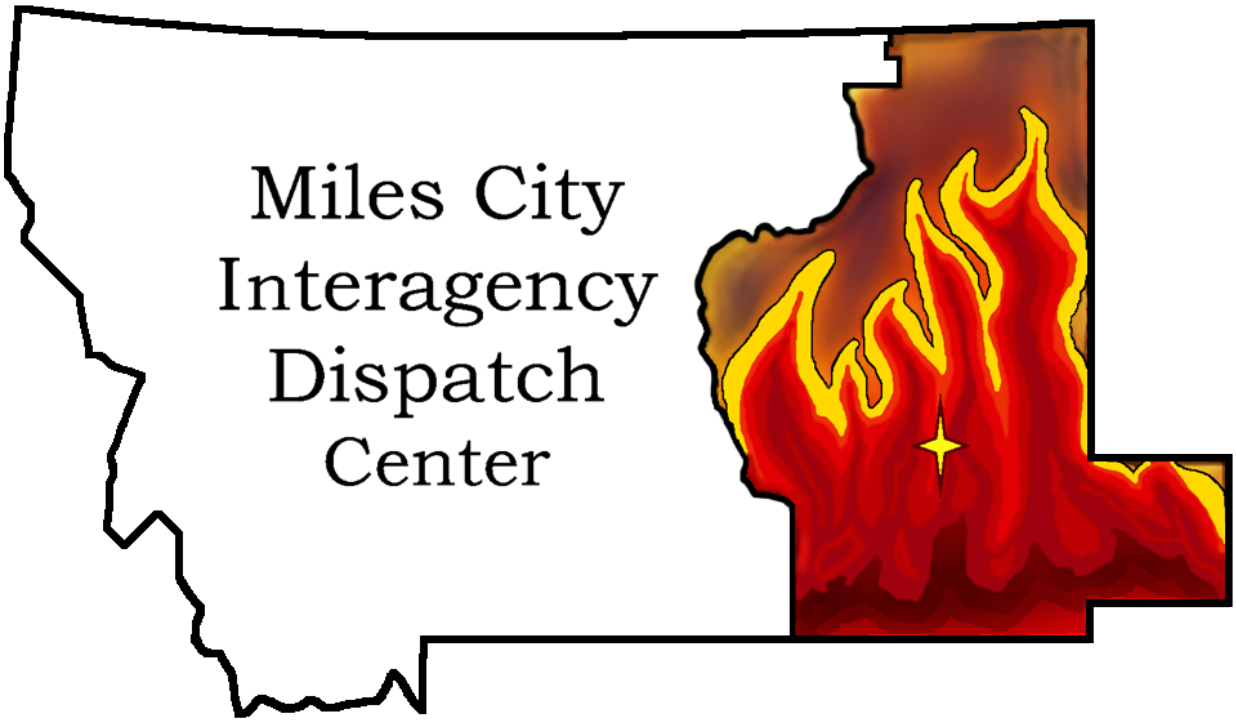
Eastern Montana Fire Zone

Fire Danger Analysis



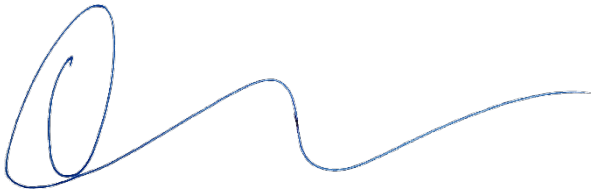
This Page Intentionally Left Blank

Reviewed By:

Craig Howells - Fire Management Officer — Date

Eastern Montana/Dakotas BLM District

Prepared By:



4/22/2020

David Lee – Assistant Center Manager — Date

Miles City Interagency Dispatch Center

Table of Contents

Table of Tables

Table of Figures

I. Introduction

This document is intended to define a decision-making process for agency administrators, fire program managers, fire operations specialists, dispatchers, agency co-operators, and firefighters using the best available scientific methods and historical weather/fire data. This plan provides a science-based "tool" for fire managers to incorporate a measure of risk associated with decisions which have the potential to significantly compromise safety and control of wildfires.

II. Fire Danger Planning Area Inventory and Analysis

A. Fire Danger Rating Areas (FDRAs)

FDRAs are the smallest spatial measure used to translate fire danger rating outputs from a point source (such as a weather station observation) to a spatial area that can be used for operational and planning purposes.

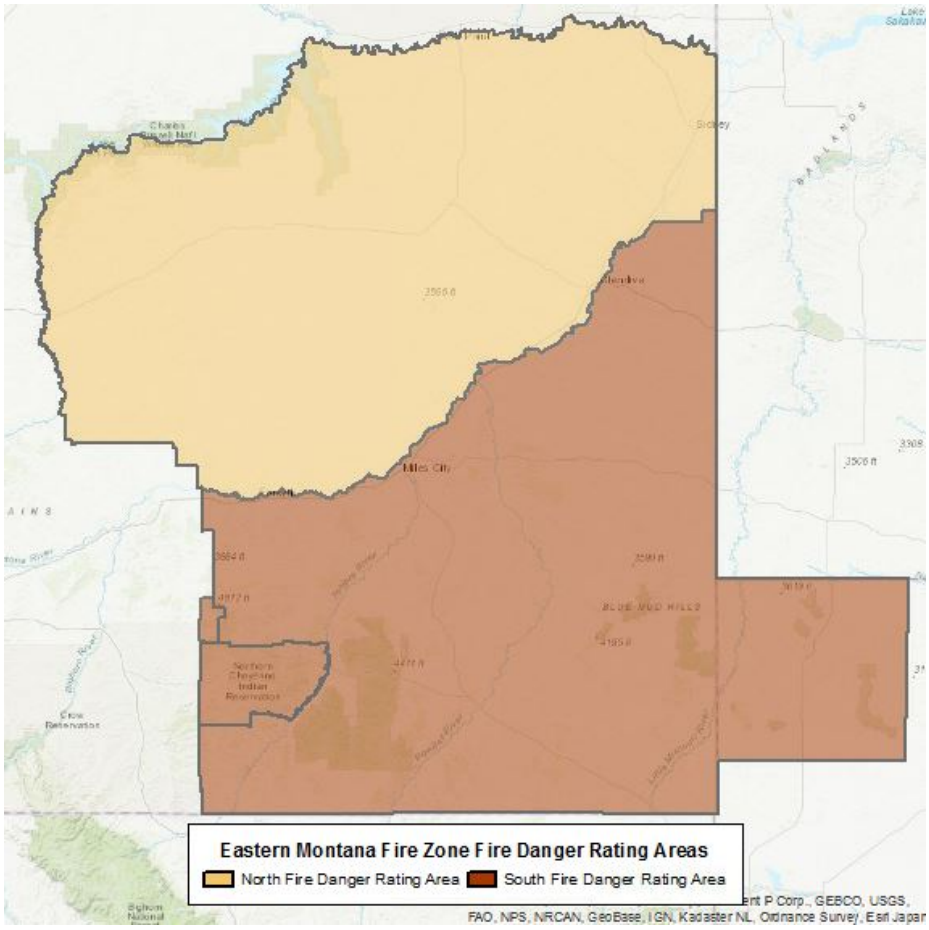


***Figure 1** - Map of Fire Danger Rating Areas*

See Appendix 1 for a detailed description of the evaluation of landscape data process used to develop Fire Danger Rating Areas.

B. Selected Weather Stations

The EMFZ grouped weather stations into special interest groups (SIG) that best represent conditions across the zone. The South Sawmill and Big Sheep RAWS are used for the North FDRA SIG. The Cow Creek, Bradshaw Creek, Knowlton, and Ekalaka RAWS are used for the South FDRA SIG.

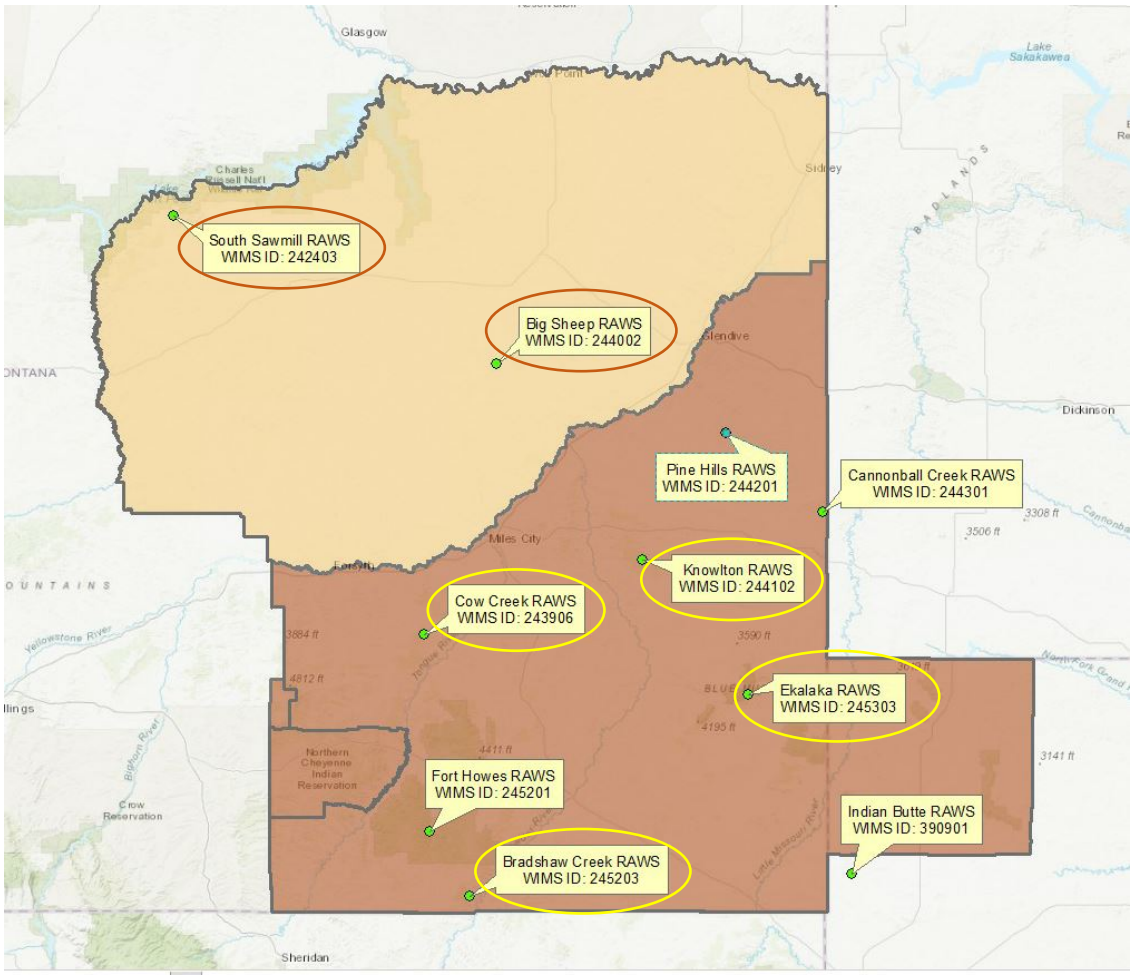


***Figure 2** - Map of Selected Weather Sites*

See Appendix 2 for a description of process used to select weather sites.

III. Fire Danger Analysis

A. Fire Business Analysis

Table 1: Preparedness Level Breakpoints

Rating Area	RAWS	Data years	Weighting Factor	Fuel Model	NFDRS Index	Fire Business Breakpoint Ranges	
North	**SIG** South Sawmill Big Sheep	**2010-2019**	**1** **1**	**Y**	**BI**	**0-14** **14-24** **24-34** **34-42** **42+**	**PL-1** **PL-2** **PL-3** **PL-4** **PL-5**
South	**SIG** Bradshaw Ekalaka Cow Creek Knowlton	**2010-2019**	**1** **1**	**Y**	**BI**	**0-15** **16-23** **24-30** **31-36** **37+**	**PL-1** **PL-2** **PL-3** **PL-4** **PL-5**

Table 2: Dispatch Level Breakpoints

Rating Area	RAWS	Data years	Weighting Factor	Fuel Model	NFDRS Index	Fire Business Breakpoint Ranges	
North	**SIG** South Sawmill Big Sheep	**2010-2019**	**1** **1**	**Y**	**BI**	**0-23** **24-36** **37+**	**Low** **Moderate** **High**
South	**SIG** Bradshaw Ekalaka Cow Creek Knowlton	**2010-2019**	**1** **1**	**Y**	**BI**	**0-21** **22-33** **34+**	**Low** **Moderate** **High**

Table 3: Adjective Fire Danger Rating Breakpoints

Rating Area	RAWS	Data years	Weighting Factor	Fuel Model	NFDRS Index	Fire Business Breakpoint Ranges	
North	**SIG** South Sawmill Big Sheep	**2010-2019**	**1** **1**	**Y**	**IC**	**0-14** **15-27** **28-41** **42-54** **54+**	**Low** **Moderate** **High** **Very High** **Extreme**
South	**SIG** Bradshaw Ekalaka Cow Creek Knowlton	**2010-2019**	**1** **1**	**Y**	**IC**	**0-13** **14-23** **24-35** **36-47** **48+**	**Low** **Moderate** **High** **Very High** **Extreme**

See Appendices 3 and 4 for a detailed description of the processes used to identify parameters for fire danger thresholds and values.

IV. Fire Danger Operating Procedures

A. Roles and Responsibilities

1. **Compliance with Weather Station Standards (NWCG PMS 426-3)**
   The remote sensing/fire weather support unit is located at the National Interagency Fire Center (NIFC) and maintenance is scheduled annually. The weather station site maintenance is described in the Interagency Wildland Fire Weather Station Standards & Guidelines, June 2012.
2. **Validation of Historic Fire Data**
   Historical Fire Data is maintained and validated annually by the Miles City Interagency Dispatch Center, Center Manager, Assistant Center Manager, and delegated Dispatchers
3. **Validation of Weather Data**
   Weather sources outside of the Weather Information Management System (WIMS) are not used. WIMS is monitored daily and is the responsibility of the Miles City Inter Agency Dispatch Center, Assistant Center Manager.
4. **Preparation of FDAD**
   This FDAD document was prepared by David Lee, Assistant Center Manager, Miles City Interagency Dispatch Center
5. **Update of FDAD**
   The Miles City Interagency Dispatch Center, Assistant Center Manager is responsible for reviewing this plan annually and ensuring a full update is completed minimally every five years.

B. Seasonal Trend

Seasonal trend analyses are produced at the Predictive Service Area scale and published by the Northern Rockies Coordination Center. Seasonal trend analyses use historic conditions as well as measured current year data to produce real-time fire season condition updates to improve fire danger awareness and firefighter safety. The Eastern Montana Fire Zone has four Predictive Services Areas (PSA): NR13 – Northern Plains and Missouri Breaks, NR14 – Southern Montana (Bighorn/Powder River), NR15 – Northeast Montana and Northwest North Dakota, and NR16 – Southeast Montana and Southwest North Dakota. Maps and links to current graphs can be found at: https://gacc.nifc.gov/nrcc/predictive/fuels_fire-danger/PSAmap.htm

C. Daily Schedule

0900: Miles City Dispatch Daily Intel Briefing is posted to the website. Includes: Daily Forecasted Fire Danger Indices, NFDRS Adjective Fire Danger Rating, EMFZ I.A. Response Levels, EMFZ Preparedness Levels and Current Seasonal Trend Analysis for Burning Index.

1445: WIMS information is validated, Observed Indices recorded, and Dispatch response levels adjusted.

1630: Afternoon Fire Weather Forecast is broadcast to the field. Observed NFDRS Indices, percentile level, and Response level included with the broadcast.

Appendix 1 – Evaluation of Landscape Data (Topography, Fuels, Climate)

The NIFC ArcGIS Online (AGOL) Draft Fire Danger Rating Areas tool was used to identify homogeneous Topography, Fuels, and Climate within the Eastern Montana Fire Zone.

A. Topographic Information

500 ft Elevation Bands was the layer used to identify differences in topography within the zone. Using this data there are three distinct elevation zones.

1. **Missouri and Yellowstone Rivers Corridor**
   The dominate features are the river breaks and steep plateaus. The Missouri River, Fort Peck Reservoir, Yellowstone River and Big Dry Creek are major drainages within this area. The country adjacent to the Yellowstone and Missouri rivers are rough, steep, and defined as river break lands. The remainder of this area consists of combinations of rolling to steep grasslands, sagebrush flats, river breaks and agricultural lands, divided by drainages

2. **Lower River Basin**: **Tongue, Powder, and Musselshell**
   The Tongue Powder, and Musselshell rivers dominate this portion of the Eastern Montana Fire Zone and all flow south to north. The Tongue and Powder river valleys are broad and flat gradually rising to the steeper divides with increased slope, roughness and elevation. The country adjacent to the Musselshell river is rough, steep, and defined as river break lands. Sarpy Creek, Reservation Creek, and Rosebud Creek are east of the Big Horn River and drain from south to north into the Yellowstone River. The terrain between these drainages rises from flat river bottoms to river breaks of varying topography to upland elevations of up to 5,000 feet. These elevated lands vary from gentle rolling landscapes to abrupt rises with both narrow and broad valleys. The remainder of this area's topography consists of combinations of rolling to steep grasslands, sagebrush flats, river breaks and agricultural lands, divided by drainages.

3. **Upper River Basin: Tongue and Powder**
   This area is dominated by the Custer Gallatin National Forest. Steep plateaus within the Custer Gallatin National Forest rise to 4800 feet. The river valleys are broad and flat gradually rising to the steeper divides with increased slope, roughness and elevation.

Map of Similar Terrain:

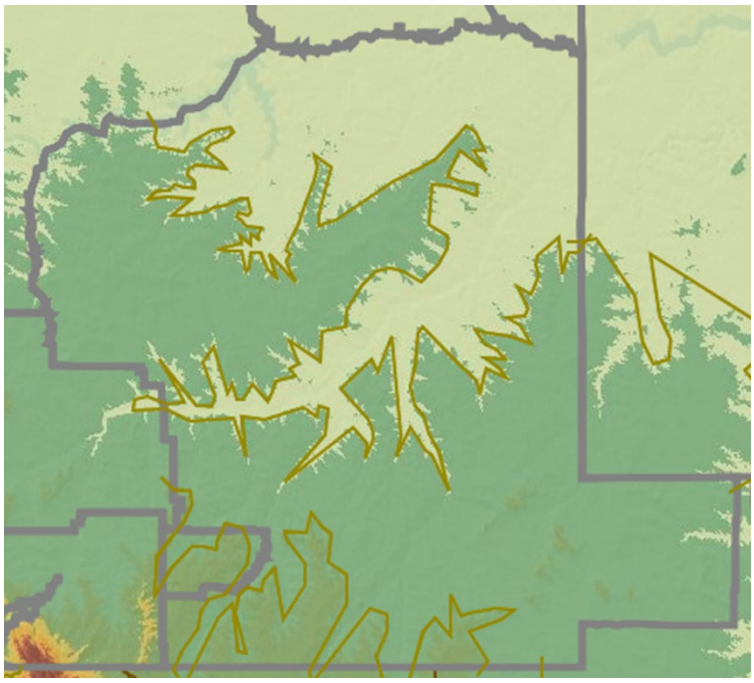


Figure 3 *- Map of Areas of Similar Terrain*

B. Vegetation Data

The USA NLCD Land Cover was used to identify areas of similar vegetation cover. The Vegetation data shows two distinct cover types.

1. **Open Timber**
   The areas identified as open timber consist of western annual grasses, sagebrush, juniper and pine. These areas are mostly concentrated along the river breaks and higher elevation plateaus.

2. **Grassland**
   These areas consist of perennial grasses, western annual grasses, and sagebrush interspersed with badlands and mixed-use agriculture.

Map of Similar Vegetation:

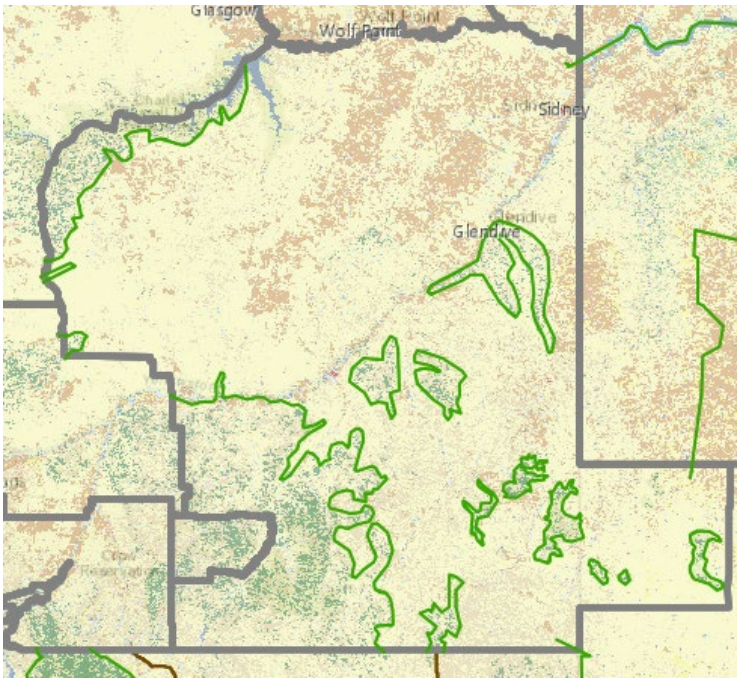


Figure 4 *- Map of Areas of Similar Vegetation*

C. Climate Data

Use of the NIFC AGOL tool for analyzing Temperature and annual precipitation showed a uniform, homogenous average throughout the Eastern Montana Fire Zone. When looking at vapor pressure deficit a distinct east/west boundary can be identified.

Map of Vapor Pressure Deficit:

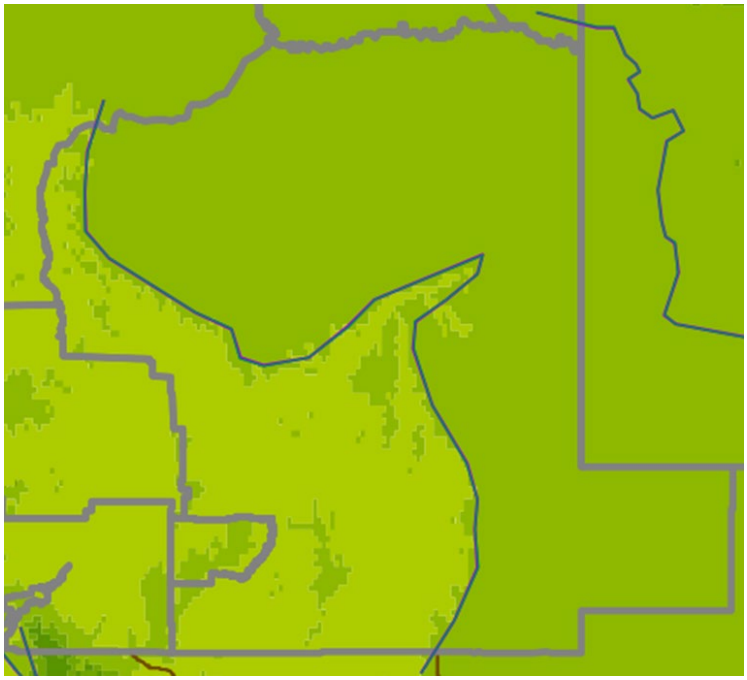


Figure 5 - *Map of Vapor Pressure Deficit*

D. Delineation of FDRAs

Based on the data analysis from NIFC AGOL it appears the EMFZ should have two FDRAs that could be defined as either an East and West FDRAs or a Timber and Rangeland FDRAs. The presence of separate climatological patterns within the EMFZ inhibit either of these options for predicting fire danger.

The North half of the EMFZ (defined as North of the Yellowstone River / I-94) has summer weather patterns that are westerly, southwesterly and north westerly flows. These flows generally bring hot dry air into the region. Orographic lifting from mountain ranges located in the neighboring Lewistown Field Office creates the weather events leading to lightning as an ignition source. Summer thunderstorms track west to east impacting the Musselshell breaks first and will funnel along the Big Sheep Mtns and Yellowstone River corridor.

The South half of the EMFZ has summer weather patterns that are westerly and southwesterly flows, which generally bring hot dry air into the region. The nearby Bighorn mountain range in Northeastern Wyoming will create orographic lifting which leads to a localized pattern of weather events and occurrence of lightning during peak fire season over the Ashland Ranger District. The Ekalaka Hills, Chalk Buttes, and the Long Pines located in the Southeast will create less pronounced orographic lifting which leads to a localized pattern of weather events and occurrence of lightning during peak fire season, though less frequent than the event on the western side.

Given the climatological patterns experienced across the EMFZ it was determined that two FDRAs delineated by a North and South with the Yellowstone River as the boundary is the best fit. Detailed descriptions of each follow below.

1. North Fire Danger Rating Area:

a. **Location:** The western boundary of the North FDRA is the east side of the Musselshell River trailing north to the southern edge of the Fort Peck Reservoir and the Charles M. Russell National Wildlife Refuge. The northern boundary is the south side of the Missouri River. The eastern edge follows the western state line of North Dakota to the Richland/Wibaux County Line. The southern boundary follows the Wibaux County line heading west through the intersection of the Yellowstone River, then follows the River to the Rosebud/Treasure County Line.

b. **Fuels:** The fuels complex of the North FDRA consists of perennial grasses, western annual grasses, sagebrush, juniper and pine. This FDRA is best represented by NFDRS 2016 Fuel Model V where most fires are wind driven and occur in this grass fuel type. Areas surrounding this FDRA are represented by NFDRS 2016 Fuel Models W and Y.

c. **Climate:** Hot and dry weather typically dominates the Big Dry FDRA during the fire season. Temperatures rise into the upper nineties, relative humidity drops to the lower teens, and wetting rains occur infrequently. Summer weather patterns that affect the area are westerly, southwesterly and north westerly flows. These flows generally bring hot dry air into the region. Orographic lifting from mountain ranges located in the neighboring Lewistown Field Office creates the weather events leading to lightning as an ignition source. Fire activity may be infrequent, but the potential for large fire growth is usually high. Southwesterly flows typically bring moisture into this FDRA. Fires in this FDRA are typically in climate class B and C.

d. **Topography:** This FDRA encompasses the Missouri River Breaks, Fort Peck Reservoir, and Missouri River Plateaus. The dominate features are the river breaks and steep plateaus. The Missouri River, Fort Peck Reservoir, Musselshell River and Big Dry Creek are major drainages within this FDRA. The country adjacent to the Musselshell and Missouri rivers are rough, steep, and defined as river break lands. The remainder of this FDRA consists of combinations of rolling to steep grasslands, sagebrush flats, river breaks and agricultural lands, divided by drainages

e. **Weather Stations:** Two stations are located in the FDRA. South Sawmill (WIMS ID 242403) and Big Sheep (WIMS ID 244002).

   South Sawmill is located just south of the Fort Peck Reservoir in the northwest of the FDRA. Situated along the river breaks country and is representative of the open timber fuels found in that area.

   Big Sheep located in the southeast of the FDRA on Big Sheep Mountain sits in a grassy valley with rolling terrain and intermittent sagebrush.

   Both RAWS are highly correlated and when combined into a SIG provide an accurate representation of the Fire Danger throughout the rating area.

2. South Fire Danger Rating Area

a. **Location:** The South FDRA encompasses the Ashland and Sioux Ranger Districts of the Custer Gallatin National Forest and surrounding BLM lands. The northern boundary is the Yellowstone River to the intersection of the Wibaux County line, then follows the Richland/Wibaux County Line to the North Dakota state line. The eastern boundary is the western North Dakota and South Dakota state lines except where it extends further to the east, in Harding County, South Dakota where suppression responsibility is part of the EMDD BLM. The southern boundary is the Wyoming state line. The western boundary of the FDRA is the

eastern boundary of the Northern Cheyenne Indian Reservation extending north along the Big Horn and Treasure county line.

b. **Fuels**: The fuels complex of the Southern FDRA consists of perennial grasses, western annual grasses, sagebrush, juniper and pine. This FDRA is best represented by NFDRS Fuel Model A, where most fires are wind driven and occur in this grass fuel type. The forested areas of the Custer National Forest which is encompassed by this FDRA are represented by Fuel Model C and U.

c. **Climate:** Hot and dry weather typically dominates the Southern FDRA during the fire season. Historically, temperatures have risen into the upper nineties and relative humidity has dropped to the lower teens. Wetting rains are infrequent. Summer weather patterns that affect the area are westerly and southwesterly flows, which generally bring hot dry air into the region. The nearby Bighorn mountain range in Northeastern Wyoming will create orographic lifting which leads to a localized pattern of weather events and occurrence of lightning during peak fire season. Lightning tends to be the main ignition source for this FDRA. Fire activity is moderate to high and the potential for large fire growth is usually high to very high throughout the peak fire season. Fires in this FDRA are typically in climate class B and C.

d. **Topography**: The Western portion of the FDRA is dominated by the Custer Gallatin National Forest. Steep plateaus within the Custer Gallatin National Forest rise to 4800 feet and often provide the district with vantage points for fire lookouts. The Tongue and Powder rivers dominate this portion of the Miles City Field Office and both flow south to north. The river valleys are broad and flat gradually rising to the steeper divides with increased slope, roughness and elevation. Sarpy Creek, Reservation Creek, and Rosebud Creek are east of the Big Horn River and drain from south to north into the Yellowstone River. The terrain between these drainages rises from flat river bottoms to river breaks of varying topography to upland elevations of up to 5,000 feet. These elevated lands vary from gentle rolling landscapes to abrupt rises with both narrow and broad valleys. The remainder of this FDRA's topography consists of combinations of rolling to steep grasslands, sagebrush flats, river breaks and agricultural lands, divided by drainages.

The Eastern portion of the FDRA consists of the Ekalaka Hills, Chalk Buttes, and the Long Pines located in the state of Montana. The East and West Short Pines, the North and South Cave Hills, and the Slim Buttes are located in South Dakota. In both instances, these hills rise from rangeland and have isolated Ponderosa pine and grass for vegetation. East of the Powder River, the Little Powder and the Little Missouri rivers drain south to north into the Yellowstone River. The areas between are rolling badlands with juniper, sagebrush, and grass flats. The higher elevations extend to approximately 4,120 feet.

e. **Weather Stations:** Eight stations are located in the South FDRA. Pine Hills (WIMS ID 244201), Cannonball Creek (WIMS ID 244301), Knowlton (WIMS ID 244102), Cow Creek (WIMS ID 243906), Fort Howes (WIMS ID 245201), Bradshaw Creek (WIMS ID 245203), Ekalaka (WIMS ID 245303), and Indian Butte (WIMS ID 390901).

   The Cow Creek, Bradshaw, Ekalaka, and Knowlton RAWS are well spaced throughout the FDRA. All four stations are highly correlated and when combined into a SIG provide an accurate representation of the Fire Danger throughout the rating area.

Appendix 2 – Weather Station Selection and Fire Occurrence

A. Weather Data

The Eastern Montana Fire Zone manages ten (10) active Remote Automated Weather Stations (RAWS): South Sawmill, Big Sheep Mtn., Pine Hill, Cannonball, Knowlton, Cow Creek, Bradshaw, Ekalaka, Indian Butte and, Fort Howes. All of these stations comply with NWCG NFDRS Weather Station Standards.

Fire Family Plus was used to produce climatological reports for Temperature, Relative Humidity, Energy Release Component, and Burning Index using the previous ten years of data 2010 – 2019. These reports were then imported into Excel. Pivot charts were created to determine station correlation and best fit SIGs.

1. North Fire Danger Rating Area

Fire Family Plus Fire Summary was used to determine the months to use in the comparison. For the North FDRA we start to get fires in mid-March and stop seeing fires by mid-November. The number of fires jumps significantly starting in June and drop off just as significantly at the end of September. For this reason, we will use June through September to determine seasonal correlation.

a. Burning Index

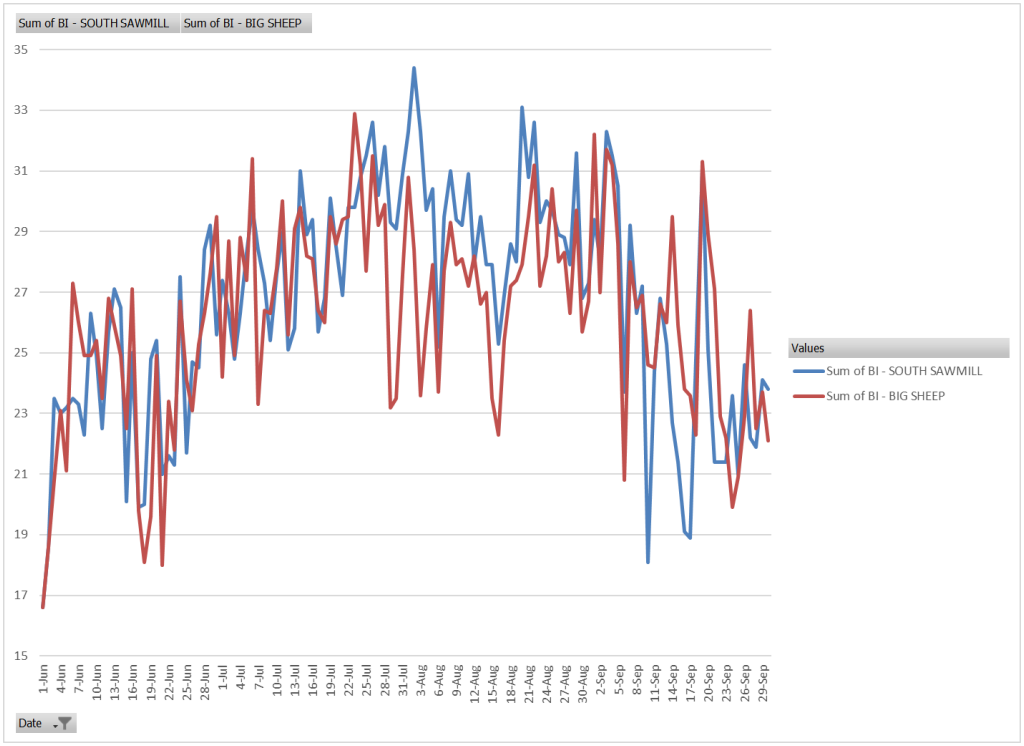


Figure 6 *- Burning Index Seasonal Trend North FDRA*

b. Energy Release Component

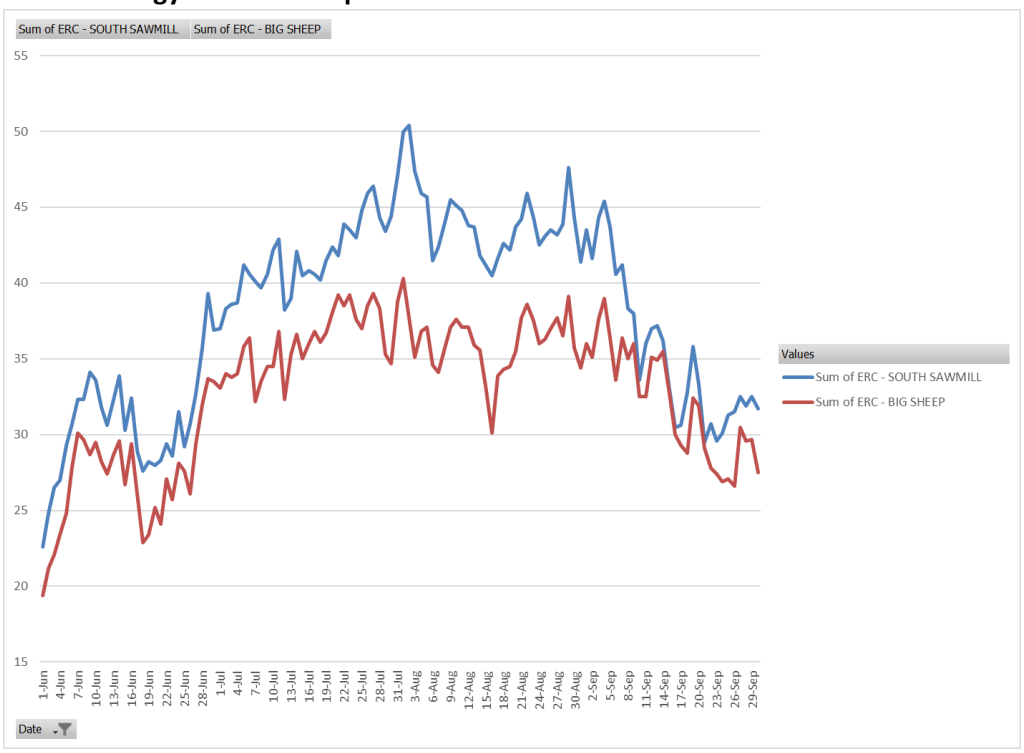


Figure 7 - *Energy Release Component Seasonal Trend North FDRA*

c. Dry Bulb Temperature

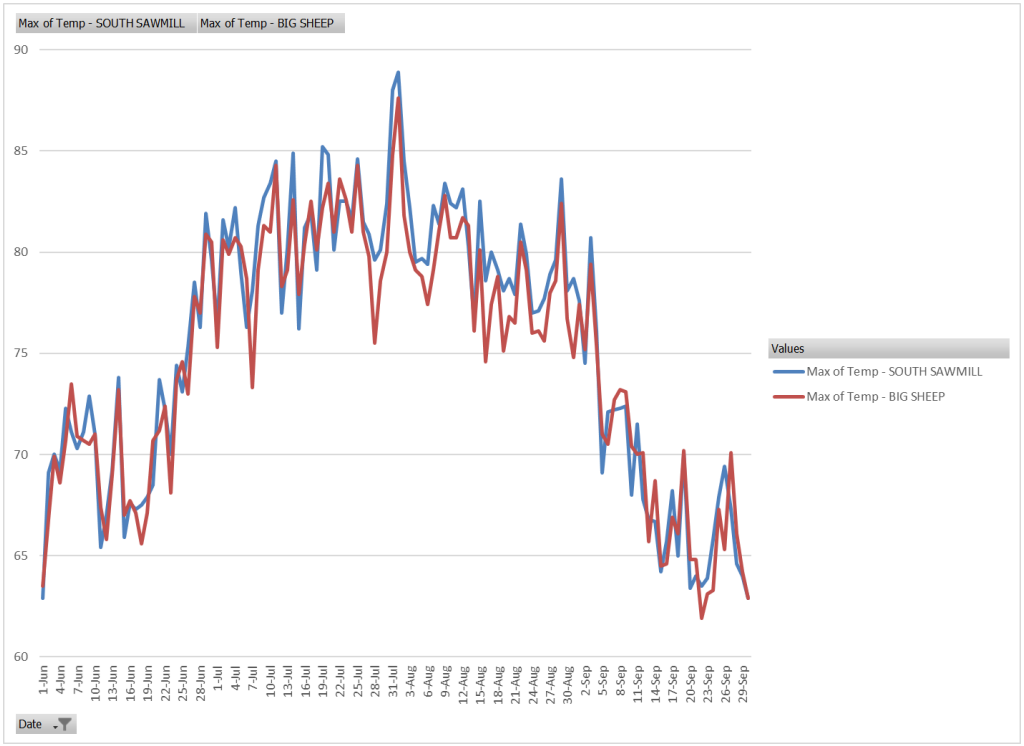


Figure 8 - *Temperature Seasonal Trend North FDRA*

d. Relative Humidity

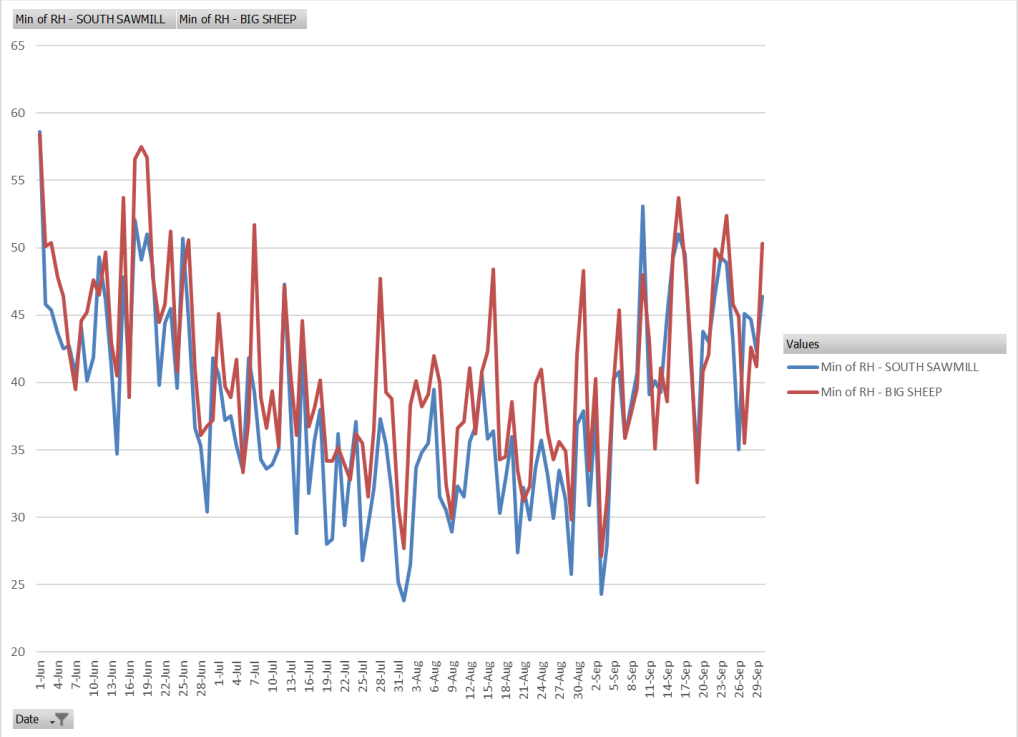


Figure 9 *- Relative Humidity Seasonal Trend North FDRA*

Comparing the seasonal trends between South Sawmill and Big Sheep we can determine they are well correlated for Burning Index, Temperature, and Relative Humidity. The seasonal trends for Energy Release Component between the two stations are also well correlated though the values are not.

Based on the weather analysis it is determined to combine both stations into a SIG for producing fire danger indices for the North Fire Danger Rating Area.

2. South Fire Danger Rating Area

Fire Family Plus Fire Summary was used to determine the months to use in the comparison. For the South FDRA we start to get fires in mid-February and stop seeing fires by mid-November. The number of fires jumps significantly starting in June and drop off just as significantly at the end of September. For this reason, we will use June through September to determine seasonal correlation.

There are eight stations in the FDRA. Initial comparison of monthly trends helped identify which stations were similar and which ones were outliers.

a. Burning Index

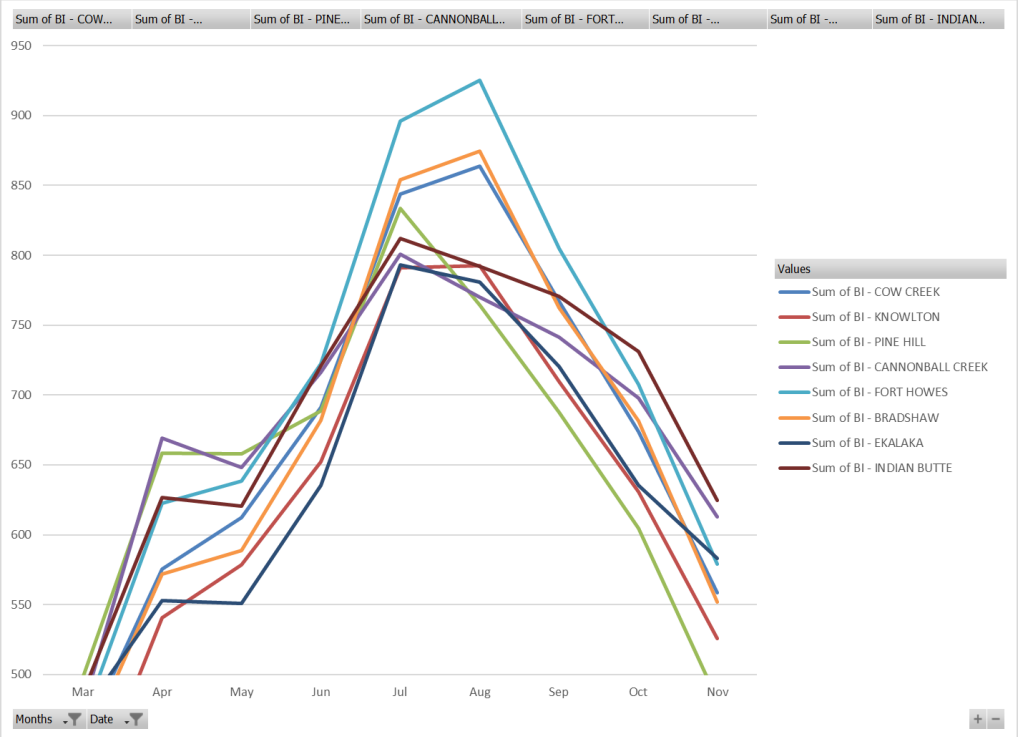


Figure 10 *- Burning Index Seasonal Trend South FDRA*

b. Energy Release Component

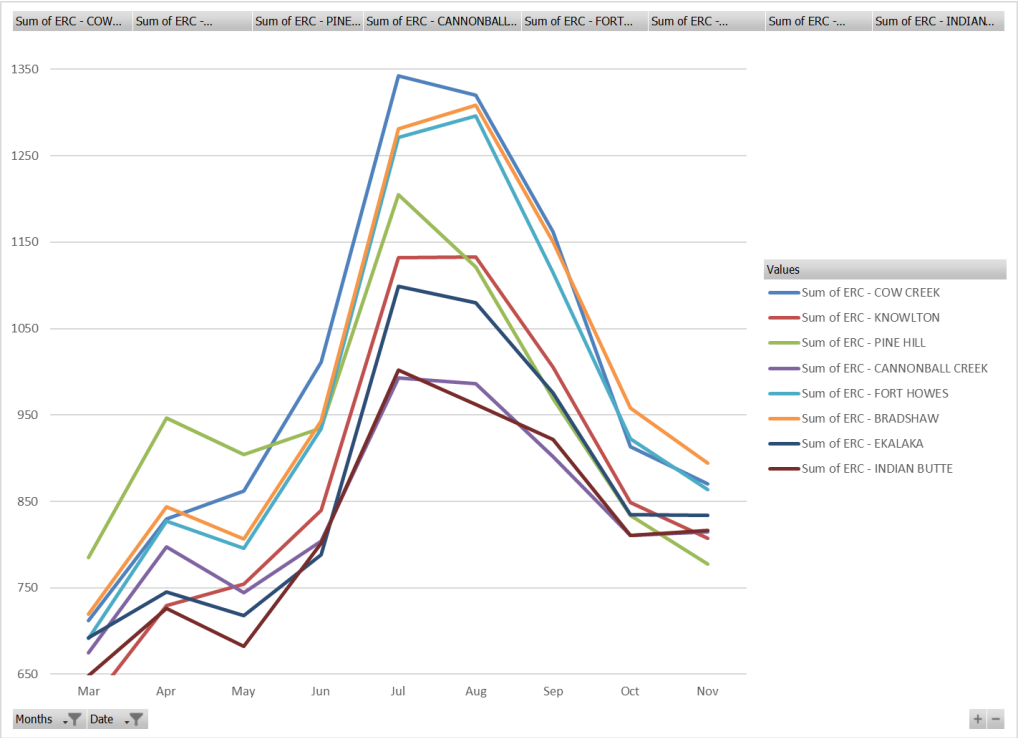


Figure 11 *- Energy Release Component Seasonal Trend South FDRA*

c. Dry Bulb Temperature

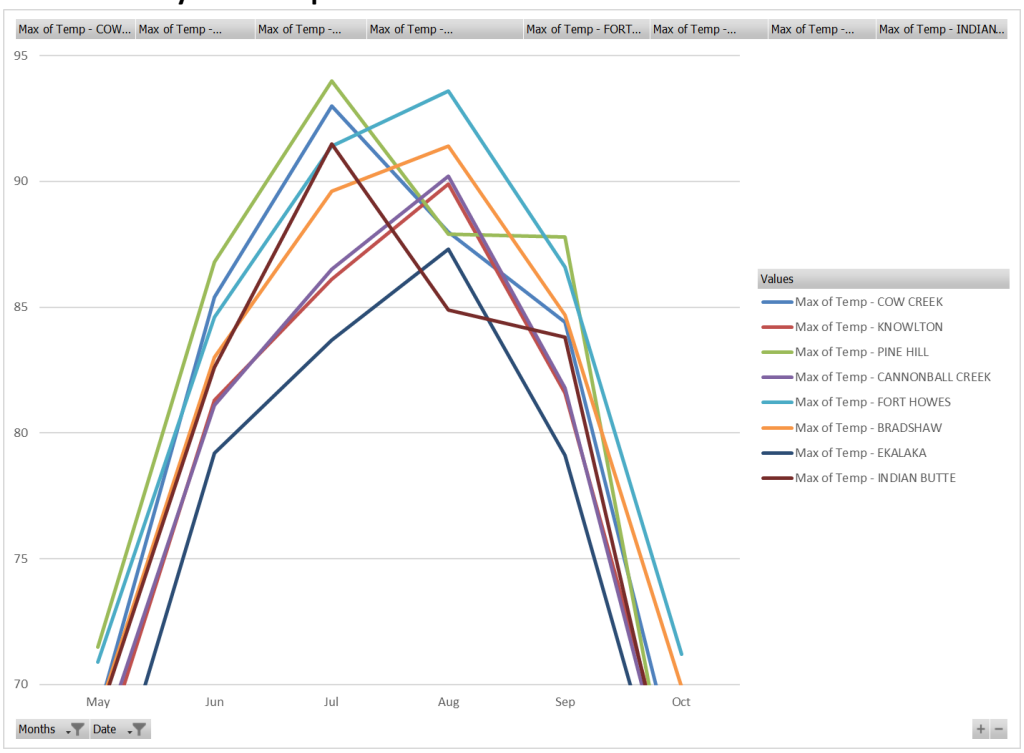


***Figure 12** - Temperature Seasonal Trend South FDRA*

d. Relative Humidity

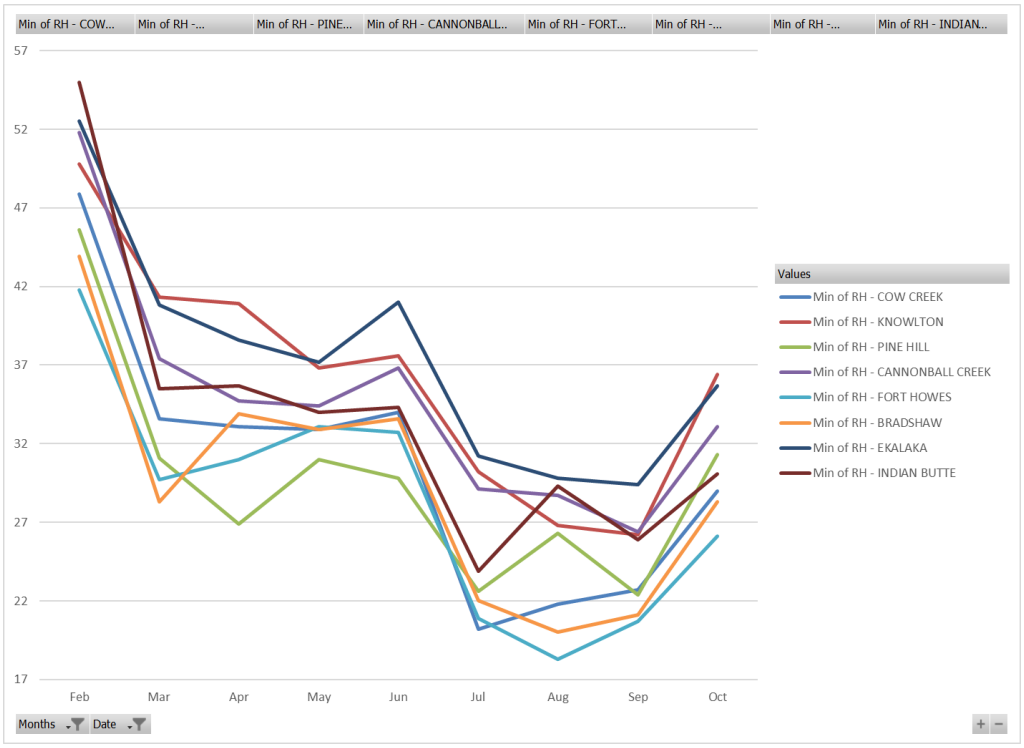


***Figure 13** - Relative Humidity Seasonal Trend South FDRA*

The monthly trend for BI during peak fire season shows two groups with similar trends.

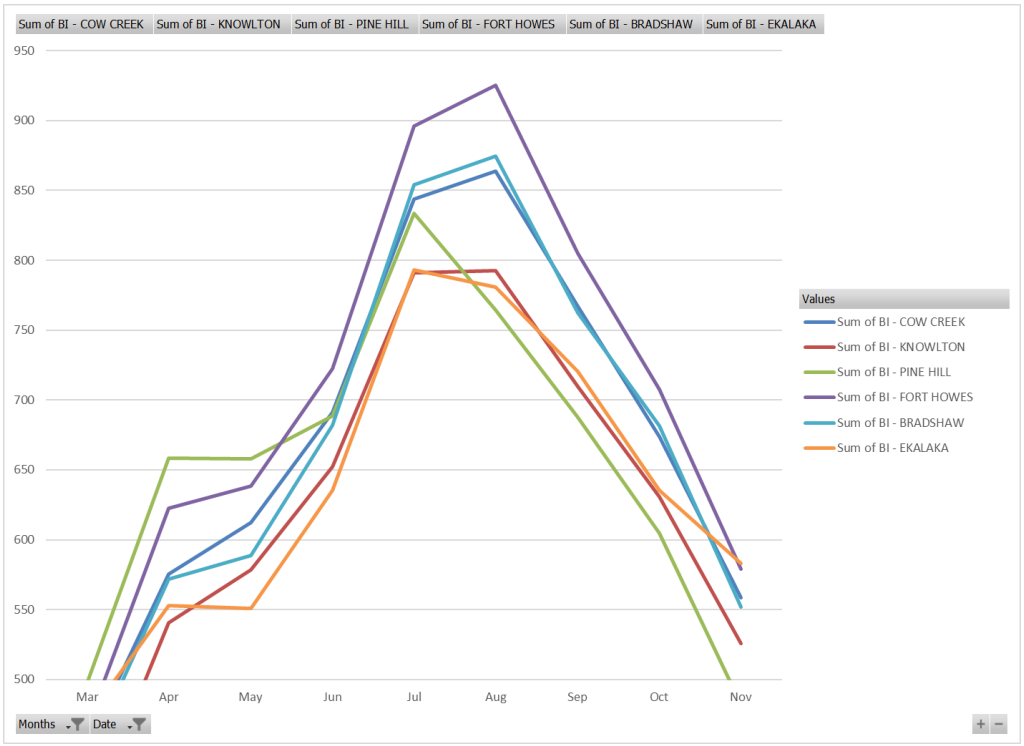


***Figure 14** - Burning Index Seasonal Trend (showing group 1 with Ekalaka and Pine Hill)*

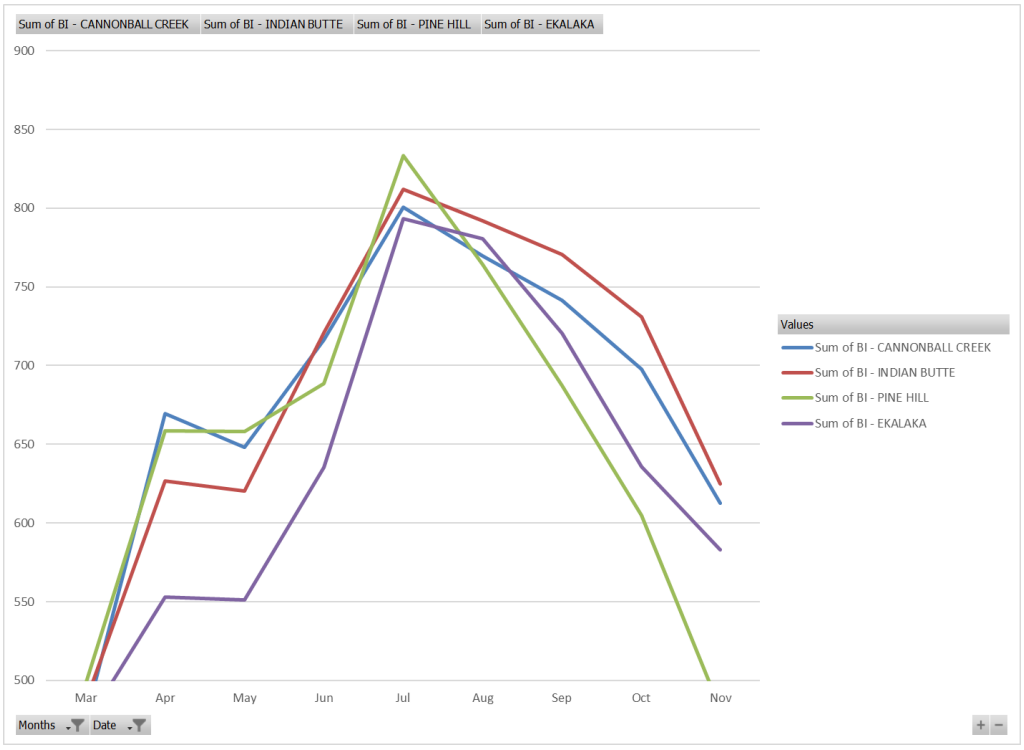


***Figure 15** - Burning Index Seasonal Trend (showing group 2 with Ekalaka and Pine Hill)*

Cow Creek, Knowlton, Fort Howes, and Bradshaw make one group. Cannon Ball Creek and Indian Butte make the second. Ekalaka trends closer to group two earlier in the season then trends similar to group one, it could be grouped with either. Pine Hill shows as an outlier and does not correlate with either grouping.

Further analysis for each station was done using Fire Family Plus Fire Analysis. This helps to show which stations have a better correlation between recorded weather and fire occurrence. This information combined with the seasonal trend comparisons will be used to create a Special Interest Group (SIG) for determining Fire Danger Ratings.

Table 4: South FDRA RAWS Comparison

Station	80th Percentile	95th Percentile	Chi Square Fire Day	Chi Square Large Fire Day	Chi Square Multi Fire Day
Cow Creek	30	37	6.0	12.5	11.5
Ekalaka	29	36	7.2	5.4	8.7
Bradshaw	29	35	9.9	14.7	6.2
Knowlton	28	34	12.5	18.5	6.8
Cannon Ball Creek	31	39	13.2	10.0	9.2
Fort Howes	30	38	17.5	31.1	15.8
Indian Butte	30	38	18.0	6.7	8.5
Pine Hill	28	34	39.1	12.1	10.8

Based on the seasonal trend comparisons and the best fit fire analysis it is determined that the South FDRA should use a SIG that consists of Cow Creek, Ekalaka, Bradshaw and Knowlton RAWS.

B. Fire Occurrence Data

Fire occurrence data was examined for 10 consecutive years (2010 - 2019). Over the 10-year period, the Eastern Montana Fire Zone responded to 1007 fires with 1,211,482 total acres burned. The majority of fires and acres burned occurred during the months of June, July, August, and September. During those months over the ten-year period there were 918 fires and 1,172,056 acres burned. This accounts for 91% of our fire occurrence and 97% of our acres burned. Median fire size is 73 acres and an average of 10,823 acres burned each year.

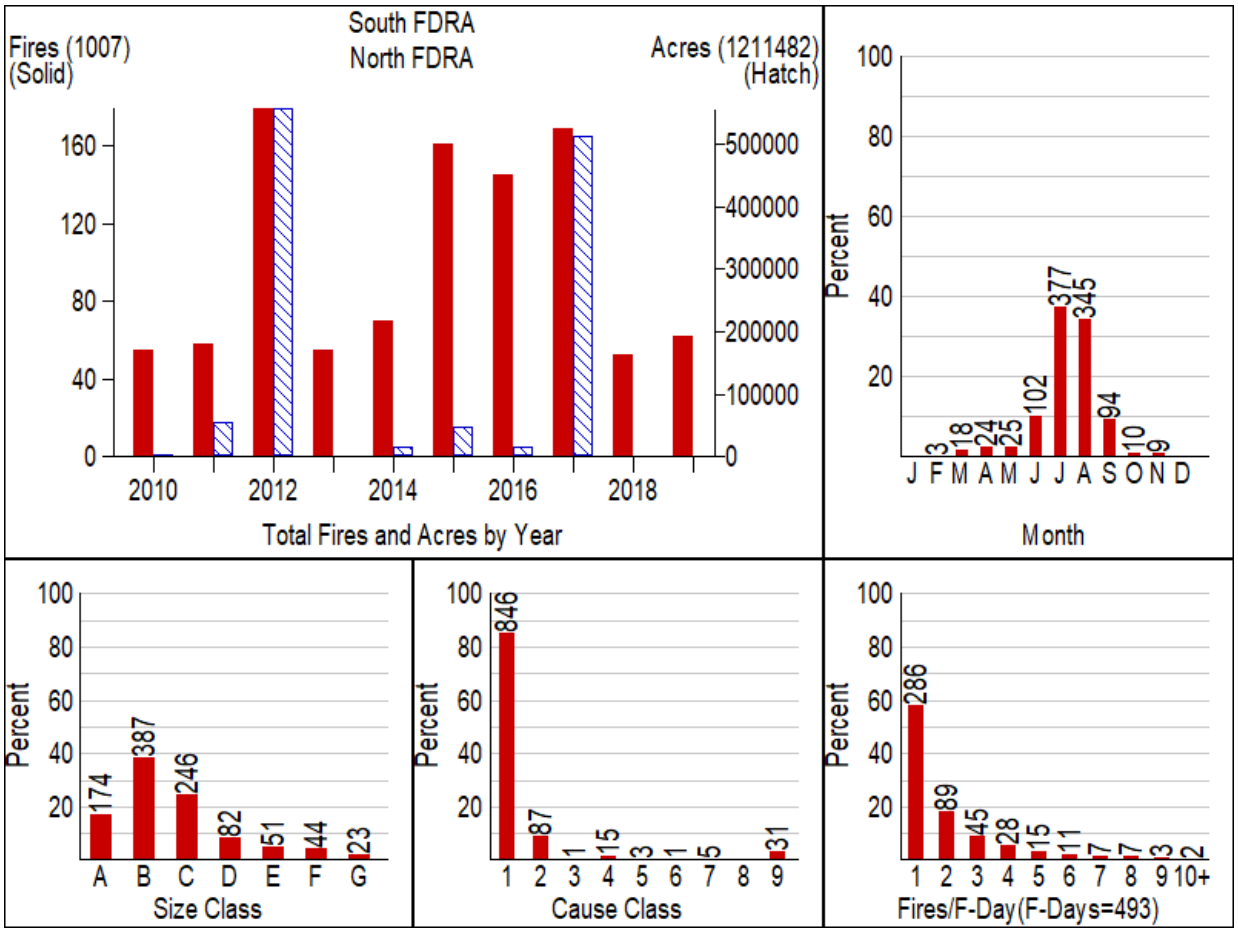


Figure 16 *- 2010-2019 EMFZ Fire Occurrence Summary*

Map of Eastern Montana Fire Zone Fire Occurrence:

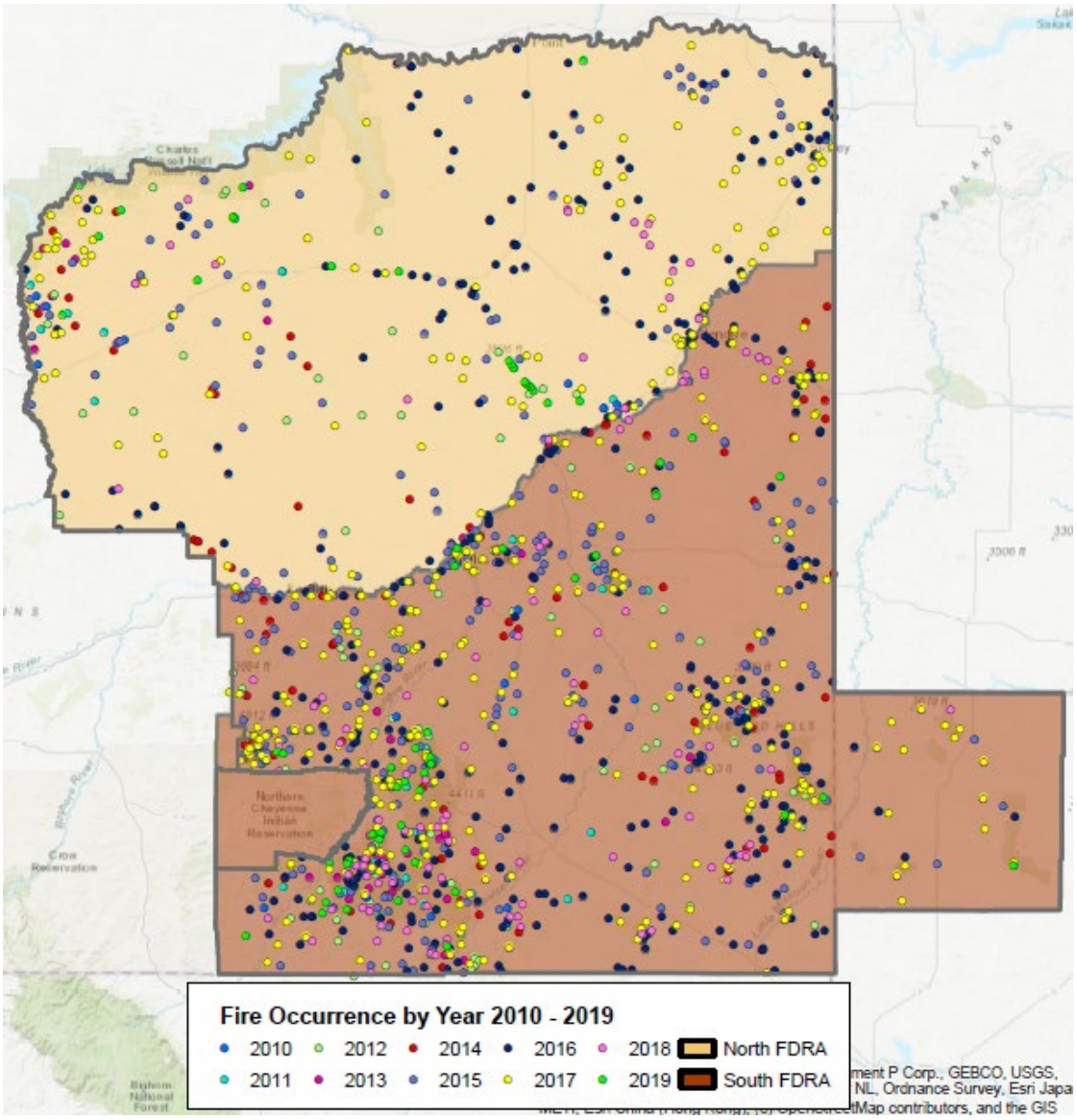


Figure 17 - Map of 2010-2019 Fire Occurrence

Table 5: Most Active Fire Years in Eastern Montana

Year	Number of Fires	Acres Burned
2000	189	96,071
2002	205	96,822
2003	212	173,255
2006	178	199,461
2012	183	490,972
2017	422	527,099

Fire occurrence data was further broken down by rating areas

1. **North Fire Danger Rating Area**
   Over the 10-year period the North FDRA had a total of 271 fires for 384,518 acres. This breaks down to 27% of the fire occurrence and 32% of acres burned in the Eastern Montana Fire Zone. Lightning is the primary means of ignition and accounts for 69% of all fire starts in the FDRA. Equipment use accounts for 20% of ignitions and the remaining 11% are other miscellaneous causes.

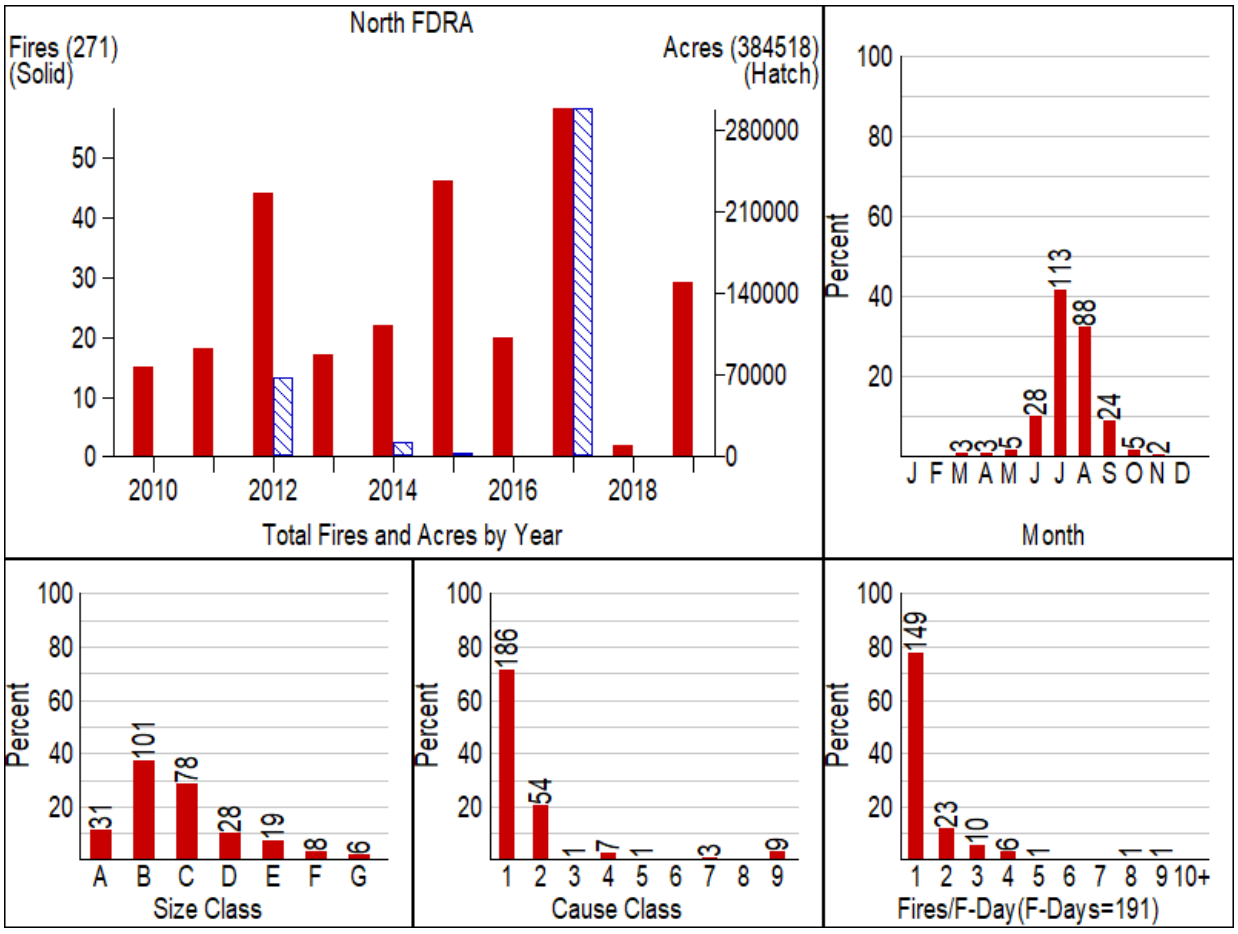


Figure 18 - North FDRA Fire Summary

```
Size Classes:
       A: <= 0.25 acres
       B: 0.26 to 9.9 acres
       C: 10 to 99.9 acres
       D: 100 to 299 acres
       E: 300 to 999 acres
       F: 1000 to 4999 acres
       G: >= 5000 acres
```

```
Cause Classes:
       1 - Lightning
       2 - Equipment Use
       3 - Smoking
       4 - Campfire
       5 - Debris Burning
       6 - Railroad
       7 - Arson
       8 - Children
       9 - Miscellaneous
```

2. South Fire Danger Rating Area

Over the 10-year period the South FDRA had a total of 736 fires for 826,965 acres. This breaks down to 73% of the fire occurrence and 68% of acres burned in the Eastern Montana Fire Zone. Lightning is the primary means of ignition and accounts for 90% of all fire starts in the FDRA. Equipment use accounts for 4% of ignitions and the remaining 6% are other miscellaneous causes.

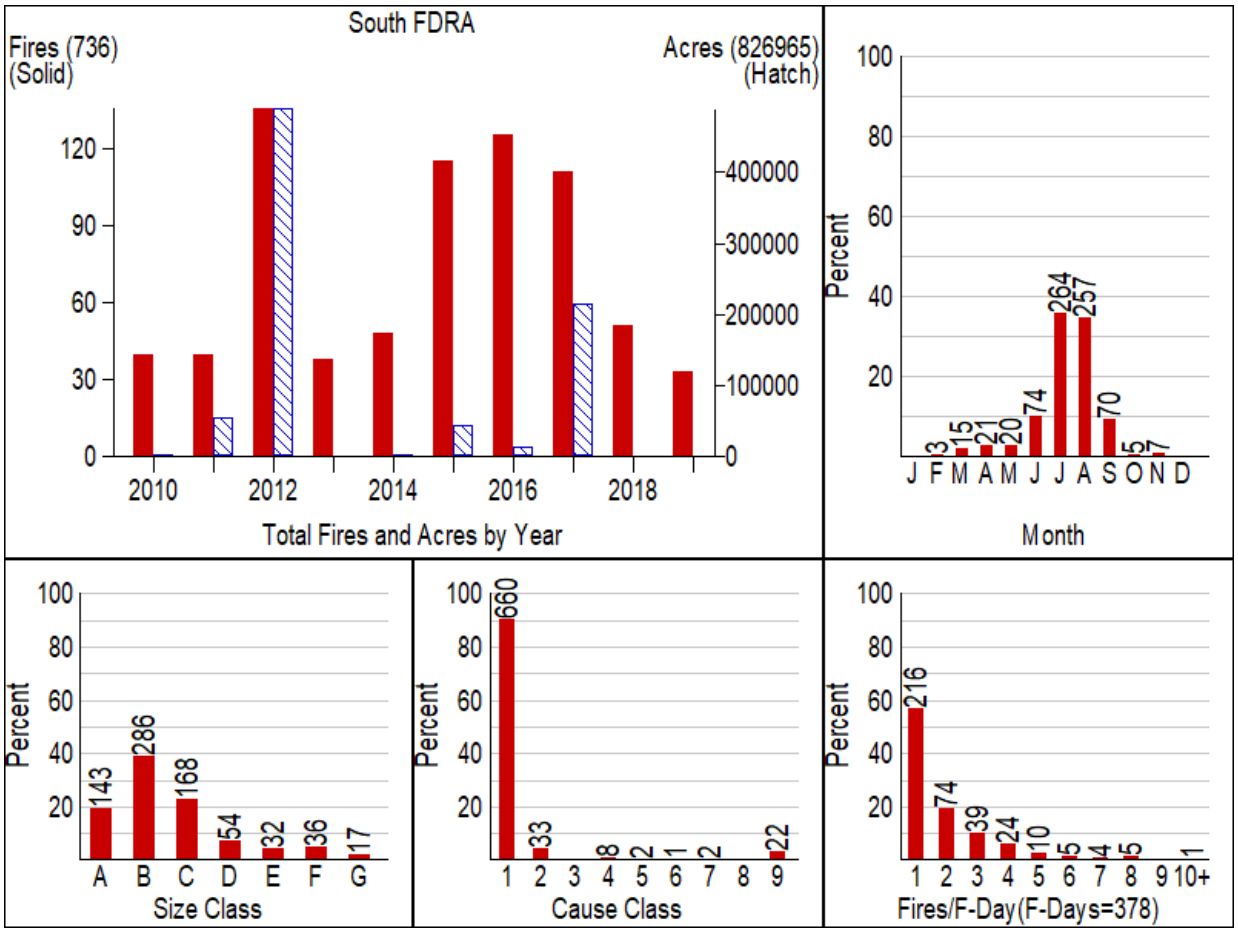


Figure 19 *- North FDRA Fire Summary*

```
Size Classes:
      A: <= 0.25 acres
      B: 0.26 to 9.9 acres
      C: 10 to 99.9 acres
      D: 100 to 299 acres
      E: 300 to 999 acres
      F: 1000 to 4999 acres
      G: >= 5000 acres
```

```
Cause Classes:
      1 - Lightning
      2 - Equipment Use
      3 - Smoking
      4 - Campfire
      5 - Debris Burning
      6 - Railroad
      7 - Arson
      8 - Children
      9 - Miscellaneous
```

Appendix 3 – Correlation with Fire Occurrence

A. Statistical Analysis

Fire Family Plus was used to evaluate the statistical correlation between fire occurrence and weather data for the FDRAs. A fire day probability analysis was done for each of the 2016 NFDRS fuel models for both burning index and energy release component. The fitness for each fuel model is in the table below. Based on how the 2016 models calculate NFDRS outputs it is recommended that the entire year be used when doing analyses. For this reason, fire day probability runs were done using the entire year. Ten consecutive years of data was used (2010-2019).

Table 6: Fuel Model Fitness for Probability of a Fire Day

North FDRA Fire Day Probability			South FDRA Fire Day Probability		
2016 Fuel Model	Chi Square by NFDRS Index		2016 Fuel Model	Chi Square by NFDRS Index	
	BI	ERC		BI	ERC
V	68.6	23.6	V	112.8	34.3
W	55.3	42.9	W	121.9	63.1
X	52.2	23.3	X	102.8	70.3
Y	5.2	7.8	Y	10.8	10.0
Z	5.4	7.3	Z	13.5	13.5

Based on the probability analysis of having a fire day the data show that either Fuel Model Y (Timber) or Fuel Model Z (Slash) would be the best fit. Either NFDRS Index would be appropriate to use for fire planning purposes. Both fuel models were further analyzed for multiple fire days and large fire days using the conditional probability analysis.

Prior to running the analysis multiple fire days and large fire size needed to be defined. Multi fire days are defined as days the number of fires occurring in a single day that would exceed the capability of the local unit to contain each fire during initial attack. For the North FDRA this is 3 new starts in one day. For the South FDRA this is 4 new starts in one day.

Large fire size is defined as the acreage that would exceed the capability of the local unit to contain the fire during initial attack. Fire occurrence data was used to determine what acreage is appropriate to use as the large fire definition. Percentile distribution data was used to plot fire size growth. Large fire growth is an exponential relationship. The acreage at which the plotted curve beings to leave the baseline of the x-axis is the size at which fires begin to exceed initial attack and resource capability. For the North FDRA, 38 acres is the size at which fire growth becomes exponential (**Figure 20**). For the South FDRA, 16 acres is the size at which fire growth becomes exponential (**Figure 21**).

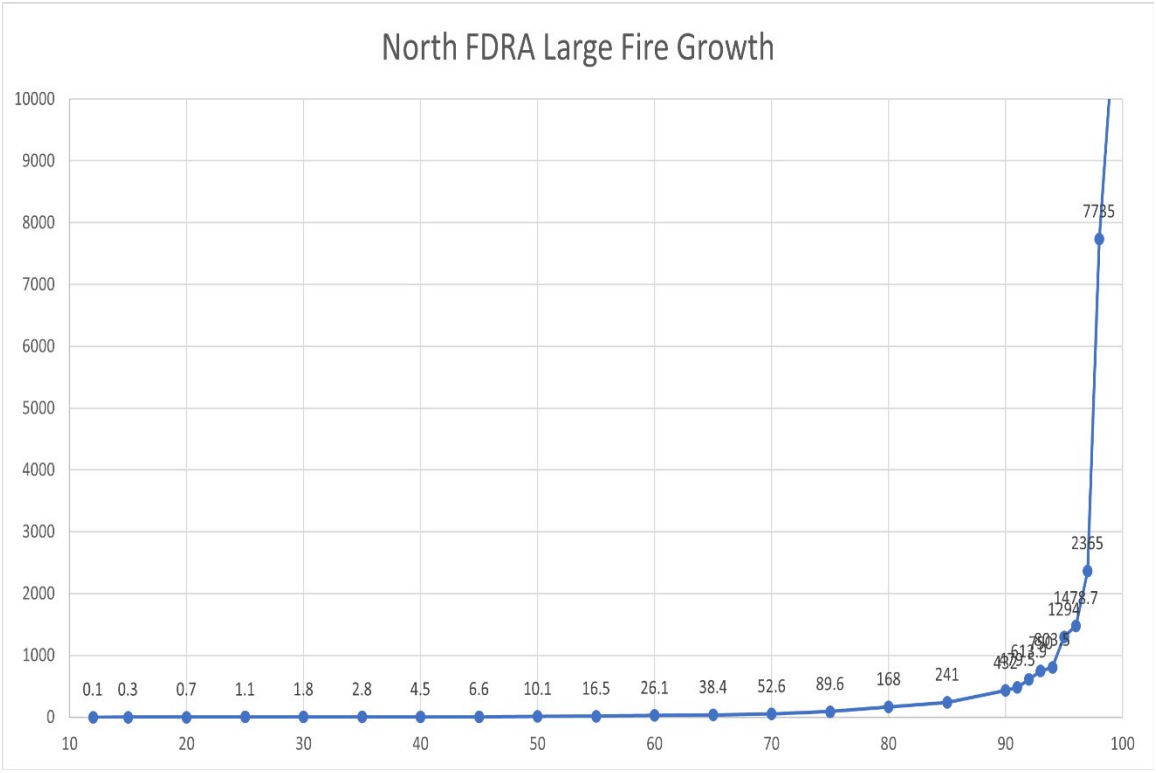


Figure 20 *- North FDRA Large Fire Growth Acres*

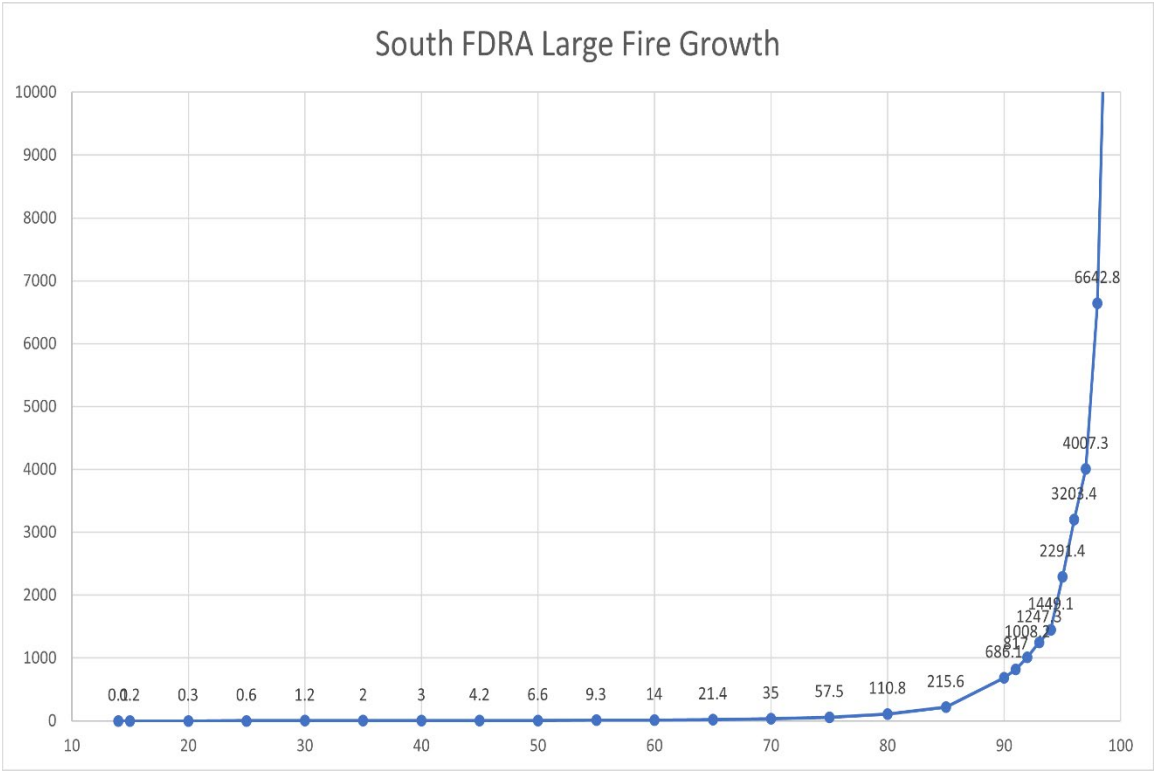


Figure 21 *- South FDRA Large Fire Growth Acres*

Table 7: Fuel Model Fitness, Conditional Probability of a Large Fire Day

North FDRA Large Fire Day Probability			South FDRA Large Fire Day Probability		
2016 Fuel Model	Chi Square by NFDRS Index		2016 Fuel Model	Chi Square by NFDRS Index	
	BI	ERC		BI	ERC
Y	4.6	6.8	Y	4.5	19.8
Z	7.4	7.1	Z	5.6	9.8

Table 8: Fuel Model Fitness, Conditional Probability of a Multi Fire Day

North FDRA Multi Fire Day Probability			South FDRA Multi Fire Day Probability		
2016 Fuel Model	Chi Square by NFDRS Index		2016 Fuel Model	Chi Square by NFDRS Index	
	BI	ERC		BI	ERC
Y	3.8	15.2	Y	4.4	9.2
Z	3.8	6.9	Z	7.4	9.2

The Data analysis show that Fuel Model Y combined with Burning Index is the best fit for Fire Danger planning in both the North and South FDRAs.

B. Breakpoints and Fire Business Thresholds

Climatological breakpoints are established using only historic weather data. Fire business thresholds are established using both historic weather and fire occurrence data. Fire Family Plus was used to establish fire business thresholds based on the best fit fuel model and index for each FDRA.

Fire business thresholds have been established for each FDRA. Five class levels have been established for use in determining preparedness levels and adjective fire danger ratings. Three class levels have been established for dispatch response levels.

1. North Fire Danger Rating Area Preparedness Level Thresholds

Table 9: North FDRA Preparedness Level Fire Business Thresholds

Rating Area	RAWS	Data years	Weighting Factor	Fuel Model	NFDRS Index	Fire Business Breakpoint Ranges	
North	SIG South Sawmill Big Sheep	2010-2019	1 1	Y	BI	0-14 14-24 24-34 34-42 42+	PL-1 PL-2 PL-3 PL-4 PL-5

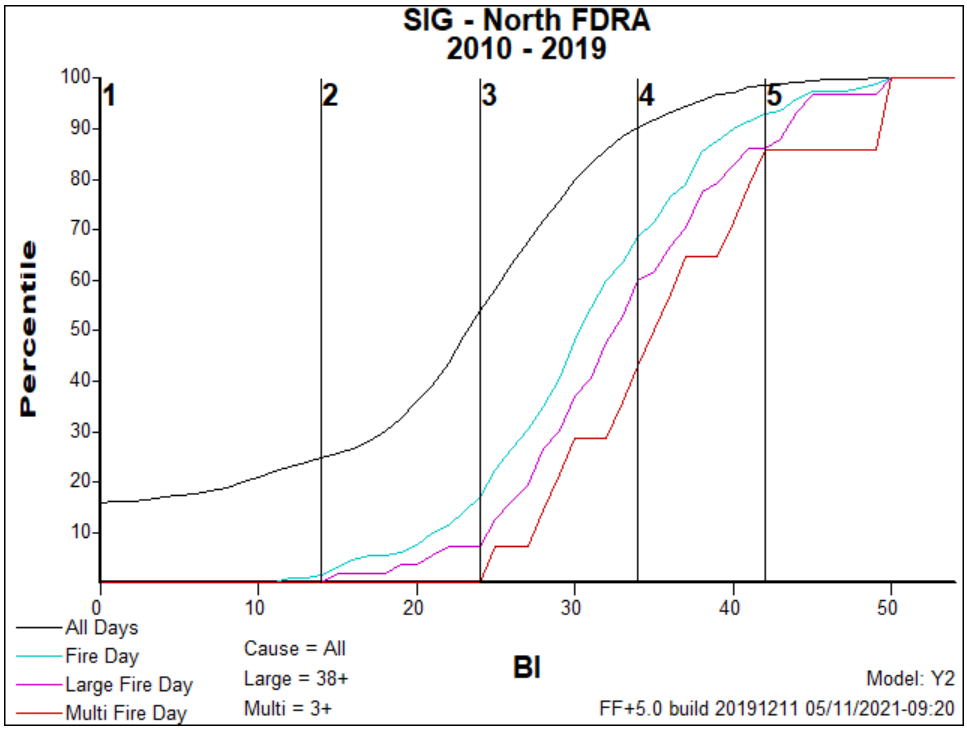


Figure 22 *- North FDRA BI Percentile with Preparedness Level Fire Business Thresholds*

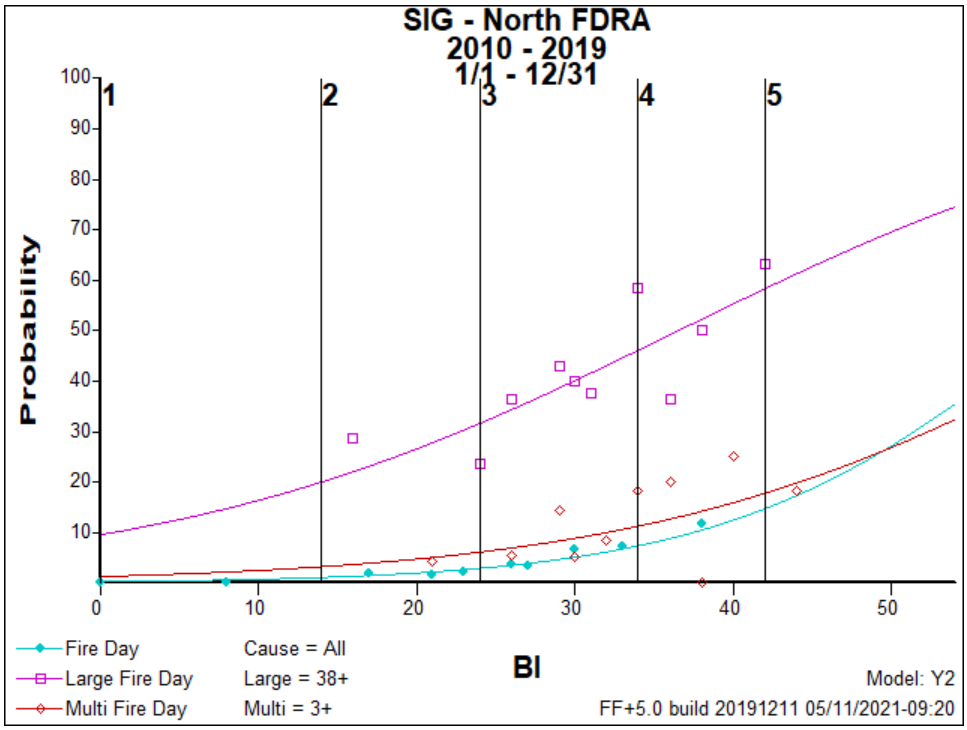


Figure 23 *- North FDRA Fire Probability with Preparedness Level Fire Business Thresholds*

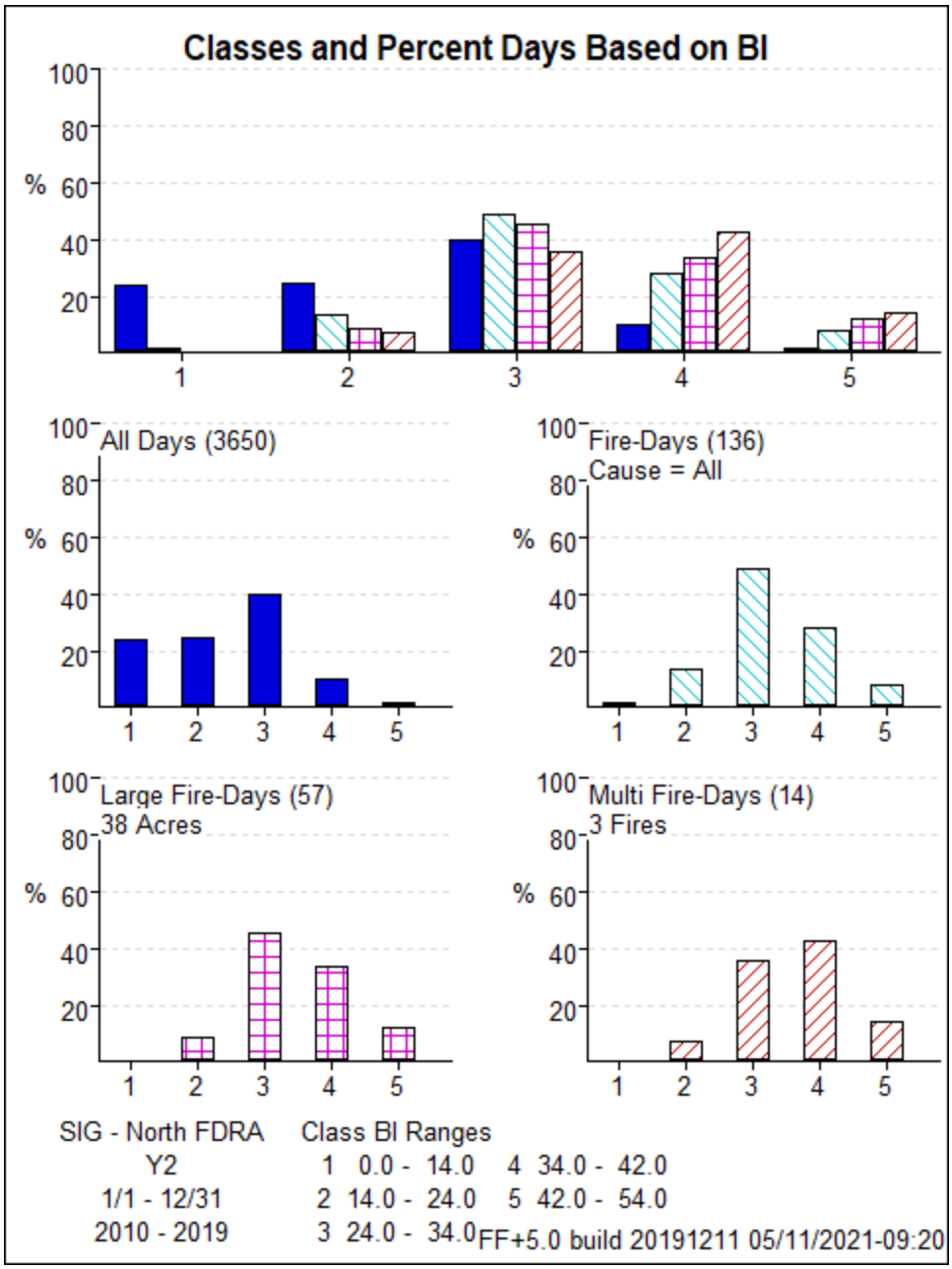


Figure 24 *– North FDRA BI Class Percentage Breakdown*

2. South Fire Danger Rating Area Preparedness Level Thresholds

Table 10: South FDRA Preparedness Level Fire Business Thresholds

Rating Area	RAWS	Data years	Weighting Factor	Fuel Model	NFDRS Index	Fire Business Breakpoint Ranges	
South	**SIG** Bradshaw Ekalaka Cow Creek Knowlton	**2010-2019**	**1** **1**	**Y**	**BI**	**0-15** **16-23** **24-30** **31-36** **37+**	**PL-1** **PL-2** **PL-3** **PL-4** **PL-5**

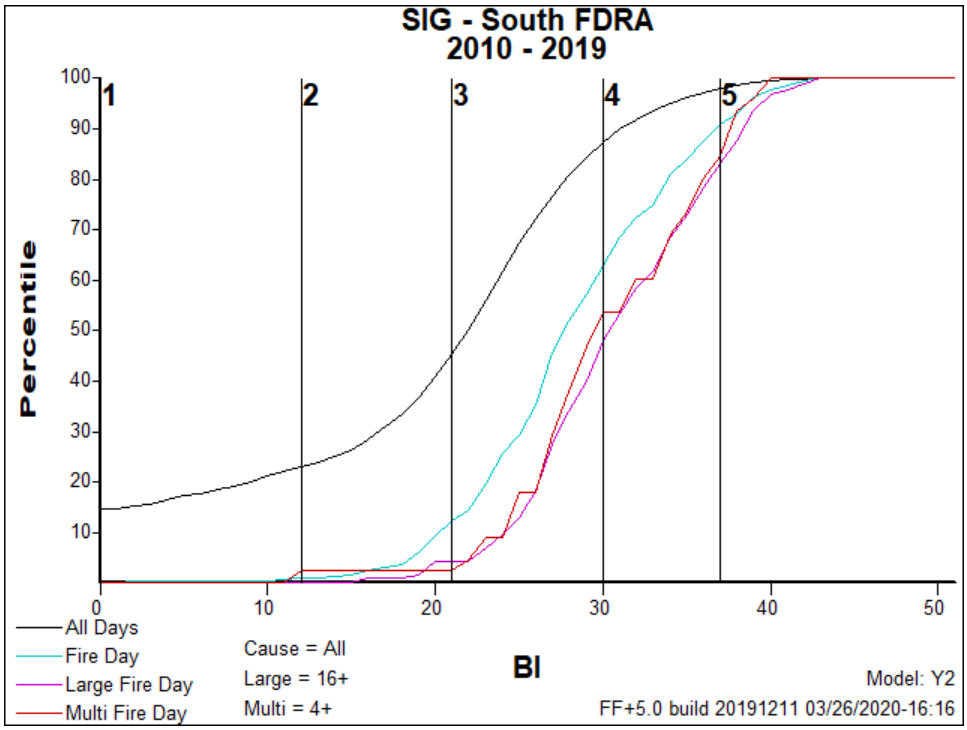


Figure 25 *– South FDRA BI Percentile with Preparedness Level Fire Business Thresholds*

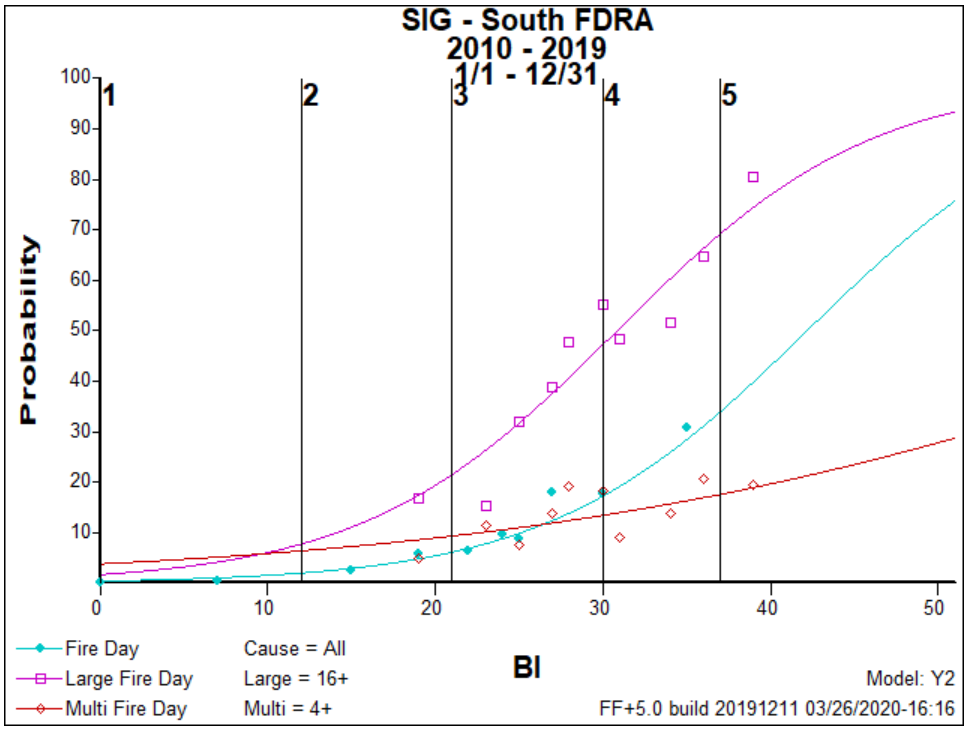


Figure 26 *– South FDRA Fire Probability with Preparedness Level Fire Business Thresholds*

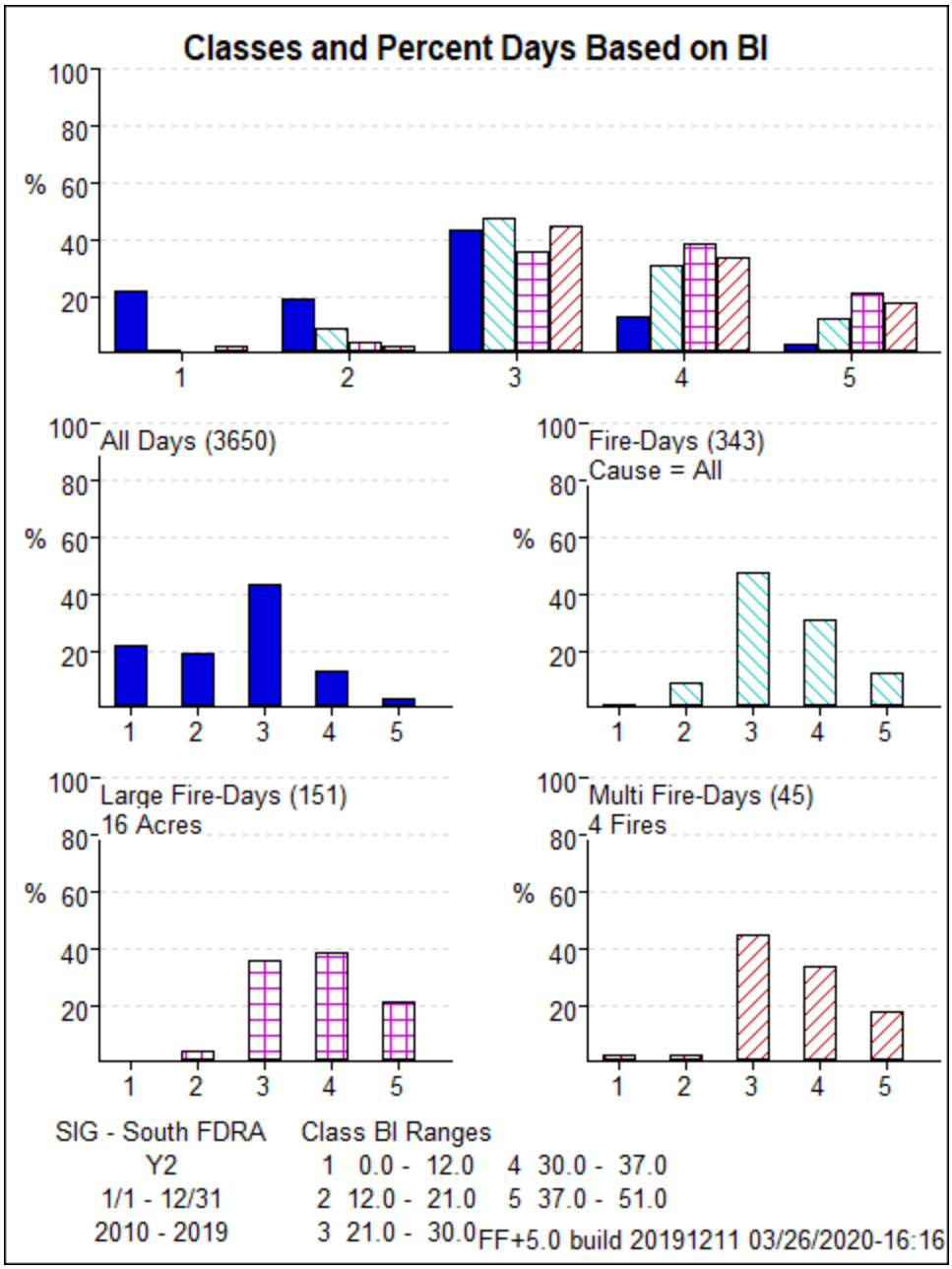


Figure 27 *– South FDRA BI Class Percentage Breakdown*

C. Dispatch Response Levels

Dispatch response levels are fire business thresholds combined with pre-defined response zones that are used to assign an appropriate mix of suppression resources to a reported wildland fire based upon fire danger potential. The dispatch levels are derived from the most appropriate NFDRS index and/or component that correlate to fire occurrence in the FDRA. In all FDRA's the BI has been determined to be the best index for Dispatch Level.

Dispatch Response Level thresholds are established based on historical fire occurrence and the actual workload requested. Fire growth across the Eastern Montana Fire Zone is predominately wind driven and Burning Index is a good indicator of required workload for a new initial attack. Historically fires that occur below the 50th percentile require minimal response and resource commitment. Fires that occur on days where the BI is above the 50th percentile but below the 95th require a moderate amount of resource commitment but are generally handled with the first couple of operational periods. Fires that occur on days above the 95th percentile require large resource commitments to be able to contain them within the first couple operational periods.

For these reasons the response level thresholds are set at about the 50th and 95th percentile.

Table 11: Dispatch Response Levels

Fire Danger Rating Area	NFDRS Index and Fuel Model			
North	**BI Fuel Model Y**	**0 – 23**	**24– 36**	**37+**
South	**BI Fuel Model Y**	**0 – 21**	**22 – 33**	**34+**
Dispatch Response Level		**Low**	**Moderate**	**High**

1. **North FDRA Dispatch Response Level Thresholds**

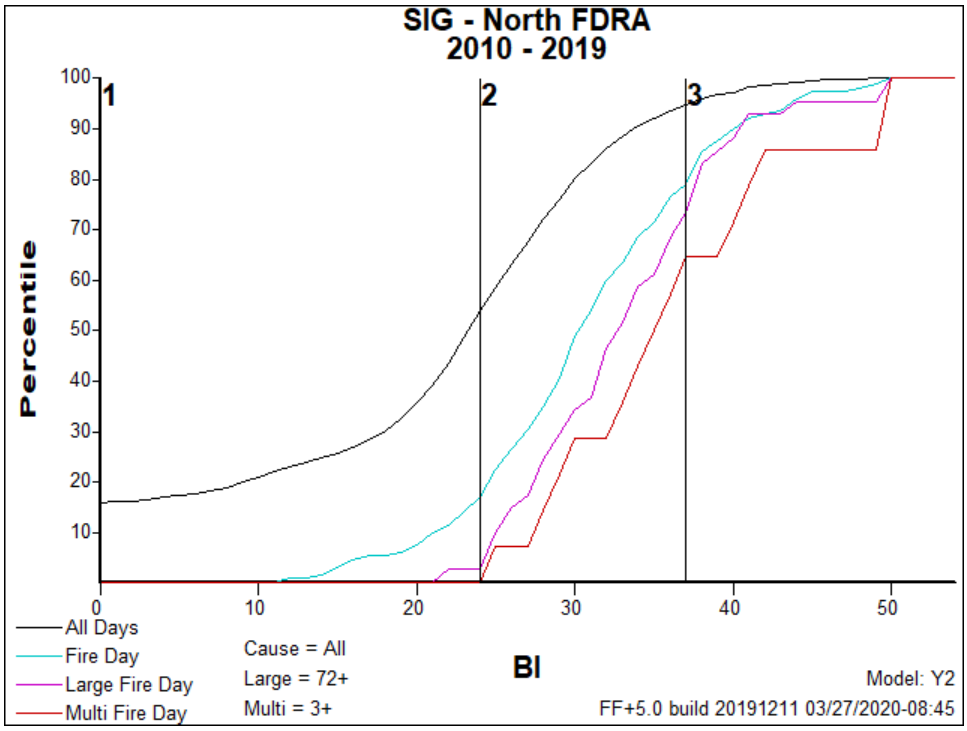


Figure 28 *– North FDRA Dispatch Response Breakpoints Percentile Distribution*

2. South FDRA Dispatch Response Level Thresholds

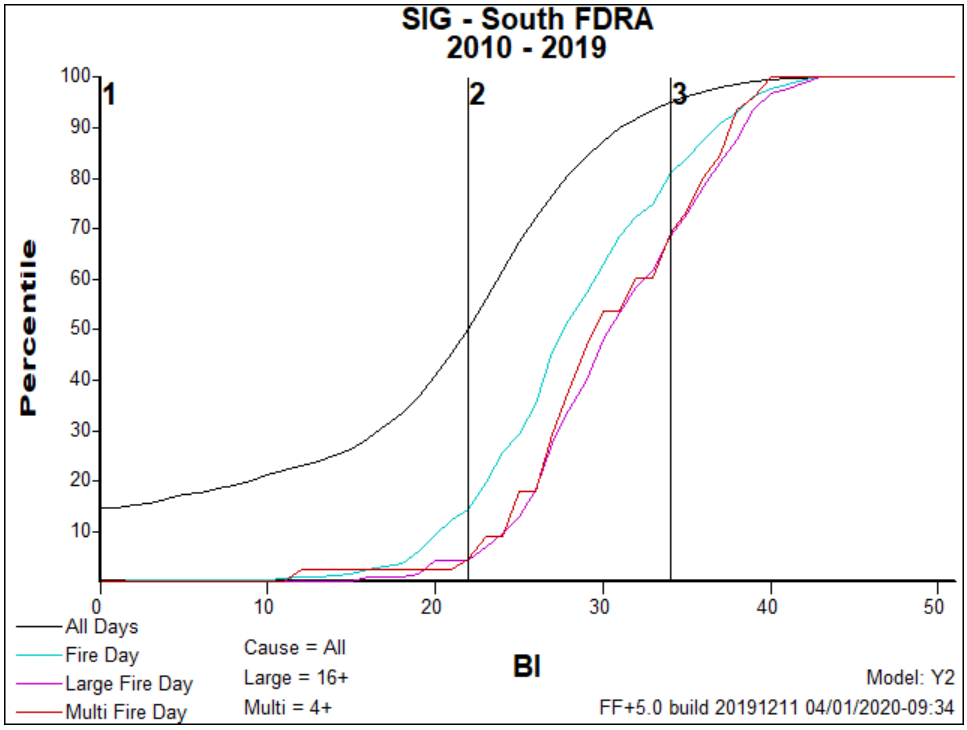


Figure 29 *– South FDRA Dispatch Response Breakpoints Percentile Distribution*

D. Adjective Fire Danger Rating

The adjective fire danger break points are based on staffing classes and a staffing index (BI). Staffing classes refer to thresholds or break points in fire danger levels. The Eastern Montana Fire Zone uses five staffing classes that correspond to low, moderate, high, very high, and extreme levels of adjective fire danger.

Adjective Fire Danger Ratings are communicated to the public via Smokey Bear signage

The actual determination of the daily adjective rating is based on the current or predicted value for a user selected staffing index (BI) and ignition component using the table below. The Ignition component fire business thresholds are established based on large and multi fire day percentile distribution using fuel model Y.

Staffing Levels are derived from the WIMS processor using hourly weather observations.

1. North Adjective Fire Danger Rating

Table 12: North Adjective Fire Danger Rating

Staffing Levels (SL)	Adjective Fire Danger Rating				
1-,1, 1+	L	L	L	M	M
2-, 2, 2+	L	M	M	M	H
3-, 3, 3+	M	M	H	H	VH
4-, 4, 4+	M	H	VH	VH	E
5	H	VH	VH	E	E
Ignition Component (IC)	**0-14**	**15-27**	**28-41**	**42-54**	**54+**

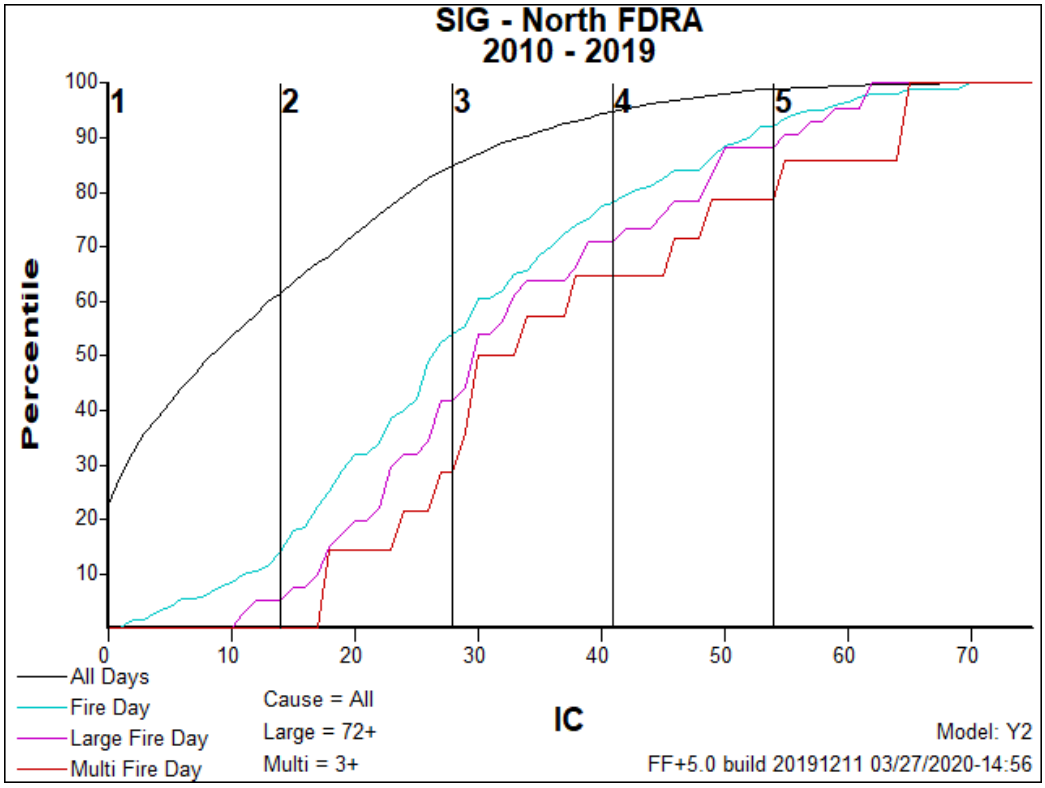


Figure 30 *– North FDRA Ignition Component Percentile Distribution*

2. South Adjective Fire Danger Rating

Table 13: South Adjective Fire Danger Rating

Staffing Levels (SL)	Adjective Fire Danger Rating				
1-,1, 1+	L	L	L	M	M
2-, 2, 2+	L	M	M	M	H
3-, 3, 3+	M	M	H	H	VH
4-, 4, 4+	M	H	VH	VH	E
5	H	VH	VH	E	E
Ignition Component (IC)	**0-13**	**14-23**	**24-35**	**36-47**	**48+**

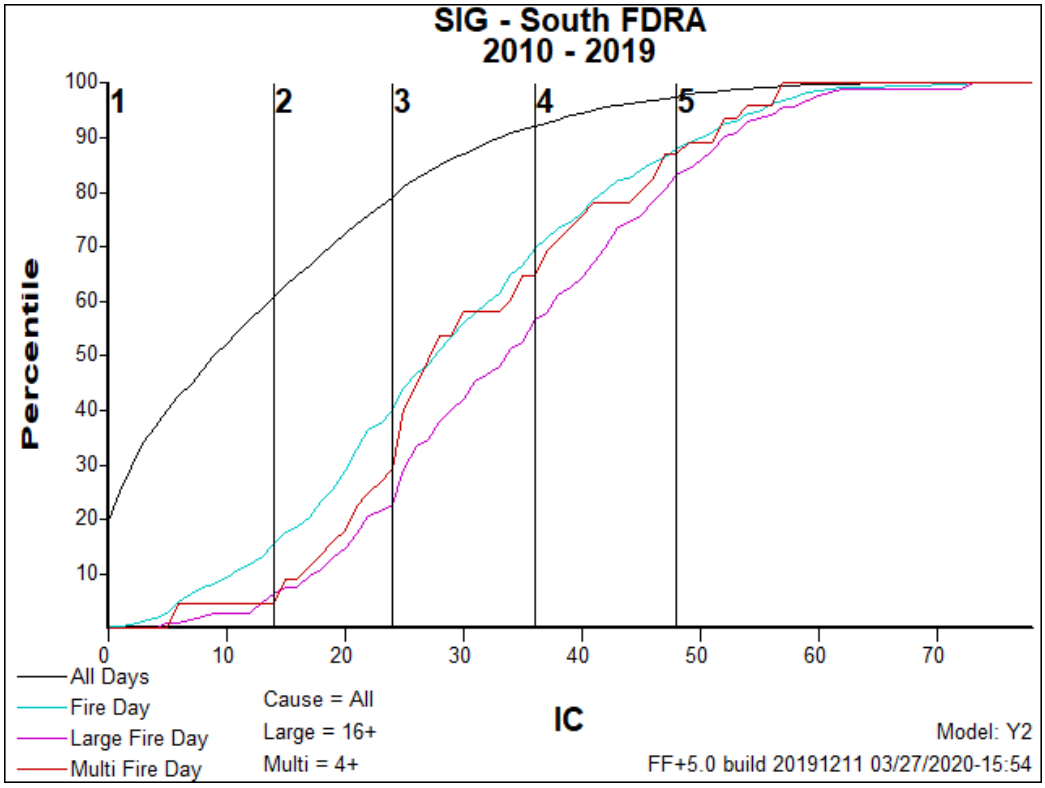


Figure 31 *– South FDRA Ignition Component Percentile Distribution*

Appendix 4 – Preparedness Levels and Staffing Plan

A. Preparedness Levels

The EMFZ uses one preparedness level to represent the entire zone. The worksheet should be done for both fire danger rating areas to determine what the zone preparedness level is. If there is a difference the higher level will be used to report the preparedness level in the daily sit report.

The preparedness levels of each FDRA is used internally for resource allocation, staffing, and severity planning.

Table 14: Preparedness Level Worksheet

Adjective Rating	LOW		MODERATE		HIGH		VERY HIGH		EXTREME	
North	BI 0-13		BI 14-23		BI 24-33		BI 34-41		BI 42+	
South	BI 0-11		BI 12-20		BI 21-29		BI 30-36		BI 37+	
Red Flag Warning	No ↓	Yes ↓	No ↓	Yes ↓	No ↓	Yes ↓	No ↓	Yes ↓	No ↓	Yes ↓
Ignition Risk	Low ↓	High ↓	Low ↓	High ↓	Low ↓	High ↓	Low ↓	High ↓	Low ↓	High ↓
Fire Activity	Yes or No ↓		No ↓	Yes ↓	Yes or No ↓		No ↓	Yes ↓	No ↓	Yes ↓	Yes or No ↓
Preparedness Level	1		2		3		4		5	

1. Adjective Rating/ Percentile Breaks: Place a checkmark in row one indicating the forecasted staffing index/component range. These indices are based on RAWS hourly observations and derived from the WIMS processor.

2. Red Flag Warning: Place a checkmark in row two based on the presence of these advisories issued by the National Weather Service.

3. Ignition Risk: Place a checkmark in row three to indicate the relative risk of human and/or naturally caused ignitions. Human-caused risk is based upon activities such as holidays or special events occurring within the zone. During holiday weekends or special events, the ignition risk is "High;" otherwise, it is "Low." Lightning Activity Level (LAL) would be the basis for relative risk for natural ignitions; a forecasted LAL of 1 or 2 is "Low" ignition risk; 3 through 6 is "High". If multiple LALs are forecasted within the Fire Danger Rating Area (FDRA), use the highest LAL forecasted for that FDRA to complete the worksheet.

4. Fire Activity: Fire activity can be defined as any fire within the zone that requires the commitment of a Federal ground or aviation resource. Place a checkmark in the appropriate box in row four.

B. Drawdown and Step-up

Table 15: Drawdown Staffing Levels Based on Preparedness Levels

	ON-ZONE ENGINES				
Preparedness Level	**1**	**2**	**3**	**4**	**5**
Miles City (of 3 engines)	1	1	2	3	3
Jordan (of 2 engines)	1	1	1	2	2
Fort Howes (of 3 engines)	1	1	2	3	3
Camp Crook/ Ekalaka(of 2 engines)	1	1	1	2	2
Totals	**4**	**4**	**6**	**10**	**10**

*The staffing levels identified above are only a guide; will need concurrence from the Fire Management Officer and/or Duty Officer.

*Focus will be on Zone totals rather than Station location. If needed, Engine(s) will be moved to provide coverage throughout the zone.

Insert Step-up Plan here

Appendix 5 – Initial Attack Response Plan

The Miles City Interagency Dispatch Center (MCC) provides dispatch operations for the Eastern Montana Fire Zone (EMFZ). The EMFZ is divided into two Fire Danger Rating Areas (FDRA), a North FDRA and a South FDRA. The Yellowstone River is primary boundary between the North and South Fire Danger Rating Areas. The North Fire Danger Rating Area primarily consists of short grass prairie interspersed with broken badlands and isolated pockets of timber with the exception being the river break country along the Musselshell River and the Charles M. Russel National Wildlife Refuge. The South Fire Danger Rating Area consists of the Powder River and Tongue River basins, a mix of short grass prairie, Ponderosa and Juniper Forests, badlands and sagebrush steppe.

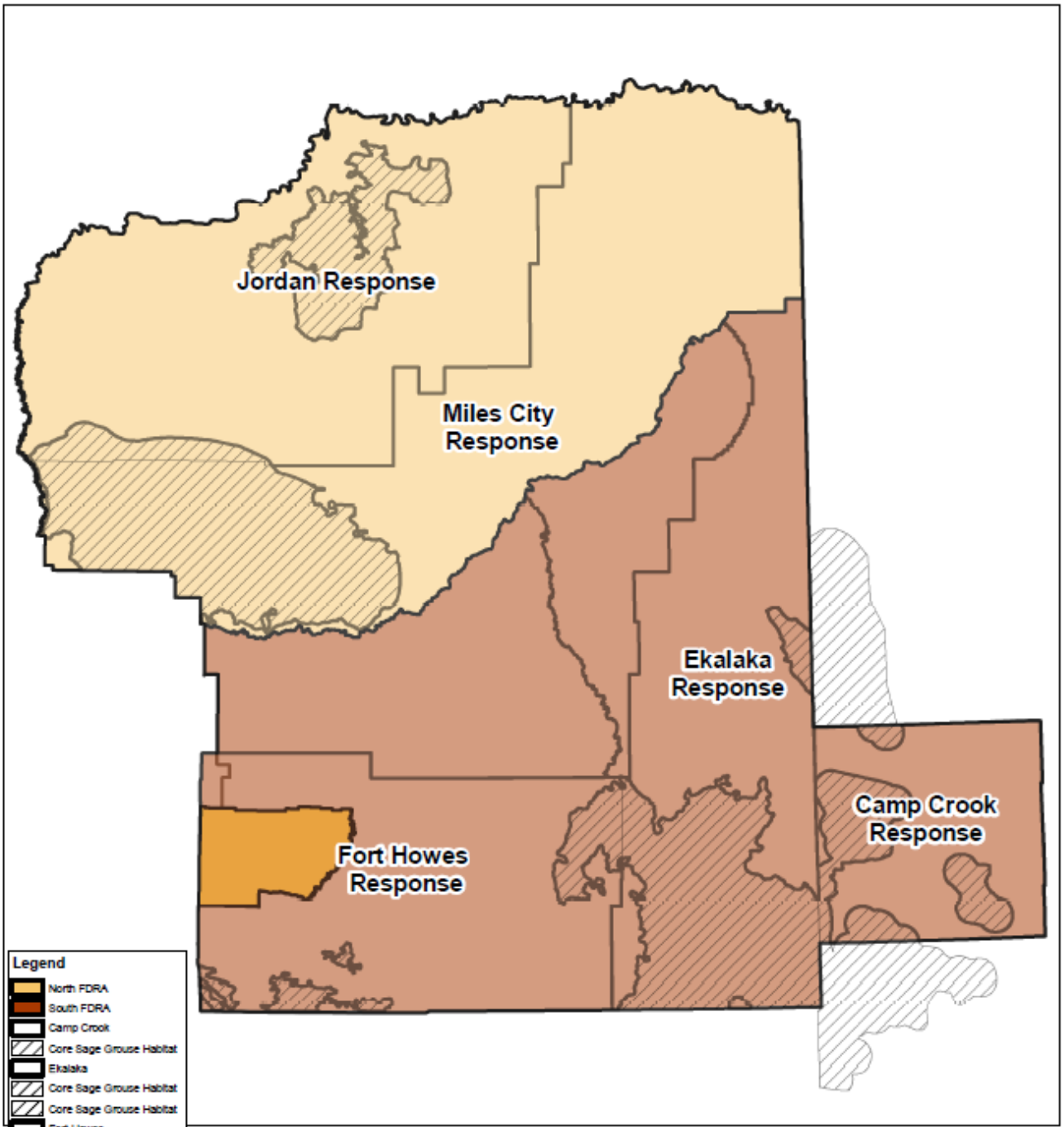
The EMFZ is broken up into twelve Initial Attack response zones. To better meet current resource objectives, core Sage Grouse habitat is identified as their own Initial Attack zones. The Camp Crook and Ekalaka Stations are generally treated as one station with one response zone but were broken out separately to better facilitate initial fire response through the dispatch system.

The EMFZ consists of the following fire stations: BLM; Jordan (JDN), Miles City (MC), Miles City Airbase (MCAIRBASE), Fort Howes (FTH), Ekalaka (EKA), and Camp Crook (CC). FWS; Jordan (CMR). USFS; Ashland Ranger District (ARD), and Sioux Ranger District (SRD).

Fire Danger Rating Area	NFDRS Index and Fuel Model			
North	**BI Fuel Model Y**	**0 – 23**	**24 – 36**	**37+**
South	**BI Fuel Model Y**	**0 – 21**	**22 – 33**	**34+**
Dispatch Response Level		**Low**	**Moderate**	**High**

**The response matrixes in this plan show the planned response for each level, they are not cumulative*.

Fire Danger Rating Areas



0 15 30 60 Miles

Miles City Interagency Dispatch Center

United States Department of the Interior
Bureau of Land Management
Eastern Montana/Dakotas District

CAUTION:
Land ownership data is derived from less accurate data than the 1:24000 scale base map. Therefore, land ownership may not be shown for parcels smaller than 40 acres, and land ownership lines may have plotting errors due to source data.
No warranty is made by the Bureau of Land Management for the use of the data for purposes not intended by the BLM.

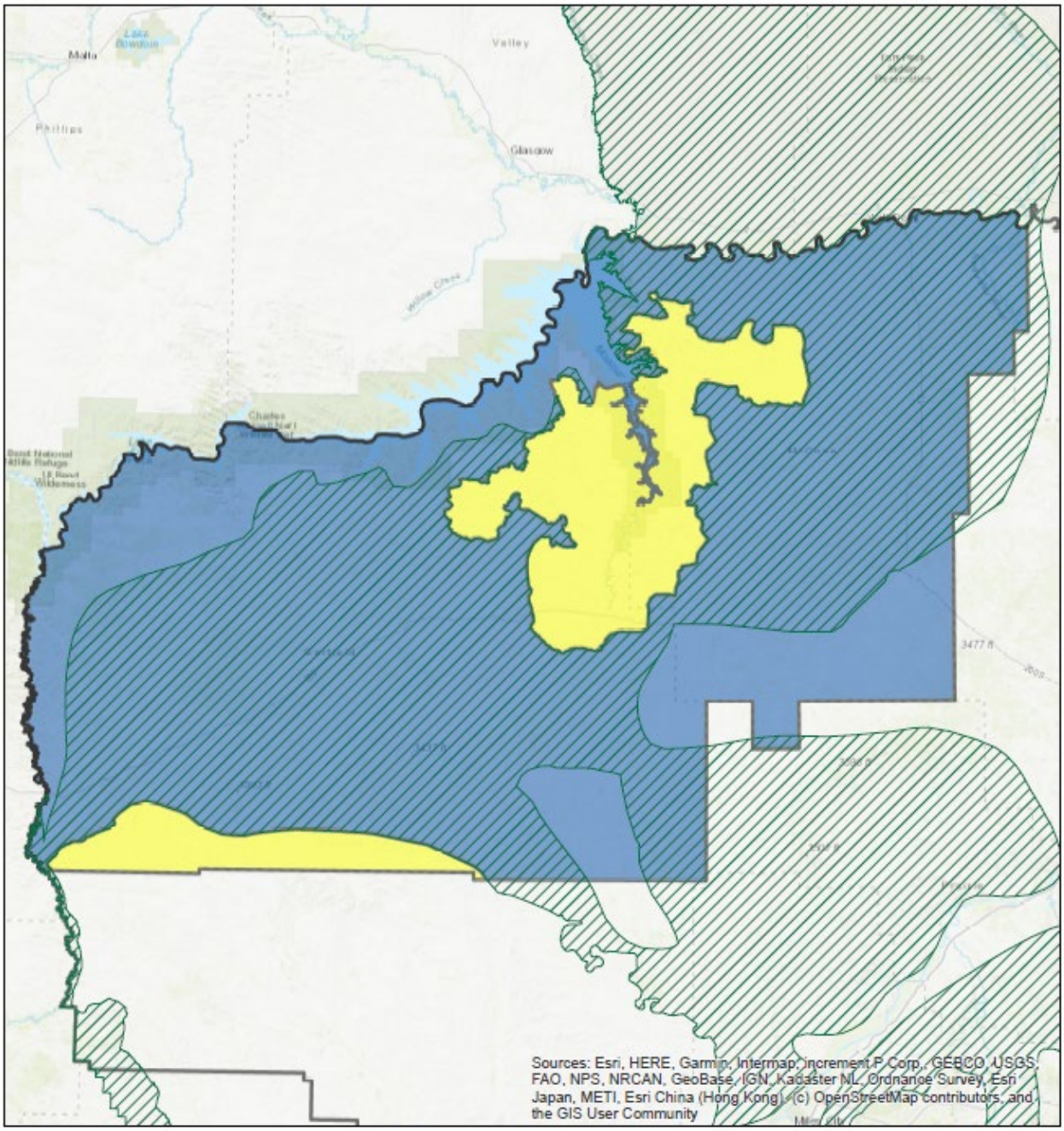
NAD 1983 Albers

N W E S

Coordinate System: NAD 1983 Albers
Projection: Albers
Datum: North American 1983

Date: 3/19/2020

Jordan Response Zone



Jordan Response Zone

Sage Grouse General Habitat

Response Type

Normal Response

Core Sage Grouse

0 5 10 20 Miles

Miles City Interagency Dispatch Center

Date: 3/19/2020

United States Department of the Interior
Bureau of Land Management
Eastern Montana/Dakotas District

CAUTION:
Land ownership data is derived from less accurate data than the 1:24000 scale base map. Therefore, land ownership may not be shown for parcels smaller than 40 acres, and land ownership lines may have plotting errors due to source data.
No warranty is made by the Bureau of Land Management for the use of the data for purposes not intended by the BLM.

NAD 1983 Albers

N
W E
S

Coordinate System: NAD 1983 Albers
Projection: Albers
Datum: North American 1983

Fire Danger Rating Area: North

Response Area: Jordan **WildCAD Area Code:** JDN

Sage Grouse Habitat: General Sage Grouse habitat 80% of response area

Primary Response Station: Jordan BLM and Jordan CMR

Response Matrix:

BI Range/Response Level →	**0 – 23 LOW**	**24 – 36 MODERATE**	**37 + HIGH**
Resources	**1** Engine	**1** Engine **1** Dozer – if available **Consider **Air Attack** or **Helitack** if staffed*	**2** Engine **1** Dozer – if available **Air Attack** **1 Helicopter** **1 READ** ****Advise/Standby*** ***SEAT's*** ***Jumpship*** ***ICT3***

Station Response Priority:

JDN, CMR, MC, MCAIRBASE, FTH, EKA, CC, ARD, SRD

Comments:

If the initial fire location is on the refuge dispatch the CMR resources in addition to any pre-planned response.

Fire Danger Rating Area: North

Response Area: Jordan Sage Grouse **WildCAD Area Code:** JDSG

Sage Grouse Habitat: Core habitat

Primary Response Station: Jordan BLM and Jordan FWS

Response Matrix:

BI Range/Response Level →	**0 – 23 LOW**	**24 – 36 MODERATE**	**37 + HIGH**
Resources	**1 Engine** **1 READ**	**2 Engine** **1 READ** **1 Dozer** – if available **Air Attack** **1 Helicopter** ***Advise/Standby*** ***SEAT's***	**3 Engine** **2 Dozer** – if available **Air Attack** **1 Helicopter** **1 READ** **LAT or SEAT's** ***Advise/Standby*** ***Jumpship*** ***ICT3***

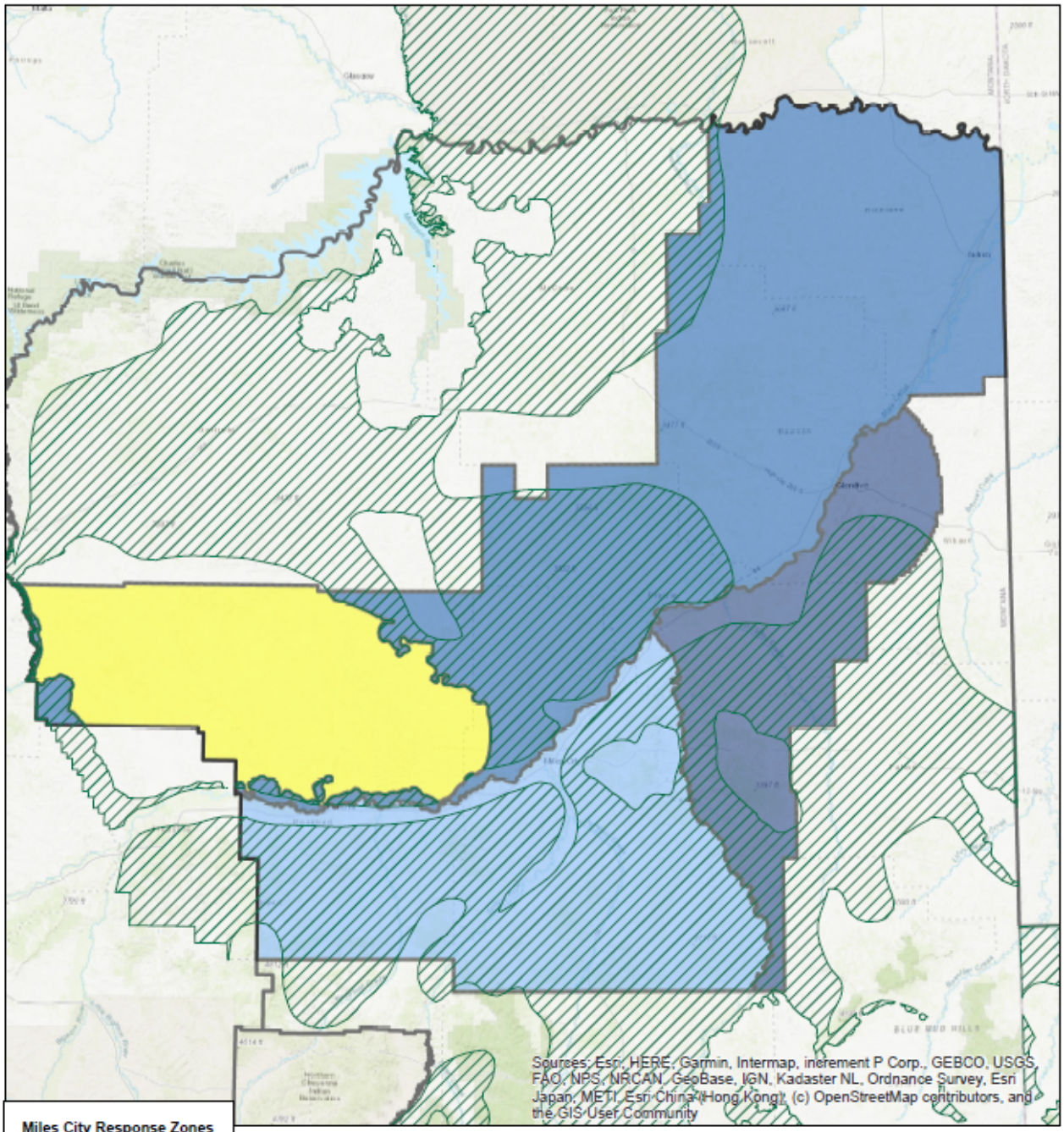
Station Response Priority:

JDN, CMR, MC, MCAIRBASE, FTH, EKA, CC, ARD, SRD

Comments:

Response zone is core sage grouse habitat, ensure notifications are made to appropriate district staff and all resources responding are advised on initial dispatch.

Miles City Response Zones



Miles City Response Zones

Sage Grouse General Habitat

Response Type

- MLS Southwest Normal
- MLS Southeast Normal
- MLS North Normal
- Core Sage Grouse

0 12.5 25 50 Miles

United States Department of the Interior
Bureau of Land Management
Eastern Montana/Dakotas District

CAUTION:
Land ownership data is derived from less accurate data than the 1:24000 scale base map. Therefore, land ownership may not be shown for parcels smaller than 40 acres, and land ownership lines may have plotting errors due to source data.
No warranty is made by the Bureau of Land Management for the use of the data for purposes not intended by the BLM.

NAD 1983 Albers

Miles City Interagency Dispatch Center

N
W E
S

Coordinate System: NAD 1983 Albers
Projection: Albers
Datum: North American 1983

Date: 3/19/2020

Fire Danger Rating Area: North

Response Area: Miles City **WildCAD Area Code:** MLSN

Sage Grouse Habitat: General habitat about 50% of response area

Primary Response Station: Miles City BLM

Response Matrix:

BI Range/Response Level →	**0 – 23 LOW**	**24 – 36 MODERATE**	**37 + HIGH**
Resources	**1** Engine	**1** Engine **1** Dozer – if available **Consider **Air Attack** or **Helitack** if staffed*	**2** Engine **1** Dozer – if available **Air Attack** **1 Helicopter** **1 READ** ****Advise/Standby*** ***SEAT's*** ***Jumpship*** ***ICT3***

Station Response Priority:

MC, MCAIRBASE, JDN, FTH, EKA, CC, CMR, ARD, SRD

Comments:

Fire Danger Rating Area: North

Response Area: Miles City Sage Grouse **WildCAD Area Code:** MCSG

Sage Grouse Habitat: Core Habitat

Primary Response Station: Miles City BLM

Response Matrix:

BI Range/Response Level →	0 – 23 LOW	24 – 36 MODERATE	37 + HIGH
Resources	**1 Engine** **1 READ**	**2 Engine** **1 READ** **1 Dozer** – if available **Air Attack** **1 Helicopter** ***Advise/Standby*** ***SEAT's***	**3 Engine** **2 Dozer** – if available **Air Attack** **1 Helicopter** **1 READ** **SEAT's** ***Advise/Standby*** ***Jumpship*** ***ICT3***

Station Response Priority:

MC, MCAIRBASE, JDN, FTH, EKA, CC, CMR, ARD, SRD

Comments:

Response zone is core sage grouse habitat, ensure notifications are made to appropriate district staff and all resources responding are advised on initial dispatch.

Fire Danger Rating Area: South

Response Area: Miles City Southwest **WildCAD Area Code:** MLSSW

Sage Grouse Habitat: General habitat about 90% of response area

Primary Response Station: Miles City BLM

Response Matrix:

BI Range/Response Level →	**0 – 21 LOW**	**22 – 33 MODERATE**	**34 + HIGH**
Resources	**1** Engine	**1** Engine **1** Dozer – if available **Consider **Air Attack** or **Helitack** if staffed*	**2** Engine **1** Dozer – if available **Air Attack** **1 Helicopter** **1 READ** ****Advise/Standby*** ***SEAT's*** ***Jumpship*** ***ICT3***

Station Response Priority:

MC, MCAIRBASE, FTH, JDN, EKA, CC, CMR, ARD, SRD

Comments:

Fire Danger Rating Area: South

Response Area: Miles City South East **WildCAD Area Code:** MLSSE

Sage Grouse Habitat: General habitat about 80% of response area

Primary Response Station: Miles City BLM

Response Matrix:

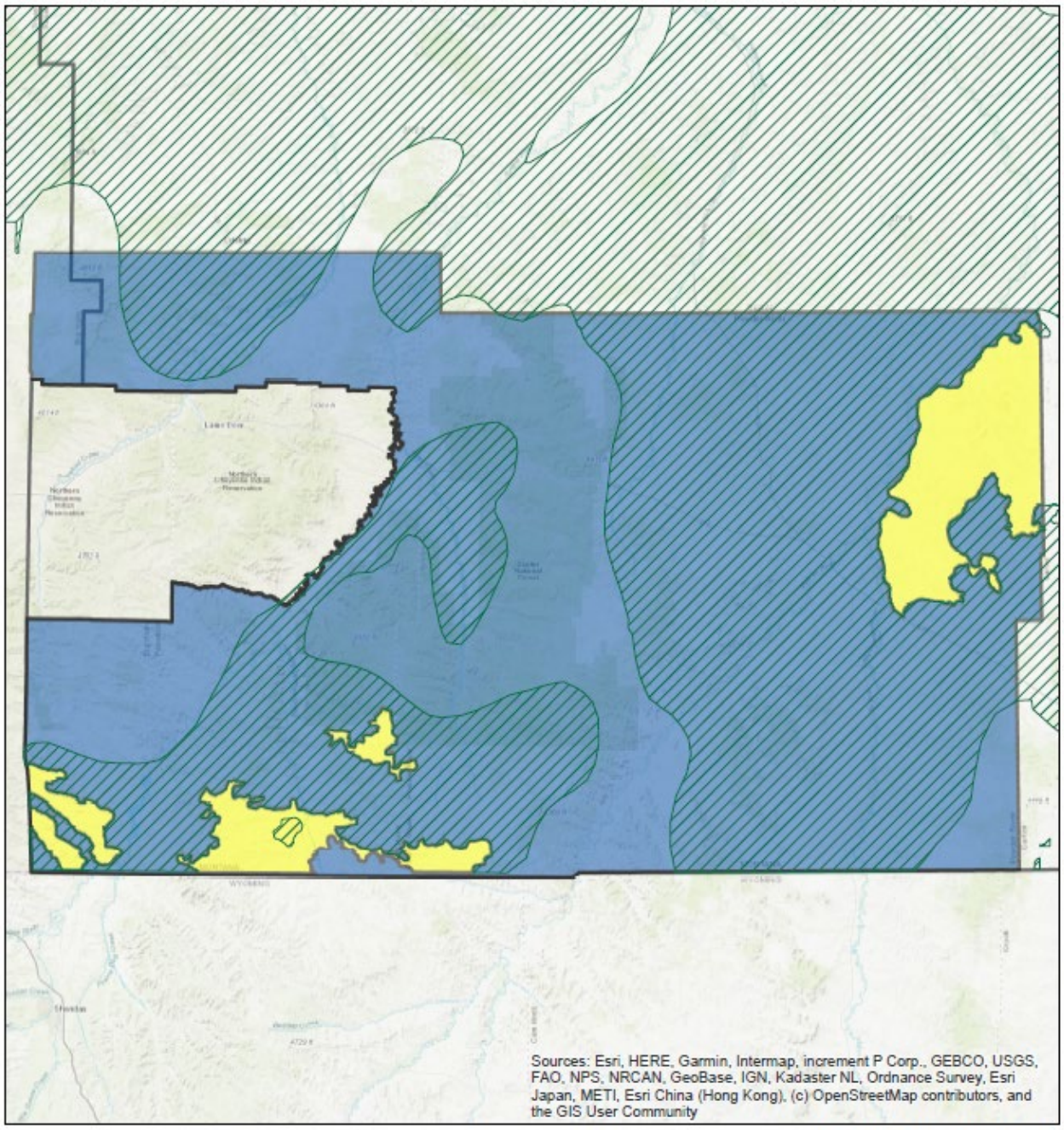
BI Range/Response Level →	**0 – 21 LOW**	**22 – 33 MODERATE**	**34 + HIGH**
Resources	**1** Engine	**1** Engine **1** Dozer – if available **Consider **Air Attack** or **Helitack** if staffed*	**2** Engine **1** Dozer – if available **Air Attack** **1 Helicopter** **1 READ** ****Advise/Standby*** ***SEAT's*** ***Jumpship*** ***ICT3***

Station Response Priority:

MC, MCAIRBASE, EKA, CC, FTH, JDN, CMR, ARD, SRD

Comments:

Fort Howes Response Zone



Fort Howes Response Zone

Sage Grouse General Habitat

Response Type

Normal Response

Core Sage Grouse

0 5 10 20 Miles

Miles City Interagency Dispatch Center

Date: 3/19/2020

United States Department of the Interior
Bureau of Land Management
Eastern Montana/Dakotas District

CAUTION:
Land ownership data is derived from less accurate data than the 1:24000 scale base map. Therefore, land ownership may not be shown for parcels smaller than 40 acres, and land ownership lines may have plotting errors due to source data.
No warranty is made by the Bureau of Land Management for the use of the data for purposes not intended by the BLM.

NAD 1983 Albers

N W E S

Coordinate System: NAD 1983 Albers
Projection: Albers
Datum: North American 1983

Fire Danger Rating Area: South

Response Area: Fort Howes **WildCAD Area Code:** FTH

Sage Grouse Habitat: General habitat about 50% of response area

Primary Response Station: Fort Howes BLM

Response Matrix:

BI Range/Response Level →	**0 – 21 LOW**	**22 – 33 MODERATE**	**34 + HIGH**
Resources	**1** Engine	**1** Engine **1** Dozer – if available **Consider **Air Attack** or **Helitack** if staffed*	**2** Engine **1** Dozer – if available **Air Attack** **1 Helicopter** **1 READ** ****Advise/Standby*** ***SEAT's*** ***Jumpship*** ***ICT3***

Station Response Priority:

FTH, MC, MCAIRBASE, EKA, CC, JDN, ARD, SRD, CMR

Comments:

Fire Danger Rating Area: South

Response Area: Fort Howes Sage Grouse **WildCAD Area Code:** FHSG

Sage Grouse Habitat: Core Habitat

Primary Response Station: Fort Howes BLM

Response Matrix:

BI Range/Response Level →	**0 – 21 LOW**	**22 – 33 MODERATE**	**34 + HIGH**
Resources	**1 Engine** **1 READ**	**2 Engine** **1 READ** **1 Dozer** – if available **Air Attack** **1 Helicopter** ***Advise/Standby*** ***SEAT's***	**3 Engine** **2 Dozer** – if available **Air Attack** **1 Helicopter** **1 READ** **LAT** or **SEAT's** ***Advise/Standby*** ***Jumpship*** ***ICT3***

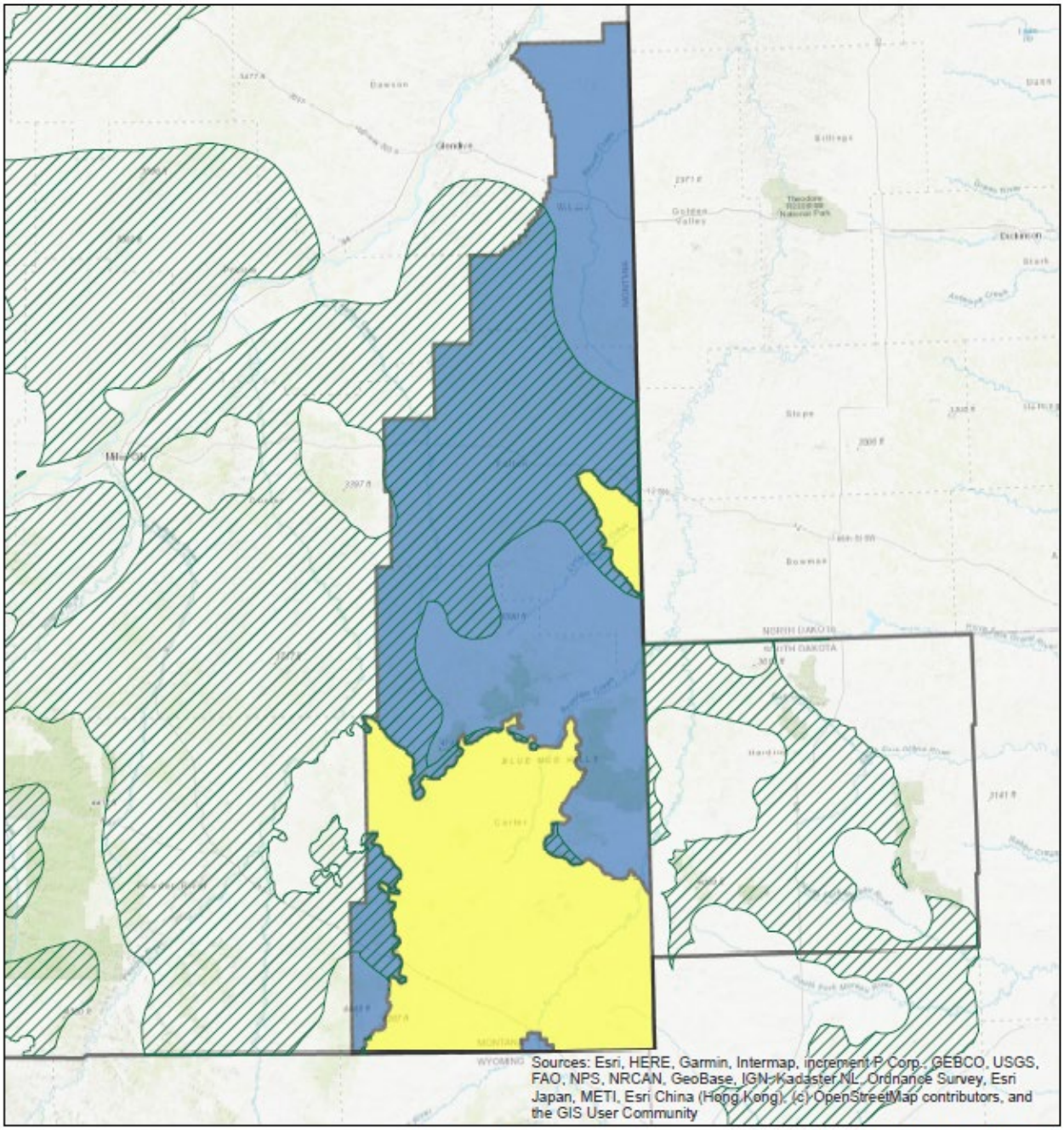
Station Response Priority:

FTH, MC, MCAIRBASE, EKA, CC, JDN, ARD, SRD, CMR

Comments:

Response zone is core sage grouse habitat, ensure notifications are made to appropriate district staff and all resources responding are advised on initial dispatch.

Ekalaka Response Zone



Ekalaka Response Zone

Sage Grouse General Habitat

Response Type

Normal Response

Core Sage Grouse

0 10 20 40 Miles

Miles City Interagency Dispatch Center

Date: 3/19/2020

United States Department of the Interior
Bureau of Land Management
Eastern Montana/Dakotas District

CAUTION:
Land ownership data is derived from less accurate data than the 1:24000 scale base map. Therefore, land ownership may not be shown for parcels smaller than 40 acres, and land ownership lines may have plotting errors due to source data.
No warranty is made by the Bureau of Land Management for the use of the data for purposes not intended by the BLM.

NAD 1983 Albers

N
W E
S

Coordinate System: NAD 1983 Albers
Projection: Albers
Datum: North American 1983

Fire Danger Rating Area: South

Response Area: Ekalaka **WildCAD Area Code:** EKA

Sage Grouse Habitat: General habitat about 50% of response area

Primary Response Station: Ekalaka and Camp Crook BLM

Response Matrix:

BI Range/Response Level →	**0 – 21 LOW**	**22 – 33 MODERATE**	**34 + HIGH**
Resources	**1** Engine	**1** Engine **1** Dozer – if available **Consider **Air Attack** or **Helitack** if staffed*	**2** Engine **1** Dozer – if available **Air Attack** **1 Helicopter** **1 READ** ****Advise/Standby*** ***SEAT's*** ***Jumpship*** ***ICT3***

Station Response Priority:

EKA, CC, SRD, MC, MCAIRBASE, FTH, JDN, CMR

Comments:

Ekalaka and Camp Crook Response zones are treated as one zone with Ekalaka or Camp Crook station as primary response.

Fire Danger Rating Area: South

Response Area: Ekalaka Sage Grouse **WildCAD Area Code:** EKSG

Sage Grouse Habitat: Core Habitat

Primary Response Station: Ekalaka and Camp Crook BLM

Response Matrix:

BI Range/Response Level →	0 – 21 LOW	22 – 33 MODERATE	34 + HIGH
Resources	**1 Engine** **1 READ**	**2 Engine** **1 READ** **1 Dozer** – if available **Air Attack** **1 Helicopter** ***Advise/Standby*** ***SEAT's***	**3 Engine** **2 Dozer** – if available **Air Attack** **1 Helicopter** **1 READ** **LAT** or **SEAT** ***Advise/Standby*** ***Jumpship*** ***ICT3***

Station Response Priority:

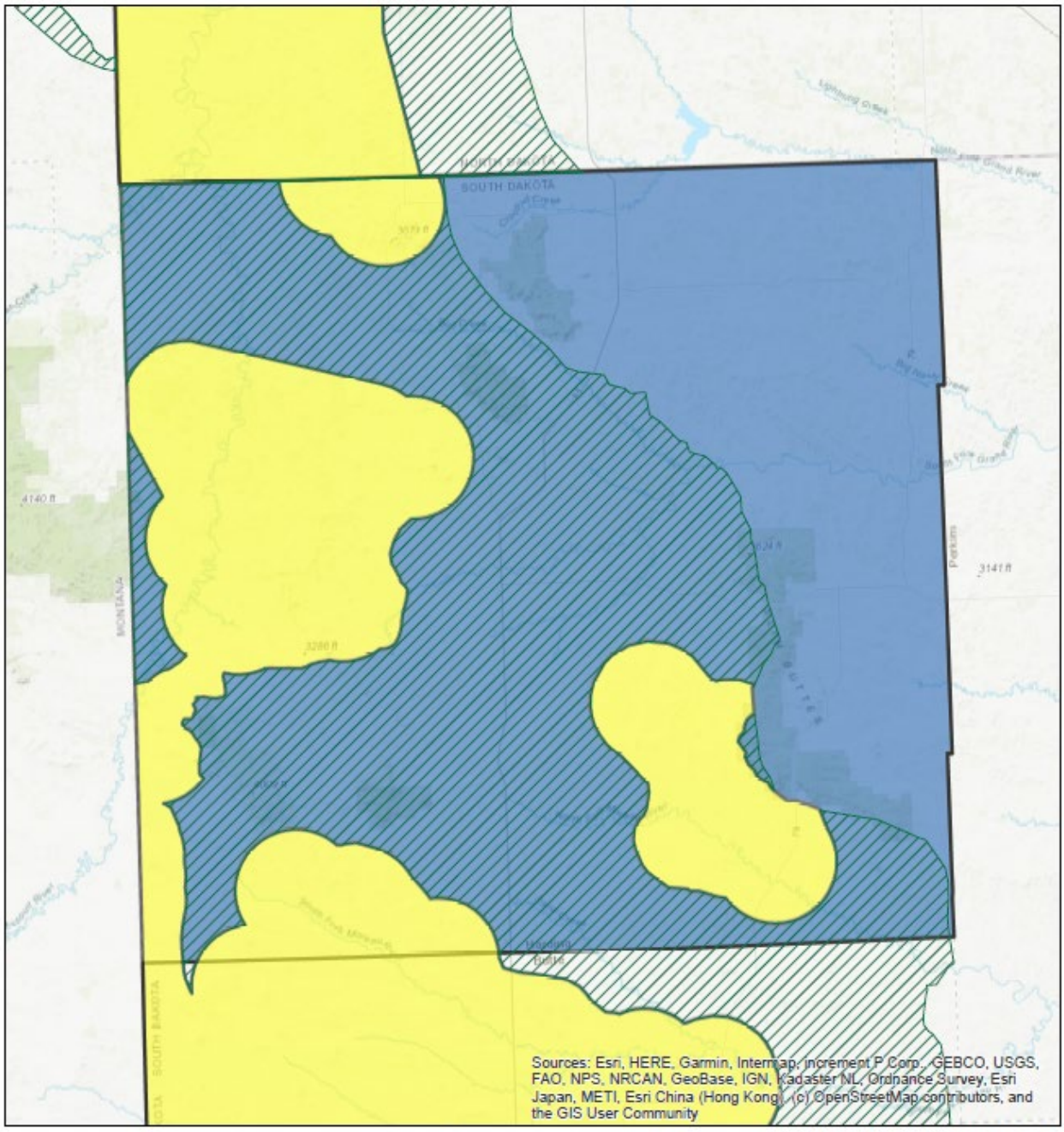
EKA, CC, SRD, MC, MCAIRBASE, FTH, JDN, CMR

Comments:

Ekalaka and Camp Crook Response zones are treated as one zone with Ekalaka or Camp Crook station as primary response.

Response zone is core sage grouse habitat, ensure notifications are made to appropriate district staff and all resources responding are advised on initial dispatch.

Camp Crook Response Zone



Camp Crook Response Zone

Sage Grouse General Habitat

Response Type

Normal Response

Core Sage Grouse

0 4.5 9 18 Miles

Miles City Interagency Dispatch Center

Date: 3/19/2020

United States Department of the Interior
Bureau of Land Management
Eastern Montana/Dakotas District

CAUTION:
Land ownership data is derived from less accurate data than the 1:24000 scale base map. Therefore, land ownership may not be shown for parcels smaller than 40 acres, and land ownership lines may have plotting errors due to source data.
No warranty is made by the Bureau of Land Management for the use of the data for purposes not intended by the BLM.

NAD 1983 Albers

Coordinate System: NAD 1983 Albers
Projection: Albers
Datum: North American 1983

N
W E
S

Fire Danger Rating Area: South

Response Area: Camp Crook **WildCAD Area Code:** CC

Sage Grouse Habitat: General habitat about 50% of response area

Primary Response Station: Camp Crook and Ekalaka BLM

Response Matrix:

BI Range/Response Level →	**0 – 21 LOW**	**22 – 33 MODERATE**	**34 + HIGH**
Resources	**1** Engine	**1** Engine **1** Dozer – if available **Consider **Air Attack** or **Helitack** if staffed*	**2** Engine **1** Dozer – if available **Air Attack** **1 Helicopter** **1 READ** ****Advise/Standby*** ***SEAT's*** ***Jumpship*** ***ICT3***

Station Response Priority:

CC, EKA, SRD, MC, MCAIRBASE, FTH, JDN, CMR

Comments:

Ekalaka and Camp Crook Response zones are treated as one zone with Ekalaka or Camp Crook station as primary response.

Response area includes parts of North and South Dakota that are outside of the Miles City Interagency Dispatch Center boundaries but are the responsibility of the Eastern Montana and Dakotas BLM.

Fire Danger Rating Area: South

Response Area: Camp Crook **WildCAD Area Code:** CCSG

Sage Grouse Habitat: Core Habitat

Primary Response Station: Camp Crook and Ekalaka BLM

Response Matrix:

BI Range/Response Level →	0 – 21 LOW	22 – 33 MODERATE	34 + HIGH
Resources	**1 Engine** **1 READ**	**2 Engine** **1 READ** **1 Dozer** – if available **Air Attack** **1 Helicopter** ***Advise/Standby*** ***SEAT's***	**3 Engine** **2 Dozer** – if available **Air Attack** **1 Helicopter** **1 READ** **LAT or SEAT** ***Advise/Standby*** ***Jumpship*** ***ICT3***

Station Response Priority:

CC, EKA, SRD, MC, MCAIRBASE, FTH, JDN, CMR

Comments:

Ekalaka and Camp Crook Response zones are treated as one zone with Ekalaka or Camp Crook station as primary response.

Response area includes parts of North and South Dakota that are outside of the Miles City Interagency Dispatch Center boundaries but are the responsibility of the Eastern Montana and Dakotas BLM.

Response zone is core sage grouse habitat, ensure notifications are made to appropriate district staff and all resources responding are advised on in