Fuel Mitigation Grant Program

Bitter Root RC&D

Assessment of Past Fuel Treatment effects on the 2016 Roaring Lion Fire Behavior

Purpose of the Grant or Any Fuel Mitigation Program

Reduce Fire Risk
to protect Life, Values at Risk, Property
& Natural Resources

This is what we want to prevent!

Secondary Goal: Improve Forest Health

To increase the vigor and resiliency of our Forests

This is what we want to try to prevent!

Mtn Pine Beetle Epidemic – McDonald Pass

The Wildland Fire Problem

Montana has one of the most severe wildland fire problems in the world because of:

- Population,
- Vegetation,
- Topography, and
- Climate

In wildland/urban interface areas, wildfire isn't a matter of "IF," it's a matter of "WHEN."

The Wildland Fire Problem

Between 2000 and 2014 Montana Wildfires:

- Burned over 5 Million Acres
- Destroyed over 1100 Homes
- At a Cost of $1.2 Billion

Federal Firefighting Costs (Suppression Only)

Year	Fires	Acres	Forest Service	DOI Agencies	Total
1985	82,591	2,896,147	$161,505,000	$78,438,000	$239,943,000
1986	85,907	2,719,162	$111,625,000	$91,153,000	$202,778,000
1987	71,300	2,447,296	$253,657,000	$81,452,000	$335,109,000
1988	72,750	5,009,290	$429,609,000	$149,317,000	$578,926,000
1989	48,949	1,827,310	$331,672,000	$168,115,000	$499,787,000
1990	66,481	4,621,621	$253,700,000	$144,252,000	$397,952,000
1991	75,754	2,953,578	$132,300,000	$73,820,000	$206,120,000
1992	87,394	2,069,929	$290,300,000	$87,166,000	$377,466,000
1993	58,810	1,797,574	$184,000,000	$56,436,000	$240,436,000
1994	79,107	4,073,579	$757,200,000	$161,135,000	$918,335,000
1995	82,234	1,840,546	$367,000,000	$110,126,000	$477,126,000
1996	96,363	6,065,998	$547,500,000	$153,683,000	$701,183,000
1997	66,196	2,856,959	$179,100,000	$105,048,000	$284,148,000
1998	81,043	1,329,704	$306,800,000	$109,904,000	$416,704,000
1999	92,487	5,626,093	$361,100,000	$154,416,000	$515,516,000
2000	92,250	7,383,493	$1,076,000,000	$334,802,000	$1,410,802,000
2001	84,079	3,570,911	$683,122,000	$269,574,000	$952,696,000
2002	73,457	7,184,712	$1,279,000,000	$395,040,000	$1,674,040,000
2003	63,629	3,960,842	$1,023,500,000	$303,638,000	$1,327,138,000
2004	65,461	8,097,880	$726,000,000	$281,244,000	$1,007,244,000
2005	66,753	8,689,389	$524,900,000	$294,054,000	$818,954,000
2006	96,385	9,873,745	$1,280,419,000	$424,058,000	$1,704,477,000
2007	85,705	9,328,045	$1,149,654,000	$470,491,000	$1,620,145,000
2008	78,979	5,292,468	$1,193,073,000	$392,783,000	$1,585,856,000
2009	78,792	5,921,786	$702,111,000	$218,418,000	$920,529,000
2010	71,971	3,422,724	$578,285,000	$231,214,000	$809,499,000
2011	74,126	8,711,367	$1,055,736,000	$318,789,000	$1,374,525,000
2012	67,774	9,326,238	$1,436,614,000	$465,832,000	$1,902,446,000
2013	47,579	4,319,546	$1,341,735,000	$399,199,000	$1,740,934,000
2014	63,212	3,595,613	$1,195,955,000	$326,194,000	$1,522,149,000
2015	68,151	10,125,149	$1,713,000,000	$417,543,000	$2,130,543,000
2016	67,595	5,503,538	$1,603,806,000	$371,739,000	$1,975,545,000

There are 3 factors that influence the behavior of a wildfire:

FUELS
WEATHER
TOPOGRAPHY

FUELS is the only factor that we have control over. Reducing the fuels on, in and around your home & property, increases the probability your home will survive a wildfire.

Surface Fire

Fire that burns loose debris on the surface, which includes dead branches, leaves, and low vegetation.

Active Crown Fire

A fire in which a solid flame develops in the crowns of trees, but the surface and crown phases advance as a linked unit dependent on each other.

Passive Crown Fire

A fire in the crowns of trees in which trees or groups of trees torch, ignited by the passing front of the fire. The torching trees reinforce the spread rate, but these fires are not basically different from surface fires.

Smoldering &/or Creeping Fire

Fire burning with a low flame and spreading slowly.

An Ignition under the wrong conditions, time, & location at High Fire Risk = THIS

All factors (Temps, RH, wind, terrain) were in perfect alignment on the 2016 Roaring Lion Fire

Burgdorf Junction Fire - 2000

Results of fuel mitigation

Hidden Valley - Florence

Painted Rocks Area – Ravalli Co.

Bear Creek – Ravalli County - Before

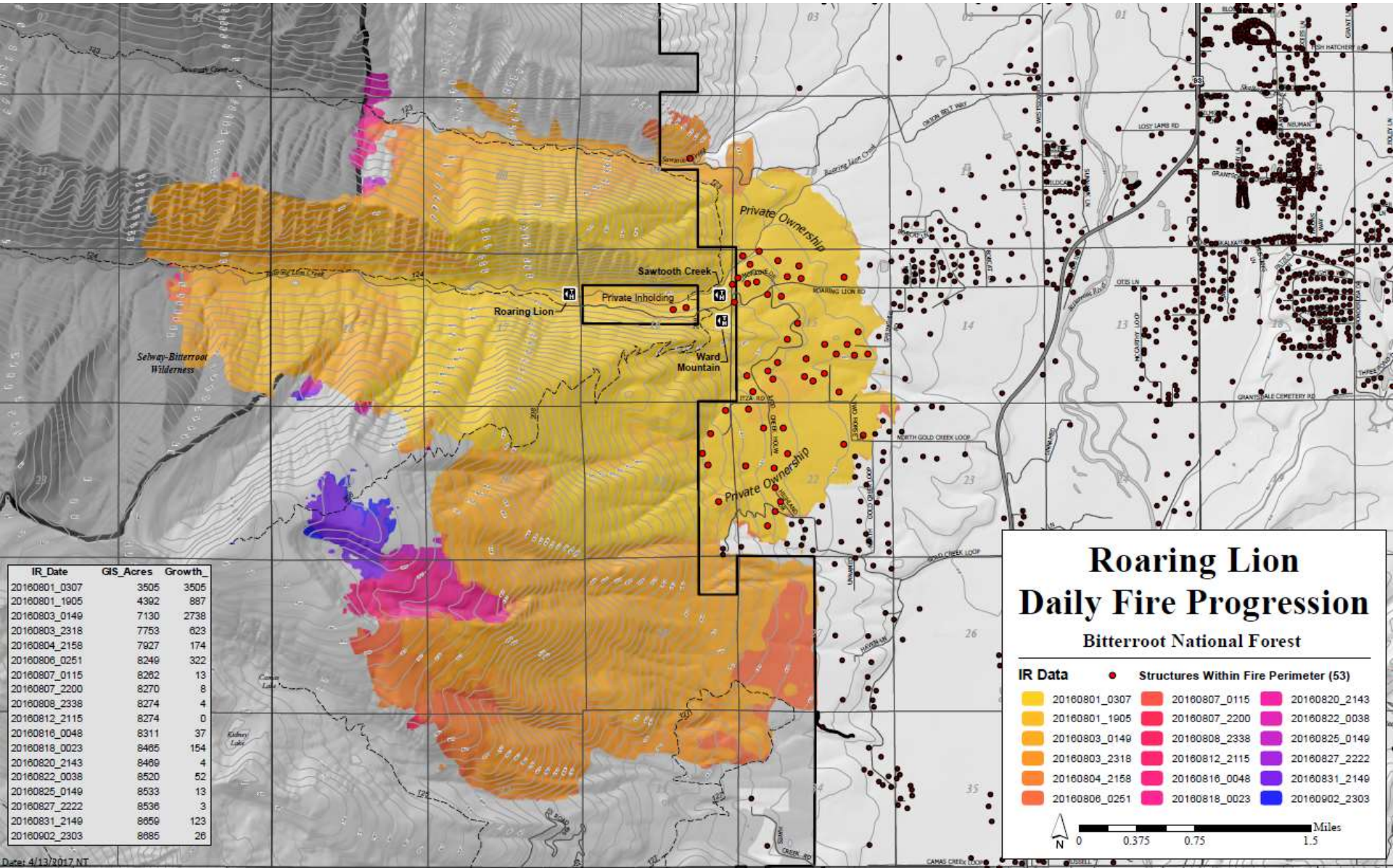
Bear Creek – Ravalli County - After

We want to prevent or reduce damage to lives, property, values at risk

Roaring Lion Fire – Bitterroot N.F.

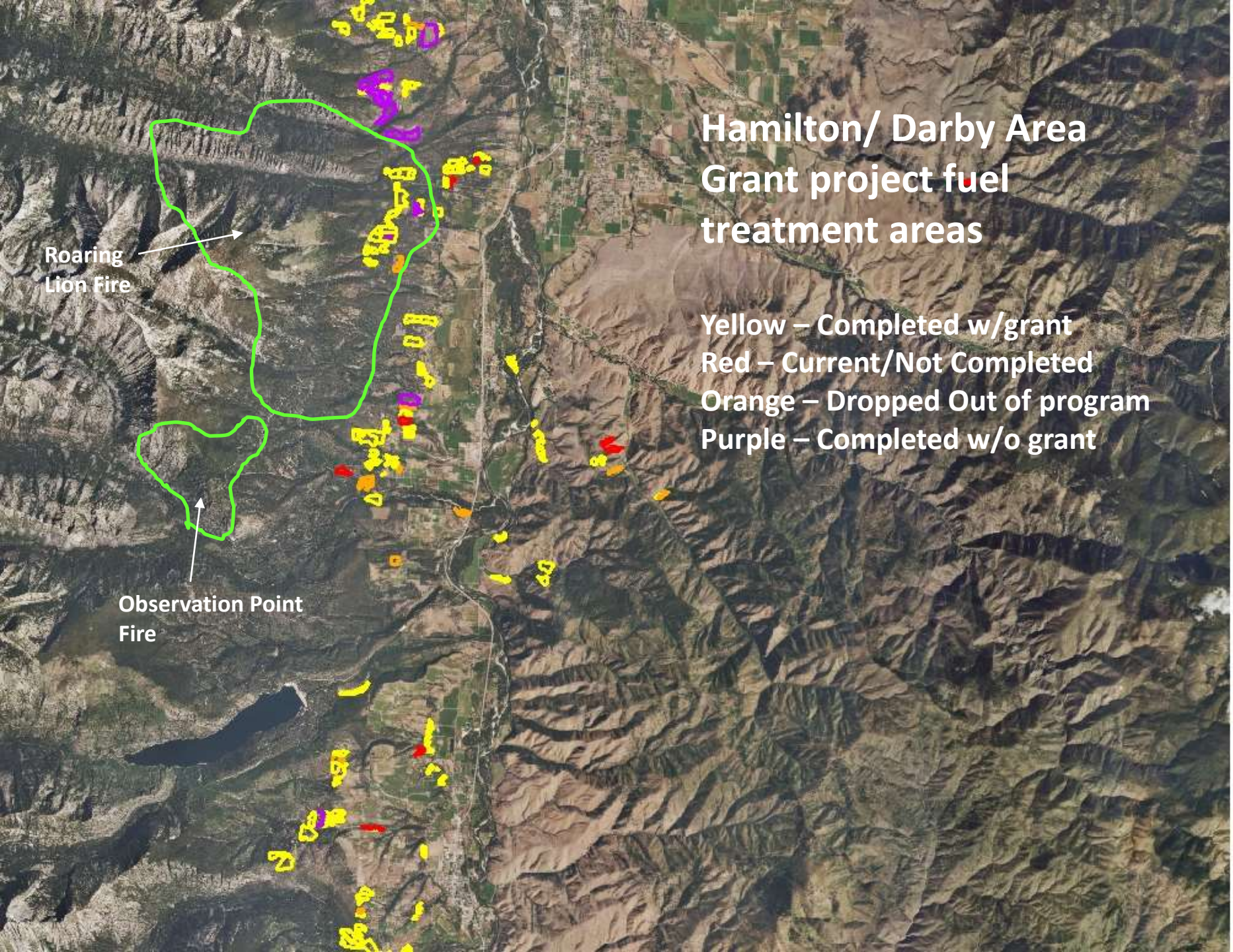
July 31, 2016 – 1430-1830 hours

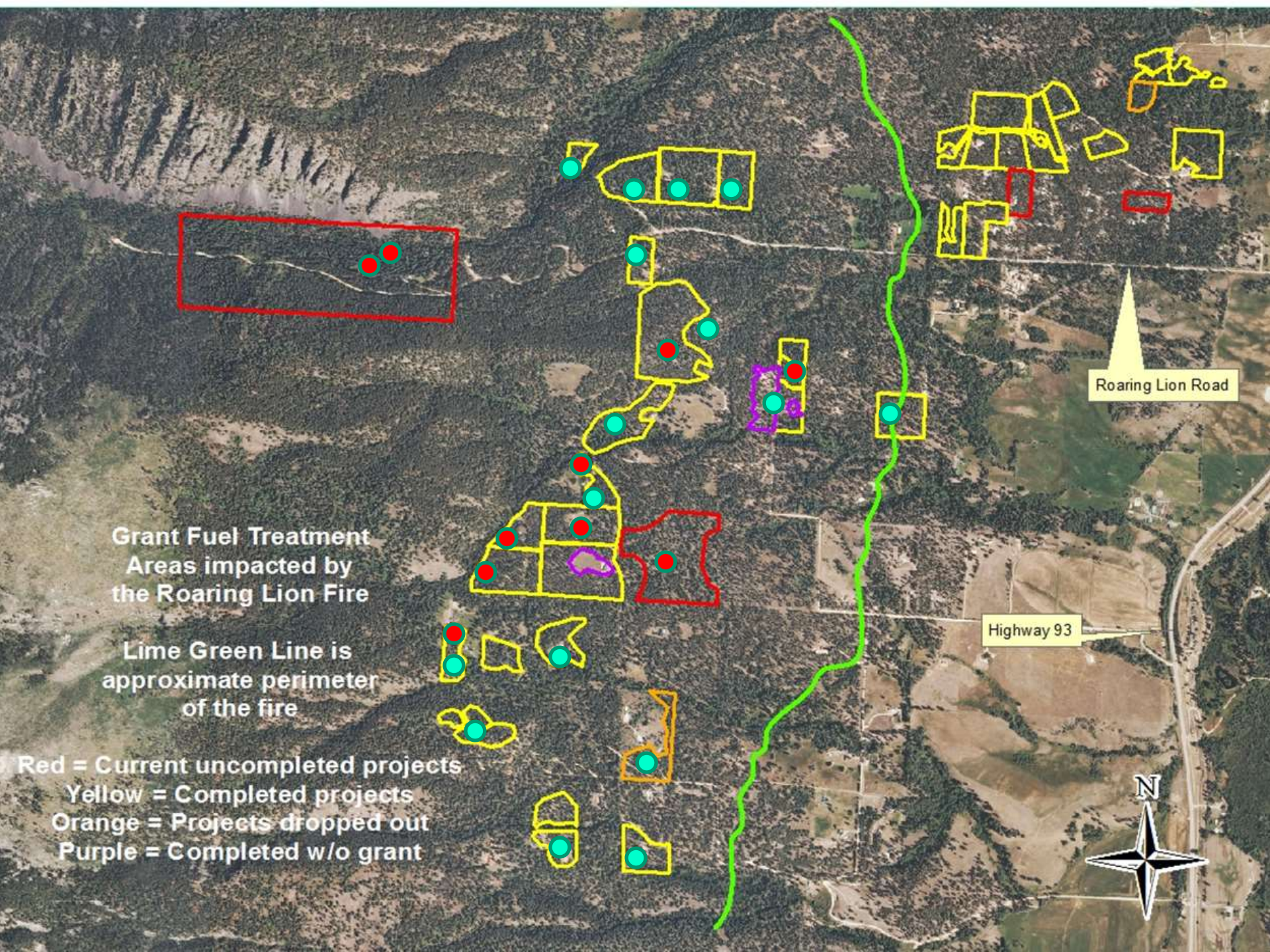
There were 53 primary residences & 50 other structures within the fire perimeter
16 of these were lost along with 33 other structures lost or damaged
8 primary residences within thinned areas (grant projects) were lost
15 primary residences within thinned areas (grant projects) survived

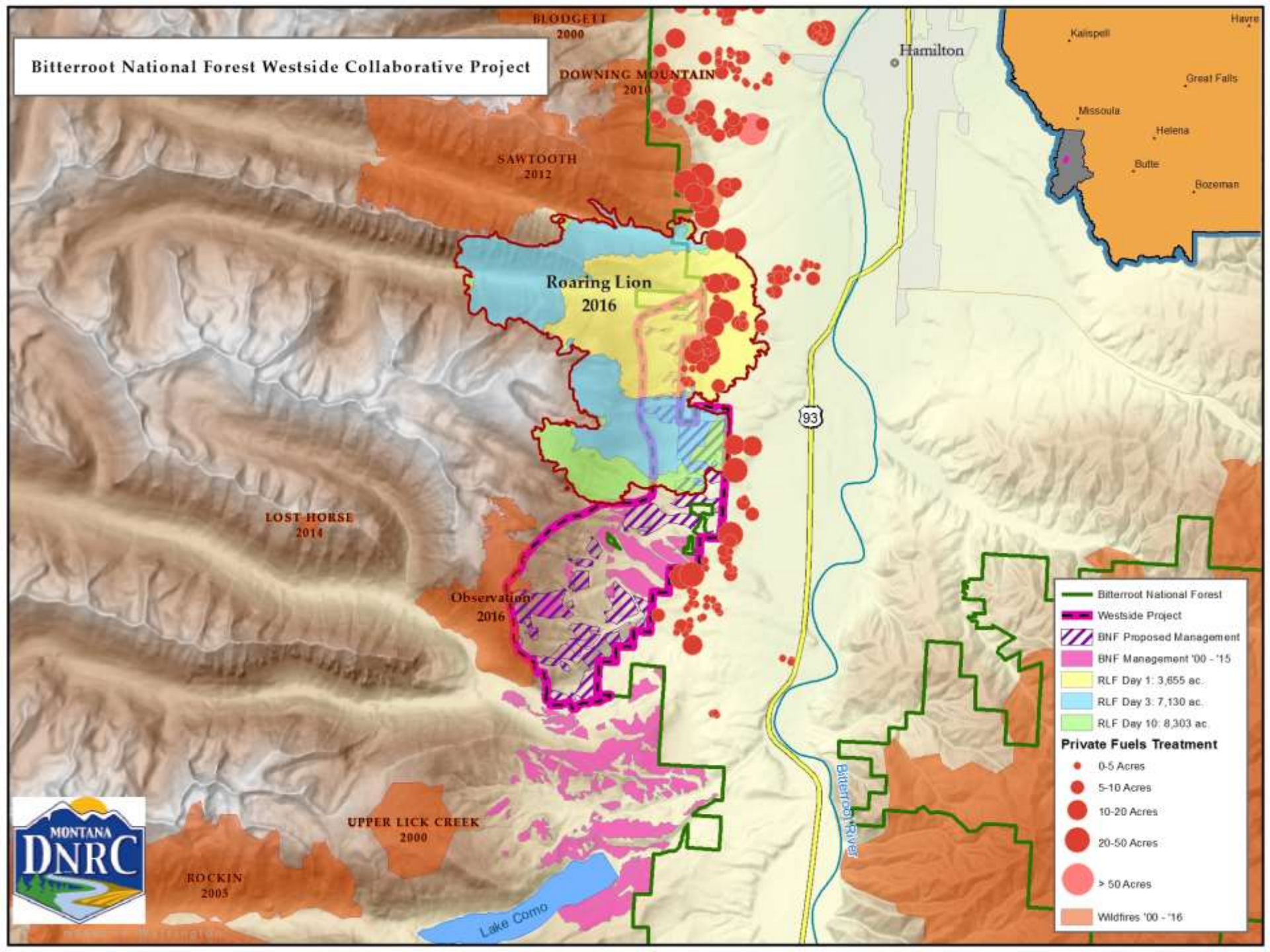


IR_Date	GIS_Acres	Growth_
20160801_0307	3505	3505
20160801_1905	4392	887
20160803_0149	7130	2738
20160803_2318	7753	623
20160804_2158	7927	174
20160806_0251	8249	322
20160807_0115	8262	13
20160807_2200	8270	8
20160808_2338	8274	4
20160812_2115	8274	0
20160816_0048	8311	37
20160818_0023	8465	154
20160820_2143	8469	4
20160822_0038	8520	52
20160825_0149	8533	13
20160827_2222	8536	3
20160831_2149	8659	123
20160902_2303	8685	26

Date: 4/13/2017 NT

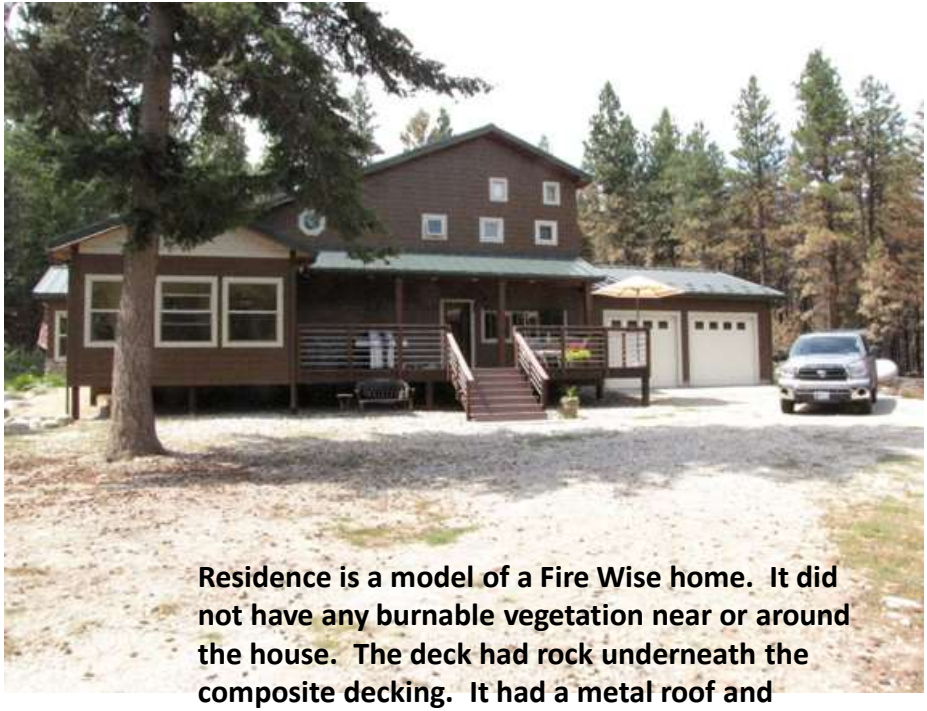

Hamilton/ Darby Area
Grant project fuel
treatment areas
Yellow – Completed w/grant
Red – Current/Not Completed
Orange – Dropped Out of program
Purple – Completed w/o grant
Roaring
Lion Fire
Observation Point
Fire


Grant Fuel Treatment
Areas impacted by
the Roaring Lion Fire
Lime Green Line is
approximate perimeter
of the fire
Red = Current uncompleted projects
Yellow = Completed projects
Orange = Projects dropped out
Purple = Completed w/o grant
Roaring Lion Road
Highway 93
N


Bitterroot National Forest Westside Collaborative Project
BLODGETT
2000
DOWNING MOUNTAIN
2010
SAWTOOTH
2012
Roaring Lion
2016
LOST HORSE
2014
Observation
2016
UPPER LICK CREEK
2000
ROCKIN
2005
Lake Como
Hamilton
Kalispell
Havre
Great Falls
Missoula
Helena
Butte
Bozeman
93
Bitterroot River
Bitterroot National Forest
Westside Project
BNF Proposed Management
BNF Management '00 - '15
RLF Day 1: 3,655 ac.
RLF Day 3: 7,130 ac.
RLF Day 10: 8,303 ac.
Private Fuels Treatment
0-5 Acres
5-10 Acres
10-20 Acres
20-50 Acres
> 50 Acres
Wildfires '00 - '16
MONTANA
DNRC


Home survived fire
Home survived fire
Shop/Garage Destroyed by Fire

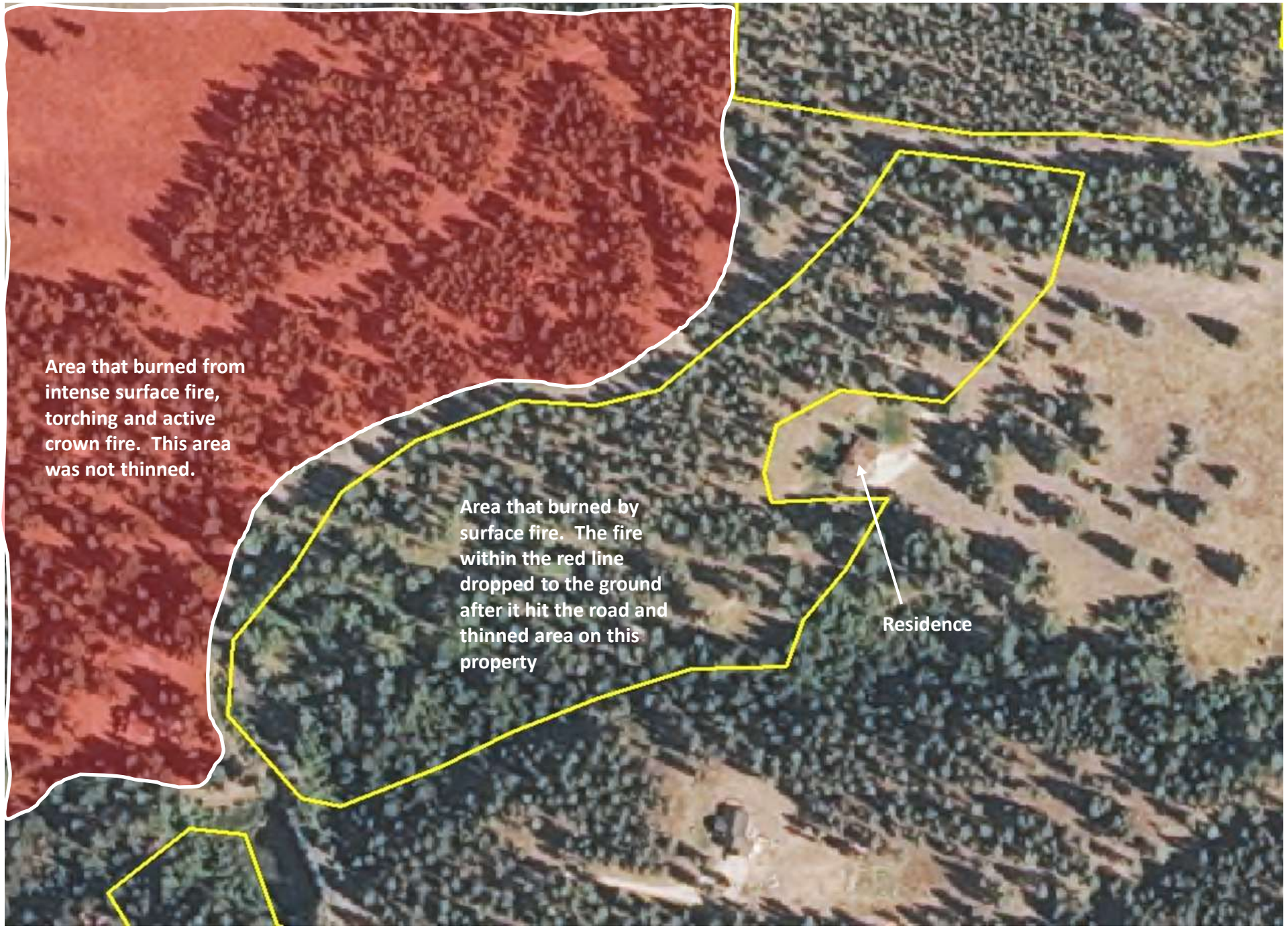
Timber stand north and east of the house where the surface fire burned across the property. Very minimal amount of torching but most of the Doug fir had a significant amount of scorch.



Residence is a model of a Fire Wise home. It did not have any burnable vegetation near or around the house. The deck had rock underneath the composite decking. It had a metal roof and hardiplank siding and a gravel driveway surrounded the house on two sides. Trees were cleared away from the house.

Riparian area south of the house had minimal impacts from the fire.

The site of the garage that was destroyed by the fire. It was about 200 feet east of the house.

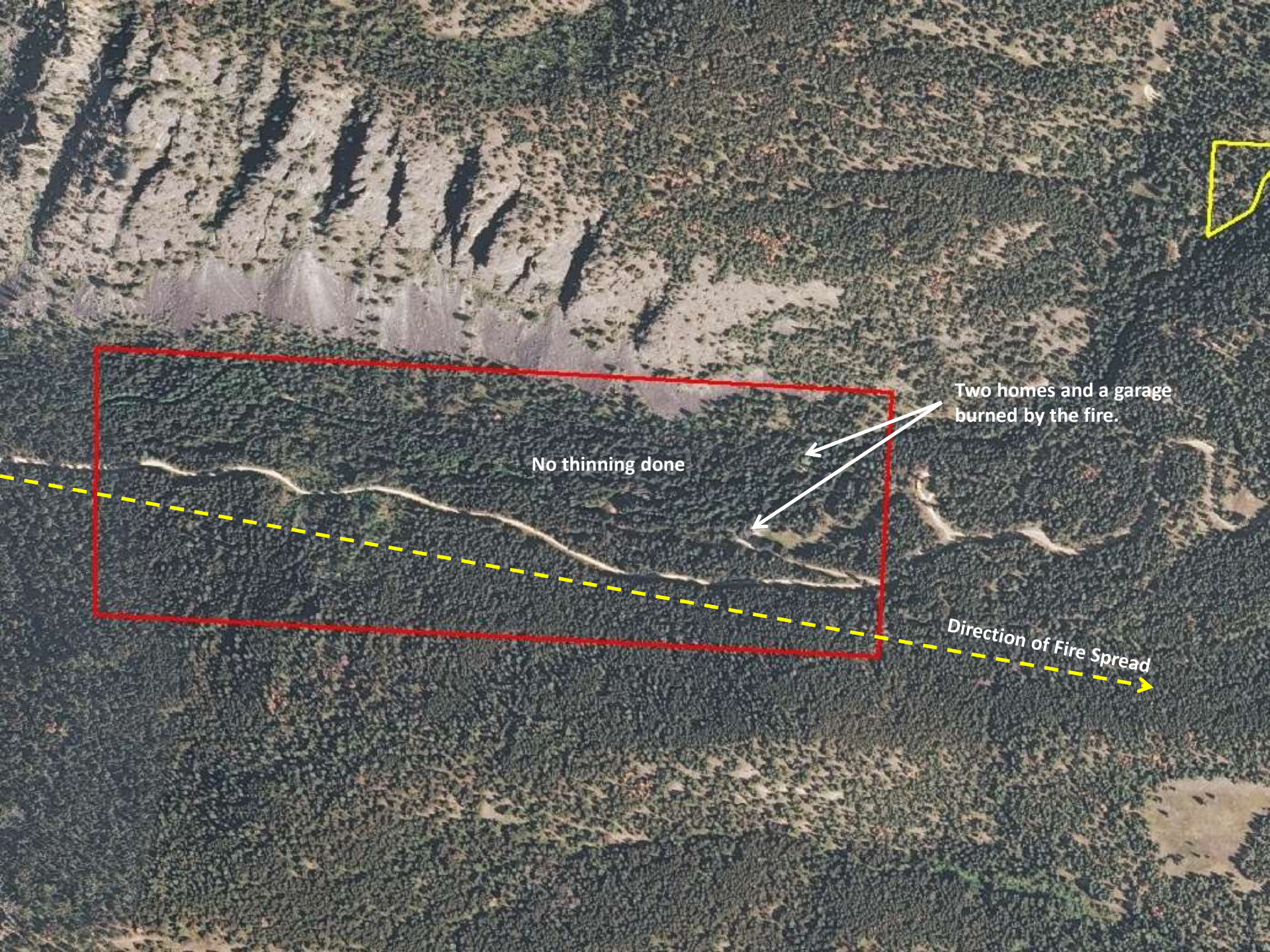

Area that burned from intense surface fire, torching and active crown fire. This area was not thinned.
Area that burned by surface fire. The fire within the red line dropped to the ground after it hit the road and thinned area on this property
Residence

This area was across the Judd Creek road from the landowners' property showing active crown fire and torching that impacted their property. This area shows the crown fire run to the north of an adjacent landowners' secondary residence that was lost in the fire.

Area north of the house where the surface fire burned through the timber stand showing a high amount of scorch with no torching or crown fire activity.

House that survived the fire. Due to the lack of torched trees or crown fire, it is evident that the the area around the house burned as a result of an surface fire, spotting from ember showers with superheated air passing through the timber stand west of the house from a crown fire across the Judd Creek road. Note the spot fire burned area to the right of center below the deck.

This area had very high scorch damage to the surrounding timber near the house. This area is SW of the house location.

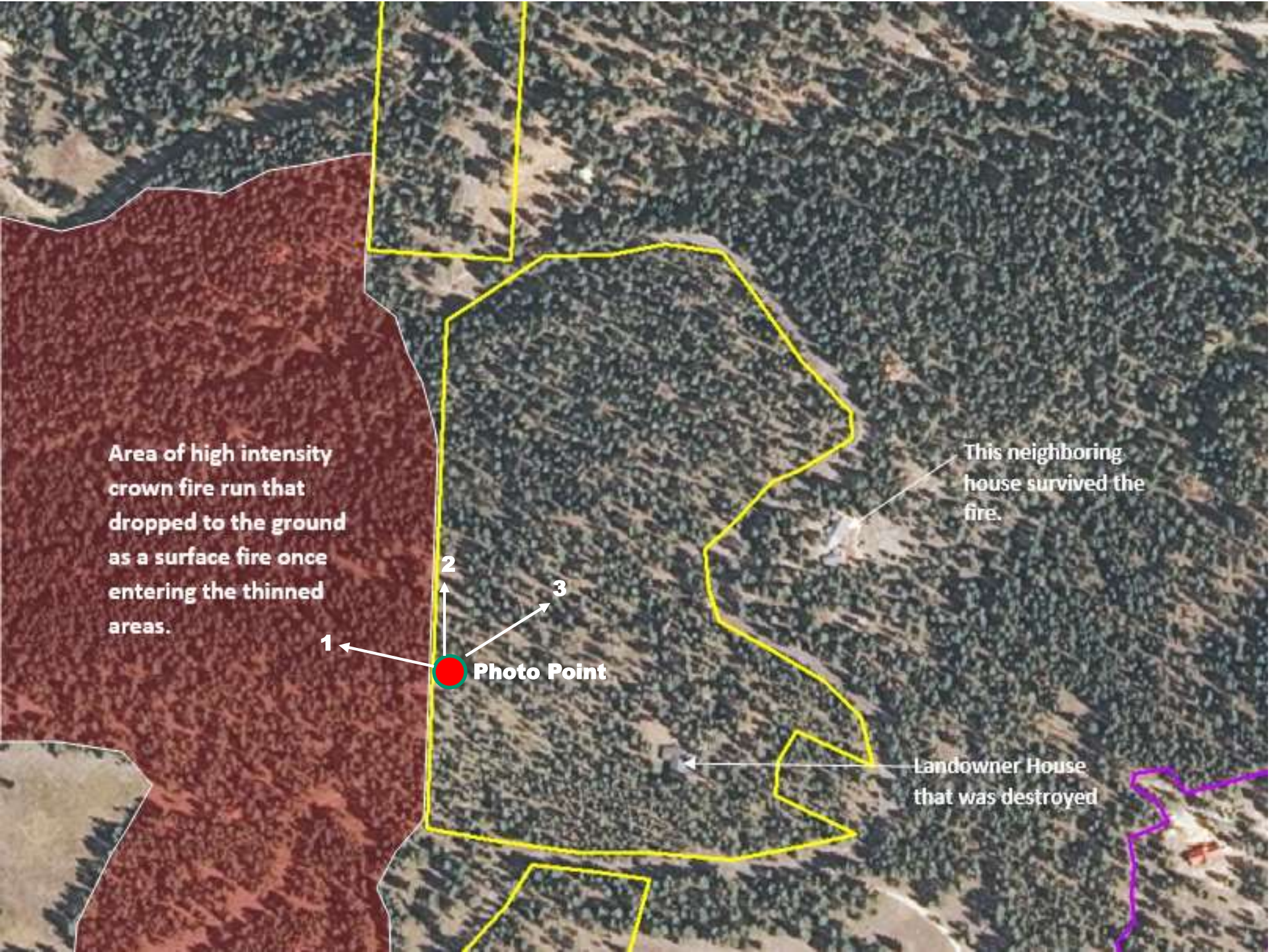

Two homes and a garage burned by the fire.
No thinning done
Direction of Fire Spread

Roaring Lion Creek

1 - Crown Fire Run directly west of thinned property on NF

2 - Boundary between un-thinned and thinned property

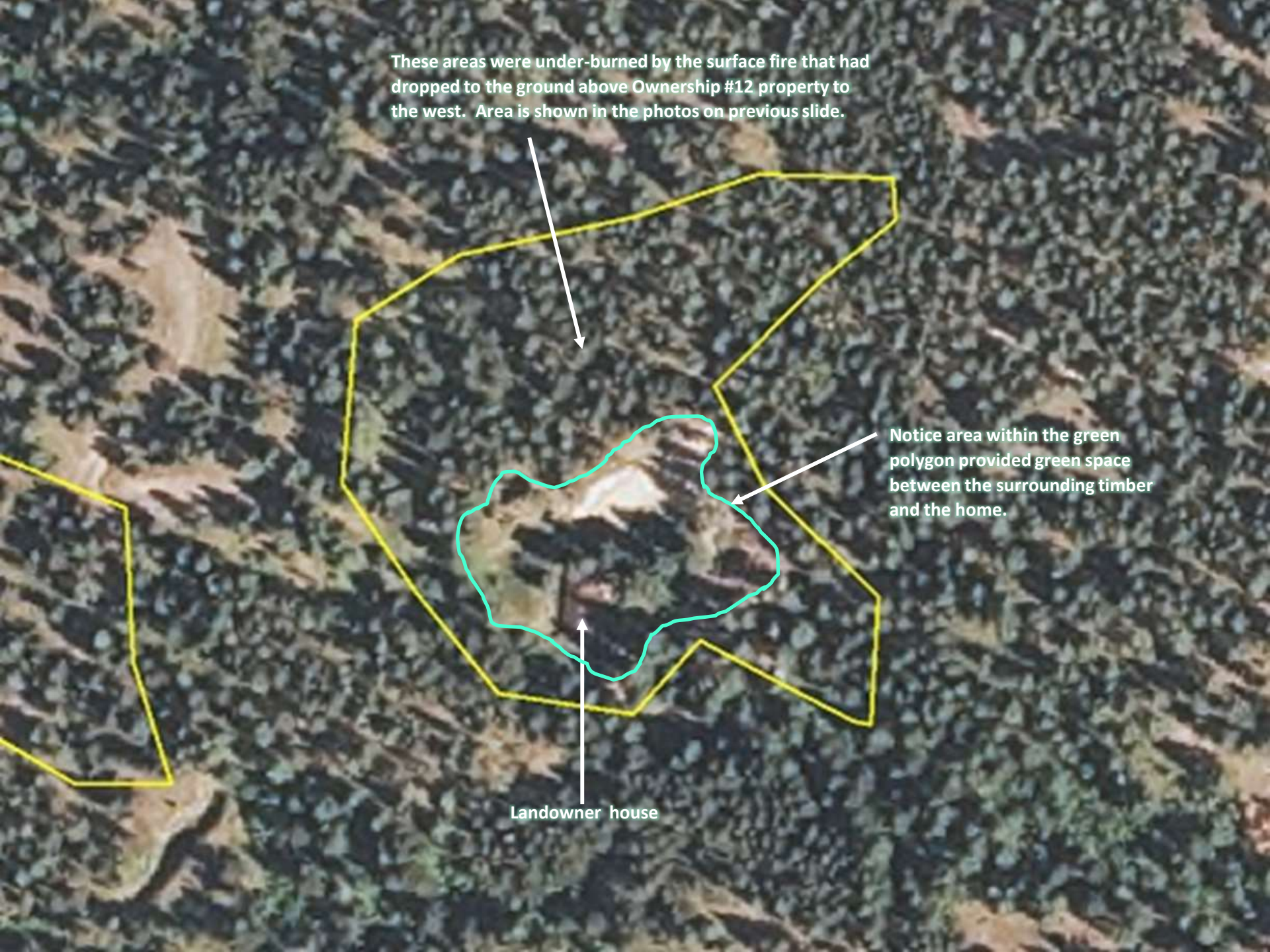
3 - Thinned property directly east of high intensity fire area in upper left photo

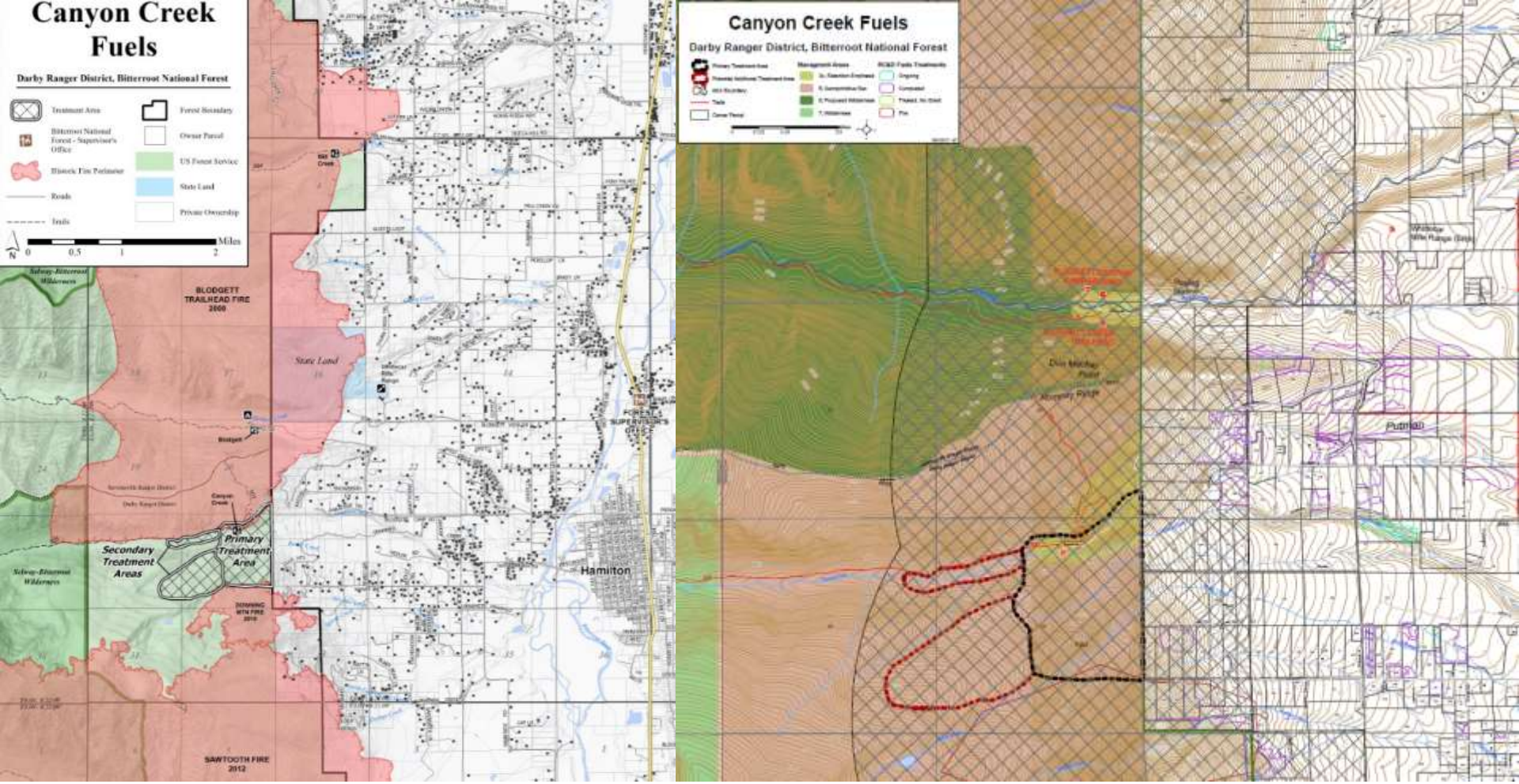

Area of high intensity crown fire run that dropped to the ground as a surface fire once entering the thinned areas.
1
2
3
Photo Point
This neighboring house survived the fire.
Landowner House that was destroyed

Landowner residence after the fire. Due to the open and thinned areas around the home and outbuildings, the structures survived. This area shows the area to the east of the residence that did not receive any damage from the fire.

This area shows the area to the east of the residence that did not receive any damage from the fire.

Looking toward the east of her home and north of the corrals, the wind from the fire was so intense that it broke some large Ponderosa Pine trees about 20-30 feet up from the base. Notice that most of the remaining trees did not receive much scorch.


These areas were under-burned by the surface fire that had dropped to the ground above Ownership #12 property to the west. Area is shown in the photos on previous slide.
Notice area within the green polygon provided green space between the surrounding timber and the home.
Landowner house



Over 90 private landowners sent a petition to the USFS Bitterroot NF requesting a fuel reduction project on National Forest above their homes and property. The Bitterroot NF is currently reviewing a proposal how to accomplish this within designated a Roadless Area. The landowners are concerned that they are at high risk like those landowners in the 2016 Roaring Lion Fire.

How Do Homes Ignite?

- Emberwash & Firebrands
- Radiant or Convective Heat
- Conduction or Direct Flame Impingement

Structure and Property Assessment

One of the most important factors to consider in order to protect your home.

1-Topography; 2-Weather; 3-Roof Assembly; 4-Chimney; 5-Gutters; 6-Eaves; 7-Exterior Walls & Siding; 8-Windows; 9-Vents; 10-Attached Structures; 11-Vegetation; 12-Heat Sources; 13-Ignition Sources; 14-Water Sources; 15-Access

Contact SW Land Office of the State of Montana DNRC to have fire professionals that can come out to do this assessment on your property.

Structures burn from embers finding receptive fuel beds near or on structures. That is why structure construction and Firewise techniques are essential to increasing the likelihood a home could survive a wildfire.

Why Does One Home Survive and the Next Doesn't?

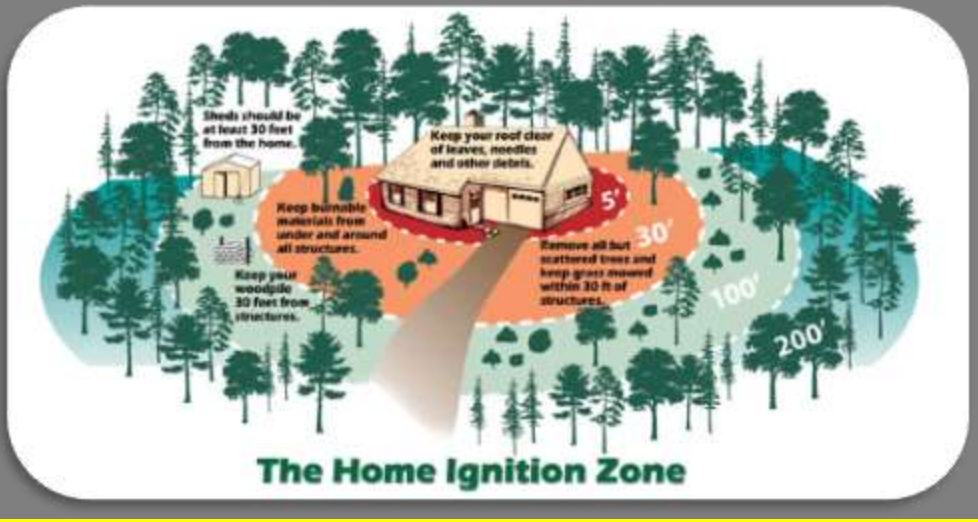
1. Preparedness
2. Topography
3. Built to Higher Ignition Resistance Standards
4. Luck

Most Highly Probable

Least Likely

Home Ignition Zones

- **Zone 1** – The area from 0-30 feet out from a house, including a 3-5 foot non-combustible perimeter around the home.
- **Zone 2** – The area from 30 to 100-feet out from a house.
- **Zone 3** – The area from 100 to 200-feet out from a house.



It is equally important to treat fuels beyond Zone 3 to prevent an ember shower from single tree, group torching, and active crown fire. This will also help protect your neighbors as evidenced on the Roaring Lion Fire.

Zone 1: 0-30 feet

Includes a 5-foot noncombustible perimeter:

- ✓ Replace plants containing volatile oils with high moisture varieties
- ✓ Replace wood mulch with rock or install reliable irrigation.
- ✓ Rake clean of leaves or needles

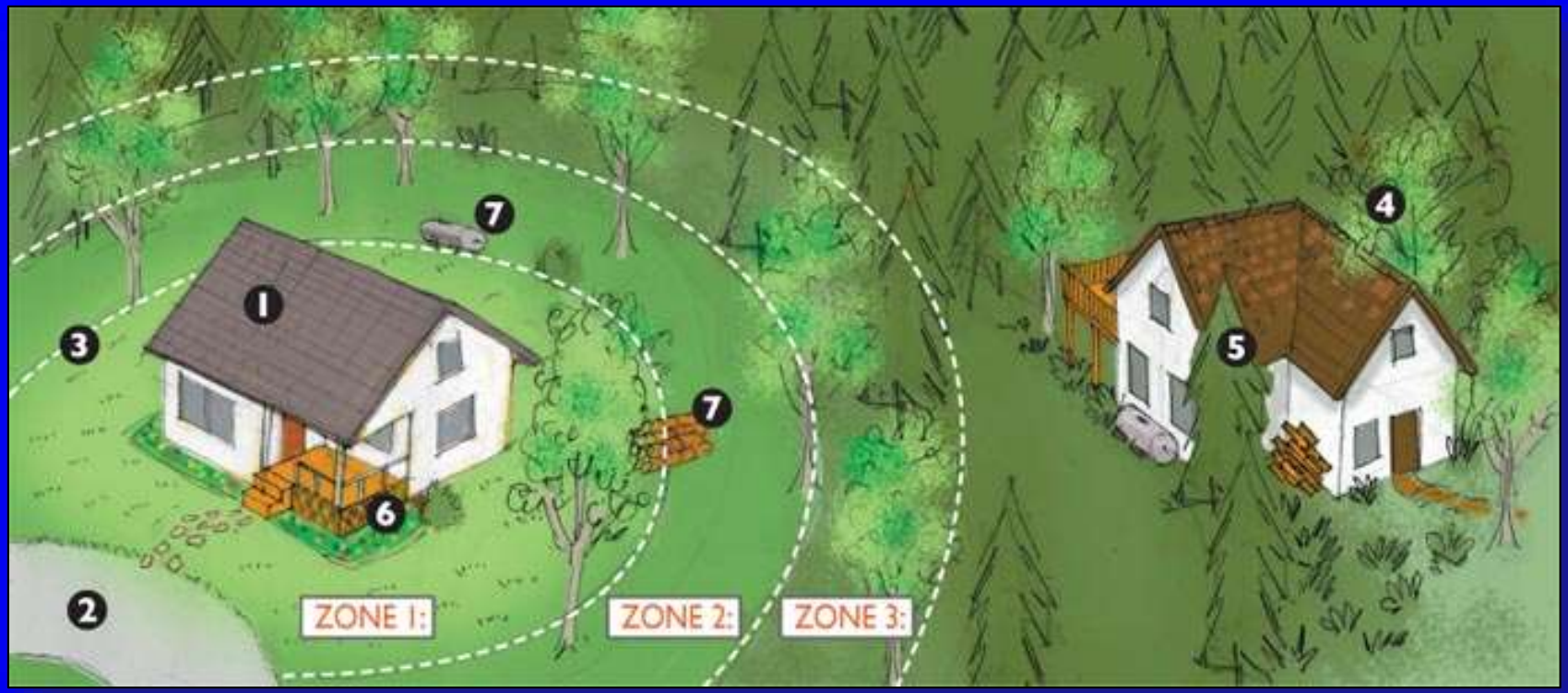
Zone 1: Fire-resistant Landscaping

No plant is “fire proof,” but some are more fire-resistant than others. Within 30 feet of structures choose plants with:

- High moisture content & low resin or oil content
- Minimal foliage or dead branches
- Low height
- Drought resistance

Zone 2: 30 – 100 feet out

Zone 3 – The area from 100-200 feet out



Assessment Process

1) As you are driving in, take a wide-angle “big picture” view focusing on position on slope, road access, signage, surrounding fuels, weather patterns.
2) Assess the home from roof to foundation
3) Assess landscaping and forest fuels around the home out to 200+ feet or the property line, whichever is appropriate.

Overview of Surrounding Area

- What is the access like?
- What will affect fire behavior around the structure?
- Sketch of the home and surroundings
- Include general weather
- What is the surrounding fuel type and loading?
- Are there assets to consider as well?

Home Assessments from Top to Bottom

Roof Assembly- the roof is the most vulnerable part of a home when considering exposure to wildfire.

Checkthishouse.com

Assessment and images from disastersafety.org

Vents

Vulcan vent

Brandguard vent

Eaves

Melted vinyl soffit

Open eaves

Boxed eaves

Gutters

Firecenter.berkeley.ed
u

Firecenter.berkeley.edu

Windows


© Insurance Institute for Business & Home Safety


TEMPGLASS
WESTERN
© Insurance Institute for Business & Home Safety

Siding

Gaps in lapped siding

Interlocking laps, no gaps

Combustible Siding

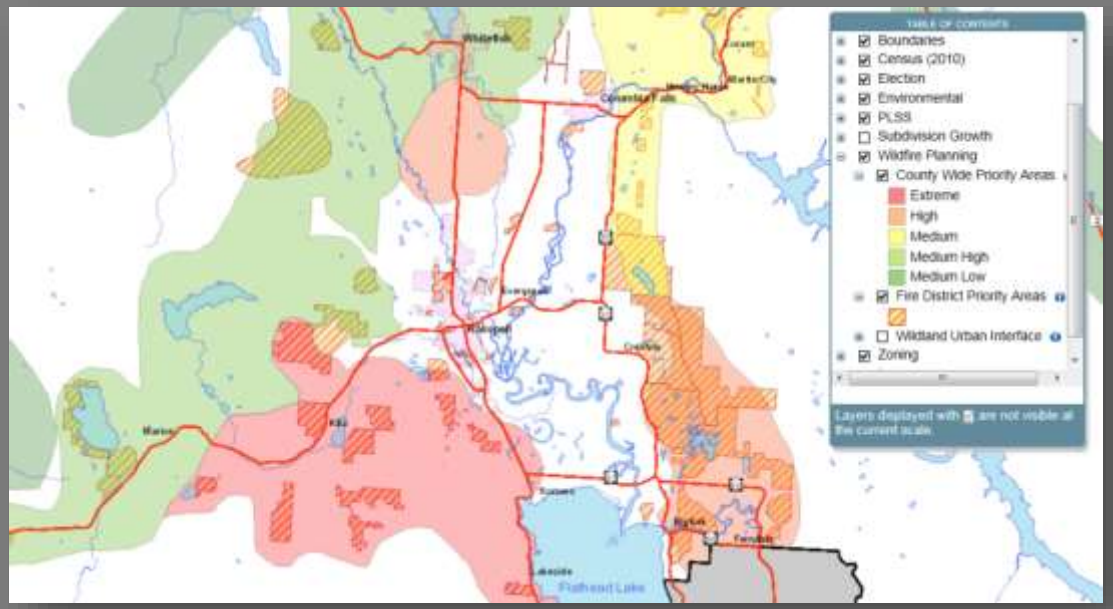
Non-Combustible Siding

Vinyl siding melted in a NJ wildfire

Decks

Know Your Community

- Do you know the fire history in your area?
- How many fires were lighting-caused & how many fires were human-caused in the past few seasons?
- Is there a Community Wildfire Protection Plan?
- Is wildfire defined as a priority in your area?
- Which areas in your community identified as High Priority?



From Flathead County GIS showing County and Fire District Priority Areas

Local Grant Programs

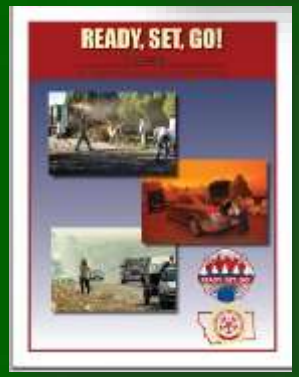
- Grants are available to reduce fire risk on private land throughout the state of Montana.
- It's up to all of us to alert landowners to the risks of wildfire on their properties and surrounding areas.
- Most of the grants are 50/50 cost share.
- Grant programs provide technical and financial assistance to landowners.
- Purpose of these grant programs is to:
  - Reduce fire risk
  - Improve the health of the forest
  - Improve firefighter and public safety
  - Provide areas where firefighting can be more effective and efficient
- Treatments are to:
  - Thin to reduce crown density and surface fuels – reduce chances of crown fire
  - Prune tree branches to reduce ladder fuels
  - Treat slash to reduce surface fuels thus reducing intensities

Additional Resources

- DNRC Fire Prevention Website, Facebook, Twitter
- Firewise.org
- FiresafeMT.org
- FEMA
- Red Cross
- NOAA weather
- Inciweb
- Ready.MT.gov

MONTANA DNRC

FIREWISE COMMUNITIES
www.firewise.org



Contact Information

Bitter Root RC&D

Byron Bonney –

Community Forester

(406) 544-5126

www.bitterrootrcd.org


QUESTIONS?