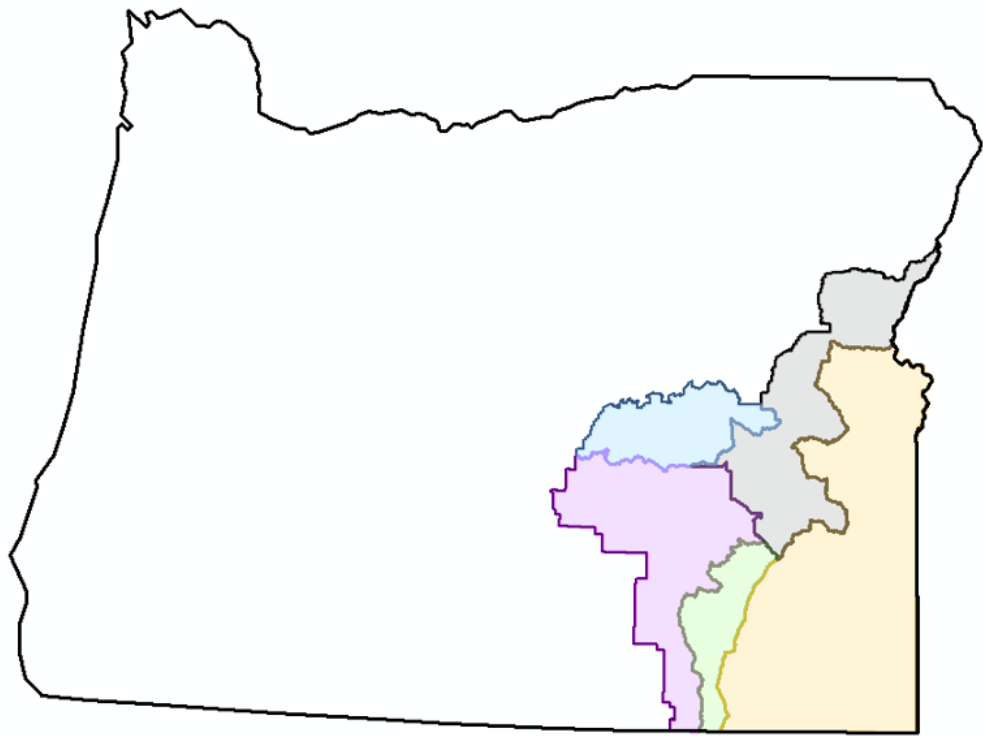


Southeast Oregon

Interagency Fire Danger Operating Plan



April 2021

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Southeast Oregon

Interagency Fire Danger Operating Plan

Approved By: Agency Administrators



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Southeast Oregon

Interagency Fire Danger Operating Plan

Recommended By: *Fire Program Manager*



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Southeast Oregon

Interagency Fire Danger Operating Plan

Reviewed By: **Technical Review Group**



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Southeast Oregon

Interagency Fire Danger Operating Plan

Prepared By: **Technical Group**



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I. INTRODUCTION

A. PURPOSE

The public, industry, and our own agency personnel expect the interagency wildland fire management agencies to implement appropriate and timely decisions which ultimately result in safe, efficient, and effective wildland fire management actions. This plan is intended to document a decision-making process for agency administrators, fire program managers, fire operations specialists, dispatchers, agency cooperators, and firefighters by establishing interagency planning and response levels using the best available scientific methods and historical weather/fire data.

An appropriate level of preparedness to meet wildland fire management objectives is based upon an assessment of vegetation, climate, and topography utilizing the National Fire Danger Rating System (NFDRS). This plan provides a science-based “tool” for interagency fire managers to incorporate a measure of risk associated with decisions which have the potential to significantly compromise safety and control of wildland fires.

1. Preparedness

Interagency policy and guidance require numerous unit plans and guides to meet preparedness objectives. Some of these plans and guides are inter-related; some plans and guides provide the basis for other plans/guides as shown in Figure 1.

This Fire Danger Operating Plan (FDOP) guides the application of information from decision support tools (such as NFDRS) at the local level. This FDOP is supplemental to the Fire Management Plan; it documents the establishment and management of a fire weather station network and describes how fire danger ratings will be applied to local unit fire management decisions. The actual implementation of the fire business thresholds is described in the following supplemental action plans.



Figure 1: Preparedness Plan Relationship

The decision points are identified and documented in the Southeast Oregon Fire Danger Operating Plan.

a. Preparedness Plan

Preparedness plans provide management direction given identified levels of burning conditions, fire activity, and resource commitment, and are required at national, state/regional, and local levels. Preparedness Levels (1-5) are determined by incremental measures of burning conditions, fire activity, and resource commitment. Fire danger rating is a critical measure of burning conditions. The Preparedness Levels are identified and documented in the unit specific operational plan located in *Appendix A*

b. Staffing Plan

The Staffing Plan describes escalating responses. Mitigating actions are designed to enhance the unit's fire management capability during short periods (one burning period, Fourth of July or other pre-identified events) where normal staffing cannot meet initial attack, prevention, or detection needs. The decision points and recommended actions are identified and documented in the unit specific operational plan located in *Appendix AB*.

c. Prevention Plan

Prevention plans document the wildland fire problems identified by a prevention analysis. This analysis will not only examine human-caused fires, but also the risks, hazards, and values for the planning unit. Components of the plan include mitigation (actions initiated to reduce impacts of wildland fire to communities), prevention (of unwanted human-caused fires), education (facilitating and promoting awareness and understanding of wildland fire), enforcement (actions necessary to establish and carry out regulations, restrictions, and closures), and administration of the prevention program. The analysis of fire problems and associated target group are documented in this Fire Danger Operating Plan; the associated decisions and recommended actions are in *Appendix D*.

d. Restriction Plan

A Restriction Plan is an interagency document that outlines interagency coordination efforts regarding fire restrictions and closures. An interagency approach for initiating restrictions or closures helps provide consistency among the land management partners, while defining the restriction boundaries so they are easily distinguishable to the public. Based on the fire danger, managers may impose fire restrictions or emergency closures to public lands. Decision points when restrictions and/or closures should be considered are identified and documented in the unit specific plan located in *Appendix F*.

2. Wildfire Response

a. Initial Response Plan

Initial response plans, also referred to as run cards or pre-planned response plans, specify the fire management response (e.g. number and type of suppression assets to dispatch) within a defined geographic area to an unplanned ignition, based on fire weather, fuel conditions, fire management objectives, and resource availability. Response levels are identified and documented in the Southeast Oregon Fire Danger Operating Plan. The number and type of suppression resources dispatched to a reported fire is documented in the associated initial Dispatch / Response Plan *Appendix C*.

3. Fuels Management

- a. Prescribed Burn Approval Plan (USFS) – this is a plan only for the U.S. Forest Service (USFS) that applies NFDRS to prescribed fire. Currently, this plan is not incorporating NFDRS principles into direction of local prescribed burning. However, all direction from USFS “Prescribed Burn Approval Act of 2016” will be followed (i.e. Regional Forester will be contacted if prescribed burning is planned during extreme fire danger levels).

B. POLICY AND GUIDANCE

Interagency policy and guidance regarding the development of Fire Danger Operating Plans can be found in [Interagency Standards for Fire and Aviation Operations](#) (Red Book). Agency specific direction can be found in:

- U.S. Forest Service - [Manual 5120 - Fire Mangement Preparedness](#)
- Bureau of Land Management - [Manual 9211 - 1 - Fire Planning Handbook](#)
- U.S Fish and Wildlife Service - [Fire Management Handbook, Chapter 10 - Preparedness](#)

C. OPERATING PLAN OBJECTIVES

1. Provide a tool for agency administrators, fire managers, dispatchers, agency cooperators, and firefighters to correlate fire danger ratings with appropriate fire business decisions in fire danger planning area.
2. Delineate fire danger rating areas (FDRAs) in fire danger planning area with similar climate, vegetation, and topography.
3. Establish an interagency fire weather-monitoring network consisting of Remote Automated Weather Stations (RAWS) which comply with NFDRS Weather Station Standards (PMS 426-3).
4. Determine climatological breakpoints and fire business thresholds using the Weather Information Management System (WIMS), National Fire Danger Rating

System (NFDRS), FireFamilyPlus software to analyse and summarize an integrated database of historical fire weather and fire occurrence data.

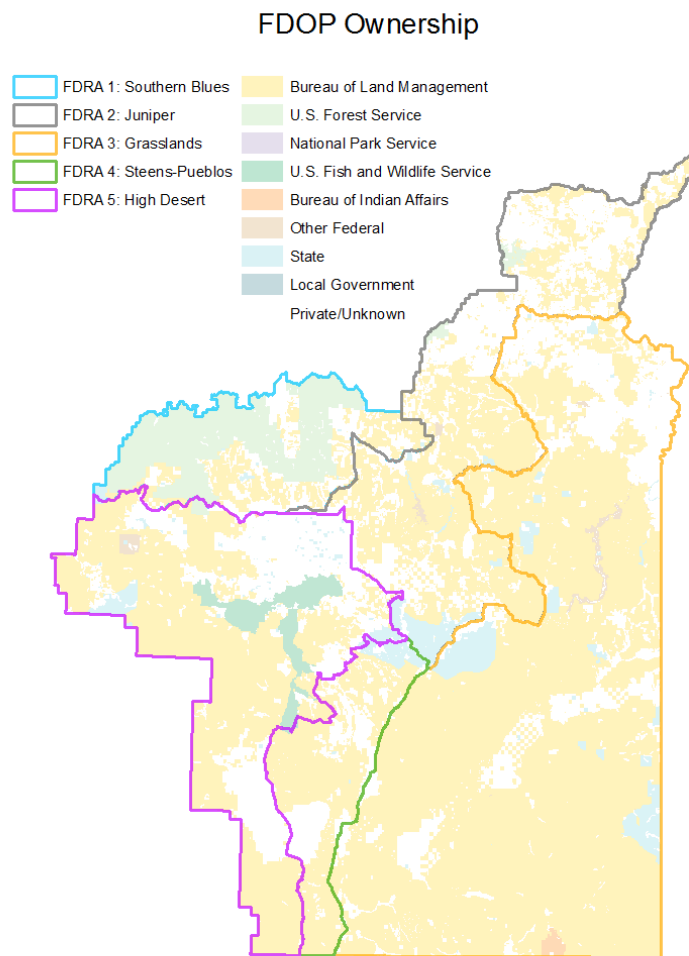
5. Define roles and responsibilities to make fire preparedness decisions, manage weather information, and brief fire suppression personnel regarding current and potential fire danger.
6. Determine the most effective communication methods for fire managers to communicate potential fire danger to cooperating agencies, industry, and the public.
7. Provide guidance to interagency personnel outlining specific daily actions and considerations at each preparedness level.
8. Identify seasonal risk analysis criteria and establish general fire severity thresholds.
9. Identify the development and distribution of fire danger pocket cards to all personnel involved with fire suppression within the fire danger planning area.
10. Identify program needs and suggest improvements for implementation of the Fire Danger Operating Plan.

II. FIRE DANGER PLANNING AREA INVENTORY AND ANALYSIS

A. ADMINISTRATIVE UNITS

This document serves as an *interagency* example of consistent and effective application of fire danger decisions applied across multiple jurisdictional boundaries. Wildland fire management and suppression responsibilities are shared among Federal, State, and local cooperators.

1. Overview Map



Map 1: Fire Danger Planning Area Overview

2. Ownership Table

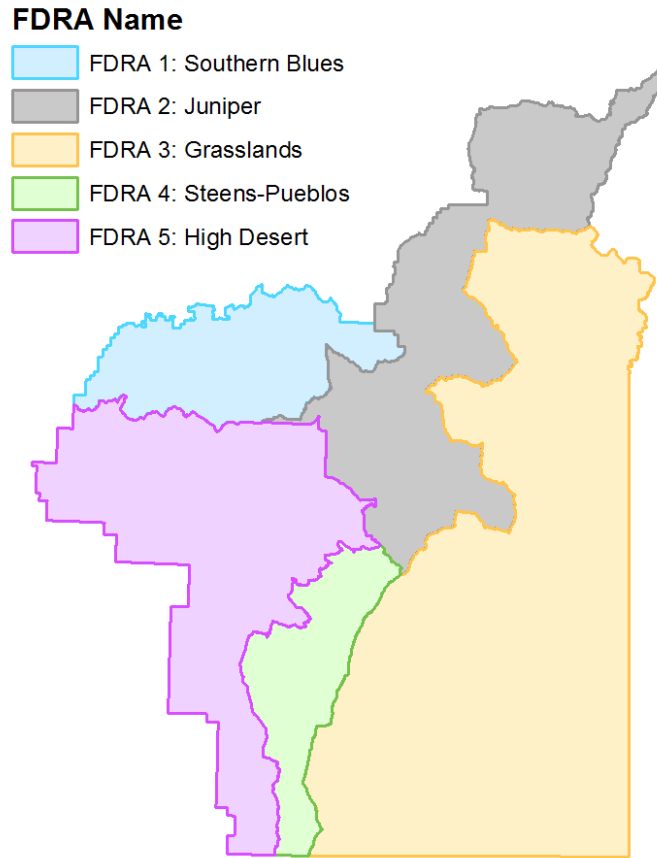
Agency	Acreage
Bureau of Land Management – BLM	8,173,042
Private - PVT	3,440,208
United States Forest Service - USFS	655,413
State	542,574
United States Fish and Wildlife Service - FWS	188,301
Bureau of Reclamation - BR	40,650
Bureau of Indian Affairs - BIA	19,085
Other Federal Agencies	15,876

Table 1: Ownership Table

B. FIRE DANGER RATING AREAS

A Fire Danger Rating Area (FDRA) is defined as a large geographic area relatively homogenous with respect to *climate, vegetation, and topography*. Because of these similarities, it can be assumed that the fire danger within a FDRA is relatively uniform. Fire Danger Rating Areas were delineated based upon an analysis of these three factors: climate, vegetation, and topography (Appendix G). After these environmental factors were considered, the draft FDRAs were *edge-matched* to existing administrative boundaries using Response Areas. It is important that existing Response Areas are not split by FDRAs; a Response Area must not have two FDRAs to avoid additional workload and confusion for operational personnel. A detailed description of each FDRA is in Appendix J. The final FDRA delineation is depicted here:

1. FDRA Map



Map 2: Fire Danger Rating Areas (FDRAs)

2. FDRA Table

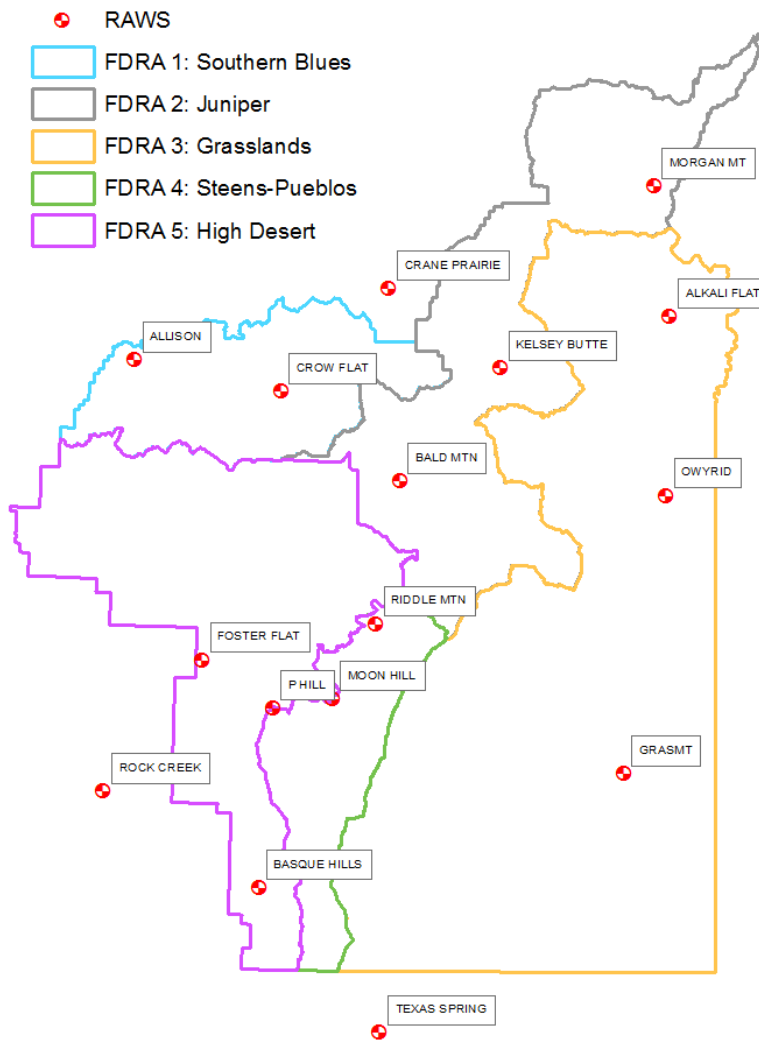
Fire Danger Rating Area	Acreage	% of Total
FDRA 1: Southern Blues	1,169,792	9
FDRA 2: Juniper	2,405,097	18
FDRA 3: Grasslands	5,891,814	45
FDRA 4: Steens-Pueblos	864,544	7
FDRA 5: High Desert	2,739,529	21

Table 2: Fire Danger Rating Areas (FDRAs)

C. WEATHER STATIONS

All Remote Automated Weather Stations (RAWS) comply with the National Wildfire Coordinating Group (NWCG) weather station standards. [NWCG Standards for Fire Weather Stations](#). Each RAWS receives, at a minimum, one annual on-site maintenance visit by either the local user or contracted personnel to ensure sensors are within calibration standards and verify site and station conditions.

1. RAWS Map



Map 3: Remote Automated Weather Station (RAWS)

2. RAWS Catalog Table (Active Stations Only)

Table 3: RAWS Catalog

STATION NAME	WIMS ID	NESDIS ID	AGENCY / OWNER	AVAIL DATA YEARS	ELEV	LATITUDE	LONGITUDE	REPORTING TIME
Morgan Mountain	352420	3253A6AE	BLM-OR-VAD	2009-2018	3600	44.50111	-117.2983	1200
Crane Prairie	352305	32622430	USFS-OR-MAF	2009-2018	5373	44.16667	-118.4667	1300
Allison	353501	326021C4	USFS-OR-MAF	2009-2018	5320	43.92	-119.5797	1300
Crow Flat	353515	326241D6	USFS-OR-MAF	2009-2018	5130	43.83333	-118.9333	1300
Kelsey Butte	353613	32557008	BLM-OR-VAD	2009-2018	5200	43.91833	-117.97	1200
Alkali Flat	353618	329073AC	BLM-OR-VAD	2009-2018	2495	44.08694	-117.2256	1300
Bald Mountain	353522	325282B8	BLM-OR-BUD	2009-2018	5480	43.55556	-118.4042	1200
Owyhee Ridge	353614	3252A454	BLM-OR-VAD	2009-2018	4400	43.51778	-117.2394	1200
Riddle Mountain	353511	3253C348	BLM-OR-BUD	2009-2018	6281	43.10056	-118.4981	1200
Foster Flat	353525	32653572	BLM-OR-BUD	2009-2018	4999	42.97361	-119.2461	1200
P Hill	353521	32550698	BLM-OR-BUD	2009-2018	4880	42.82639	-118.9361	1200
Rock Creek	353424	3264F296	FWS-OR-LKV	2009-2018	5640	42.5475	-119.6564	1300
Grassy Mountain	353612	3250D730	BLM-OR-VAD	2009-2018	4800	42.63333	-117.42	1300
Basque Hills	353520	3250A1A0	BLM-OR-BUD	2009-2018	4990	42.25472	-118.9792	1200
Texas Spring	260206	32560196	BLM-NV-WID	2009-2018	5760	41.80167	-118.4508	1200
Moon Hill	353526	326543E2	BLM-OR-BUD	2009-2018	6100	42.85972	-118.6789	1200

3. Special Interest Groups (SIGs)

<i>Special Interest Group (SIG):</i>		FDRA 1: Southern Blues
<i>Station / WIMS Number</i>	<i>Station Name</i>	<i>Weight</i>
352305	Crane Prairie	1.0
353501	Allison	1.0
353515	Crow Flat	1.0

Table 4: FDRA #1 SIG

<i>Special Interest Group (SIG):</i>		FDRA 2: Juniper
<i>Station / WIMS Number</i>	<i>Station Name</i>	<i>Weight</i>
352420	Morgan Mountain	1.0
353522	Bald Mountain	1.0
353613	Kelsey Butte	1.0

Table 5: FDRA #2 SIG

<i>Special Interest Group (SIG):</i>		FDRA 3: Grasslands
<i>Station / WIMS Number</i>	<i>Station Name</i>	<i>Weight</i>
353612	Grassy Mountain	1.0
353613	Kelsey Butte	1.0
353614	Owyhee Ridge	1.0
353618	Alkali Flat	1.0

Table 6: FDRA #3 SIG

<i>Special Interest Group (SIG):</i>		FDRA 4: Steens-Pueblos
<i>Station / WIMS Number</i>	<i>Station Name</i>	<i>Weight</i>
353424	Rock Creek	1.0
353511	Riddle Mountain	1.0
353526	Moon Hill	1.0

Table 7: FDRA #4 SIG

<i>Special Interest Group (SIG):</i>		FDRA 5: High Desert
<i>Station / WIMS Number</i>	<i>Station Name</i>	<i>Weight</i>
353520	Basque Hills	1.0
353521	P-Hill	1.0
353525	Foster Flat	1.0

Table 8: FDRA #5 SIG

III. FIRE DANGER WORKLOAD ANALYSIS

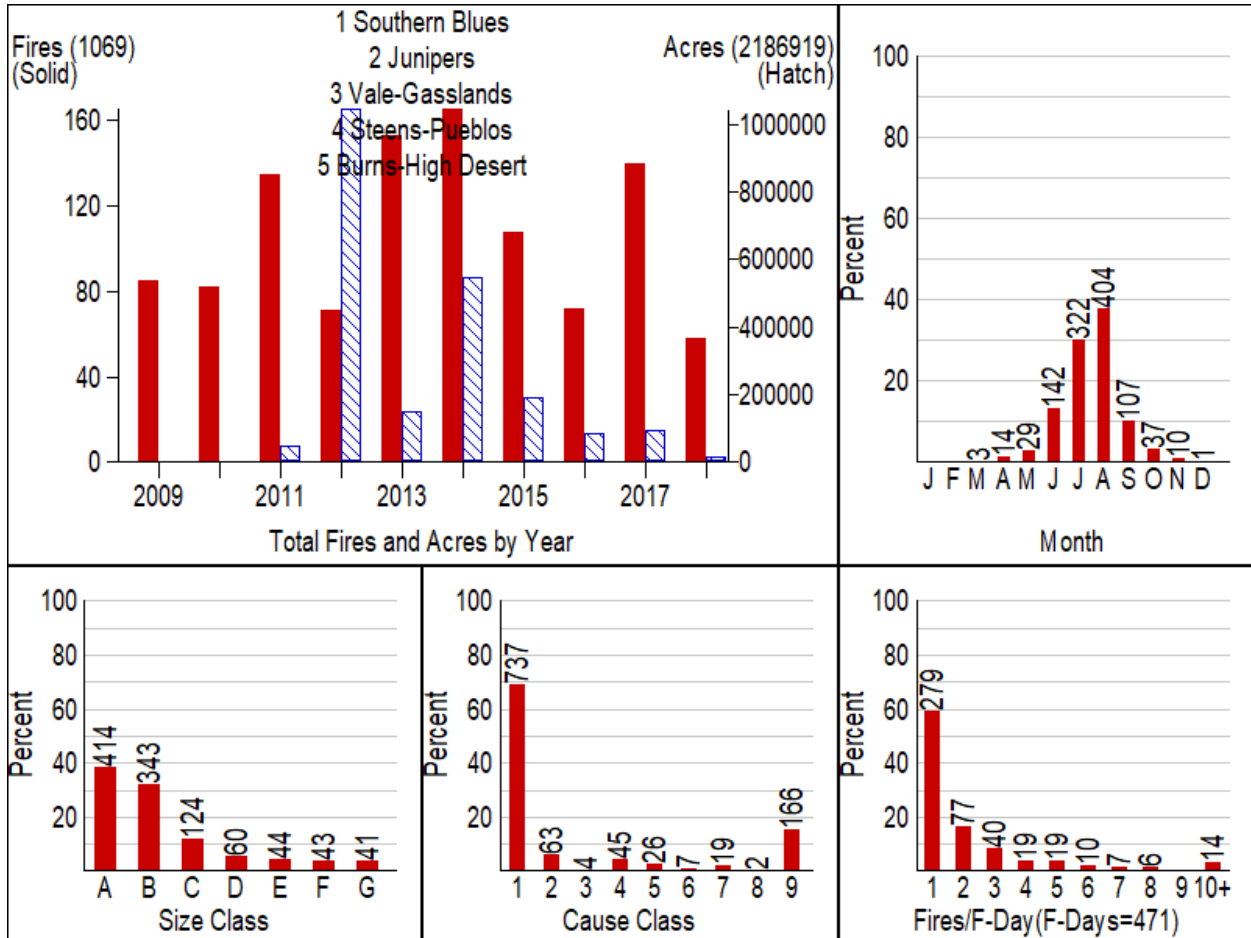
To apply fire danger rating as a viable decision support tool, fire managers must be able to associate fire suppression workload with a specific target group. An understanding of the specific target group from which the suppression workload originates will help determine the appropriate communication methods and deterrence measures which may effectively change the behavior of the respective target group.

A. IDENTIFICATION / FRAMING OF THE FIRE OCCURRENCE WORKLOAD

The ability to regulate, educate, or control a user group will be based upon the interface method and how quickly they can react to the action taken. Consequently, the most appropriate decision tool would depend upon the sensitivity of the target group to the implementation of the action. In addition, each action will result in positive and/or negative impacts to a user group. In selecting a component and/or index, several factors must be considered:

1. **Affected Target Group:** The group of people commonly associated with the problem (Agency, Industry, or Public).
 - a. **Agency:** Employees of the federal, state, and local governments involved in the cooperative effort to suppress wildland fires. This includes Federal, State, and County land management employees, along with volunteer fire departments who share a similar protection mission to manage wildland fires.
 - b. **Industry:** Employees affiliated with organizations which utilize natural resources and/or obtain permits or leases to conduct commercial activities on federal, state, or private lands. These entities or activities could include ranchers, wilderness camps, railroads, mines, timber harvesting, filming, building construction, oil and gas, electric generation, guiding services, etc.
 - c. **Public:** Individuals who use public lands for non-commercial purposes such as off-highway vehicle (OHV) use, camping, hiking, hunting, fishing, skiing, firewood gathering, agriculture, mountain biking, general travel, and recreation. This group also includes those living within the wildland/urban interface (WUI).
2. **Workload Description:** This is the fire unit's suppression workload. Human-caused fires are usually described in terms of an ignition cause related to public and industrial target groups. Natural-caused (or lightning) fire workload is usually described as the Agency's workload. For example, lightning is not "the problem," rather, the problem is the local unit's ability to respond to multiple ignitions, exceeding the staffing capabilities.

a. Fire Summary chart for entire analysis area.



Size Class:
 A = 0 — .25 acres
 B = .30 — 9 acres
 C = 10 — 99 acres
 D = 100 — 299 acres
 E = 300 — 999 acres
 F = 1000 — 4999 acres
 G = 5000 + acres

Cause Class:
 1 = Lightning 6 =Railroad
 2 = Equipment 7 =Arson
 3 = Smoking 8 =Children
 4 = Campfire 9 =Misc
 5 = Debris Burning

B. FIRE WORKLOAD ANALYSIS TABLE

The ability to regulate, educate, or control a user group will be based upon the interface method and how quickly they can react to the action taken. In addition, each action will result in positive and/or negative impacts to the user groups. Consequently, the decision tool which would be most appropriate would depend upon the sensitivity of the target group to the implementation of the action, and ultimately change their behavior. Table 9 illustrates the differences between target groups (Agency, Industry, and Public) and the associated fire cause. A breakdown of how fire causes were selected for Table 9 is depicted in Table 10 which depicts fire statistics by each of the 5 FDRAs.

Table 9: Planning Area Fire Workload Analysis

TARGET GROUP		IGNITION CAUSE		RELATIVE DEGREE OF CONTROL	COMMUNICATION METHODS	WORKLOAD DESCRIPTION
GENERAL	SPECIFIC/ FDRA's Effected	GENERAL	SPECIFIC			
Agency	<i>Challenge #1 across all FDRAs:</i> Highest percent of starts, large fire days (LFD), and multi-fire days (MFD) for all FDRAs. All divisions of fire management groups effected.	1 - Lightning	Lighting storms that produce numerous ignitions depleting IA capacity.	High	Coordination with National Weather Service forecasting office and Dispatch Centers communicate forecasted events with agency resources. Increased staffing and prepositioning of resources will assist with increased workload expected.	Summer thunder-storms produce abundant lightning across all FDRAs. These often occur when fuels are cured and available across the planning area, creating numerous ignitions. The storms typically impact more than one FDRA at a time across both BLM Districts. These lightning events limit the ability for each unit to respond entirely to every ignition or report. IA capacity is quickly depleted. Impacts of these lightning events lasts for a couple of days following the event with ignitions going unreported.
Public	FDRA 1: Southern Blues	4 - Campfire	Escaped campfires, unattended campfires, unauthoriz	Low	Informational signing, Fire restrictions, public messaging, Adjective Fire Danger Rating signage should be located at the entrance to developed recreation areas and along travel routes that	These fires account for 34% of ignitions within the FDRA, very few of them become large fires. Most of these fires occur within the Malheur National Forest at developed recreation sites. The campfires are abandoned by single-day or

			ed campfires.		provide access to high use public lands.	overnight campers when fuels are critically dry with high wind events.
Public	FDRA 1: Southern Blues FDRA 4: Steens-Pueblos FDRA 5: High Desert	5 - Debris Burning	Private land activities, burn piles, using burn barrels and some small scale private Rx fires.	Moderate	Educate local community on the risks of debris burning through public affairs officer and local governments (especially during times where agencies are conducting Rx Burning as this seems to correlate with private burning). Prevention program can address through outreach activities. Local ranchers should be encouraged to coordinate with neighbouring agencies and local RFPAs.	Most of these fires originate on private property bordering public lands.
Public	FDRA 2: Juniper FDRA 3: Grasslands	2 - Equipment	Mostly motorists along travel corridors	Very Low	Prevention signage along travel corridors. Coordinated fuel reduction activities along travel corridors with rite of way owners (ODOT). Public education campaigns such as "One Less Spark."	General activity associated with primary travel routes through these 2 FDRAs. Fire ignitions under this category tend to increase when fine fuels occur. Large fires that occur under these conditions are heavily terrain and wind influenced.
Public	FDRA 2: Juniper FDRA 3: Grasslands	2 - Equipment	General Public recreation OHV	Low	Fire restrictions, prevention patrols, DMV postings, public education.	Equipment failure and activities associated with OHV use.
Industry	FDRA 2: Juniper FDRA 3: Grasslands	2 - Equipment	Electrical power companies and industry providers	Moderate	Fire restrictions and workshops with industry providers, Right of way agreements, special use permits and fire waivers with identified mitigations.	Wind events, structural failures, and wildlife can cause powerlines in remote areas to ignite wildfires.

Public	FDRA 2: Juniper FDRA 3: Grasslands	9 - Miscellaneous	Various	Very Low	Fire restrictions, prevention patrols, and public education.	Although listed as miscellaneous, most of these fires are associated with roadways and can likely be related to equipment. However, exact cause could not be determined. Additionally, this general cause category has many subcategories that do not fit into other causes.
Agency	FDRA 1: Southern Blues FDRA 4: Steens-Pueblos FDRA 5: High Desert	9 - Miscellaneous	Various	High	<p>Federal policy requires all fires to be investigated as to cause, origin, and responsibility.</p> <p>Yearly IC trainings should stress on importance of identification of the proper cause category.</p> <p>Dispatch center and IC interaction during fire suppression and fire reporting process.</p> <p>Supervisors of ICs certifying fire reports should question fires assigned to this category.</p>	<p>This category is being addressed as an issue here more on the basis that too many fires are miscategorized by being attributed to this cause category.</p> <p>Large fire workload in this category. Properly identifying the cause category most of these fires should be in will dramatically reduce proportion of fires in this category.</p> <p>Work to implement this change to ensure fires are assigned the appropriate cause category is Low.</p>

Table 10: Fire Problem Identification by FDRA

Fire Problem Identification - Southern Blue FDRA 1							
Stat Cause	Ignitions	Pct	Large Fire	Pct	Multiple Fire	Pct	Rationale
1	253	72%	16	59%	27	87%	Problem #1 large/multiple fires
2	2	1%	1	4%	0	0%	Not significant
3	2	1%	1	4%	0	0%	Not significant
4	34	10%	1	4%	2	6%	Problem #3 significant proportion of starts
5	8	2%	3	11%	0	0%	Considered, High proportion of LFD (10%)
6	0	0%	0	0%	0	0%	Not significant
7	3	1%	0	0%	0	0%	Not significant
8	0	0%	0	0%	0	0%	Not significant
9	47	13%	5	19%	2	6%	Problem #2, sig. # of starts and LFDs
TOTALS	349		27		31		
Causes Considered as a Problem			Notes: * Large fire = 3 ac, Multiple fire = 3+ ignitions				
Causes Selected as a Problem							

Fire Problem Identification - Junipers FDRA 2							
Stat Cause	Ignitions	Pct	Large Fire	Pct	Multiple Fire	Pct	Rationale
1	150	70%	39	68%	31	84%	Problem #1 large/multiple fires
2	17	8%	4	7%	2	5%	Problem #3: Starts and Large Fires.
3	0	0%	0	0%	0	0%	Not significant
4	2	1%	0	0%	1	3%	Not significant
5	2	1%	1	2%	0	0%	Not significant
6	2	1%	1	2%	0	0%	Not significant
7	4	2%	2	4%	1	3%	Not significant
8	2	1%	1	2%	0	0%	Not significant
9	36	17%	9	16%	2	5%	Problem #2: Sig number of starts and LFD's
TOTALS	215		57		37		
Causes Considered as a Problem			Notes: * Large fire = 50 ac, Multiple Fire = 2+ ignitions				
Causes Selected as a Problem							

Fire Problem Identification - Vale Grasslands FDRA 3

Stat Cause	Ignitions	Pct	Large Fire	Pct	Multiple Fire	Pct	Rationale	
1	190	70%	55	92%	45	90%	Problem #1: large/multiple fires	
2	36	13%	1	2%	2	4%	Problem #2: Significant number of starts	
3	2	1%	0	0%	0	0%	Not significant	
4	1	0%	0	0%	1	2%	Not significant	
5	6	2%	1	2%	0	0%	Not significant	
6	0	0%	0	0%	0	0%	Not significant	
7	5	2%	0	0%	1	2%	Not significant	
8	0	0%	0	0%	0	0%	Not significant	
9	31	11%	3	5%	1	2%	Considered as a problem; sig. # of starts	
TOTALS	271		60		50			
Causes Considered as a Problem			Notes:					* Large fire = 500 ac, Multiple fire = 2+ ignitions
Causes Selected as a Problem								

Fire Problem Identification - Steens-Pueblos FDRA 4

Stat Cause	Ignitions	Pct	Large Fire	Pct	Multiple Fire	Pct	Rationale	
1	66	84%	16	84%	10	100%	Problem #1 large/multiple fires	
2	0	0%	0	0%	0	0%	Not significant	
3	0	0%	0	0%	0	0%	Not significant	
4	1	1%	0	0%	0	0%	Not significant	
5	2	3%	1	5%	0	0%	Considered; small data set	
6	1	1%	0	0%	0	0%	Not significant	
7	0	0%	0	0%	0	0%	Not significant	
8	0	0%	0	0%	0	0%	Not significant	
9	9	11%	2	11%	0	0%	Problem #2	
TOTALS	79		19		10			
Causes Considered as a Problem			Notes:					* Large fire = 150 ac, Multiple fire = 2+ ignitions
Causes Selected as a Problem								

Fire Problem Identification - Burns High Desert FDRA 5

Stat Cause	Ignitions	Pct	Large Fire	Pct	Multiple Fire	Pct	Rationale
1	78	55%	7	58%	13	76%	Problem #1 large/multiple fires
2	6	4%	0	0%	0	0%	Not significant
3	0	0%	0	0%	0	0%	Not significant
4	1	1%	0	0%	0	0%	Not significant
5	7	5%	2	17%	0	0%	Problem #3, high proportion of large fires
6	4	3%	0	0%	0	0%	Not significant
7	7	5%	0	0%	1	6%	Not significant
8	0	0%	0	0%	0	0%	Not significant
9	38	27%	3	25%	3	18%	Problem #2. Significant number of starts, LFD, and MFD's
TOTALS	141		12		17		
Causes Considered as a Problem		Notes: * Large fire = 300, Multiple fire = 2+ ignitions					
Causes Selected as a Problem							

IV. FIRE DANGER DECISION ANALYSIS

Decision points can be based upon either:

- Climatological Breakpoints, or
- Fire Business Thresholds.

The following table (Table 11) provides a summary of the planning area's fire danger problems and concerns. In addition, each problem is associated with a specific target group whose activities can be influenced through effective communication and implementation of specific control measures.

This Fire Danger Operating Plan will be used to support preparedness, staffing and response decisions which are made at specific decision points. A "decision point" is a point along the range of possible output values where a decision shifts from one choice to another. When the combination of events and conditions signal that it is time to do something different, a "decision point" has been identified for each Fire Danger Rating Level within each Fire Danger Rating Area.

A. CLIMATOLOGICAL ANALYSIS

Climatological breakpoints are points on the cumulative distribution curve of one fire weather/danger index computed from climatology (weather) without regard for associated fire occurrence/business. For example, the value at the 90th percentile Energy Release Component (ERC) is the climatological breakpoint at which only 10 percent of the ERC values are greater in value.

It is equally important to identify the period or range of data analysis used to determine the agency percentiles. The percentile values for the calendar year (Jan – Dec) will be different from the percentile values for the fire season (April – Oct). Each agency will have specific (and perhaps different) direction for use of climatological percentiles.

The decision thresholds identified in this Fire Danger Operating Plan are based upon the statistical correlation of historical fire occurrence and weather data and, therefore, do not utilize climatological (percentiles) for decision points.

B. FIRE BUSINESS ANALYSIS

To apply a fire danger system which will assist managers with fire management decisions, ignition problems should be identified, quantified, framed, and associated with a target group to determine the most appropriate fire danger-based decision "tool" to mitigate any given issue.

C. DECISION SUMMARY TABLE

Target Group	Fire Danger Rating Area(s)	Statistical Cause	Climatological Breakpoints or Fire Business Thresholds	Index/Comp	NFDRS2016 Fuel Model	Management Tool	Number of Decision Points	Preparedness Plan(s) to Modify Target Group Behavior
Agency	All FDRAs 1-5	1 - Lightning	Fire Business Thresholds	ERC/BI	Y	Staffing Level	4	Preparedness Plan Staffing Plan
Agency	All FDRAs 1-5	All fire causes	Climatological Breakpoints	ERC/BI	Y	Preparedness Level Severity	4	Response Plan Staffing Plan
Public	FDRA 2 FDRA 3	2 - Equipment	Fire Business Thresholds	ERC and BI	Y	Adjective Fire Danger Rating Level	5	Prevention Plan
Public	FDRA 1	4 - Campfire	Fire Business Thresholds	ERC and BI	Y	Adjective Fire Danger Rating Level	5	Prevention Plan Sign Plan
Public	FDRA 1 FDRA 4 FDRA 5	5 - Debris Burning	Fire Business Thresholds	ERC and BI	Y	Adjective Fire Danger Rating Level	5	Prevention Plan
Public	All FDRAs 1-5	9 - Miscellaneous	Fire Business Thresholds	ERC and BI	Y	Preparedness Level	5	Preparedness Plan

Table 11: Decision Summary Table

V. FIRE DANGER RATING LEVELS

The NFDRS utilizes the WIMS processor to manipulate weather data and forecasted data stored in the National Interagency Fire Management Integrated Database (NIFMID) to produce fire danger ratings for corresponding weather stations. NFDRS outputs from the WIMS processor can be used to determine various levels of fire danger rating to address the fire problems identified previously in the Fire Problem Analysis Chart. The system is designed to model worst-case fire danger scenarios. NFDRS (along with other decision support tools) will be utilized to produce levels (thresholds) of fire business to address local fire problems by targeting public, industrial, or agency groups.

A. RESPONSE (OR DISPATCH) LEVEL

Response (or Dispatch) Levels are pre-planned actions which identify the number and type of resources (engines, crews, aircraft, etc.) initially dispatched to a reported wildland fire based upon fire danger criteria.

B. STAFFING LEVEL

Staffing Levels will be used to make daily internal fire preparedness and operational decisions. At the protection unit level, the staffing level can form a basis for decisions regarding the “degree of readiness” for initial attack and support resources. Specific preparedness actions are defined at each staffing level. Although Staffing Level can be a direct output in WIMS, the WIMS output is only based upon weather observations and climatological percentiles. The use of climatological percentiles for daily staffing decisions is optional. The preferred method to delineate Staffing Level thresholds is based on statistical correlation of weather AND fire occurrence.

C. PREPAREDNESS LEVEL

The Preparedness Level is a five-tier (1-5) fire danger rating decision tool that is based on NFDRS output(s) and other indicators of fire business (such as projected levels of resource commitment). Preparedness Levels will assist fire managers with more long-term (seasonal) decisions with respect to fire danger.

D. FIRE DANGER ADJECTIVE RATING LEVEL

In 1974, the U.S. Forest Service, Bureau of Land Management and State Forestry organizations established five standard Adjective Fire Danger Rating Levels descriptions for public information and signing.

As with Staffing Level, the Adjective Fire Danger Rating Level can be obtained as a direct output in WIMS; however, the Adjective Rating from WIMS is strictly based on weather and climatological percentiles (80th / 95th) with no regard to historical fire occurrence. The use of agency-specific climatological percentiles is not mandatory. The preferred method to determine Adjective Fire Danger Rating thresholds is based on the statistical correlation of

weather observations AND fire occurrence. This FDOP will implement Adjective Fire Danger Rating based upon fire business thresholds, not climatological percentiles.

VI. FIRE DANGER OPERATING PROCEDURES

A. ROLES AND RESPONSIBILITIES

These are general roles and responsibilities. Agency specific requirements and delegations apply. Specific responsibilities are found within each individual operational plan which only apply to the identified unit.

1. Agency Administrators

- Approve plans upon update or revision.
- Utilize Fire Danger Operating Plan and NFDRS outputs as tools to coordinate and to make informed fire related decisions.
- Coordinate with fire program managers on escalating fire danger conditions.

2. Fire Program Managers

- The Fire Management Officer and/or Deputy Fire Management Officer will ensure that necessary amendments or updates to this plan are completed. Updates to this plan will be made as needed; it is recommended this occur every two years at a minimum.
- The FMO and/or DFMO will ensure this plan is implemented.
- Utilize this Fire Danger Operating Plan and NFDRS outputs as tools in developing appropriate decision criteria for establishing appropriate fire related actions.

3. Fire Danger Technical Group

- Review annually and update FDOP as needed.
- Monitor fire weather and fire occurrence data to ensure a quality dataset is used during analysis.
- Communicate any problems identified.
- Coordinate plan revisions.
- Be available for NFDRS technical consultation.
- Ensure that pocket cards are prepared at least every 2 years, are in compliance with NWCG standards, and are posted on the [pocket card website](#).

4. Fire Weather Station Owners/Managers

The Remote Sensing Fire Weather Support Unit (RSFWU) located at the National Interagency Fire Center (NIFC) maintains and calibrates the BLM RAWS stations on an annual basis. They also provide the first responder services for malfunctions of these stations. The RAWS stations that are located on USFS land have annual maintenance/replacement of instruments completed locally with support from the RSFWU (instruments are on a strict replacement cycle to ensure proper calibration to meet NWCG standards).

The station owners grant access in WIMS to those individuals who need direct access to the data in order to make edits and process weather data for NFDRS. Station owners included:

- Fire Planner,
- Center Manager, and
- Asst. Center Managers.

5. Dispatch/Communication Center

- The Dispatch Center is responsible for the daily monitoring and editing of all weather station inputs and the fire-danger outputs for the FDOP. This information is to be disseminated to the field during the morning and afternoon (seasonally) fire weather forecast packages.
- The Center Manager (or designee) will ensure the timely editing of daily weather observations for all stations. Each year this will begin roughly in April and will continue until stations are frozen at the end of fire season.
- The Center Manager (or designee) will use this plan to determine the following on daily basis during fire season (at a minimum this is June 1st-October 1st). During this timeframe, the following information will be calculated and posted:
 - Response Levels,
 - Adjective Fire Danger Rating, and
 - Preparedness Level (*weekly assessment with DO transition*).

6. Duty Officers

- Implementation of this plan, ensuring that decisions made are consistent with the intent of the plan.
- Interpret and modify the daily preparedness and dispatch levels as required by factors not addressed by this plan. Modifications of the preparedness and/or dispatch levels must be coordinated through the Dispatch Center Manager.
- Keep their respective agency's fire and management staff updated (as needed).

7. Education/Mitigation/Prevention Specialists

- These specialists will communicate Adjective Fire Danger Rating to the general public through changing Fire Danger related signs appropriately, implementing fire restrictions according to agency policy, and communicating fire danger.
- Work with Unit Public Affairs Officer (PAO) for public notices on fire danger conditions.
- Monitor fire environment conditions and initiate fire restriction notifications and communication with line officers.
- Implement fire restrictions.

8. Fire Planners

- The interagency Fire Planner will be the lead for biannual updates to this plan.

- Work as a member of the technical group to complete any analysis needs or updates.

B. SEASONAL SCHEDULE

Seasonal risk analysis is a comparison of the historic weather/fuels records with current and forecasted weather/fuels information. Seasonal risk analysis is an on-going responsibility for fire program managers. The most significant indicators of seasonal fire severity BI, ERC, fine fuel loading, and Live Fuel Moisture will be graphically compared with historical maximums and average; this graph will be routinely updated and distributed to fire suppression personnel and dispatch. Seasonal risk analysis information will be used as a basis for pre-positioning critical resources, dispatching resources, and requesting fire severity funding.

BLM and USFS owned RAWs: Green-up dates will be determined through a combination of ocular estimates of annual grasses and sampling live fuel moisture at representative locations. Cheat grass, along with several species of native bunch grasses and sage exist as the primary carrier of fire and are thus the critical fuels to be sampled in determining a green-up date. Multiple green ups can occur during a growing season which makes consistent live fuel moisture sampling and attention to on-the-ground conditions extremely important to ensuring NFDRS outputs are accurate. At the writing of this document, the manual green-up process within WIMS is expected to be replaced by key GSI (growing season index) levels automating “green-up” within the next year.

C. DAILY SCHEDULE

Daily Timeline

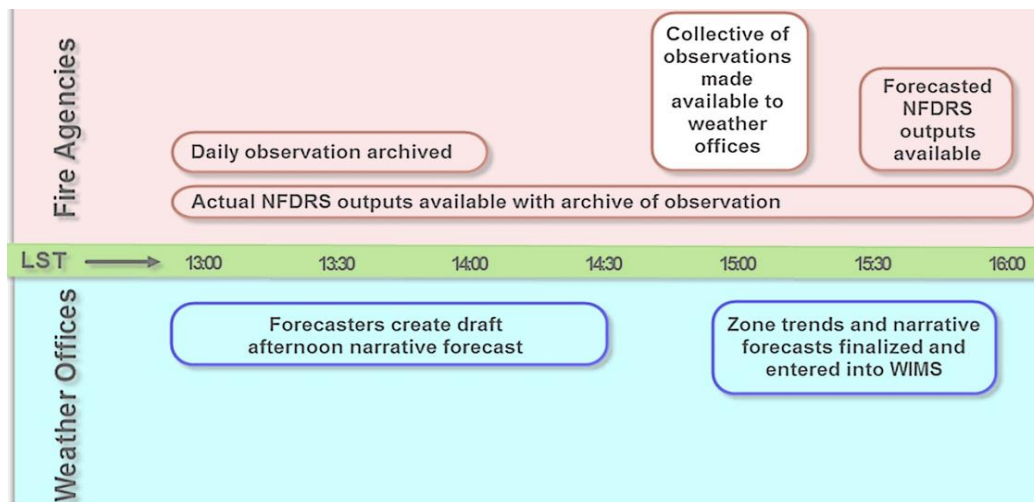


Figure 2: Daily Fire Weather Operations Schedule

D. WEATHER STATION MONITORING AND MAINTENANCE

Each agency is responsible for the annual maintenance and calibration of their RAWS. The Remote Sensing Fire Weather Support Unit (RSFWU) Laboratory located at the National Interagency Fire Center (NIFC) maintains and calibrates the BLM RAWS annually. The RAWS stations that are located on USFS land have annual maintenance/replacement of instruments completed locally with support from the RSFWU Laboratory (instruments are on a strict replacement cycle to ensure proper calibration to meet NWCG standards).

VII. FIRE DANGER PROGRAM NEEDS

A. WEATHER STATIONS

- Evaluate all weather stations within the control of each unit for NWCG standards and consider deactivating or relocating non-compliant stations.
- Potential to add weather station in SE corner of FDRA 3.

B. COMPUTER / EQUIPMENT

- Fire danger signs throughout the planning area especially in high use areas.
- District/dispatch websites for displaying fire information to staff and public.

C. TRAINING

- Encourage employees to attend S-491.
- At least one individual from the Fire Danger Technical Group should take ANFDR – Advanced National Fire Danger Rating System.
- Teach and emphasize fire danger to non-fire staff.
- Teach fire danger to RFPAs, county, city, and other cooperators.
- Increase the number of qualified fire investigators.

D. DATA MANAGEMENT

- Fire reporting data quality is critical to ensuring accurate historical fire occurrence analyses. Fire Program Managers need to ensure that the information on fire reports submitted to the national database is accurate and complete.

APPENDICES

THE FOLLOWING OPERATIONAL PLANS WITHIN THE
APPENDICES ARE SPECIFIC TO THE VALE DISTRICT

Appendix A PREPAREDNESS PLAN

I. PREPAREDNESS LEVEL DEFINITIONS

The Preparedness Level is a five tier (1-5) fire danger rating decision tool that is based on NFDRS outputs and other indicators, such as projected levels of resource commitment, and live fu. Preparedness levels assist fire managers and line officers with more long-term seasonal decisions with respect to fire danger.

PREPAREDNESS LEVEL 1
Description: No large wildland fires in progress. Most FDRAs have low to moderate fire severity. Number and size of fires within normal range for that time of year. Little or no commitment of other than local resources.
PREPAREDNESS LEVEL 2
Description: Unit is experiencing moderate fire activity. Fires have potential to achieve large fire thresholds. Resources within the area appear adequate to deal with the situation.
PREPAREDNESS LEVEL 3
Description: Unit is experiencing moderate to high fire danger. Active wildland fires are likely to escape Initial Attack. Holding and suppression actions taking increasing numbers of resources.
PREPAREDNESS LEVEL 4
Description: Unit is experiencing very high or extreme fire danger. Large fires likely in every FDRA. Lightning causes multiple ignitions. Numerous wildland fires escaped Initial Attack. No break in the predicted weather for at least 48 hours. Resources being mobilized from outside the area.
PREPAREDNESS LEVEL 5
Description: Unit is experiencing major incidents which have the potential to exhaust all resources, while new fires continue to occur. New fires have a high probability of becoming large fires. The majority of support is coming from outside the area. No break in the weather is predicted for at least 48 hours.

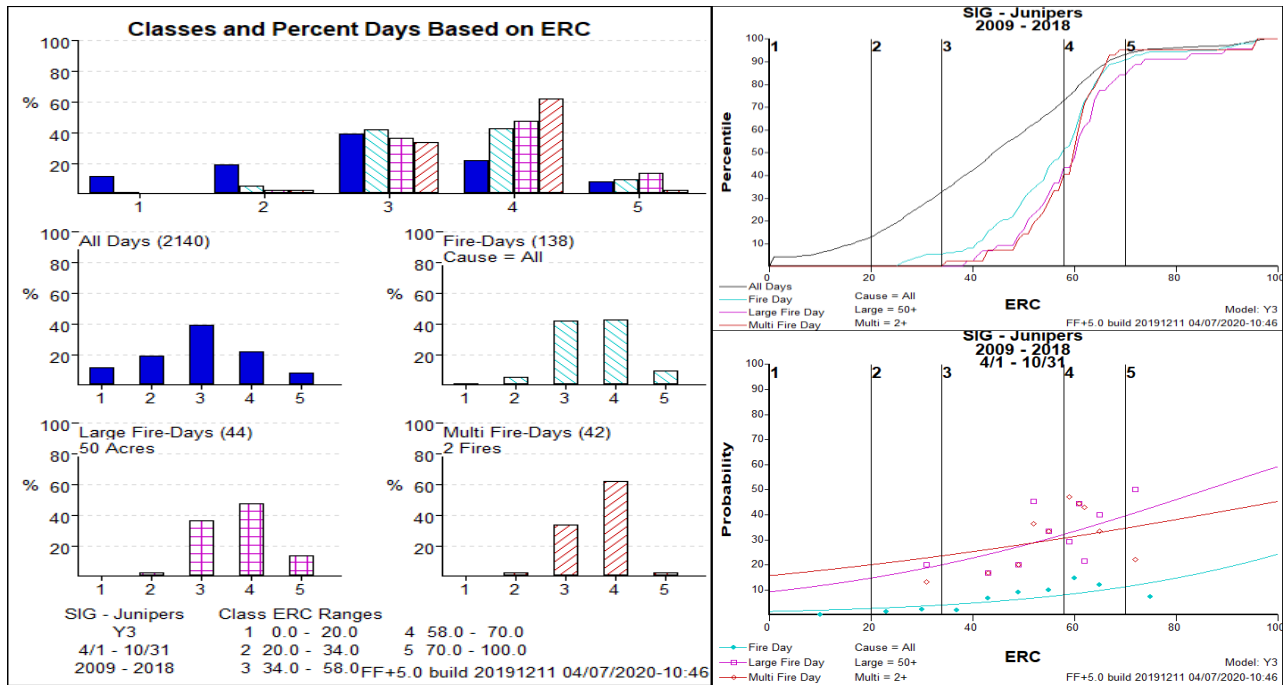
II. DETERMINING PREPAREDNESS LEVEL

Preparedness level will be adjusted using the following chart. The intent is to reflect changing fuel conditions, fire potential, current fire workload, and predicted fire weather throughout the fire season. If the output of the following result in a preparedness level that is not consistent with definitions or current fire situation, the Center Manager can deviate from this chart with concurrence from the Operational Duty Officer (duty officer) and Fire Program Managers.

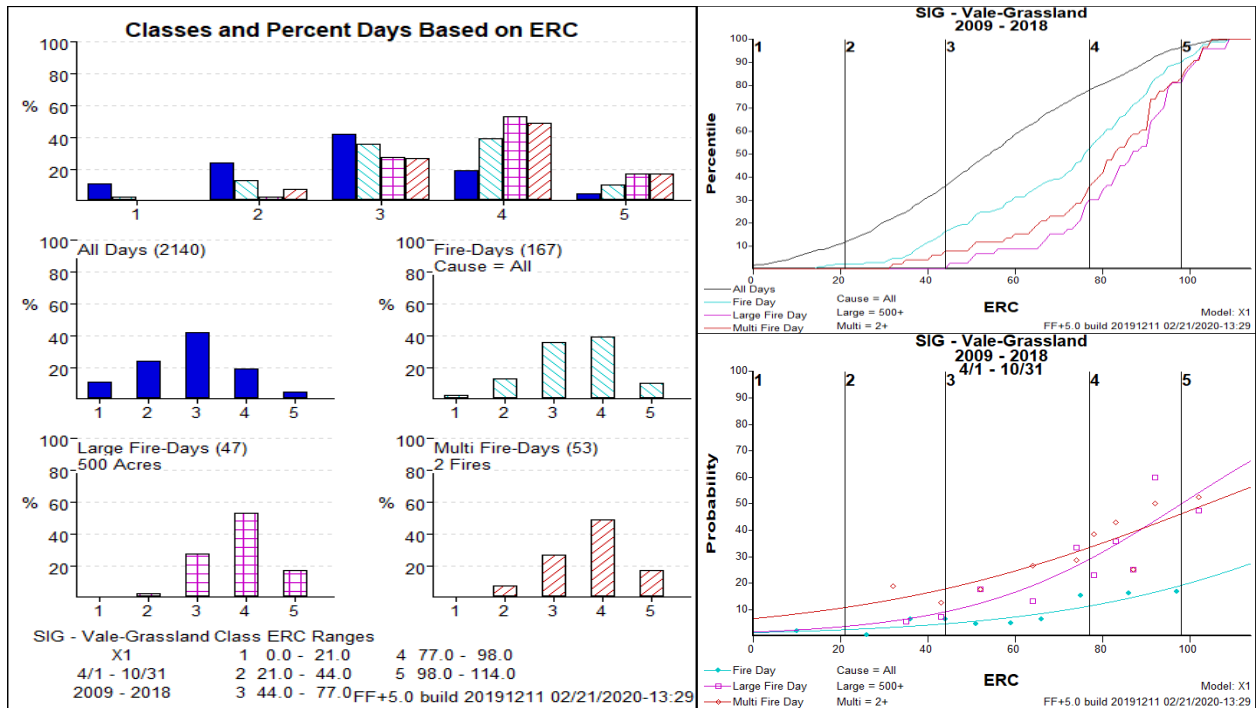
PREPAREDNESS LEVEL WORKSHEET						
NFDRS Breakpoints						Directions
	Low	Moderate	High	VH	Extreme	Determine NFDRS rating from WIMS. Add point total.
FDRA 2: Junipers-FMY-ERC	0-19	20-33	34-57	58-69	70+	
	0	1	2	3	4	
FDRA3: Grasslands-FMY-ERC	0-17	18-33	34-56	57-68	69+	
	0	1	2	3	4	
Added Value						
Live Fuel Moisture						Directions
	> 150	149-125	124-100	99-75	< 75	Reference most recent live fuel moisture chart for each location.
Keating	1	2	3	4	5	
Shirttail	1	2	3	4	5	
Keeney	1	2	3	4	5	
Pole Creek	1	2	3	4	5	
Rome	1	2	3	4	5	
Jackson	1	2	3	4	5	
Average Value	1	2	3	4	5	
Number of Fires with containment 2 days out	0-1 Fire	2 Fires	3 Fires	4 Fires	5 + Fires	Directions
Point Value	0	1	2	3	4	Use estimated containment time. Include fires with no estimated containment
Number of fires within the last 7 days	0-1 Fire	2 Fires	3 Fires	4 Fires	5 + Fires	Include all fires and complexes
Point Value	0	1	2	3	4	
Significant Event forecasted	Yes			No		Utilize NWCC 7 Significant potential outlook and/or any local NOAA weather briefing include high recreation holidays
Point Value	1			0		
Fine Fuel Loading Above Average	Yes			No		RAP data or collected fine fuel loads shows one or more FDRAs with above average fine fuel production. (Only applies at Preparedness level 3 and above)
Point Value	1			0		
Total Point	1-4 points	5-7 points	8-10 points	11-13 points	14+ points	Work with FMO/DFMO/DO to determine accuracy of flow chart, document changes as needed
PREPAREDNESS LEVEL	I	II	III	IV	V	

III. FIRE FAMILY PLUS ANALYSIS

A. FDRA 2: JUNIPERS-FMY-ERC



B. FDRA3: GRASSLANDS-FMY-ERC



Appendix B **STAFFING PLAN**

I. **OVERVIEW**

The following is a guide of recommended actions to assist Fire Managers and Line Officers in the decision support process to make informed fire management decisions. This can be adjusted using professional judgement to meet agency needs. This plan is intended to provide day-to-day guidance for decisions regarding the “degree of readiness” of initial attack (IA) resources. The Staffing Level (SL) is used as a basis to make daily internal fire operations decisions affecting our agency personnel.

Staffing plans are designed to direct incremental preparedness actions in response to increasing fire danger. As Preparedness Level changes, the corresponding actions to consider changes. Those actions are identified in the following Step-up and Draw-down plans.

The Staffing levels are based on a combination of energy release component and ignition component along with forecasted significant events utilizing the worksheet below. Fire occurrence data is utilized as this is a fire business decision not based on climatology alone. The following days staffing is established by utilizing afternoon WIMS outputs and applying the staffing level worksheet.

II. **DRAW-DOWN PLAN**

Draw-down is the predetermined number and type of suppression resources that are required to maintain viable initial attack (IA) capability at either the local or geographic area. The probability of initial attack success is contingent upon the availability of suppression resources during periods of high fire danger.

A. **FACTORS AFFECTING DRAW – DOWN**

Draw-down levels can change dramatically in a short period of time. A few factors which can affect staffing and resource commitment/availability include the following:

1. **Response/Dispatch Level**

Staffing Levels have a direct effect on the ability to send pre-determined suppression resources to wildland fires, depending upon the Dispatch Level (and vice versa). Even under normal threat levels, a routine call for service can deplete the availability of a unit’s resources and result in a degree of drawdown. If an incident becomes prolonged or requires the commitment of resources beyond the initial response, the agencies capabilities can be affected.

2. 5-day Versus 7-day Resource Staffing

When considering the full capacity of a unit, we include all personnel and resources. For ground resources (engines and dozers) and overhead (FOS, ICs, FMOs, AFMOs, Single resource bosses, Duty Officers, Resources Advisors, etc.), the daily operating capacity is typically a fraction of the full capacity due to staffing limitations and scheduling days off. Therefore, the “daily” capacity is used as the benchmark for draw-down levels unless a unit has sufficient personnel to keep a resource operational 7 days per week. The 5-day staffing is usually 65% to 75% of the full 7-day staffing (at 100%). For purposes of this plan, a base-line of 70% will be used for daily staffing of ground resources and overhead.

Aviation resources are typically under contract during the fire season to be available 7-days per week. Aviation resources are highly mobile and will respond to fire activity with the greatest need; often, outside the local jurisdiction. Therefore, aviation resources are not included in the determination of staffing levels in this plan.

3. Multiple Fires

Maintaining capacity to respond to a reported incident is the intended outcome of a Staffing Plan. However, when more than one incident occurs concurrently within the respective unit’s response area, a unit’s capacity is certainly diminished or exhausted.

B. TARGET DRAW - DOWN CHART

		Engines	Dozers	I.A. Overhead	Engines	Dozers	Overhead Capacity
Capacity	Max 7-Day	15	2	6	100%	100%	100%
	Daily 5-Day	10	1	4	70%	50%	65%
	Staffing Level	Resources at Target Draw-Down			Target Draw-Down %		
		Engines	Dozers	I.A. Overhead	Engines	Dozers	Overhead Capacity
Target Capacity	1	1	0	0	10%	0%	0%
	2	2	0	0	15%	0%	0%
	3	6	1	2	40%	50%	30%
	4	8	2	2	55%	100%	30%
	5	12	2	3	80%	100%	50%

* IA Overhead: Includes all Single Resource qualified personnel available for IA as identified on the daily staffing sheet, updated every morning.

* Aviation resources not included as they are available for duration of contract as well as reasons mentioned above.

C. STAFFING LEVEL WORKSHEET

Staffing Level									
Response Level		Low		Mod		High		Very High	
Fire Activity	N	1	1	2	3	3	4	4	5
	Y	2	2	3	3	4	4	5	5
Significant Fire Potential Forecasted High Risk Event		N	Y	N	Y	N	Y	N	Y
Definitions									
Response Level	If the 2 FDRAs do not have the same RL then utilize the higher of the 2 to begin Staffing calculation								
Fire Activity	If an IA resource is or will be assigned to a smoke report, wildfire, RX or other, regardless of FDRA, then Fire activity is YES								
Significant Fire Potential	"High Risk Triggers" is shown for the day on the PNW Significant fire potential chart for PSA12 OR Red Flag Warning/Fire Weather Watch has been issued for Fire Weather Zone 637 or 646								

III. STEP-UP PLAN

This plan identifies recommended actions intended to increase initial attack capacity based on changes in preparedness level. Conditions that apply to Preparedness Levels 2 thru 5 are as listed below:

- Fire Management Officer (FMO) (or acting FMO) and/or duty officer may activate extended staffing for mitigating actions designed to enhance the unit’s fire management capabilities during busy holiday weekends or other pre-identified events within the identified fire season where normal staffing cannot meet initial attack, prevention, or detection needs.
- Extended staffing for mitigating actions designed to enhance suppression capabilities in high risk, high valued areas such as WUI and priority Sage-grouse habitat. IA resources, necessary dispatch staff, and aviation resources may be authorized as needed based on the FMO’s or duty officer’s judgment.
- Utilize State Director Severity (short-term or preposition) to extend staffing and/or mobilize locally assigned resources if conditions meet those outlined in National and State Office Severity Instructional Memorandums.

Preparedness Level	Step-up/Authorized Actions	Potential Management Actions
PL 1	<ul style="list-style-type: none"> Off hours on call list available 	<ul style="list-style-type: none"> Normal operating hours
PL 2	<ul style="list-style-type: none"> Normal staffing during identified fire season. Preposition of resources if necessary where potential exists Extended staffing may be approved by the duty officer for necessary resources and personnel Resources from within the affected zone or other unaffected zones may be extended to 'move up and cover' stations where pre-positioning is occurring away from primary stations. Necessary extended staffing may be funded from Unit preparedness account. 	<ul style="list-style-type: none"> Above actions plus: Distribute Daily morning situation report Monitor weather forecasts
PL 3	<ul style="list-style-type: none"> All above actions authorized Unit FMO and/or duty officer may request aerial platform for fire detection flights if there has been or is expected to be a multiple ignitions across the area. Extended staffing may be approved for SEAT personnel, aircraft, and aviation dispatcher. Consider engaging PIO 	<ul style="list-style-type: none"> All above actions plus: Consider increased patrols following lightning storms. Consider fire restrictions Fire safety messages distributed Consider ordering off unit IA resources No RX burning. Conduct briefings with District Manager and Agency Administrators as needed Evaluate need for fire restrictions
PL 4	<ul style="list-style-type: none"> All Above actions authorized Unit FMO and/or duty officer may order additional outside of area IA resources to enhance IA capability. Engage PIO Consider Outside duty officer/FMO type for Fire management support and assistance with large fires if necessary 	<ul style="list-style-type: none"> All above actions plus: Consider releasing Public Service Announcements about the fire danger and consider implementing use restrictions and area closures Consider daily evening strategy meeting Consider fire behavior advisory
PL 5	<ul style="list-style-type: none"> All Above actions authorized Consider ordering one or more PIO as needed Consider Prepositioning IMT 	<ul style="list-style-type: none"> All above actions plus: Assess need for additional EFF crews. Consider regular scheduled co-operator call. Consider staging areas Consider Fire prevention teams

Appendix C **RESPONSE PLAN**

I. **OVERVIEW**

Run Cards are used when a wildfire is reported and does not meet the discretionary smoke report criteria. Not all resources listed on the run cards are within the control of the Vale fire program, therefore, some resources may not be available. Dispatch will apply the closest forces concept which could include utilizing neighbouring districts, forests, ODF units, and RFPAs to complete the full run cards. If dispatch is unable to fill the run card, the Duty Officer will make the final determination on response. Once a NWCG qualified Incident Commander is on scene of the fire, they may adjust the initial attack response based on the needs of each incident by evaluating fire potential, values at risk, threat to identified values and the incident objectives to be achieved.

II. **DISCRETIONARY SMOKE REPORTS**

If any of the following smoke reports are received, the Duty Officer will need to be contacted to determine the response.

- Federal Aviation Administration (FAA) reports
- Abandoned campfires while still within the ring
- Incidents that RFPAs, local and/or volunteer fire departments have responded to, or are on scene and are not requesting additional resources
- During periods of large or multiple fire activity, when there are not enough resources to fill the run cards.

III. **AFTER HOURS DISPATCH PROCEDURES**

Dispatchers will mobilize the closest resources (2 engine min), then contact the DO who will determine changes to this level of response for BLM fires. This applies when all resources have gone out of service.

A. **MULTIPLE FIRE RESPONSE**

The duty officer working in coordination with the dispatch center manager and/or floor coordinator will determine when to begin dispatching under the multiple fire response as identified in the run cards. Multiple fire response will apply across the entire Vale Dispatch Boundary, not just a fire danger rating area. This can be impacted by predicted lightning, actual ignitions, or ongoing incidents.

During lightning events or multiple ignition scenarios when the duty officer has declared multiple fire response is being used, Vale Dispatch should mobilize the identified resources until all are exhausted and notify the duty officer. The duty officer must be ready to begin prioritizing fires once two or more fires have been confirmed. In the event that all resources become exhausted and fire reports

continue to occur, the duty officer, working with an agency administrator determines incident priorities and response as resources become available.

The objective of responding resources on a multiple start day is to gather situational awareness and provide initial fire size-ups of each or as many incidents as possible. This information will be used to determine response to fires. Once two or more fires have been confirmed the duty officer should use the current line officer approved Fire Suppression Priorities document, notify other fire managers, and notify affected line officers to provide input into the prioritization process. As incident size-ups continue the duty officer should communicate with other units to obtain assistance as needed and continue to coordinate resource allocation based on values at risk, threat to those values, spread potential of all active fires, and fire management objectives to be met.

B. RUN CARDS

1. Response area V-1: The Tongue

V - 1: RUN CARD					
	RL 1	RL 2	RL 3	RL 4	Multiple
Air Attack		1	1	1	1
SEAT/Fixed Wing			2	2	
Helicopter		1	2	2	1
Engine	1	2	4	6	1
Dozer			1	2	

RL2 – If Vale Air Attack and/or Helicopter are available include in initial response.

At response level 3 and above, prompt DO on needs of:

- Overhead support
- Crew/module
- Water tender

2. Response area V-2: Junipers

V - 2: RUN CARD					
	RL 1	RL 2	RL 3	RL 4	Multiple
Air Attack		1	1	1	1
SEAT/Fixed Wing			2	2	
Helicopter		1	1	1	1
Engine	1	2	4	6	2
Dozer			1	2	

RL2 – If Vale Air Attack and/or Helicopter are available include in initial response.

At response level 3 and above, prompt DO on needs of:

- Overhead support
- Crew/module
- Water tender

3. Response area V-3: Big Desert

V - 3: RUN CARD					
	RL 1	RL 2	RL 3	RL 4	Multiple
Air Attack		1	1	1	1
SEAT/Fixed Wing			2	2	
Helicopter		1	1	1	1
Engine	1	2	5	7	2
Dozer			1	2	

RL2 – If Vale Air Attack and/or Helicopter are available include in initial response.

At response level 3 and above, prompt DO on needs of:

- Overhead support
- Crew/module
- Water tender

4. Response area V-4: Owyhee

V - 4: RUN CARD					
	RL 1	RL 2	RL 3	RL 4	Multiple
Air Attack		1	1	1	1
SEAT/Fixed Wing			2	2	
Helicopter		1	2	2	1
Engine	1	2	4	6	2
Dozer			1	2	

RL2 – If Vale Air Attack and/or Helicopter are available include in initial response.

At response level 3 and above, prompt DO on needs of:

- Overhead support
- Crew/module
- Water tender

5. Response area V-5: SE corner

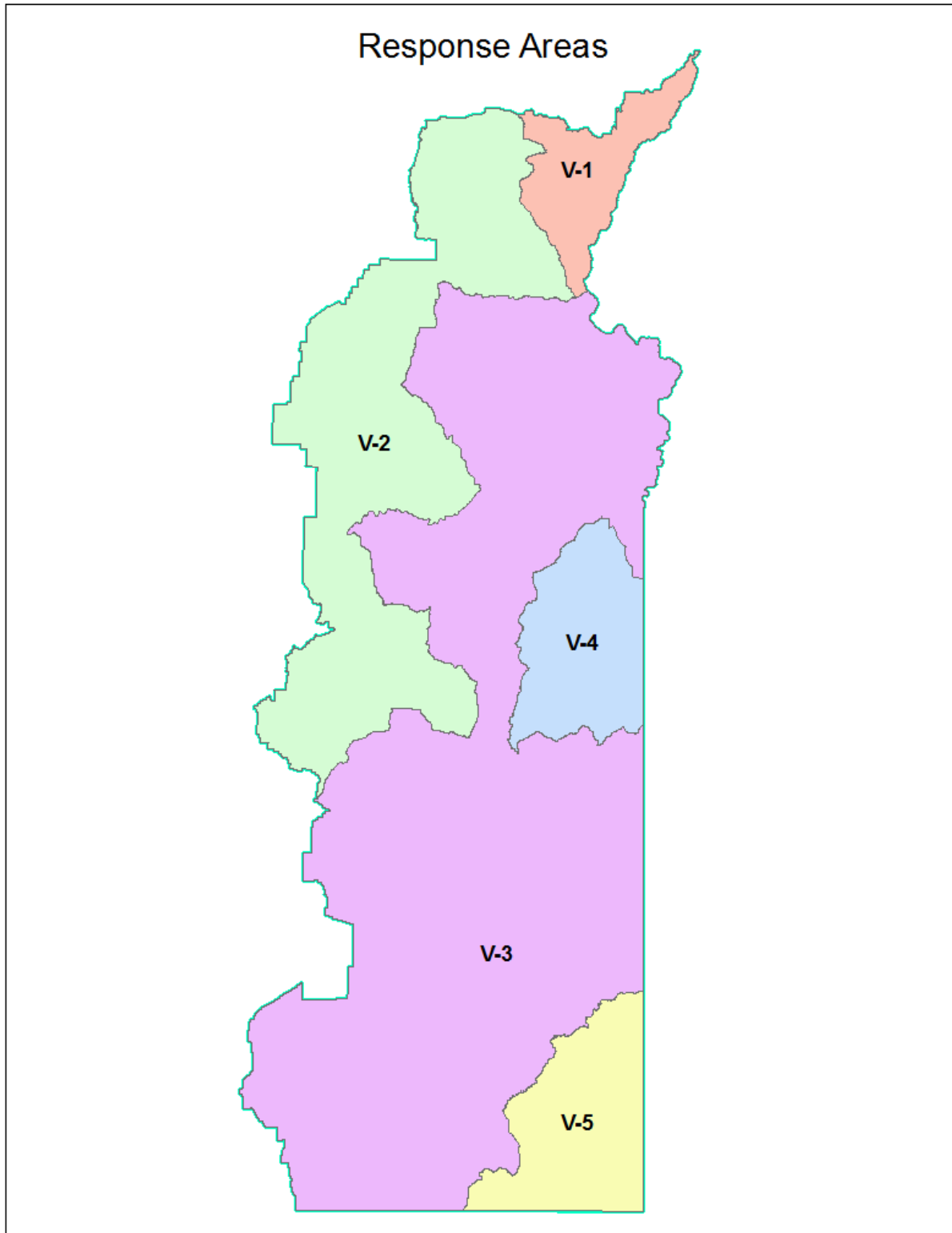
V - 5: RUN CARD					
	RL 1	RL 2	RL 3	RL 4	Multiple
Air Attack		1	1	1	1
SEAT/Fixed Wing			3	4	
Helicopter		1	1	1	1
Engine	1	2	5	5	2
Dozer			1	2	

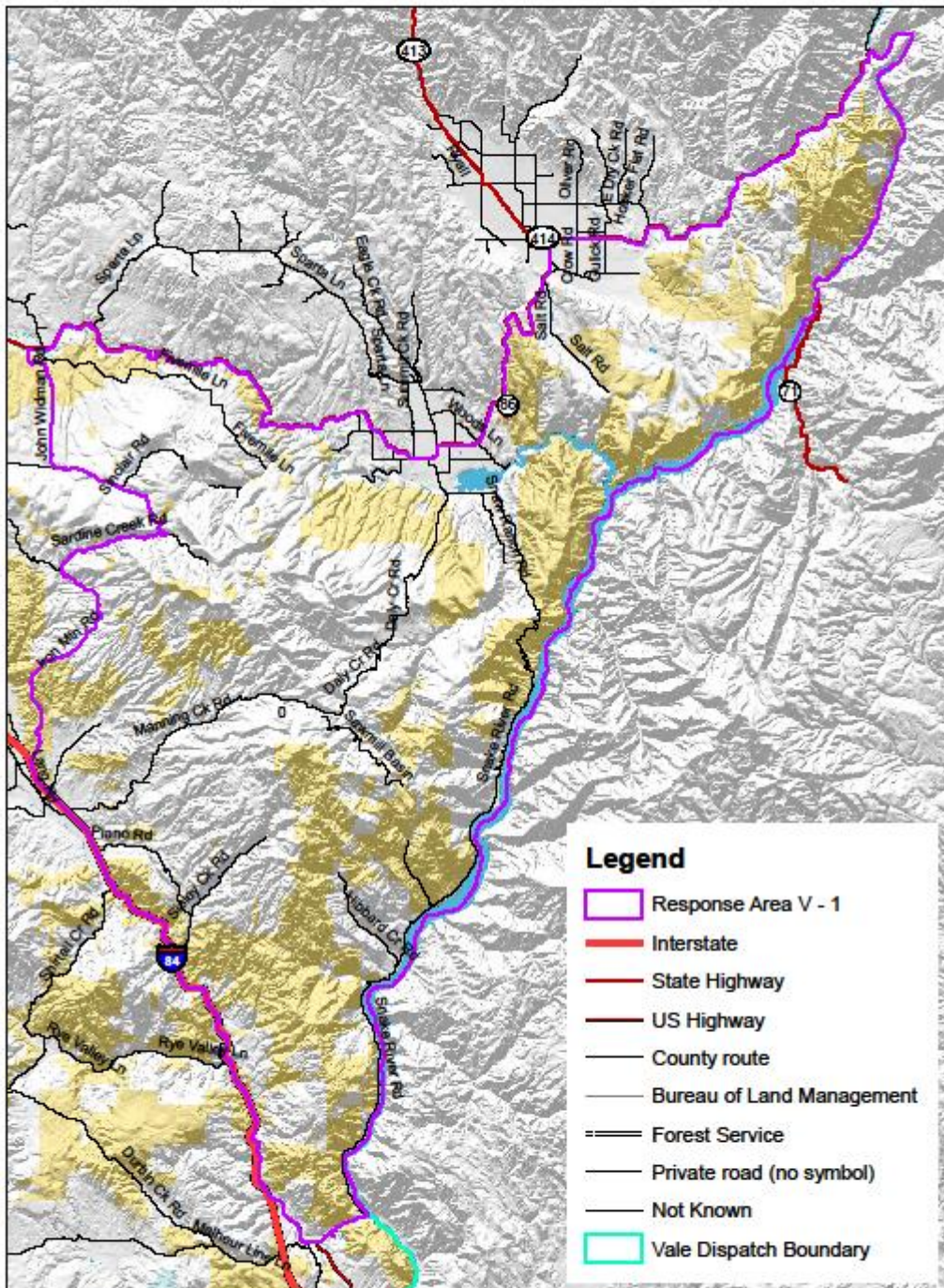
RL2 – If Vale Air Attack and/or Helicopter are available include in initial response.

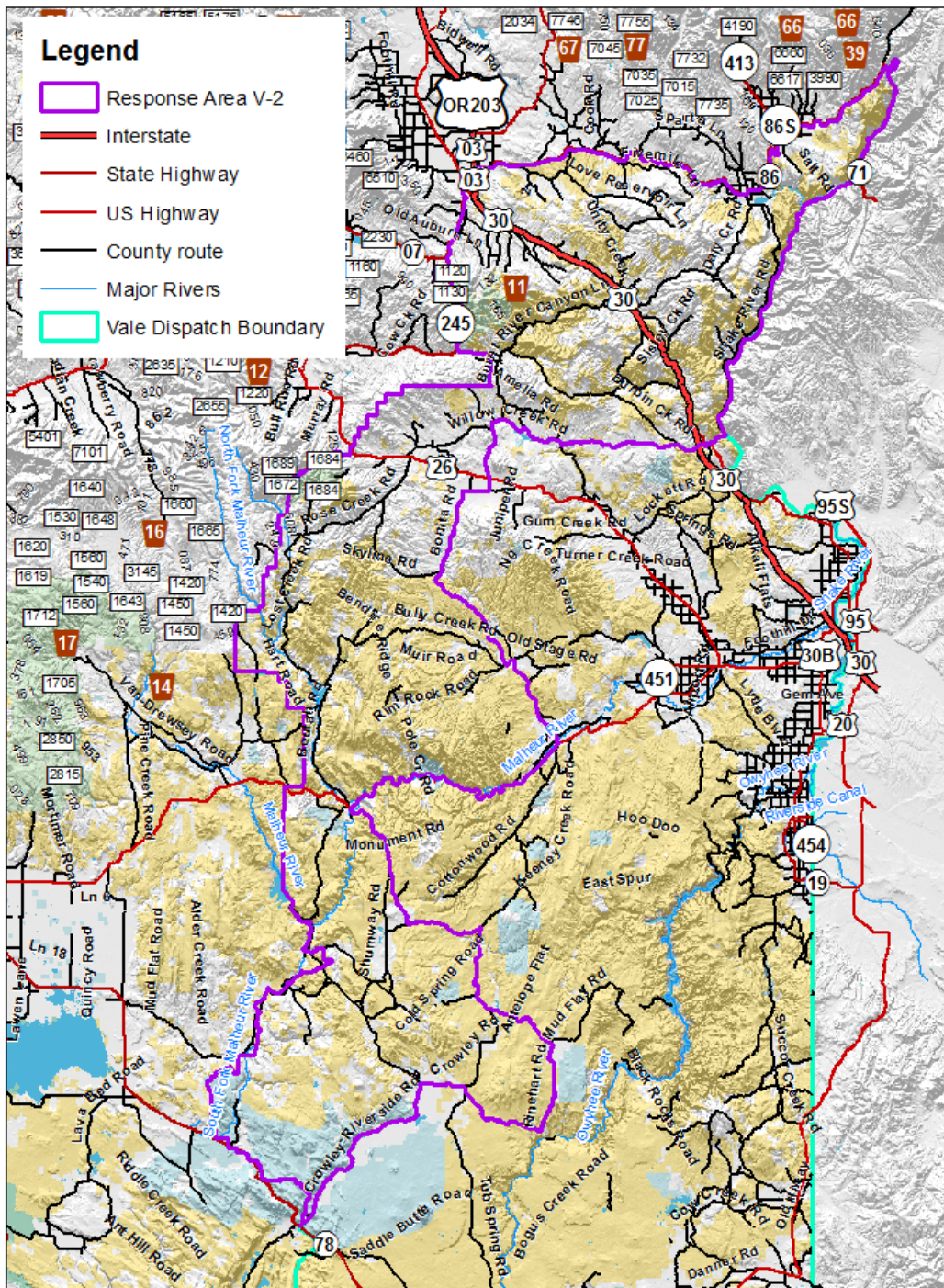
At response level 3 and above, prompt DO on needs of:

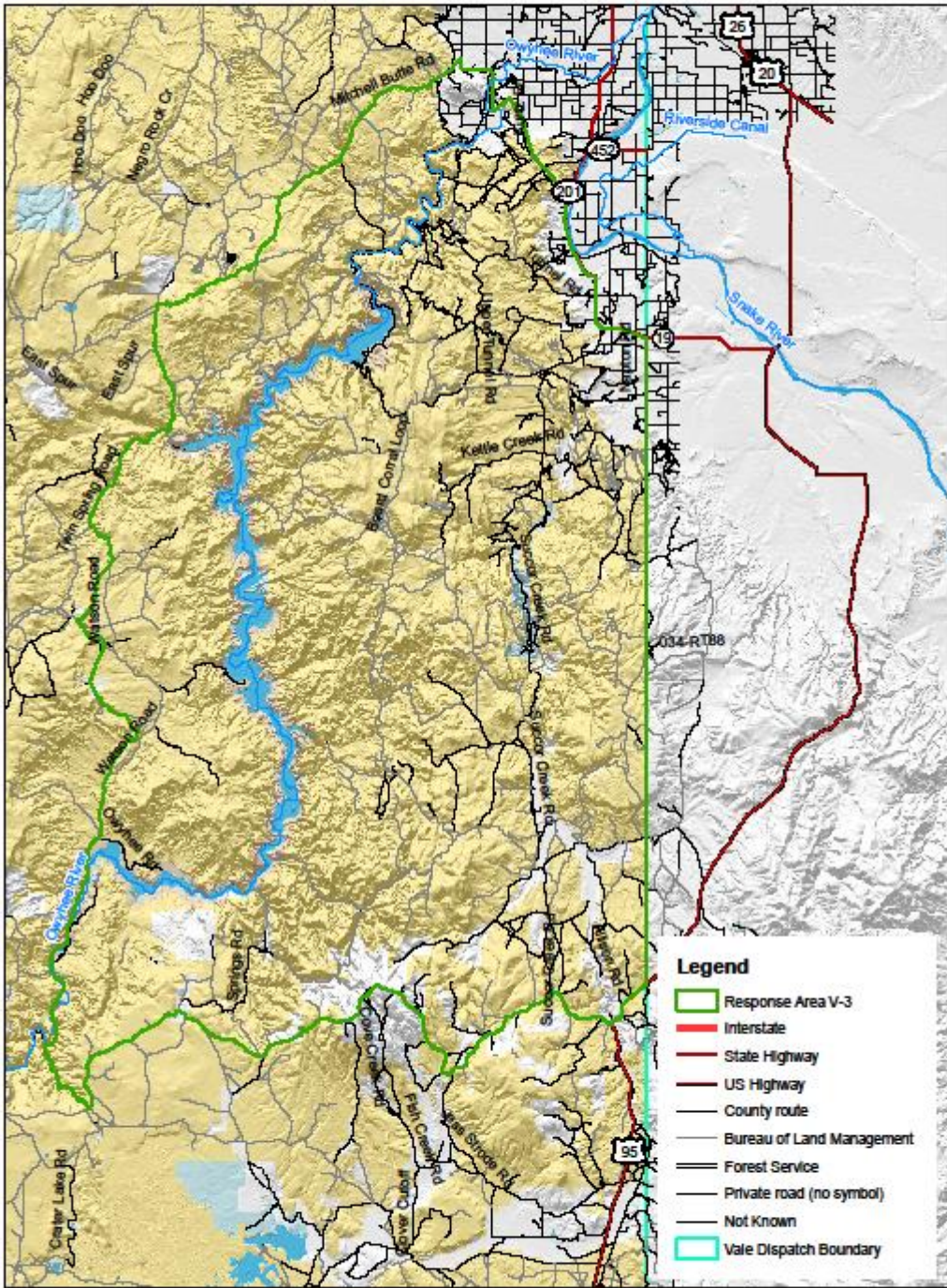
- Overhead support
- Crew/module
- Water tender

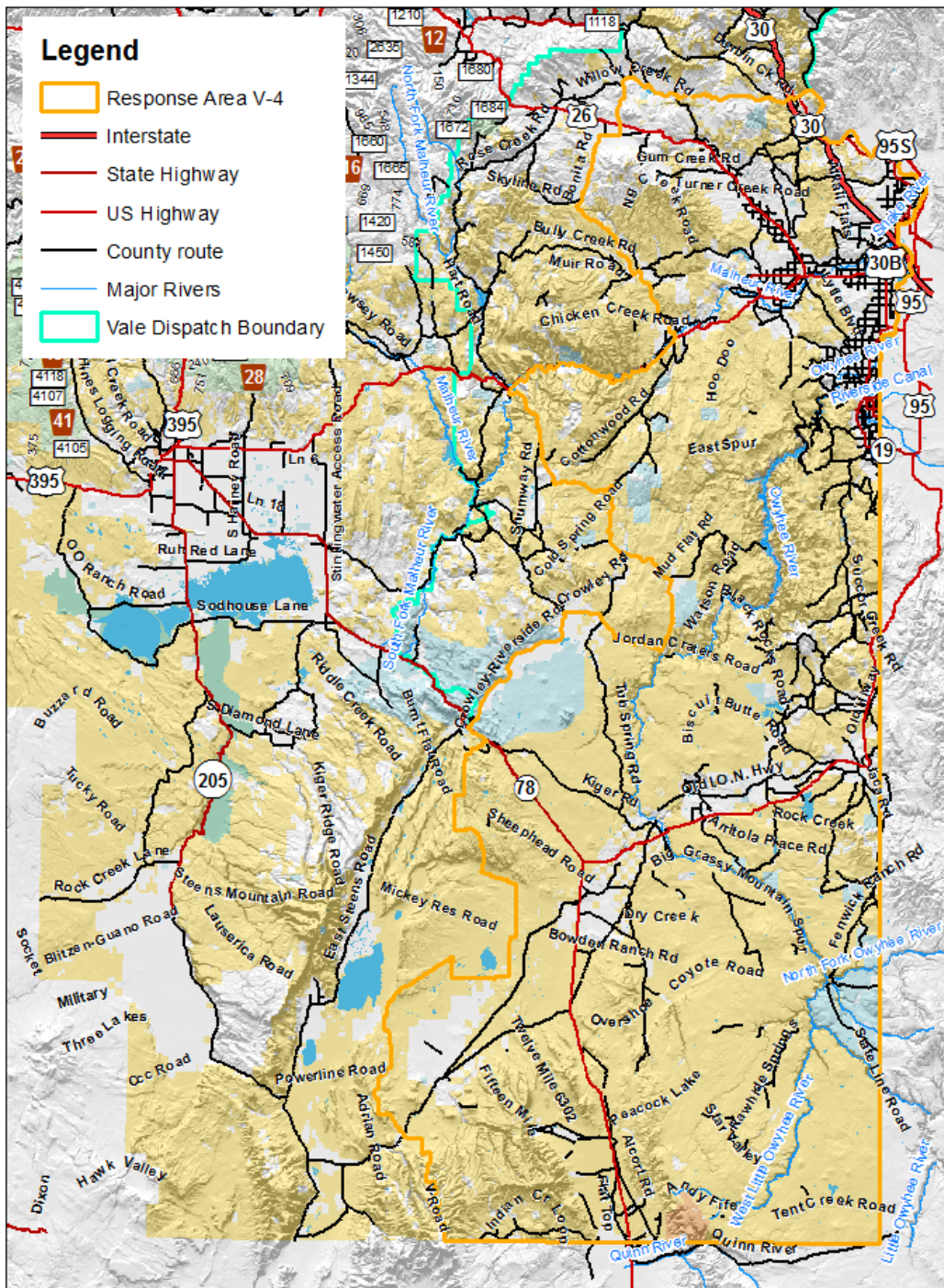
IV. RESPONSE/DISPATCH AREA MAP

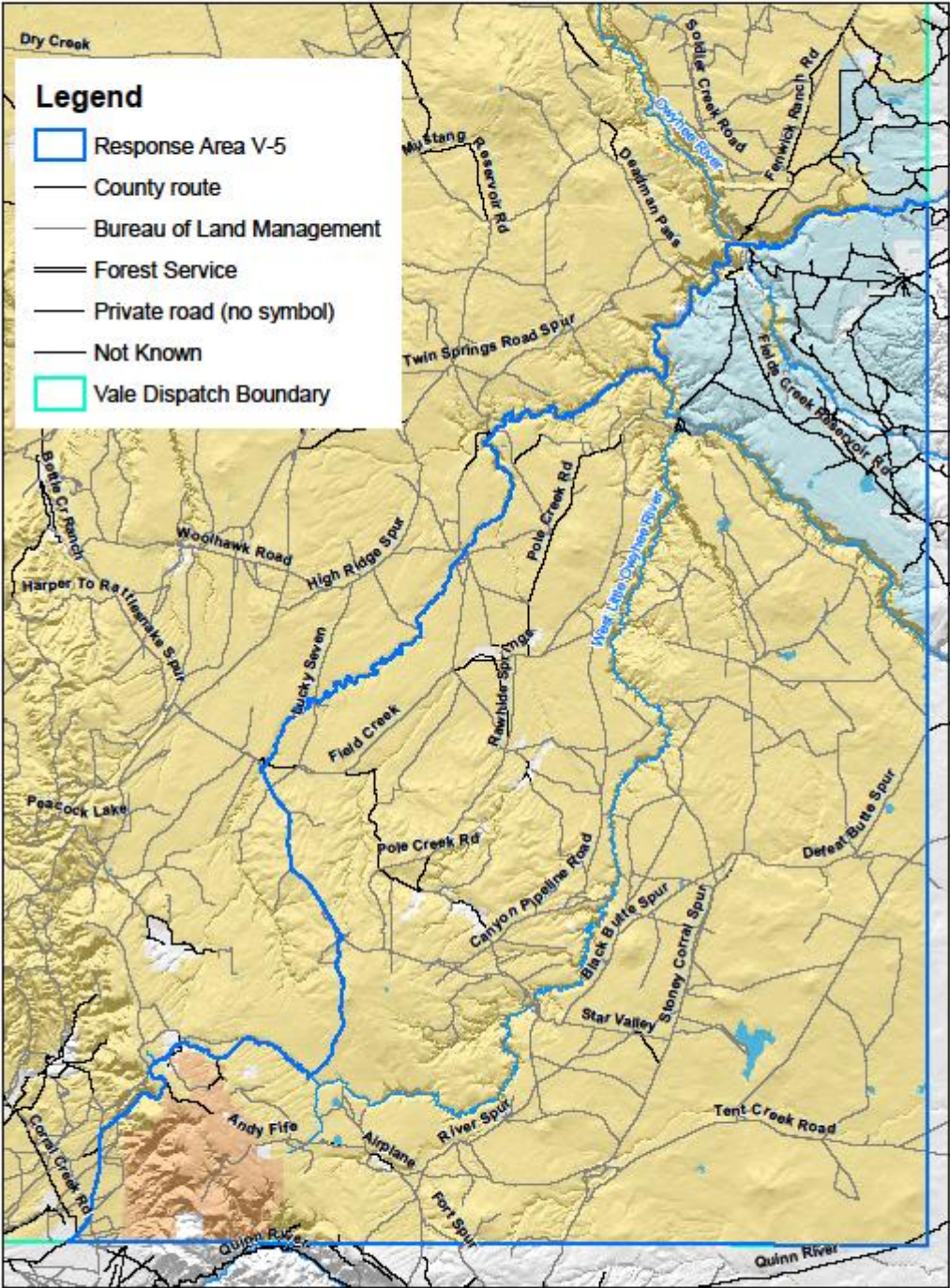






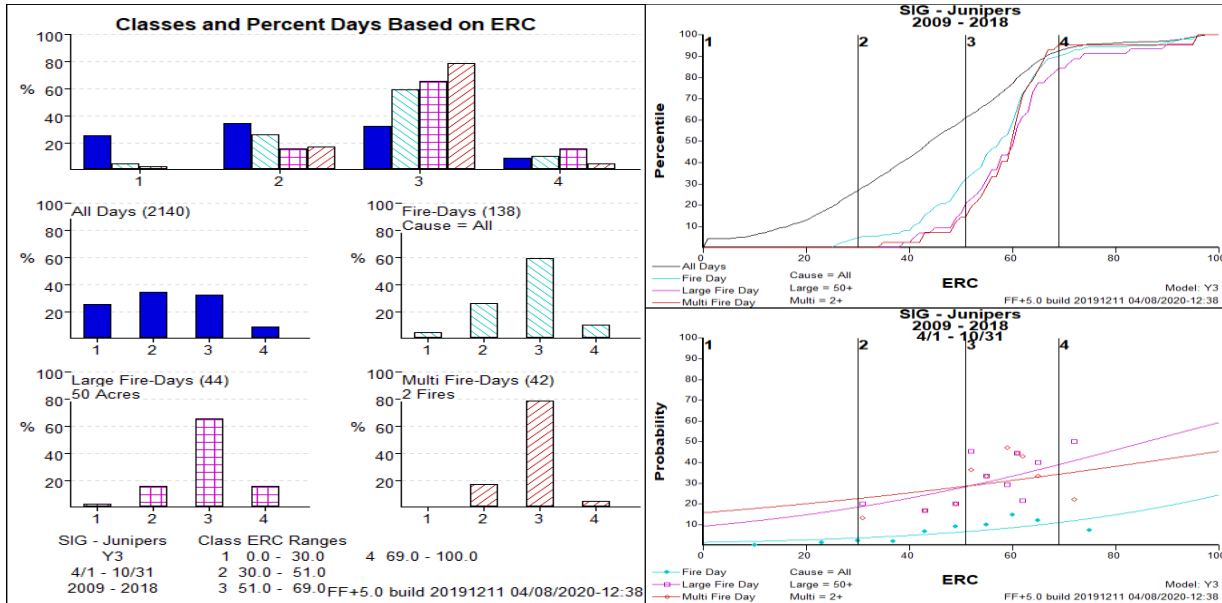




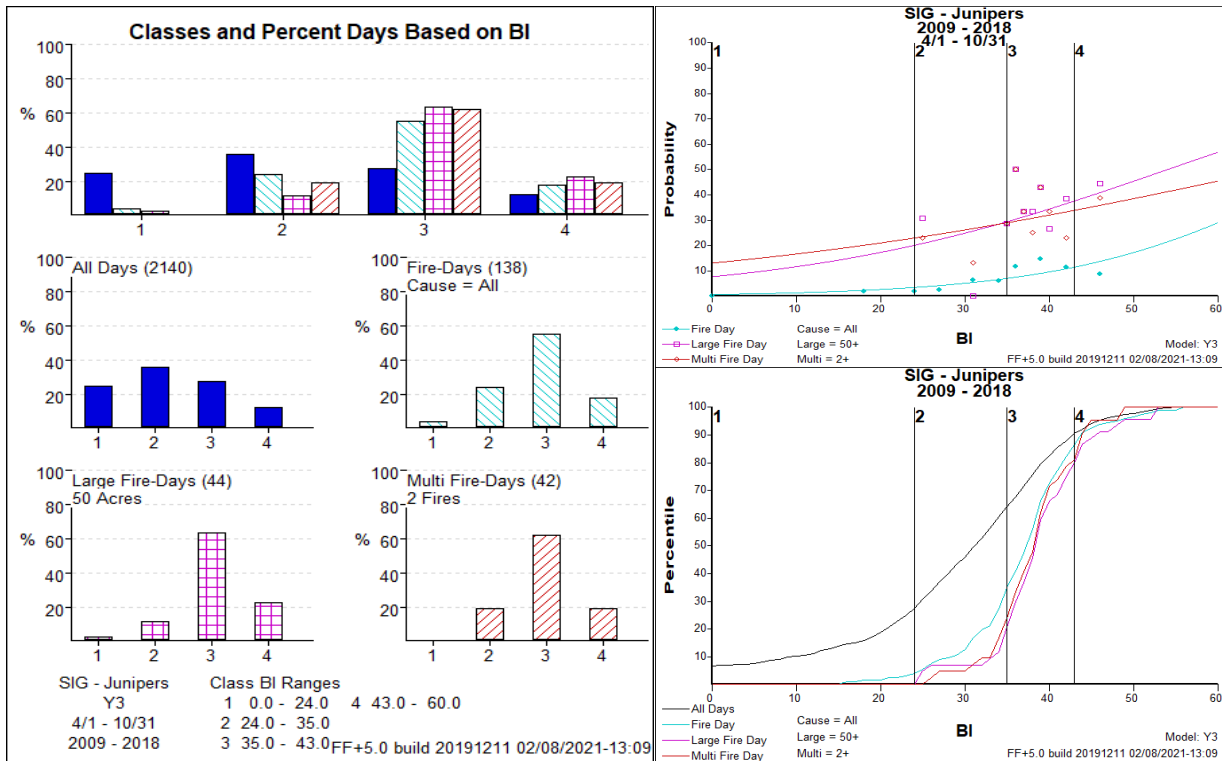


V. FIRE DANGER BREAKPOINTS

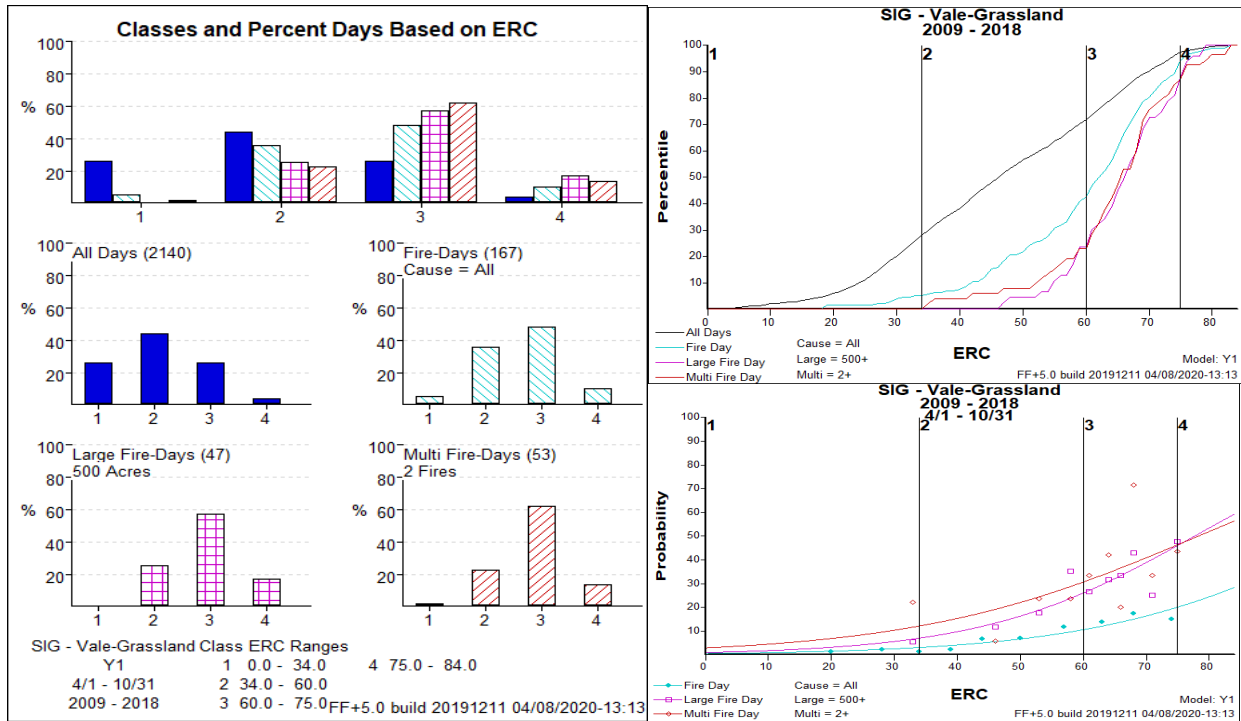
A. FDRA 2 – ERC FMY – JUNIPERS



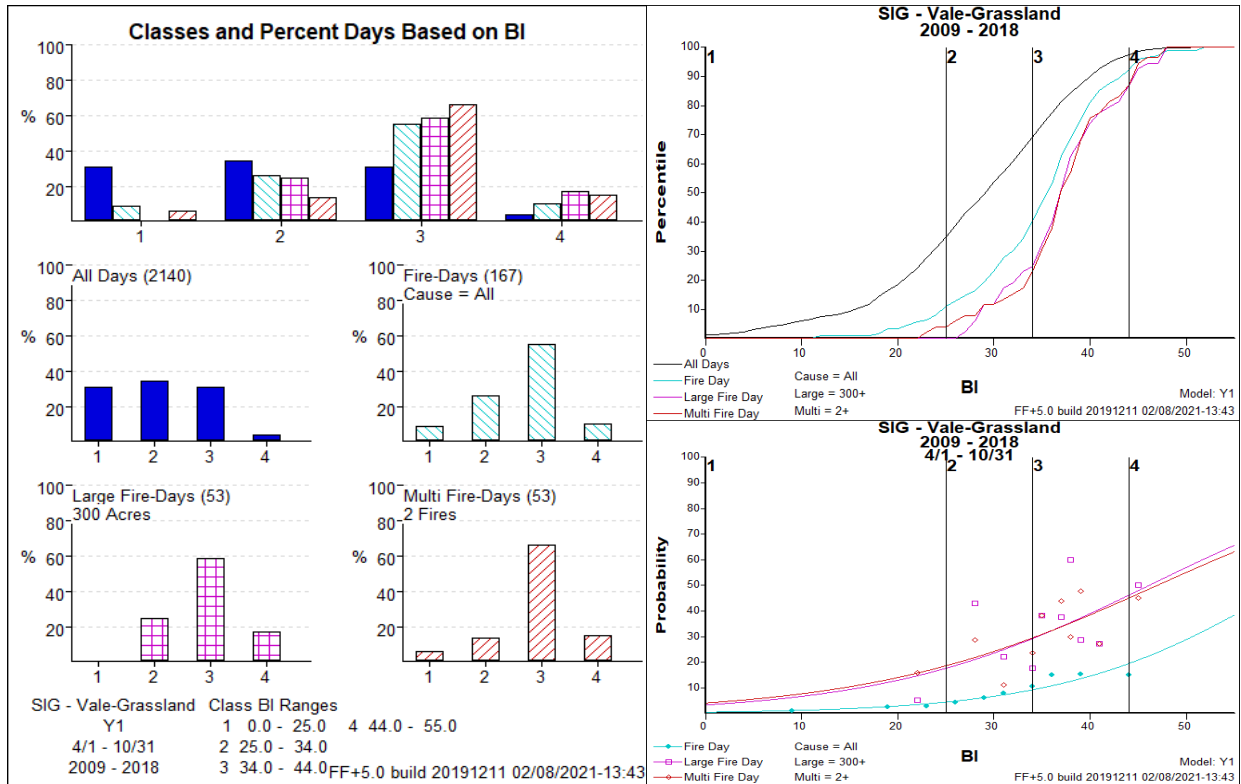
B. FDRA 2 – BI FMY - JUNIPERS



C. FDRA 3 – ERC FMY – GRASSLANDS



D. FDRA 4 – BI FMY – GRASSLANDS



Appendix D **PREVENTION PLAN**

I. **OVERVIEW**

Historically, the Vale District has implemented a fire prevention program consisting primarily of school programs, signing, and patrol. Much of Malheur and Baker Counties has had low population densities, limited recreation use, and a population base primarily of farm/ranch communities. However, Southwest Idaho has a large and growing population within the Treasure Valley. This population is within close proximity to public lands in Eastern Oregon. As population grows, the chances of human caused ignitions increase.

Although lightning is and will likely remain the primary driver of fire ignitions, recreational use on the district is trending upwards in recent years and ignition causes associated with recreational activities is increasing.

Dispersed recreation on the district is extensive and varied across the area, but typical uses are: camping, fishing, backpacking, hunting, off highway vehicle use, shooting, wildlife viewing, water recreation, and photography.

Commercial use of the district is common and the majority of it is used by permitted livestock operators for livestock grazing. Other commercial uses include mining operations and small amount of logging. Various rights-of-way have been granted for energy projects, power lines, gas lines, communication sites, and travel routes. Industrial use remains a concern and a focus for the BLM nationally. Ignitions from power lines is the leading industrial cause.

In recent years, there has been an increase in federal and state highway usage. More traffic on the roads translates to higher potential for equipment caused fires. Unfortunately, vagrancy on public lands is also on the rise as well, along with the law enforcement issues and human caused fires associated with it.

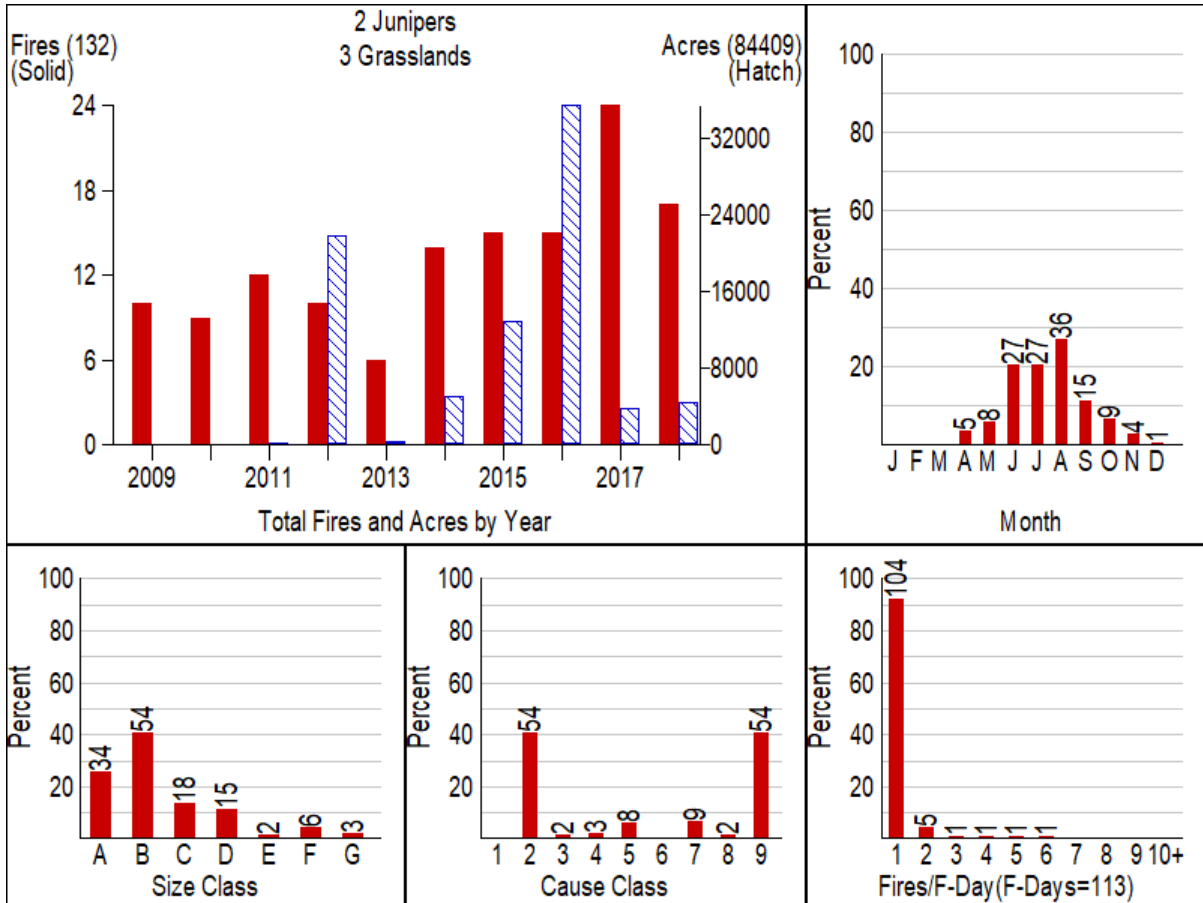
II. **STATISTICS/TRENDS**

Human-caused fires are responsible for an average of 13 starts per year, resulting in an average of 8,401 acres burned annually. Equipment fires are responsible for 41% of these fires, and 43% of all human-caused burned acres. The miscellaneous cause class also represents a problem throughout the district. These fires make up 41% of all human caused fires and account for 52% of the acres associated with human caused fires. The largest being 2016 Cherry Road which burned over 35,000 acres.

The following charts depict the human caused trends from the analysis period of this FDOP (2009-2018) by cause category. Human caused ignitions are tracked and recorded locally to current year and will be utilized in the to update fire occurrence data in the

next revision of the FDOP. This data is available upon request from either the district Mitigation Specialist or Fire Planner.

Fire summary of human caused ignitions 2009-2018.



Size Class:

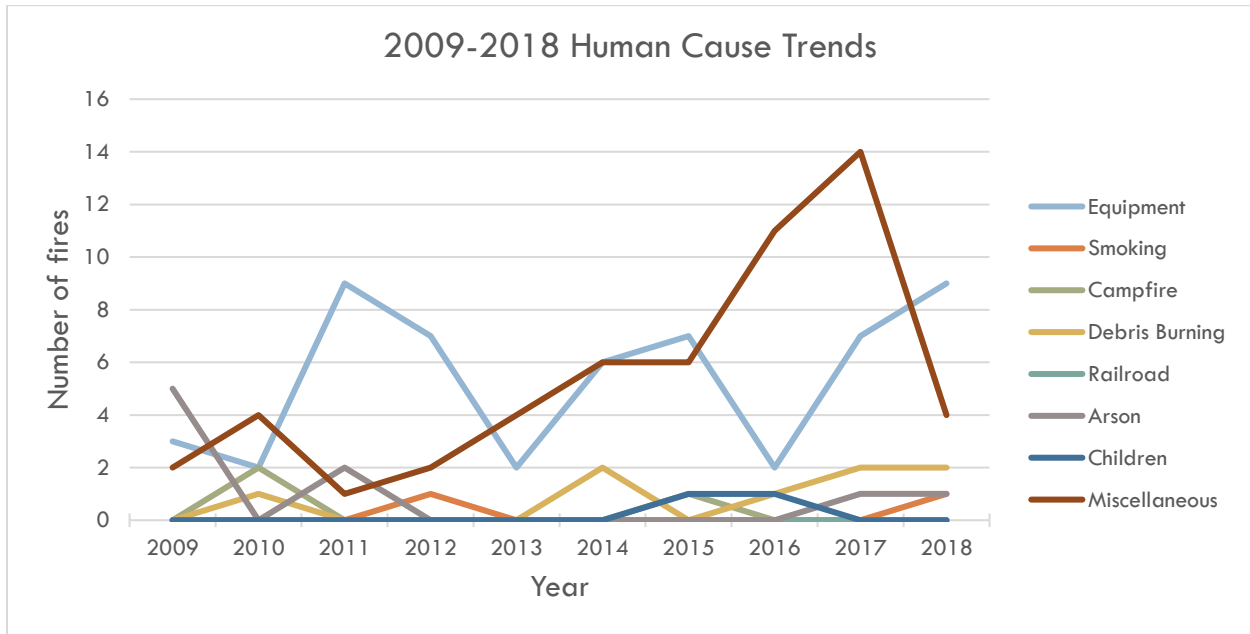
- A = 0 — .25 acres
- B = .30 — 9 acres
- C = 10 — 99 acres
- D = 100 — 299 acres
- E = 300 — 999 acres
- F = 1000 — 4999 acres
- G = 5000 + acres

Cause Class:

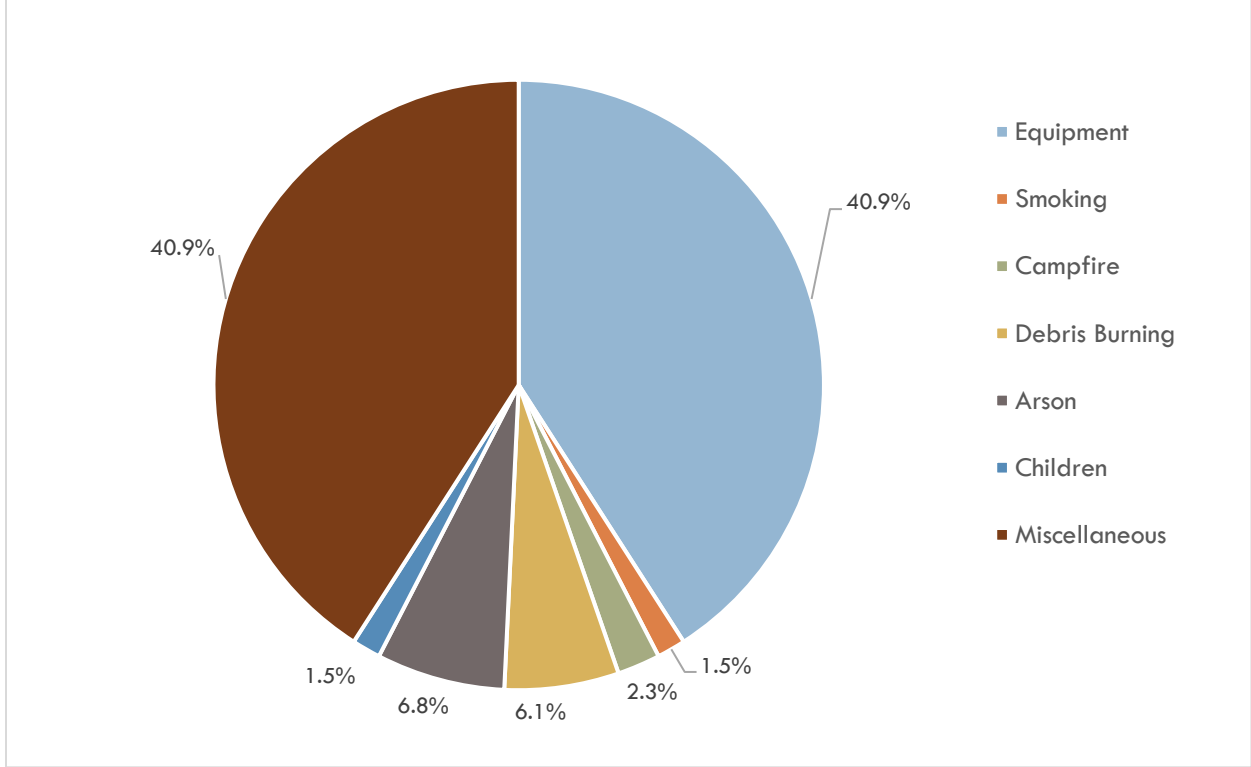
- 1 = Lightning
- 2 = Equipment
- 3 = Smoking
- 4 = Campfire
- 5 = Debris Burning
- 6 = Railroad
- 7 = Arson
- 8 = Children
- 9 = Misc

Number of Human Cause by Category

Cause	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	Total	10yr Avg	Percent
Equipment	3	2	9	7	2	6	7	2	7	9	54	5.4	40.9%
Smoking	0	0	0	1	0	0	0	0	0	1	2	0.2	1.5%
Campfire	0	2	0	0	0	0	1	0	0	0	3	0.3	2.3%
Debris Burning	0	1	0	0	0	2	0	1	2	2	8	0.8	6.1%
Railroad	0	0	0	0	0	0	0	0	0	0	0	0	0.0%
Arson	5	0	2	0	0	0	0	0	1	1	9	0.9	6.8%
Children	0	0	0	0	0	0	1	1	0	0	2	0.2	1.5%
Miscellaneous	2	4	1	2	4	6	6	11	14	4	54	5.4	40.9%
TOTAL	10	9	12	10	6	14	15	15	24	17	132	13.2	100.0%

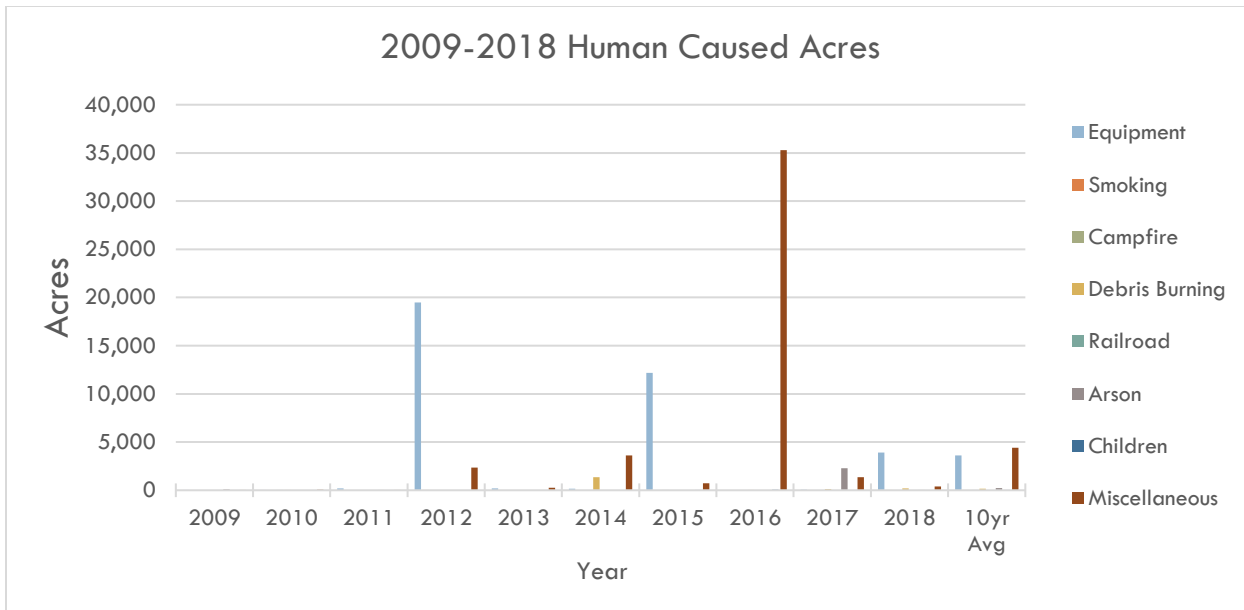


2009-2018 Human Cause Percentages



Human Caused Acres

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	Total	10yr Avg	Percent
Equipment	6	2	205	19,485	181	171	12,166	44	46	3,916	36,222	3,622	42.91%
Smoking	0	0	0	5	0	0	0	0	0	0.1	5.1	0.5	0.01%
Campfire	0	0.4	0	0	0	0	4.8	0	0	0	5.2	0.5	0.01%
Debris Burning	0	9.4	0	0	0	1,363	0	5	141	192	1,710	171	2.03%
Railroad	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.00%
Arson	85	0	0.4	0	0	0	0	0	2,289	2	2,376	238	2.81%
Children	0	0	0	0	0	0	0.1	61	0	0	61	6	0.07%
Miscellaneous	12	51	3	2,347	262	3,608	714	35,285	1,369	380	44,030	4,403	52.16%
Total	103	62	208	21,837	443	5,142	12,884	35,394	3,845	4,489	84,409	8,441	100%



III. FIRE PREVENTION AND MITIGATION

The goal of the fire prevention program is public education about fire safety, fire effects, and to reduce the overall number of human-caused wildland fires. This program also includes public education initiatives to educate homeowners on ways to mitigate wildfire risk to life and improved properties. The Vale District fire prevention staff attends a variety of events each season. Messaging changes from event to event based on target audience.

A. TARGETED EDUCATION AND PREVENTION

Based on historical fire causes, the Vale District utilizes special messages related to these causes targeted at the user groups associated with them, using a variety of delivery tools and systems. Historically, the majority of human caused fires on the Vale District are equipment related and occur along transportation corridors. Water-based recreational opportunities and the locations for such also pose a large threat due to the increased human presence and activities in those areas. Some of these user groups/audiences targeted in recent years include boaters and recreational vehicle owners (trailer use), off-road vehicle users, homeowners, hunters and recreational shooters, industry and Right-of-Ways (ROWS), and the traveling public.

B. SCHOOL PROGRAMS AND PREVENTION EVENTS

The Vale District prevention staff regularly visits second grade classrooms in schools within Malheur County that reach 400-500 students. Prevention staff visits Baker County schools as requested through the Baker County Interagency Fire Prevention Team. School programs usually focus on campfires and ignition devices with Smokey Bear and often include discussions about fire suppression and outdoor fire safety.

Multiple schools within our jurisdiction are visited and the program may vary by school with some schools participating in co-teaching efforts with the local fire departments.

Below lists the prevention events that the Vale District has historically attended. Many of these events are coordinated with interagency partners through the Baker County Interagency Fire Prevention Team, The Northwest Passage Fire Prevention Cooperative, and the Snake River Valley Fire Chief's Association.

1. Dates to remember:

National Wildfire Awareness Month
NFPA Community Wildfire Awareness Day
Baker County Fire Prevention Week
Arson Awareness Week
Get Outdoors Day
Smokey Bear birthday
National Public Lands Day
National Fire Prevention Week
National Fire Prevention Day

Events occurring during these time frames may vary from year to year, depending on location and local, regional, and national themes.

2. Public Events Table:

Event	Location	Month	Audience	Message	Lead
Hunter's Education	Malheur/Baker County	Feb-April	Children and Public	Fire causes, prevention, restrictions, fire safety	Mit/Ed Spec
Ag in the Classroom	TVCC	March	Children	Varies upon request	Mit/Ed Spec
School visits	All Malheur County schools	April/May	Children	Smokey/Campfires/Rec/Home Fire Safety	Prev/Mit Tech
Owyhee Field Days	Lake Owyhee	April	Children	Outdoor Fire Safety, Fire Causes, Fire Suppression	Prev/Mit Tech
Nyssa Kids Day	Nyssa	May	Public	Outdoor Fire Safety	Prev/Mit Tech
Spring Into Wellness	Varied	April-May	Public	Firewise, Living with Fire	Prev/Mit Tech
TVCC Ball Game	TVCC	May	Public	Smokey, Fire Prevention	Prev/Mit Tech
NHOTIC	NHOTIC	May-June	Public	Prevention, Firewise, Fire Ecology	Mit/Ed Spec
Huntington Parade	Huntington	July 4th	Public	Smokey, Fire Prevention	Prev/Mit Tech
Parade and Rodeo	Vale	July 4th	Public	Smokey, Fire Prevention	Prev/Mit Tech
Miners Jubilee	Baker	July	Public	Smokey, Fire Prevention	Prev/Mit Tech
Thunder Egg Days	Nyssa	July	Public	Smokey, Wildland Fire Prevention	Prev/Mit Tech
Malheur County Fair/Rodeo	Ontario	August	Public	Smokey, Sage Grouse, One Less Spark	Based on availability
Baker Resource Fair	Baker	August	Public	Wildland Fire Prevention, WUI	Based on availability
Baker County Fair	Halfway	August	Public	Smokey, Sage Grouse fire causes	Based on availability
Home Depot Safety Plaza	Ontario	October	Kids and Homeowners	fire safety, Firewise, fires causes	Mit/Ed Spec
Veterans Day Parade	Ontario	November	Public	Fire Prevention	Mit/Ed Spec
Community Assistance WUI	District Wide	Varried	Public	Signing and postings, social media	Mit/Ed Spec
One Less Spark	District Wide	May-Oct	Public and recreation	Travel Safety, recreation, signing, social media	Mit/Ed Spec
Safe Shooting	Vale and Ontario	May-Oct	Public and recreation	Signing and postings	Mit/Ed Spec
Firewise, living with fire	Varied	May-Oct	Public homeowners	Signings and outreach	Mit/Ed Spec
OHV and Fire	OHV retailers, RFPA	July-Oct	Public and recreation	Shools and signing	Mit/Ed Spec
Sage-grouse and Fire	Schools, rec sites, information	Spring	Public	signings and outreach, NHOTIC	Mit/Ed Spec

IV. HOMEOWNERS EDUCATION

The Vale District has partnered with the Snake River Valley Fire Chiefs Association and The Baker County Interagency Fire Prevention Team to create two local versions of the "Living with Fire" program. One version of the program is tailored to Malheur County and the western Treasure Valley while the other was developed for Baker County.

These homeowner education materials have been widely distributed around Baker and

Malheur Counties. The purpose of these documents is to educate residents to help minimize wildfire risks to property and infrastructure and promote a move towards fire adapted communities. In addition to these publications, National Fire Protection Association (NFPA) and USFS/BLM “Firewise” materials have also been used at many fire prevention events.

Fire Prevention staff members conduct home assessments upon request for interested parties as many homes across the district are directly adjacent to or in close vicinity to BLM managed lands. Assessments can be accomplished independently, but should be coordinated with local fire districts, Baker County Emergency Management Fire Division, and/or the local extension offices for Oregon State University.

A. SPECIAL CAMPAIGNS, PROJECTS AND ACTIVITIES

All special campaigns/projects are coordinated by the Fire Mitigation Specialist and are designed to address specific historical fire causes and the associated user groups.

Campaign	Location/ Task	Message	Target Audience	Funding
Malheur County WUI Planning, Outreach and Education- with RFPAs, Fire Departments, and County Departments	County-wide planning, marketing and support of CWPP, public education tools, social media messaging, special presentations, Gun/ammo sales in Vale and Ontario, OHV service centers	Firewise, fire-safe shooting, OHV fire prevention, and misc fire prevention topics	General public, Irrigation District employees, RFPAs members, recreational shooters, homeowners	Community Assistance and preparedness
State and County Assistance -Public Education Assistance for local State Agencies (ODOT/DMV, ODFW, State Parks)	Signing, pub-ed material, classroom presentations and rec inspections at Ontario boat check station, Bully Creek Boat Ramp, rest areas travel stops, DMV, recreation areas, in support of CWPP	One Less Spark, travel safety and general fire prevention	Recreation area users, traveling public and vehicle owners, hunter’s ed students., State park visitors	Community Assistance and preparedness
Basque Heli-well	Helicopter dip tank installation near Basque Station, in support of CWPP		Permittees, traveling public, McDermitt, and ODOT	FY21 and FY22 Community Assistance
Cooperatively funded fire management mitigation coordinator	Baker County	Cohesive Wildfire Strategy coordination	General public, state and federal agencies, fire districts, RFPAs	Community Assistance through BLM WUI grant

Cooperatively funded Coordinator	Oregon Department of Forestry	Cohesive Wildfire Strategy	General public, state and federal agencies, fire districts	Community Assistance through BLM WUI grant
Sage Grouse and Fire	Pub-ed material in schools and signing in PHMAs	Sage Grouse habitat and Fire	All ages	fuels and preparedness
BLM Facilities Firewise	Infrastructure improvements to BLM facilities	Firewise	General public	fuels and preparedness

V. SIGNING AND PATROL

Signing is an effective method for message delivery on the Vale District due to the logistically challenging landscape encompassing the district, that has multiple access points to public lands over a large area and offering limited internet and cellular connectivity. High use areas and major travel corridors and portals to public land have been identified as key locations to educate public land users with fire prevention messages.

Various signs with different fire prevention messages, with some that pertain to a particular use for that area, are posted. Signs are also designed for special seasonal messages such as fire restrictions, closures, and special events. Some signs may be posted through partnerships with cooperating or assisting agencies. For complete information on signing in the Vale District, see Appendix E.

Patrolling is a regular duty for prevention staff or fire suppression resources. Routes are established on major travel corridors and in areas of high recreation use. Routes are normally patrolled on holidays, during special events, when fire restrictions are in place, or on an as needed basis. Coordination with BLM LEOs is crucial in the enforcement of public use restrictions, especially fire restrictions.

VI. FIRE RESTRICTIONS

The purpose of Public Use Restrictions are a tool to help reduce the risk of human-caused fires during periods of unusually high fire danger and/or burning conditions. A detailed plan discussing the purpose, authorities, an implementation procedure for fire restrictions is described in the Vale District Fire Restrictions and Closure Plan in *Appendix F*.

VII. FIRE INVESTIGATION

It is agency policy that fire cause determination be integrated in fire prevention programs. It is essential to understand the local human caused ignition statistics in order to effectively address specific fire causes and design mitigation efforts to reduce risk. The result of successful cause determination and fire investigation is to track unwanted ignition causes, target future prevention strategies, and peruse trespass to responsible parties for cost recovery of the suppression and rehabilitation of the human caused fires as required by agency policy.

VIII. FIRE INFORMATION

The release of information to the general public related to incidents on the Vale District is a responsibility and a function of the Public Affairs Officer (PAO). Fire prevention messages should accompany news releases for incidents. Fire prevention messages can occur at any time. Timeframes for the release of fire prevention messages should occur changes in fire danger conditions, implementation of fire prevention orders, and increase in threat of specific fire causes, and around special dates identified above.

IX. ROLES AND RESPONSIBILITIES

A. FIRE MITIGATION SPECIALIST

- Serve as the Prevention/Mitigation/Education program lead. Planning and coordination or development of internal fire prevention related mitigation and public education efforts, campaigns, and special events. Communicate, cooperate, and collaborate with internal and external partners. Develop joint projects as applicable. On a daily basis, ensure prevention and mitigation events and duties are covered by prevention personnel. If conflicts arise coordinate with AFMO Fuels and the Fire Management Officer.
- Develop, update and implement sub plans of the fire danger operating plan.
- NFPORS reporting of Community Assistance (CA) projects and a Program Officer (PO) for grants and cooperative agreements.
- Serve as the lead fire investigator and manage the fire investigation program.
- Function as the fire trespass coordinator.
- Actively participate in or lead the implementation of campaigns, projects and events as needed or assigned.
- Provide fire program support as needed

B. FIRE MITIGATION TECHNICIAN

- Coordinate with the Fire Mitigation Specialist and implement the sub plans of the fire danger operating plan. Serve as the implementation lead for field-going work. Provide input to plan updates.

- Actively participate in or lead the implementation of signing, patrol, school programs, campaigns, projects, and events assigned by the program lead with supervisor concurrence or as assigned by the supervisor.
- Assist with the investigation of fires as a lead or assistant investigator.
- Provide fire program support as needed (operations, logistics, training, or other position as qualified)

C. RANGE TECHNICIAN (FIRE PREVENTION)

- Assist the Fire Mitigation Specialist and the Fire Mitigation Technician with the implementation of the sub plans of the fire danger operating plan.
- Actively participate in the implementation of signing, patrol, school programs, campaigns, projects and events as assigned by the program lead with supervisor concurrence or as assigned by the supervisor.
- Assist with fire investigations as a qualified INVFF or trainee.
- Provide fire program support as needed (operations, logistics, training, or other position as qualified)

Appendix E **SIGN PLAN**

I. **SIGNING STRATEGY**

Prevention signing strategies are designed to deliver an overall message of wildfire prevention and also specifically target common and historic causes specific to the Vale District with unique and seasonal signage related to those areas where those signs are posted. They may also be used to focus on Agency-wide efforts for targeted messaging in wildfire prevention. These concepts are outlined in the Vale District Fire Mitigation, Education and Prevention Planning Guide. The Vale District Fire Prevention Sign Plan describes the current signing strategy and discusses potential needs for additional signs and posters.

Signing is a technique used to convey wildfire prevention messages and provide visual information/education concerning a variety of wildfire prevention needs to general and specific public audiences. Signing must be completed in a timely and consistent manner to help prevent human caused fires and support enforcement and fire trespass actions. The Fire Mitigation Specialist and Fire Mitigation Technician integrate signing into the wildfire prevention programs and identify specific signing requirements and updates to this plan. Generally, sign messages will be consistent with the current fire danger and risks associated with historical human caused fires on the District.

This plan contains information concerning when, where, and how to convey wildfire prevention messages to public land users. A complete inventory of fire prevention sign boards within the District is included along with special remarks for posting and maintenance purposes. A portion of the plan will provide instructions to be followed for each situation listed.

II. **SEASON SCHEDULE**

Fire prevention signage varies throughout the year as fire danger conditions change throughout the year. The following is the typical progression of seasonal signage.

A. **SHOULDER SEASON POSTINGS**

Installation normally occurs in late March/early April. Fire indices during the shoulders of the fire season in spring and fall vary from the Low to High rating. There are usually no District-level fire restrictions in effect at this time.

Starting in May, a Regional fire prevention order is typically in effect which prohibits the use of fireworks, exploding targets, and other activities not allowed on public lands. This order is typically not posted throughout the District but is circulated via email to all internal and external contacts and the media.

In early spring and late fall, normal posting will caution the public of the hazards of fire, including (but not limited to) extinguishing campfires, not burning when windy, and limiting sparks.

B. FIRE RESTRICTION POSTINGS

District fire restrictions normally occur each fire season as fire danger indices rise. This occurs typically within the month of July and remains in place into October. During this time, specific prevention signage, posters, and handouts are distributed to various locations based on human caused ignition trends.

C. SIGN REMOVAL

When fire restrictions are rescinded all fire restriction notices and posters shall be replaced. Shoulder fire season messages will remain on the sign structures until the end of fire season, typically into November. At the end of the fire season, prevention signs will be removed as fire danger conditions diminish.

III. FIRE RESTRICTION POSTINGS

District fire restrictions normally occur each fire season as fire danger indices rise above thresholds identified in the Preparedness plan. Fire Restriction notices should be posted at campgrounds, select offices, businesses, and sign structures to make them effective. Along with the official notices, signs and custom posters instruct the public of what is restricted or allowed on public lands. The District will strive to have all signs changed and locations posted prior to the initiation date of the fire restrictions and removed accordingly when restrictions are rescinded. Locations of permanent sign structures are identified on the maps provided.

Additionally, as conditions warrant, sign posting locations increase to include post offices, rest areas, city halls, and other commonly visited public locations.

A. SUPPLEMENTAL SIGNING

Temporary sign boards are placed in various locations to supplement existing signage for better coverage during periods of District fire restrictions. These signs were designed in coordination with Oregon Department of Fish and Wildlife and the BLM to increase fire prevention messaging in specific areas during the hunting season.

IV. COOPERATOR PARTNERSHIPS

The Vale District BLM collaborates with multiple local partnerships and agencies within our jurisdiction. Cooperation with these agency partners helps provide consistency in and additional distribution of messaging and signage. Partners include: Bureau of

Reclamation, Rangeland Fire Protection Associations, Fire Departments, County Sherriff, Oregon Department of Fish and Wildlife, Oregon State Parks and local businesses in Baker and Malheur Counties.

A. FIRE DANGER SIGNS

Fire danger signs in Malheur and Baker Counties exist in Ontario, Vale, Nyssa, and Huntington. Procurement and placement of these signs were accomplished through WUI Community Assistance funding through the BLM. Management of these signs are the responsibility of Ontario, Vale, Nyssa, and Huntington fire departments as well as staff at Lake Owyhee State Park. The Fire Mitigation Specialist will communicate with the cooperating departments/agencies as fire danger changes.

Other Fire danger signs in Baker County are managed by the local fire protection districts and fire departments. Fire danger is set by the Oregon Department of Forestry (ODF). These fire districts typically follow ODF regulations within their jurisdictions regardless of protecting agency.

V. ROLES AND RESPONSIBILITIES

A. FIRE MITIGATION SPECIALIST

- Supervises the Prevention/Mitigation Technician and seasonal staff.
- Responsible for the annual review and updates to the sign plan.
- Monitors sign system for plan compliance and timeliness, and ensures installation, maintenance and take down of swinging sign boards.
- Assists the Prevention/Mitigation Technician in the acquisition of and maintaining the inventory of signs and supplies.
- Assists with installation, maintenance, posting changes, and take down when necessary.
- Coordinates with the Assistant Fire Management Officer of Operations and Baker Field Office staff for support if needed.

B. FIRE MITIGATION TECHNICIAN

- Responsible for ensuring posting of district signs occurs in a timely manner, primarily utilizing prevention staff, and ensures installation, maintenance and take down of swinging sign boards. Coordinates with the Fire Mitigation Specialist, AFMOs Operations and Fuels, and Baker Field Office staff for support if needed.
- Monitors sign system for plan compliance and corrects issues in a timely manner. Reports problems to the Fire Mitigation Specialist.
- Provides input for sign plan revisions.
- Maintains the inventory of signs and supplies and maintains storage facility.

C. RANGE TECHNICIAN (FIRE PREVENTION)

- Supports the Fire Mitigation Specialist and the Fire Mitigation Technician in sign and notice installation and removal, maintenance, and postings.
- Corrects issues in the field as applicable and capable and recommends options for sign program improvements.

D. ASSISTANT FIRE MANAGEMENT OFFICER - FUELS

- Supervises the Fire Mitigation Technician. Coordinates with the Fire Mitigation Specialist and Fire Mitigation Technician to ensure posting and/or removal of fire prevention signs is completed.
- Coordinates with the AFMO Operations when assistance is requested.

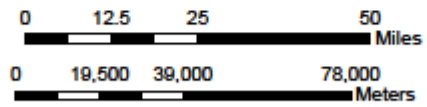
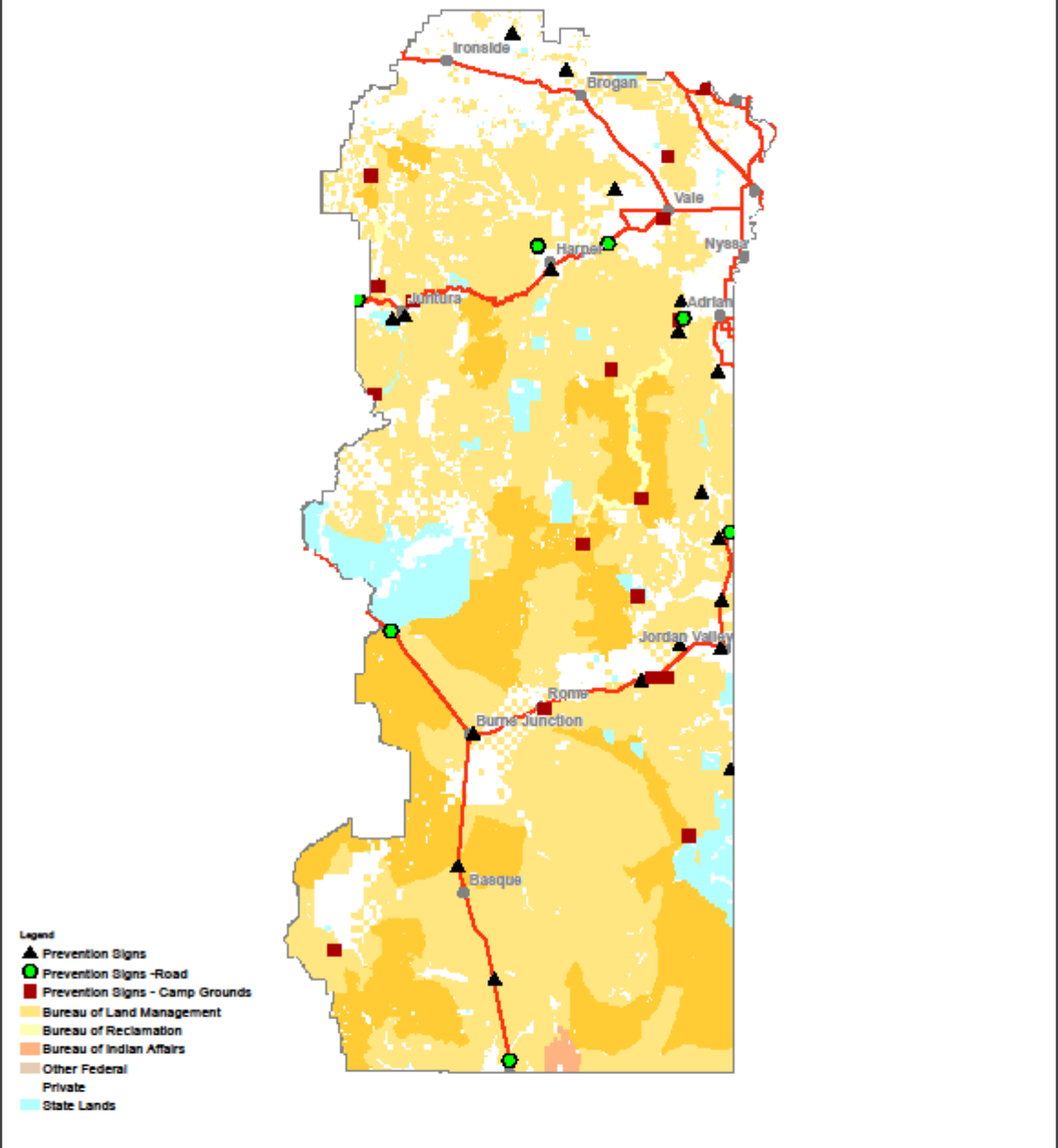
E. ASSISTANT FIRE MANAGEMENT OFFICER - OPERATIONS

- Coordinates with the AFMO Fuels, Fire Mitigation Specialist and Fire Mitigation Technician to assist in posting and/or removal of fire prevention signs when assistance is warranted.
- Ensures requirements of sign plan are followed by assigned personnel and signs are returned to the Fire Mitigation Technician.

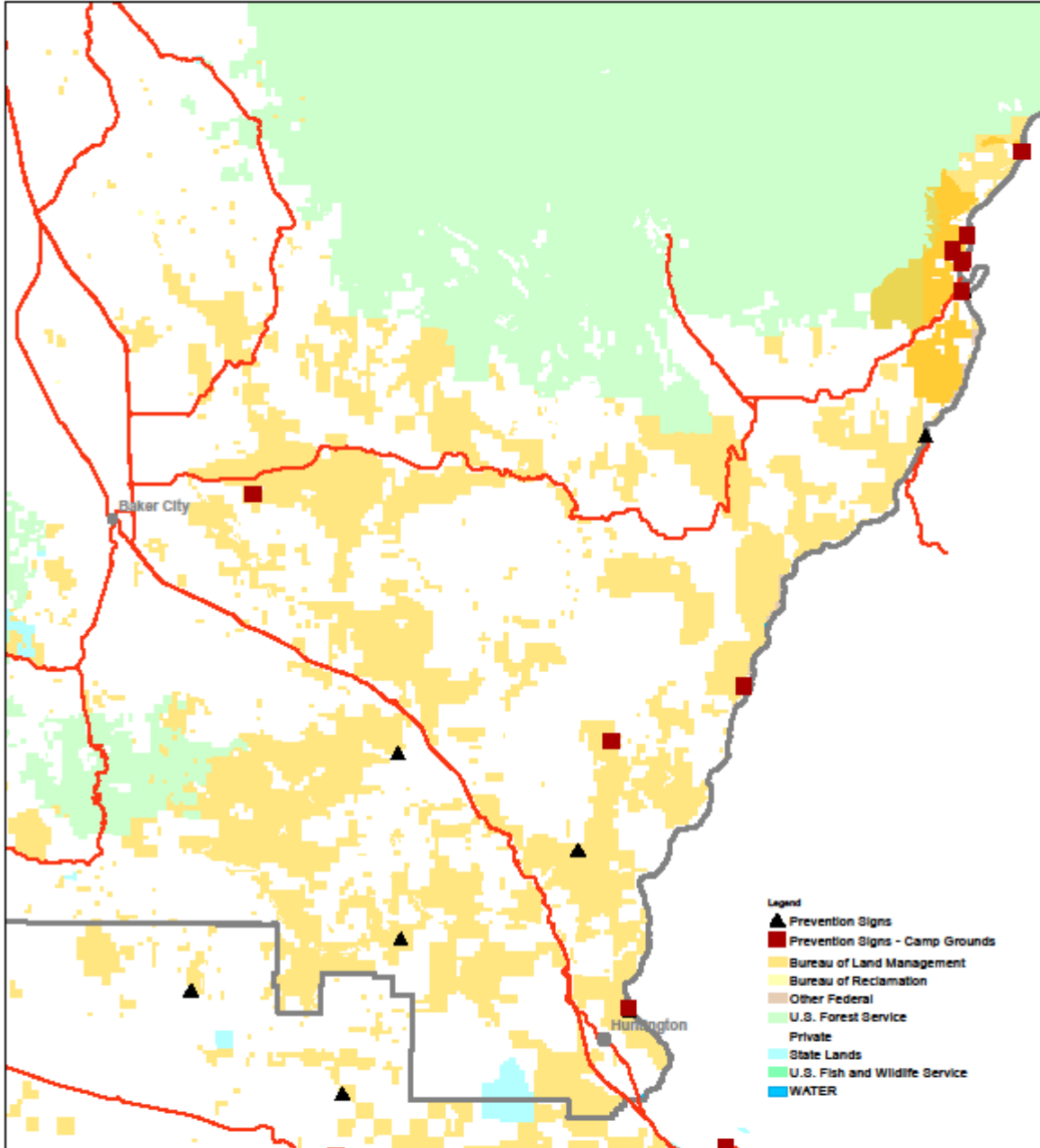
F. BAKER FIELD OFFICE

- Coordinates with Mitigation Specialist or Fire Mitigation Technician for signing requirement needs within the Baker Field Office, and to secure prevention poster inventory as needed.
- Normally responsible to post fire prevention and restriction information in Baker Field Office recreation and portal sites.

Malheur Field Office - Prevention Sign Locations



Baker Field Office - Prevention Sign Locations



0 4.25 8.5 17 Miles

0 6,500 13,000 26,000 Meters

U.S. Department of Interior
Bureau of Land Management



We District
02/19/2021

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Appendix F **RESTRICTION AND EMERGENCY CLOSURE PLAN**

I. PURPOSE

The purpose of fire restrictions and emergency closures is to reduce the risk of human-caused fires during periods of elevated fire danger and/or burning conditions. Fire restrictions address limitations on specific activities or uses of public lands. Restrictions impose many limitations on the general public and should be implemented only as a portion of an ambitious and successful prevention program.

II. AUTHORITY

Fire restrictions and closures can be invoked on federal lands under federal laws. The Vale District Manager is delegated this responsibility from the Oregon/Washington State Director to ensure the completion of all appropriate documents and the enforcement of restrictions and closures for BLM-managed public land within the Vale District boundary under the Federal Land Policy and Management Act of 1976 (43 U.S.C. 1701, et seq.), Sections 302(b) and 301(a) 43, CFR, Part 9210 (Fire Management) 43, CFR, Part 9212 (Wildfire Prevention)

In accordance with Interagency Agreement Number R14PG00092, between the Bureau of Reclamation Pacific Northwest Region, and the Bureau of Land Management Oregon/Washington State Office, for wildland fire suppression and related services, the district manager has been given the authority to issue, post, and enforce compliance for fire prevention orders on Bureau of Reclamation (BOR) lands within the Pacific Northwest Region, Snake River Area of the BOR. Coordination with the BOR must take place prior to the decision to implement restrictions and continue throughout until the order is lifted. The prevention order and signage are from both agencies. Bureau of Reclamation disseminates and posts the order through BOR chain of command and processes.

III. PROCESS FOR FIRE RESTRICTIONS

Before the onset of the fire season, the DM, Field Managers, Law Enforcement Office (LEO), Fire Managers, and Public Information personnel should review and validate the Restriction and Closure Plan and applicable agency documents.

A. INITIATION

When the fire danger conditions within an area approach critical levels, Fire Managers within the restriction area should begin planning for the initiation of fire restrictions. The planning process for restrictions may include a public awareness campaign to notify and keep the public informed, utilizing media outlets. The Fire Mitigation Specialist (FMS) should coordinate all restriction actions.

The FMS will initiate discussion with the Fire Management Staff regarding the need to implement restrictions within specified areas as fire danger conditions change. The FMO will be responsible for facilitating discussion among the Agency Administrators and BLM Law Enforcement Officers. This group should decide to implement or rescind area restrictions together, as needed. The District Manager has the final decision on the initiation and rescission of fire restrictions and closures.

Coordination should be started early enough so both field offices and neighboring agencies have time to plan, properly distribute the restriction documents, and notify the public.

B. IMPLEMENTATION

Many factors influence the need to implement public use restrictions. Weather, fuels conditions, and fire danger are monitored as conditions worsening. The identified thresholds listed in Fire Restriction Matrix signify conditions that may warrant the implementation of public use restrictions. As conditions approach the local Preparedness Level 3, discussions with Vale District management staff and Fire Management staff fire restrictions should occur regarding the need to place fire restrictions.

The FMS will coordinate approval of all agency documents. The District Manager is responsible for assuring that documents are completed and signed and supporting documentation is complete. The DM should allow a minimum of 48 hours to prepare for restrictions before the restriction goes into effect. It is recommended that restrictions should not go into effect for a week in advance to allow for proper posting, dissemination, and coordination of the order.

The FMS should also coordinate public notification with the Vale District Public Affairs Officer (PAO). Each Restriction and Closure Plan may include a media communications process. The media release must be clear and concise and understandable by the general public. Each area will be posted with signs and notifications to inform the public of the restrictions. The FMS and PAO are responsible for informing employees of the restrictions. Those responsible for public contact must be familiar with and have copies of the restrictions.

Once a restriction is in effect, all persons regardless of employment, origin, permit or authorized activity must comply with the restrictions(s), unless a written authorized fire waiver is in place. As waivers are issued, the waivers shall be filed with the Records Manager in the Vale District Office. The Records Manager will disseminate copies of the waiver to the FMO, affected field office managers, Vale Dispatch Center and Law Enforcement personnel via electronic filing.

Changes to the orders may occur as conditions warrant a change. Modifications to the Orders should be passed through the BLM Law Enforcement Division's Special Agent, prior to issuance. An example fire restriction order is included in this plan for reference that includes the uses that have been restricted historically.

C. RECISSION

Rescission of restrictions should be discussed by the Vale Executive Leadership Team (VELT) as conditions moderate. When the DM decides that restrictions should be removed, the FMS and PAO may coordinate the release of information to the public, cooperators, and agency employees. Upon rescission, all procedural requirements should be completed within 48 hours.

IV. CLOSURES

Closures are the closing of an area to entry or use. Emergency closures have an extreme impact on the public and fire agencies and are discouraged except under the most severe conditions. Closures should be implemented only in situations where the public's safety cannot be guaranteed. Closures are not justified by fire danger alone but should be driven by the potential for risk to life and safety due to extreme fire behavior, high potential for human-caused fires, severe shortages of resources, and/or numerous large fires.

When conditions exist that threaten firefighter and public safety, the DM can implement closures. These closures may involve multiple areas within the Vale District. Small-scale closures can also be implemented and can be used for isolated areas where public and firefighter safety is a concern. Implementation, rescission, and public notification of closures that occur on the Vale District should be conveyed to adjacent federal, state, and local agencies, and the Oregon /Washington State Director.

Key determining factors for implementing closures include:

- Potential loss of public life or property due to extreme fire conditions.
- Potential for extreme fire behavior that may put firefighter and public safety in jeopardy.
- Fire Restrictions are not effective in reducing the number of human-caused fires.
- Resources across the geographic area are at a critical shortage level.

A. FIRE RESTRICTION OPTIONS AND ZONES

Based on evaluation of key determining factors and additional considerations, managers have options for implementing fire restrictions. Option selection depends on the current and expected situation. These options are designed to offer flexibility and efficiency in the decision-making process.

1. **Option 1**

Restrictions implemented by FDRA across all authorized land ownerships.

2. **Option 2**

All BLM and BOR managed lands within the Vale District one statute mile from the Snake River, beginning at Farewell Bend downstream to the Hells Canyon Wilderness Area, and BLM managed lands located within one statute mile of the Owyhee River downstream from the Owyhee Dam to the intersection of the Owyhee Road and Overstreet Road.

3. **Option 3**

All BLM and BOR managed lands within the Vale District one statute mile from the Snake River, beginning at the Oregon/Washington border downstream to Fisher Gulch in Asotin County Washington, and BLM and BOR managed lands located within one statute mile of the Wallowa River and the Grande Ronde River beginning at Minam, Oregon downstream to the confluence of the Snake River.

4. **Option 4**

Restrictions implemented district wide on all BLM and BOR administered lands.

5. **Option 5**

Restrictions will be implemented District-wide on all BLM and BOR administered lands, except in designated developed recreation sites or other identified areas. Exempted sites will be identified in the prevention order.

6. **Option 6**

Restrictions will be implemented by County on all BLM and BOR administered lands. This is to represent the differences within local County government regulations and/or IFPL from cooperating agencies currently in effect.

7. **Option 7**

No Restrictions

V. **RESTRICTION SPECIFICS**

Once a geographic option is chosen, managers should decide which activities to restrict. The Industrial Fire Precaution Levels (IFPL) can be used as a reference in deciding which activities to restrict. However, careful consideration should be given as to the types of public uses on BLM and BOR lands that warrant restriction. This decision should be based on historical human-caused fire statistics on the unit, neighboring restrictions

from partner agencies, and current or anticipated threats based on current or expected public use.

Public use activities to consider:

- Fireworks
- Campfires and torches (open flame)
- Charcoal grills
- Portable braziers, stoves, heaters, and smokers (gas, electric, and wood-fired)
- Smoking
- Debris burning
- Shooting (tracer ammunition, incendiary ammunition, flares, metal targets, and steel component ammunitions)
- Exploding targets and other incendiary devices
- Chainsaw use
- Cutting, grinding, welding
- Gasoline powered equipment and small engines (such as generators) and electrical power tools
- Off-road vehicles and travel (including the use of e-bikes)
- Aerial luminaries (sky lanterns)
- Industrial operations (logging, mining, blasting, mowing, energy production)

VI. INDUSTRIAL FIRE PRECAUTION LEVEL

Industrial Fire Precaution Levels are fire prevention measures issued in collaboration with several agencies in northeast Oregon counties, primarily with the United States Forest Service (USFS) and the Oregon Department of Forestry (ODF). These restrictions can assist agencies in Northeast Oregon in reducing human caused fires associated with industrial operations by restricting certain activities across jurisdictional boundaries. The Vale District does not use IFPL as an implementation and communication tool for public use restrictions on BLM lands in Malheur County but does collaborate with ODF and the USFS to maintain consistency in the restriction levels between agencies in Grant, Union, and Baker counties. Therefore, restrictions implemented on BLM lands in Baker county should mirror or at a minimum closely resemble those in the IFPL. In areas of the Baker Field Office protected by the Umatilla National Forest (UNF) IFPL levels will normally follow those levels set by the UNF in Morrow, Umatilla and Asotin WA. Counties. This is done to standardize IFPL on BLM and National Forest lands, and to reduce confusion to the public and neighboring agencies and cooperators.

The FMS will coordinate with Blue Mountain Interagency Dispatch Center (BMIDC) concerning any changes to the IFPL levels on the Whitman portion of the Forest and will notify BLM staff of any pending IFPL changes. If the Vale DM or Field Managers do not concur with the forecasted Forest IFPL's, they will notify the FMO or FMS who should facilitate a conference call with the appropriate representatives from the Wallowa Whitman or Umatilla National Forest.

ODF Fire Restrictions and IFPL:

<https://www.oregon.gov/ODF/Fire/Pages/Restrictions.aspx>

VII. COMMUNICATION

The following administrative agencies should be notified of impending restrictions, dates, maps of restriction areas, etc., prior to releasing the information to the public. This will be accomplished by the key members identified in this plan. Enough information will be provided to them to have the ability to accurately answer questions from their local constituents. However, it is the responsibility of every employee to contact the members of key external contact groups within their respective area of influence prior to an official release. This includes but is not limited to: permit holders, contractors, partnering agencies, local governments, right-of-way holders, and key local businesses.

Fire Departments

- Snake River Valley Chiefs Association
- Baker Fire Defense Board
- Baker County Emergency Management Coordinator
- Baker Fire Prevention Team
- Malheur County Emergency Management Coordinator
- Malheur County Fire Chief

Law Enforcement Agencies

- Malheur County Sheriff Dept.
- Union County Sheriff Dept.
- Baker County Sheriff Dept.
- Wallow County Sheriff Dept.
- Umatilla County Sheriff Dept.
- Morrow County Sheriff Dept.
- Asotin County Sheriff Dept.
- Oregon State Police
- Washington State Police
- Harney County Sheriff Dept.
- Grant County Sheriff Dept.

State and Local Agencies

- Oregon Dept. of Transportation
- Oregon Dept. of Fish and Wildlife
- Oregon Dept. of Forestry
- Oregon Dept. of State Lands
- Oregon State Parks
- Washington DNR (Asotin County)

Neighboring Federal Agencies

- Bureau of Reclamation
- Malheur National Forest
- Wallow Whitman National Forest
- Umatilla National Forest
- BIFZ- Burns BLM
- Winnemucca BLM
- Boise District BLM
- Payette National Forest
- Spokane BLM
- Prineville BLM

Tribes

- Fort McDermitt Paiute Tribe
- Burns Paiute Tribe
- Confederated Tribes of the Umatilla Reservation

Rangeland Fire Protection Associations (RFPA)

- Ironside RFPA
- Lookout/Glasgow RFPA
- Jordan Valley RFPA
- Juntura RFPA
- Greater Pine Valley RFPA
- Blue Mountain RFPA
- Vale RFPA
- Burnt River RFPA
- Owyhee RFPA
- Crane RFPA
- Fields/Andrews RFPA

Additionally, fire restriction orders and notices should be posted on the following websites:

<https://www.blm.gov/office/vale-district-office>

<https://www.blm.gov/programs/public-safety-and-fire/fire-and-aviation/regional-info/oregon-washington/fire-restrictions>

<https://www.blm.gov/alert/fire-closures-and-fire-restrictions>

<http://bmidc.org/restrictions.shtml>

VIII. FIRE WAIVERS

The objective of granting a waiver is to allow an operator or permit holder to continue operating if the risk of ignition can be mitigated through one or typically more mitigation measures implemented to prevent fires. Depending on the restrictions listed in the prevention order, the mitigations in the waiver must adequately address the potential threat.

Fire restrictions and the use of fire waivers applies to all public land users including agency employees. The waiver process must be used prior to initiation or continuation of any field work that potentially violates a fire restriction(s). Before work is implemented, a waiver(s) must be submitted and approved. Copies of the approved fire

waiver(s) must accompany the field-going personnel on the project. If waivers are not “in-hand”, the project must cease work.

For instructions on completing and filing a fire waiver, see fire prevention standard operating procedures.

A. ATTACHMENT 1: FIRE RESTRICTION DECISION MATRIX

AUTHORIZED OFFICER'S FIRE RESTRICTIONS DECISION MATRIX				
Date:	District Office:			
Key Determining Factors				
<i>At least 3 of the rating factors should be met prior to placing a District level fire prevention order in effect in the impacted FDRA.</i>	Yes	No		
1. Local Preparedness Level and Response Level is 3 or higher				
2. Direct sampling of Live Fuel Moisture % at designated sites is 100 or lower				
3. Energy Release Component is at the 60 %tile or higher.				
4. Three or more of the Risk Indicators below have reached identified thresholds.				
Risk Indicators				
<i>Additional considerations</i>	Yes	No		
National Weather Service 7 day weather forecasting in predicting worsening conditions.				
Predictive Services products (drought indexes, climate outlook conditions, etc) indicate the presence, onset, or likelihood of significant fire potential.				
Local fire danger adjective class 7 day average is HIGH or above as determined by fire business breakpoints.				
Factors that diminish the ability to effectively respond to and suppress fires are present; such as a lack of available resources, a lack of funding, high levels of local fire occurrence, or political issues.				
Life safety and higher than normal threat to property and infrastructure. (On-going large fires or high levels of local or regional initial attack)				
The affected zone is or will see a high amount of public use, beyond the normal occurrence level. (i.e. special events such as the Solar Eclipse event of 2017)				
Fine fuel loading is above normal in the rating area.				
Recommendations				
Recommended Action	FMO	BFO	MFO	LEO
The BLM should proceed with public use restrictions.				
The BLM should not proceed at this time. Continue to evaluate.				
The BLM should not proceed and remove any restrictions.				
Recommended Option Selection	FMO	BFO	MFO	LEO
Option 1 – Restrictions by FDRA				
Option 2 – Snake and Owyhee Rivers				
Option 3 – Snake, Wallowa, and Grande Ronde Rivers				
Option 4 – District-wide restrictions				
Option 5 – District-wide restrictions, with exemptions				
Option 6 – Restrictions by County				
Option 7 – No restrictions				
Recommendation Rationale <i>(reference attached supporting documentation here, continue on page 2 if necessary):</i>				
Authorized Officer's (DM/AM) Recommendation (circle one): Proceed Do Not Proceed				
Rationale (continue on page 2 if necessary)				
Authorized Officer's (DM/ ADM) Signature:	Printed Name:	Date:		

B. FIRE RESTRICTION CRITERIA

	Juniper Belt FDRA 2	Grasslands FDRA 3
Preparedness Level		
ERC %		
Live Fuel Moisture %	Keating Shirttail Pole Creek	Keeney Jackson Rome
National Weather Service 7 day weather forecasting in WIMS predicting worsening conditions.		
Predictive Services products (drought indexes, climate outlook conditions, etc)		
Local Fire Danger Adjective Class		
Factors that diminish the ability to effectively respond to and suppress fires; such as a lack of available resources, a lack of funding, high levels of local fire occurrence, or political issues.		
Life safety and higher than normal threat to property and infrastructure. (On-going large fires or high levels of local or regional initial attack)		
The affected zone is or will see a high amount of public use, beyond the normal occurrence level.		
Fine fuel loading		

Recommendation Rationale (continued):

Authorized Officer’s Recommendation Rationale (continued):

C. ATTACHMENT 2: FIRE PREVENTION ORDER EXAMPLE

In Reply Refer to: 9212 (ORV004)

Notice of Emergency Fire Prevention Orders on Public Land within the Vale District, Bureau of Land Management (BLM) and Bureau of Reclamation (Reclamation)

AGENCY: Bureau of Land Management, Vale, Oregon / Reclamation, PN Region
ACTION: Emergency Fire Prevention Orders for public land within the boundaries of the Vale District BLM.
SUMMARY: The BLM and Reclamation are temporarily prohibiting some activities and uses of the public lands within the boundaries of the Vale District (BLM) during periods of high fire danger. This regulation is necessary to protect natural resources and the public's health and safety.
DATES: Beginning on July XX, 20XX and will remain in effect until rescinded.
DISCUSSION: These orders will apply to all public lands administered by the Vale District BLM and lands under the jurisdiction of Reclamation within the boundaries of the BLM Vale District. These agencies have determined that these orders are necessary to protect natural resources and provide for public safety. Reclamation lands administered by agencies other than the BLM will determine their own restrictions. Pursuant to 43 CFR 9212.2 and 43 CFR 423.3(d), the following acts are prohibited on lands administered by the Bureau of Land Management (Vale District) and Reclamation jurisdictional lands within the Vale District (BLM):

Orders to be enforced:

1. **You must not build, maintain, or attend a fire, or wood stove or smoker fire, including charcoal briquette fires and portable braziers.** NOTE: Liquefied and bottled gas stoves, smokers and heaters are permitted. When used outside of developed recreation sites, they must be within an area at least ten (10) feet in diameter that is barren, or clear of all flammable materials.
2. **You must not smoke outside of a vehicle, trailer or building, except within areas barren of all flammable materials for at least a six (6) foot diameter, or aboard boats on rivers and lakes.**
3. **You must not possess, discharge or use any type of fireworks or other pyrotechnic device, to include exploding targets, or tracer or incendiary ammunition.**
4. **You must not operate a chainsaw.**
5. **You must not operate or park your motorized vehicle or operate any other type of internal combustion engine in an area that is not clear of flammable material.**
6. **You must not operate any motorized vehicle with a combustion engine outside of existing roads or ways. This prohibits cross-country travel until this order is rescinded.**
7. **You must not operate any motorized vehicle or equipment that is wider than 46 inches or has a dry weight of 700 pounds or more, on public lands without a shovel not less than 26 inches in overall length, with a blade not less than 8 inches wide, and a container with at least one gallon of water, or a fully charged 2.5 pound fire extinguisher. All motorcycles, All-Terrain Vehicles (ATV), and side-by-side Utility Terrain Vehicles (UTV) must be equipped with a functional U.S. Forest Service approved spark arrestor.**

PENALTIES: On BLM lands, under section 303(a) of the Federal Land Policy and Management Act of 1976 (43 U.S.C. 1733 (a)) and 43 CFR 9212.4, any person who violates any of the supplementary rules within the boundaries established in the rules may be tried before a United States Magistrate and fined no more than \$1,000 or imprisoned for no more than 12 months, or both. Such violations may also be subject to the enhanced fines provided for by 18 U.S.C. 3571. On BOR project lands under section (1)(a) of Pub. L. 107-69, you are subject to a fine under chapter 227, subchapter C of title 18 United States Code (18 U.S.C. 3571), or can be imprisoned for not more than 6 months, or both, if you violate:

- a) The provisions of this part 423; or
 - b) Any condition, limitation, or prohibition on uses or activities, or of public use limits, imposed under this part 423.
- Pursuant to 43 CFR 9212.3(a) and 43 CFR 423.3(d), the following persons are exempt from this order:
- 1 Persons with a permit specifically authorizing the otherwise prohibited act or omission.
 - 2 Any Federal, State, or local officer or a member of an organized rescue or firefighting force in the performance of an official duty.

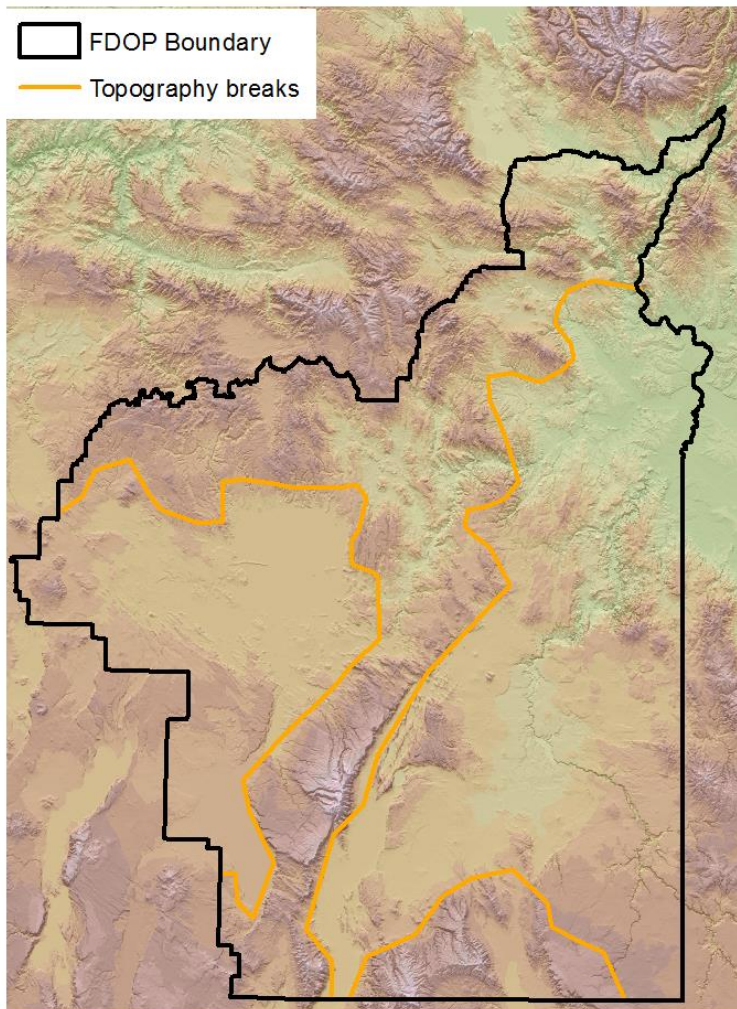
District Manager

Date

Appendix G FIRE DANGER RATING AREA DELINEATIONS

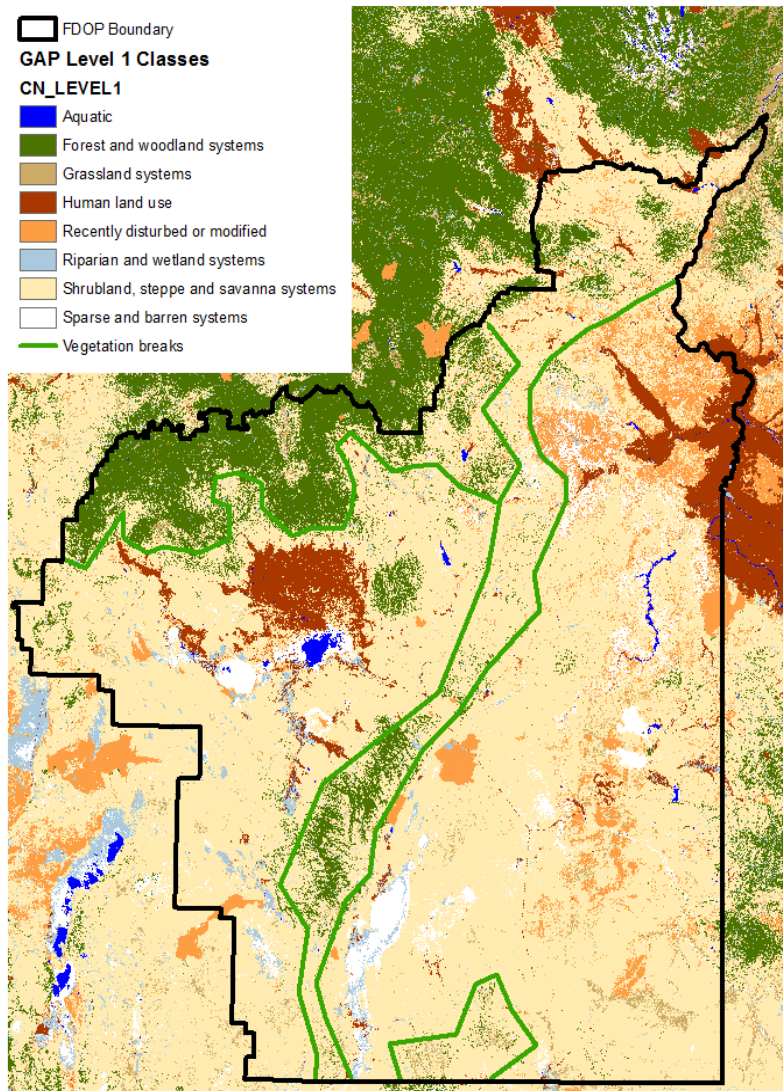
I. TOPOGRAPHY

Terrain throughout Southeast (SE) Oregon can be defined by fault-block mountain ranges, steep walled basins, and high isolated buttes. Topographic delineations were made based on a combination of Digital Elevation Model, Color Hillshade, and 1,000 ft contour layers available on the Oregon State Office GIS layers, viewed through ESRI's ArcMap System. Delineations were made with no recognition of land ownership or administrative boundaries.



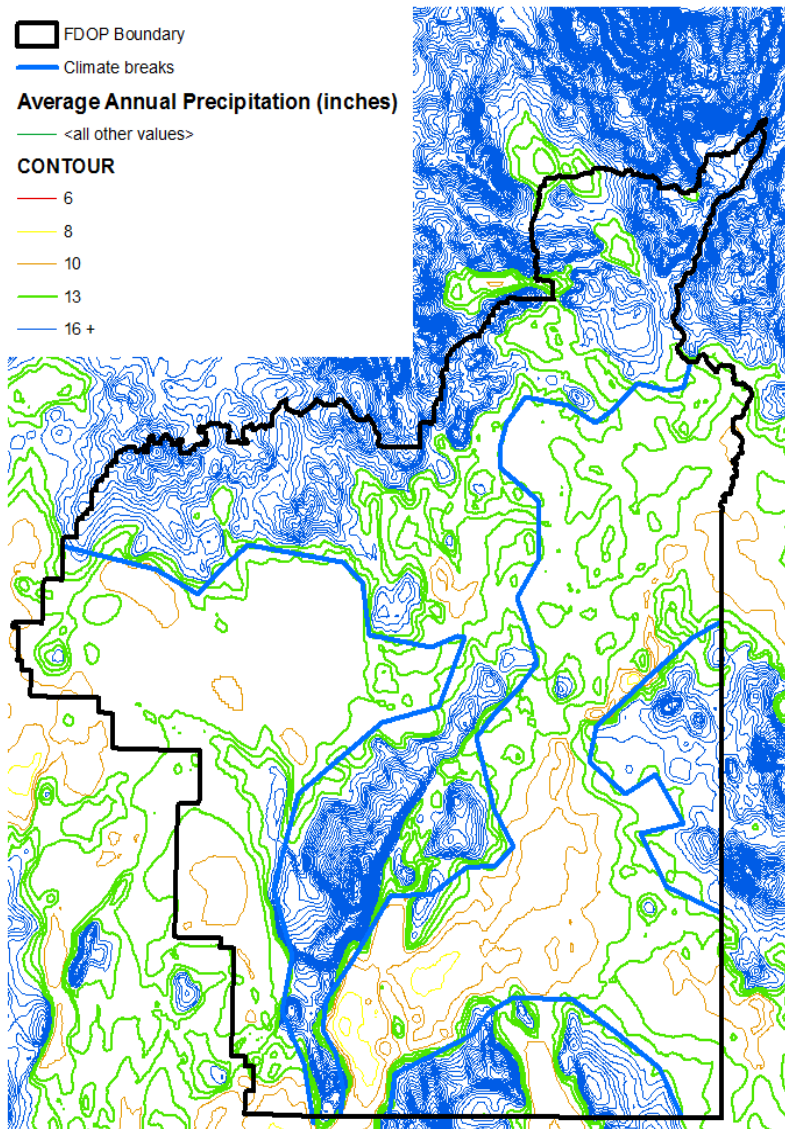
II. VEGETATION

Vegetation throughout SE Oregon can be defined as an ocean of sagebrush, juniper, and bunchgrasses. This is the land of Basin and Range in Oregon, the northwesternmost extent of America's Great Basin. Because this is a dry savannah type environment typical of the Great Basin, the primary factors driving delineations was the presence of Forest and Woodland systems, as characterized utilizing GAP Level 1 Veg classes. This GIS layer is available through the Oregon State Office.



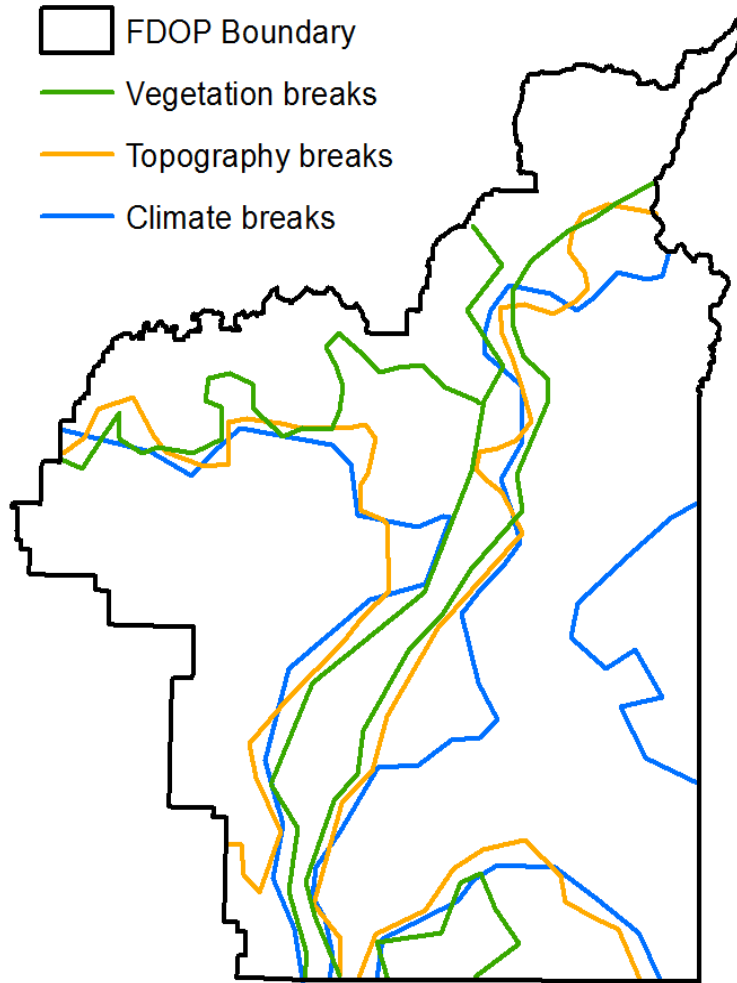
III. CLIMATE

General climate throughout this area is relatively dry, classified as semi-arid, with large areas receiving no more than 12 inches of precipitation a year. Delineations were made based on average annual precipitation, as this is a limiting factor in vegetation growth across the planning area.



IV. ALL DELINEATIONS

The following map is a combination of all delineations. Final Fire Danger Rating Area boundaries were pulled to primary roads for ease of description and communication. FDRAs span administrative boundaries and include all ownerships.

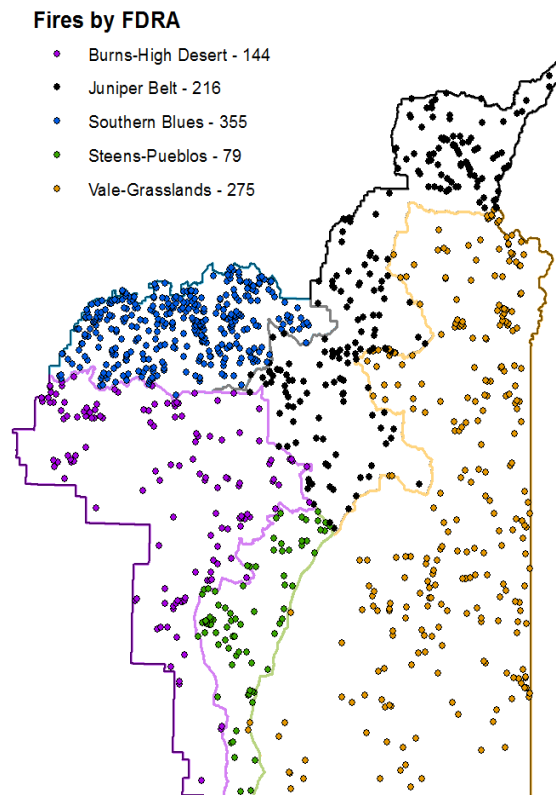


Appendix H FIRE OCCURRENCE

Fire occurrence is compared against calculated same-day fire danger values to find statistical relationships between fire activity and fire danger. This allows NFDRS2016 fire danger metrics to be used to help predict fire activity and related fire management business.

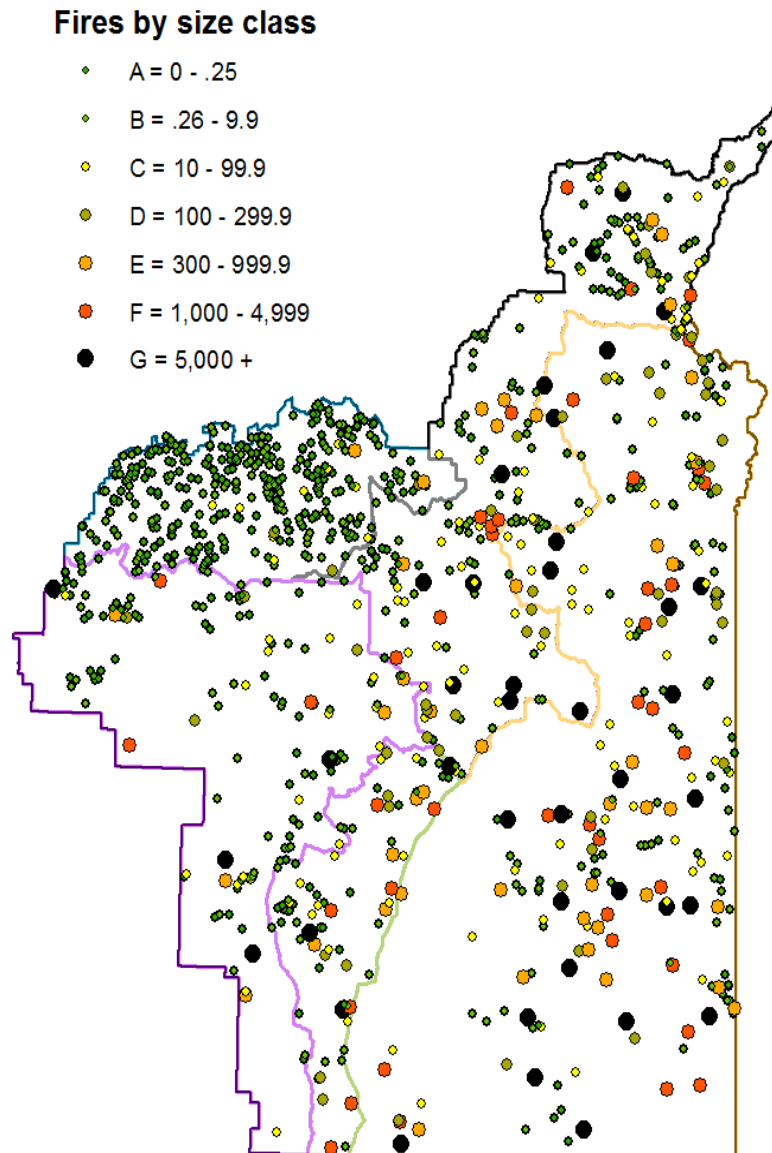
Fire occurrence data for federal agencies, and most states within the U.S., are available from multiple resources in a variety of file formats. There is no authoritative standard. There are also known data quality issues, which vary across the available corporate datasets. The fire occurrence dataset used in this analysis was a combination of the Fire Program Analysis – Fire Occurrence Dataset (FPA FOD) along with agency specific sources to complete a 10 year fire history.

The FPA FOD is a national scale, quality controlled, consolidated dataset that draws from most of the available reporting systems. It is managed by Karen Short of the Rocky Mountain Research Station (RMRS), and is updated annually with an average of two years lag time. The current dataset contains data from 1996 through 2015 and has all the fields needed for a FireFamilyPlus fire business analysis.



I. FIRES BY SIZE CLASS

Fires were classified based fire size classes as defined by the NWCG.



Appendix I FIRE FAMILY PLUS ANALYSIS

I. FIREFAMILYPLUS ANALYSIS PARAMETERS

Table 10: FireFamilyPlus Parameters

Large Fire Size (acres)	3
Multiple Fire Day (fires/day)	3

SIG: FDRA 1: Southern Blues

Weather Station Number →	352305	353501	353515
Weather Station Name	Crane Prairie	Allison	Crow Flat
NFDRS Fuel Model	Y	Y	Y
Data Years Used in Analysis	2009-2018	2009-2018	2009-2018
Weight	1.0	1.0	1.0

Large Fire Size (acres)	50
Multiple Fire Day (fires/day)	2

SIG: FDRA 2: Juniper

Weather Station Number →	352420	353522	353613
Weather Station Name	Morgan Mountain	Bald Mountain	Kelsey Butte
NFDRS Fuel Model	Y	Y	Y
Data Years Used in Analysis	2009-2018	2009-2018	2009-2018
Weight	1.0	1.0	1.0

Large Fire Size (acres)	500
Multiple Fire Day (fires/day)	2

SIG: FDRA 3: Grasslands

Weather Station Number →	353612	353613	353614	353618
Weather Station Name	Grassy Mountain	Kelsey Butte	Owyhee Ridge	Alkali Flat
NFDRS Fuel Model	Y	Y	Y	Y
Data Years Used in Analysis	2009-2018	2009-2018	2009-2018	2009-2018
Weight	1.00	1.00	1.00	1.00

Large Fire Size (acres)	150
Multiple Fire Day (fires/day)	2

SIG: FDRA 4: Steens-Pueblós

Weather Station Number →	353424	353511	353526
Weather Station Name	Rock Creek	Riddle Mountain	Moon Hill
NFDRS Fuel Model	Y	Y	Y
Data Years Used in Analysis	2009-2018	2009-2018	2009-2018
Weight	1.00	1.00	1.00

Large Fire Size (acres)	300
Multiple Fire Day (fires/day)	2

SIG: FDRA 5: High Desert

Weather Station Number →	353520	353521	353525
Weather Station Name	Basque Hills	P-Hill	Foster Flat
NFDRS Fuel Model	Y	Y	Y
Data Years Used in Analysis	2009-2018	2009-2018	2009-2018
Weight	1.00	1.00	1.00

Appendix J FIRE DANGER RATING AREA DETAILS

I. FDRA 1: SOUTHERN BLUES

A. GENERAL LOCATION:

The Southern Blues FDRA parallels HWY 20 to the north along the ecotone dividing sagebrush steppe to the south and dry pine forests to the north. The east/west borders of this FDRA are roughly represented by Harney County. The majority of the FDRA falls in the jurisdiction of the Emigrant Creek Ranger District of the Malheur Forest, however much of the southern end of this FDRA is a mix of Burns District BLM and privately owned ground. There are some large inholdings of private land within this FDRA, with the Silvies Valley Ranch being the most notable (located centrally in this FDRA).

B. VEGETATION:

Dry Ponderosa pine forests dominate this landscape, however there is a spectrum of unique vegetation sites intermixed in this vegetation. In general, this deviation from dry pine sites can be correlated in potential productivity going above the resource needs supporting growth of ponderosa pine. The more productive areas express mixed conifer species and the less productive sites express sage-steppe vegetation (much of which has substantial encroachment of western juniper and mountain mahogany). There are also inclusions of quaking aspen stringers which are typically correlated to wet sites with riparian vegetation.

C. CLIMATE:

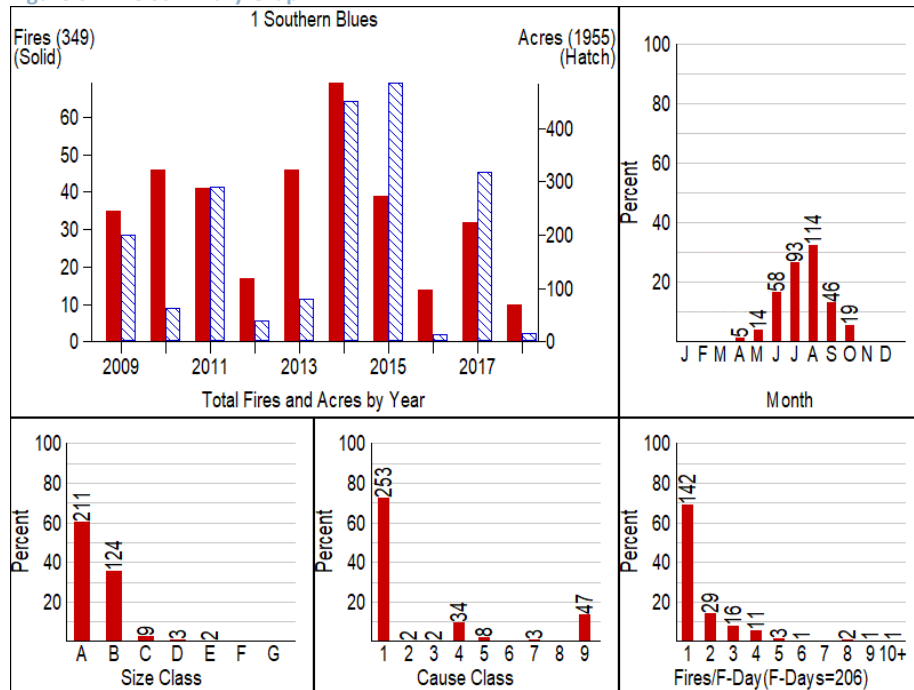
Climate is typical of the northern Great Basin, with cold-wet winters and wet springs, and warm-dry summers. Based on the PRISM (Parameter-elevation Regressions on Independent Slopes Model; OSU) based GIS products, annual precipitation within Southern Blue FDRA ranges from 12" at some of the lower elevation dry sites to the south and upwards of 30" in high elevation locations to the north (such as Snow Mountain). Mean annual temperatures at the Burns airport average 37 degrees F in the winter (December-February), and 62 degrees F in the summer (June-August).

D. TOPOGRAPHY:

In general elevation rises from the south to the north in this FDRA, with numerous drainages dissecting the landscape. Predominate flow is from north to south with majority of watersheds dropping into the Harney Basin. However, there are small upper reaches to two watersheds within this FDRA that are ultimately sea run; the John Day River system to the north central and the Malheur river system to the north east. Elevation within this FDRA ranges from 4,200 feet on the southern end near Harney Basin to over 7,000 feet at the northern end at Snow Mountain.

E. FDRA 1: SOUTHERN BLUES – FIRE SUMMARY GRAPH

Figure 3: Fire Summary Graph



Size Class:

- A = 0 — .25 acres
- B = .30 — 9 acres
- C = 10 — 99 acres
- D = 100 — 299 acres
- E = 300 — 999 acres
- F = 1000 — 4999 acres
- G = 5000 + acres

Cause Class:

- 1 = Lightning
- 2 = Equipment
- 3 = Smoking
- 4 = Campfire
- 5 = Debris Burning
- 6 = Railroad
- 7 = Arson
- 8 = Children
- 9 = Misc

II. FDRA 2: JUNIPER

A. GENERAL LOCATION

This FDRA incorporates the Oregon communities of Crowley, Venator, Riverside, Juntura, Drewsey, Westfall, Crane, Buchanan, and Ironside.

B. VEGETATION:

Vegetation within this FDRA can be characterized as sage-steppe. Along the lower elevations within this FDRA, multiple disturbances resultant of wildfire has created areas where annual grasses dominate; specifically cheat grass and medusa head wild rye. Other areas are typical sage-steppe with Mountain and Wyoming big sagebrush and perennial grasses that transition to juniper woodlands with gains in elevation and latitude.

C. CLIMATE:

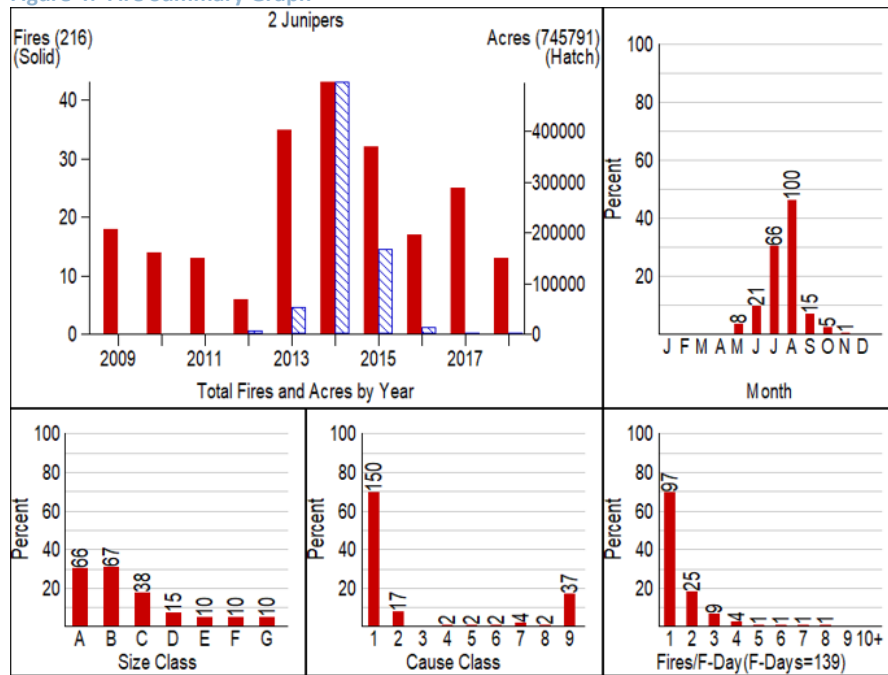
Much of this area is over the 13-inch precipitation zone. Snow tends to accumulate beginning in October, with spring run-off lasting through April. Much of the precipitation occurs as winter snow and spring rains. Summers tend to be dry.

D. TOPOGRAPHY:

This FDRA is characterized by numerous rocky peaks over 5,000 feet. The southern end of the FDRA is a transition from the Steens Mountain range to the Stockade range. Many peaks are prevalent in between highway 20 and highway 26, the most notable is Castle Rock. The series of jagged peaks continue north throughout Baker county to all edges of the FDRA.

E. FDRA 2: JUNIPER – FIRE SUMMARY GRAPH

Figure 4: Fire Summary Graph



Size Class:
 A = 0 — .25 acres
 B = .30 — 9 acres
 C = 10 — 99 acres
 D = 100 — 299 acres
 E = 300 — 999 acres
 F = 1000 — 4999 acres
 G = 5000 + acres

Cause Class:
 1 = Lightning
 2 = Equipment
 3 = Smoking
 4 = Campfire
 5 = Debris Burning
 6 = Railroad
 7 = Arson
 8 = Children
 9 = Misc

III. **FDRA 3: GRASSLANDS**

A. **GENERAL LOCATION:**

This FDRA incorporates the Oregon communities of: Brogan, Vale, Ontario, Nyssa, Jordan Valley, Burns Junction, and Rome.

B. **VEGETATION:**

This FDRA is characterized by great basin fuel types. Shrub species with grass understories can be found throughout the FDRA. Annual grasses are prevalent, and in some areas, the dominant vegetation. Agricultural fields are found in the North of this FDRA surrounding the communities of Brogan, Vale, Nyssa, and Ontario. In the far southern end of the FDRA, decadent stands of Wyoming and Mountain sagebrush dominate. The rest of the FDRA is primarily grasses with patches of shrub islands. Small, isolated patches of pinon junipers can be found along the east boundary and into Idaho, south and east of Jordan Valley Oregon.

C. **CLIMATE:**

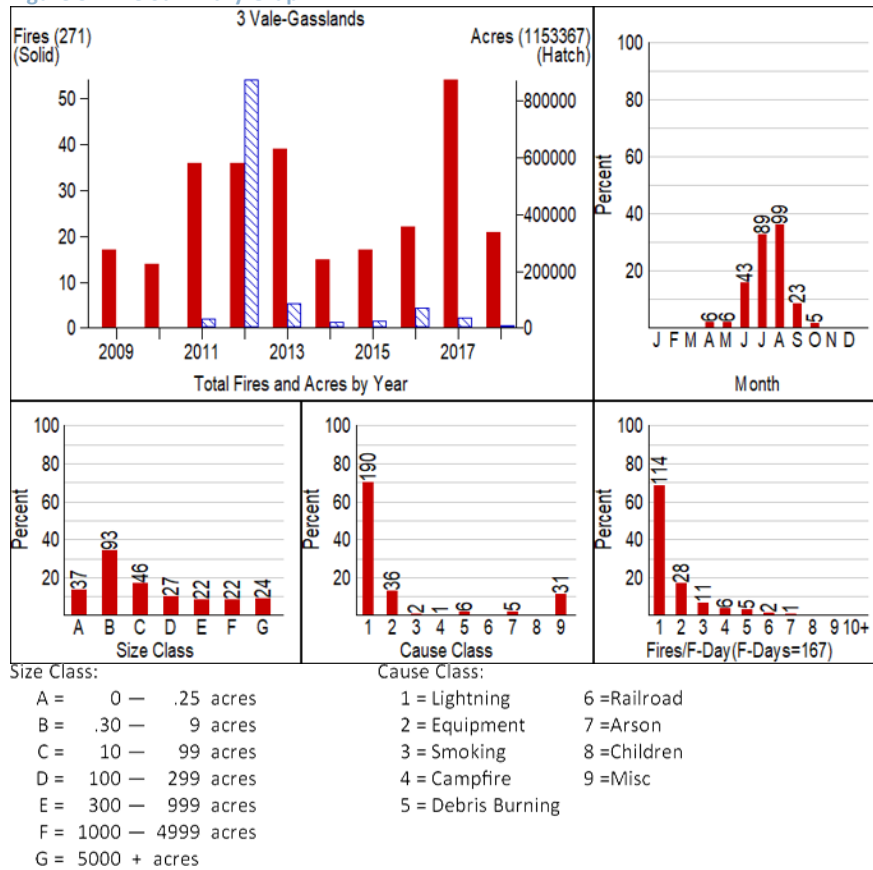
Much of this FDRA is near the 10 in precipitation zone, associated with the Snake River Plains. There are areas with peaks that receive abundant precipitation. The Sheepshead Mountains west of Burns Junction and the area around Mahogany Mountain, north of Jordan Valley, receive approximately 20 inches of precipitation. In the southern end of the FDRA, the Trout Creek Mountains and area south of Jackson Summit near McDermitt Nevada can receive yearly precipitation near 30 inches.

D. **TOPOGRAPHY:**

Much of this FDRA is below 5,000 ft elevation, except for the far southern portion surrounding McDermitt, Nevada and various peaks scattered throughout. Rivers cut through this landscape creating steep canyons and distinct divides with very little opportunities to cross. The remaining portions of this FDRA are rolling desert plains typical of the Great Basin.

E. FDRA 3: GRASSLANDS – FIRE SUMMARY GRAPH

Figure 5: Fire Summary Graph



IV. FDRA 4: STEENS-PUEBLOS

A. GENERAL LOCATION:

The Steens-Pueblos FDRA is named after the respective mountain ranges captured within. The Pueblo mountains originate to the south near the Oregon-Nevada border to the west of Denio, NV, and run up to the north of Fields, OR, where Hwy 205 goes up and over Long Hollow pass and into Catlow Valley. Long Hollow Pass designates the transition from the Pueblos into the Steens mountains. The Steens mountain runs roughly from southwest to northeast and is capped to the north by the Folley Farm pass on Hwy 78. Communities that skirt around the Steens Mountain are: Frenchglen to the northwest, Diamond to the North, Andrews to the east, and Fields is located on the southern end.

B. VEGETATION:

Vegetation is just as varied as the topography exhibited on the Steens. Lower elevations express typical sage-steppe plant communities, with some small inclusions of salt desert-shrub communities on the eastern side along the Alvord

Desert. Along with the progressive rise of the mountain, there is also in general a rise in annual precipitation and plant productivity. Moving up the mountain, the varieties of big sagebrush shift from more arid adapted varieties such as Wyoming and basin and into the heartier, yet more water dependent varieties such as mountain big sagebrush. Along with this increased productivity other woody species also increase, with a notable band of western juniper entering most plant communities at approximately 5,500 feet elevation in northern aspects and slightly higher on southern facing aspects. Juniper dominance begins to drop out of communities above elevations of 7,000 feet, and quaking aspen becomes more dominant in wetter sites and mountain sagebrush and mahogany are more dominant in the drier sites. Due to the long winters and heavy snow loads on the higher elevation sites, much of the vegetation above the 7,500-8,000-elevation range becomes alpine and stunted in growth form.

C. CLIMATE :

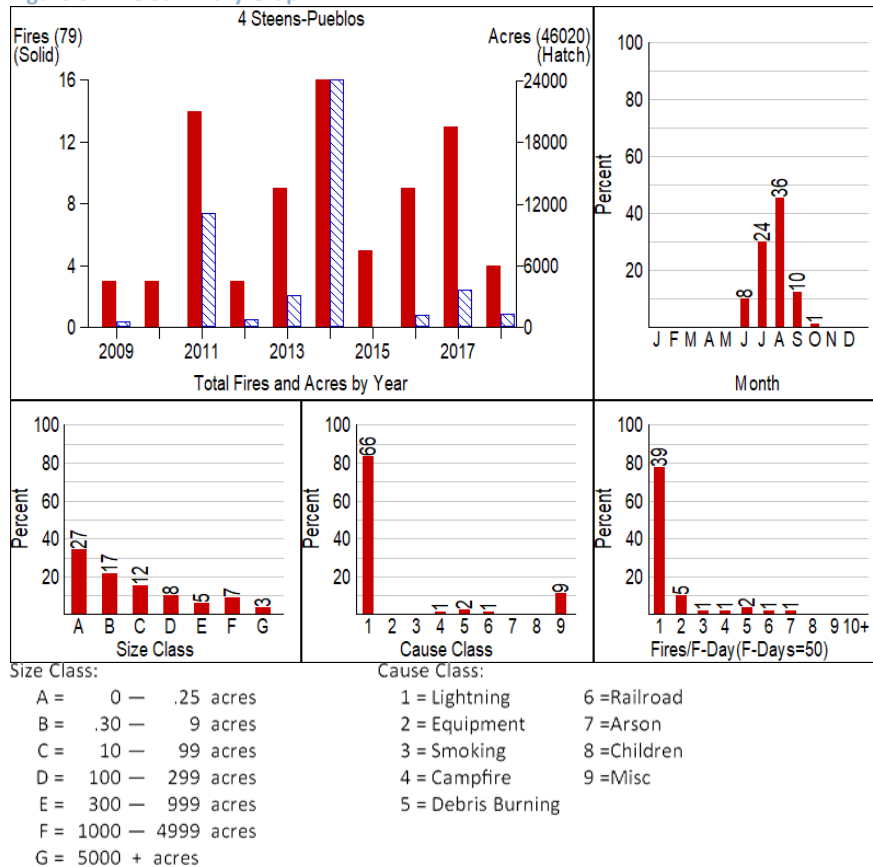
Climate on the Steens-Pueblos runs the spectrum from dry desert (Alvord Desert) in the rain shadow on the eastern side, to wet alpine areas in the higher elevations that run snowmelt summer long. Climate is typical of the northern Great Basin, with cold-wet winters and wet springs, and warm-dry summers. Based on the PRISM based GIS products, annual precipitation within the Steens-Pueblos FDRA ranges from 8" on the lower elevations on the eastern side, to nearly 50" inches in the higher elevation sites. Due to the Steens impressive topography, this mountain range has a strong influence on general weather patterns moving through the area. Storms typically become split or track around this feature. During the summer this is a common area for thunderstorms to develop.

D. TOPOGRAPHY :

Topography is largely what the Steens Mountain is known for. The Steens is a large, lifted fault-block that abruptly drops on its eastern side from elevations of nearly 10,000 feet to just above 4,000 feet on the Alvord Desert. On the western side of the mountain, the lifting of this block is subtle in comparison to the eastern side, however there are impressive glacially created gorges associated with the streams that run off the mountain to the west and north. Notable examples of these gorge drainages are: Kiger, Little Blitzen, and Big and Little Indian Creeks. These sharply cut drainages significantly fragment navigation on the Steens mountain.

E. FDRA 4: STEENS-PUEBLOS FIRE SUMMARY GRAPH

Figure 6: Fire Summary Graph



V. FDRA 5: HIGH DESERT

A. GENERAL LOCATION:

This FDRA encompasses all the lower elevation, drier sites on Burns District. The boundary runs from the western border of the Burns District into the higher elevation FDRA's to the east and north (Steens-Pueblos, Juniper Belt, and Southern Blues; respectively). Numerous communities and the bulk of the Harney County population are captured within this FDRA. Some of the communities within and adjacent to this FDRA include: Burns-Hines, Riley, Wagontire, Crane, Lawen, Princeton, Frenchglen, Fields, and Denio.

B. VEGETATION:

Most of the vegetation within this FDRA is sage-steppe habitat represented by drier varieties of big sagebrush, such as Wyoming and basin. These drier sites are the most susceptible to conversion to annual grasses. In general, the areas within this FDRA that have burned from wildfires have a high level of annual grass in the vegetation community. Many of the older (>20 years) burn scars were aggressively seeded with non-native cultivars such as crested wheatgrass, and most of these

“seedings” are still intact. More recent (<20 years) burn scars typically have a much higher level of annual grasses still present. Within this area there are small inclusions of salt desert shrub vegetation that is typically located around alkaline lakebed playas. Much of the ground within the Harney Basin (north central portion of this FDRA) is private and has been converted to agricultural uses; predominately pivots for alfalfa but also some flood irrigated meadow systems as well. The Malheur National Wildlife Refuge spans the central portions of this FDRA and is predominately associated with riparian systems (predominately the Blitzen system to the south and the Silver Creek system to the west). Most of this area is flood irrigated in the spring and supports riparian vegetation that stays relatively wet through the peak summer months.

C. CLIMATE:

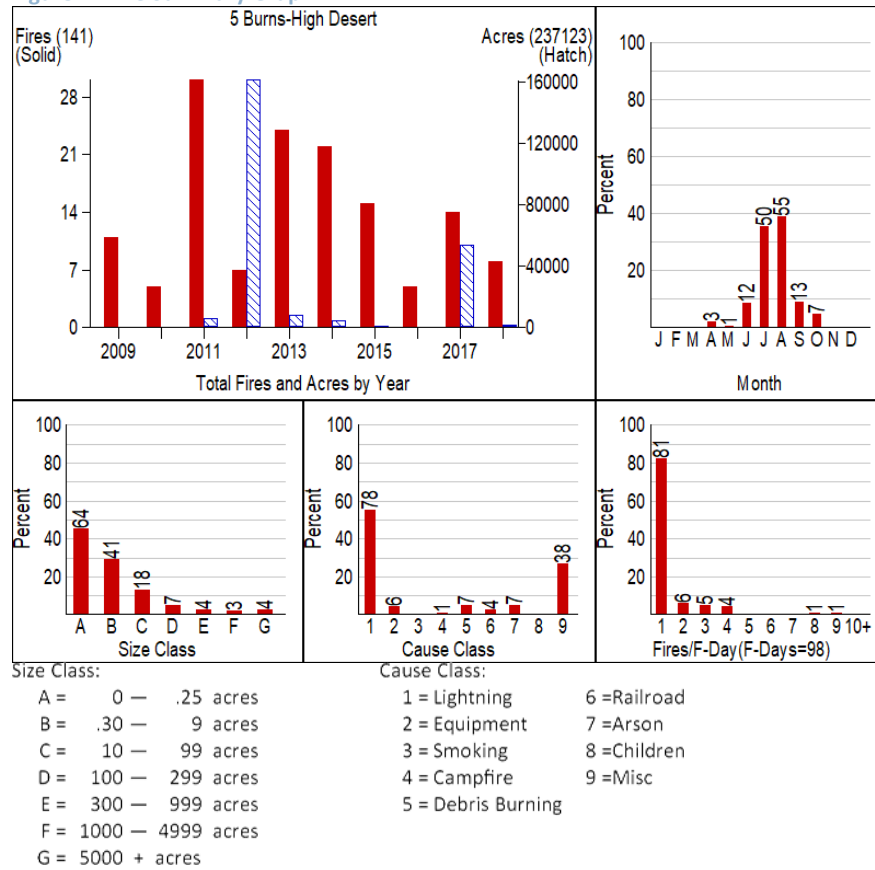
Climate is typical of the northern Great Basin, with cold-wet winters and wet springs, and warm-dry summers. Based on the PRISM based GIS products, annual precipitation within this FDRA ranges from 10” in the drier sites such as Catlow Valley, to upwards of 16” on some of the elevated features such as Square Mountain to the south. In comparison to the other FDRA’s on the Burns District, this FDRA represents the driest sites that are exposed to the longest fire season.

D. TOPOGRAPHY:

Topography is relatively flat through most of this FDRA, although there are some elevated features within. Some of the more notable features contained within this FDRA include: Square and Hawks Mountains to the south, Jack Mountain Rim (paralleling Hwy 205 north of Frenchglen), and Wagontire and Squaw Butte to the northwest. Elevation averages 4,500-5,000 feet across most of this FDRA, however some of these features (such as Wagontire; 6,440 feet) raise substantially above this elevation.

E. FDRA 5: HIGH DESERT – FIRE SUMMARY GRAPH

Figure 7: Fire Summary Graph



Appendix K **STATISTICAL ANALYSIS**

Prior to completing any analysis using FireFamilyPlus software, all daily weather observations were reviewed for accuracy. Outliers were verified, gaps in data were corrected, and station compliance was verified. Fire occurrence data was also reviewed for accuracy. It is a best practice to use 10 years of data to perform analysis. The analysis period for this FDOP is 2009-2019.

Scientific literature has shown that climatological patterns in the western United States has shifted, particularly in the last 20 years. Historical patterns of weather and fire occurrence data validate the literature. Fire seasons have become longer on both ends of the season schedule. Additionally, acreages burned over this time have steadily increased.

Statistical outputs associated with fire occurrence data combined with historical weather are used to determine “goodness of fit.” This is a statistical model that describes how well a set of observations meet the modelled trends. Measures of goodness of fit summarize the discrepancy between observed values and values expected using the models.

Statistical analysis was conducted for Fire Day (FD), Large Fire Day (LFD), and Multi-Fire Day (MFD) for each weather SIG associated with each FDRA within the FDOP to determine the most appropriate NFDRS Fuel Model and NFDRS output to best model the fire situation within each FDRA. The outcome of the statistical analysis frames the rationale for use of NFDRS outputs to aid in fire management and fire business decisions.

The four items used to analyze data in the interpretation of goodness of fit are:

1. Correlation coefficient (R^2). The most common interpretation of r-squared is how well the regression model fits the observed data. For example, an r-squared of 60% reveals that 60% of the data fit the regression model. Generally, a higher r-squared indicates a better fit for the model. An R^2 of 1 indicates a perfect correlation.
2. Chi-squared (χ^2). This is a statistical test applied to sets of categorical data to evaluate how likely it is that any observed difference between the sets arose by chance. A χ^2 less than 13 indicates excellent fit. A χ^2 of less than less than 20 is considered good. Over 20 is poor and over 26 is very poor.
3. The P-value associated with χ^2 . The P-value describes the probability of observing large differences purely by chance. It determines the confidence interval for testing. The P-value range from 0 (no chance) to 1 (absolute certainty). A P-value of 0.5 means a 50 per cent chance and 0.05 means a 5 per cent chance of achieving accurate results by chance.
4. Data Range. A large data range defines the decision space. A large data range allows for more flexibility in setting thresholds and breakpoints for fire business and fire management decisions.

It is important to note that sometimes there is no “good fit” and the best you can do is pick between the best of the worst. Additionally, the best fit may not work for the intended

purpose. A good example of this would be using a highly variable index and fuel model to implement campfire restrictions. This would result in changing restriction levels daily, which would be extremely difficult to implement and enforce. The outcome of this scenario would be potential damage to credibility with the public and industrial interests.

The following tables list all NFDRS fuel models V (grass), W (grass-shrub), X (brush), Y (timber), and Z (slash) and the statistics associated with NFDRS outputs for each FDRA.

SIG/Station#	Index	FM	FD R^2	FD Chi^2	FD P-Val	FD P-Range	LFD	LFD R^2	LFD Chi^2	LFD P-Val	LFD P-Range	MFD	MFD R^2	MFD Chi^2	MFD P-Val	MFD P-Range
SIG - Southern Blues	BI	V	0.19	51.18		0.07 - 0.17	1 (C)	0.22	8.7	0.3681	0.19 - 0.4	3 (C)	0.3	7.21	0.5144	0.07 - 0.29
SIG - Southern Blues	BI	W	0.14	53.02		0.07 - 0.16	1 (C)	0.34	5.43	0.7112	0.19 - 0.4	3 (C)	0.34	8.54	0.3826	0.07 - 0.30
SIG - Southern Blues	BI	X	0.14	52.46		0.07 - 0.14	1 (C)	0.06	9.67	0.289	0.22 - 0.3	3 (C)	0.29	13.02	0.1111	0.08 - 0.36
SIG - Southern Blues	BI	Y	0.51	45.37		0.03 - 0.21	1 (C)	0.14	14.27	0.075	0.16 - 0.3	3 (C)	0	9.62	0.2931	0.16 - 0.17
SIG - Southern Blues	BI	Z	0.52	38.35		0.03 - 0.24	1 (C)	0.06	25.09	0.0015	0.19 - 0.3	3 (C)	0.01	15.08	0.0576	0.14 - 0.21
SIG - Southern Blues	ERC	V	0.31	32.83		0.06 - 0.20	1 (C)	0.7	2.32	0.8034	0.16 - 0.4	3 (C)	0.2	3.3	0.5095	0.11 - 0.24
SIG - Southern Blues	ERC	W	0.22	46.37		0.07 - 0.17	1 (C)	0.37	6.23	0.5133	0.18 - 0.4	3 (C)	0.28	8.86	0.2627	0.08 - 0.27
SIG - Southern Blues	ERC	X	0.29	41.26		0.06 - 0.16	1 (C)	0.13	14.48	0.07	0.16 - 0.3	3 (C)	0.35	6.06	0.6403	0.10 - 0.34
SIG - Southern Blues	ERC	Y	0.52	43.88		0.03 - 0.21	1 (C)	0.46	6.24	0.6201	0.11 - 0.4	3 (C)	0.14	15.42	0.0515	0.06 - 0.28
SIG - Southern Blues	ERC	Z	0.49	45.08		0.04 - 0.21	1 (C)	0.28	8.78	0.361	0.14 - 0.4	3 (C)	0.01	4.18	0.8402	0.14 - 0.19
SIG - Southern Blues	IC	V	0.38	34.21		0.06 - 0.25	1 (C)	0.57	3.64	0.8877	0.18 - 0.5	3 (C)	0.18	12.3	0.1383	0.08 - 0.26
SIG - Southern Blues	IC	W	0.29	44.36		0.06 - 0.23	1 (C)	0.31	10.28	0.2461	0.18 - 0.5	3 (C)	0.32	7.35	0.4995	0.07 - 0.27
SIG - Southern Blues	IC	X	0.43	38.74		0.06 - 0.24	1 (C)	0.52	4.08	0.8496	0.17 - 0.4	3 (C)	0.22	8.16	0.4178	0.08 - 0.26
SIG - Southern Blues	IC	Y	0.49	44.51		0.05 - 0.28	1 (C)	0.25	10.97	0.2031	0.18 - 0.4	3 (C)	0.02	16.67	0.0337	0.13 - 0.21
SIG - Southern Blues	IC	Z	0.46	44.69		0.05 - 0.27	1 (C)	0.37	5.85	0.6642	0.19 - 0.4	3 (C)	0.07	12.52	0.1293	0.12 - 0.22
SIG - Southern Blues	SC	W	0.04	56.59		0.08 - 0.13	1 (C)	0.07	12.04	0.1495	0.24 - 0.3	3 (C)	0.22	13.12	0.108	0.06 - 0.28
SIG - Southern Blues	SC	V	0.08	49.42		0.08 - 0.17	1 (C)	0.1	6.27	0.6175	0.24 - 0.3	3 (C)	0.32	8.48	0.3878	0.06 - 0.27
SIG - Southern Blues	SC	X	0.03	55.3		0.08 - 0.12	1 (C)	0.02	16.64	0.034	0.26 - 0.3	3 (C)	0.45	6.22	0.6226	0.05 - 0.34
SIG - Southern Blues	SC	Y	0.74	14.41	0.006	0.03 - 0.23	1 (C)	0.14	9.77	0.0018	0.21 - 0.3	3 (C)	0.02	4.68	0.1967	0.15 - 0.21
SIG - Southern Blues	SC	Z	0.64	19.43	0.013	0.04 - 0.34	1 (C)	0.04	9.98	0.2661	0.24 - 0.3	3 (C)	0.02	9.32	0.3159	0.13 - 0.21

SIG/Station#	Variable	Model	FD R^2	FD Chi^2	FD P-Val	FD P-Range	LFD	LFD R^2	LFD Chi^2	LFD P-Val	LFD P-Range	MFD	MFD R^2	MFD Chi^2	MFD P-Val	MFD P-Range
SIG - Junipers	BI	Y3	0.68	28.89	0.0003	0.01 - 0.29	50 (C)	0.2	8.7	0.3684	0.14 - 0.52	2 (C)	0.24	4.71	0.7877	0.18 - 0.43
SIG - Junipers	BI	V3	0.83	8.5	0.3861	0.03 - 0.32	50 (C)	0.16	6.06	0.6411	0.25 - 0.46	2 (C)	0.45	10.4	0.2384	0.13 - 0.69
SIG - Junipers	BI	W3	0.77	14.57	0.0681	0.03 - 0.29	50 (C)	0.55	1.15	0.9971	0.24 - 0.45	2 (C)	0.6	4.46	0.8136	0.15 - 0.59
SIG - Junipers	BI	X3	0.78	11.92	0.1547	0.02 - 0.25	50 (C)	0.11	7.25	0.5103	0.24 - 0.43	2 (C)	0.54	5.99	0.6486	0.12 - 0.64
SIG - Junipers	BI	Z3	0.71	19.97	0.0104	0.01 - 0.28	50 (C)	0.11	14.05	0.0806	0.16 - 0.49	2 (C)	0.24	4.83	0.7751	0.19 - 0.42
SIG - Junipers	ERC	Y3	0.54	38.63		0.02 - 0.24	50 (C)	0.53	4.14	0.8439	0.14 - 0.57	2 (C)	0.16	7.51	0.4826	0.20 - 0.44
SIG - Junipers	ERC	V3	0.65	21.7	0.0055	0.03 - 0.26	50 (C)	0.16	3.05	0.8024	0.28 - 0.38	2 (C)	0.23	9.5	0.2189	0.18 - 0.50
SIG - Junipers	ERC	W3	0.71	17.69	0.0236	0.03 - 0.24	50 (C)	0.11	7.38	0.496	0.26 - 0.40	2 (C)	0.28	6.31	0.6122	0.21 - 0.44
SIG - Junipers	ERC	X3	0.84	9.7	0.2868	0.02 - 0.22	50 (C)	0.13	3.3	0.914	0.25 - 0.37	2 (C)	0.41	5.82	0.6677	0.13 - 0.47
SIG - Junipers	ERC	Z3	0.58	30.81	0.0002	0.01 - 0.23	50 (C)	0.19	11.43	0.1784	0.17 - 0.50	2 (C)	0.04	6.59	0.5811	0.24 - 0.37
SIG - Junipers	IC	Y3	0.6	30.48	0.0002	0.02 - 0.26	50 (C)	0.03	11.66	0.1673	0.27 - 0.36	2 (C)	0.01	14.76	0.064	0.28 - 0.34
SIG - Junipers	IC	V3	0.59	35.09		0.03 - 0.36	50 (C)	0.17	3.72	0.8814	0.25 - 0.47	2 (C)	0.41	7.47	0.4869	0.18 - 0.58
SIG - Junipers	IC	W3	0.65	30.63	0.0002	0.03 - 0.38	50 (C)	0.22	4.3	0.8288	0.24 - 0.49	2 (C)	0.44	5.38	0.7165	0.20 - 0.55
SIG - Junipers	IC	X3	0.67	26.47	0.0009	0.03 - 0.32	50 (C)	0.17	4.71	0.7881	0.25 - 0.43	2 (C)	0.19	12.64	0.1247	0.20 - 0.47
SIG - Junipers	IC	Z3	0.66	24.02	0.0023	0.02 - 0.27	50 (C)	0.05	13.37	0.0996	0.26 - 0.38	2 (C)	0	10.26	0.2474	0.29 - 0.32
SIG - Junipers	SC	Y3	0.69	14.1	0.007	0.01 - 0.29	50 (C)	0.87	0.09	0.9548	0.23 - 0.44	2 (C)	0.24	1.59	0.4509	0.24 - 0.39
SIG - Junipers	SC	V3	0.62	18.72	0.0164	0.04 - 0.41	50 (C)	0.19	7.39	0.4953	0.25 - 0.55	2 (C)	0.33	17.08	0.0292	0.17 - 0.79
SIG - Junipers	SC	W3	0.67	17.28	0.0273	0.03 - 0.43	50 (C)	0.18	6.83	0.5554	0.25 - 0.54	2 (C)	0.3	16.65	0.034	0.17 - 0.74
SIG - Junipers	SC	X3	0.53	16.93	0.0309	0.03 - 0.32	50 (C)	0.15	8.84	0.3556	0.26 - 0.50	2 (C)	0.33	15.92	0.0435	0.16 - 0.76
SIG - Junipers	SC	Z3	0.57	19.96	0.0105	0.02 - 0.32	50 (C)	0.19	6.57	0.5835	0.25 - 0.47	2 (C)	0.24	5.16	0.7401	0.24 - 0.44

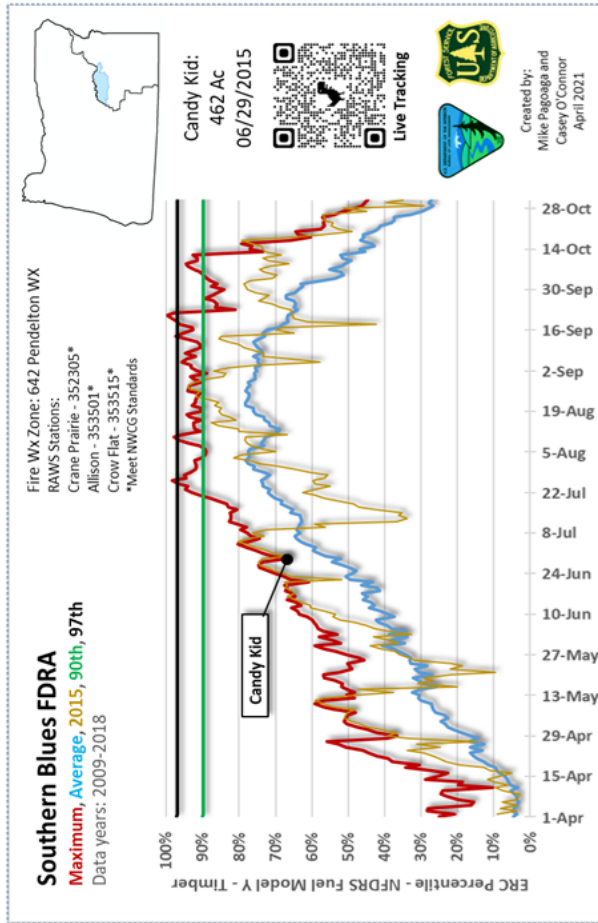
SIG/Station#	Index	FM	FD R^2	FD Chi^2	FD P-Val	FD P-Range	LFD	LFD R^2	LFD Chi^2	LFD P-Val	LFD P-Range	MFD	MFD R^2	MFD Chi^2	MFD P-Val	MFD P-Range
SIG - Vale-Grassland	BI	V	0.89	9	0.3422	0.03 - 0.42	500 (C)	0.69	5.97	0.651	0.07 - 0.64	2 (C)	0.45	10.66	0.2219	0.13 - 0.59
SIG - Vale-Grassland	BI	W	0.83	13.86	0.0855	0.03 - 0.38	500 (C)	0.67	7.73	0.4604	0.06 - 0.65	2 (C)	0.47	9.52	0.3007	0.12 - 0.59
SIG - Vale-Grassland	BI	X	0.88	7.3	0.5047	0.02 - 0.33	500 (C)	0.74	4.75	0.7837	0.06 - 0.64	2 (C)	0.26	18.73	0.0164	0.12 - 0.59
SIG - Vale-Grassland	BI	Y	0.92	6.78	0.561	0.01 - 0.38	500 (C)	0.54	8.67	0.3708	0.03 - 0.63	2 (C)	0.52	6.18	0.6275	0.06 - 0.60
SIG - Vale-Grassland	BI	Z	0.88	8.45	0.3912	0.01 - 0.39	500 (C)	0.61	3.86	0.8693	0.06 - 0.62	2 (C)	0.55	4.45	0.8139	0.10 - 0.61
SIG - Vale-Grassland	ERC	V	0.83	17.75	0.0232	0.03 - 0.38	500 (C)	0.66	8	0.2381	0.06 - 0.65	2 (C)	0.56	6.9	0.33	0.13 - 0.57
SIG - Vale-Grassland	ERC	W	0.76	23.69	0.0026	0.03 - 0.31	500 (C)	0.69	8.33	0.402	0.05 - 0.64	2 (C)	0.72	3.7	0.8828	0.12 - 0.55
SIG - Vale-Grassland	ERC	X	0.82	16.01	0.0422	0.01 - 0.27	500 (C)	0.89	2.61	0.9566	0.02 - 0.61	2 (C)	0.72	3.84	0.871	0.08 - 0.53
SIG - Vale-Grassland	ERC	Y	0.92	8.71	0.3677	0.01 - 0.28	500 (C)	0.78	3.62	0.8899	0.02 - 0.57	2 (C)	0.49	7.86	0.4476	0.05 - 0.55
SIG - Vale-Grassland	ERC	Z	0.88	11.18	0.1918	0.01 - 0.29	500 (C)	0.63	7.91	0.4424	0.01 - 0.60	2 (C)	0.49	7.59	0.4746	0.05 - 0.55
SIG - Vale-Grassland	IC	V	0.84	14.09	0.0795	0.03 - 0.44	500 (C)	0.59	9.42	0.3079	0.07 - 0.70	2 (C)	0.67	5.41	0.7124	0.12 - 0.64
SIG - Vale-Grassland	IC	W	0.81	16.6	0.0346	0.03 - 0.48	500 (C)	0.72	6.36	0.6072	0.07 - 0.73	2 (C)	0.6	7.61	0.4725	0.13 - 0.65
SIG - Vale-Grassland	IC	X	0.87	11.39	0.1804	0.02 - 0.43	500 (C)	0.76	5.12	0.7448	0.06 - 0.69	2 (C)	0.72	4.36	0.8229	0.11 - 0.63
SIG - Vale-Grassland	IC	Y	0.86	15.21	0.0553	0.02 - 0.36	500 (C)	0.58	8.62	0.3758	0.05 - 0.62	2 (C)	0.61	5.7	0.6813	0.09 - 0.58
SIG - Vale-Grassland	IC	Z	0.86	13.83	0.0863	0.02 - 0.37	500 (C)	0.61	7.01	0.5356	0.05 - 0.63	2 (C)	0.58	6.59	0.581	0.10 - 0.60
SIG - Vale-Grassland	SC	V	0.65	16.24	0.039	0.04 - 0.38	500 (C)	0.49	5.52	0.7006	0.15 - 0.64	2 (C)	0.29	8.25	0.4095	0.20 - 0.62
SIG - Vale-Grassland	SC	W	0.81	10.57	0.2274	0.04 - 0.44	500 (C)	0.48	8.53	0.3837	0.14 - 0.73	2 (C)	0.44	6.36	0.6066	0.19 - 0.67
SIG - Vale-Grassland	SC	X	0.75	10.34	0.2417	0.04 - 0.43	500 (C)	0.31	10.45	0.2346	0.15 - 0.67	2 (C)	0.37	6.16	0.6296	0.20 - 0.65
SIG - Vale-Grassland	SC	Y	0.64	17.32	0.0039	0.02 - 0.33	500 (C)	0.33	3.96	0.2658	0.14 - 0.61	2 (C)	0.1	6.03	0.1101	0.20 - 0.54
SIG - Vale-Grassland	SC	Z	0.44	24.36	0.002	0.04 - 0.25	500 (C)	0.41	2.61	0.9566	0.20 - 0.48	2 (C)	0.1	12.83	0.1179	0.24 - 0.51

SIG/Station#	Index	FM	FD R^2	FD Chi^2	FD P-Val	FD P-Range	LFD	LFD R^2	LFD Chi^2	LFD P-Val	LFD P-Range	MFD	MFD R^2	MFD Chi^2	MFD P-Val	MFD P-Range
SIG - Steens-Puebllos	BI	V	0.34	11.61	0.1693	0.01 - 0.09	55 (C)	0.38	2.74	0.9498	0.25 - 0.75	2 (C)	0	5.62	0.5847	0.20 - 0.25
SIG - Steens-Puebllos	BI	W	0.23	15.88	0.0441	0.01 - 0.09	55 (C)	0.51	2.69	0.9524	0.26 - 0.74	2 (C)	0	10.77	0.0957	0.22 - 0.22
SIG - Steens-Puebllos	BI	X	0.15	21.3	0.0064	0.01 - 0.06	55 (C)	0.14	11.37	0.1816	0.26 - 0.77	2 (C)	0.11	3.92	0.8644	0.15 - 0.37
SIG - Steens-Puebllos	BI	Y	0.75	7.8	0.4534	0.00 - 0.17	55 (C)	0.15	10.5	0.2319	0.23 - 0.68	2 (C)	0.02	13.97	0.03	0.16 - 0.30
SIG - Steens-Puebllos	BI	Z	0.63	11.48	0.1758	0.00 - 0.16	55 (C)	0.14	9.44	0.3066	0.29 - 0.70	2 (C)	0.02	4.72	0.6946	0.18 - 0.31
SIG - Steens-Puebllos	ERC	V	0.48	9.51	0.1469	0.01 - 0.08	55 (C)	0.14	10.01	0.0402	0.28 - 0.60	2 (C)	0.01	6.31	0.0976	0.18 - 0.27
SIG - Steens-Puebllos	ERC	W	0.38	14.26	0.0752	0.01 - 0.07	55 (C)	0.15	10.69	0.2201	0.29 - 0.63	2 (C)	0.05	11.7	0.0391	0.15 - 0.29
SIG - Steens-Puebllos	ERC	X	0.54	6.52	0.5894	0.01 - 0.06	55 (C)	0.15	10.31	0.2441	0.25 - 0.62	2 (C)	0.01	10.21	0.1772	0.20 - 0.25
SIG - Steens-Puebllos	ERC	Y	0.71	16.78	0.0325	0.00 - 0.12	55 (C)	0.15	8.53	0.3833	0.23 - 0.65	2 (C)	0	8.7	0.191	0.21 - 0.23
SIG - Steens-Puebllos	ERC	Z	0.79	7.33	0.5019	0.00 - 0.12	55 (C)	0.22	6.62	0.5777	0.22 - 0.67	2 (C)	0	6.88	0.332	0.19 - 0.26
SIG - Steens-Puebllos	IC	V	0.68	6.43	0.5997	0.01 - 0.16	55 (C)	0.37	5.5	0.7032	0.23 - 0.70	2 (C)	0.03	5.42	0.4907	0.17 - 0.26
SIG - Steens-Puebllos	IC	W	0.49	12.76	0.1202	0.01 - 0.14	55 (C)	0.38	2.64	0.955	0.26 - 0.67	2 (C)	0.02	4.47	0.6128	0.18 - 0.26
SIG - Steens-Puebllos	IC	X	0.47	14.54	0.0687	0.01 - 0.11	55 (C)	0.23	5.51	0.7014	0.24 - 0.67	2 (C)	0	6.54	0.4785	0.19 - 0.25
SIG - Steens-Puebllos	IC	Y	0.51	15.23	0.0548	0.01 - 0.10	55 (C)	0.23	2.98	0.9357	0.28 - 0.61	2 (C)	0.03	8.79	0.268	0.12 - 0.35
SIG - Steens-Puebllos	IC	Z	0.59	10.58	0.2265	0.01 - 0.10	55 (C)	0.08	6.7	0.5696	0.28 - 0.62	2 (C)	0.08	7.02	0.3192	0.13 - 0.34
SIG - Steens-Puebllos	SC	W	0.06	18.35	0.0187	0.02 - 0.05	55 (C)	0.25	4.77	0.7818	0.30 - 0.81	2 (C)	0.15	6.54	0.3654	0.16 - 0.44
SIG - Steens-Puebllos	SC	V	0.11	12.01	0.1506	0.02 - 0.06	55 (C)	0.17	5.49	0.7044	0.30 - 0.80	2 (C)	0.38	1.75	0.9724	0.16 - 0.43
SIG - Steens-Puebllos	SC	X	0.02	18.43	0.0182	0.02 - 0.04	55 (C)	0.07	10.65	0.2225	0.30 - 0.82	2 (C)	0.29	5.44	0.6069	0.13 - 0.61
SIG - Steens-Puebllos	SC	Y	0.42	12.01	0.0617	0.01 - 0.14	55 (C)	0.73	0.31	0.8568	0.33 - 0.63	2 (C)	0.14	0.31	0.5755	0.20 - 0.25
SIG - Steens-Puebllos	SC	Z	0.33	20.85	0.0076	0.01 - 0.15	55 (C)	0.02	9.8	0.2794	0.37 - 0.62	2 (C)	0.08	3.91	0.5619	0.16 - 0.39

SIG/Station#	Index	FM	FD R^2	FD Chi^2	FD P-Val	FD P-Range	LFD	LFD R^2	LFD Chi^2	LFD P-Val	LFD P-Range	MFD	MFD R^2	MFD Chi^2	MFD P-Val	MFD P-Range
SIG - High Desert	BI	V2	0.53	12.7	0.1228	0.02 - 0.20	300 (C)	0.33	8.44	0.295	0.02 - 0.45	2 (C)	0.05	9.4	0.3096	0.12 - 0.24
SIG - High Desert	BI	W2	0.62	9.01	0.3416	0.02 - 0.17	300 (C)	0.25	15.52	0.0298	0.01 - 0.42	2 (C)	0.04	17.41	0.0261	0.11 - 0.25
SIG - High Desert	BI	X2	0.47	9.13	0.331	0.02 - 0.12	300 (C)	0.29	10.67	0.2212	0.01 - 0.41	2 (C)	0.26	4.08	0.8496	0.09 - 0.33
SIG - High Desert	BI	Y2	0.47	9.13	0.331	0.02 - 0.12	300 (C)	0.29	10.67	0.2212	0.01 - 0.41	2 (C)	0.26	4.08	0.8496	0.09 - 0.33
SIG - High Desert	BI	Y2	0.71	11.7	0.1651	0.01 - 0.23	300 (C)	0.35	6.61	0.5794	0.02 - 0.45	2 (C)	0.22	10.27	0.2468	0.06 - 0.38
SIG - High Desert	ERC	V2	0.67	10.53	0.1607	0.02 - 0.16	300 (C)	0.54	2.3	0.5129	0.03 - 0.26	2 (C)	0	5.36	0.2523	0.17 - 0.17
SIG - High Desert	ERC	W2	0.68	11.56	0.1718	0.02 - 0.15	300 (C)	0.48	1.75	0.8822	0.02 - 0.29	2 (C)	0	11.42	0.1214	0.16 - 0.19
SIG - High Desert	ERC	X2	0.67	8.77	0.3622	0.01 - 0.11	300 (C)	0.37	2.95	0.8895	0.01 - 0.27	2 (C)	0.01	9.72	0.2854	0.16 - 0.19
SIG - High Desert	ERC	Y2	0.67	8.77	0.3622	0.01 - 0.11	300 (C)	0.37	2.95	0.8895	0.01 - 0.27	2 (C)	0.01	9.72	0.2854	0.16 - 0.19
SIG - High Desert	ERC	Y2	0.65	21.67	0.0056	0.01 - 0.17	300 (C)	0.22	7.07	0.4213	0.01 - 0.31	2 (C)	0.01	8.51	0.385	0.16 - 0.19
SIG - High Desert	IC	V2	0.59	17.83	0.0225	0.02 - 0.24	300 (C)	0.29	10.2	0.1777	0.02 - 0.39	2 (C)	0.03	11.18	0.1915	0.14 - 0.21
SIG - High Desert	IC	W2	0.68	12.87	0.1165	0.02 - 0.22	300 (C)	0.32	9.38	0.2267	0.02 - 0.43	2 (C)	0.06	8.09	0.4248	0.12 - 0.23
SIG - High Desert	IC	X2	0.78	9.13	0.3314	0.02 - 0.22	300 (C)	0.27	9.92	0.1931	0.02 - 0.31	2 (C)	0.03	7.26	0.5091	0.13 - 0.23
SIG - High Desert	IC	Y2	0.78	9.13	0.3314	0.02 - 0.22	300 (C)	0.27	9.92	0.1931	0.02 - 0.31	2 (C)	0.03	7.26	0.5091	0.13 - 0.23
SIG - High Desert	IC	Y2	0.79	12.29	0.1385	0.01 - 0.19	300 (C)	0.36	5.63	0.5835	0.02 - 0.25	2 (C)	0.07	11.79	0.1609	0.14 - 0.24
SIG - High Desert	SC	V2	0.16	23.34	0.003	0.04 - 0.13	300 (C)	0.22	19.26	0.0074	0.04 - 0.55	2 (C)	0.18	8.26	0.4084	0.04 - 0.28
SIG - High Desert	SC	W2	0.31	10.82	0.2121	0.04 - 0.11	300 (C)	0.25	12.1	0.0973	0.03 - 0.46	2 (C)	0.09	17.54	0.0249	0.06 - 0.29
SIG - High Desert	SC	X2	0.1	12.4	0.134	0.04 - 0.07	300 (C)	0.22	12.71	0.1222	0.03 - 0.41	2 (C)	0.21	9.94	0.2695	0.04 - 0.35
SIG - High Desert	SC	Y2	0.1	12.4	0.134	0.04 - 0.07	300 (C)	0.22	12.71	0.1222	0.03 - 0.41	2 (C)	0.21	9.94	0.2695	0.04 - 0.35
SIG - High Desert	SC	Y2	0.53	9.17	0.3281	0.03 - 0.16	300 (C)	0.42	4.04	0.6711	0.04 - 0.47	2 (C)	0.51	3.88	0.8678	0.01 - 0.37

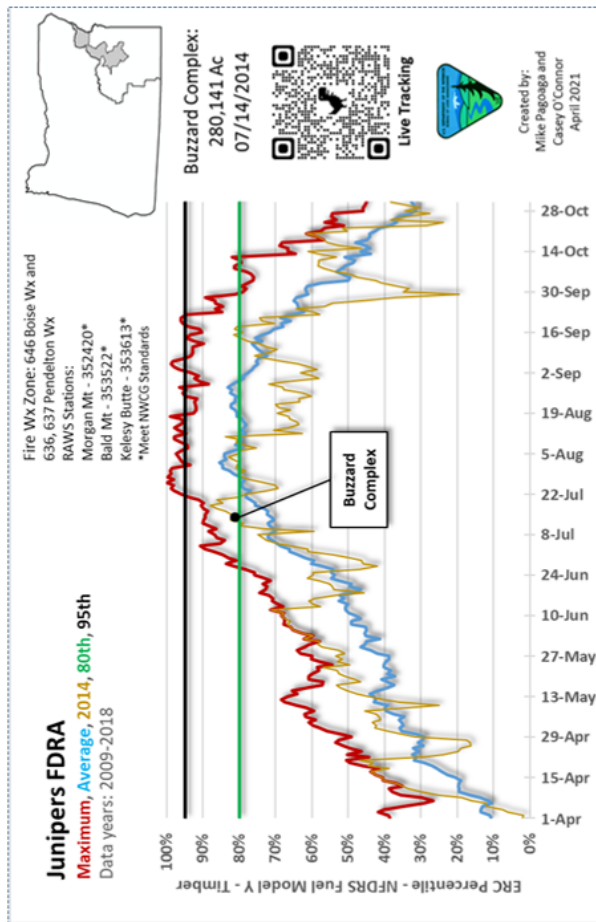
Appendix L POCKET CARDS

I. FDRA 1: SOUTHERN BLUES



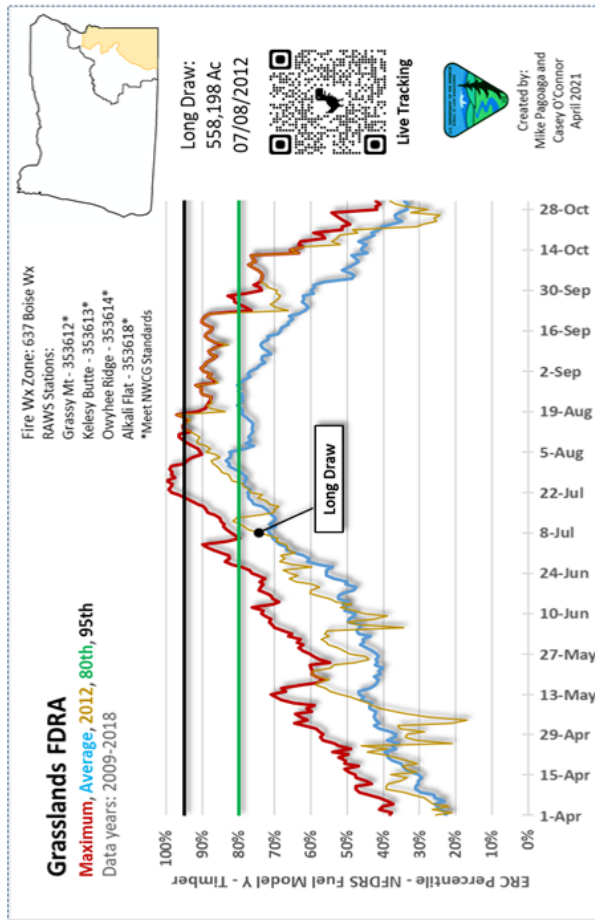
FIRE DANGER FACTS							
ENERGY RELEASE COMPONENT							
<ul style="list-style-type: none"> ERC is calculated from the 1300 RAWs daily observations of temperature, humidity, precipitation, and daily ranges of temp & RH ERC can serve as a good characterization of a fire season as it tracks seasonal fire danger trends ERC has low variability and is the best fire danger component for indicating effects of intermediate to long-term drying on fire behavior Wind is <u>NOT</u> part of the ERC equation 							
LOCAL FACTORS							
<p>There are many areas of recent fuels treatment work on the North End of the</p> <ul style="list-style-type: none"> Zone with large accumulations of dead/down slash. Be especially cautious around cuts that still have needles attached (red slash). <p>The <u>Egley</u> Fire Complex (2007) grew to >150,000 acres in ~10 days burning along the fringe between pine forests (heavy fuels) and sagebrush steppe</p> <ul style="list-style-type: none"> (flashy fuels). Within this fire scar (as well as the old Pine Springs Basin Fire from 1990) there has been regrowth of grass and shrub components and there is the potential for a re-burn (especially following a frost kill in shrubs). <ul style="list-style-type: none"> 80% of large fires (>3 acres) occur on days with a Min. RH <21%. 							
Local Watchout Thresholds							
Any combinations of these factors significantly increase the potential for extreme fire behavior and containment difficulty.							
20ft winds	> 5						
Min Rh	< 20%						
Max Temp	> 80°						
Past Fire Experience							
Name	Size	Date	BI	ERC	TEMP	RH	Wind
Candy Kid	462	6/29/15	69%	67%	92	18	6
Drewsey	365	7/10/14	74%	66%	87	13	6
Theimer #2	276	8/21/11	79%	85%	89	17	3
Cow Creek	231	6/26/17	74%	70%	87	13	4
#9278	136	9/29/09	72%	74%	78	9	7

II. FDRA 2: JUNIPERS



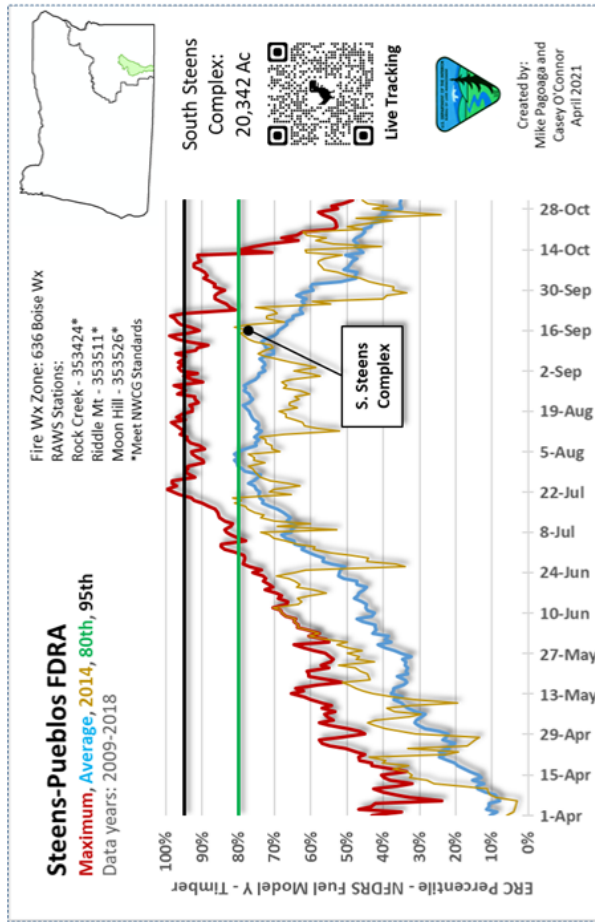
FIRE DANGER FACTS							
ENERGY RELEASE COMPONENT							
<ul style="list-style-type: none"> ERC is calculated from the 1300 RAWs daily observations of temperature, humidity, precipitation, and daily ranges of temp & RH ERC can serve as a good characterization of a fire season as it tracks seasonal fire danger trends ERC has low variability and is the best fire danger component for indicating effects of intermediate to long-term drying on fire behavior Wind is NOT part of the ERC equation 							
LOCAL FACTORS							
<ul style="list-style-type: none"> Terrain is a significant factor of large fire growth within this FDRA, impacting weather patterns. Take extra precautions where wind and terrain align. Current fuels treatments within this FDRA are focused on Juniper encroachment. Be especially cautious around cuts that still have needles attached (red slash). Rugged terrain and limited access make initiating suppression strategies difficult. Lightning is the primary cause of ignitions, due to the presence of Pinyon Juniper ignitions can lay dormant for a few days following a lightning event. 							
Local Watchout Thresholds							
Any combinations of these factors significantly increase the potential for extreme fire behavior and containment difficulty.							
20ft winds							> 8
Min Rh							< 20%
Max Temp							> 80°
Past Fire Experience							
Name	Size	Date	BI	ERC	TEMP	RH	Wind
Buzzard Complex	280,141	7/14/14	94%	81%	93	13	11
Windy Ridge	103,811	8/11/15	75%	78%	87	16	9
Bendire Complex	48,849	8/11/15	75%	78%	87	16	9
Cedar Mt	23,948	8/8/13	82%	86%	89	13	9

III. FDRA 3: GRASSLANDS



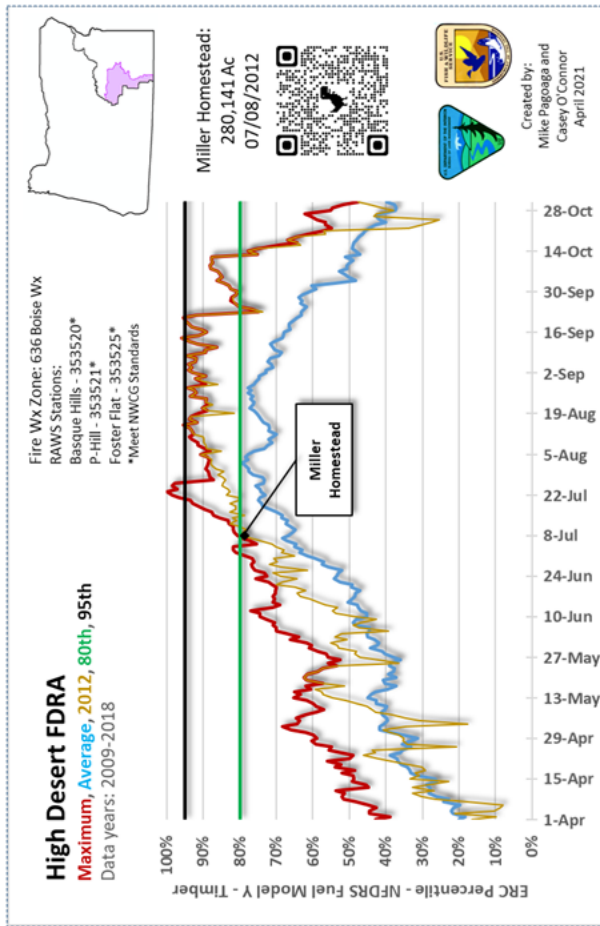
FIRE DANGER FACTS							
ENERGY RELEASE COMPONENT							
<ul style="list-style-type: none"> ERC is calculated from the 1300 RAWWS daily observations of temperature, humidity, precipitation, and daily ranges of temp & RH ERC can serve as a good characterization of a fire season as it tracks seasonal fire danger trends ERC has low variability and is the best fire danger component for indicating effects of intermediate to long-term drying on fire behavior Wind is NOT part of the ERC equation 							
LOCAL FACTORS							
<ul style="list-style-type: none"> Always KEEP ONE FOOT IN THE BLACK! Fine flashy fuels in this Fire Danger Rating Area can exhibit rapid fire growth There have been numerous large fires throughout this FDRA. Much of the shrub lands have been converted to grass. Fires move quickly through light flashy fuels and are heavily influenced by wind. The Long Draw Fire (2012) was estimated to grow about 400,000 ac in one burn period. Since then, there have been numerous smaller fires within this scar. Nearly 25% of all fires have been large fires (>500 acres). 							
Local Watchout Thresholds							
Any combinations of these factors significantly increase the potential for extreme fire behavior and containment difficulty.							
20ft winds				> 5			
Min Rh				< 15%			
Max Temp				> 90°			
Past Fire Experience							
Name	Size	Date	BI	ERC	TEMP	RH	Wind
Long Draw	558,198	7/8/12	69%	71%	94	11	10
Holloway	170,304	8/5/12	74%	86%	93	9	7
Owyhee	46,444	7/1/13	65%	61%	100	14	9
Cherry Rd	35,194	8/21/16	74%	87%	91	11	8
Owyhee Cyn	22,327	6/5/16	56%	61%	90	17	7

IV. FDRA 4: STEENS-PUEBLOS



FIRE DANGER FACTS							
ENERGY RELEASE COMPONENT							
<ul style="list-style-type: none"> ERC is calculated from the 1300 RAWWS daily observations of temperature, humidity, precipitation, and daily ranges of temp & RH ERC can serve as a good characterization of a fire season as it tracks seasonal fire danger trends ERC has low variability and is the best fire danger component for indicating effects of intermediate to long-term drying on fire behavior Wind is NOT part of the ERC equation 							
LOCAL FACTORS							
Strong downslope winds are likely from high elevation cooling in afternoons at <ul style="list-style-type: none"> locations with abrupt elevation differences (East Side of Steens Mountain). Be prepared for fires to come down hill in the evening (especially off the east rim). Respect the diversity of topography, fuels, and weather (wind) exhibited within this unique landscape. Diurnal wind patters greatly impact fire spread. 30% of all starts within this FDRA reach large fire criteria (>150 acres). 							
Local Watchout Thresholds							
Any combinations of these factors significantly increase the potential for extreme fire behavior and containment difficulty.							
20ft winds		> 5					
Min Rh		< 20%					
Max Temp		> 80°					
Past Fire Experience							
Name	Size	Date	BI	ERC	TEMP	RH	Wind
S. Steens Complex	20,342	9/16/14	75%	75%	81	19	13
DSL Complex	6,534	8/25/11	66%	75%	88	14	9
House Crk	2,769	8/8/13	59%	74%	84	16	9
Upper Mine	2,500	7/24/17	70%	83%	91	12	9

V. FDRA 5: HIGH DESERT



FIRE DANGER FACTS							
ENERGY RELEASE COMPONENT							
<ul style="list-style-type: none"> ERC is calculated from the 1300 RAWs daily observations of temperature, humidity, precipitation, and daily ranges of temp & RH ERC can serve as a good characterization of a fire season as it tracks seasonal ERC has low variability and is the best fire danger component for indicating effects of intermediate to long-term drying on fire behavior Wind is NOT part of the ERC equation 							
LOCAL FACTORS							
<ul style="list-style-type: none"> Always KEEP ONE FOOT IN THE BLACK! Fine flashy fuels in this Fire Danger Rating Area can exhibit rapid fire growth, however offer functional safety zone shortly after flame front passage. Fuels in this area facilitate rapid ROS; the Cinder Butte Fire in 2017 made a 20 mile run in ~ 6 hours. Miller Homestead fire in 2012 had ~80,000 acres of growth in one burn period. Pay attention to alignment of ERC and BI. High end combination of these two indices facilitates extreme fire days. This has occurred on nearly all large fire days within this area 							
Local Watchout Thresholds							
Any combinations of these factors significantly increase the potential for extreme fire behavior and containment difficulty.							
20ft winds	> 5						
Min Rh	< 15%						
Max Temp	> 90°						
Past Fire Experience							
Name	Size	Date	BI	ERC	TEMP	RH	Wind
Miller Homestead	160,801	7/8/12	66%	73%	96	7	9
Cinder Butte	52,464	8/2/17	60%	80%	98	10	5
Lava	7,081	8/12/13	52%	65%	87	13	6
Catlow	5,249	10/1/11	72%	64%	86	10	19
Gumboot	4,420	7/14/14	55%	65%	97	11	8