



# THOMPSON RIDGE FIRE BAER ASSESSMENT



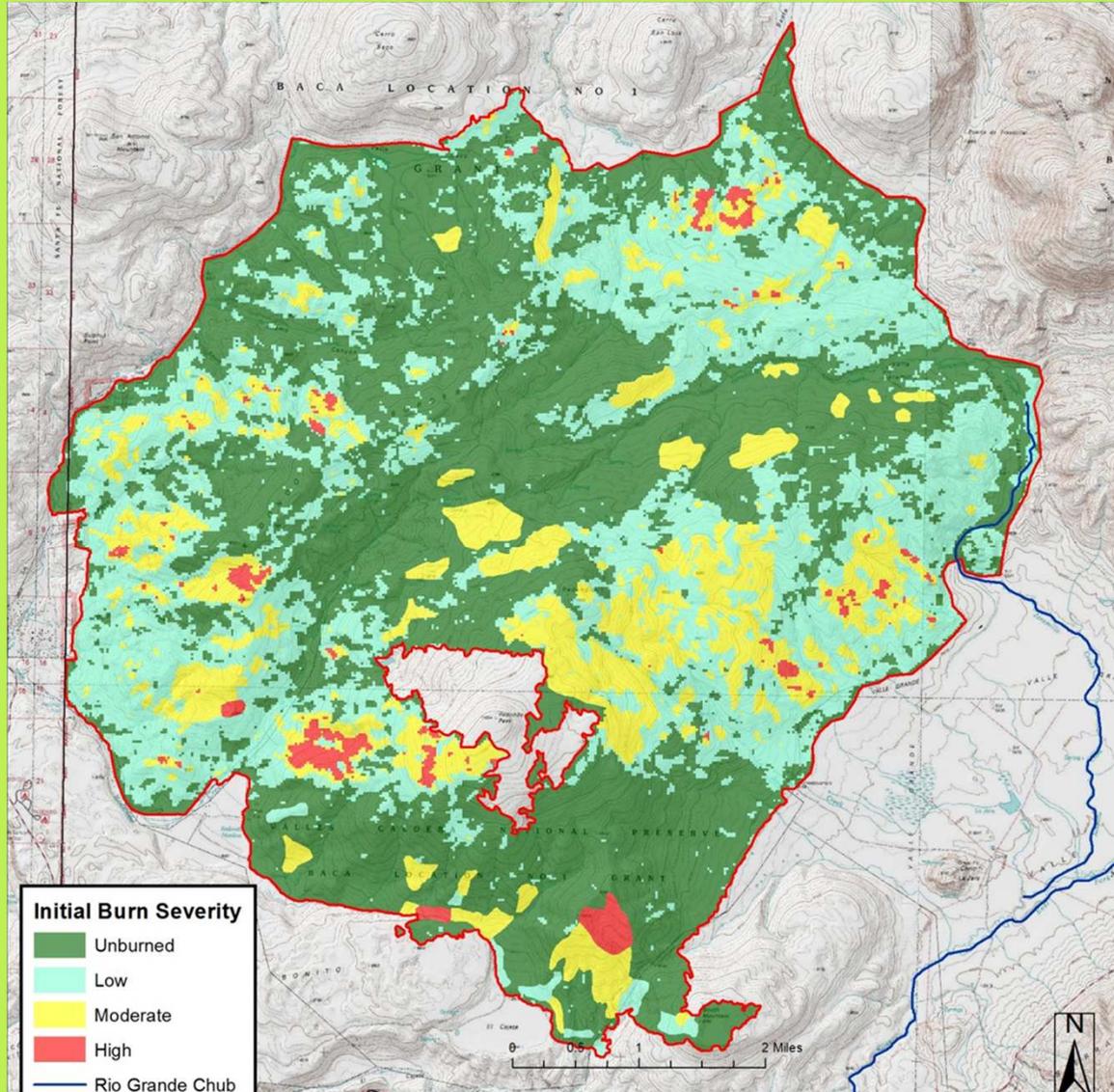
# BAER PROCESS



- **Burned Area Reflectance Classification (BARC) Map**
- **Burn Severity Map**
- **Evaluate Watershed Response**
- **Determine Threats to Values-at-Risk (VAR)**
  - **Human Life and Safety**
  - **Property**
  - **Natural/Cultural Resources**
- **Propose Treatments**
- **Develop BAER Report**
  - **7 Days After Containment**
- **Implementation**
- **Monitoring**

# BAER PROCESS

# BURN SEVERITY MAP





# VALUES AT RISK

- **HUMAN LIFE, HEALTH & SAFETY**
- **PROPERTY**
  - **Structures / Facilities**
  - **Roads / Trails**
- **NATURAL RESOURCES**
  - **Water Sources**
  - **Soils**
  - **Threatened & Endangered Species**
  - **Unique Botanical Resources**
    - **Spread of Noxious Weeds**
- **CULTURAL-HERITAGE RESOURCES**
  - **Pre-historic Resources**
  - **Historic Resources**

# HAZARD TREE ASSESSMENT





# HAZARD TREE ASSESSMENT

## Probability of Damage & Magnitude of Risk

- Focus on where the wildfire crossed areas of high human use and private property
- Roads, bus stops and routes, subdivision ingress/egress, administrative use areas



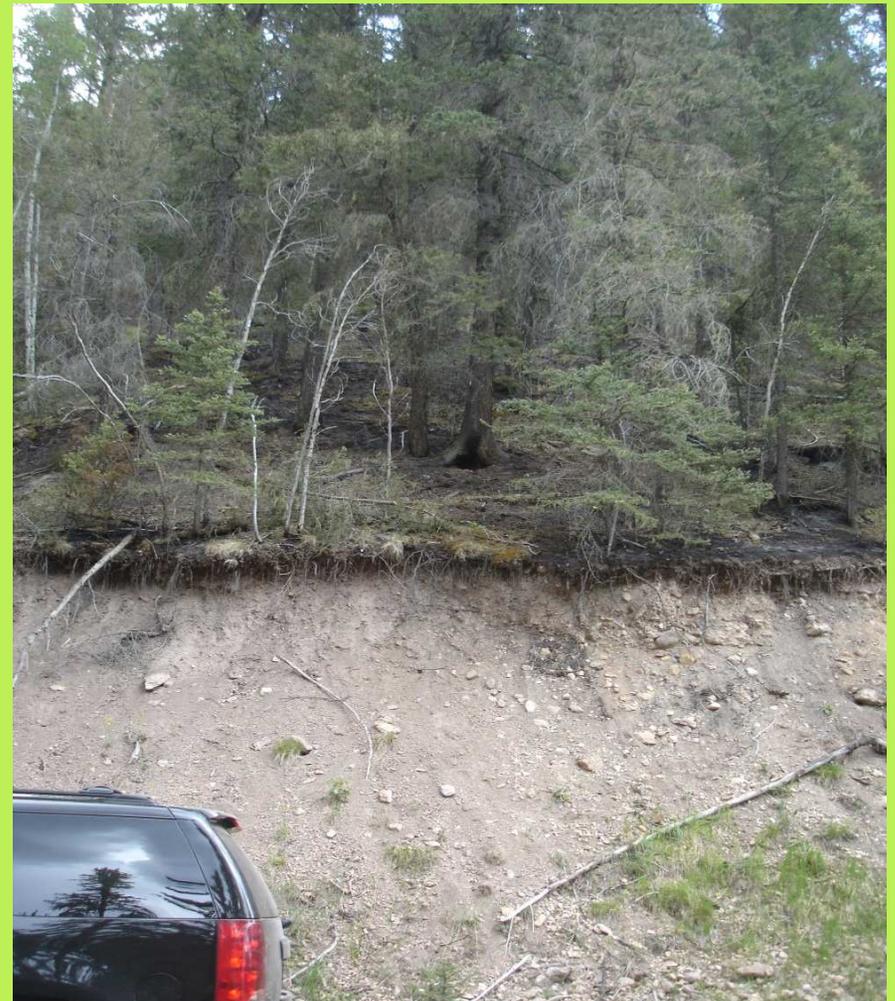


# HAZARD TREE ASSESSMENT

Bus Stop



Ingress/Egress





# HAZARD TREE ASSESSMENT

Private Boundary Fence

Administrative Use Area





# HAZARD TREE EXAMPLES





# HAZARD TREE EXAMPLES



# VALUES AT RISK

PROPERTY - Infrastructure



# ROADS



# VALUES AT RISK

PROPERTY - Infrastructure



# ROADS





# VALUES AT RISK

PROPERTY - Infrastructure



# ROADS

**VALUES AT RISK**

PROPERTY - Infrastructure



**ROADS**



**VALUES AT RISK** NATURAL RESOURCES – Water Resources



# **WATER SOURCES**





# SOILS

- Primary duties:
  - Verify the BARC Map via field reconnaissance and ground-truthing
  - Identify and determine soil burn severity trends in different burn severities derived from the BARC map
  - Sample in the areas that present the largest potential impacts to life, property, water quality, and soil productivity
  - Model erosion and sedimentation rates of soil loss, summarize findings, and prescribe mitigation treatments if modeled to be necessary



## FIELD OBSERVATIONS

- **Post-fire soil characteristics observed in the field:**
  - **Ground cover**
  - **Surface color and ash depth**
  - **Soil structure and root condition**
  - **Soil water repellency (hydrophobicity)**
  - **Soil burn severity**

# VALUES AT RISK

## NATURAL RESOURCES - SOILS



# FIELD OBSERVATIONS

Site ID	Date	Ash Color	Depth (cm)	Structure	Roots	Soil Hydrophob.	Soil Burn Severity Class	Veg Burn Intensity	Surface Rock (%)	Ground Cover (%)
1	6/17/2013	Gray	0.7	No Change	Intact	High	Moderate	High	> 50	< 20
2	6/17/2013	Gray	0.4	No Change	Intact	Low	Low	High	> 50	< 20
3	6/17/2013	Gray	0.3	No Change	Intact	High	Moderate	High	> 50	< 20
4	6/17/2013	Gray	0.7	No Change	Intact	Low	Low	Moderate	20 - 50	20 - 50
5	6/18/2013	White / Gray	1.5	No Change	Intact	Low	Low	Moderate	> 50	20 - 50
6	6/18/2013	White / Gray	3.5	No Change	Intact	Low	Low	Moderate	> 50	20 - 50
7	6/18/2013	White / Gray	1	No Change	Intact	Moderate	Low	Moderate	> 50	20 - 50
8	6/18/2013	Gray / Black / White	2	No Change	Intact	Low	Low	High	> 50	< 20
9	6/18/2013	Gray / Black / White	0.5	No Change	Intact	Low	Low	Low	20 - 50	> 50
10	6/19/2013	Dark Gray / Black	2	No Change	Intact	Low	Low	High	> 50	< 20
11	6/19/2013	Dark Gray	1.5	No Change	Intact	Low	Low	Moderate	> 50	< 20
12	6/19/2013	White / Gray	3	No Change	Intact	Low	Low	High	> 50	< 20
13	6/19/2013	Light Gray	0.3	No Change	Intact	Low	Low	Moderate	> 50	< 20

# VALUES AT RISK

NATURAL RESOURCES - SOILS



## HIGH SEVERITY BURN



VALUES AT RISK

NATURAL RESOURCES - SOILS



# MODERATE SEVERITY BURN



# VALUES AT RISK

NATURAL RESOURCES - SOILS



## LOW SEVERITY BURN





# SUMMARY

- Upon the consensus of the BAER team and with our findings, we feel the initial BARC map has been adequately verified. Fieldwork is completed and datasets are being prepared for erosion modeling.
- Our field observations in areas of concern for values at risk indicate that in the moderate and high burns, effective organic ground cover is less than 20 percent. Inevitably, this will exacerbate soil loss tendencies compared to pre-fire conditions as well as affect nutrient cycling for soil productivity.
- Overall, soil hydrophobicity has not been significantly affected in areas of concern. A couple severely burned sites exhibited some high hydrophobicity, but most sites showed low hydrophobicity tendencies. Generally, forested ecosystems exhibit natural hydrophobicity.



## SUMMARY

- The mineral soil has responded well in some ways. Fire effects across all burn severities appear to have had minimal effect on soil surface stability.
- Soil structure has not changed and roots are intact. Granular soil structure at the surface fosters good infiltration and root establishment. Hearty root structure aids in good infiltration and keeps the soil intact. These are also positive indicators of potential soil productivity for re-establishment of vegetation.
- Also, surface rock fragment amounts were over 50% on most sites. Surface rock fragments are a component of effective ground cover and contribute to soil loss protection against rain drop impaction and overland water-flow.

# VALUES AT RISK

NATURAL RESOURCES - Wildlife



# WILDLIFE



Photo courtesy of the Valles Caldera Preserve

**VALUES AT RISK**

NATURAL RESOURCES - Wildlife



# Effects to Wildlife Habitat





## FISHERIES

### Fisheries – Brown & Rainbow trout

- Jaramillo Creek
- San Antonio
- East Fork Jemez River

### Rio Grande Chub – East Fork Jemez & Jaramillo Creek



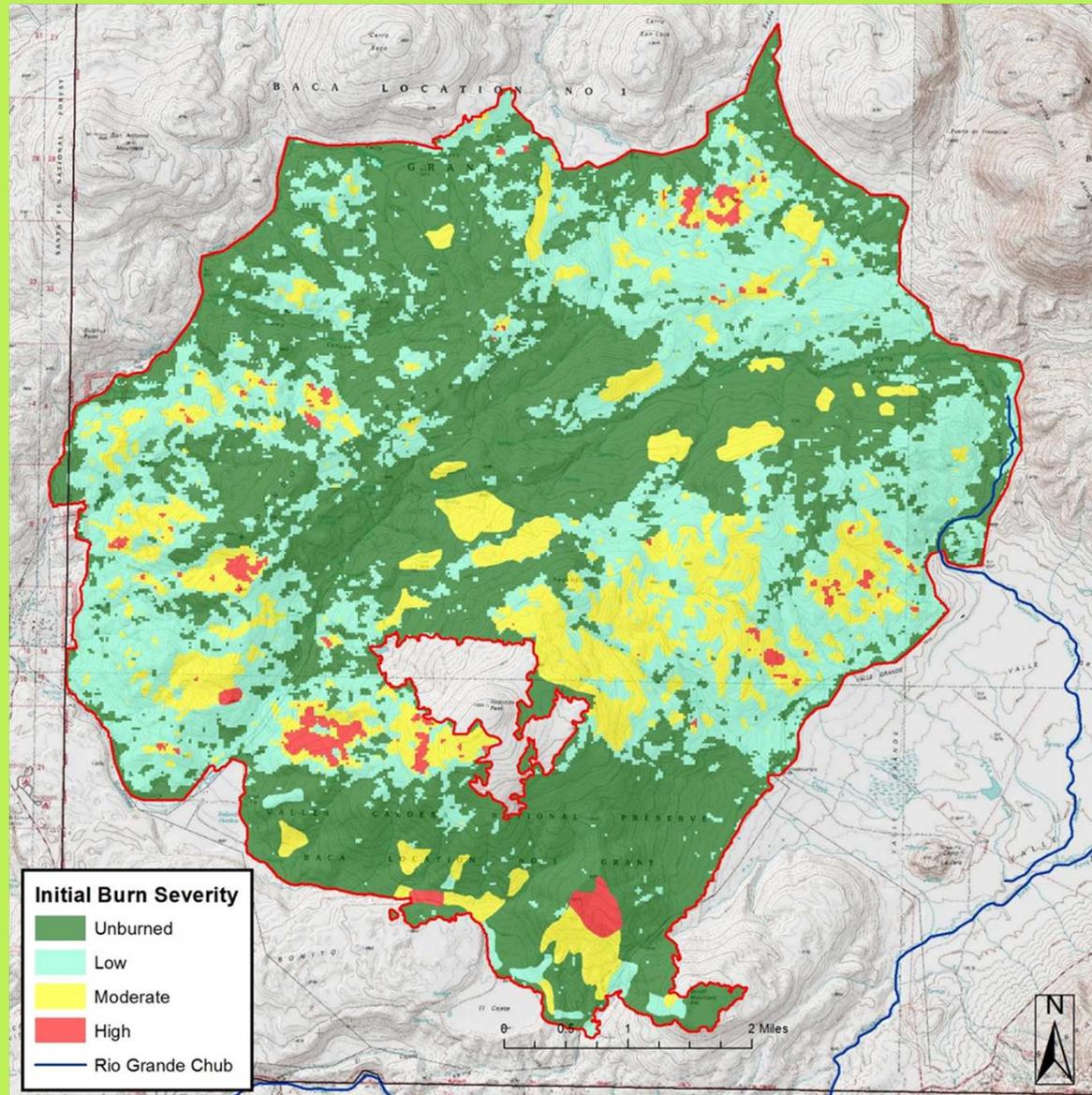
Photo by Chad Thomas, Texas State University, San Marcos



Photo by Zachary Shattuck, Texas State University, San Marcos

# VALUES AT RISK

## NATURAL RESOURCES - Wildlife









**VALUES AT RISK**

NATURAL RESOURCES -Unique  
Botanical Resources



# **UNIQUE BOTANICAL RESOURCES**

- **Spread of Noxious Weeds**



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# VALUES AT RISK

CULTURAL – HERITAGE RESOURCES



## CULTURAL RESOURCES SITE - UNBURNED



**VALUES AT RISK**

CULTURAL – HERITAGE RESOURCES



# HISTORIC BUILDING



# VALUES AT RISK

CULTURAL – HERITAGE RESOURCES



## LIGHTLY BURNED



**VALUES AT RISK**

CULTURAL – HERITAGE RESOURCES



# **LIGHTLY BURNED OVERVIEW**



# VALUES AT RISK

CULTURAL – HERITAGE RESOURCES



## LOW TO MODERATE SEVERITY



**VALUES AT RISK**

CULTURAL – HERITAGE RESOURCES



**MODERATE TO HIGH SEVERITY**



**VALUES AT RISK**

CULTURAL – HERITAGE RESOURCES



# **POST-FIRE TWO YEARS**



# VALUES AT RISK

CULTURAL – HERITAGE RESOURCES



# SCORCHED



**VALUES AT RISK**

CULTURAL – HERITAGE RESOURCES



# UNBURNED OVERVIEW



# QUESTIONS?

