

Roaring Lion Fire - Assessment of Private Land Fuels Mitigation

Byron Bonney, Community Forester- Bitter Root RC&D

The Roaring Lion Fire on the Bitterroot National Forest began on July 31, 2016. It burned towards the east with high intensity from National Forest system land into the wildland-urban interface (WUI) in the Roaring Lion/Judd Creek Hollow and Sawtooth drainages on the west side of the Bitterroot Valley. Within a four-hour period, this fire consumed over 3,500 acres and burned a total of 16 homes and 49 outbuildings.

The Roaring Lion Fire burned through several areas where private land fuel mitigation projects had been completed over the last 10 years. One of those projects was being treated during the time of the fire and another project was in the planning stages. There are a total of 21 project areas within the perimeter of this fire that were impacted. These projects ranged in size from five acres to thirty acres for a total of approx. 230 acres treated through the Western States WUI grant program, which is administered by Bitter Root Resource Conservation and Development and funded by USFS State & Private Forestry through Montana DNRC's forest stewardship program.

The goal of these projects was to reduce the fire risk to these properties. The objectives were to reduce the probability of a high intensity crown fire (passive and active) and to reduce the probability of a surface fire from becoming a crown fire by reducing the ladder fuels that lead fire into the crowns.

The majority of these projects were completed by local contractors but a few were completed by the landowners themselves. The objective on each project was to thin the timber stands to reduce the crown density to 10-foot crown spacing, prune the remaining trees in the stand up to 8-10 feet to reduce the ladder fuels, and to treat all slash and existing downed woody fuels to reduce the surface fuels to a minimum yet leaving some debris on the ground for site protection.



(photo: inciweb.org)

Property Assessment:

Visual assessment of hazardous fuels mitigation treatment following a wildfire event

Degree of Damage*	For Structures**	For Forest
Affected	<ul style="list-style-type: none"> Cosmetic damage only. It also applies to residences with damage to a porch, carport, garage, and/or an outbuilding, etc. 	<ul style="list-style-type: none"> Superficial damage only. No evidence or predictions of tree mortality. Indicates low severity ground fire activity.
Minor	<ul style="list-style-type: none"> The residence is damaged and requires minimal repairs. 	<ul style="list-style-type: none"> Evidence of moderate tree scorch, and/or minimal individual tree torching. Minimal tree mortality. Indicates low-moderate severity ground fire activity.
Major	<ul style="list-style-type: none"> The residence has sustained structural or significant damage that require extensive repairs. 	<ul style="list-style-type: none"> Evidence of significant tree scorch, and/or group torching. Extensive tree mortality. Indicates moderate-high severity fire activity.
Destroyed	<ul style="list-style-type: none"> The residence is a total loss. 	<ul style="list-style-type: none"> Stand replacing event. Indicates high severity fire activity.
Definitions		
<p><u>Defensible Space</u>: Treatment prescription with significant modification/reduction of fuels within 30,50, & 100 ft. of the home pursuant to current Firewise mitigation standards.</p> <p><u>Ingress/Egress</u>: Treatment prescription specific to a buffer along road/driveway for the safe access for the landowner and fire response vehicles/equipment</p> <p><u>Open Acres</u>: Treatment beyond the extent of defensible space and ingress/egress prescriptions intended to reduce tree density, increase canopy openings, and eliminate ladder fuels.</p> <p><u>Fuel Break</u>: Treatment prescription of specified distance/width geographically oriented across the path of prevailing winds, or along a property boundary.</p> <p><u>Understory (light, moderate, heavy)</u>: Vegetation primarily consisting of grasses/forbs (light); grasses/forbs intermixed with some woody shrubs (moderate); woody shrubs are the dominate vegetation type, covering substantial area (heavy).</p>		

*/** Descriptions and format taken from FEMA Damage Assessment Operations Manual p.113, Appendix E



Property Assessment:

Visual assessment of hazardous fuels mitigation treatment following a wildfire event

Ownership No.	1				
Address	Roaring Lion Road – Hamilton, MT				
Total Acres	10	Acres Treated	8.2	Treatment Date	1/29/13
Structure Damage	<input checked="" type="checkbox"/> Affected <input type="checkbox"/> Minor <input type="checkbox"/> Major <input checked="" type="checkbox"/> Destroyed <input type="checkbox"/> None The residence survived the fire but the outbuildings and equipment were destroyed				
Forest Damage	<input type="checkbox"/> Affected <input type="checkbox"/> Minor <input checked="" type="checkbox"/> Major <input type="checkbox"/> Destroyed <input type="checkbox"/> None High intensity surface fire, high % of PP likely to survive, Doug-fir 30-40% loss				
Estimated Fire Behavior that Caused Damage	<input checked="" type="checkbox"/> Ember Shower <input checked="" type="checkbox"/> Surface Fire <input type="checkbox"/> Passive Crown Fire (torching) <input type="checkbox"/> Active Crown Fire (stand replacement) <input type="checkbox"/> _____				
Treatment Type (all that apply)	<input checked="" type="checkbox"/> Defensible Space <input type="checkbox"/> Ingress/Egress <input checked="" type="checkbox"/> Open Acres <input type="checkbox"/> Fuel Break (clear cut) <input type="checkbox"/> Fuel Break (shaded) <input checked="" type="checkbox"/> Pruning				
Treatment method	<input type="checkbox"/> Hand Work <input type="checkbox"/> Mechanical <input checked="" type="checkbox"/> Combination <input checked="" type="checkbox"/> Pile/Burn <input type="checkbox"/> Chip/Masticate <input type="checkbox"/> _____ Landowner accomplished the fuel mitigation project				
Current Forest Structure & Composition (best estimate)	<input checked="" type="checkbox"/> Single Story <input type="checkbox"/> Two-aged <input type="checkbox"/> Uneven-aged _____ % Seedling/Sapling <u>30%</u> Pole <u>70%</u> Mature <u>PP</u> Primary Species <u>DF</u> Secondary Species <input type="checkbox"/> Riparian Area <input checked="" type="checkbox"/> Light Understory <input type="checkbox"/> Moderate Understory <input type="checkbox"/> Heavy Understory 2 aged stand prior to treatment				
Current Tree Spacing	<input checked="" type="checkbox"/> < 10' crown spacing <input type="checkbox"/> 10' crown spacing <input type="checkbox"/> > 10' crown spacing				
Notes/Comments: (special treatment areas: SMZ, visual buffer, clump/gap, etc.; single/multiple access; turn-around area)	<p>- The landowner who stayed at his residence when the fire was advancing toward his house stated there were 14 ft. flame lengths. The scorch and heat was significant within the timber stands to the west and north of his property. There was significant scorch on the DF and moderate scorch in the PP.</p> <p>- The property has one way in and one way out with no equipment turnarounds</p> <p>- Landowner had a 350-gallon tank on a truck and used the water to wet down his house before leaving. This action likely saved the house.</p> <p>- Major loss of all his equipment and shop that contained a large collection of old blacksmith equipment.</p>				



Property Assessment:

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Residence was protected by landowner before leaving the area by using 350 gallons from his water truck. The garage/shop behind the house was totally destroyed. It was only about 40 feet from the house.

Timber stand north of the house where the surface fire burned across the property. Very few trees torched but most had a significant amount of scorch.



Fence line is the west property boundary between ownerships. The burned area beyond the fence was also treated. The surface fire and the shower of embers contributed to the fire burning all the equipment and garage/shop on the landowners property.



Property Assessment:

Visual assessment of hazardous fuels mitigation treatment following a wildfire event



Property Assessment:

Visual assessment of hazardous fuels mitigation treatment following a wildfire event

Ownership No.	2				
Address	Roaring Lion Road – Hamilton, MT				
Total Acres	20	Acres Treated	15.5	Treatment Date	11/21/12
Structure Damage	<input checked="" type="checkbox"/> Affected <input type="checkbox"/> Minor <input type="checkbox"/> Major <input checked="" type="checkbox"/> Destroyed <input type="checkbox"/> None The residence survived the fire but one outbuilding (garage) was destroyed				
Forest Damage	<input type="checkbox"/> Affected <input type="checkbox"/> Minor <input checked="" type="checkbox"/> Major <input type="checkbox"/> Destroyed <input type="checkbox"/> None High intensity surface fire, high % of PP likely to survive, Doug-fir 30-40% loss				
Estimated Fire Behavior that Caused Damage	<input checked="" type="checkbox"/> Ember Shower <input checked="" type="checkbox"/> Surface Fire <input type="checkbox"/> Passive Crown Fire (torching) <input type="checkbox"/> Active Crown Fire (stand replacement) <input type="checkbox"/> _____				
Treatment Type (all that apply)	<input checked="" type="checkbox"/> Defensible Space <input type="checkbox"/> Ingress/Egress <input checked="" type="checkbox"/> Open Acres <input type="checkbox"/> Fuel Break (clear cut) <input type="checkbox"/> Fuel Break (shaded) <input checked="" type="checkbox"/> Pruning				
Treatment method	<input type="checkbox"/> Hand Work <input type="checkbox"/> Mechanical <input checked="" type="checkbox"/> Combination <input checked="" type="checkbox"/> Pile/Burn <input type="checkbox"/> Chip/Masticate <input type="checkbox"/> _____ Landowner accomplished the fuel mitigation project				
Current Forest Structure & Composition (best estimate)	<input checked="" type="checkbox"/> Single Story <input type="checkbox"/> Two-aged <input type="checkbox"/> Uneven-aged _____ % Seedling/Sapling <u>30%</u> Pole <u>70%</u> Mature <u>PP</u> Primary Species <u>DF</u> Secondary Species <input type="checkbox"/> Riparian Area <input checked="" type="checkbox"/> Light Understory <input type="checkbox"/> Moderate Understory <input type="checkbox"/> Heavy Understory 2 aged stand prior to treatment – moderate mtn pine beetle infestation treated				
Current Tree Spacing	<input checked="" type="checkbox"/> < 10' crown spacing <input type="checkbox"/> 10' crown spacing <input type="checkbox"/> > 10' crown spacing				
Notes/Comments: (special treatment areas: SMZ, visual buffer, clump/gap, etc.; single/multiple access; turn-around area)	<ul style="list-style-type: none"> - Healthy riparian area not affected by the fire. - House has a loop access road with an adequate engine turnaround. - This house was an excellent example of Firewise construction with a metal roof, closed soffits/vents, cement board siding, rock all around the house with low growing deciduous vegetation, cleaned gutters, trees thinned away from house, with virtually no heat or ignition sources near the home. 				



Property Assessment:

Visual assessment of hazardous fuels mitigation treatment following a wildfire event



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

←

Residence was a model of a Firewise 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 cement board siding and a gravel driveway surrounded the house on two sides. Trees were cleared away from the house.

→



←

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.

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The site of the garage that was destroyed by the fire. It was about 200 feet east of the house. Ownership #1 property is about 500 feet behind the garage.



Property Assessment:

Visual assessment of hazardous fuels mitigation treatment following a wildfire event



Property Assessment:

Visual assessment of hazardous fuels mitigation treatment following a wildfire event

Ownership No.	3				
Address	Roaring Lion Road – Hamilton, MT				
Total Acres		Acres Treated	5.3	Treatment Date	6/2/05
Structure Damage	<input type="checkbox"/> Affected <input type="checkbox"/> Minor <input type="checkbox"/> Major <input type="checkbox"/> Destroyed <input checked="" type="checkbox"/> None The residence survived the fire				
Forest Damage	<input type="checkbox"/> Affected <input type="checkbox"/> Minor <input checked="" type="checkbox"/> Major <input type="checkbox"/> Destroyed <input type="checkbox"/> None High intensity surface fire, high % of PP likely to survive, Doug-fir 30-40% loss				
Estimated Fire Behavior that Caused Damage	<input checked="" type="checkbox"/> Ember Shower <input checked="" type="checkbox"/> Surface Fire <input type="checkbox"/> Passive Crown Fire (torching) <input checked="" type="checkbox"/> Active Crown Fire (stand replacement) on adjacent property to South and SW (not on property).				
Treatment Type (all that apply)	<input checked="" type="checkbox"/> Defensible Space <input type="checkbox"/> Ingress/Egress <input checked="" type="checkbox"/> Open Acres <input type="checkbox"/> Fuel Break (clear cut) <input type="checkbox"/> Fuel Break (shaded) <input checked="" type="checkbox"/> Pruning Homeowner accomplished the fuel mitigation himself with family members				
Treatment method	<input checked="" type="checkbox"/> Hand Work <input type="checkbox"/> Mechanical <input type="checkbox"/> Combination <input checked="" type="checkbox"/> Pile/Burn <input type="checkbox"/> Chip/Masticate <input type="checkbox"/> _____				
Current Forest Structure & Composition (best estimate)	<input checked="" type="checkbox"/> Single Story <input type="checkbox"/> Two-aged <input type="checkbox"/> Uneven-aged _____ % Seedling/Sapling <u>20%</u> Pole <u>80%</u> Mature <u>DF</u> Primary Species <u>PP</u> Secondary Species <input type="checkbox"/> Riparian Area <input checked="" type="checkbox"/> Light Understory <input type="checkbox"/> Moderate Understory <input type="checkbox"/> Heavy Understory				
Current Tree Spacing	<input checked="" type="checkbox"/> < 10' crown spacing <input type="checkbox"/> 10' crown spacing <input type="checkbox"/> > 10' crown spacing				
Notes/Comments: (special treatment areas: SMZ, visual buffer, clump/gap, etc.; single/multiple access; turn-around area)	<ul style="list-style-type: none"> - Stand replacement fire to the west/SW of his property boundary on the adjacent property. - Crown fire in adjacent stand transitioned to surface fire in treated area. - Ingress/egress is one way in and one way out. - Treatment area acted as a shaded fuelbreak. - House and outbuildings across the Judd Creek Hollow road to the east from this property were completely destroyed. 				



Property Assessment:

Visual assessment of hazardous fuels mitigation treatment following a wildfire event



Residence was not damaged by the fire but the surface fire did burn up to the pathway in front of the house.

This area had a very intense active crown fire. It is located on the ridge to the SW of the landowner's house on the adjacent property. When the fire burned onto this property, it transitioned to a surface fire, underburning the thinned stand as shown below.



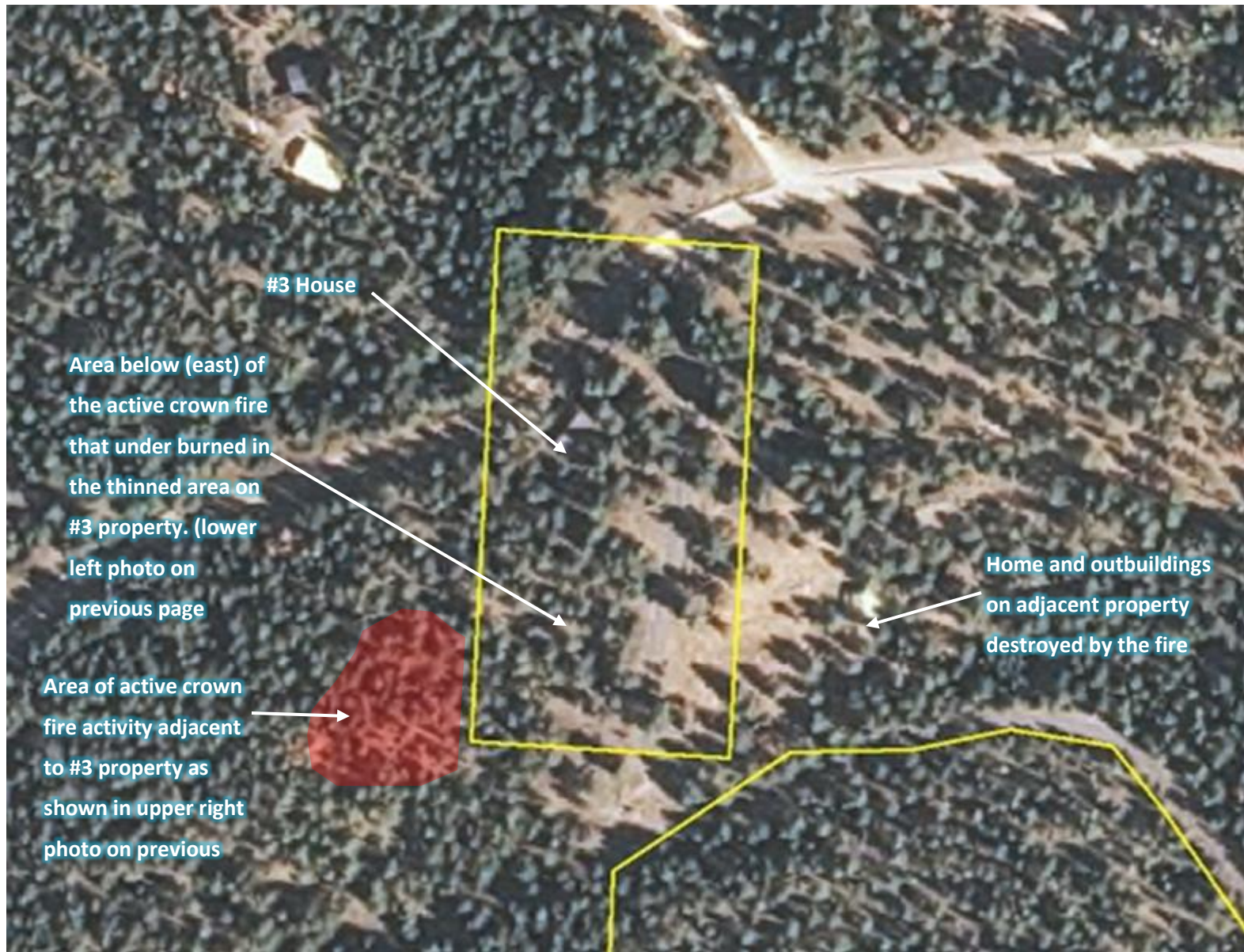
This is the stand to the east and below where the fire entered this property. The Doug-fir had a significant amount of scorch from the superheated air passing through the stand that was produced by the crown fire to the west.

This is on the ridge to the west of the landowners house looked north toward the Roaring Lion Road.



Property Assessment:

Visual assessment of hazardous fuels mitigation treatment following a wildfire event



Property Assessment:

Visual assessment of hazardous fuels mitigation treatment following a wildfire event

Ownership No.	4				
Address	Judd Creek Hollow – Hamilton, MT				
Total Acres		Acres Treated	25.9	Treatment Date	6/14/05
Structure Damage	<input type="checkbox"/> Affected <input type="checkbox"/> Minor <input type="checkbox"/> Major <input checked="" type="checkbox"/> Destroyed <input type="checkbox"/> None The residence was completely destroyed by the fire				
Forest Damage	<input type="checkbox"/> Affected <input type="checkbox"/> Minor <input checked="" type="checkbox"/> Major <input type="checkbox"/> Destroyed <input type="checkbox"/> None Severe scorch mortality in PP and DF, estimate 80% scorch mortality-no crown fire only severe scorch from surface fire and heat through stand from intense crown fire above property.				
Estimated Fire Behavior that Caused Damage	<input checked="" type="checkbox"/> Ember Shower <input checked="" type="checkbox"/> Surface Fire <input type="checkbox"/> Passive Crown Fire (torching) <input checked="" type="checkbox"/> Active Crown Fire (stand replacement) on adjacent property lead to impacts of an ember shower, intense surface fire, and extreme heat through the stand				
Treatment Type (all that apply)	<input checked="" type="checkbox"/> Defensible Space <input checked="" type="checkbox"/> Ingress/Egress <input checked="" type="checkbox"/> Open Acres <input type="checkbox"/> Fuel Break (clear cut) <input type="checkbox"/> Fuel Break (shaded) <input checked="" type="checkbox"/> Pruning A contractor (Shawn Stoker) treated this property several years prior to the fire				
Treatment method	<input type="checkbox"/> Hand Work <input checked="" type="checkbox"/> Mechanical <input type="checkbox"/> Combination <input checked="" type="checkbox"/> Pile/Burn <input type="checkbox"/> Chip/Masticate <input type="checkbox"/> _____				
Current Forest Structure & Composition (best estimate)	<input checked="" type="checkbox"/> Single Story <input type="checkbox"/> Two-aged <input type="checkbox"/> Uneven-aged _____ % Seedling/Sapling <u>50%</u> Pole <u>50%</u> Mature <u>PP</u> Primary Species <u>DF</u> Secondary Species <input type="checkbox"/> Riparian Area <input checked="" type="checkbox"/> Light Understory <input type="checkbox"/> Moderate Understory <input type="checkbox"/> Heavy Understory South aspect 100% PP, mixed PP/DF on north aspect. Estimate 80% scorch mortality				
Current Tree Spacing	<input checked="" type="checkbox"/> < 10' crown spacing <input type="checkbox"/> 10' crown spacing <input type="checkbox"/> > 10' crown spacing				
Notes/Comments: (special treatment areas: SMZ, visual buffer, clump/gap, etc.; single/multiple access; turn-around area)	<ul style="list-style-type: none"> - Active crown fire (stand replacement) on adjacent property likely played significant role in this landowners loss of the residential structure - High scorch ratio through the entire timber stand. - One way in and one way out ingress/egress - No equipment turnaround at the location of where the house was located 				



Property Assessment:

Visual assessment of hazardous fuels mitigation treatment following a wildfire event



Ownership #4 house foundation that was destroyed by the fire. Due to the lack of torched trees or crown fire, it is evident that the house burned as a result of an ember shower and surface fire with superheated air from the intense crown fire west of the property.

This area had very high scorch damage to the surrounding timber on the property. This area is north of the house location.



Area near the house location showing the surface fire and crown scorch.

This area had very high scorch damage to the surrounding timber on the property. This area is north of the house location.



Property Assessment:

Visual assessment of hazardous fuels mitigation treatment following a wildfire event



These two photos show before and after the thinning that took place on Ownership #4 property.



The skidder on Ownership #4 property climbing over the rocks during the thinning project.

This area is north of the house showing the property after the thinning. The Judd Creek Hollow Road is in the center of the photo through the thinned stand.



Property Assessment:

Visual assessment of hazardous fuels mitigation treatment following a wildfire event



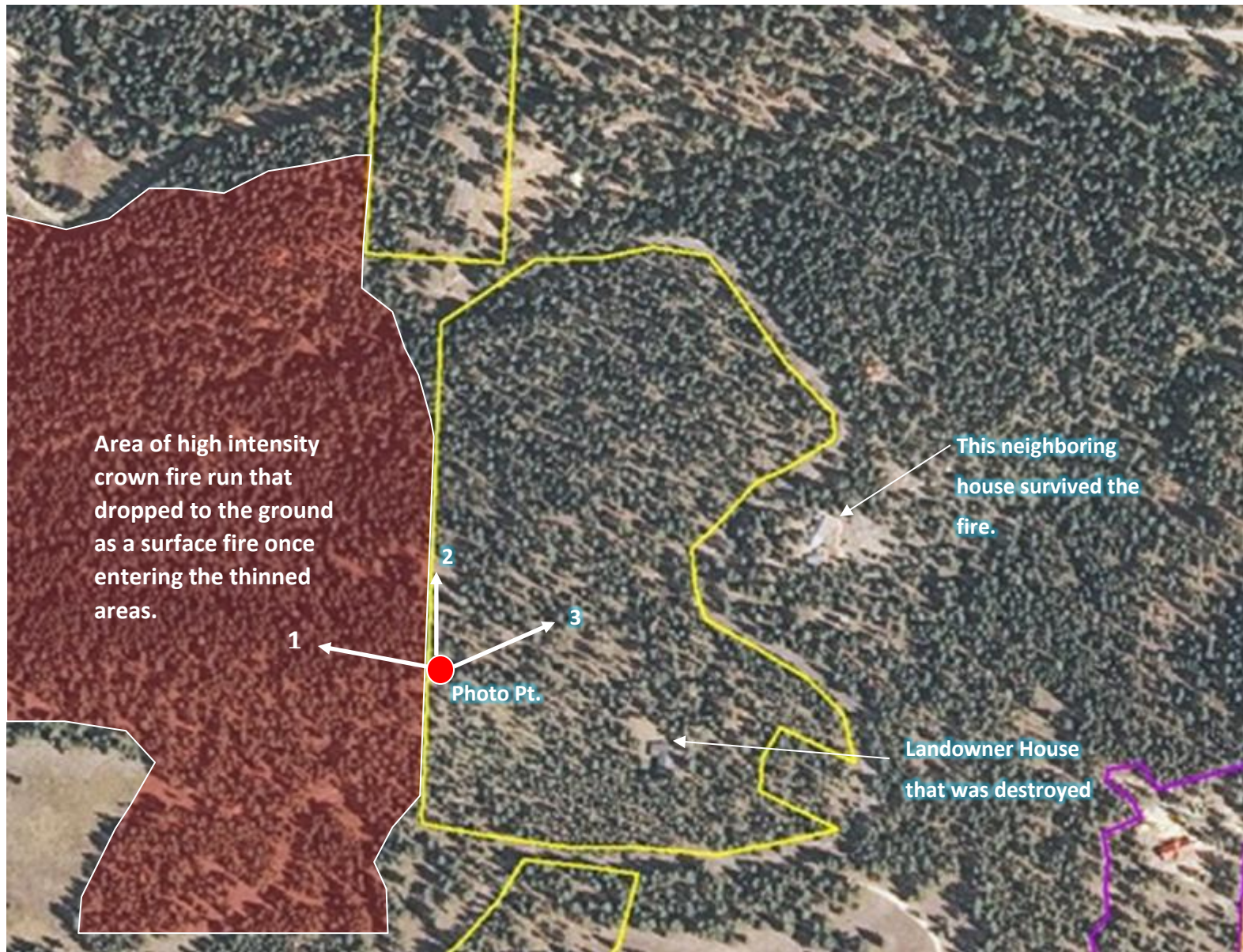
#1 – Upper Left Photo – Un-thinned area directly adjacent to property (thinned in 2005). This area was totally consumed by a high intensity crown fire.

#2 – Upper Right Photo – The stark contrast between the un-thinned adjacent stand of timber to the thinned stand of timber on Ownership #4 property. The approximate property line is shown as the red line.

#3 – Lower Left Photo – Looking toward the Judd Creek road (E/NE) through the thinned stand on this property. The trees were severely scorched from the superheated air from the intense crown fire west of the property. Minimal tree torching, predominantly surface fire through the area.

Property Assessment:

Visual assessment of hazardous fuels mitigation treatment following a wildfire event



Property Assessment:

Visual assessment of hazardous fuels mitigation treatment following a wildfire event

Ownership No.	5				
Address	Judd Creek Hollow – Hamilton, MT				
Total Acres		Acres Treated	12.1	Treatment Date	3/14/05
Structure Damage	<input type="checkbox"/> Affected <input type="checkbox"/> Minor <input type="checkbox"/> Major <input type="checkbox"/> Destroyed <input checked="" type="checkbox"/> None No damage to the residence. One out building destroyed by ember shower/ground fire				
Forest Damage	<input type="checkbox"/> Affected <input type="checkbox"/> Minor <input checked="" type="checkbox"/> Major <input type="checkbox"/> Destroyed <input type="checkbox"/> None Estimate 80% scorch mortality with minor amounts of torching				
Estimated Fire Behavior that Caused Damage	<input checked="" type="checkbox"/> Ember Shower <input checked="" type="checkbox"/> Surface Fire <input checked="" type="checkbox"/> Passive Crown Fire (torching) <input checked="" type="checkbox"/> Active Crown Fire (stand replacement) west of the Judd Creek Hollow road on adjacent ownership leading to impacts from an ember shower, intense surface fire, and extreme heat through the stand.				
Treatment Type (all that apply)	<input checked="" type="checkbox"/> Defensible Space <input checked="" type="checkbox"/> Ingress/Egress <input checked="" type="checkbox"/> Open Acres <input type="checkbox"/> Fuel Break (clear cut) <input type="checkbox"/> Fuel Break (shaded) <input checked="" type="checkbox"/> Pruning A contractor treated this property several years prior to the fire				
Treatment method	<input type="checkbox"/> Hand Work <input checked="" type="checkbox"/> Mechanical <input type="checkbox"/> Combination <input checked="" type="checkbox"/> Pile/Burn <input type="checkbox"/> Chip/Masticate <input type="checkbox"/> _____				
Current Forest Structure & Composition (best estimate)	<input checked="" type="checkbox"/> Single Story <input type="checkbox"/> Two-aged <input type="checkbox"/> Uneven-aged _____ % Seedling/Sapling <u>30%</u> Pole <u>70%</u> Mature <u>PP</u> Primary Species <u>DF</u> Secondary Species <input type="checkbox"/> Riparian Area <input checked="" type="checkbox"/> Light Understory <input type="checkbox"/> Moderate Understory <input type="checkbox"/> Heavy Understory Heavy PP litter layer from mature PP stand (18 in.+ DBH PP present)				
Current Tree Spacing	<input checked="" type="checkbox"/> < 10' crown spacing <input type="checkbox"/> 10' crown spacing <input type="checkbox"/> > 10' crown spacing				
Notes/Comments: (special treatment areas: SMZ, visual buffer, clump/gap, etc.; single/multiple access; turn-around area)	<ul style="list-style-type: none"> - Some minor torching occurred but not near the house - Intense heated air through the stand caused major scorch - One way in and one way out of driveway with no equipment turnaround - Green lawn was turned brown by the intense heat - One spot fire was close to the house almost under the deck, nobody around at the time it occurred so it apparently went out on its own 				



Property Assessment:

Visual assessment of hazardous fuels mitigation treatment following a wildfire event



Ownership #5 house that survived the fire. Due to the lack of torched trees or crown fire, it is evident that the area around the house burned as a result of a 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. →



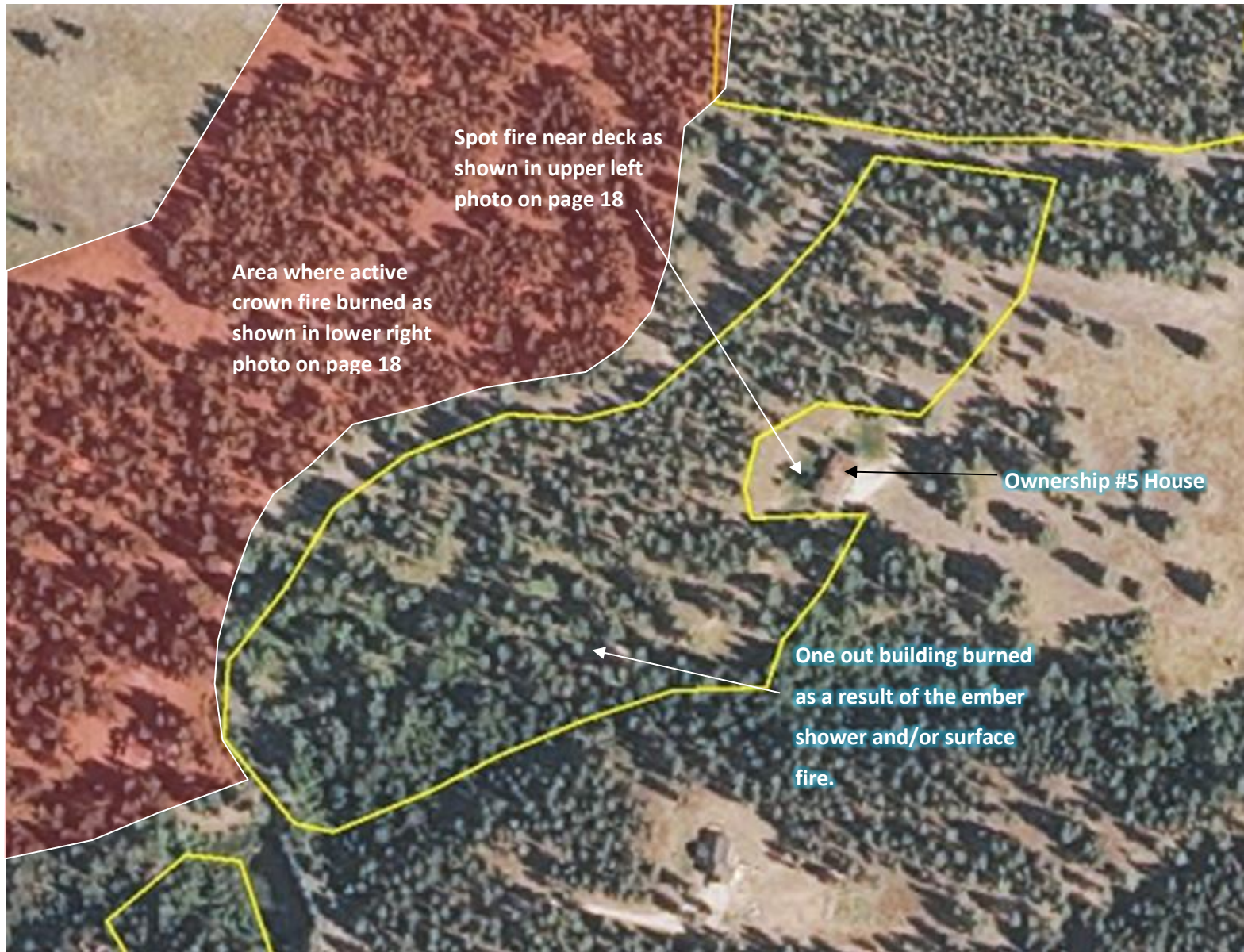
← Area north of the house where the surface fire burned through the timber stand showing a high amount of scorch with no torching or crown fire activity. →

← This area was across the Judd Creek road from Ownership #5 property showing active crown fire and torching that impacted the this property. This area shows the crown fire run to the north of Ownership #6 secondary residence that was lost in the fire. →



Property Assessment:

Visual assessment of hazardous fuels mitigation treatment following a wildfire event



Property Assessment:

Visual assessment of hazardous fuels mitigation treatment following a wildfire event

Ownership No.	6				
Address	Judd Creek Hollow – Hamilton, MT				
Total Acres		Acres Treated	1.0	Treatment Date	9/13/05
Structure Damage	<input type="checkbox"/> Affected <input type="checkbox"/> Minor <input type="checkbox"/> Major <input checked="" type="checkbox"/> Destroyed <input type="checkbox"/> None The residence was completely destroyed by the fire.				
Forest Damage	<input type="checkbox"/> Affected <input type="checkbox"/> Minor <input type="checkbox"/> Major <input checked="" type="checkbox"/> Destroyed <input type="checkbox"/> None Estimate 80% scorch mortality with minor amounts of torching				
Estimated Fire Behavior that Caused Damage	<input checked="" type="checkbox"/> Ember Shower <input checked="" type="checkbox"/> Surface Fire <input type="checkbox"/> Passive Crown Fire (torching) <input checked="" type="checkbox"/> Active Crown Fire (stand replacement) through the property led to destroying the house				
Treatment Type (all that apply)	<input checked="" type="checkbox"/> Defensible Space <input checked="" type="checkbox"/> Ingress/Egress <input checked="" type="checkbox"/> Open Acres <input type="checkbox"/> Fuel Break (clear cut) <input type="checkbox"/> Fuel Break (shaded) <input checked="" type="checkbox"/> Pruning A contractor treated this property several years prior to the fire				
Treatment method	<input type="checkbox"/> Hand Work <input checked="" type="checkbox"/> Mechanical <input type="checkbox"/> Combination <input checked="" type="checkbox"/> Pile/Burn <input type="checkbox"/> Chip/Masticate <input type="checkbox"/> _____				
Current Forest Structure & Composition (best estimate)	<input checked="" type="checkbox"/> Single Story <input type="checkbox"/> Two-aged <input type="checkbox"/> Uneven-aged _____ % Seedling/Sapling <u>20%</u> Pole <u>80%</u> Mature <u>PP</u> Primary Species <u>DF</u> Secondary Species <input checked="" type="checkbox"/> Riparian Area <input type="checkbox"/> Light Understory <input checked="" type="checkbox"/> Moderate Understory <input type="checkbox"/> Heavy Understory				
Current Tree Spacing	<input checked="" type="checkbox"/> < 10' crown spacing <input type="checkbox"/> 10' crown spacing <input type="checkbox"/> > 10' crown spacing				
Notes/Comments: (special treatment areas: SMZ, visual buffer, clump/gap, etc.; single/multiple access; turn-around area)	<ul style="list-style-type: none"> - The entire riparian area burned with high intensity. - One way in and one way out with a paved turnaround. 				



Property Assessment:

Visual assessment of hazardous fuels mitigation treatment following a wildfire event



← View of Ownership #7 secondary residence that was destroyed by the fire by a high intensity crown fire.

This area had very high intensity crown fire burning the entire riparian area to the north of the residence location. This view is looking from the Judd Creek Hollow road to the west toward NF system land. →



← Effects of the high intensity crown fire burning through Ownership #7 property toward Ownership #5 property. Judd Creek Hollow road is in the middle ground in the photo. Photo is looking east.

→ Pond adjacent to the Judd Creek Hollow road on this property. Note that all of the cattails turned brown due to the superheated air from the intense crown fire.



Property Assessment:

Visual assessment of hazardous fuels mitigation treatment following a wildfire event



Property Assessment:

Visual assessment of hazardous fuels mitigation treatment following a wildfire event

Ownership #7	7				
Address	Judd Creek Hollow – Hamilton, MT				
Total Acres		Acres Treated	3.8	Treatment Date	9/13/05
Structure Damage	<input checked="" type="checkbox"/> Affected <input type="checkbox"/> Minor <input type="checkbox"/> Major <input type="checkbox"/> Destroyed <input type="checkbox"/> None No damage to the residence other than smoke damage and some interior damage from melted blinds on the windows				
Forest Damage	<input type="checkbox"/> Affected <input checked="" type="checkbox"/> Minor <input type="checkbox"/> Major <input type="checkbox"/> Destroyed <input type="checkbox"/> None Significant scorch mortality on north portion of property. Forest SE of the house has minor damage				
Estimated Fire Behavior that Caused Damage	<input checked="" type="checkbox"/> Ember Shower <input checked="" type="checkbox"/> Surface Fire <input type="checkbox"/> Passive Crown Fire (torching) <input checked="" type="checkbox"/> Active Crown Fire (stand replacement) through the northern portion of the property that destroyed the secondary residence.				
Treatment Type (all that apply)	<input checked="" type="checkbox"/> Defensible Space <input type="checkbox"/> Ingress/Egress <input checked="" type="checkbox"/> Open Acres <input type="checkbox"/> Fuel Break (clear cut) <input type="checkbox"/> Fuel Break (shaded) <input checked="" type="checkbox"/> Pruning A contractor treated this property several years prior to the fire				
Treatment method	<input type="checkbox"/> Hand Work <input checked="" type="checkbox"/> Mechanical <input type="checkbox"/> Combination <input checked="" type="checkbox"/> Pile/Burn <input type="checkbox"/> Chip/Masticate <input type="checkbox"/> _____				
Current Forest Structure & Composition (best estimate)	<input checked="" type="checkbox"/> Single Story <input type="checkbox"/> Two-aged <input type="checkbox"/> Uneven-aged _____ % Seedling/Sapling <u>30%</u> Pole <u>70%</u> Mature <u>PP</u> Primary Species <u>DF</u> Secondary Species <input checked="" type="checkbox"/> Riparian Area <input type="checkbox"/> Light Understory <input checked="" type="checkbox"/> Moderate Understory <input type="checkbox"/> Heavy Understory				
Current Tree Spacing	<input checked="" type="checkbox"/> < 10' crown spacing <input type="checkbox"/> 10' crown spacing <input type="checkbox"/> > 10' crown spacing				
Notes/Comments: (special treatment areas: SMZ, visual buffer, clump/gap, etc.; single/multiple access; turn-around area)	<ul style="list-style-type: none"> - Ponds and open area NW of the house took away the punch out of the fire front that passed through the northern portion of the property that destroyed the secondary residence (Ownership #6). - Loop driveway - The heat passing through the air from the intense crown fire west and north of the property melted the blinds inside the house 				



Property Assessment:

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View of Ownership #7 primary residence that survived a high intensity crown fire that passed to the north of the residence. This house survived partly due to the large open area to the west of the house which was the direction of fire spread.

The southern section of the primary residence that also survived the fire. There was surface fire and most probably ember showers that started several spot fires around the area.



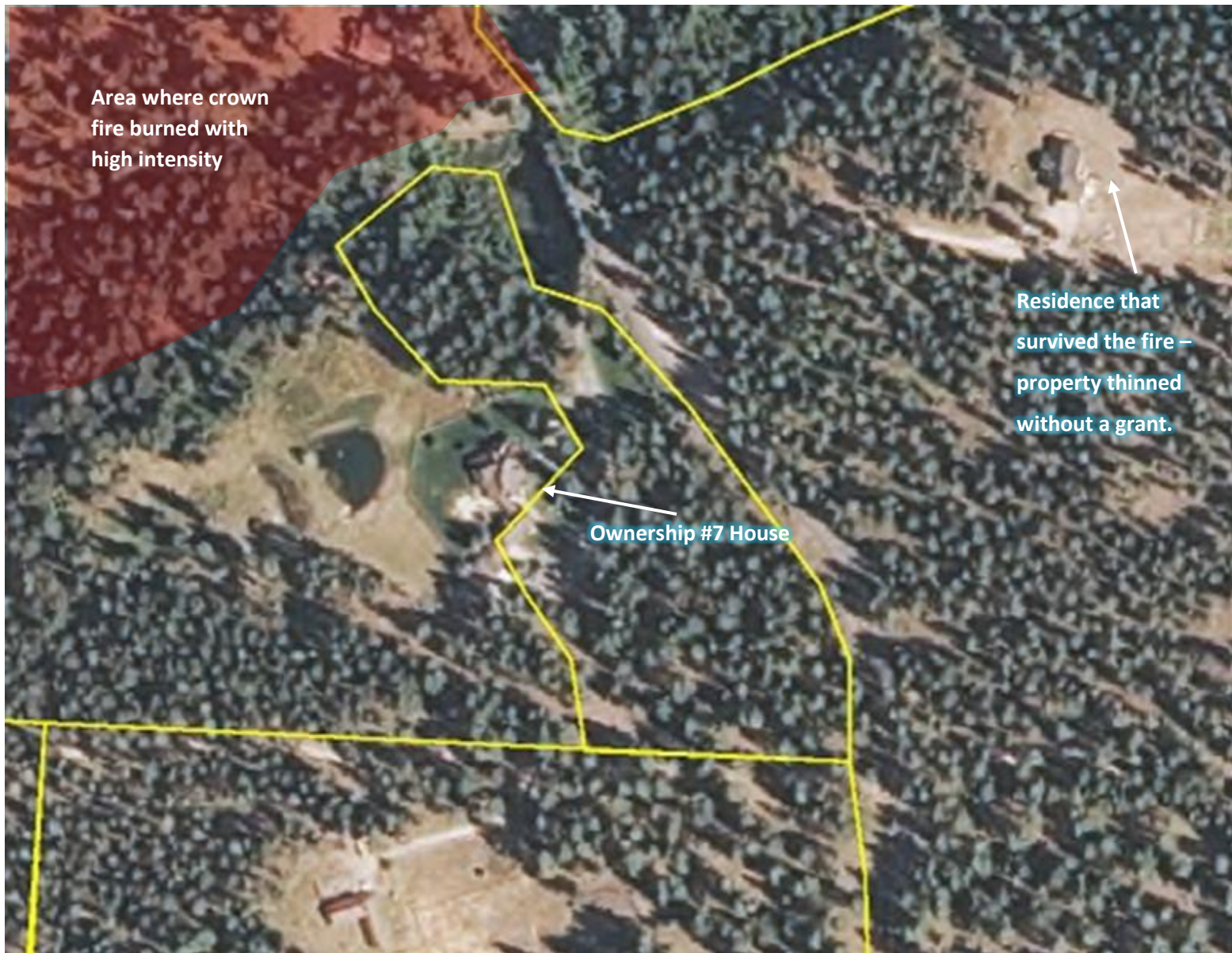
Timber stand W/SW of the primary residence that was thinned. Effects from the fire were intense surface fire but minimal torching and no active crown fire.

Looking from the primary residence to the west across the large open area. The main fire burned from west to east. The area where the intense crown fire burned the secondary residence is to the right in this photo. Note the deciduous tree in the center of the photo that was scorched on the right side. This was due to that intense crown fire.



Property Assessment:

Visual assessment of hazardous fuels mitigation treatment following a wildfire event



Property Assessment:

Visual assessment of hazardous fuels mitigation treatment following a wildfire event

Ownership No.	8				
Address	Judd Creek Hollow – Hamilton, MT				
Total Acres		Acres Treated	13.3	Treatment Date	8/1/05
Structure Damage	<input type="checkbox"/> Affected <input type="checkbox"/> Minor <input type="checkbox"/> Major <input checked="" type="checkbox"/> Destroyed <input type="checkbox"/> None Residence and outbuildings were completely destroyed				
Forest Damage	<input type="checkbox"/> Affected <input type="checkbox"/> Minor <input checked="" type="checkbox"/> Major <input type="checkbox"/> Destroyed <input type="checkbox"/> None Estimated 80% scorch mortality				
Estimated Fire Behavior that Caused Damage	<input checked="" type="checkbox"/> Ember Shower <input checked="" type="checkbox"/> Surface Fire <input type="checkbox"/> Passive Crown Fire (torching) <input type="checkbox"/> Active Crown Fire (stand replacement) <input checked="" type="checkbox"/> Superheated air through timber stand It is estimated due to no evidence of torching or crown fire that the structures were destroyed by the ember shower				
Treatment Type (all that apply)	<input checked="" type="checkbox"/> Defensible Space <input checked="" type="checkbox"/> Ingress/Egress <input checked="" type="checkbox"/> Open Acres <input type="checkbox"/> Fuel Break (clear cut) <input type="checkbox"/> Fuel Break (shaded) <input checked="" type="checkbox"/> Pruning A contractor treated this property several years prior to the fire				
Treatment method	<input type="checkbox"/> Hand Work <input checked="" type="checkbox"/> Mechanical <input type="checkbox"/> Combination <input checked="" type="checkbox"/> Pile/Burn <input type="checkbox"/> Chip/Masticate <input type="checkbox"/> _____				
Current Forest Structure & Composition (best estimate)	<input checked="" type="checkbox"/> Single Story <input type="checkbox"/> Two-aged <input type="checkbox"/> Uneven-aged ____ % Seedling/Sapling <u>10%</u> Pole <u>90%</u> Mature <u>PP</u> Primary Species <u>DF</u> Secondary Species <input checked="" type="checkbox"/> Riparian Area <input checked="" type="checkbox"/> Light Understory <input type="checkbox"/> Moderate Understory <input type="checkbox"/> Heavy Understory				
Current Tree Spacing	<input checked="" type="checkbox"/> < 10' crown spacing <input type="checkbox"/> 10' crown spacing <input type="checkbox"/> > 10' crown spacing				
Notes/Comments: (special treatment areas: SMZ, visual buffer, clump/gap, etc.; single/multiple access; turn-around area)	<ul style="list-style-type: none"> - One way in and one way out with no equipment turnaround - Defensible space treatment opened up to the south for "normal" fire behavior but the timber stand was close to the house on the west side but was opened up from thinning. The predicted fire behavior on the Roaring Lion Fire was considered abnormal for the Bitterroot Valley because of the high intensity crown fire spread onto private land. 				



Property Assessment:

Visual assessment of hazardous fuels mitigation treatment following a wildfire event



View of Ownership #8 residence that was destroyed by the fire. It is a high probability that this residence was destroyed by an ember shower landing on receptive fuels on and around the house. No evidence of high intensity crown fire or torching near the home.

This area had high intensity surface fire burning through the thinned stand. Very little evidence of torching and no evidence of high intensity crown fire but there is group torching and active crown fire on the adjacent property to the west (Ownership #10).



Area between this residence and Judd Creek Hollow road that was open. This area supported active surface fire with a moderate amount of scorch in the timber. It is evident that this opening assisted in reducing the damage to the downwind timber stand in the photo.

The access road from the main Judd Creek Hollow road to this owners residence also leading to Ownerships #9 & #10 properties. This access is one way in and one way out.



Property Assessment:

Visual assessment of hazardous fuels mitigation treatment following a wildfire event



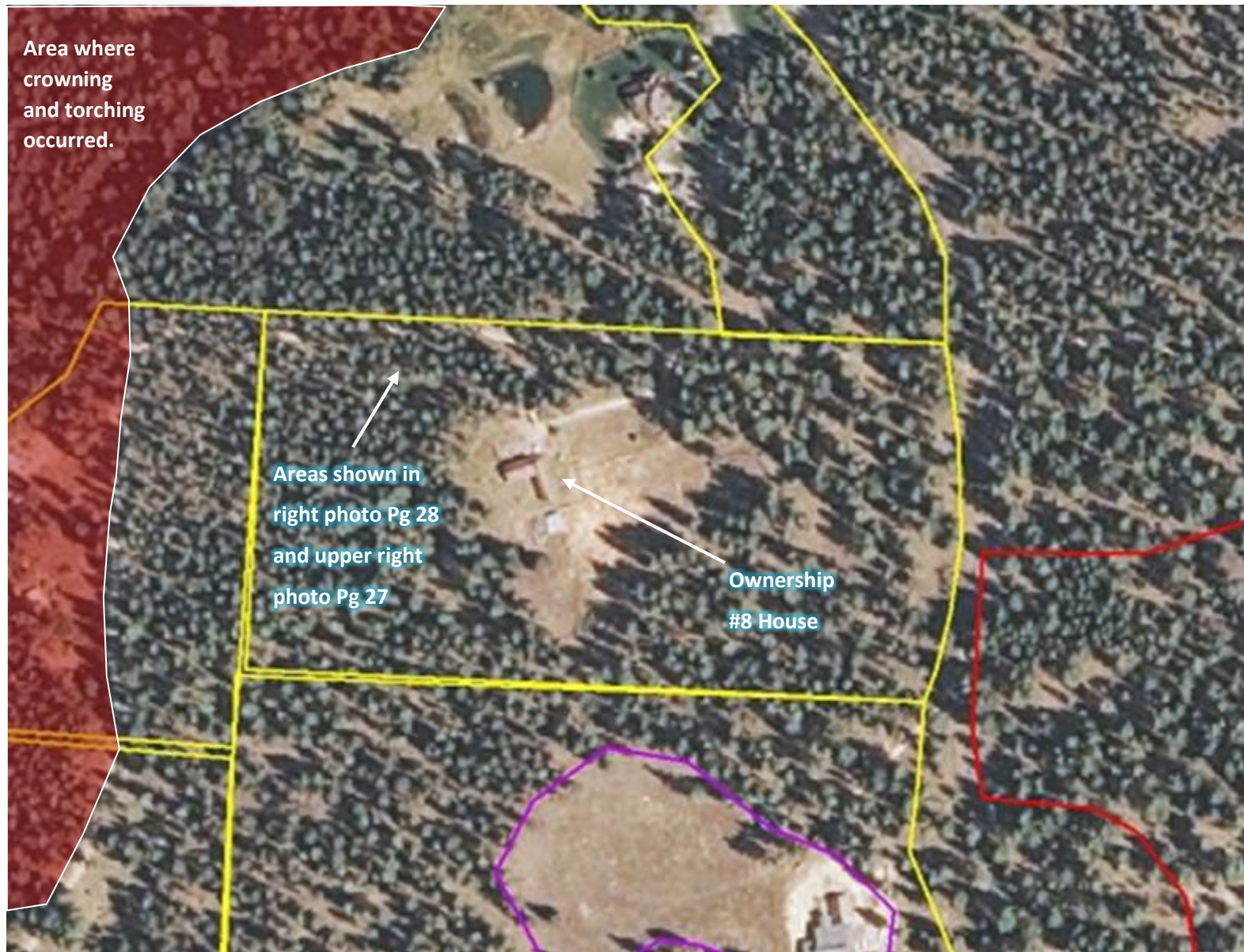
Area to the west of
this owners
residence prior to
being thinned.

This is the same
area after the
thinning was
accomplished.



Property Assessment:

Visual assessment of hazardous fuels mitigation treatment following a wildfire event



Property Assessment:

Visual assessment of hazardous fuels mitigation treatment following a wildfire event

Ownership No.	9				
Address	Judd Creek Hollow – Hamilton, MT				
Total Acres		Acres Treated	12.9	Treatment Date	11/10/05
Structure Damage	<input type="checkbox"/> Affected <input type="checkbox"/> Minor <input type="checkbox"/> Major <input checked="" type="checkbox"/> Destroyed <input type="checkbox"/> None Residence and outbuildings were completely destroyed				
Forest Damage	<input type="checkbox"/> Affected <input type="checkbox"/> Minor <input type="checkbox"/> Major <input checked="" type="checkbox"/> Destroyed <input type="checkbox"/> None Estimated 80% scorch mortality				
Estimated Fire Behavior that Caused Damage	<input checked="" type="checkbox"/> Ember Shower <input checked="" type="checkbox"/> Surface Fire <input type="checkbox"/> Passive Crown Fire (torching) <input checked="" type="checkbox"/> Active Crown Fire (stand replacement) <input checked="" type="checkbox"/> Superheated air through area It is estimated that the active crown fire is what caused the structures to be destroyed				
Treatment Type (all that apply)	<input checked="" type="checkbox"/> Defensible Space <input checked="" type="checkbox"/> Ingress/Egress <input checked="" type="checkbox"/> Open Acres <input type="checkbox"/> Fuel Break (clear cut) <input type="checkbox"/> Fuel Break (shaded) <input checked="" type="checkbox"/> Pruning The landowner treated the area himself				
Treatment method	<input type="checkbox"/> Hand Work <input type="checkbox"/> Mechanical <input checked="" type="checkbox"/> Combination <input checked="" type="checkbox"/> Pile/Burn <input type="checkbox"/> Chip/Masticate <input type="checkbox"/> _____				
Current Forest Structure & Composition (best estimate)	<input checked="" type="checkbox"/> Single Story <input type="checkbox"/> Two-aged <input type="checkbox"/> Uneven-aged ____ % Seedling/Sapling <u>30%</u> Pole <u>70%</u> Mature <u>DF</u> Primary Species <u>PP</u> Secondary Species <input checked="" type="checkbox"/> Riparian Area <input type="checkbox"/> Light Understory <input checked="" type="checkbox"/> Moderate Understory <input type="checkbox"/> Heavy Understory				
Current Tree Spacing	<input checked="" type="checkbox"/> < 10' crown spacing <input type="checkbox"/> 10' crown spacing <input type="checkbox"/> > 10' crown spacing				
Notes/Comments: (special treatment areas: SMZ, visual buffer, clump/gap, etc.; single/multiple access; turn-around area)	<ul style="list-style-type: none"> - Severe wind impacted this and the adjacent property (Iten) uprooting trees and snapping tree stems off about 20-30 feet high. - Severe scorch mortality where there was not stand replacement fire - One way in and one way out on steep dirt road with no equipment turnaround - Adjacent to untreated National Forest System land but was proposed for treatment in the current USFS Westside Project 				



Property Assessment:

Visual assessment of hazardous fuels mitigation treatment following a wildfire event



Road to owners residence was blocked by uprooted and broken off trees. Landowner's house did not survive the fire. His house was located directly behind the trees that are across the road. Notice that the intense crown fire burned through this area from National Forest that is directly adjacent to his property.

This area shows the intense crown fire that burned through the upper portions of landowners property. Note the broken tree in the center is the same tree on the right side of the photo on the left. →



Area on and adjacent to landowner's property where the wind from the fire uprooted and broke off trees. This area is below to the SE of where landowner's residence was located. Part of this stand is on Iten's property.

Another view through the thinned area on landowner's property of the uprooted and broken off trees. →



Property Assessment:

Visual assessment of hazardous fuels mitigation treatment following a wildfire event



Property Assessment:

Visual assessment of hazardous fuels mitigation treatment following a wildfire event

Ownership No.	10					
Address	Judd Creek Hollow – Hamilton, MT					
Total Acres		Acres Treated	6.4	Treatment Date	7/22/05	
Structure Damage	<input type="checkbox"/> Affected <input type="checkbox"/> Minor <input type="checkbox"/> Major <input checked="" type="checkbox"/> Destroyed <input type="checkbox"/> None Residence and outbuildings were completely destroyed					
Forest Damage	<input type="checkbox"/> Affected <input type="checkbox"/> Minor <input type="checkbox"/> Major <input checked="" type="checkbox"/> Destroyed <input type="checkbox"/> None Estimated 80% scorch mortality from stand replacement fire					
Estimated Fire Behavior that Caused Damage	<input checked="" type="checkbox"/> Ember Shower <input checked="" type="checkbox"/> Surface Fire <input type="checkbox"/> Passive Crown Fire (torching) <input checked="" type="checkbox"/> Active Crown Fire (stand replacement) <input checked="" type="checkbox"/> Superheated air through area It is estimated that the active crown fire is what caused the structures to be destroyed					
Treatment Type (all that apply)	<input checked="" type="checkbox"/> Defensible Space <input checked="" type="checkbox"/> Ingress/Egress <input checked="" type="checkbox"/> Open Acres <input type="checkbox"/> Fuel Break (clear cut) <input type="checkbox"/> Fuel Break (shaded) <input checked="" type="checkbox"/> Pruning A contractor treated this area several years prior to this fire					
Treatment method	<input type="checkbox"/> Hand Work <input type="checkbox"/> Mechanical <input checked="" type="checkbox"/> Combination <input checked="" type="checkbox"/> Pile/Burn <input type="checkbox"/> Chip/Masticate <input type="checkbox"/> _____					
Current Forest Structure & Composition (best estimate)	<input checked="" type="checkbox"/> Single Story <input type="checkbox"/> Two-aged <input type="checkbox"/> Uneven-aged ____ % Seedling/Sapling <u>30%</u> Pole <u>70%</u> Mature <u>DF</u> Primary Species <u>PP</u> Secondary Species <input checked="" type="checkbox"/> Riparian Area <input type="checkbox"/> Light Understory <input checked="" type="checkbox"/> Moderate Understory <input type="checkbox"/> Heavy Understory					
Current Tree Spacing	<input checked="" type="checkbox"/> < 10' crown spacing <input type="checkbox"/> 10' crown spacing <input type="checkbox"/> > 10' crown spacing					
Notes/Comments: (special treatment areas: SMZ, visual buffer, clump/gap, etc.; single/multiple access; turn-around area)	<ul style="list-style-type: none"> - Riparian area was burned by the high intensity fire - One way in and one way out - 100% severe scorch mortality in the DF and PP - Internal torching with stand replacement N of the property - Underburn on the east side of the driveway - Adjacent to untreated National Forest System land but was proposed for treatment in the current USFS Westside Project 					



Property Assessment:

Visual assessment of hazardous fuels mitigation treatment following a wildfire event



← Area where landowner's residence was located directly adjacent to the National Forest. Area around residence was thinned.

This area shows the intense crown fire and numerous torched trees around his garage. The opening to the east of these structures assisted the fire in becoming a surface fire that spread into Ownership #8 property underburning the trees on her property as depicted in the lower right photo. →



← Looking down the road leading to the Judd Creek Hollow road toward an area that shows an intense crown fire north of landowner's residence.

This area shows the area across the road from landowner's property on Rukusak's property that supported a surface fire but very little, if any evidence of any fire in the crowns. The road to Ownership #9 & #10 is one way in and one way out. →



Property Assessment:

Visual assessment of hazardous fuels mitigation treatment following a wildfire event



Property Assessment:

Visual assessment of hazardous fuels mitigation treatment following a wildfire event

Ownership No.	11					
Address	Judd Creek Hollow – Hamilton, MT					
Total Acres		Acres Treated	7.4	Treatment Date	7/19/05	
Structure Damage	<input checked="" type="checkbox"/> Affected <input type="checkbox"/> Minor <input type="checkbox"/> Major <input type="checkbox"/> Destroyed <input type="checkbox"/> None Residence and any outbuildings survived					
Forest Damage	<input type="checkbox"/> Affected <input checked="" type="checkbox"/> Minor <input type="checkbox"/> Major <input type="checkbox"/> Destroyed <input type="checkbox"/> None Some scorch in the PP					
Estimated Fire Behavior that Caused Damage	<input checked="" type="checkbox"/> Ember Shower <input checked="" type="checkbox"/> Surface Fire <input type="checkbox"/> Passive Crown Fire (torching) <input type="checkbox"/> Active Crown Fire (stand replacement) <input type="checkbox"/> Superheated air through area The structures were not damaged in the fire. The timber stand was mainly underburned with little damage to the residual trees due to the prior thinning that took place.					
Treatment Type (all that apply)	<input checked="" type="checkbox"/> Defensible Space <input checked="" type="checkbox"/> Ingress/Egress <input checked="" type="checkbox"/> Open Acres <input type="checkbox"/> Fuel Break (clear cut) <input type="checkbox"/> Fuel Break (shaded) <input checked="" type="checkbox"/> Pruning A contractor treated this area several years prior to this fire.					
Treatment method	<input type="checkbox"/> Hand Work <input checked="" type="checkbox"/> Mechanical <input type="checkbox"/> Combination <input checked="" type="checkbox"/> Pile/Burn <input type="checkbox"/> Chip/Masticate <input type="checkbox"/> _____					
Current Forest Structure & Composition (best estimate)	<input checked="" type="checkbox"/> Single Story <input type="checkbox"/> Two-aged <input type="checkbox"/> Uneven-aged ____ % Seedling/Sapling <u>20%</u> Pole <u>80%</u> Mature <u>PP</u> Primary Species <u>DF</u> Secondary Species <input checked="" type="checkbox"/> Riparian Area <input checked="" type="checkbox"/> Light Understory <input type="checkbox"/> Moderate Understory <input type="checkbox"/> Heavy Understory					
Current Tree Spacing	<input checked="" type="checkbox"/> < 10' crown spacing <input type="checkbox"/> 10' crown spacing <input type="checkbox"/> > 10' crown spacing					
Notes/Comments: (special treatment areas: SMZ, visual buffer, clump/gap, etc.; single/multiple access; turn-around area)	<ul style="list-style-type: none"> - One way in and one way out with adequate turnaround - High fire severity to the south across the riparian area - Intact mature PP forest survived the fire with much of the area showing a moderate intense surface understory burn 					



Property Assessment:

Visual assessment of hazardous fuels mitigation treatment following a wildfire event



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.



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.

This photo shows where the fire underburned the thinned stand of larger Ponderosa pine trees but there was very little scorch. The fire was a surface fire with virtually no torching in this stand.



Property Assessment:

Visual assessment of hazardous fuels mitigation treatment following a wildfire event



Property Assessment:

Visual assessment of hazardous fuels mitigation treatment following a wildfire event

Ownership No.	12				
Address	Judd Creek Hollow – Hamilton, MT				
Total Acres		Acres Treated	7.5	Treatment Date	12/11/06
Structure Damage	<input type="checkbox"/> Affected <input type="checkbox"/> Minor <input type="checkbox"/> Major <input checked="" type="checkbox"/> Destroyed <input checked="" type="checkbox"/> None The primary residence was completely destroyed but the secondary log residence survived				
Forest Damage	<input type="checkbox"/> Affected <input checked="" type="checkbox"/> Minor <input type="checkbox"/> Major <input checked="" type="checkbox"/> Destroyed <input type="checkbox"/> None Stand replacement to the W & SW but minor underburning to the E & SE				
Estimated Fire Behavior that Caused Damage	<input checked="" type="checkbox"/> Ember Shower <input checked="" type="checkbox"/> Surface Fire <input type="checkbox"/> Passive Crown Fire (torching) <input checked="" type="checkbox"/> Active Crown Fire (stand replacement) <input checked="" type="checkbox"/> Superheated air through area It is likely that the primary residence was destroyed by the crown fire and superheated air. The large opening to the east of this residence took the heat out of the fire front with minor damage to the timber stand to the east				
Treatment Type (all that apply)	<input checked="" type="checkbox"/> Defensible Space <input checked="" type="checkbox"/> Ingress/Egress <input checked="" type="checkbox"/> Open Acres <input type="checkbox"/> Fuel Break (clear cut) <input type="checkbox"/> Fuel Break (shaded) <input checked="" type="checkbox"/> Pruning A contractor treated this area several years prior to this fire.				
Treatment method	<input type="checkbox"/> Hand Work <input type="checkbox"/> Mechanical <input checked="" type="checkbox"/> Combination <input checked="" type="checkbox"/> Pile/Burn <input type="checkbox"/> Chip/Masticate <input type="checkbox"/> _____				
Current Forest Structure & Composition (best estimate)	<input checked="" type="checkbox"/> Single Story <input type="checkbox"/> Two-aged <input type="checkbox"/> Uneven-aged _____ % Seedling/Sapling <u>30%</u> Pole <u>70%</u> Mature <u>PP</u> Primary Species <u>DF</u> Secondary Species <input checked="" type="checkbox"/> Riparian Area <input type="checkbox"/> Light Understory <input checked="" type="checkbox"/> Moderate Understory <input type="checkbox"/> Heavy Understory				
Current Tree Spacing	<input type="checkbox"/> < 10' crown spacing <input checked="" type="checkbox"/> 10' crown spacing <input type="checkbox"/> > 10' crown spacing				
Notes/Comments: (special treatment areas: SMZ, visual buffer, clump/gap, etc.; single/multiple access; turn-around area)	<ul style="list-style-type: none"> - One way in and one way out with no turnaround - High fire severity to the north burning through the riparian area through Ownership #9 property - A visual buffer was retained to the north to shield the neighbor (Ownership #9) from the primary residence - Severe wind impacted this and the adjacent property (Ownership #9) uprooting trees and snapping tree stems off about 20-30 feet high. - 				



Property Assessment:

Visual assessment of hazardous fuels mitigation treatment following a wildfire event



Site of landowner's house near the property boundary with the National Forest and Ownership #9 property. As seen in the left center of the photo, the fire burned with high intensity downslope to the east from left to right. It is anticipated that this home burned from the shower of embers, surface fire, and the intense superheated air from the crown fire.

This photo shows the opening to the east of the home site that helped reduce the fire intensity below the house. Note the house chimney in the right center of the photo.



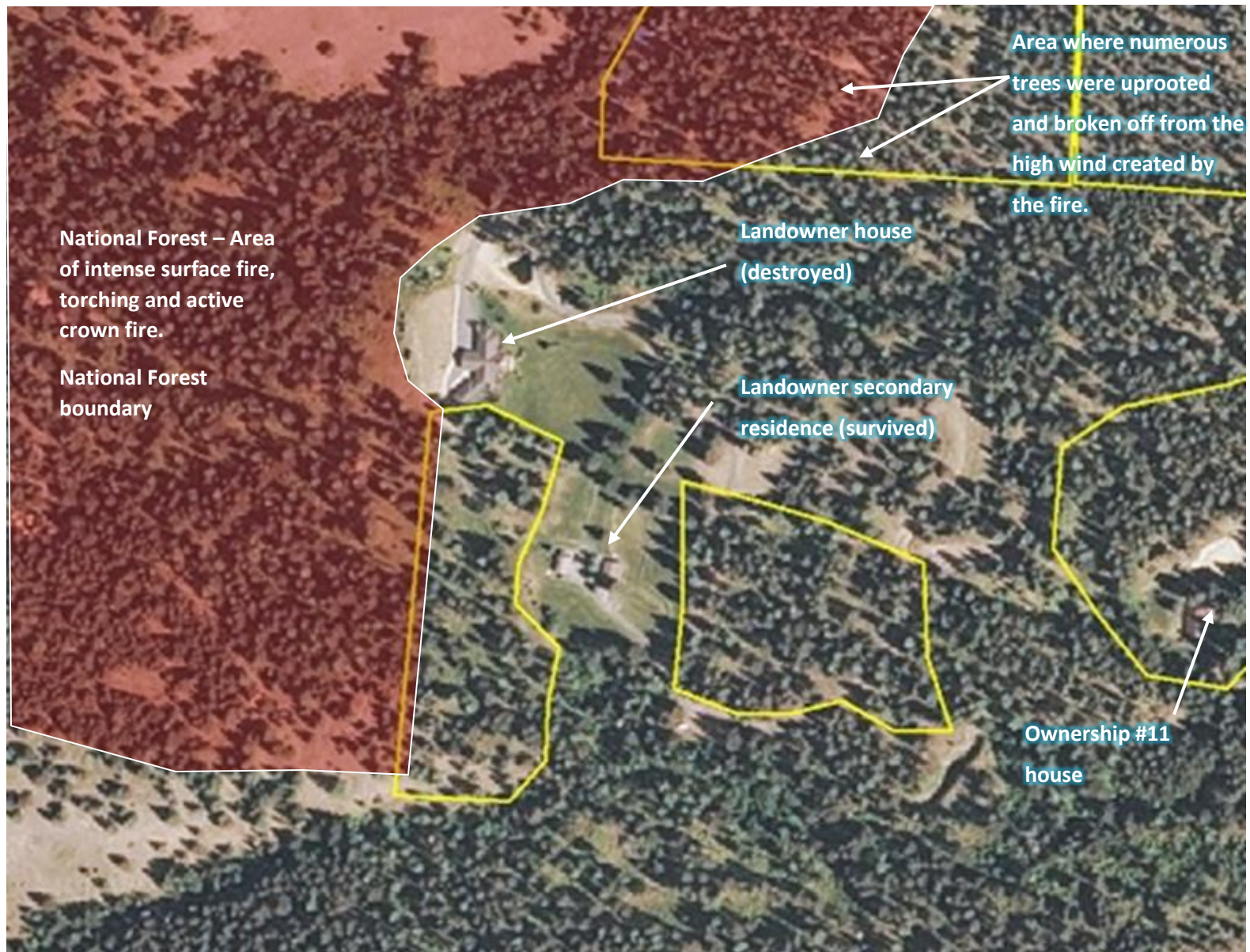
This photo shows the effects of the intense crown fire and space between the house and the surrounding timber to the west of the house adjacent to National Forest land. The house is to the right of the rock wall and the driveway. The rock wall can also be seen in the upper left photo.

This photo shows the effects of the intense crown fire to the west of the house above the opening shown in the photo on the left.



Property Assessment:

Visual assessment of hazardous fuels mitigation treatment following a wildfire event



Property Assessment:

Visual assessment of hazardous fuels mitigation treatment following a wildfire event

Ownership No.	13				
Address	Roaring Lion Road – Hamilton, MT				
Total Acres		Acres Treated	14.5	Treatment Date	4/1/05
Structure Damage	<input type="checkbox"/> Affected <input type="checkbox"/> Minor <input type="checkbox"/> Major <input type="checkbox"/> Destroyed <input checked="" type="checkbox"/> None				
Forest Damage	<input checked="" type="checkbox"/> Affected <input type="checkbox"/> Minor <input type="checkbox"/> Major <input checked="" type="checkbox"/> Destroyed <input type="checkbox"/> None Very little evidence of scorch mortality, main fire run to the south across Roaring Lion road				
Estimated Fire Behavior that Caused Damage	<input checked="" type="checkbox"/> Ember Shower <input checked="" type="checkbox"/> Surface Fire <input type="checkbox"/> Passive Crown Fire (torching) <input type="checkbox"/> Active Crown Fire (stand replacement) <input type="checkbox"/> Superheated air through area Light underburn stopped by a ditch with water to the west of the house, spotting occurred to the east in other areas on the property but only underburned the stand with minimal scorch				
Treatment Type (all that apply)	<input checked="" type="checkbox"/> Defensible Space <input checked="" type="checkbox"/> Ingress/Egress <input checked="" type="checkbox"/> Open Acres <input type="checkbox"/> Fuel Break (clear cut) <input type="checkbox"/> Fuel Break (shaded) <input checked="" type="checkbox"/> Pruning The landowner treated the area				
Treatment method	<input type="checkbox"/> Hand Work <input type="checkbox"/> Mechanical <input checked="" type="checkbox"/> Combination <input checked="" type="checkbox"/> Pile/Burn <input type="checkbox"/> Chip/Masticate <input type="checkbox"/> _____				
Current Forest Structure & Composition (best estimate)	<input checked="" type="checkbox"/> Single Story <input type="checkbox"/> Two-aged <input type="checkbox"/> Uneven-aged <u>5</u> % Seedling/Sapling <u>30%</u> Pole <u>65%</u> Mature <u>DF</u> Primary Species <u>PP</u> Secondary Species <input checked="" type="checkbox"/> Riparian Area <input checked="" type="checkbox"/> Light Understory <input type="checkbox"/> Moderate Understory <input type="checkbox"/> Heavy Understory				
Current Tree Spacing	<input checked="" type="checkbox"/> < 10' crown spacing <input type="checkbox"/> 10' crown spacing <input type="checkbox"/> > 10' crown spacing				
Notes/Comments: (special treatment areas: SMZ, visual buffer, clump/gap, etc.; single/multiple access; turn-around area)	<ul style="list-style-type: none"> - One way in and one way out with loop turnaround - Surface fire burned up to the irrigation ditch from the West and South 				

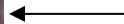


Property Assessment:

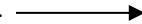
Visual assessment of hazardous fuels mitigation treatment following a wildfire event



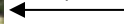
The fire burned as a low intensity surface fire around this secondary home. The surface fire stopped at an irrigation ditch that was running water. There was no evidence of any spot fires in the litter around the home.



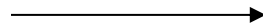
This photo shows the irrigation ditch that kept the fire from spreading to the home.



This photo shows the primary residence in the bottom of Roaring Lion Creek. This home was also not impacted by the fire.

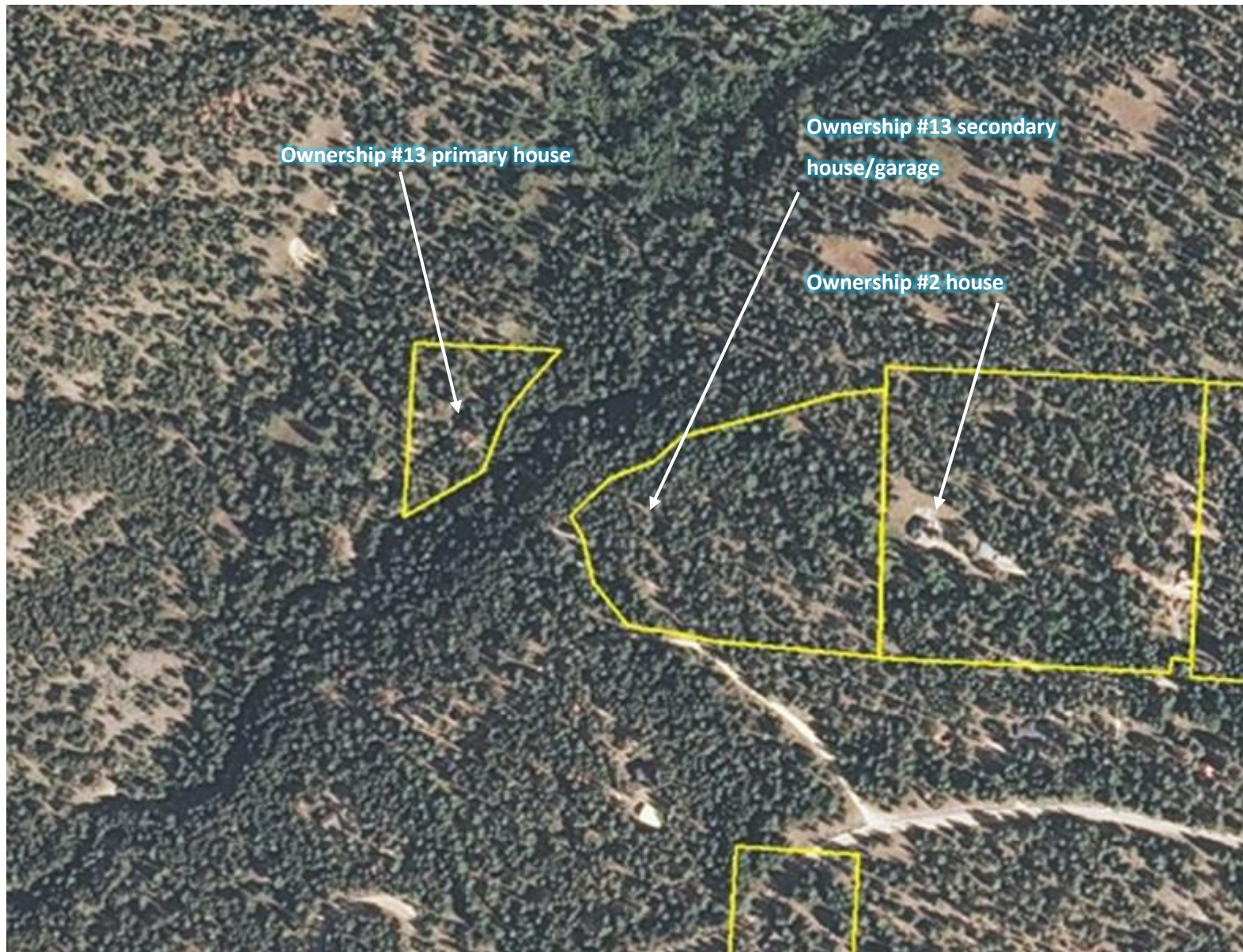


This photo shows the area near the secondary home that was not impacted by the fire in this thinned stand. The fire did spot to the east of this property causing some torching and a fairly intense surface fire that burned toward Ownership #1 & #2 properties to the east.



Property Assessment:

Visual assessment of hazardous fuels mitigation treatment following a wildfire event



Property Assessment:

Visual assessment of hazardous fuels mitigation treatment following a wildfire event

Ownership No.	14				
Address	Springhill Road – Hamilton, MT				
Total Acres		Acres Treated	9.8	Treatment Date	5/20/11
Structure Damage	<input type="checkbox"/> Affected <input type="checkbox"/> Minor <input type="checkbox"/> Major <input type="checkbox"/> Destroyed <input checked="" type="checkbox"/> None Fire was suppressed with handline about 200 feet to the west of the house				
Forest Damage	<input type="checkbox"/> Affected <input checked="" type="checkbox"/> Minor <input type="checkbox"/> Major <input type="checkbox"/> Destroyed <input type="checkbox"/> None Some minor scorch but minimal in areas with larger diameter trees but significant in smaller diameter stands				
Estimated Fire Behavior that Caused Damage	<input checked="" type="checkbox"/> Ember Shower <input checked="" type="checkbox"/> Surface Fire <input type="checkbox"/> Passive Crown Fire (torching) <input type="checkbox"/> Active Crown Fire (stand replacement) <input type="checkbox"/> Superheated air through area There was probably some ember shower but the property was mainly burned by a surface fire. The surface fire could have started by spotting.				
Treatment Type (all that apply)	<input checked="" type="checkbox"/> Defensible Space <input checked="" type="checkbox"/> Ingress/Egress <input checked="" type="checkbox"/> Open Acres <input type="checkbox"/> Fuel Break (clear cut) <input type="checkbox"/> Fuel Break (shaded) <input checked="" type="checkbox"/> Pruning A contractor treated the area				
Treatment method	<input type="checkbox"/> Hand Work <input checked="" type="checkbox"/> Mechanical <input type="checkbox"/> Combination <input checked="" type="checkbox"/> Pile/Burn <input type="checkbox"/> Chip/Masticate <input type="checkbox"/> _____				
Current Forest Structure & Composition (best estimate)	<input checked="" type="checkbox"/> Single Story <input type="checkbox"/> Two-aged <input type="checkbox"/> Uneven-aged _____ % Seedling/Sapling <u>20%</u> Pole <u>80%</u> Mature <u>PP</u> Primary Species _____ Secondary Species <input checked="" type="checkbox"/> Riparian Area <input checked="" type="checkbox"/> Light Understory <input type="checkbox"/> Moderate Understory <input type="checkbox"/> Heavy Understory				
Current Tree Spacing	<input checked="" type="checkbox"/> < 10' crown spacing <input checked="" type="checkbox"/> 10' crown spacing <input checked="" type="checkbox"/> > 10' crown spacing Large open area >10 foot spacing with spacing mosaic				
Notes/Comments: (special treatment areas: SMZ, visual buffer, clump/gap, etc.; single/multiple access; turn-around area)	<ul style="list-style-type: none"> - A hand constructed fireline stopped the fire progression to the east toward the structures - Significant scorch occurred on the west ½ of property that burned - Ash at the base of mature pine indicates heavy needle mat with possible root damage 				



Property Assessment:

Visual assessment of hazardous fuels mitigation treatment following a wildfire event



The burned area to the west of landowner's property was a surface fire that was controlled by a hand constructed fireline. The house can be seen in the middle of the photo. The brown cured grass between the house and burned area is where the fireline was located.



This landowner's neighbor lost their home from a shower of embers and surface fire. This property was not thinned and the house had a shake roof, wood siding, pine needles on the roof and burnable shrubs around the



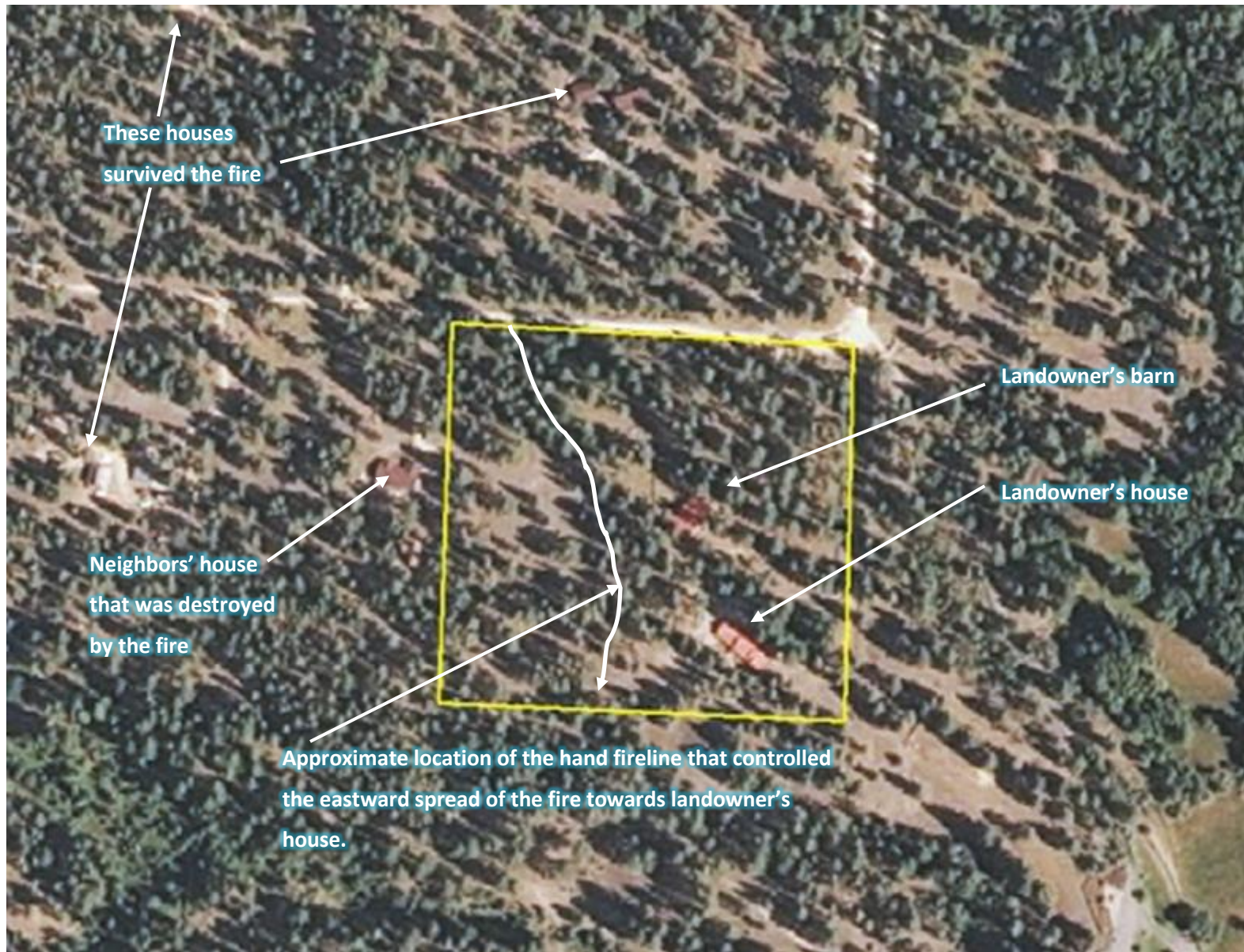
Severe scorch in the pine trees on the west side of landowner's property near the property boundary of the neighbor who lost their home in the upper right photo.



The surface fire burning around some of the older Ponderosa Pine trees. It remains to be seen as to the severity of this fire to the root systems of these trees due to the deep needle litter layer surrounding them.

Property Assessment:

Visual assessment of hazardous fuels mitigation treatment following a wildfire event



Property Assessment:

Visual assessment of hazardous fuels mitigation treatment following a wildfire event

Ownership No.	15				
Address	Judd Creek Hollow – Hamilton, MT				
Total Acres		Acres Treated	30.0	Treatment Date	2016 in progress
Structure Damage	<input type="checkbox"/> Affected <input type="checkbox"/> Minor <input type="checkbox"/> Major <input checked="" type="checkbox"/> Destroyed <input type="checkbox"/> None Primary residence and all outbuildings destroyed				
Forest Damage	<input type="checkbox"/> Affected <input type="checkbox"/> Minor <input checked="" type="checkbox"/> Major <input type="checkbox"/> Destroyed <input type="checkbox"/> None Major damage to forest due to intense surface fire and superheated air through stand.				
Estimated Fire Behavior that Caused Damage	<input checked="" type="checkbox"/> Ember Shower <input checked="" type="checkbox"/> Surface Fire <input checked="" type="checkbox"/> Passive Crown Fire (torching) <input type="checkbox"/> Active Crown Fire (stand replacement) <input checked="" type="checkbox"/> Superheated air through area There was some effect of the log deck burning NE of the structures but no effect to the structures.				
Treatment Type (all that apply)	<input checked="" type="checkbox"/> Defensible Space <input checked="" type="checkbox"/> Ingress/Egress <input checked="" type="checkbox"/> Open Acres <input type="checkbox"/> Fuel Break (clear cut) <input type="checkbox"/> Fuel Break (shaded) <input checked="" type="checkbox"/> Pruning A contractor was in the process of treating the area during the fire.				
Treatment method	<input type="checkbox"/> Hand Work <input checked="" type="checkbox"/> Mechanical <input type="checkbox"/> Combination <input type="checkbox"/> Pile/Burn <input type="checkbox"/> Chip/Masticate <input checked="" type="checkbox"/> Some piles and log deck				
Current Forest Structure & Composition (best estimate)	<input checked="" type="checkbox"/> Single Story <input type="checkbox"/> Two-aged <input type="checkbox"/> Uneven-aged _____ % Seedling/Sapling <u>50%</u> Pole <u>50%</u> Mature <u>PP</u> Primary Species <u>DF</u> Secondary Species <input type="checkbox"/> Riparian Area <input type="checkbox"/> Light Understory <input checked="" type="checkbox"/> Moderate Understory <input type="checkbox"/> Heavy Understory				
Current Tree Spacing	<input type="checkbox"/> < 10' crown spacing <input checked="" type="checkbox"/> 10' crown spacing <input type="checkbox"/> > 10' crown spacing				
Notes/Comments: (special treatment areas: SMZ, visual buffer, clump/gap, etc.; single/multiple access; turn-around area)	<ul style="list-style-type: none"> - Individual tree and group torching on property - Some areas of low intensity surface fire with little to no scorch damage - Fire through small aspen stands contributed to at least 50% scorch in these stands with surface fire under aspens will probably allow regenerating aspen understory - 100% loss of log volume at the landing from the contractor thinning that would have produced revenue for the contractor. Contractor estimated about 10 log truck loads lost. 				



Property Assessment:

Visual assessment of hazardous fuels mitigation treatment following a wildfire event



Landowner's home that was destroyed by the fire. It is anticipated that this home was burned due to the shower of embers, superheated air, and a surface fire burning up to the structure. The torched trees around the home site were torched from the heat of the burning home.



The property was being thinned at the time of the fire by a contractor. This stand was one of the areas that had been thinned and had minimal scorch to the Ponderosa Pine trees.



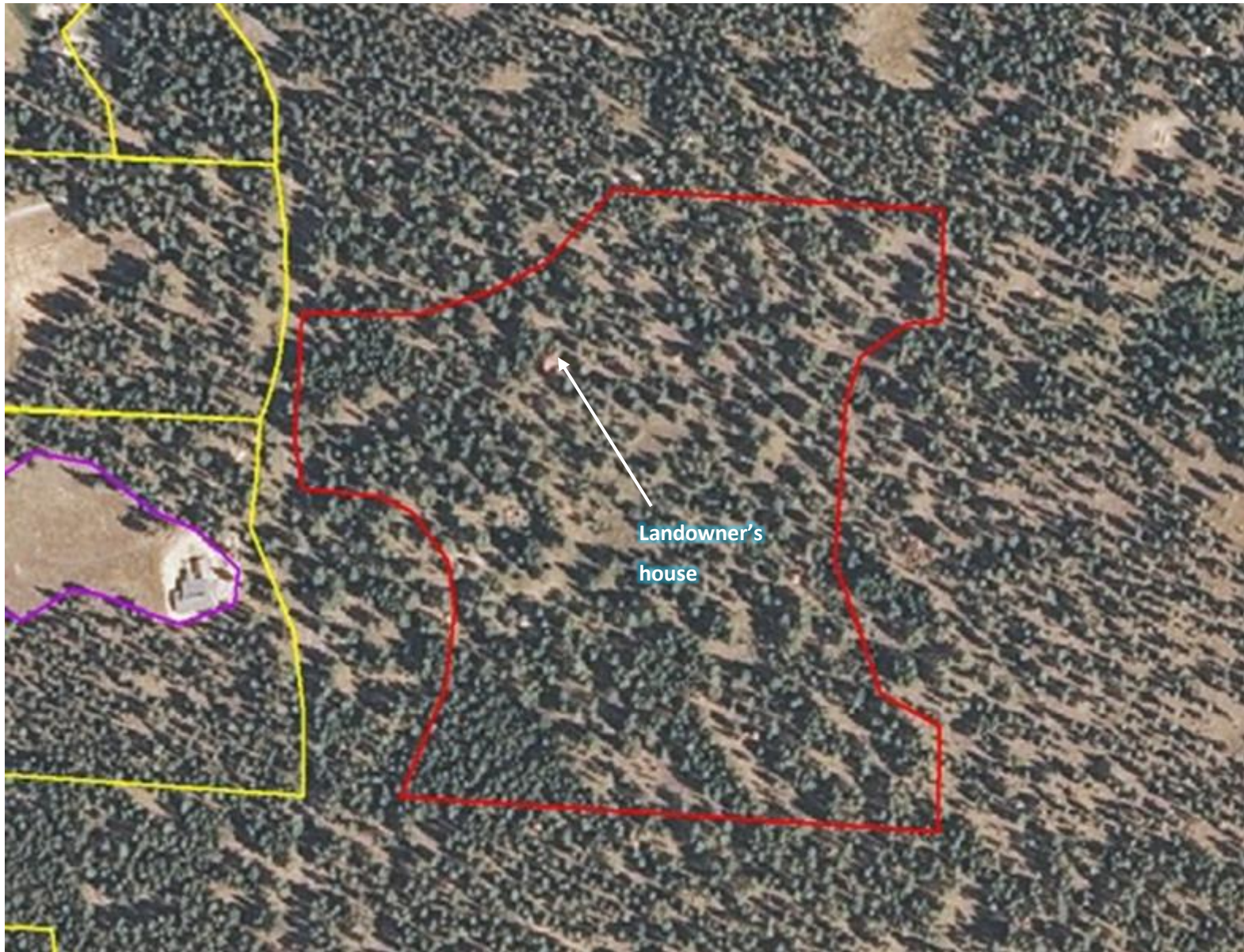
This area was burned due to the surface fire and the shower of embers starting spot fires within the stand of trees and in the openings in the cured grass and fine fuels.

This is the area where the contractor lost 10 loads of logs/pulp due to the fire that were harvested off the thinning project. The trees that were severely scorched and/or had their crowns torched were as a result of the burning log deck close by.



Property Assessment:

Visual assessment of hazardous fuels mitigation treatment following a wildfire event



Property Assessment:

Visual assessment of hazardous fuels mitigation treatment following a wildfire event

Ownership No.	16				
Address	Lupine Ridge Trail – Hamilton, MT				
Total Acres		Acres Treated	9.8	Treatment Date	4/19/13
Structure Damage	<input type="checkbox"/> Affected <input type="checkbox"/> Minor <input type="checkbox"/> Major <input checked="" type="checkbox"/> Destroyed <input type="checkbox"/> None The residence was completely destroyed.				
Forest Damage	<input type="checkbox"/> Affected <input checked="" type="checkbox"/> Minor <input type="checkbox"/> Major <input type="checkbox"/> Destroyed <input type="checkbox"/> None Major damage to forest due to intense surface fire and superheated air through stand.				
Estimated Fire Behavior that Caused Damage	<input checked="" type="checkbox"/> Ember Shower <input checked="" type="checkbox"/> Surface Fire <input type="checkbox"/> Passive Crown Fire (torching) <input type="checkbox"/> Active Crown Fire (stand replacement) <input type="checkbox"/> Superheated air through area It is estimated, due to surface fire burning right up to the house that this and some ember shower contributed to the structure loss.				
Treatment Type (all that apply)	<input checked="" type="checkbox"/> Defensible Space <input checked="" type="checkbox"/> Ingress/Egress <input checked="" type="checkbox"/> Open Acres <input type="checkbox"/> Fuel Break (clear cut) <input type="checkbox"/> Fuel Break (shaded) <input checked="" type="checkbox"/> Pruning A contractor treated the area				
Treatment method	<input checked="" type="checkbox"/> Hand Work <input type="checkbox"/> Mechanical <input type="checkbox"/> Combination <input type="checkbox"/> Pile/Burn <input type="checkbox"/> Chip/Masticate <input type="checkbox"/>				
Current Forest Structure & Composition (best estimate)	<input checked="" type="checkbox"/> Single Story <input type="checkbox"/> Two-aged <input type="checkbox"/> Uneven-aged _____ % Seedling/Sapling <u>50%</u> Pole <u>50%</u> Mature <u>PP</u> Primary Species <u>DF</u> Secondary Species <input checked="" type="checkbox"/> Riparian Area <input checked="" type="checkbox"/> Light Understory <input type="checkbox"/> Moderate Understory <input type="checkbox"/> Heavy Understory				
Current Tree Spacing	<input checked="" type="checkbox"/> < 10' crown spacing <input checked="" type="checkbox"/> 10' crown spacing <input type="checkbox"/> > 10' crown spacing 10 ft. avg. crown spacing around the homesite, slightly tighter in other areas.				
Notes/Comments: (special treatment areas: SMZ, visual buffer, clump/gap, etc.; single/multiple access; turn-around area)	<ul style="list-style-type: none"> - There was no torching in any of the stands only surface fire - All structures on adjacent properties survived the fire - Very little scorch mortality in the DF on the north aspect - Almost no scorch in the PP - Very rocky north aspect had minimal DF litter - Riparian area to the south and below home site had minimal damage 				



Property Assessment:

Visual assessment of hazardous fuels mitigation treatment following a wildfire event



This photo is of the landowner home that was destroyed by the fire. The evidence points to this home being burned by the shower of embers landing on receptive fuels in and around the home as well as surface fire burning up to the home.

This area is within the thinned Ponderosa Pine stand to the north and upslope from the home. The fire that passed through this area was a surface fire.



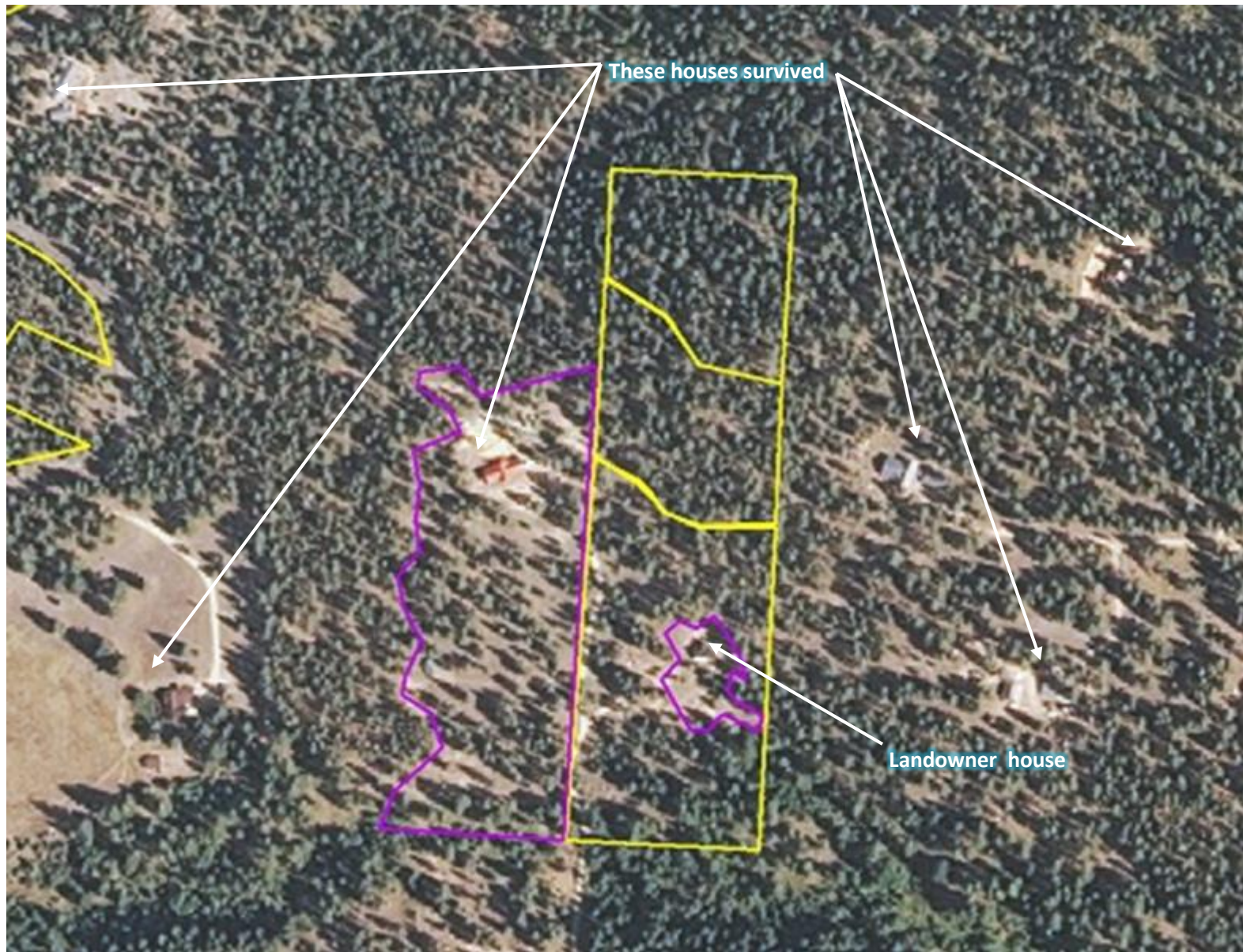
This is the thinned ponderosa pine stand to the north of the house that sustained moderate scorch from the intense surface fire. Virtually none of the trees allowed any torching due to the lack of ladder fuels.

This is a stand of Doug-fir on the north aspect over the ridge to the north of the house near the property boundary. Most of the Doug-fir will probably not survive the surface fire even though much of the area had a tremendous amount of rock.



Property Assessment:

Visual assessment of hazardous fuels mitigation treatment following a wildfire event



Property Assessment:

Visual assessment of hazardous fuels mitigation treatment following a wildfire event

Ownership No.	17				
Address	Whispering Pines Road – Hamilton, MT				
Total Acres		Acres Treated	7.2	Treatment Date	11/25/13
Structure Damage	<input type="checkbox"/> Affected <input type="checkbox"/> Minor <input type="checkbox"/> Major <input type="checkbox"/> Destroyed <input checked="" type="checkbox"/> None No structures damaged or destroyed but barn did have a burning log roll down the hill and scorch the back wall but the landowner put the fire out				
Forest Damage	<input type="checkbox"/> Affected <input checked="" type="checkbox"/> Minor <input type="checkbox"/> Major <input type="checkbox"/> Destroyed <input type="checkbox"/> None Minor damage to the property due to lighter surface fire than experienced on other properties				
Estimated Fire Behavior that Caused Damage	<input checked="" type="checkbox"/> Ember Shower <input checked="" type="checkbox"/> Surface Fire <input type="checkbox"/> Passive Crown Fire (torching) <input type="checkbox"/> Active Crown Fire (stand replacement) <input type="checkbox"/> Superheated air through area There was active crown fire on NF to the west of this property				
Treatment Type (all that apply)	<input checked="" type="checkbox"/> Defensible Space <input checked="" type="checkbox"/> Ingress/Egress <input checked="" type="checkbox"/> Open Acres <input type="checkbox"/> Fuel Break (clear cut) <input type="checkbox"/> Fuel Break (shaded) <input checked="" type="checkbox"/> Pruning A contractor treated the area				
Treatment method	<input type="checkbox"/> Hand Work <input type="checkbox"/> Mechanical <input checked="" type="checkbox"/> Combination <input checked="" type="checkbox"/> Pile/Burn <input type="checkbox"/> Chip/Masticate <input type="checkbox"/>				
Current Forest Structure & Composition (best estimate)	<input type="checkbox"/> Single Story <input checked="" type="checkbox"/> Two-aged <input type="checkbox"/> Uneven-aged <u>20</u> % Seedling/Sapling <u>50%</u> Pole <u>30%</u> Mature <u>PP</u> Primary Species <u>DF</u> Secondary Species <input checked="" type="checkbox"/> Riparian Area <input type="checkbox"/> Light Understory <input checked="" type="checkbox"/> Moderate Understory <input type="checkbox"/> Heavy Understory				
Current Tree Spacing	<input checked="" type="checkbox"/> < 10' crown spacing <input checked="" type="checkbox"/> 10' crown spacing <input type="checkbox"/> > 10' crown spacing More open around the structures				
Notes/Comments: (special treatment areas: SMZ, visual buffer, clump/gap, etc.; single/multiple access; turn-around area)	<ul style="list-style-type: none"> - Active crown fire on the west side of the property on NF land during the first day of the fire - Very low intensity surface fire through the treated area E, N and NW of the home - Riparian area SW of the house intact with no damage - Landowner put out a fire at the propane tank and the burning log that rolled down the hill to the barn. If the landowner would not have put out the fire on the barn, the barn would have been destroyed - The ninebark burned intense in some pockets but was largely intact with heavy scorch - The corral where they kept their mules reduced the fire behavior as it burned off NF to the property due to bare ground and open area. 				



Property Assessment:

Visual assessment of hazardous fuels mitigation treatment following a wildfire event



Landowner's home survived the fire due to its Firewise construction, the green lawn and excellent landscaping, and the thinning that was done near the home.

This area is northwest of the house that was underburned by the fire which stopped in a draw that was near the house on a north aspect.



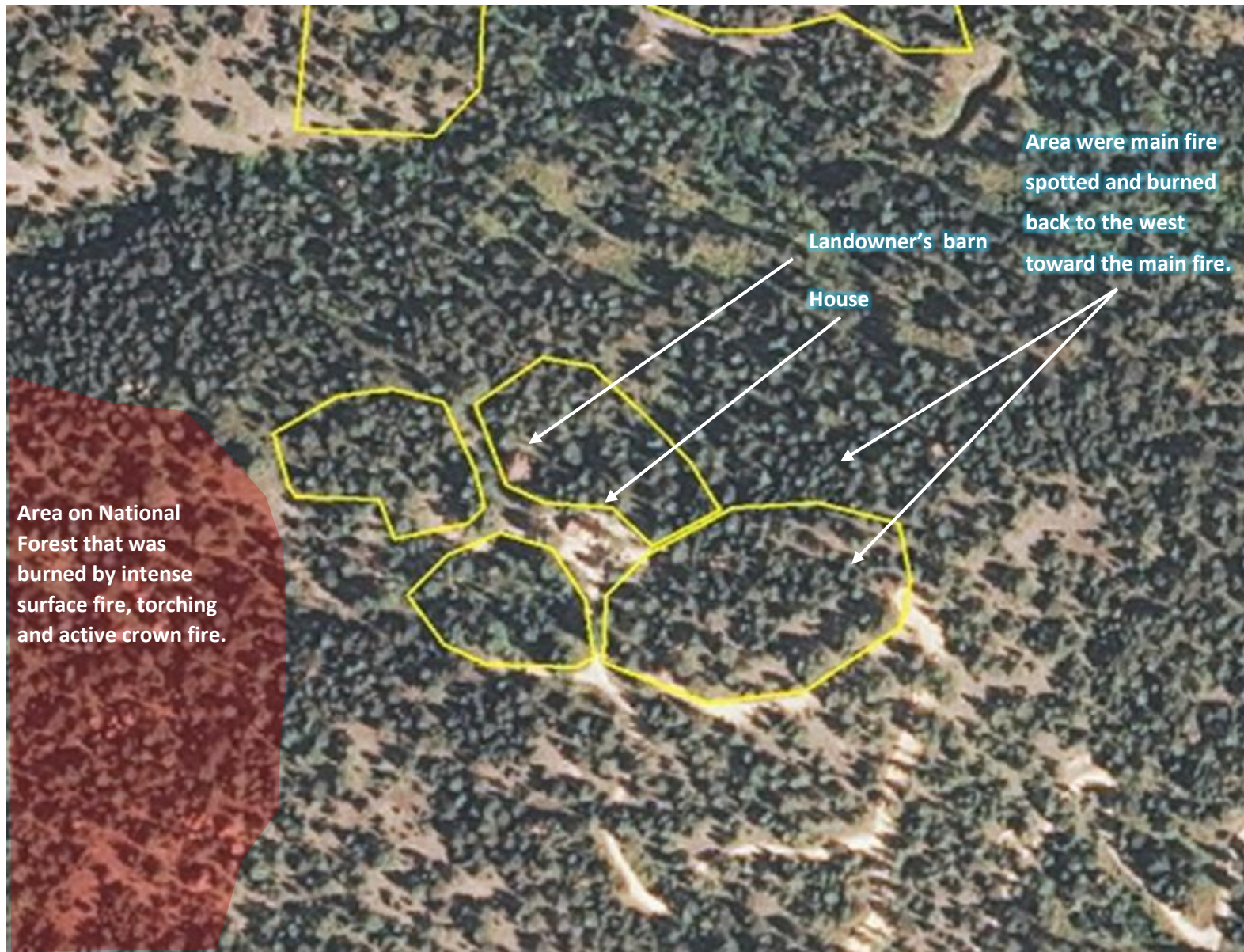
The area behind the fence did not burn even though there was an active crown fire in the background on NF land because this was a mule corral that had very little vegetation and very few trees. The area in the foreground was a surface fire that burned toward the barn.

According to the landowner, this area to the east of the house is where the main fire spotted and then burned back to the west upslope and was being drawn by in-drafts from the main fire above the property on NF. This area underburned causing little damage to the ponderosa pines.




Property Assessment:

Visual assessment of hazardous fuels mitigation treatment following a wildfire event



Property Assessment:

Visual assessment of hazardous fuels mitigation treatment following a wildfire event

Ownership No.	18				
Address	Whispering Pines Road – Hamilton, MT				
Total Acres		Acres Treated	7.0	Treatment Date	10/30/09
Structure Damage	<input type="checkbox"/> Affected <input type="checkbox"/> Minor <input type="checkbox"/> Major <input type="checkbox"/> Destroyed <input checked="" type="checkbox"/> None No structures damaged or destroyed. Fire did not burn to the structures but was stopped about 100 yards to the W/NW				
Forest Damage	<input type="checkbox"/> Affected <input checked="" type="checkbox"/> Minor <input type="checkbox"/> Major <input type="checkbox"/> Destroyed <input type="checkbox"/> None				
Estimated Fire Behavior that Caused Damage	<input type="checkbox"/> Ember Shower <input checked="" type="checkbox"/> Surface Fire <input type="checkbox"/> Passive Crown Fire (torching) <input type="checkbox"/> Active Crown Fire (stand replacement) <input type="checkbox"/> Superheated air through area Light surface fire in a thinned area NW of house				
Treatment Type (all that apply)	<input checked="" type="checkbox"/> Defensible Space <input checked="" type="checkbox"/> Ingress/Egress <input checked="" type="checkbox"/> Open Acres <input type="checkbox"/> Fuel Break (clear cut) <input type="checkbox"/> Fuel Break (shaded) <input checked="" type="checkbox"/> Pruning A contractor treated the area				
Treatment method	<input checked="" type="checkbox"/> Hand Work <input type="checkbox"/> Mechanical <input type="checkbox"/> Combination <input checked="" type="checkbox"/> Pile/Burn <input type="checkbox"/> Chip/Masticate <input type="checkbox"/>				
Current Forest Structure & Composition (best estimate)	<input type="checkbox"/> Single Story <input type="checkbox"/> Two-aged <input checked="" type="checkbox"/> Uneven-aged <u>20</u> % Seedling/Sapling <u>40%</u> Pole <u>40%</u> Mature <u>PP</u> Primary Species <u>DF</u> Secondary Species <input checked="" type="checkbox"/> Riparian Area <input checked="" type="checkbox"/> Light Understory <input type="checkbox"/> Moderate Understory <input type="checkbox"/> Heavy Understory				
Current Tree Spacing	<input checked="" type="checkbox"/> < 10' crown spacing <input type="checkbox"/> 10' crown spacing <input type="checkbox"/> > 10' crown spacing More open around the structures				
Notes/Comments: (special treatment areas: SMZ, visual buffer, clump/gap, etc.; single/multiple access; turn-around area)	- Surface fire only entered the north/northwest portion of the property. Probably about an acre burned 				

Property Assessment:

Visual assessment of hazardous fuels mitigation treatment following a wildfire event



The area to the NW of landowner residence that underburned as a result of the low intensity surface fire. The fire only burned 1 to 1 ½ acres on this property and did not impact the structures. This area was thinned several years ago.

Another view of the same area that was a low intensity surface fire.



Same area where the surface fire burned but did not scorch any of the trees. Many of these trees were Doug-fir.

This area is north of the residence on top of the ridge adjacent to the neighbor's property (that did not burn). This area was partially thinned several years ago.



Property Assessment:

Visual assessment of hazardous fuels mitigation treatment following a wildfire event



Property Assessment:

Visual assessment of hazardous fuels mitigation treatment following a wildfire event

Ownership No.	19				
Address	Whispering Pines Road – Hamilton, MT				
Total Acres		Acres Treated	7.0	Treatment Date	11/30/09
Structure Damage	<input type="checkbox"/> Affected <input type="checkbox"/> Minor <input type="checkbox"/> Major <input type="checkbox"/> Destroyed <input checked="" type="checkbox"/> None No structures damaged or destroyed. Fire did not burn to the structures but was stopped north of a large drainage/riparian area about 150 yds from the structures				
Forest Damage	<input checked="" type="checkbox"/> Affected <input type="checkbox"/> Minor <input type="checkbox"/> Major <input type="checkbox"/> Destroyed <input type="checkbox"/> None				
Estimated Fire Behavior that Caused Damage	<input type="checkbox"/> Ember Shower <input checked="" type="checkbox"/> Surface Fire <input type="checkbox"/> Passive Crown Fire (torching) <input type="checkbox"/> Active Crown Fire (stand replacement) <input type="checkbox"/> Superheated air through area Light surface fire in a thinned area but neighbor had passive and active crown fire within 100 yards to the north of this landowner's property				
Treatment Type (all that apply)	<input checked="" type="checkbox"/> Defensible Space <input checked="" type="checkbox"/> Ingress/Egress <input checked="" type="checkbox"/> Open Acres <input type="checkbox"/> Fuel Break (clear cut) <input type="checkbox"/> Fuel Break (shaded) <input checked="" type="checkbox"/> Pruning A contractor treated the area				
Treatment method	<input checked="" type="checkbox"/> Hand Work <input type="checkbox"/> Mechanical <input type="checkbox"/> Combination <input checked="" type="checkbox"/> Pile/Burn <input type="checkbox"/> Chip/Masticate <input type="checkbox"/>				
Current Forest Structure & Composition (best estimate)	<input type="checkbox"/> Single Story <input type="checkbox"/> Two-aged <input checked="" type="checkbox"/> Uneven-aged <u>5</u> % Seedling/Sapling <u>55%</u> Pole <u>40%</u> Mature <u>PP</u> Primary Species <u>DF</u> Secondary Species <input checked="" type="checkbox"/> Riparian Area <input type="checkbox"/> Light Understory <input checked="" type="checkbox"/> Moderate Understory <input type="checkbox"/> Heavy Understory				
Current Tree Spacing	<input type="checkbox"/> < 10' crown spacing <input checked="" type="checkbox"/> 10' crown spacing <input type="checkbox"/> > 10' crown spacing				
Notes/Comments: (special treatment areas: SMZ, visual buffer, clump/gap, etc.; single/multiple access; turn-around area)	<ul style="list-style-type: none"> - Very low intensity surface fire with minimal scorch and less than 3 foot stem char. - Hand fire line scratched to the north and going into the riparian area held the fire 				



Property Assessment:

Visual assessment of hazardous fuels mitigation treatment following a wildfire event



The landowner's home is located across the draw through the trees in the background. The riparian area did not burn in the fire. The fire burned the very north portion of the property through an area that was thinned.

This view is of the area that was thinned north of the draw in the photo on the right. This was a spotty under-burn with virtually no scorch.



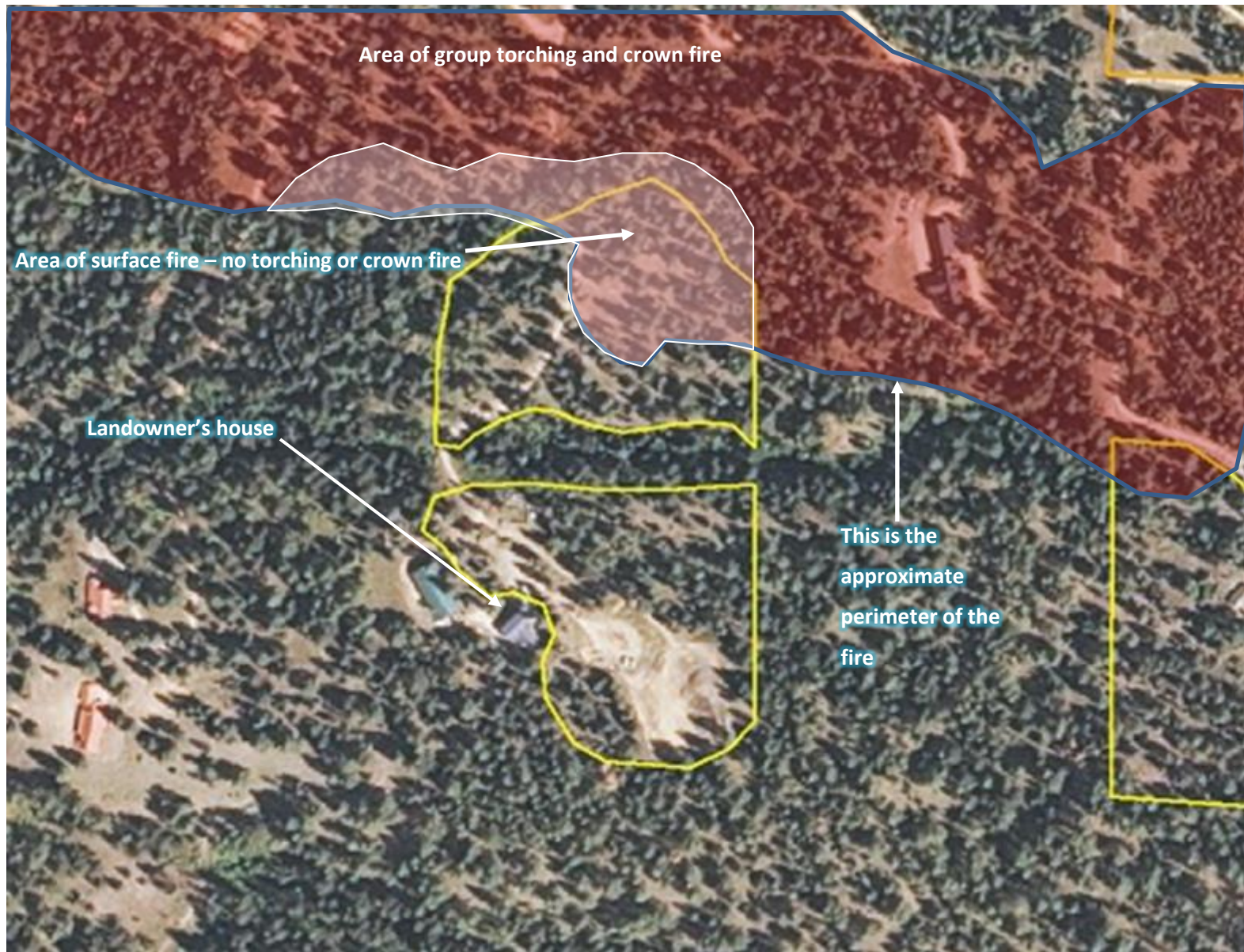
This is a photo of the thinned area north of the house and the draw. The fire did not burn into this area due to the lack of fuels and probably due to the wind conditions that were not spreading the fire in that direction. The adjacent property to the north of this area had an intense crown fire and torching which probably drew any fire spreading in the surface fuels by in-drafts away from this area.

View of the fire that started burning down into the draw north of the house in the thinned area. This fire was stopped by a small scratch hand fire line.



Property Assessment:

Visual assessment of hazardous fuels mitigation treatment following a wildfire event



Property Assessment:

Visual assessment of hazardous fuels mitigation treatment following a wildfire event

Ownership No.	20				
Address	Judd Creek Hollow – Hamilton, MT				
Total Acres		Acres Treated	21.6	Treatment Date	4/22/05
Structure Damage	<input type="checkbox"/> Affected <input type="checkbox"/> Minor <input type="checkbox"/> Major <input type="checkbox"/> Destroyed <input checked="" type="checkbox"/> None No structures damaged or destroyed. The house on this property burned down several years ago.				
Forest Damage	<input type="checkbox"/> Affected <input checked="" type="checkbox"/> Minor <input type="checkbox"/> Major <input type="checkbox"/> Destroyed <input type="checkbox"/> None				
Estimated Fire Behavior that Caused Damage	<input type="checkbox"/> Ember Shower <input checked="" type="checkbox"/> Surface Fire <input type="checkbox"/> Passive Crown Fire (torching) <input type="checkbox"/> Active Crown Fire (stand replacement) <input type="checkbox"/> Superheated air through area A surface fire burned through the thinned area with some crown scorch.				
Treatment Type (all that apply)	<input checked="" type="checkbox"/> Defensible Space <input checked="" type="checkbox"/> Ingress/Egress <input checked="" type="checkbox"/> Open Acres <input type="checkbox"/> Fuel Break (clear cut) <input type="checkbox"/> Fuel Break (shaded) <input checked="" type="checkbox"/> Pruning A contractor treated the area				
Treatment method	<input type="checkbox"/> Hand Work <input type="checkbox"/> Mechanical <input checked="" type="checkbox"/> Combination <input checked="" type="checkbox"/> Pile/Burn <input type="checkbox"/> Chip/Masticate <input type="checkbox"/>				
Current Forest Structure & Composition (best estimate)	<input checked="" type="checkbox"/> Single Story <input type="checkbox"/> Two-aged <input type="checkbox"/> Uneven-aged _____ % Seedling/Sapling <u>30%</u> Pole <u>70%</u> Mature <u>PP</u> Primary Species <u>DF</u> Secondary Species <input type="checkbox"/> Riparian Area <input checked="" type="checkbox"/> Light Understory <input type="checkbox"/> Moderate Understory <input type="checkbox"/> Heavy Understory				
Current Tree Spacing	<input checked="" type="checkbox"/> < 10' crown spacing <input type="checkbox"/> 10' crown spacing <input type="checkbox"/> > 10' crown spacing				
Notes/Comments: (special treatment areas: SMZ, visual buffer, clump/gap, etc.; single/multiple access; turn-around area)	<ul style="list-style-type: none"> - Low – Moderate intensity surface fire with scorch. - House burned down several years ago from a source inside the house. 				



Property Assessment:

Visual assessment of hazardous fuels mitigation treatment following a wildfire event

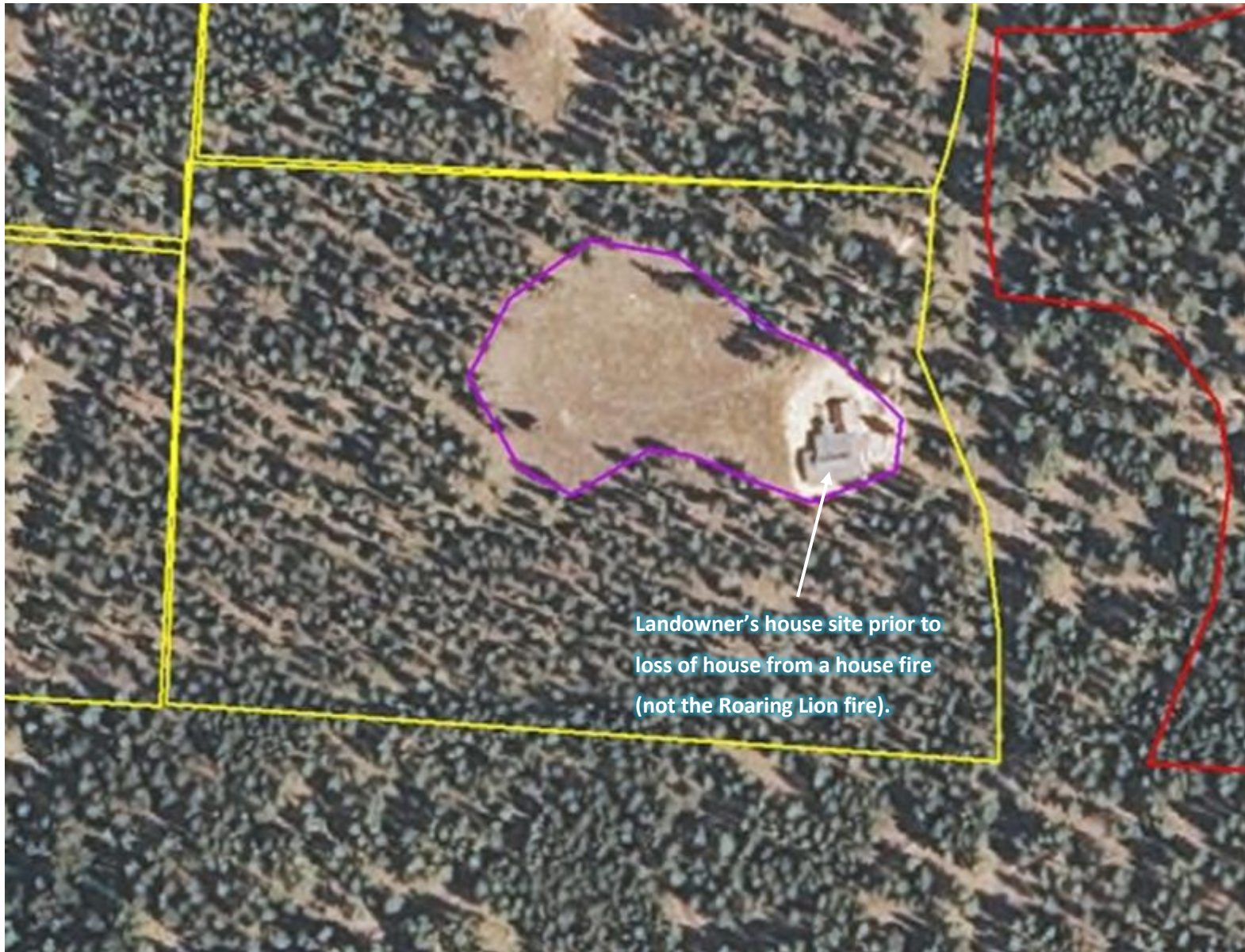


These four photos show the thinned stands on this property. Some severe scorch occurred from the superheated air passing through the stand. No torching or crown fire, only surface fire.



Property Assessment:

Visual assessment of hazardous fuels mitigation treatment following a wildfire event



Property Assessment:

Visual assessment of hazardous fuels mitigation treatment following a wildfire event

Ownership No.	21 - (project was in planning stage when fire occurred)				
Address	Roaring Lion Road – Hamilton, MT				
Total Acres	120	Acres Treated	0	Treatment Date	N/A
Structure Damage	<input type="checkbox"/> Affected <input type="checkbox"/> Minor <input type="checkbox"/> Major <input checked="" type="checkbox"/> Destroyed <input type="checkbox"/> None This landowner property and homes were destroyed by an active crown fire that burned the entire property directly in the path of the advancing fire from its origin 2 miles west of the houses.				
Forest Damage	<input type="checkbox"/> Affected <input type="checkbox"/> Minor <input type="checkbox"/> Major <input checked="" type="checkbox"/> Destroyed <input type="checkbox"/> None				
Estimated Fire Behavior that Caused Damage	<input type="checkbox"/> Ember Shower <input checked="" type="checkbox"/> Surface Fire <input type="checkbox"/> Passive Crown Fire (torching) <input checked="" type="checkbox"/> Active Crown Fire (stand replacement) <input type="checkbox"/> Superheated air through area This landowner property and homes were destroyed by an active crown fire that burned the entire property directly in the path of the advancing fire from its origin 2 miles west of the houses.				
Treatment Type (all that apply)	<input type="checkbox"/> Defensible Space <input type="checkbox"/> Ingress/Egress <input type="checkbox"/> Open Acres <input type="checkbox"/> Fuel Break (clear cut) <input type="checkbox"/> Fuel Break (shaded) <input type="checkbox"/> Pruning The RC&D was in the process of setting up a project to treat the areas around the houses the week before the fire. No treatment had been completed by the landowner previous to fire.				
Treatment method	<input type="checkbox"/> Hand Work <input type="checkbox"/> Mechanical <input type="checkbox"/> Combination <input type="checkbox"/> Pile/Burn <input type="checkbox"/> Chip/Masticate <input type="checkbox"/>				
Current Forest Structure & Composition (best estimate)	<input type="checkbox"/> Single Story <input type="checkbox"/> Two-aged <input checked="" type="checkbox"/> Uneven-aged <u>10</u> % Seedling/Sapling <u>30%</u> Pole <u>60%</u> Mature <u>DF</u> Primary Species <u>PP</u> Secondary Species <input checked="" type="checkbox"/> Riparian Area <input type="checkbox"/> Light Understory <input type="checkbox"/> Moderate Understory <input checked="" type="checkbox"/> Heavy Understory				
Current Tree Spacing	<input type="checkbox"/> < 10' crown spacing <input type="checkbox"/> 10' crown spacing <input type="checkbox"/> > 10' crown spacing				
Notes/Comments: (special treatment areas: SMZ, visual buffer, clump/gap, etc.; single/multiple access; turn-around area)	<ul style="list-style-type: none"> - Fire burned with extremely high intensity with an active, running crown fire pushed by a strong down canyon wind through the property consuming all vegetation. - Two houses and a garage were destroyed on the property as well as all timber. 				



Property Assessment:

Visual assessment of hazardous fuels mitigation treatment following a wildfire event



Photo of the main house on this property that was destroyed by the fire. The fire burned the entire rock face in the background and spread into Sawtooth Creek, the next drainage to the north of Roaring Lion Creek. ←

Road from house leading to the Roaring Lion trailhead road. →



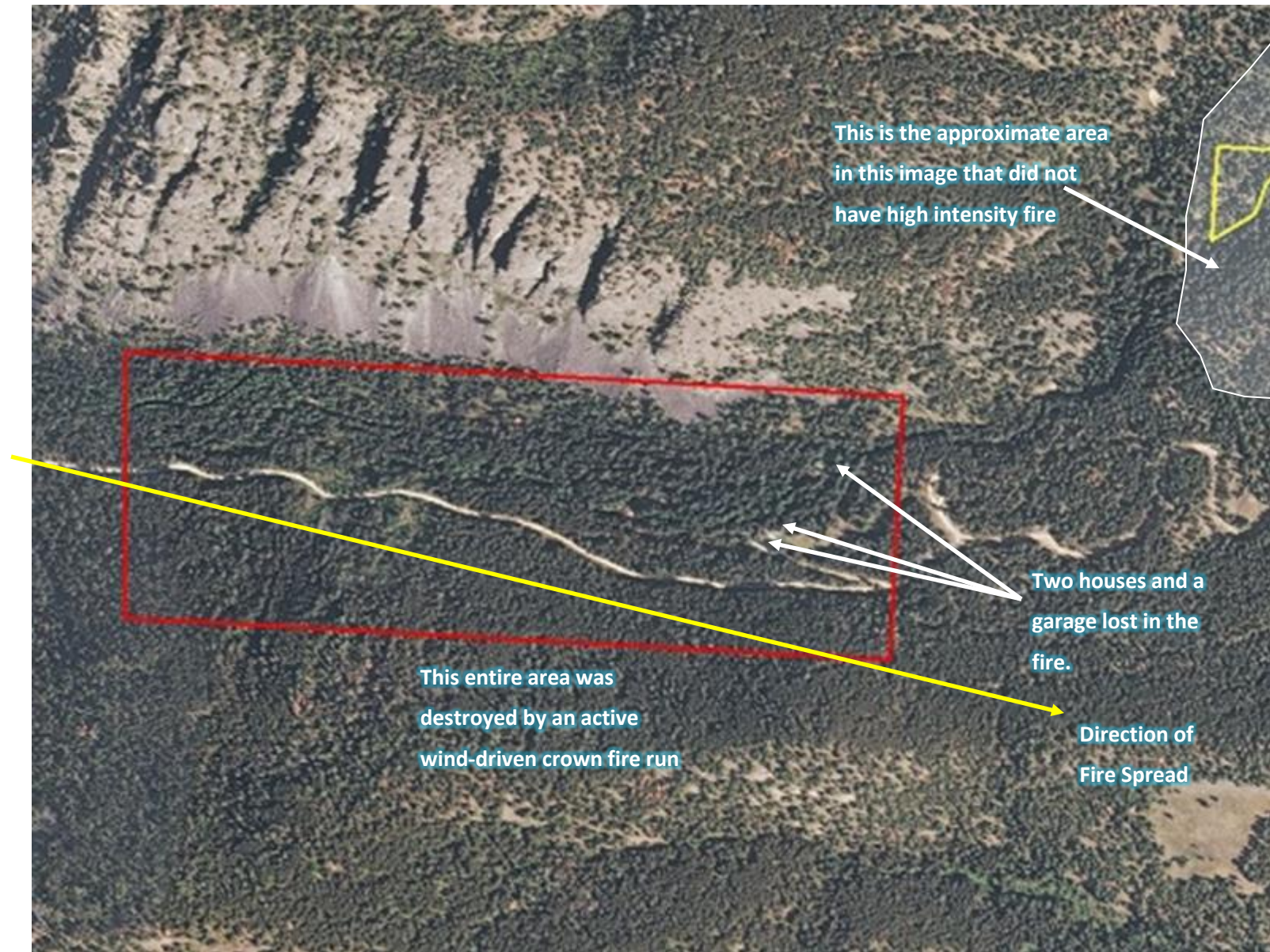
Looking SW across the Roaring Lion trailhead road through landowner's property to National Forest. Total stand replacement active crown fire. ←

Looking from Roaring Lion trailhead road down driveway toward where the house was destroyed. Opposite view from photo in upper right photo. →



Property Assessment:

Visual assessment of hazardous fuels mitigation treatment following a wildfire event



Property Assessment:

Visual assessment of hazardous fuels mitigation treatment following a wildfire event

The assessment and report were completed by Byron Bonney, Bitter Root RC&D Community Forester and Erik Warrington, DNRC Stewardship Specialist. The on-the-ground assessment took place within two weeks after the start of the fire (July 31, 2016). There have been numerous field trips and presentations given to various agencies and organizations in order to share the impacts that the hazardous fuel mitigation grant program had on the Roaring Lion fire behavior.

In summary, a total of 21 properties treated under the Western States WUI grant program were impacted by the Roaring Lion Fire, which burned all or portions of these areas. Of the 21 properties, nine home and nine outbuildings were lost in the fire. It is evident that 4 homes were lost due to high intensity crown fire, subsequent shower of embers, superheated air from the, and high intensity surface fire. Of the nine homes, five were most likely lost due to the tremendous shower of embers landing on a receptive fuel bed in and around the residences which ignited and eventually burned the structure. Some of those same five homes also had evidence of some surface fire that may have impinged on the structure also causing the damage.

It was very evident that the hazardous fuels mitigation treatments which occurred on 19 of the 21 properties either altered fire behavior by causing the active crown fire to drop to the ground through the thinned stands, or sustained a ground fire and did not initiate a crown fire. Unfortunately, the intense, superheated air passing through the thinned stands of trees created severe scorch damage/mortality. Some of the severely scorched ponderosa pine will probably survive but very few of the Douglas-fir are likely to survive in those thinned stands.

The following maps show the completion status of all the private land properties that have been set-up under the grant fuel mitigation program administered by the Bitter Root RC&D, as well as the location of the properties that were impacted by the 2016 Roaring Lion Fire and where the Bitterroot National Forest's Westside Collaborative Project was planned to occur.

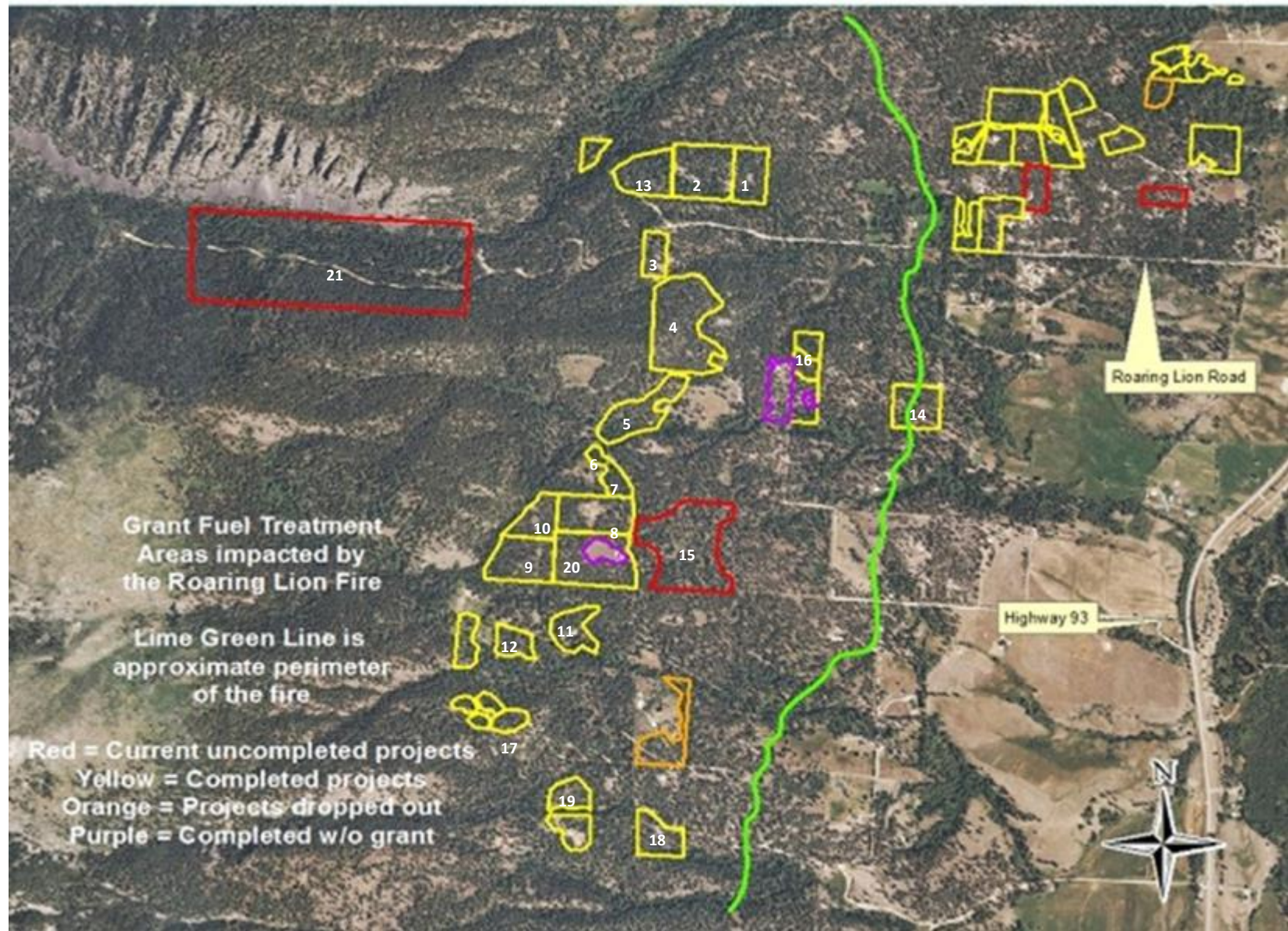
Property Assessment:

Visual assessment of hazardous fuels mitigation treatment following a wildfire event

Summary of Landowner Property/Structure Status				
Ownership No.	Acres Treated	Home Status	Outbuilding Status	Fire Characteristics that most likely destroyed structures
1	8.2	Survived	Destroyed	Ember Shower
2	15.5	Survived	Destroyed	Ember Shower
3	5.3	Survived	None	
4	25.9	Destroyed	None	Ember Shower – Surface Fire
5	12.1	Survived	Destroyed	Ember Shower – Surface Fire
6	1.0	Destroyed	None	Ember Shower – Surface Fire – Crown Fire
7	3.8	Survived	Survived	
8	13.3	Destroyed	Destroyed	Ember Shower – Surface Fire
9	12.9	Destroyed	Destroyed	Ember Shower – Surface Fire – Crown Fire
10	6.4	Destroyed	Destroyed	Ember Shower – Surface Fire – Crown Fire
11	7.4	Survived	Survived	
12	7.5	Destroyed/ Survived	Destroyed/ Survived	Ember Shower – Crown Fire
13	14.5	Survived	Survived	
14	9.8	Survived	Survived	
15	30.3	Destroyed	Destroyed	Ember Shower – Surface Fire
16	9.8	Destroyed	None	Ember Shower – Surface Fire
17	7.2	Survived	Survived	
18	7.0	Survived	Survived	
19	7.0	Survived	Survived	
20	21.6	None	None	
21	none	Destroyed	Destroyed	Ember Shower – Surface Fire – Crown Fire

Property Assessment:

Visual assessment of hazardous fuels mitigation treatment following a wildfire event



Property Assessment:

Visual assessment of hazardous fuels mitigation treatment following a wildfire event

