Malheur National Forest | December 2024

# Upper Pine F Prescribed Fire Declared Wildfire Review

*Malheur National Forest, Pacific Northwest Region*

Image: Upper Pine F after firing operations on May 21, 2024. Image shows a mixed conifer fuel type with burned ponderosa pine in the background and unburned grass and mixed conifer in the foreground.

## Contents

## Executive Summary

Fifty days after ignition, Upper Pine F prescribed burn was declared a wildfire. It had yet to escape containment lines. It was not outside the project boundary. What happened?

The Malheur National Forest has a long history of utilizing contract resources in various support roles on prescribed burns. Upper Pine F, a 1,064 acre landscape underburn, was awarded to a local contractor for implementation. The contractors and Contracting Officer Representatives (COR) worked closely to monitor spring burn conditions and began ignitions May 20 and 21, 2024 on the Emigrant Creek Ranger District. The conditions on the burn were considered acceptable per the contract and the District obtained full responsibility for patrol and monitoring on June 13. By July 4, personnel recognized that fire season had arrived and conditions were not going to improve. On July 8, the Forest determined the burn would imminently escape and made the decision to declare a wildfire.

A Declared Wildfire Review Team was enlisted to develop a shared understanding of what events led to the declaration and to review decisions made as outlined by the NWCG Standards for Prescribed Fire Planning and Implementation, PMS 484, May 2022.

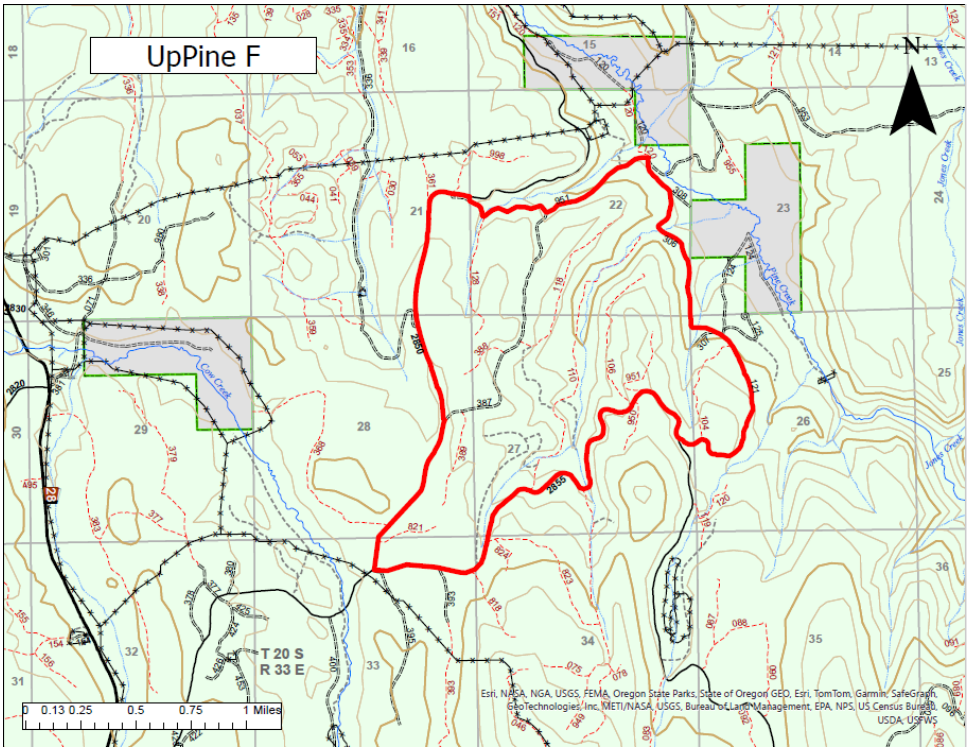


*Figure 1: Upper Pine F Prescribed Burn Map (1,064 acres)*

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## Environmental, Political, and Social Setting

The Malheur National Forest is nestled among the Blue Mountains of Eastern Oregon, encompassing more than 1.5 million acres of wilderness, grasslands, forest, and riparian ecosystems. It sustains a diversity of vegetation ranging from juniper-sagebrush woodlands and bunchgrass grasslands to high elevation alpine forests of sub-alpine fir and white bark pine. Extensive tracts of ponderosa pine, western larch, Douglas-fir, grand fir and lodgepole pine forests occur between the juniper/grassland foothills and alpine peaks. Elevations range from 4,000 feet to 9,000 feet. The majority of the Forest lies in Grant and Harney counties. State Highway 395 bisects the Forest north-to-south and State Highway 26 from east-to-west. The Forest has three ranger districts – Blue Mountain Ranger District, Prairie City Ranger District, both on the north end, and the Emigrant Creek Ranger District to the south.

The Forest has an accelerated restoration program that involves a multiprong approach, including state partner agreements, two collaborative groups, resource integration, Good Neighbor Authority, and a broad use of contractors. The Emigrant Creek District Ranger, in particular, has high aspirations for landscape restoration to get closer to an historic return interval of 45,000 acres per year.

> "My goal is to burn 20,000 acres a year. I'm trying to be opportunistic in getting prescribed fire on the landscape."
>
> -District Ranger

One of the biggest challenges is staff turnover on Emigrant Creek District, which is exemplified by the fact it has had three Fire Management Officers (FMO) in the past five years and is currently at 57% staffing of its fire program. In the spring of 2024, almost all fire management staff for the Emigrant Creek Ranger District (RD) were in a detail. There were many middle management positions unfilled, including engine captains, assistant engine captains, and assistant fire engine operator positions. The District Fire Management Specialist- Prescribed Fire and Fuels position has also been unfilled. Only one person on the district fire staff was NOT in an acting position or detail, and he had only been in his position for six months. Even facing those challenges, district staff was gung-ho to burn. The community is largely supportive of restoration, including prescribed fire. Grazing permittees on the district are also in favor of prescribed fire.

The Forest has experienced several disruptions to its prescribed fire program over the past few years, starting with Covid, then the Chief's review pause in 2022, followed by the arrest of a burn boss on the Blue Mountain Ranger District in fall of 2022. The subsequent indictment was still pending in the spring of 2024. Due to the residual stress affecting the districts on the north end of the Malheur, the Forest Supervisor made the decision that all spring prescribed fire efforts would be focused on the Emigrant Creek District.

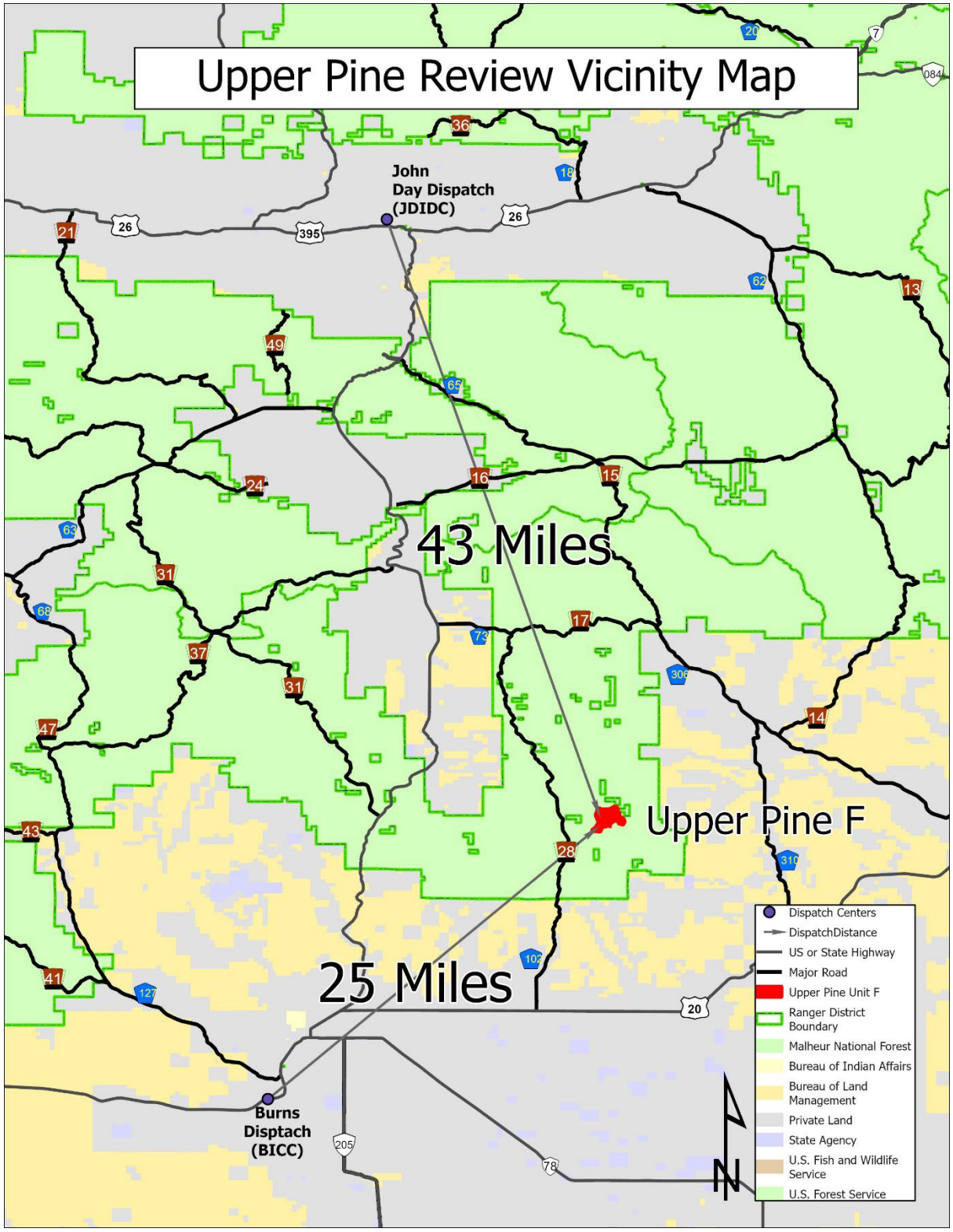



*Figure 2: Vicinity Map Upper Pine F*

## Narrative and Chronology

Land managers on the Malheur National Forest and Burns Interagency Fire Zone (BIFZ) recognize the use of fire as a critical tool for large-scale restoration. Having cleared hurdles from the Burn Boss arrest, prescribed burn pause, and Covid concerns, Emigrant Creek RD was eager to implement some landscape-scale prescribed fire projects. One strategy for encouraging more fire on the landscape was to solicit the help of contracted resources for prescribed burn implementation including: unit prep, burn boss, firing boss, holding, patrol, and monitoring. In short, award a service contract to private industry who would then be responsible for the prescribed burn until they met the standards for mop up.

In August 2023, Upper Pine F was solicited and awarded to a local contractor and the clock started ticking. By November 2024, the contractors would need to complete the prep work for 3 units on Emigrant Creek RD and implement an underburn on Upper Pine F. The CORs and contractor worked together to identify a weather window and agreed that May 20 fit the parameters identified in the burn plan.

### DO WE FEEL PRESSURE TO BURN?

"I think it is more like an opportunity than pressure…the only pressure is that we are dedicated land managers. We need to get the land restored back to a healthy ecosystem."

~District Ranger

"Yes, I feel pressure to complete the burn, simply because if we refuse to burn our contract gets cancelled. If we put the burn off until the fall instead of the spring, we may not get it done."

~Contracted Burn Boss

With one unit being implemented under contract, Emigrant Creek RD began planning more units to continue working toward a 20,000-acre restoration goal. Originally aiming for a unit adjacent to Upper Pine F, a management decision to hold off burning the unit required fire personnel to pivot and find other burn units within prescription and cleared for implementation. From May 20 to 28, firefighters lit 2,916 acres across 3 units (Silvies 7, Jane 106, and Upper Rat 5G). Two of the units were greater than 10 air miles, and roughly 45 minutes' drive, away from Upper Pine F.

THE INTENT OF THIS BPA CALL IS TO PROVIDE A COMPLETE LANDSCAPE BURN MODULE AS OUTLINED IN THE ATTACHED BURN PLAN. CONSISTING OF, BUT NOT LIMITED TO, A TYPE 2 BURN BOSS (RXB2) AND COMPLETE PRESCRIBED BURN COMPLEMENT, 5-PERSON HAND CREW MODULE(S), TYPE 6 AND OR TYPE 4 ENGINE(S), TYPE 2 TENDER(S), AND A TYPE 3 DOZER WITH TRANSPORT.

Blanket Purchase Agreement (BPA) Malheur NF

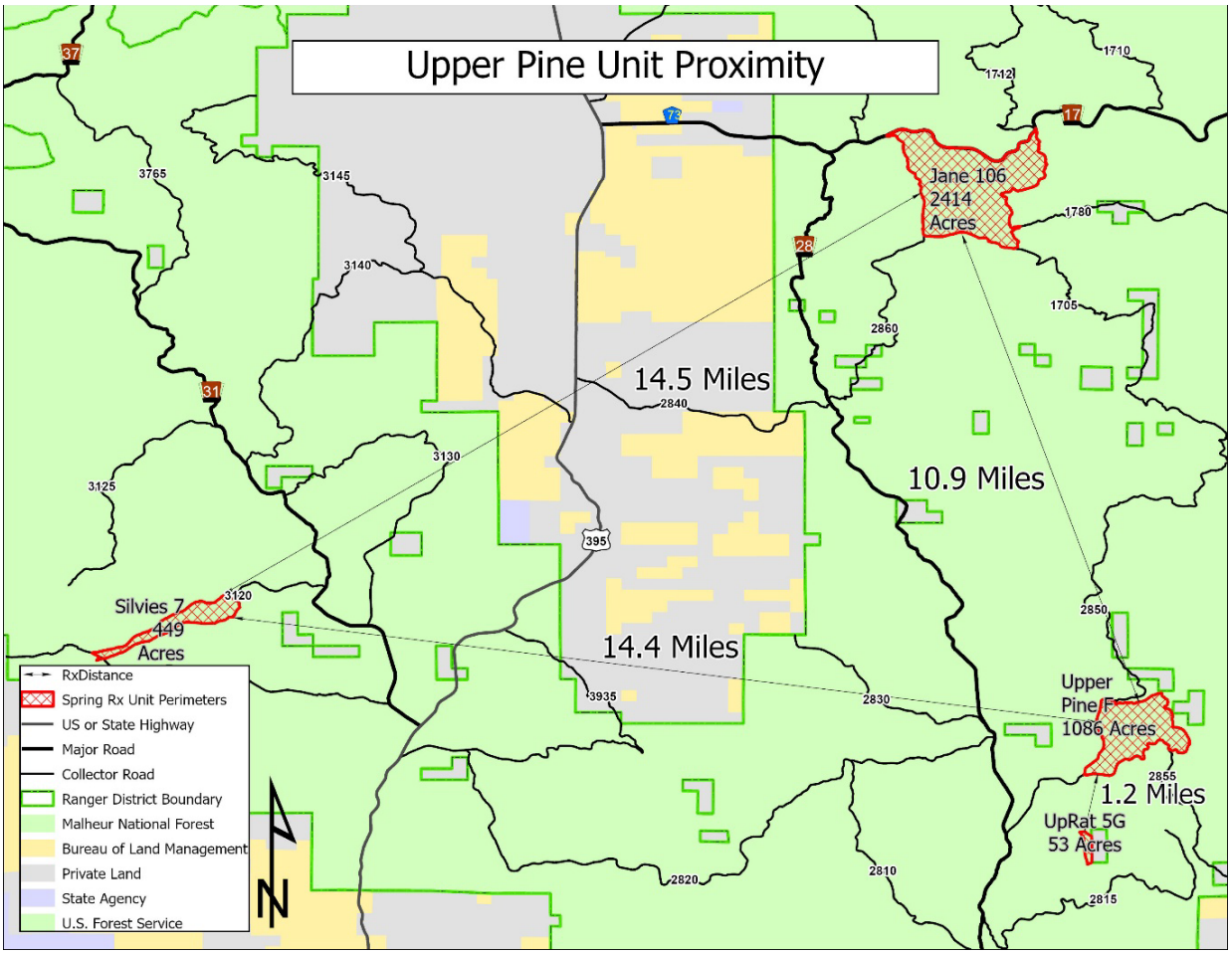



*Figure 3: Vicinity Map RX Burns*

## Event Timeline

**Planning**
Upper Pine Hazardous Fuel Reduction Project **September 2013**

**Preparation**
Burn plan writing
Contract Award **August 2023**
- Unit Preparation
- Monitoring Conditions

**Burn Plan Review**
Forest-wide Burn Plan Review **April 2024**
Decision to burn only on Emigrant Creek RD

**Ignition**
Upper Pine F **May 20, 2024**
Silvies 7- May 20
Upper Rat 5G- May 21
Jane 106- May 28

**Holding- Contractor**
Reignition for better consumption **May 29, 2024**
Upper Pine F Unit Turn Back- **June 13, 2024**

**Holding- District**
Increased fire activity **July 5-7, 2024**

**Declaration**
**July 8, 2024 at 1030**
Spotting outside containment lines at 1430
- Aerial Resources
- Type III Team

*Figure 4: Upper Pine F Timeline*

NWCG STANDARDS FOR PRESCRIBED FIRE PLANNING AND IMPLEMENTATION, PMS 484, MAY 2022.

A prescribed fire, or a portion, or segment of a prescribed fire, must be declared a wildfire by those identified in the plan with the authority to do so, when either or both of the following criteria are met:

• Prescription parameters are exceeded and holding, and contingency actions cannot secure the fire by the end of the next burning period, or,

• The fire has spread outside the project area or is likely to do so, and the associated contingency actions have failed or are likely to fail and the fire cannot be contained by the end of the next burning period.

A prescribed fire can be declared a wildfire for reasons other than those identified above if events cannot be mitigated as determined by the Burn Boss and Agency Administrator.

## Implementation

Over the course of 2 days, contracted firefighters hand ignited 1,064 acres in Upper Pine F resulting in a first-entry prescribed fire that performed well in the ponderosa pine. The mixed conifer, primarily located on north aspects or in wet drainages toward the middle of the unit, burned with low-intensities or not at all. On May 29, a third ignition was requested by the COR to try to get more consumption in areas that had not burned.

*"We really didn't want to leave them with a summertime problem." -Burn Boss*

While the contract specified 50 feet, over the next few weeks, the contracted burn boss instructed crews to mop up 100 feet from the perimeter of the burn and conduct patrols to monitor visible smoke within the interior. By June 13, the COR 1 (the on-site representative and qualified RXB2) accepted the unit back from the contractors and Upper Pine F was now fully managed by Burns Interagency Fire Zone (BIFZ). There was no visible smoke within the perimeter.

In the meantime, monitoring was going well on Silvies 7, Jane 106, and Upper Rat 5G. Units had been burned with mosaic results. The Zone had established the necessary resources to keep tabs on the four prescribed burn units and things were relatively quiet across the footprint.

## Declaration

Units from the BIFZ continued to monitor Upper Pine F through the month of June. As the weather turned from spring to summer, an uptick in fire behavior was observed. Multiple Red Flag Warnings and Fire Weather Watches had been issued. With the unit having been burned on the cool side of the prescription, there were plenty of unburned pockets that had begun to come alive. Needles from trees began to drop onto interior hot spots and grasses slowly cured. Concern for the integrity of the holding lines grew as needlecast began to build a new fuel bed over the burned area. Unit patrols observed flare ups with the afternoon heat, leading to torching and subsequent fire movement within the unit

boundary.  Just after July 4, the main drainage near the middle of the unit presented the most concern as fire chunked its way uphill.

Meanwhile across the Zone, wildfires south of Emigrant Creek RD began to draw the attention of the BIFZ and created complications for continued staffing on the four prescribed burn units. Jane 106 drew the most concern due to its heavy fuel loading and proximity to a main highway and private lands.  Fire and fuels management had to make decisions based on the fire behavior reported by resources on the ground and weigh it against the values at risk. Conditions indicated that fire season had arrived.

Previously detailed as the Assistant Fire Management Officer-Fuels, the engine captain was well versed in the Upper Pine F burn plan and the overall targeted goals for the Forest.  With limited staffing on the District, the engine captain was the only person in leadership at that level. July 5 through 7 were particularly frustrating days for the engine crew patroling Upper Pine F. Recognizing the potential for fire growth in the drainage, they put in hoselays to deter the inevitable.  By the afternoon, the fire had gained momentum, burning through checklines and hose.  The engine captain communicated to fire management that the burn would escape containment lines, if they could not gain the resources needed to fully handle Upper Pine F.

By July 8, the District Ranger and fire management staff met to discuss the best solution to their growing problem.  The group had difficulties coming to consensus on the best way forward and there was resistance to the stigma of declaring Upper Pine F, and potentially Jane 106 and Silvies 7 units, a wildfire.  They threw out various options:

| The Solution | The Problem |
|---|---|
| Develop an amendment to the burn plans for burning outside of prescription and a change in objectives. Sign an ignition authorization for an approved burn unit adjacent to Upper Pine F and burn to the ridge. | Current conditions would not have been within prescription and would not have met objectives. Is it right to put more fire on the ground if we are outside of prescription? With a primary residence 1.5 miles away, should we risk it without all the necessary support? |
| Have all resources pull off the burn units and bed down.  Burn the unit at night with conditions closer to prescription. | Is burning at night the safest choice?  Are we risking serious injury to our firefighters?  Do we have enough resources to support that effort and monitor the other burns? |
| Order more resources through contracting and outside the BIFZ footprint. | Resources were already getting pulled to wildfires in and out of Region.  Few people wanted to fill an order for a prescribed burn when they could head to a wildfire (and get hazard pay and more overtime).  How do we logistically support the incoming resources? Do we have the funding to support that? |

The District Ranger was ready to make a decision. All signs indicated the burn would jump outside its containment lines by the end of shift. There was an urgent need for additional resources and administrative flexibility to support local firefighting resources. The burn was not

pressing against the project boundary; however, it was no longer within the resource objectives of the plan. Minimizing impacts to private property (roughly 1.5 miles south) and limiting acres burned became the priority. The Ranger began the process of making the necessary notifications and declared Upper Pine F a wildfire at 1030 on July 8. Things moved quickly after that.

By 1430, the prescribed burn had spotted south across the planned containment lines along the 2855 road and north on the 2850 road. Having made the declaration, helicopters and SEATs were readily available to build a box anchored to the road and up the ridgeline. A local Type III Team had been ordered to manage the incident and were coming on scene. By 1830, aerial resources had the fire boxed in. Incoming crews and engines were briefed to begin nighttime firing operations once conditions were favorable. The final infrared flight for Upper Pine on August 19 showed it had grown 22 acres from its planned 1,064 acres.

"IF LIGHTNING STRIKES, DID WE DO ENOUGH TO CHANGE THE FUELS AND IMPROVE CONDITIONS?"

-District Fire Management Officer

## Wildfires

The story of Upper Pine does not end with a Declaration. The 2024 wildfire season in Eastern Oregon stretched the capacity of local resources due to under-staffing, high fine fuel loads, and an early-season heat dome that caused a quick shift from spring to summer. Two days after Upper Pine was declared, Falls fire ignited nearby and eventually grew to 151,689 acres. Resources were traded back and forth between fires and the unit no longer had to fight to fill resource orders.

On July 22, after widespread lightning impacted the area, the Telephone fire touched off southwest of Upper Pine, eventually growing to 54,005 acres. Compounded by multiple active large wildfires burning across the region and multiple fires involving evacuations, firefighting resources and county resources were stretched thin. Grant and Harney county officials were working at capacity and could no longer assist with evacuations from the forest, should the need arise. Forest officials decided to implement a closure for public and firefighter safety across the Malheur National Forest. After experiencing the extreme fire behavior exhibited by Falls, fire management recognized Upper Pine would provide a safe anchor point and utilized it to their advantage as they developed a strategy to contain Telephone. Finally, a silver-lining after days of plume-dominated fire with rapid rates of spread and long-range spotting.

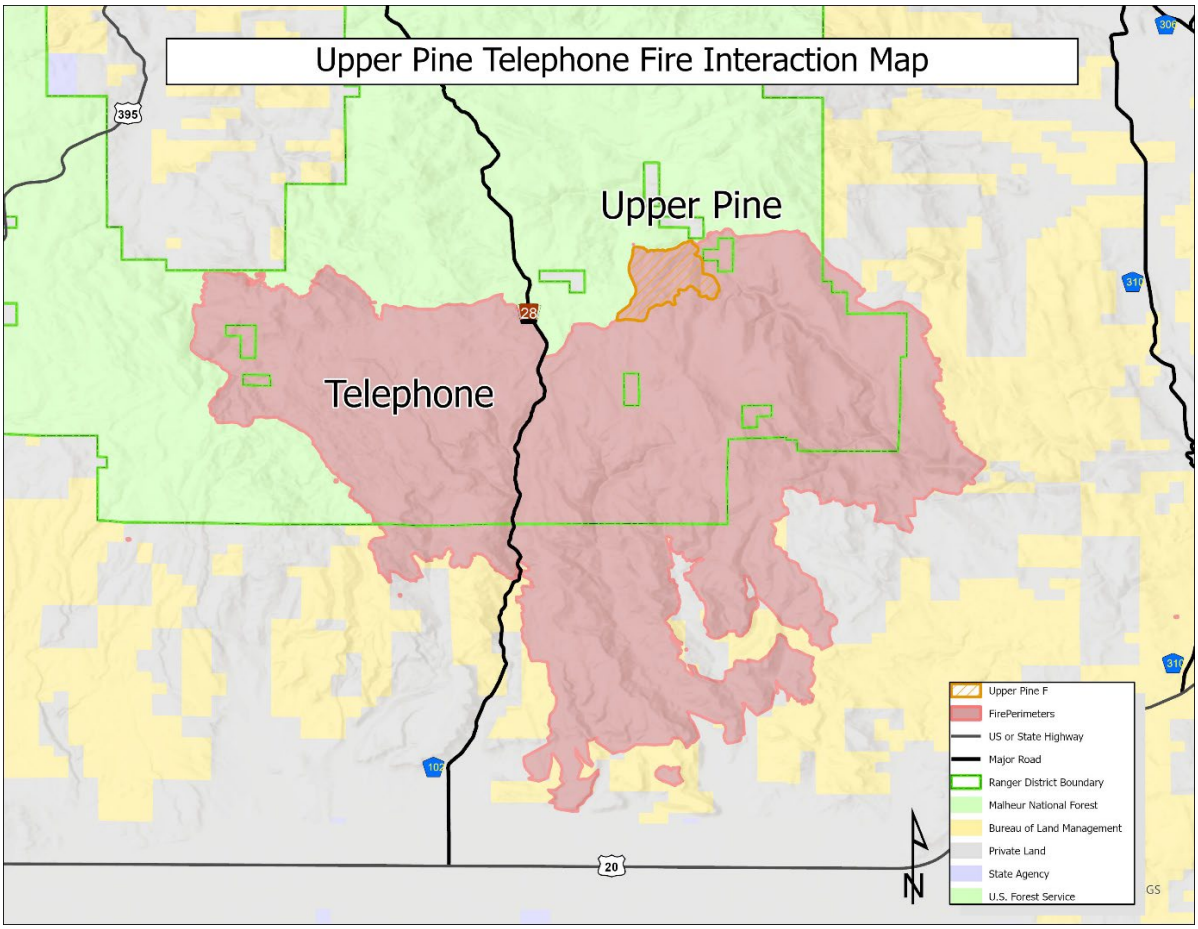



*Figure 5: Upper Pine F and Telephone Fire Interaction Map*

## Seasonal Severity, Weather Events, and On-site Conditions

The winter/spring of 2024 had seen average to above average precipitation throughout much of Oregon, with portions of Eastern Oregon falling above average. Accumulated precipitation on the Malheur National Forest for October through May ranked normal to slightly above normal.

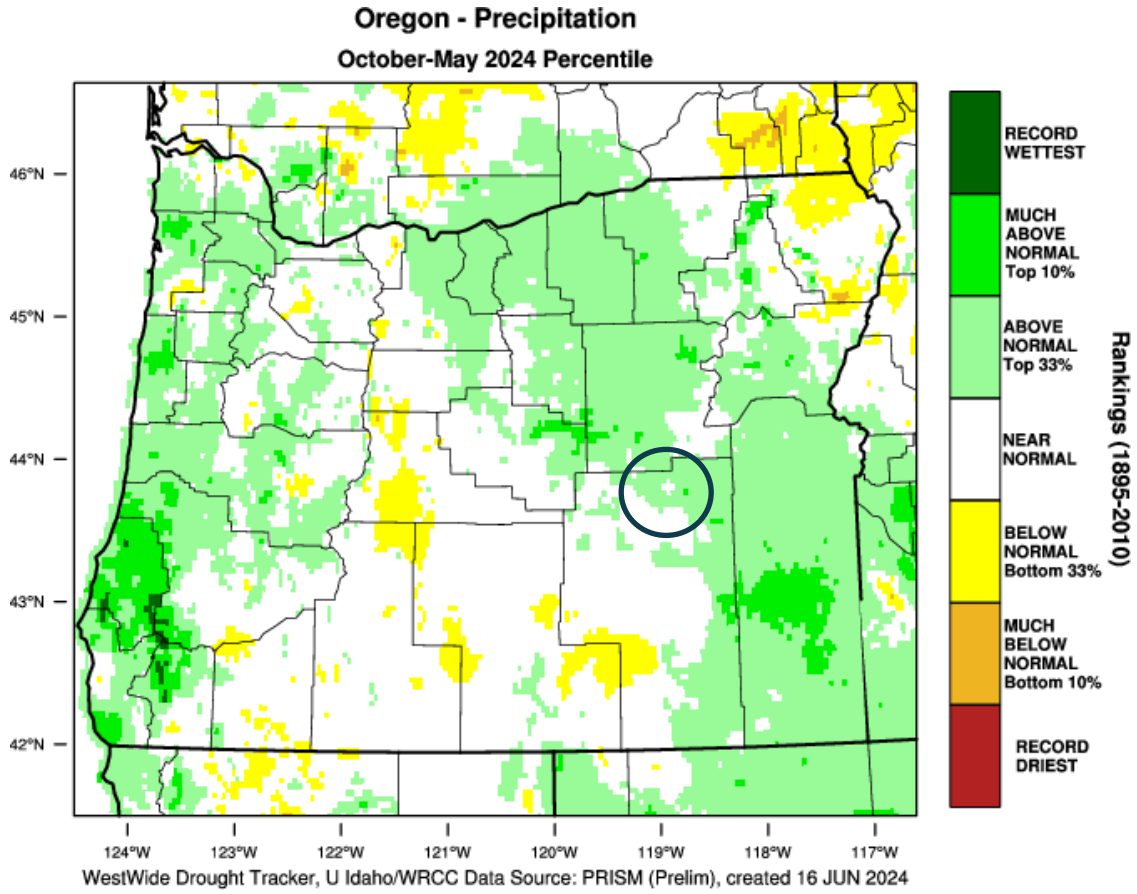



*Figure 6: Mapped precipitation percentiles for the PNW October 2023-May 2024 (above).*

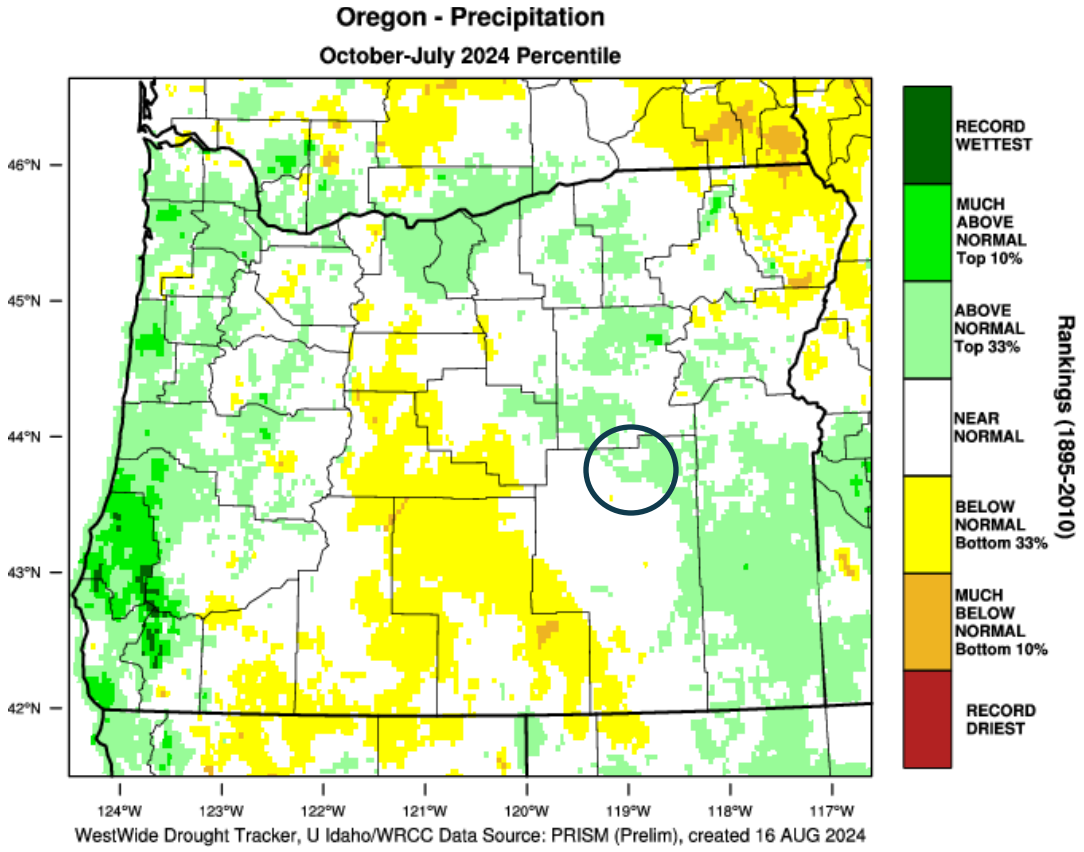



*Figure 7: Mapped precipitation percentiles for the PNW October 2023-July 2024 (above).*

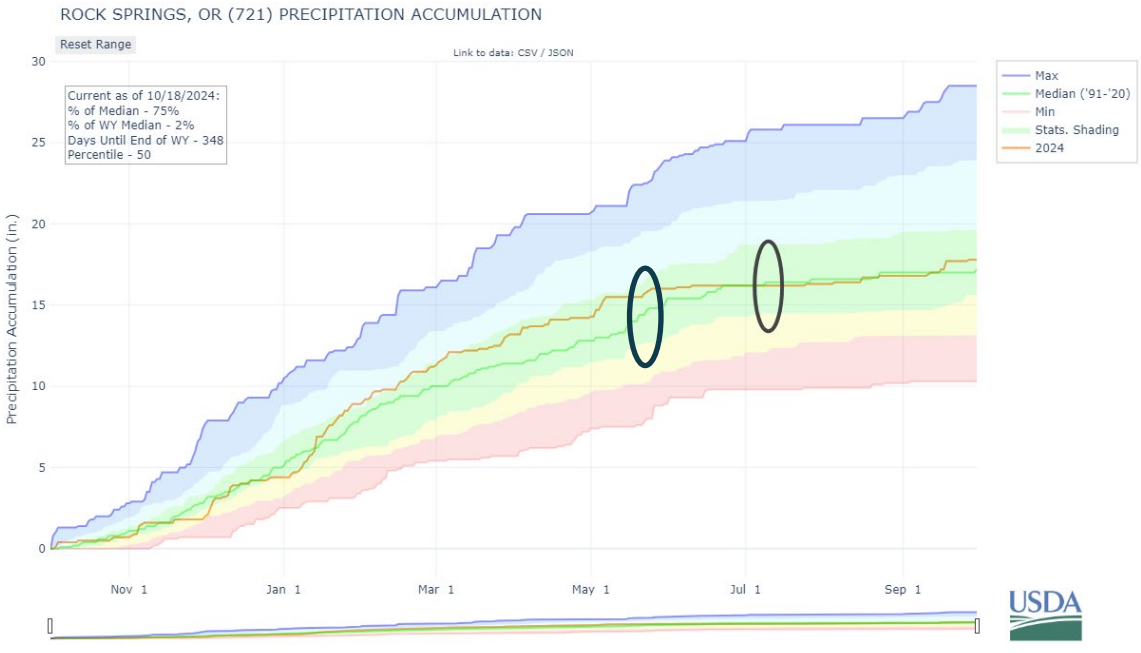



*Figure 8: Precipitation received since Oct 1, 2023 compared to average at the Rock Springs Snotel site. Day of ignition and declaration highlighted.*

## Drought Monitoring

In general, the Malheur National Forest experienced an average start to the 2023- 2024 fall and winter. Precipitation was near normal until early January and then trended above normal after the start of the calendar year. Precipitation for the water year fell in middle range of the median. Moisture stopped in late April and early May after a series of wet systems and cooler temperatures. This led to predictions of normal-significant wildland fire potential for May and June on the Forest. With an average start to the water year followed by a normal winter, the Malheur was classified as average with no drought conditions for the May 20 implementation day.

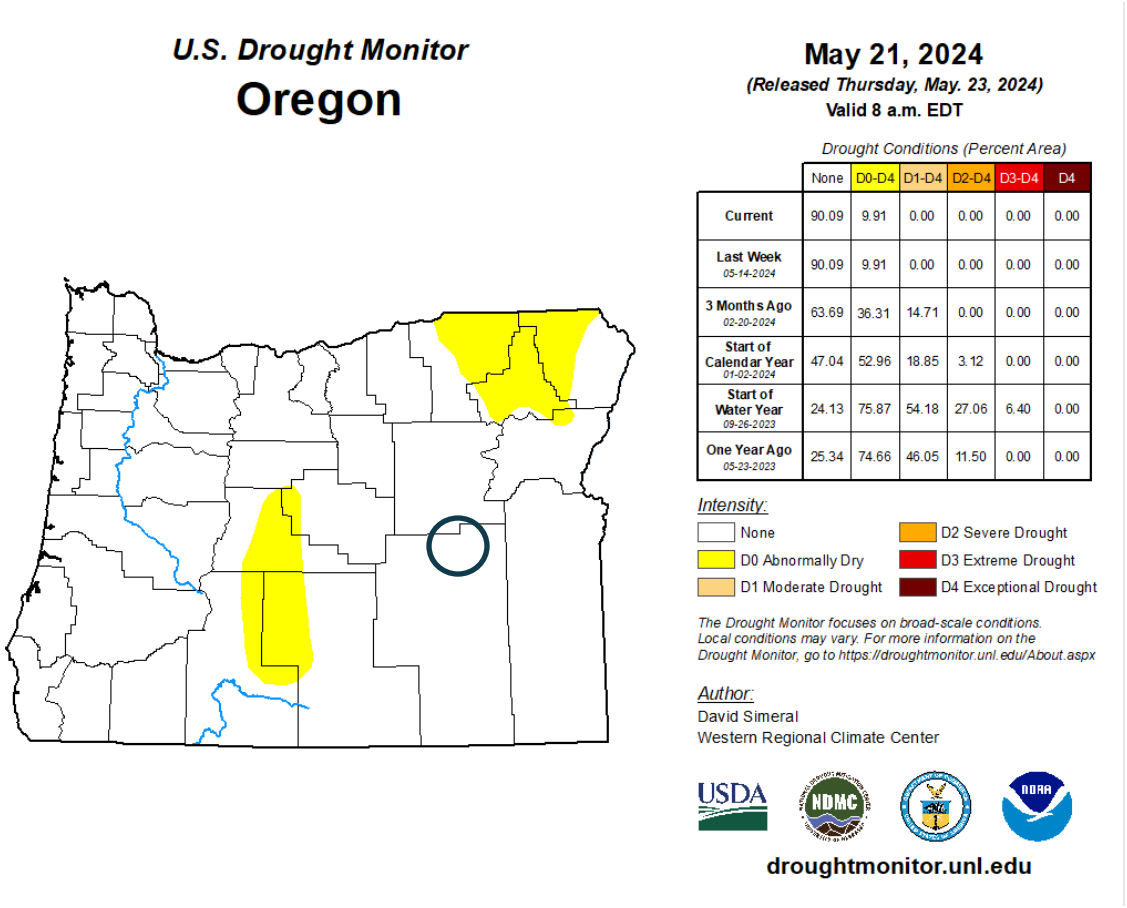



*Figure 9: Drought Montoring May 21, 2024*

Though the winter snowpack was normal for much of Eastern Oregon, spring rains were largely absent and accumulating moisture ended in mid-May. This was followed by rapid warming in mid-June and by July 9 conditions moved into abnormally dry or moderate drought conditions across the Malheur.

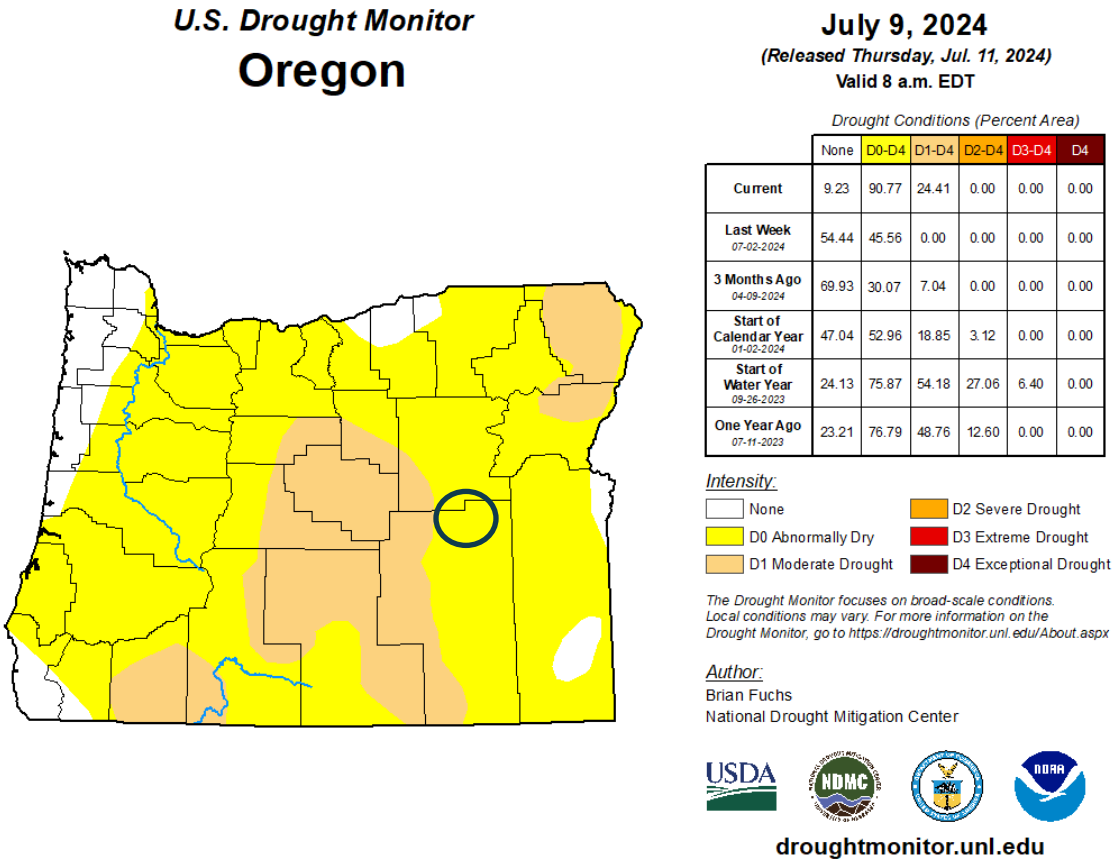



*Figure 10: Drought Montoring July 9, 2024*

## Weather Observations

The weather parameters, along with fuel moistures identified below, were used to determine if the burn unit was within prescription. The prescription range is from 0 to 8 mph mid flame wind speed. A Daily Spot Weather Forecast was not requested for the day of ignition. Spot forecasts are required by policy. Temperature for desired conditions ranged from 50-75 degrees with relative humidities greater than 10%. Conditions for Upper Pine F prescribed fire were within desired prescription parameters according to the nearest RAWS (Crow Flat, 10 miles West). The acceptable prescription range, while allowing for a wide range of conditions, does little to ensure adequate consumption with an open-ended maximum on relative humidity and 10 hour fuel moisture. Expanding prescription windows is common to allow for more possible days to implement, however by allowing for such a large range, it becomes difficult to meet objectives outlined in the burn plan, particularly for fuels reduction and desired mortality.Fire behavior modeling indicates the burn would not meet mortality objectives under the weather conditions on ignition day. This could lead to incomplete combustion and allow for residual heat to remain long after ignitions are complete.

| Environmental Prescription | Acceptable Prescription Range | | | Outside Area at Critical Holding Point *Minimum Acceptable Moisture* |
|---|---|---|---|---|
| | Jack Pot/Tree Well | Low Fire Intensity | High Fire Intensity | Miller Private/ Call meadow LLC |
| Temperature | >65 | 50 | 75 | **75** |
| Relative Humidity | >10 | *>10* | *10* | **10** |
| Mid-flame Wind Speed (5 minute average) | *<15* | <8 | <6 | **<6** |
| Fine Dead Fuel Moisture (FDFM) | *>5* | 15 | >7 | 5 |
| 10-hour Fuel Moisture | >7 | >9 | >7 | 7 |
| Wind Direction | Any | Any | Any | Any |

*Figure 11: Acceptable Prescription Criteria from Upper Pine F Burn Plan*

On-site weather observations were conducted during the two days of ignitions (May 20-21). No spot forecast was requested from the National Weather Service; however, a spot forecast from the nearby Silvies 7 unit on May 20 projected relative humidity in the mid-20% range with temperatures in the low to mid-50s. Actual observations at Upper Pine revealed that five readings were outside the prescribed temperature parameters outlined in the burn plan. Data from the Crow Flat RAWS station showed lower minimum relative humidity compared to the burn unit, but the relationship between Crow Flat RAWS, the Silvies 7 forecast, and Upper Pine remains unclear. Observations suggest that the Upper Pine unit was cooler and had higher humidity throughout the first day of ignitions. A transmission at 1253 indicated the test fire was complete, and ignitions had begun, but weather conditions at the time were at the cool and wet limits of the burn plan parameters. Fire behavior modeling outputs included in the burn plan appendix indicate these conditions were unlikely to achieve the prescribed burn objectives.

| On-Site Weather Observation for 5/20/2024 | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Time | 1045 | 1115 | 1220 | 1315 | 1415 | 1500 | 1600 | 1700 | 1800 |
| Location | Top Middle | NA | NA | NA | NA | NA | NA | NA | NA |
| Temperature (F) | 45 | 45 | 48 | 50 | 47 | 49 | 51 | 52 | 53 |
| Relative Humidity (%) | 61 | 52 | 53 | 43 | 51 | 53 | 54 | 50 | 51 |
| Winds (mph) W/NW | 1-2 | 1-2 | 0-2 | 0-2 | 0-2 | 1-2 | 1-2 | 2-3 | 2-3 |
| Find Dead Fuel Moisture (%) | 12 | 10 | 10 | 9 | 10 | 10 | 11 | 11 | 12 |
| Probability of Ignition (%) | 20 | 25 | 26 | 30 | 26 | 26 | 22 | 23 | 19 |
| Weather observations were taken on the burn site throughout the day by Contractor. | | | | | | | | | |

*Figure 12: On-site weather observations 5/20/2024*

| On-Site Weather Observation for 5/21/2024 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Time | 1100 | 1230 | 1400 | 1500 | 1615 | 1730 | 1845 | 1900 |
| Location | Top South | NA | NA | NA | NA | NA | NA | NA |
| Temperature (F) | 55 | 55 | 57 | 64 | 61 | 60 | 52 | 51 |
| Relative Humidity (%) | 28 | 40 | 38 | 37 | 46 | 58 | 80 | 88 |
| Winds (mph) W/NW | 1-3 | 2-4 | 2-4 | 2-4 | 3-5 | 3-5 | Calm/ drizzle | 1-2 |
| Find Dead Fuel Moisture (%) | 9 | 9 | 9 | 9 | 11 | 12 | 15 | 17 |
| Probability of Ignition (%) | 31 | 31 | 32 | 33 | 24 | 20 | 12 | Light rain |
| Weather observations were taken at the burn site throughout the day by Contractor. | | | | | | | | |

*Figure 13: On-site weather observations 5/21/2024*

Additionally, the Crow Flat RAWS station is near the burn unit and could serve as a proxy to actual on-site observations. Crow Flat has similar vegetation, elevation and lies roughly 10 miles due West of the burn unit. The table below shows weather observations from the burn day at Crow Flat RAWS and subsequent day of wildfire declaration.

| # STATION: CWFO3 | | | | | | | |
|---|---|---|---|---|---|---|---|
| # STATION NAME: CROW FLAT | | | | | | | |
| # LATITUDE: 43.841190 | | | | | | | |
| # LONGITUDE: -118.952030 | | | | | | | |
| # ELEVATION [ft]: 5172.0 | | | | | | | |
| # STATE: OR | | | | | | | |
| Station_ID | Date_Time | air_temp | Rh | wind_speed | wind_direction | wind_gust | fuel_moisture |
| | | Fahrenheit | % | Miles/hour | Degrees | Miles/hour | gm |
| CWFO3 | 05/20/2024 09:07 | 43 | 59 | 5 | 24 | 14.01 | 10.7 |
| CWFO3 | 05/20/2024 10:07 | 46 | 50 | 5.99 | 332 | 18 | 10.6 |
| CWFO3 | 05/20/2024 11:07 | 48 | 42 | 5.99 | 328 | 14.99 | 9.9 |
| CWFO3 | 05/20/2024 12:07 | 50 | 32 | 8 | 341 | 16 | 9 |
| CWFO3 | 05/20/2024 13:07 | 51 | 29 | 5.99 | 345 | 14.99 | 9.8 |
| CWFO3 | 05/20/2024 14:07 | 52 | 30 | 5.99 | 4 | 14.99 | 10 |
| CWFO3 | 05/20/2024 15:07 | 53 | 30 | 7 | 355 | 16 | 9.2 |
| CWFO3 | 05/20/2024 16:07 | 53 | 26 | 5 | 6 | 14.99 | 7.8 |
| CWFO3 | 05/20/2024 17:07 | 51 | 29 | 3 | 10 | 14.01 | 7.9 |
| CWFO3 | 05/20/2024 18:07 | 52 | 26 | 4 | 346 | 16 | 8.1 |
| CWFO3 | 05/20/2024 19:07 | 52 | 33 | 4 | 19 | 14.99 | 7.7 |
| CWFO3 | 05/20/2024 20:07 | 48 | 37 | 2 | 2 | 8 | 7.4 |
| CWFO3 | 05/20/2024 21:07 | 41 | 49 | 0 | | 5.99 | 7.2 |
| CWFO3 | 05/20/2024 22:07 | 34 | 65 | 0 | | 2 | 7 |
| CWFO3 | 05/20/2024 23:07 | 29 | 72 | 0 | | 1 | 6.9 |
| CWFO3 | 05/21/2024 00:07 | 27 | 77 | 1 | 227 | 3 | 6.9 |
| CWFO3 | 05/21/2024 01:07 | 25 | 82 | 0 | | 2 | 7 |
| CWFO3 | 05/21/2024 02:07 | 24 | 84 | 0 | | 3 | 7.1 |
| CWFO3 | 05/21/2024 03:07 | 23 | 86 | 0 | | 2 | 7.3 |
| CWFO3 | 05/21/2024 04:07 | 21 | 87 | 0 | | 1 | 7.6 |
| CWFO3 | 05/21/2024 05:07 | 20 | 91 | 0 | | 1 | 7.9 |
| CWFO3 | 05/21/2024 06:07 | 20 | 90 | 0 | | 0 | 8.4 |
| CWFO3 | 05/21/2024 07:07 | 25 | 85 | 0 | | 0 | 9.3 |
| CWFO3 | 05/21/2024 08:07 | 42 | 57 | 2 | 46 | 4 | 10.6 |

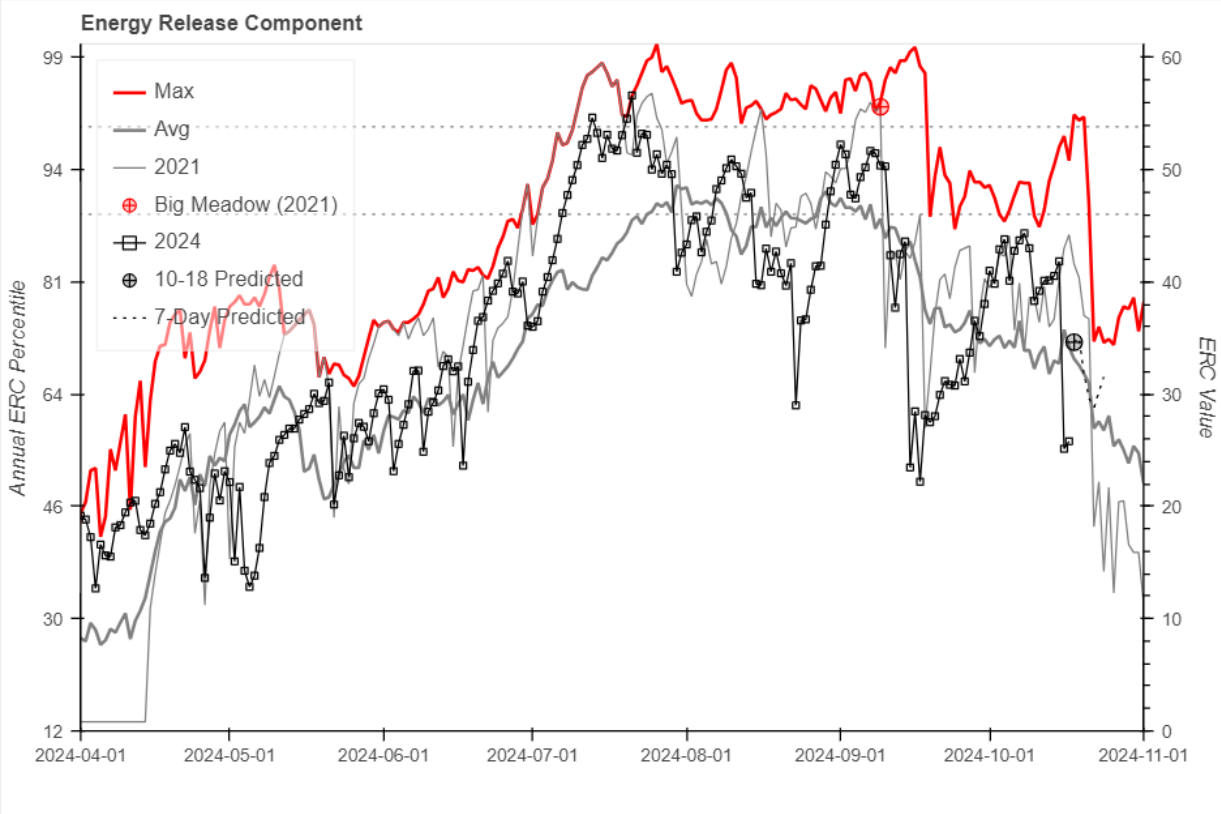
*Figure 14: RAWS Weather Observation May 20-21, 2024*

| # STATION: CWFO3 | | | | | | | |
|---|---|---|---|---|---|---|---|
| # STATION NAME: CROW FLAT | | | | | | | |
| # LATITUDE: 43.841190 | | | | | | | |
| # LONGITUDE: -118.952030 | | | | | | | |
| # ELEVATION [ft]: 5172.0 | | | | | | | |
| # STATE: OR | | | | | | | |
| Station_ID | Date_Time | air_temp_ | Rh | wind_spe | wind_dire | wind_gust | fuel_moisture |
| | | Fahrenhei | % | Miles/hou | Degrees | Miles/hou | gm |
| CWFO3 | 07/07/2024 | 75 | 19 | 1 | 41 | 4 | 4.5 |
| CWFO3 | 07/07/2024 | 79 | 15 | 2 | 49 | 7 | 4.7 |
| CWFO3 | 07/07/2024 | 83 | 11 | 3 | 59 | 12 | 4.7 |
| CWFO3 | 07/07/2024 | 85 | 11 | 3 | 29 | 8 | 4.8 |
| CWFO3 | 07/07/2024 | 89 | 10 | 3 | 11 | 9 | 4.7 |
| CWFO3 | 07/07/2024 | 90 | 9 | 4 | 326 | 11 | 4.7 |
| CWFO3 | 07/07/2024 | 92 | 9 | 3 | 354 | 12 | 4.6 |
| CWFO3 | 07/07/2024 | 92 | 11 | 5.99 | 4 | 16 | 4.3 |
| CWFO3 | 07/07/2024 | 91 | 9 | 5 | 11 | 14.01 | 4.3 |
| CWFO3 | 07/07/2024 | 90 | 9 | 5.99 | 22 | 14.01 | 4.3 |
| CWFO3 | 07/07/2024 | 89 | 8 | 4 | 17 | 18 | 4.2 |
| CWFO3 | 07/07/2024 | 85 | 12 | 2 | 21 | 11 | 4.1 |
| CWFO3 | 07/07/2024 | 70 | 21 | 0 | | 4 | 4 |
| CWFO3 | 07/07/2024 | 61 | 30 | 0 | | 3 | 4 |
| CWFO3 | 07/07/2024 | 55 | 35 | 0 | | 2 | 3.9 |
| CWFO3 | 07/08/2024 | 53 | 38 | 1 | 203 | 7 | 3.9 |
| CWFO3 | 07/08/2024 | 50 | 43 | 0 | | 3 | 3.9 |
| CWFO3 | 07/08/2024 | 47 | 50 | 0 | | 2 | 3.9 |
| CWFO3 | 07/08/2024 | 47 | 52 | 1 | 196 | 3 | 3.8 |
| CWFO3 | 07/08/2024 | 43 | 58 | 0 | | 1 | 3.8 |
| CWFO3 | 07/08/2024 | 42 | 63 | 0 | | 1 | 3.8 |
| CWFO3 | 07/08/2024 | 42 | 65 | 0 | | 2 | 3.9 |
| CWFO3 | 07/08/2024 | 47 | 64 | 0 | | 1 | 4 |
| CWFO3 | 07/08/2024 | 65 | 41 | 0 | | 1 | 4.2 |

*Figure 15: RAWS Weather Observation July 7-8, 2024*

## Fire Danger

Fire danger for the spring fire season based on the energy release component (ERC) for the Southern Blues Fire danger rating area was slightly below average on the day of ignition. During the subsequent days between ignition and declaration, ERC values started a rapid climb mid-June to the 92nd percentile on the day of wildfire declaration.




| Date | Type | ERC | BI | ERC % | BI % | SFDI | PV | ERC Level | BI Level |
|---|---|---|---|---|---|---|---|---|---|
| 2024-05-21 | O | 31 | 24 | 67th | 72nd | Moderate | 1 | 1 | 1 |

| Date | Type | ERC | BI | ERC % | BI % | SFDI | PV | ERC Level | BI Level |
|---|---|---|---|---|---|---|---|---|---|
| 2024-07-08 | O | 48 | 32 | 92th | 95th | Very High | 4 | 2 | 2 |

*Figure 16: Southern Blues Fire Danger Rating Area ERC chart*

Late May through early June, the ERC indices remained about average and bottomed out around 50 in mid-June before a rapid climb to the 94th percentile on the day of escape and continued to climb. A dip in 100-hour fuel coincides with a period of hot dry weather in late June early July.

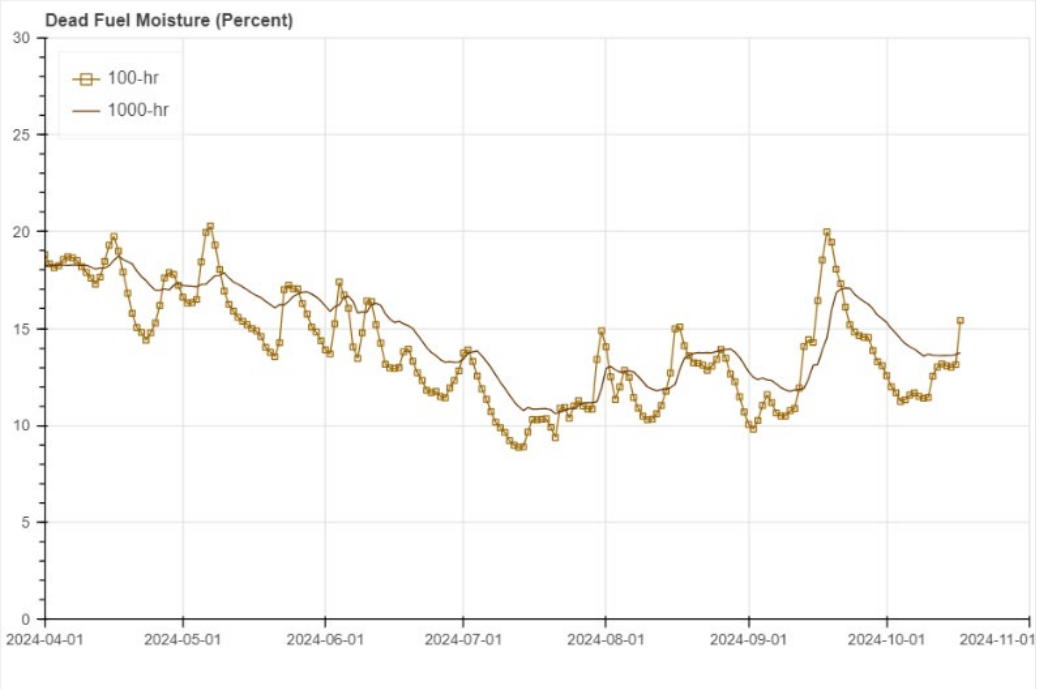



*Figure 17: Fine Dead Fuel Moisture Chart*

Severe Fire Danger Index also shows the climb from moderate values during ignition to the very high indices experienced during early July leading to declaration.

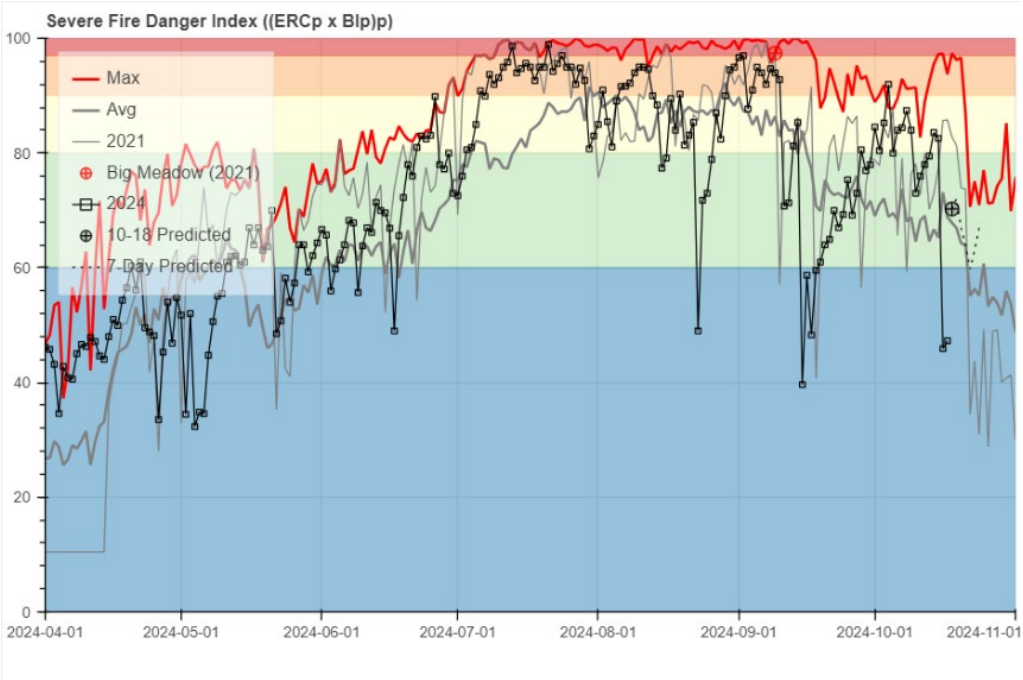



*Figure 18: Severe Fire Danger Index*

## Prescribed Fire Objectives, Prescription, and Outcomes

The primary resource objective (Element 5, A) for Upper Pine F is fuels reduction to alter fire behavior and move the area toward historical fire behavior and fire regime.

Prescribed fire objectives (Element 5, B) list the priority areas for fuels reduction treatment as the dry pine and dry mixed conifer plant associations, the duff and litter layer, and the 10- 100-hour fuels. However, there is no range of expected reduction or consumption for these fuel parameters. The prescribed fire objectives also define acceptable mortality ranges for 5 different size classes of trees. While it was verbally explained to the Declared Wildfire Review Team that these acceptable mortality ranges are in fact objectives, they are written only as acceptable limits on mortality, instead of goals or objectives to be achieved. A burn boss from outside the area may have difficulties interpreting the objectives and measuring the desired effects on-site.

*Figure 19: Top photos: Before (May 14, 2024)/ Bottom photos: After (June 10, 2024) Monitoring Plot Pictures*

The prescription has an acceptable fire behavior range for Jack Pot/Tree Well, Low Fire Intensity, and High Fire Intensity (see Figure 11). Outcomes show an acceptable Fire Behavior Range for TL1 in Jack Pot/Tree Well, and TU2 in Low Fire Intensity and High Fire Intensity. Since the prescribed fire objectives are to achieve specified levels of mortality, Element 7 A and B should state the environmental parameters to achieve those objectives. Fire behavior

modeling was completed using BehavePlus 6. The prescription criteria in the burn plan indicate limited chance for success in meeting the prescribed fire objectives. While the burn plan objectives indicate acceptable mortality ranges of 30-70% for 0-1" dbh and 5-15% for 1-5" dbh the fire behavior modeled only 2” dbh mortality. Referencing the fire behavior outputs from the burn plan, the conditions at the time of implementation indicate a mortality of 6% at 2” dbh. Fire behavior modeling indicates the burn would not meet objectives under the weather conditions on the days of ignition. The prescription narrative would be improved by describing how fire behavior will meet objectives. For more information about Objectives and Prescription, see Elements 5 and 7 in Appendix B: Post-Pause Forest Service Prescribed Fire Plan Quality Assurance Checklist in this document.

By comparing the environmental prescription in the burn plan with on-site weather observations taken during ignitions, temperatures were below the minimum threshold until afternoon. There was no National Weather Service spot weather forecast requested for the unit, even though this was a requirement of the burn plan. This may have influenced the outcome of whether the objectives for Upper Pine were met. Review of pre- and post-burn photo plots taken by fuels personnel show a mosaic of burned and unburned areas. An example of fire effects is shown in Figure 19. The photos display minimal consumption of surface fuel loading and limited mortality across size class.

### Qualifications

All personnel on Upper Pine were qualified for their positions, including the burn plan preparer, technical reviewer, on-site Forest Service Prescribed Fire Burn Boss Type 2 (RXB2/COR 1), and Prescribed Fire Agency Administrator Type 2 (RXA2) who signed off on the ignition authorization. As part of the contract, contractors were required to be qualified for the positions that they performed on the prescribed fire. CORs did not perform on site red card checks of contractor personnel.

# Lessons Learned

## Lessons Learned by the Participants

### Critical Weather Step-up Plan

During the review process, the Critical Weather Step-up Plan was brought up as an issue for the fire organization as they managed the fire after initial ignition. The Critical Weather Step-up Plan in the burn plan states, “In the event of a forecasted critical weather event during post-ignition mop-up or patrol (Red Flag Warnings, Haines index, Pocket Card Large Fire Indicators, locally recognized critical fire weather conditions) the zone will elevate the level of response to what is stated in Element 17 Section C. Any one of the four resource choices can be used.” Element 17 lists the four various configurations of contingency resource types that would meet line production capabilities should an escape occur. The burn plan required the same resources for a critical weather step-up as for contingency.

A common statement was that it was difficult to meet this requirement through the spring and summer months. Red flag warnings were frequent, resource shortages were common, and firefighters balked at being committed to a prescribed burn instead of a wildfire. It was also expressed that this requirement was a reason to cause hesitancy to conduct spring burns in the future.

The USDA Forest Service National Prescribed Fire Program Review simply requires that the Critical Weather Step-Up Plan list indicator(s) that will trigger Action, and Critical Holding Points and Actions. More specifically, “In the event of a forecasted critical weather event during post-ignition mop-up or patrol – it is imperative we recognize and react to forecasted weather conditions that can negatively impact a potential ignition source such as a prescribed fire that is not declared out; this plan should specify the type of indicators that will trigger the step-up plan (e.g., Red Flag Warnings, Haines index, Pocket Card Large Fire indicators, locally recognized critical fire weather conditions), and associated actions for elevating the level of response to reduce the potential for wildfire ignition from these known potential ignition sources.”

> **Recommendation:** During this review, it was discovered local resources were interpreting an internal discussion as national policy, when in fact it was only a burn plan requirement which can easily be edited in the future. In response, the local unit suggested they develop a working group to address Critical Weather Step-up.

### Prescribed Burn Prescriptions and Timing

In hindsight, some individuals expressed a desire to burn units at the high end of the prescription. Units with higher consumption throughout would be less likely to rekindle as spring gave way to summer. Some individuals questioned if the burn was meeting objectives. The burn plan is written to target fuel reduction in duff and litter, 10–100-hour fuels, and mortality in dry pine and mixed conifer plant associations. There is no range of expected reduction or consumption of these fuel parameters. Having a range of acceptable effects that vary over space and time can be desirable for a reintroduction of fire on a landscape; however, leaving prescription parameters and goals and objectives too open ended may result in confusion over

whether prescribed burn objectives have been met. Upper Pine F prescribed fire objectives focus primarily on acceptable mortality ranges.

> **Recommendation:** It is worth considering a range of acceptable consumption of surface fuels into the objectives, so there is a metric based on observable first order fire effects to determine if objectives are being met. Mortality is often difficult to determine ocularly at the time of ignition. It is not always possible or desirable to burn on the high end of the prescription. Objectives should be S.M.A.R.T.: Specific, Measurable, Achievable, Relevant, and Time-bound. Building in more metrics for a burn boss to determine if they are meeting objectives, or not meeting objectives, would be an overall benefit. It may also be worth considering multiple test fires in varying fuel types to determine if objectives can be met.

Emigrant Creek RD has a large amount of planned units and the majority of the district has National Environmental Policy Act (NEPA) clearance for prescribed fire. The units chosen for this spring were in 4 different locations spread across the district.

> **Recommendation:** Looking forward, it would be beneficial to consider the need for extended patrol and select units that are geographically closer together. Many of the prescribed fire units across the district are approved for both spring and fall burning. The choice of burning in the spring versus the fall should carefully consider fuels that may not yet be available but have the potential to reburn after initial ignition (such as moist mixed conifer or ceanothus).

### Contracted Prescribed Burn Resources

In general, the relationship with contract partners is positive, and the benefit of having the additional capacity of the contractor outweighs the workload required to write and administer the contract. The CORs, Technical Representatives, and Contractor were experienced in implementing contracts, in general. However, a contract for implementing a prescribed burn in its entirety was relatively new to the group.

> **Recommendation:** It may be worth considering a few additions to full-service prescribed fire contracts. One addition would be to build in funding for extended patrol. Overall, there is a need for additional funds to pay for contract resources for prescribed fire. During a busy prescribed fire season existing funding is expended quickly. When putting the contract out for bid, add a line item for estimating a daily cost break down on both the low and the high ends of the prescription as part of the government cost estimate. In order to implement a contracted burn with varied costs over the life of the contract, funding would need to be available to adjust on an as needed basis. Current budget allotments do not provide much room for quick additions or lengthened contract timelines. Additionally, the turnback standards for the local unit could be evaluated further, possibly to include infrared (IR) heat detection of the unit and improved mop-up standards.

## Lessons Learned by the Review Team Members

### Communication Oversight

A lapse in communication occurred during initial burn operations with Burns Interagency Communication Center (BICC) dispatch. A press release from the Malheur National Forest was issued regarding Upper Pine F prescribed burn implementation. Even so, BICC had not been

notified in advance of burn operations occurring on May 20 and received multiple calls from the public regarding smoke. Dispatch contacted the District FMO who then briefed them on operations. Due to this oversight, the dispatch center had not created an incident in WildCAD or completed their notification responsibilities. Element 9: Pre-burn Considerations and Weather in the burn plan lists BICC as a required notification prior to burn day. It also requires submitting the prescribed fire plan to dispatch prior to ignitions. Additionally, the complexity analysis identifies communication through dispatch as a way to mitigate hazards.

> **Recommendation:** Dispatch should be notified of prescribed fires in advance and be provided the burn plan, so they are aware of the medical plan if there is an incident within an incident on a prescribed fire. All communication should be through dispatch, regardless of who is conducting the burn. The updated Forest Service Prescribed Fire Plan Template from the Chief's Review added Element 12, C Key Communication Points, and lists the minimum that the burn boss will relay either directly or through dispatch to inform unit fire management and agency administrators on project status. The COR on-site, confirmed with dispatch that ignitions were beginning on Upper Pine F, after dispatch contacted him requesting details about the burn. It is recommended that the Burn Boss be the contact for all required communications outlined in the burn plan. It is also recommended that an incident be created in WildCAD to track prescribed fire operations on the ground. Clear communication is critical for safe operations.

### Spot Weather Requests

While on-site observations were taken, no spot weather forecasts were requested for Upper Pine F. Project-specific spot weather forecasts are required prior to ignition and for each day that ignition continues, on any day the fire is actively spreading, or when conditions adversely affecting the prescribed fire are predicted in the general forecast. (Forest Service Manual 5142).

> **Recommendation:** Prior to ignition, clarification on roles and responsibilities, between the contracted Burn Boss, the COR, FMO, and the Agency Administrator, should occur to ensure all protocols are followed as identified in the burn plan, contract, and NWCG Standards for Prescribed Fire Planning and Implementation, PMS 484, May 2022. Particularly when using contracted resources as burn bosses, the Forest should develop a checklist that deliniates when Burn Plan requirements are complete and by whom.

### Declaration Decisions

The Malheur and BIFZ had a marathon wildfire season. At the same time Upper Pine F was declared a wildfire, there were two additional prescribed fires actively burning: Jane 106 and Silvies 7. The District considered declaring all three prescribed fires wildfires. Following discussions with the Region, more resources were sent to assist. Jane 106 and Silvies 7 remained in their footprints due to lend/lease of resources from the Falls and Upper Pine wildfires. Having to monitor prescribed burns while actively fighting wildfire contributed to crews' fatigue and frustration.

During the course of the Review, questions surrounding the timing of declarations came to light. How does the Agency support and balance landscape-scale burning knowing burn windows are limited? What are we asking of our workforce when we consider pace and scale? How do we

balance exposure to risk over the short and long term? A certain stigma surrounds a decision to declare. There are two types of fires: planned ignitions (prescribed burns) and unplanned ignitions (wildfires). The same resources are available for both types: personnel, equipment, logistical support, etc. However, the mechanism to obtain resources is limited on the prescribed fire side to agreements, budget, and business management rules; all of this can be challenging when prescribed fire implementation overlaps with wildfire season. What would it look like if prescribed fire was allowed to work from the same toolbox as wildfire?

> **Recommendation:** The human factors highlighted in this review are broader than can be addressed in this document. It is well documented that because of current business rules prescribed fire and wildland fire are not simply two types of fire (planned and unplanned). Firefighters do not receive the same pay incentives, the same resources are not available, etc. At a minimum, these factors need to be considered prior to landscape burning in the spring. Washington Office could revisit policy restrictions that do not allow for time-sensitive expenditures and resource allocations, hazard pay, or work beyond 12-hour duty days. Mirroring wildfire business rules in the case of prescribed fire implementation would allow for more flexibility.

### Successes

- After the turmoil of a Burn Boss arrest and indictment on the forest, there are still individuals willing to serve as Burn Boss. In addition, despite the mental fatigue of balancing policy and politics while implementing fuel reduction activities, many people are invested in the success of the fuels program on the Malheur.
- The Forest is supportive of utilizing contract resources to carry out prescribed burning and desires to continue developing their relationships with contractors in the future. The contractors were skilled in operations and worked well with the Agency.
- The multi-agency organization within BIFZ provides a depth of support to fire management on the Emigrant Creek RD.
- Even with low staffing levels, the District was capable of handling multiple prescribed fires and wildfires.
- The timeliness of the declaration provided for quick resource mobilization to contain the fire when it came out of the unit, resulting in 22 acres of slopover where the forward momentum was caught within 24 hours and the burn never escaped the project boundary.
- Upper Pine F become a “catcher’s mitt” for the Telephone fire. The completed firelines and blackened unit helped establish an anchor point.

## Summary

The participants interviewed in the Review felt declaring Upper Pine F a wildfire was the right thing to do. The decision to declare was timely and there was support from local staff and the Regional Office. This decision allowed for ordering of aviation assets, heavy equipment, and additional resources, which helped the local unit corral the fire when it escaped containment lines.

Emigrant Creek RD capitalized on NEPA-cleared ground and available resources to achieve their goals for landscape-scale restoration. Implementing Upper Pine F was not without its challenges. Burning on the cool side of the prescription led to a mosaic of burned and unburned areas. A different spring in a different year may have allowed implementation of Upper Pine F with a very different outcome. Short burn windows, longer fire seasons, unpredictable politics, and other red tape already limit flexibility to manage a landscape in desperate need of fire. Shifting strategies to burning only on the high side of the prescription or eliminating spring burning altogether may feel like the answer. However, doing so—to avoid lengthy patrols, significant mop-up, or even declaring a prescribed fire a wildfire—is not going to help the district continue to make a significant impact on their landscape.

## Declared Wildfire Review Team

**Traci (Weaver) Zimmerlee**, Team Lead, Deputy Forest Supervisor, R6, Wallowa-Whitman National Forest

**Jason McGovern**, Subject Matter Expert, Regional Fuels Coordinator, R6, Pacific Northwest Fire and Aviation Management

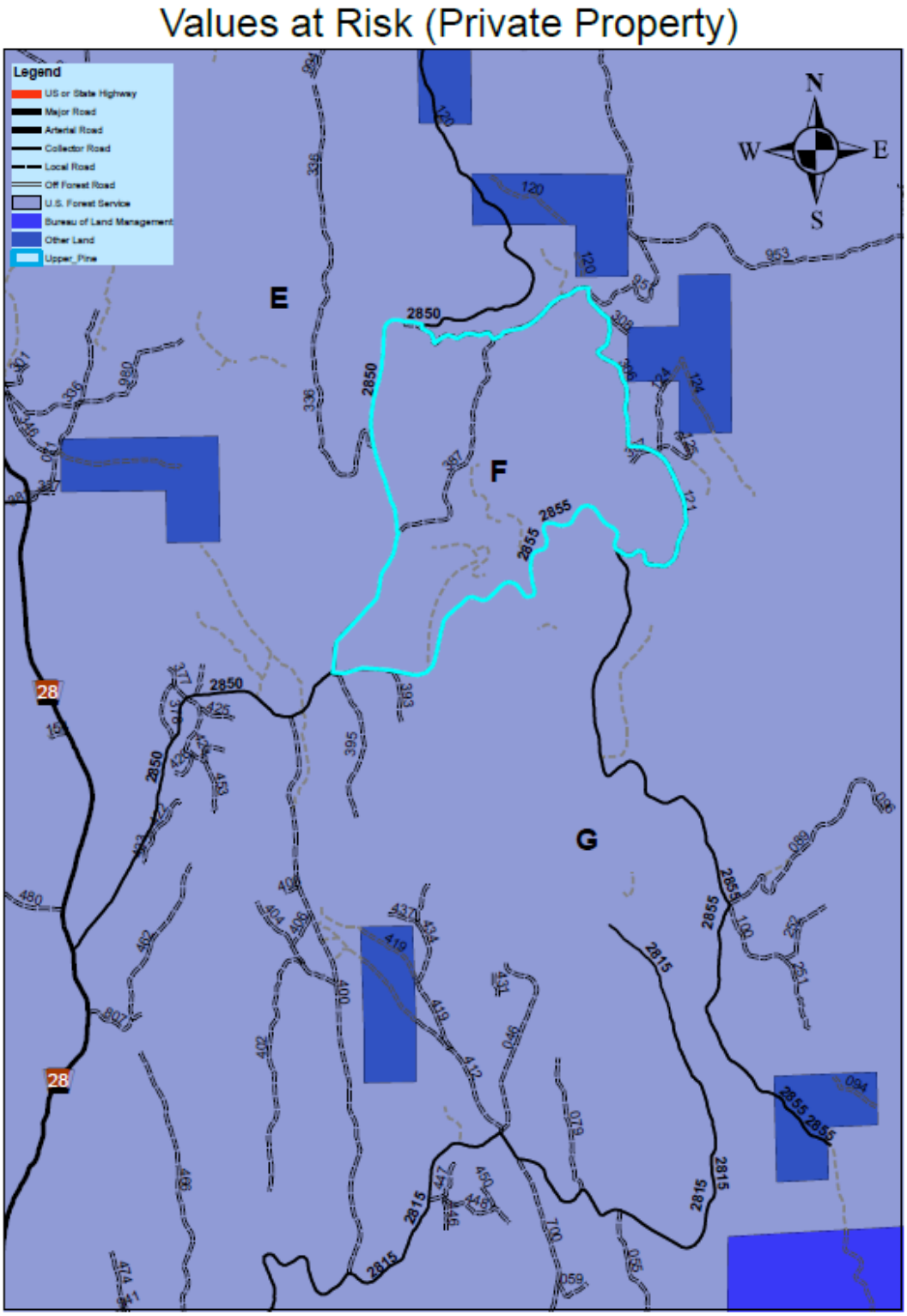
**Anne Trapanese**, Subject Matter Expert, Deputy Fire Staff-Fuels, R6, Northwest Oregon District Bureau of Land Management, Siuslaw and Willamette National Forests

**Tessa Chicks**, Subject Matter Expert, Fire Management Specialist-Prescribed Fire and Fuels, R6, Mt. Baker-Snoqualmie National Forest

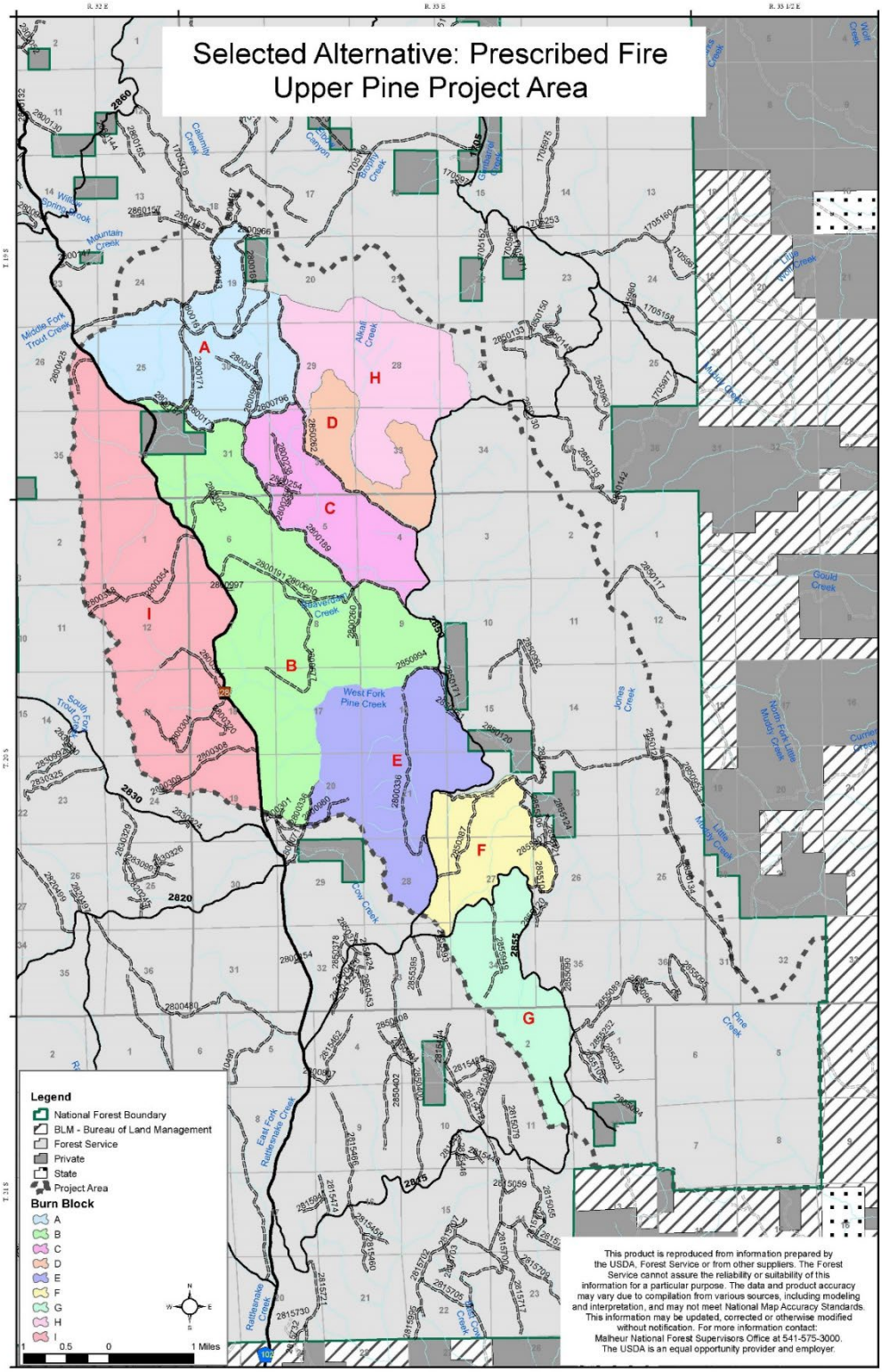
**Kristen Marshall**, Writer/Editor,  Fire Management Specialist-Prescribed Fire and Fuels, R6, Umatilla National Forest, Heppner and North Fork John Day Ranger Districts

# Appendix A: Maps

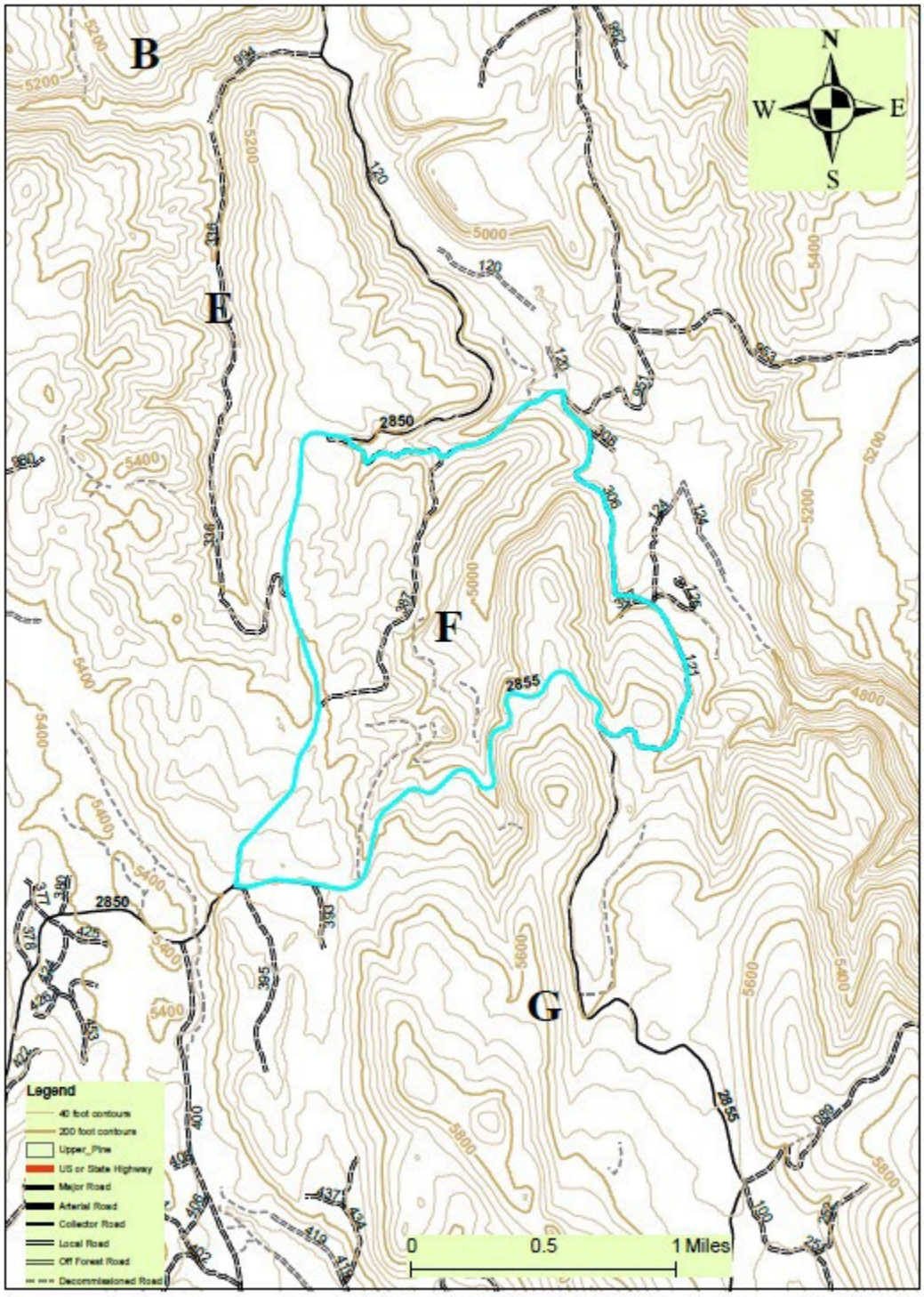
## Values At Risk Map



## Map of Approved Burn Units



## Upper Pine F Burn Unit Map



## Appendix B: Post-Pause Forest Service Prescribed Fire Plan Quality Assurance Checklist

The Post-Pause Forest Service Prescribed Fire Plan Quality Assurance Checklist was utilized to check policy compliance of the Upper Pine F Prescribed Fire Plan. The Upper Pine F Prescribed Burn Plan was also analyzed for consistency with agency policy and guidance from Forest Service Manual 5140, PMS 484: NWCG Standards for Prescribed Fire Planning and Implementation, and PMS 424: Prescribed Fire Complexity Rating System Guide. The following table shows the results of the compliance checks.

| **Prescribed Fire Plan Elements** | **Policy Consistent** | **Comments** | **Contributing Factor?** |
|---|---|---|---|
| **Element 1: Signature Page** | YES | | NO |
| **Element 2A: Agency Administrator Ignition Authorization** | YES | Three days of ignitions occurred. One of the 2As has different dates on the signatures between the AA and the Burn Boss/ FMO (5/20 and 5/21). Not all the 2As have both the FMO/ Burn Boss and the contract Burn Boss signatures. | NO |
| **Element 2B: Prescribed Fire GO/NO-GO Checklist** | YES | | NO |
| **Element 3: Complexity Analysis Summary and Final Complexity** | NO | Agency administrator/ Preparer Discussion Completed boxes were not checked green “yes” to indicate discussion occurred.<br>Burn Plan preparer did not sign the complexity analysis. | NO |
| **Element 4: Description of Prescribed Fire Area** | YES | | NO |

| Prescribed Fire Plan Elements | Policy Consistent | Comments | Contributing Factor? |
|---|---|---|---|
| **Element 5: Objectives** | YES | The objectives do not provide a specific, measurable, attainable, realistic, and time-sensitive fuels reduction metric to gauge whether the burn is meeting consumption goals. The plan states that the duff, litter layer and 10-100-hour fuels are still the primary fuel component targeted for reduction but doesn't give any metrics for reduction. Having a targeted range of fuels reduction in the various size classes would give a better measure of actual surface fuel consumption that is occurring during the ignition phase.<br><br>The plan also gives ranges of acceptable mortality. It was verbally stated during our discussions that mortality is the primary objective. It would be clearer to the implementer if mortality limits were written as goals and objectives rather than acceptable limits. | YES |
| **Element 6: Funding** | YES | The three amounts of funding are unclear; a description would be helpful. | NO |
| **Element 7: Prescription** | YES | Element 7 states that Behave Plus 5.0.5 was used, when version 6.0.0 was used.<br><br>The Fire Behavior Parameters Table lists (Backing/Flanking), but only Heading Fire was modeled. | YES |
| **Element 8: Scheduling** | YES | | NO |
| **Element 9:** | YES | A discrepancy between contacting Salem NWS and Pendleton NWS. It might be a typo about Salem being the | YES |

| Prescribed Fire Plan Elements | Policy Consistent | Comments | Contributing Factor? |
|---|---|---|---|
| **Pre-burn Considerations and Weather** | | smoke forecaster's office but is written as NWS Salem. | |
| **Element 10: Briefing** | YES | | NO |
| **Element 11: Organization and Equipment** | YES | There are a few math errors in the personnel numbers in both the low and high organization tables.<br><br>The high organization lists a BLM Burn Boss as a requirement, which may cause constraints for implementation.<br><br>It is recommended to utilize the line production tables at https://www.fs.usda.gov/t-d/nwcg/<br><br>Instead of the Wildland Fire Incident Management Field Guide, since that guide has been officially discontinued by NWCG. The National Technology and Development Program periodically updates the tables at the website, so they are the most current version. | NO |
| **Element 12: Communication** | YES | | NO |
| **Element 13: Public and Personnel Safety and Medical** | YES | | NO |
| **Element 14: Test Fire** | YES | | NO |

| Prescribed Fire Plan Elements | Policy Consistent | Comments | Contributing Factor? |
|---|---|---|---|
| **Element 15: Ignition Plan** | YES | | NO |
| **Element 16: Holding Plan** | YES | The Critical Weather Step-up Plan does not give specific forecasted weather conditions as indicators that would trigger the step-up plan, but lists the ones provided in the Chief's Review. It also does not list the associated actions for elevating the level of response to reduce the potential for wildfire ignition from the prescribed fire but instead includes direction to follow the contingency plan in Element 17. This is explored further in the narrative in the document. | NO |
| **Element 17: Contingency Plan** | YES | In the M.A.P. table, the time frame is listed as "Needed within ½ hours. Remain on scene for 24 hours." This is confusing and seems constraining. A clarification would help the implementer understand if this is a requirement or an option. | NO |
| **Element 18: Wildfire Declaration** | YES | | NO |
| **Element 19: Smoke Management and Air Quality** | YES | | NO |
| **Element 21: Post Burn Activities** | YES | | NO |

| Prescribed Fire Plan Elements | Policy Consistent | Comments | Contributing Factor? |
|---|---|---|---|
| **Prescribed Fire Plan Appendices:**<br>**Appendix A:**<br>**Maps: Vicinity,**<br>**Project (Ignition Units)** | YES | | NO |
| **Appendix B:**<br>**Technical Review Checklist** | YES | | NO |
| **Appendix C:**<br>**Complexity Analysis** | NO | See Element 3 above. | NO |
| **Appendix D:**<br>**JHA Risk Assessment** | | N/A | |
| **Appendix E:**<br>**Medical Plan** | YES | | NO |
| **Appendix F:**<br>**Fire Behavior Modeling**<br>**Documentation** | YES | Slope inputs for all the Behave Plus runs were modeled at 10%, which may not show the worst-case scenario.<br>Only one size DBH (2 inch) was modeled for mortality probability, while the objectives have five size classes listed.<br>The Jackpot/ Tree Well Fire Behavior Parameters in Element 7 only list the low fire behavior outputs from the Behave runs for Rate of Spread, Flame Lengths. | YES |

The NWCG Standards for Prescribed Fire Planning and Implementation (PMS 484) also requires an analysis of prescribed fire implementation for consistency with the prescription, actions, and procedures in the prescribed fire plan. The following inconsistencies were found between the approved prescribed fire plan and implementation of the plan:

It was found during the review that implementation did not always follow the burn plan.

Element 7. Prescription Parameters lists the environmental limitations for high and low fire intensity.

According to the on-site weather observations, the burn was implemented in conditions that were outside (too cool and moist) the weather parameters outlined in the prescription. This was found to be a contributing factor.

Element 9. A. in the burn plan states that Burn Boss (or delegated) will:

- Submit complete Prescribed Fire Plan to BIFZ dispatch prior to ignitions.
- Obtain National Weather Service spot forecast prior to ignitions.

Dispatch was not notified of the burn nor provided with a copy of the burn plan prior to ignitions. This was not a contributing factor.

A spot weather forecast was not requested for any of the days of ignitions. A spot weather forecast is required and could have helped determine if the burn was going to be in prescription and meet prescribed fire and resource objectives. This was found to be a contributing factor.

Element 9. C. lists the notification requirements for the burn plan, and the timing of the notifications as “Before” (prior to burn day), “Day of“(Prior to ignition on burn day), or “After” (After burn is completed). BICC is listed as a notification to be made by the Burn Boss Before- prior to burn day.

Dispatch was not notified prior to burn day. This was not a contributing factor.

Element 12. C. lists the Key Communication Points to be relayed by the Burn Boss either directly or through dispatch and includes:

- Element 2B Go/ No-Go is complete and intent to proceed with test fire or take other actions.
- Results of the test fire and intent to proceed with ignitions or take other course of action.
- Ignition operations completed for the project or shift.

The review team found that these minimum communications were not relayed, but that the USFS RXB2/ COR only called dispatch to let them know that the test fire was completed, and contractors had begun burning operations. This was not a contributing factor.

## Appendix C: Qualifications and Experience of Key Personnel

All key fire personnel were qualified in the positions they were assigned according to current Incident Qualifications and Certification System standards.

| Assigned Position | Qualified (Yes/No) |
|---|---|
| Agency Administrator (RXA2) | Yes |
| RXB2 (Contractor) | Yes |
| RXB2 (Agency COR 1) | Yes |
| Firing (FIRB) | Yes |
| Holding (SRB) | Yes |
| Technical Reviewer (RXB2) | Yes |
| Burn Plan Preparer (RXB2) | Yes |