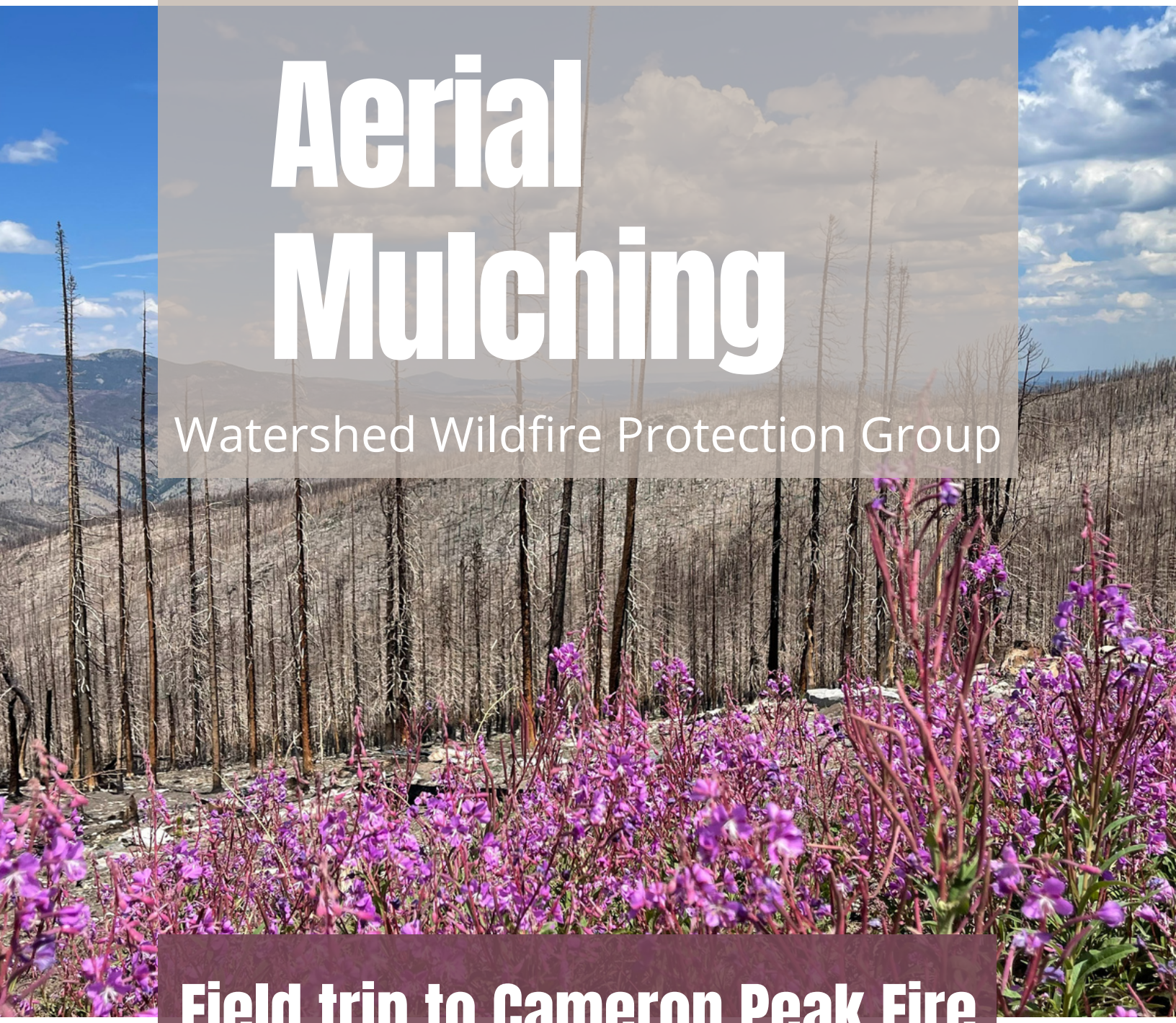


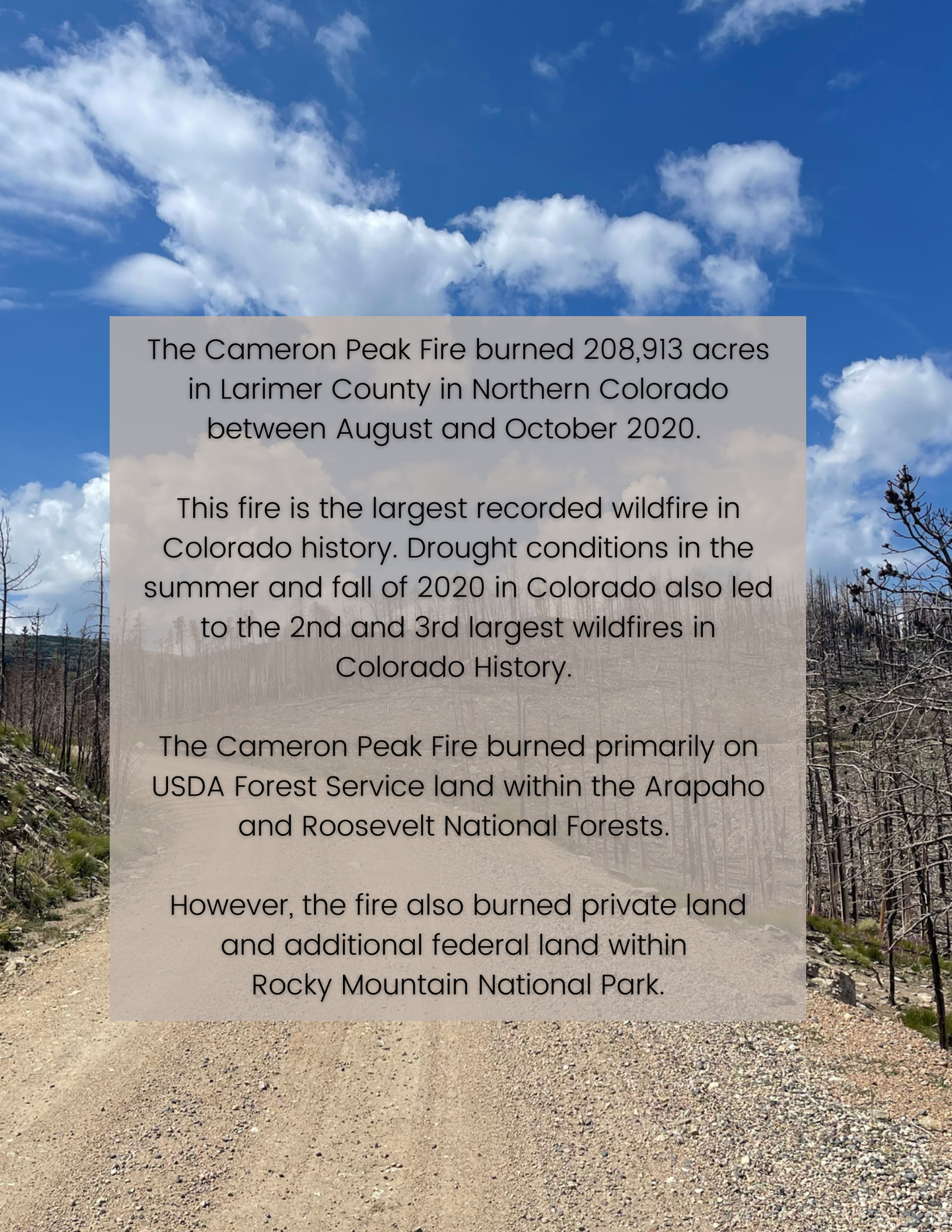
Aerial Mulching

Watershed Wildfire Protection Group

Field trip to Cameron Peak Fire

J.W. Associates and Coalition of the Poudre River Watershed invited partners to the Black Hollow Watershed to observe aerial mulching in a high severity burn area of the 2020 Cameron Peak Fire.

The focus of the aerial mulching is to protect the water quality of the watershed that flows through the burned area and restore the land.



The Cameron Peak Fire burned 208,913 acres in Larimer County in Northern Colorado between August and October 2020.

This fire is the largest recorded wildfire in Colorado history. Drought conditions in the summer and fall of 2020 in Colorado also led to the 2nd and 3rd largest wildfires in Colorado History.

The Cameron Peak Fire burned primarily on USDA Forest Service land within the Arapaho and Roosevelt National Forests.

However, the fire also burned private land and additional federal land within Rocky Mountain National Park.

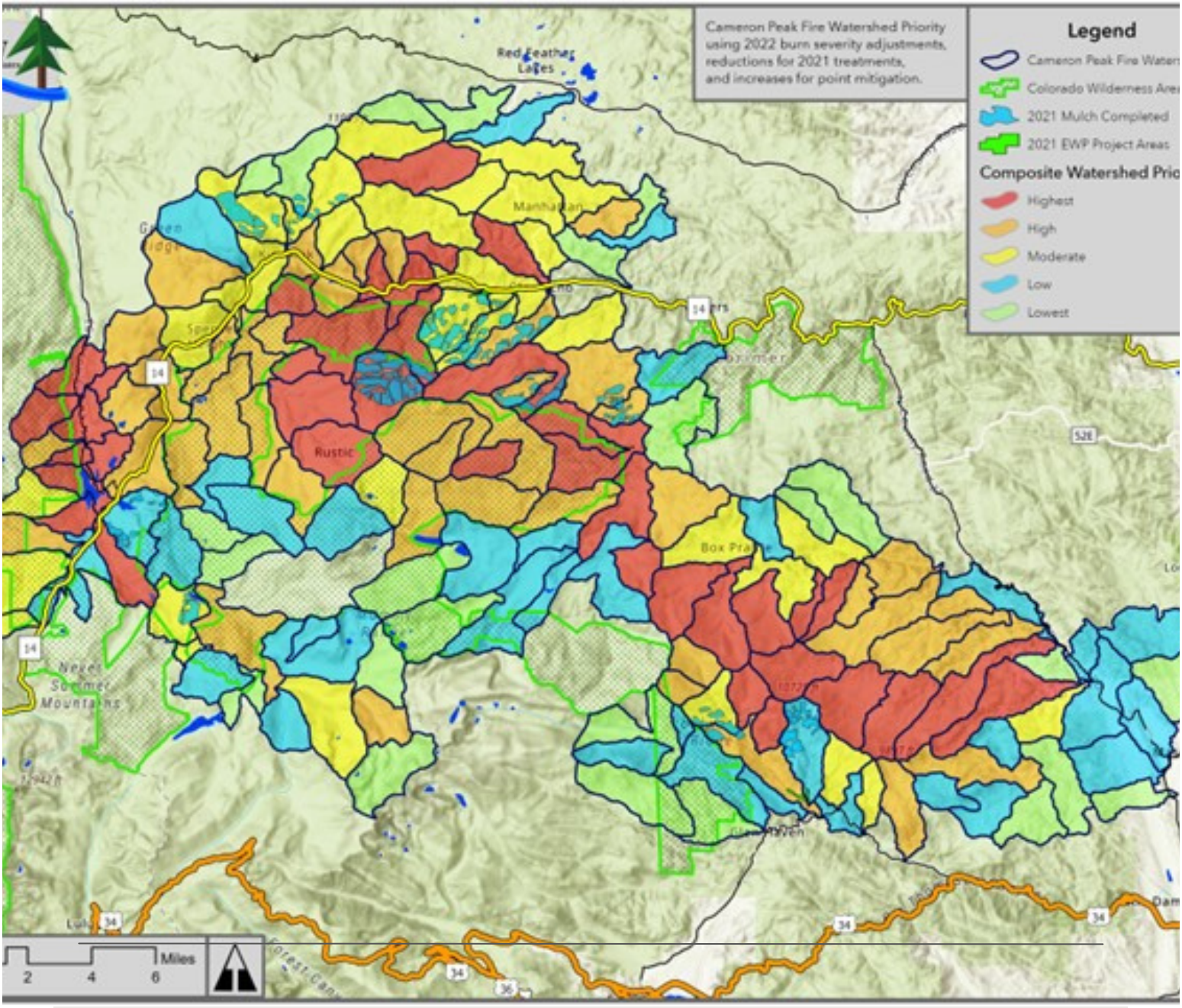
Burn Severity

One of the challenges with this fire was that it burned late into the fall and portions of the fire burned during a high wind event and was basically put out by snow. Evaluating the soil burn severity was a challenge because it is based on satellite data with ground verification. The analysis, planning, initial priorities, and treatments were based on burn severity mapping that was inaccurate in some locations. Field work during the summer of 2021 identified a number of locations that had higher burn severity than what was initially mapped.

The burn severity mapping was revised in the fall of 2021 using a dNBR (different normalized burn ratio) analysis. This approach uses before imagery and compares it to post-fire imagery. The analysis was completed by Colorado State University, Colorado Forest Restoration Institute and JW Associates. The results are shown on the attached map.

Watershed Prioritization

Watersheds were prioritized for post-fire treatment the components of the prioritization are shown on the chart. This prioritization was further revised in 2022 to include past mulch areas and areas identified for point protection projects.



POST-FIRE WATERSHED HAZARD ANALYSIS

Soil Burn Severity dNBR → Soil Burn Severity Map created with dNBR (Vorster and Woodward, CSU)

Hillslope Erosion CFRI → Gross Hillslope Erosion from Colorado Forest Restoration Institute (CFRI), re-modeled using dNBR

Debris Flow Hazard USGS → USGS Analysis of Debris Flow Hazard, re-modeled using dNBR

Roads Composite → Road density, Roads within 100m of streams, Road/stream crossings

Aerial Mulching

One of the main hillslope treatments that is being implemented in the Cameron Peak Fire burned area is aerial wood mulch.

Brad Piehl, from J.W. Associates, discusses mulching and logging operations and logistics with field trip group.

Brad Piehl and attendees discuss burn severity and the Black Hollow flood.

WHAT IS MULCHING AND WHY DO WE DO IT?

Adding mulch to the landscape after fire helps by:

1. Keeping the soil on the hillslopes, reduces erosion.
2. Adds texture to the soil and slows down water as it runs downhill, reducing peak flows, storm runoff, debris flow initiation.
3. Aids in vegetation recovery by keeping the soils moist and cool after rainfall – just like in your garden!
4. Using **wood mulch does not introduce weeds or invasives.**

Aerial wood mulch has been applied to over 5,000 acres in the Poudre Watershed in 2021, costing about $11.4 million. For 2022 over 3,600 acres are expected to be mulched in the Poudre Watershed. In the Big Thompson Watershed, over 700 acres were mulched in 2021 and 1,200 acres are planned for 2022.

Black Hollow Debris Flow

A rainstorm on July 20, 2021 caused a large debris flow in the Black Hollow watershed. Six homes were destroyed and 4 people were killed in the event. The field trip group viewed the Black Hollow watershed at the top of the watershed and at the bottom of the watershed where it enters the Poudre River.

Head of Black Hollow drainage system, where 1/5 inch of rain fell in ½ hour causing major damage downstream.

Road Hazards

Roads can present hazards in post-fire conditions. The photo shows the Cabin Creek road crossing in the East Troublesome Fire.

Even a little mulch can help stop erosion effects.

Close up of the landscape after an aerial mulching in a high priority area for future debris flows.

Many thanks to the Watershed Wildfire Protection Group, J.W. Associates, and Coalition for the Poudre River Watershed for inviting SRFSN on this fieldtrip and providing the information used in this document.

Southern Rockies
Fire Science Network