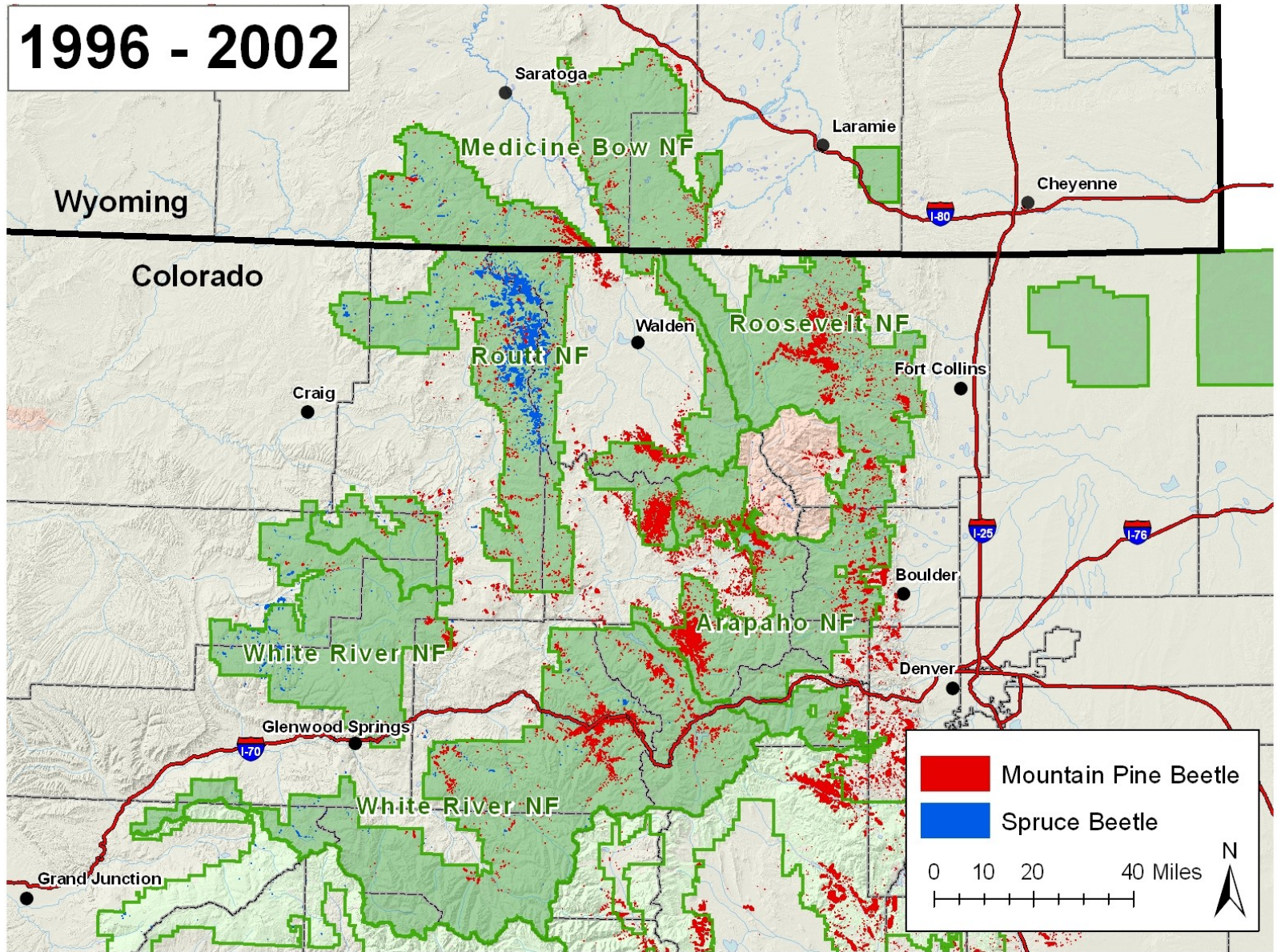
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1996 - 2002





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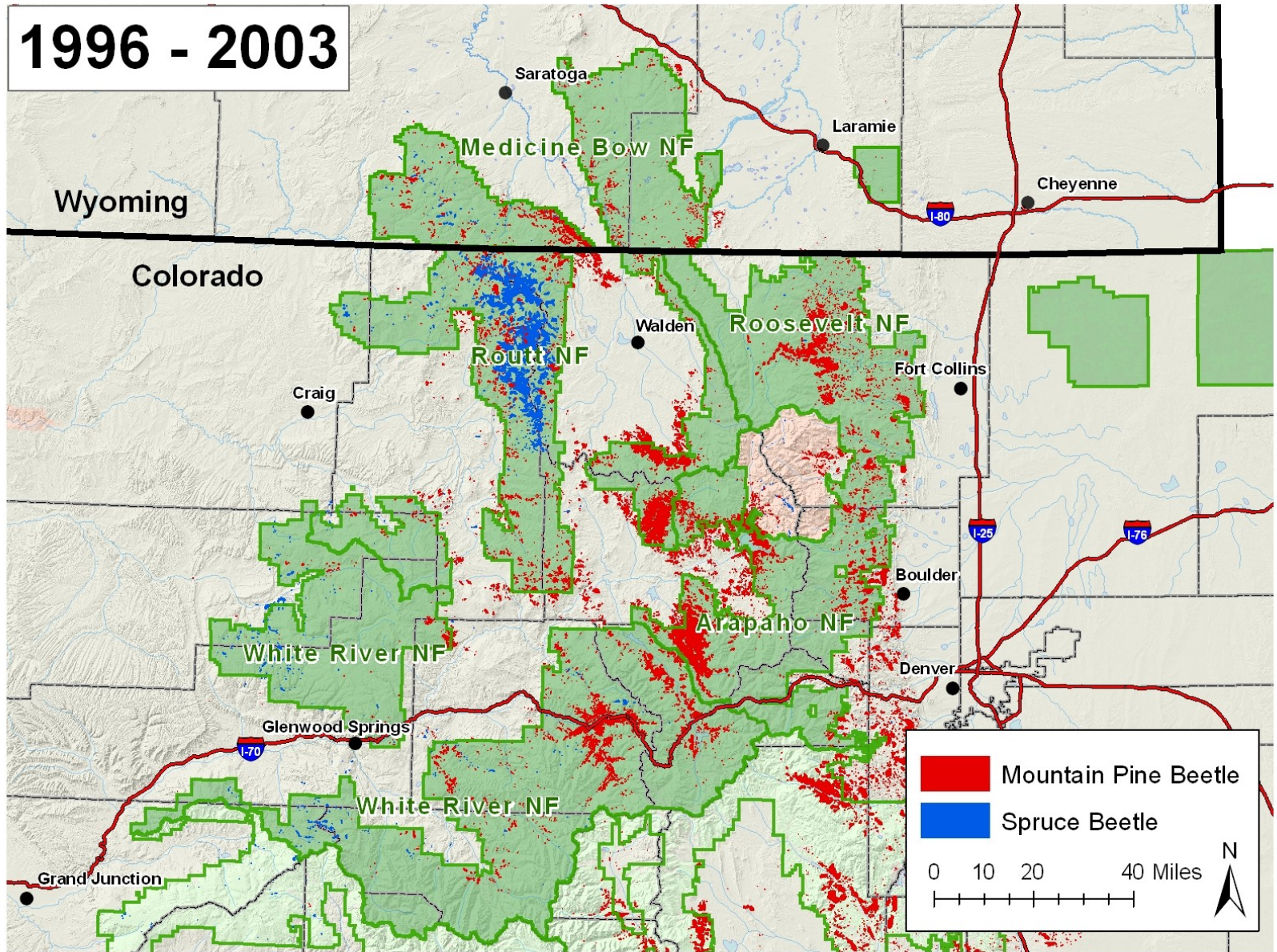
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1996 - 2003





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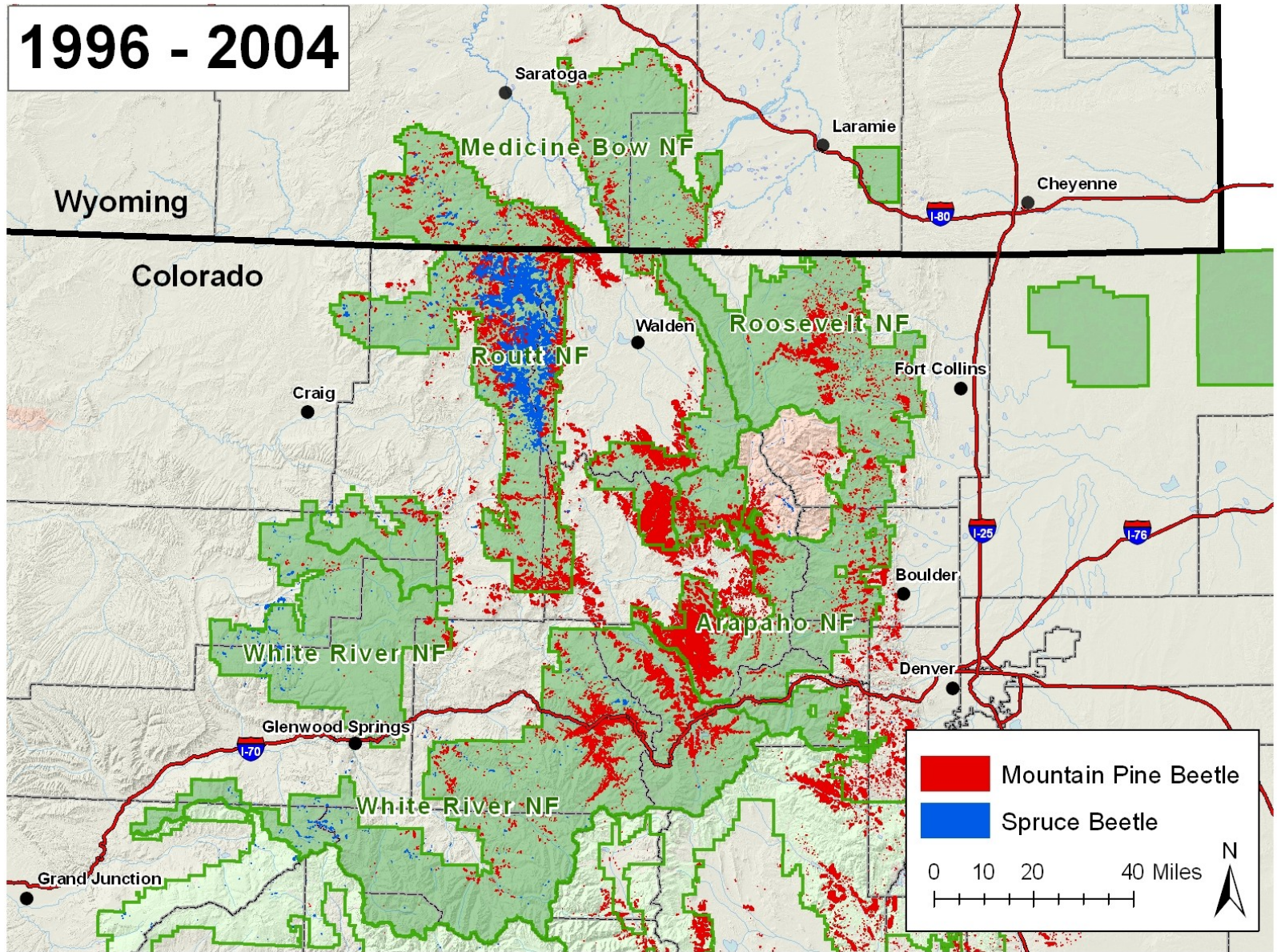
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1996 - 2004





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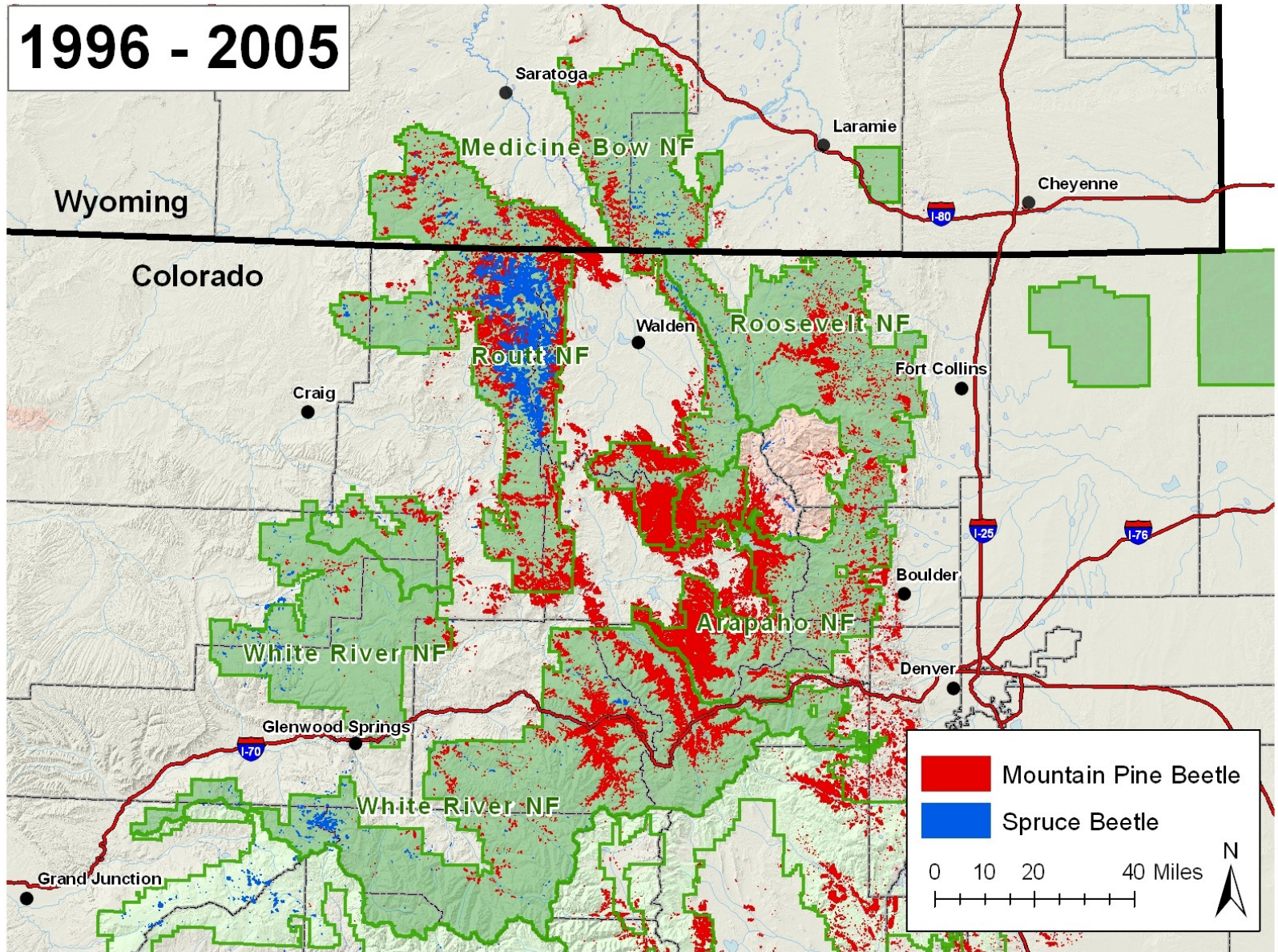
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1996 - 2005







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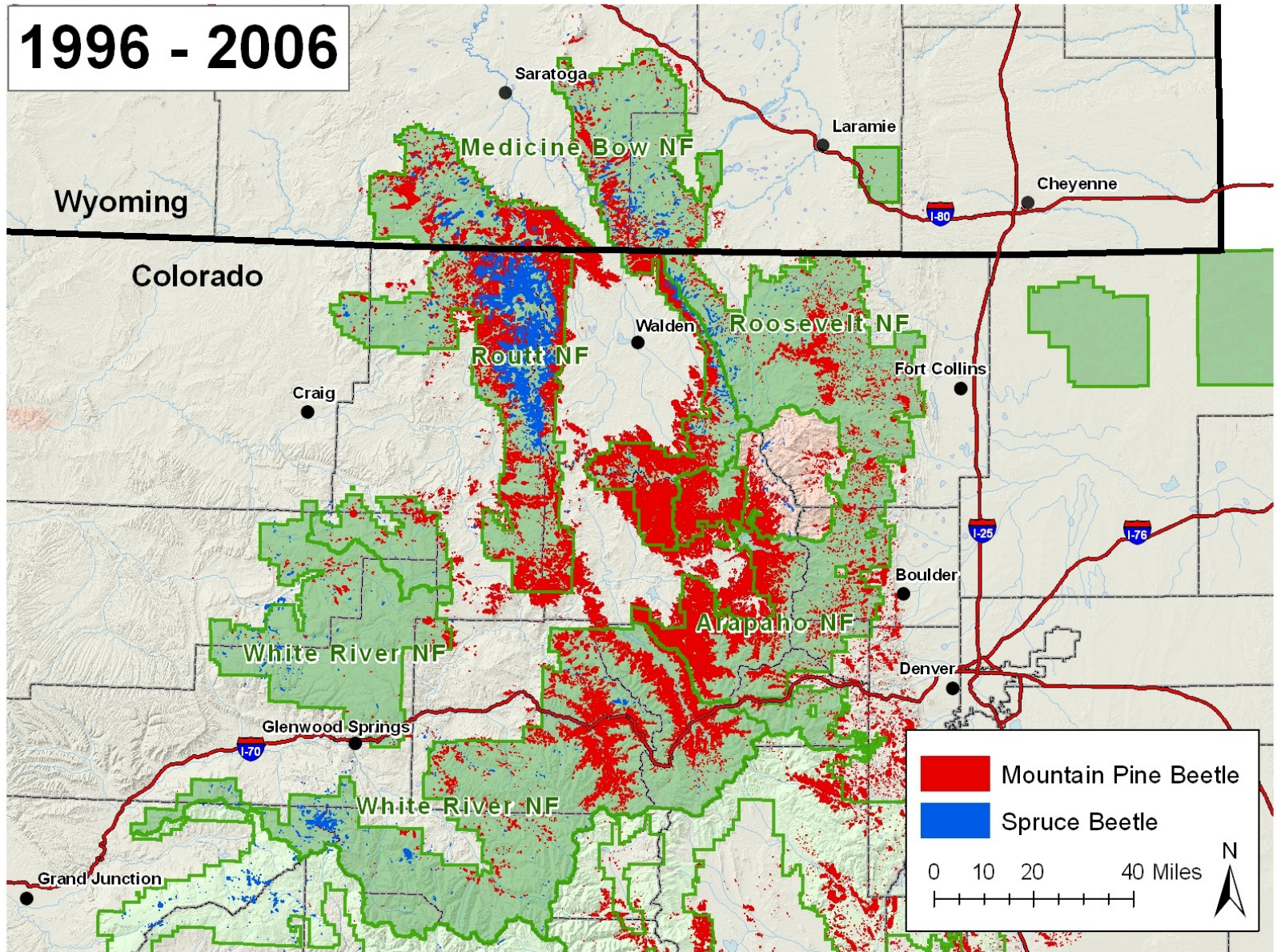
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1996 - 2006





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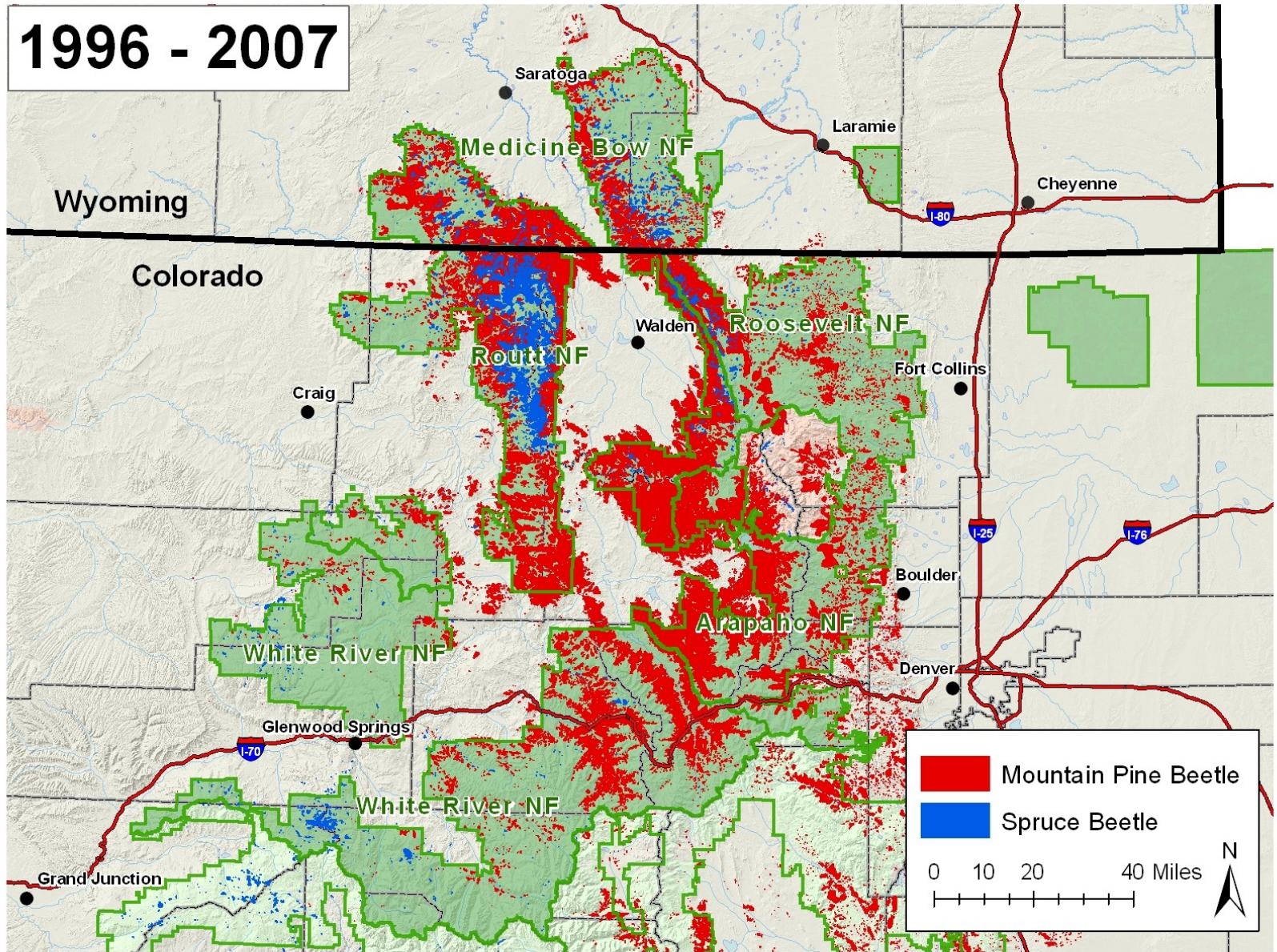
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1996 - 2007





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# Initial Beetle Kill Effects

- Good ground cover of plants and litter
- Little surface runoff or soil erosion
- Spring snowmelt flows increase for years
- Minor effects on channel form & habitats



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# Potential Later Effects

- Falling dead trees build up heavy fuels
- Severe burn → extreme soil heating
- Water-repellent soils → runoff & erosion
- Blown-out streams and choked reservoirs



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Mike Ryan (RMRS)





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*Mike Ryan (RMRS)*





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*Fred Patten*





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# Watershed Stewardship Actions

- **Short Run:** reduce fuels in staggered and anchored patches
- **Long Run:** patch cuts to renew mosaic of varied species and age classes
- **Concerns:** careful cure = roads (density, location, drainage); leave roughness



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# Treatments to Reduce the Threat of High-Severity Wildfire

- The threat of high-severity wildfires can be reduced by treating the abnormal accumulation of hazardous fuels.
- Mechanical treatments and prescribed fire are two basic types of treatments
- Mechanical treatments are those involving machines to reduce stand density and to remove lower tree limbs thereby reducing ladder fuels



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# Treatments to Reduce the Threat of High-Severity Wildfire (cont'd.)

- Prescribed fire is intentionally ignited fire under predetermined conditions to meet specific hazardous fuel reduction objectives.
- Mechanical and prescribed fire treatments are often used together, prescribed fire usually following mechanical treatments.



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# Landscape-Level Treatments

- Sometimes the scope of a hazardous fuel problem is so large that landscape-level treatments are necessary. E.g., mountain pine beetle infestations in northern Colorado.
- Landscape-level treatments require innovative solutions, collaboration among ownerships, and an adaptive management approach. They also present several legal, administrative, and funding challenges.



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# Landscape-Level Treatments (cont'd.)

- In the case of beetle-infested lodgepole pine forests in northern Colorado, the forests should be broken up into a mosaic of age classes and an enhanced mixture of native tree species through artful use of fuel breaks and application of a variety of silvicultural tools, including thinning, restoration forestry, timber harvesting, and seeding and planting to mitigate wildfire risk.



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# Three Agreements

- National Forest Foundation
  - \$250,000 for two year
  - matched by USFS
  - \$100,000 from Gates Family Foundation
- General Cooperation Agreement with USFS
- Funding Agreement with Pike San Isabel NF
  - NEPA Field work for 2 years
  - \$78,000 year 1
  - \$68,000 year 2
  - Twin Lakes/Mt Elbert Thinning
  - \$40,000



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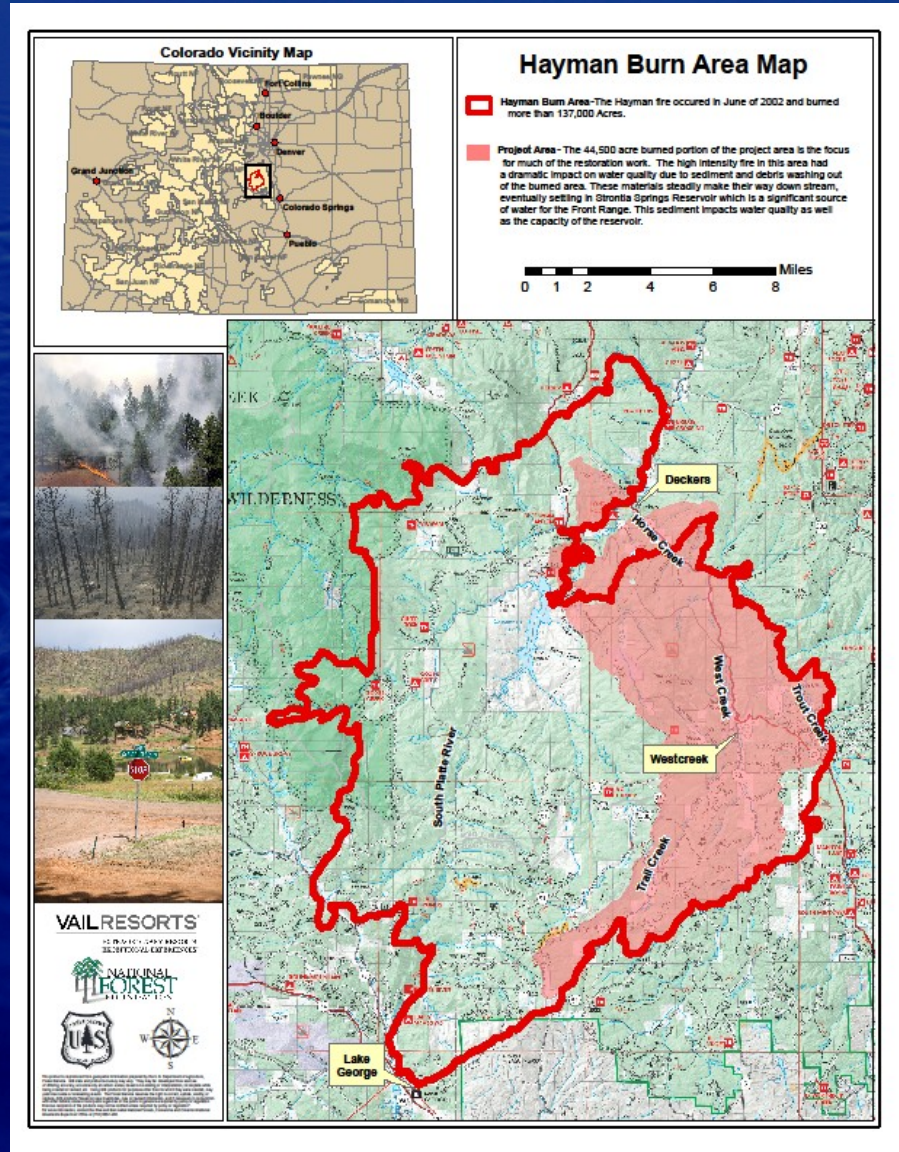
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# NFF Project Area



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- Camp Creek



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# USFS Treatment on Pike San Isabel

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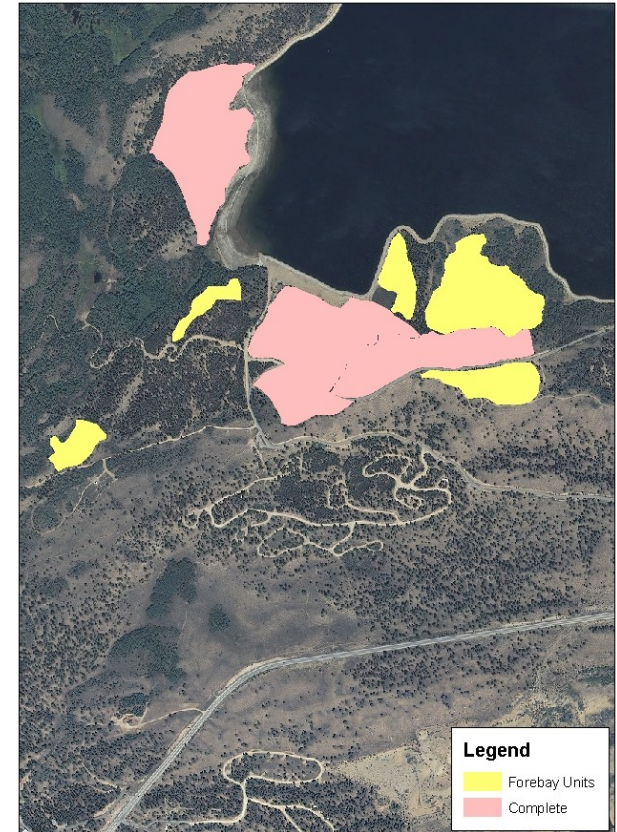
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PSICC, Leadville Ranger District  
Flume Creek Timber Sales - Map 3  
(south of Twin Lakes, CO)



PSICC, Leadville Ranger District  
Forebay Thinning Units - Map 2  
(adjacent to the Mt Elbert Forebay)



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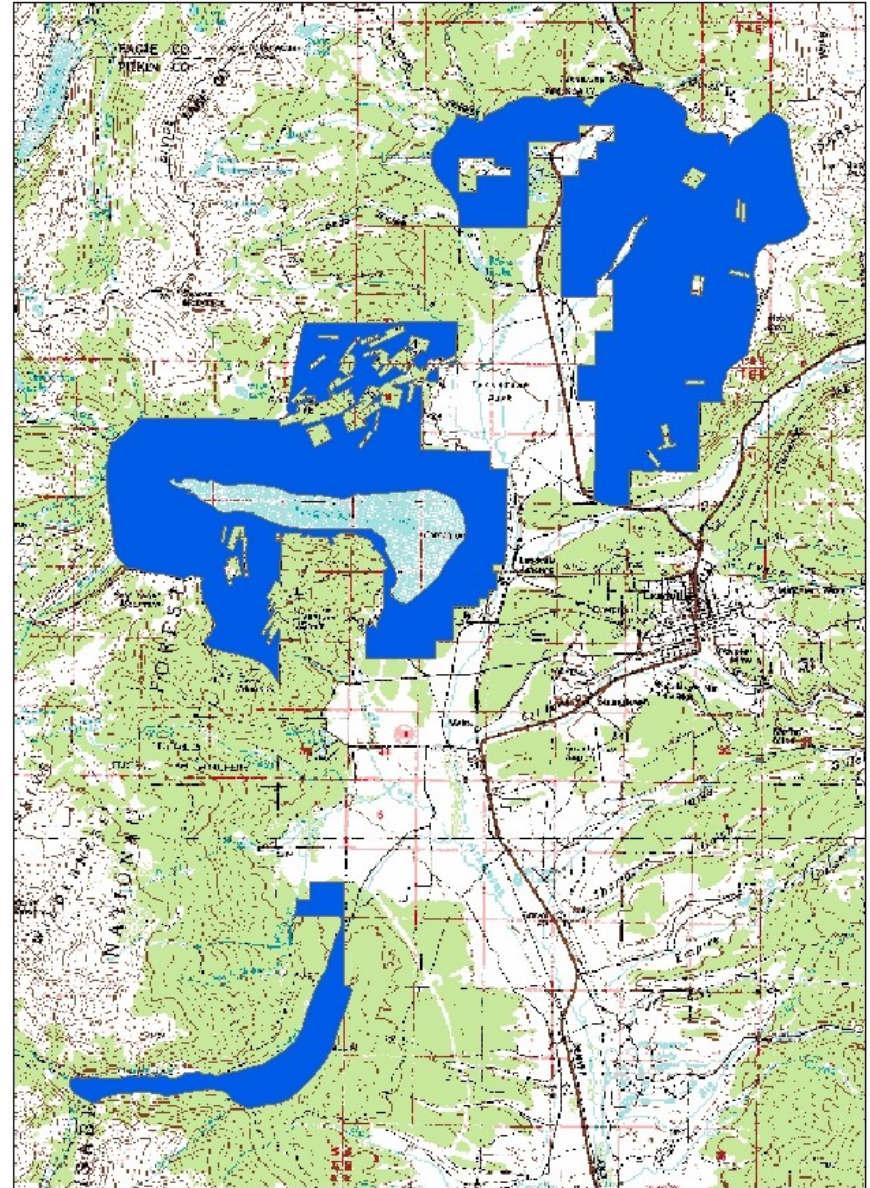
# NEPA Clearance Areas

# Leadville Ranger District



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PSICC, Leadville Ranger District  
Tennessee Creek NEPA - Map 1  
Project Boundary



L. Corbin  
05/04/11

0 0.5 1 2 3 4  
Miles

1:120,000





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# Front Range Partners

- Denver Water
  - 16.5 million over 5 years
- Colorado Springs Utilities
  - 200k for NEPA
  - 50k per year 10 years



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# The Future

- Continue Planning efforts with USFS, CSFS NFF and other water providers,
- Continue to work with groups like Front Range Fuels Treatment Partnership and Pine Bark Beetle Cooperative
- Look for ways to expand participation and funding



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# Conclusions (aka Parting Shots)

- We must engage a larger group of stakeholders to reach all Colorado residents.
- We need common messages to cultivate political support to address the issue of watershed management and protection.
- Watershed protection is a complex problem requires comprehensive planning to identify and prioritize projects.
- Is there a need for a paradigm shift with regards to Wilderness and Roadless designations?



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# Questions?

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Hayman Smoke seen from SE of Aurora

