Minnesota Interagency Fire Danger Operating Plan

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Bureau of Indian Affairs

By: THOMAS REMUS Digitally signed by THOMAS REMUS Date: 2020.12.21 07:59:01 -06'00'

Title: Tom Remus, Midwest Regional FMO

Minnesota Department of Natural Resources, Division of Forestry

By: Paul J. Lundgren Digitally signed by Paul J. Lundgren Date: 2020.12.17 12:04:46 -06'00'

Title: Paul Lundgren, Wildfire Section Chief

Minnesota Department of Public Safety, Homeland Security & Emergency Management

By: Joe Neuberger Digitally signed by Joe Neuberger Date: 2020.12.17 16:12:06 -06'00'

Title: Joe Neuberger, Operations & Training Bureau Chief

National Park Service

By: ROBERT DEGROSS Digitally signed by ROBERT DEGROSS Date: 2020.12.17 09:34:52 -06'00'

Title: Robert DeGross, Superintendent, Voyageurs National Park

U.S. Fish and Wildlife Service

By: JAMES LANGFORD Digitally signed by JAMES LANGFORD Date: 2020.12.17 08:12:31 -06'00'

Title: Russ Langford, Deputy Regional Fire Management Coordinator

U.S. Forest Service, Chippewa National Forest

By: MATTHEW DAVIS Digitally signed by MATTHEW DAVIS Date: 2020.12.15 14:10:40 -08'00'

Title: Matt Davis, Acting Forest Supervisor

U.S. Forest Service, Superior National Forest

By: CONSTANCE CUMMINS Digitally signed by CONSTANCE CUMMINS Date: 2020.12.17 07:55:16 -06'00'

Title: Connie Cummins, Forest Supervisor

Recommended by:

MNICS Task Force

William Glesener, Chair – Minnesota Department of Natural Resources, Division of Forestry
Kurt Fogelberg, Vice Chair – National Park Service
Cory Berg – Bureau of Indian Affairs
Roy Holmes – Homeland Security and Emergency Management
Seth Grimm – U.S. Fish and Wildlife Service
Chase Marshall, – U.S. Forest Service

Document Prepared by:
Interagency fire danger subject matter experts organized as a subgroup of the MNICS Prescribed Fire and Fuels Working Team

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Fire Danger Operating Plan

Introduction

Purpose

Members of the public, industry, and agency personnel share a similar expectation that wildland fire management agencies will implement appropriate and timely decisions resulting in safe, efficient, and effective wildland fire management actions. The Minnesota Interagency Fire Danger Operating Plan (MN FDOP) is designed as a tool to help meet these expectations. It allows wildland fire management agencies to document the decision-making process followed by agency administrators, fire program managers, fire operations specialists, dispatchers, agency cooperators, and firefighters. MN FDOP establishes interagency preparedness, staffing, response, and prevention levels using the best available science along with historical weather and fire data.

To determine the appropriate level of planning necessary to meet interagency wildland fire management objectives in Minnesota, the preparers of MN FDOP assessed the state's vegetation (fuels), climate (weather), and geography including topography. Elements of the National Fire Danger Rating System (NFDRS) and Canadian Forest Fire Danger Rating System (CFFDRS) – adopted for use in Minnesota, Wisconsin, Michigan, and Alaska – were analyzed for correlation to fire occurrence and characteristics. Finally, the desired planning term (short, mid, and long) and geographic extent were paired to appropriate fire danger indicators.

Minnesota's wildland fire managers will base their decisions related to preparedness, staffing, response, and prevention on the associated MN FDOP process(s) appropriate to the planning location and planning term. These decisions will be tempered with the decision makers professional judgement and incorporate agency specific needs as needed. Although flexible, the guidelines within the MN FDOP incorporate enough structure to offer a high degree of decision support and consistent outcomes. These guidelines are meant to be viewed as a checklist or reminder, and as an aid to a systematic thought process.

Application

MN FDOP guides the application of fire danger information, aided by decision support tools (such as NFDRS and CFFDRS), at the local, regional, and state-wide level. It is supplemental to the Fire Management Plan (FMP). MN FDOP documents the establishment and management of a fire weather station network. It also describes how fire danger ratings will be applied to planning activities in supplemental action plans viewable in the appendices and briefly outlined in the next section. The decision points are identified in this plan and its supplemental plans.

Supplemental Fire Danger Plans

Preparedness Plan

Preparedness plans provide management direction – based on pre-identified levels of burning conditions, fire activity, and resource commitment – and are required at the national, state or regional, and local levels. Preparedness Levels (1-5) and associated actions are the output of the process documented in the Preparedness Plan and apply to mid to long term planning periods (3 – 14 days). Fire danger indices are a critical measure of burning conditions used in preparedness planning. The associated decisions, and planned actions are in **Appendix A** *MN Interagency Preparedness Plan*.

Staffing Plan

Staffing plans describe escalating responses that are usually noted in the FMP. Mitigating actions are designed to enhance the planning unit's fire management capability during short to mid-term planning periods (1 to 4 days) when increased staffing is needed to meet initial attack, prevention, or detection needs. The associated decisions and planned actions may be referenced in **Appendix B** *MN Interagency Staffing Plan*.

Elements of this staffing plan may not apply to all signatory agencies in this FDOP.

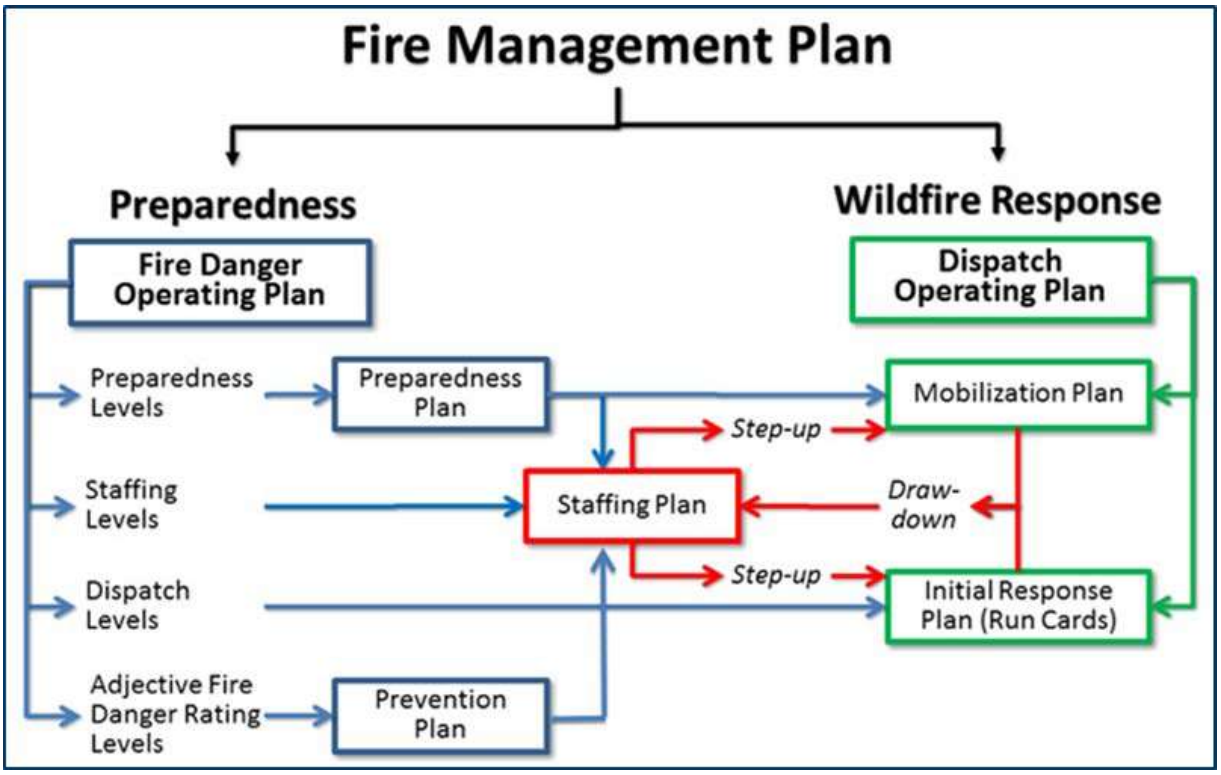


Figure 1. Diagram of Fire Management Plan Relationships

Prevention Plan

Prevention plans document wildland fire problems identified by a prevention analysis. The analysis examines not only 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 – 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)
- Administration of the prevention program.

Adjective Fire Danger Rating (Low, Moderate, High, Very High and Extreme) is a primary output of the fire danger indicators used in the prevention plan and apply in the short term (1 day)

The associated decisions and planned actions may be referenced in **Appendix C** *MN Interagency Prevention Plan*.

Elements of the prevention plan may not apply to all signatory agencies in this FDOP, and future revisions may include an expansion of the content and analysis related to prevention.

Public Fire Restriction Plan

A public fire restriction plan is an interagency approach to coordinate fire restrictions and closure efforts. The interagency approach for initiating restrictions or closures establishes consistency between land management partners and defines restriction boundaries that are easily distinguishable to the public. Based on the fire danger, agency wildland fire managers may impose fire restrictions or emergency closures to public lands, and the Minnesota Department of Natural Resources, Division of Forestry, has the statutory authority to impose fire restrictions on private land within the state. The associated decisions and planned actions may be referenced **Appendix D** *MN Interagency Public Fire Restriction Plan*.

Fire restrictions are primarily within agency specific plans at this time. Future revisions may include an expansion of the content and analysis related to restrictions.

Wildfire Response Plans

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. Each plan is based on fire weather, fuel conditions, fire management objectives, and resource availability. Response levels are identified and documented in the MN FDOP. The number and type of suppression resources dispatched to a reported fire are documented in Initial Response Plan and may be referenced in **Appendix E** *Run Cards*.

Elements of the initial response plan may not apply to all signatory agencies in the MN FDOP. Future revisions may include an expansion of the content and analysis of restrictions and parallel the development of a tiered Dispatch Operating Plan.

Local Mobilization Plan

The MNICS Mobilization Guide identifies standard procedures, guiding the operations of multi-agency logistical support activities throughout the coordination system. The Mobilization Guide is intended to facilitate interagency dispatch coordination, ensuring the most timely and cost-effective incident support services. Communication between planning units, Geographic Area Coordination Centers (GACC), State, Regional Offices, and other cooperative agencies are addressed in the Mobilization Guide. The MNICS Mobilization Guide is available through the MNICS web site.

Fuels Management Plans

Fuels management plans are specific to each agency under the MN FDOP and are intended to provide the framework for each agency's fuels management interests. Elements of fire weather, behavior, and danger are integral to the implementation of actions under each guiding document.

The NWCG Interagency Prescribed Fire Planning and Implementation Procedures Guide provides the guidance for the actions of the National Interagency Fire Planning Operations and Reporting System and Forest Service Activity Tracking System.

The Minnesota DNR Prescribed Burn Handbook provides the guidance for planning and implementing prescribed fire activity on state managed lands.

Policy and Guidance

Interagency policy and guidance specific to the development of Fire Danger Operating Plans is available in the *Interagency Standards for Fire & Aviation Operations (Red Book).*

Agency policy and guidance specific to the development of Fire Danger Operating Plans are available in*:*

- U.S. Forest Service – Manual 5120 - Fire Management - Preparedness
- Bureau of Land Management – Manual 9211 - 1 - Fire Planning Handbook
- National Park Service – Manual 18, Chapter 5 – Preparedness
- Fish and Wildlife Service – Fire Management Handbook, Chapter 10 - Preparedness
- Bureau of Indian Affairs – Indian Affairs Manual Part 90, Chapter 1
- Minnesota State Agencies – MN DNR Preparedness and Response Guide

Operating Plan Objectives

The following objectives guided the analysis, documentation, and process development of the MN FDOP.

- Provide a tool for agency administrators, fire managers, dispatchers, agency co-operators, and firefighters to correlate fire danger ratings with appropriate fire business decisions in a fire danger planning area.

- Delineate fire danger rating areas (FDRAs) in fire danger planning area with similar climate, vegetation, and topography.
- Establish an interagency fire weather-monitoring network consisting of Remote Automated Weather Stations (RAWS) that comply with NFDRS Weather Station Standards (PMS 426-3).
- Determine climatological breakpoints and fire business thresholds using the Weather Information Management System (WIMS), National Fire Danger Rating System (NFDRS), Fire Family Plus software to analyze and summarize an integrated database of historical fire weather and fire occurrence data.
- Define roles and responsibilities to make fire preparedness decisions, manage weather information, and brief fire suppression personnel regarding current and potential fire danger.
- Determine the most effective communication methods for fire managers to communicate potential fire danger to cooperating agencies, industry, and the public.
- Provide guidance to interagency personnel outlining specific daily actions and considerations at each preparedness level.
- Identify seasonal risk analysis criteria and establish general fire severity thresholds.
- Identify the development and distribution of fire danger pocket cards to all personnel involved with fire suppression within the fire danger planning area.
- Identify program needs and suggest improvements for implementation of the Fire Danger Operating Plan.

Fire Danger Planning Area Inventory and Analysis

Administrative Units

The MN FDOP document serves as an interagency example of how consistent and effective application of fire danger decisions is applied across multiple jurisdictional boundaries. Figure 2 represents the wildland fire management and suppression responsibilities shared among Federal, State, and local co-operators in Minnesota.

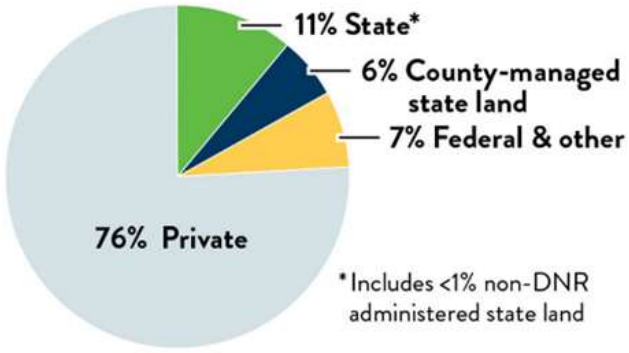


Figure 2. Land Base Chart

Table 1. Land ownership in Minnesota

Land ownership	Acres
State	**47,300,000**
State Parks, Forests, Wildlife Areas, and others	8,400,000
Private Land	38,900,000
Federal	**6,664,000***
US Forest Service – Chippewa National Forest	1,600,000*
US Forest Service – Superior National Forest	3,900,000*
US Fish and Wildlife Service	946,000*
BIA/Tribal	**2,591,000***
Red Lake	826,000
White Earth	829,000
Fond du Lac	22,000
Bois Forte	128,000
Leech Lake	677,000
Mille Lacs	61,000
Grand Portage	48,000
Total Area	**53,800,000**
Water Area	2,600,000
Land Area	51,200,000

**Acres shown may include private land inholdings, water bodies, or other ownership.*

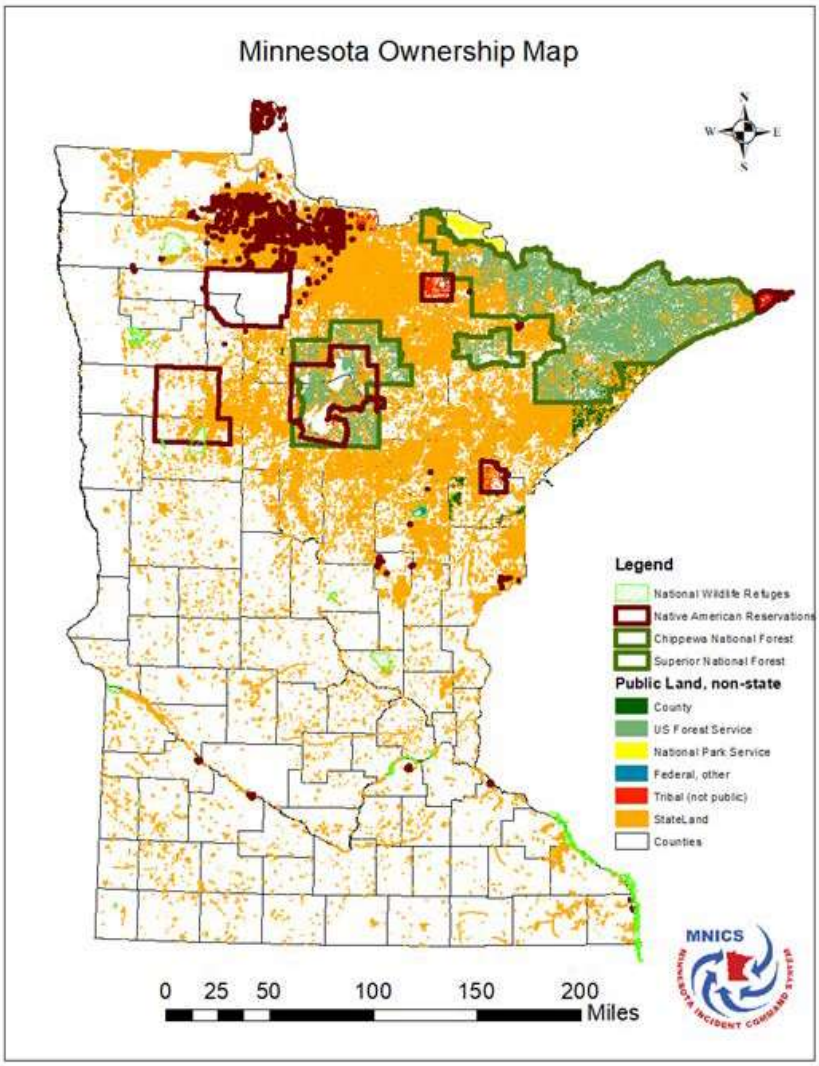


Figure 3 Map of land ownership in Minnesota

Fire Danger Rating Areas

A Fire Danger Rating Area (FDRA) is a large geographic area with relatively homogenous climate, vegetation and topography. Because of these similarities, it can be assumed that the fire danger within an FDRA is relatively uniform through time. Fire Danger Rating Areas were delineated based upon an analysis of these three factors: climate (**Appendix I**), vegetation (**Appendix H**), and topography (**Appendix G**). After these environmental factors were considered, draft FDRAs were edge-matched to county lines, except for the split between the Northern Peatlands and North-central Woodlands inside of Clearwater and Beltrami counties. There it follows the southern border of the Red Lake Tribal Reservation and connects to the northern border of Itasca County.

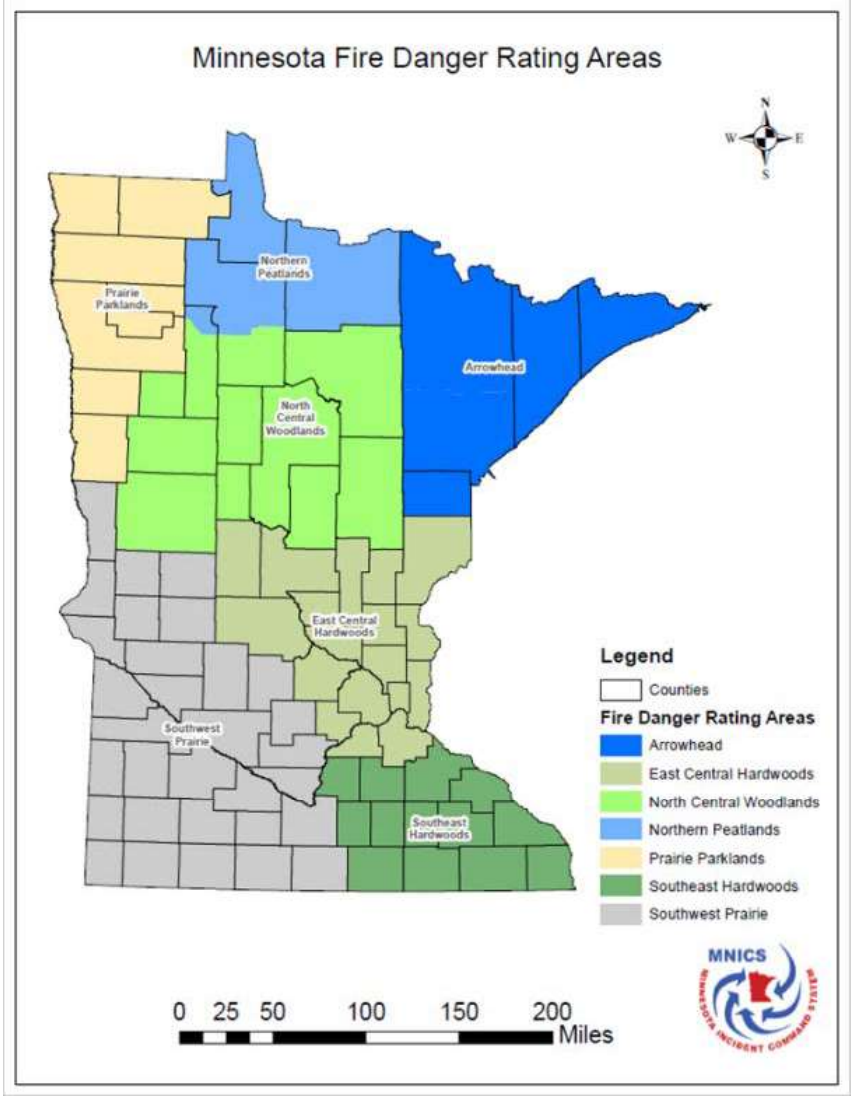


Figure 4 Fire Danger Rating areas in Minnesota

Due to the varied nature of Minnesota's administrative boundaries, FDRA boundaries were better suited to county lines. For fire planning purposes, administrative units may identify with the FDRA that

represents the majority of their areas or take a weighted approach when considering multiple FDRA indicators.

A full-page Map of FDRAs may be referenced in **Appendix F**.

FDRA Descriptions and Analysis

Links to full descriptions and analysis located in **Appendix J** can be found listed below:

- Arrowhead
- East Central Hardwoods
- North-central Woodlands
- Northern Peatlands
- Prairie Parklands
- Southeast Hardwoods
- Southwest Prairie

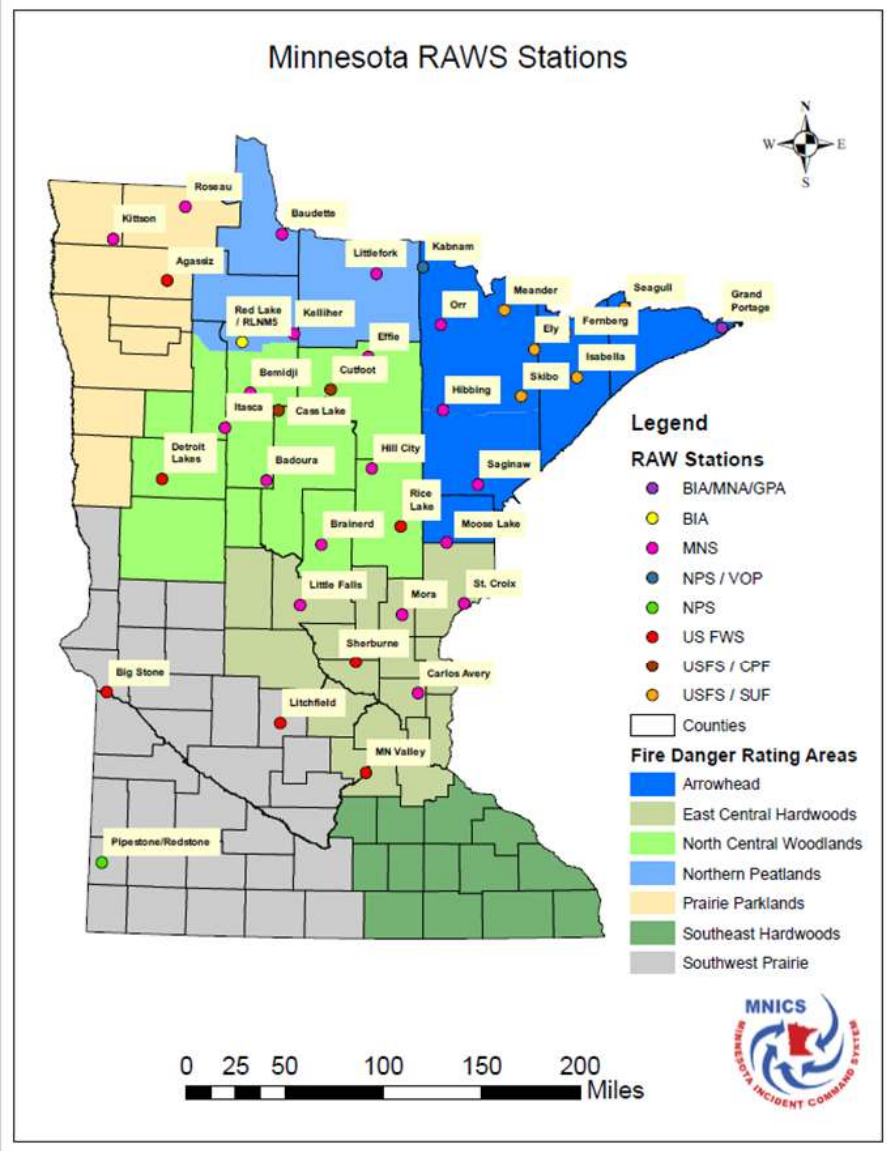


Figure 5. Map of Remote Automated Weather Stations in Minnesota

Weather Stations

There are currently 38 permanent Remote Automated Weather Stations (RAWS) active within Minnesota (see fig. 5). Each MNICS partner land management agency owns and maintains at least one station in the network. Station density is more concentrated in the forested area of northern Minnesota.

MNCC Intelligence and Predictive Services manage the daily observations of all stations, from the Minnesota Interagency Fire Center, and can edit data when necessary. This central point of contact for station management has led to extensive quality historical weather data.

All RAWS comply with the National Wildfire Coordinating Group (NWCG) specifications published in the NWCG Standards for Fire Weather Stations.

Each RAWS receives, at a minimum, one annual on-site maintenance visit. The maintenance is conducted by either the local user or contracted personnel who ensure sensors are within calibration standards and can verify site and station conditions. Station components for each station are sent annually for preventative maintenance to the RAWS Depot, some components have a longer maintenance schedule and are only sent in as needed.

Data analyzed from RAWS outside of Minnesota was used for the purpose of historical analysis. Specifically, in the southwest prairie FDRA and the southeast hardwoods, data was analyzed from the Dakotas and Wisconsin.

The lineup for the Southeast Hardwoods will change to three new Wisconsin stations starting in 2021 – Star Prairie, Ganoe Hill, and La Crosse. These three stations will replace the Lind and Boscobel stations, and will provide geographically closer data that will be incorporated in the preparedness process. As other stations become available, they will be considered for inclusion.

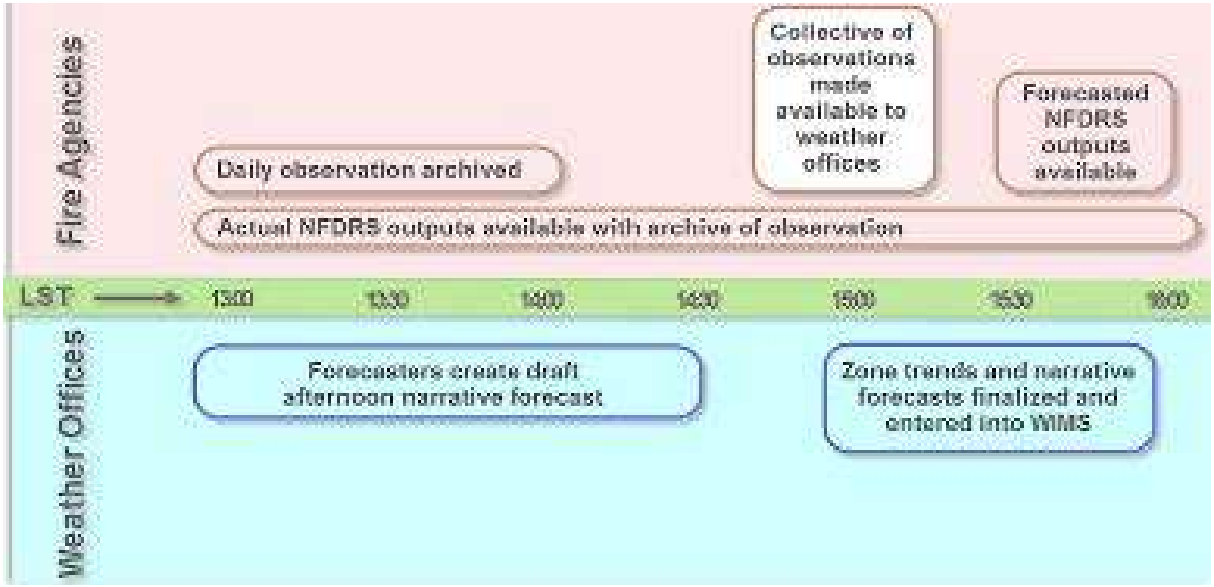


Figure 7. Diagram of daily NFDRS calculations

Arrowhead

WIMS ID	Station Name
210503	Meandor
210509	Ely
210511	Saginaw
210512	Hibbing
210514	Orr
210602	Isabella
210607	Fernberg
210703	Grand Portage
210709	Seagull
211803	Moose Lake

North-central Wood Lands

WIMS ID	Station Name
210901	Bemidji
210902	Kelliher
211004	Effie
211005	Cutfoot
211401	Itasca
211502	Badoura
211604	Cass Lake
211702	Hill City
211703	Rice Lakes NWR
212201	Detroit Lakes
212601	Brainerd

Prairie Parklands

WIMS ID	Station Name
210101	Kittson
210203	Roseau
210801	Agassiz
210901	Bemidji
211401	Itasca
212201	Detroit Lakes
213501	Big Stone NWR

East Central Hardwoods

WIMS ID	Station Name
213102	Little Falls
213301	Mora
214001	Sherburne
214201	Carlos Avery
214501	Litchfield
215601	MN Valley NWR
470603	* Lind

Southwest Prairie

WIMS ID	Station Name
213501	Big Stone NWR
214501	Litchfield
215601	MN Valley
216901	Redstone
324605	*Sheyenne
290701	* Marshall CO.

Northern Peatlands

WIMS ID	Station Name
210301	Baudette
210405	Littlefork
210514	Orr
210902	Kelliher
211004	Effie

**** Southeast Hardwoods**

WIMS ID	Station Name
214501	Litchfield
215601	MN Valley NWR
470603	*Lind
476002	*Boscobel

* Stations are outside the MN RAWS network

** For future calculations LIND and Boscobel will be replaced by Star Prairie, Ganoe Hill, and La Crosse.

Fire Danger Workload Analysis

Fire managers must be able to associate fire suppression workload with a specific target group(s) when applying fire danger rating as a viable decision support tool. Understanding the specific target group that the suppression workload originates from will help determine the appropriate communication methods and deterrence measures, which may effectively change the behavior or inform the decisions of the respective target group.

Workload Description:

The vast majority of wildfires that occur in Minnesota are managed using full suppression tactics. Human-caused fires account for 98 percent of the wildfires reported in Minnesota, of which debris burning and arson continue to be the top two human-causes of wildfire.

Due to the large percentage of human-caused ignitions, public interaction with wildfires, even small lower intensity wildfires, can present a significant risk to life, safety, and property loss. Like many other states in the eastern and southern geographic areas, Minnesota's rural population density is generally high and places many of the state's residence in the wildland urban interface *WUI. WUI increases the complexity of many initial attack fires as multi agency response and other complicating suppression factors are common.

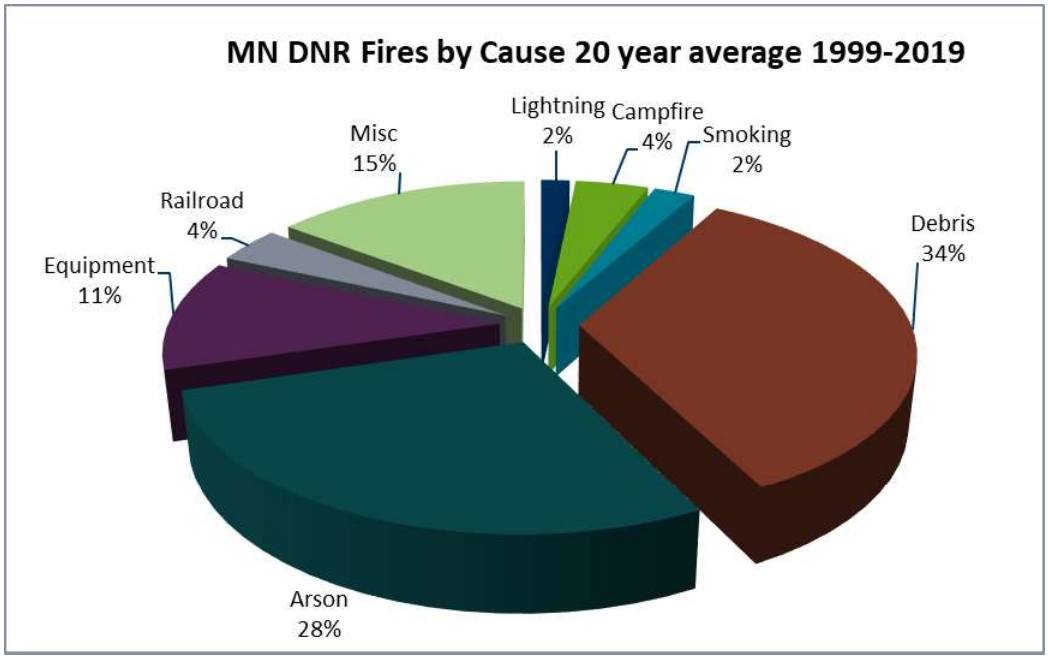


Figure 7 Chart showing fires by cause

Approximately 75 percent of Minnesota wildfires occur during the spring fire season (March, April, May). The peak occurrence of wildfire happens in April. A secondary peak in activity is not uncommon during the fall months, typically the highest occurrence of fall wildfire happens in October. Periodic droughty summers have historically led to some of Minnesota's largest wildfires in the Arrowhead FDRA.

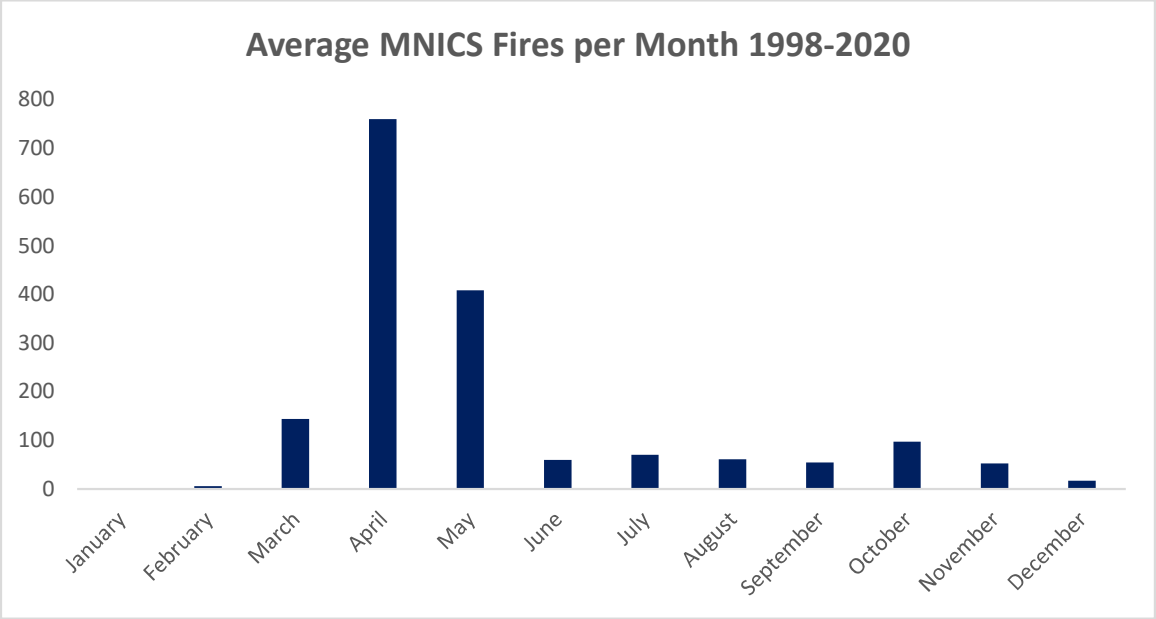


Figure 8 Chart showing fires per month

The majority of prescribed burning in Minnesota occurs during the spring months, while a secondary peak occurs in the fall. Coupled with the timing of the typical spring wildfire season, prescribed burning adds to an already high seasonal demand for firefighting resources.

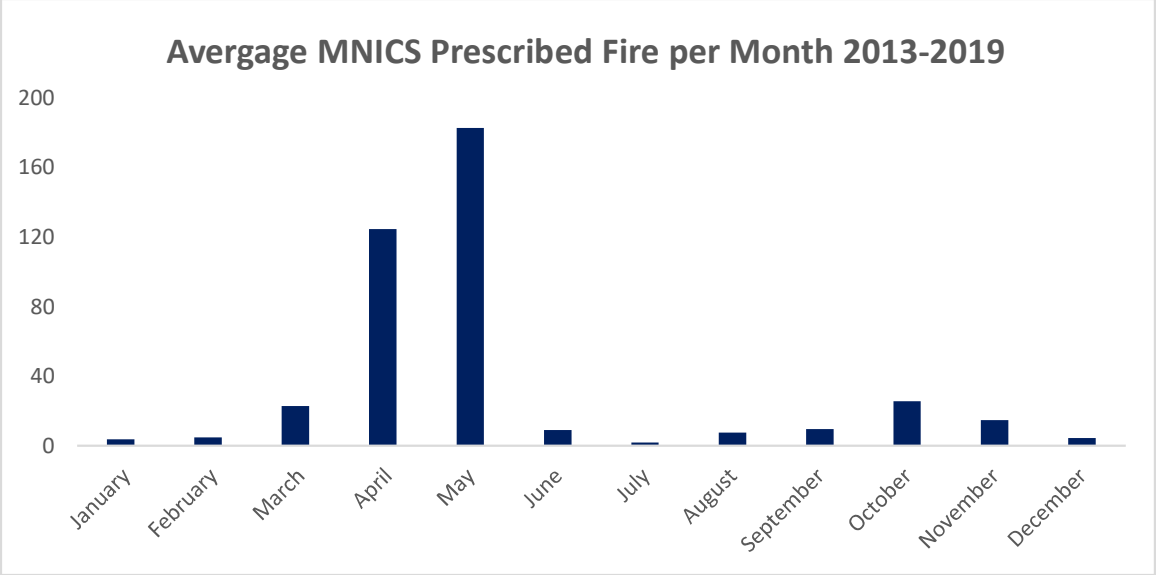


Figure 9. Chart showing average MNICS prescribed fires per month

Large *project fires*, or fires that require advanced incident management, can occur any time in the spring, summer, and fall seasons. However, during the annual *spring dip* of live fuel moisture in conifers, fires have a tendency for explosive growth in the first operational shift period. The tendency for explosive growth, often in wildland urban interface areas, places the escalation of incident

complexity into a compressed timeframe. This compressed escalation in wildland urban interface and has shaped present day incident management in Minnesota.

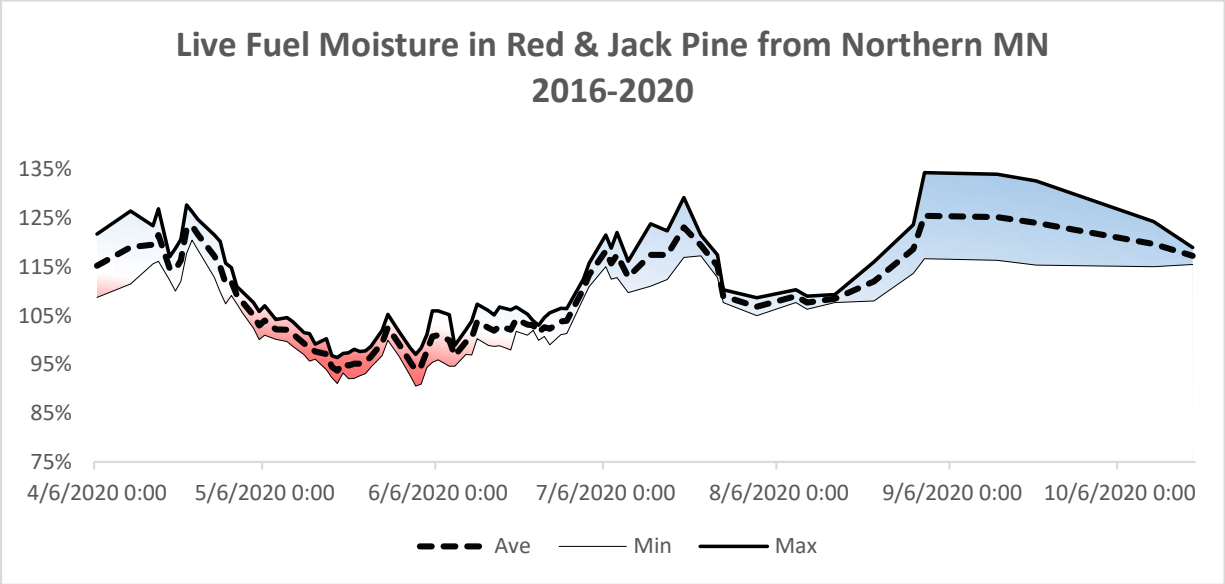


Figure 2 Chart showing live fuel moisture trends in pine

Summer and fall fires, while less common, typically entail a higher level of fire suppression involvement. The higher level of involvement is due to the seasonal drying of heavier fuels and duff, which results in higher levels of consumption. Higher levels of consumption increase the mop-up required to contain the fire and result in higher total smoke emission levels. Historical analysis shows that while there is always an annual peak in activity every spring, summer and fall peaks are heavily dependent on long-term drying. Notably, when dry years come back to back (e.g., years 1976-77, 1995-96, 2005-07, and 2011-12), the effect is greatest. The year 1988 also stands out as a notable summer in the lake states.

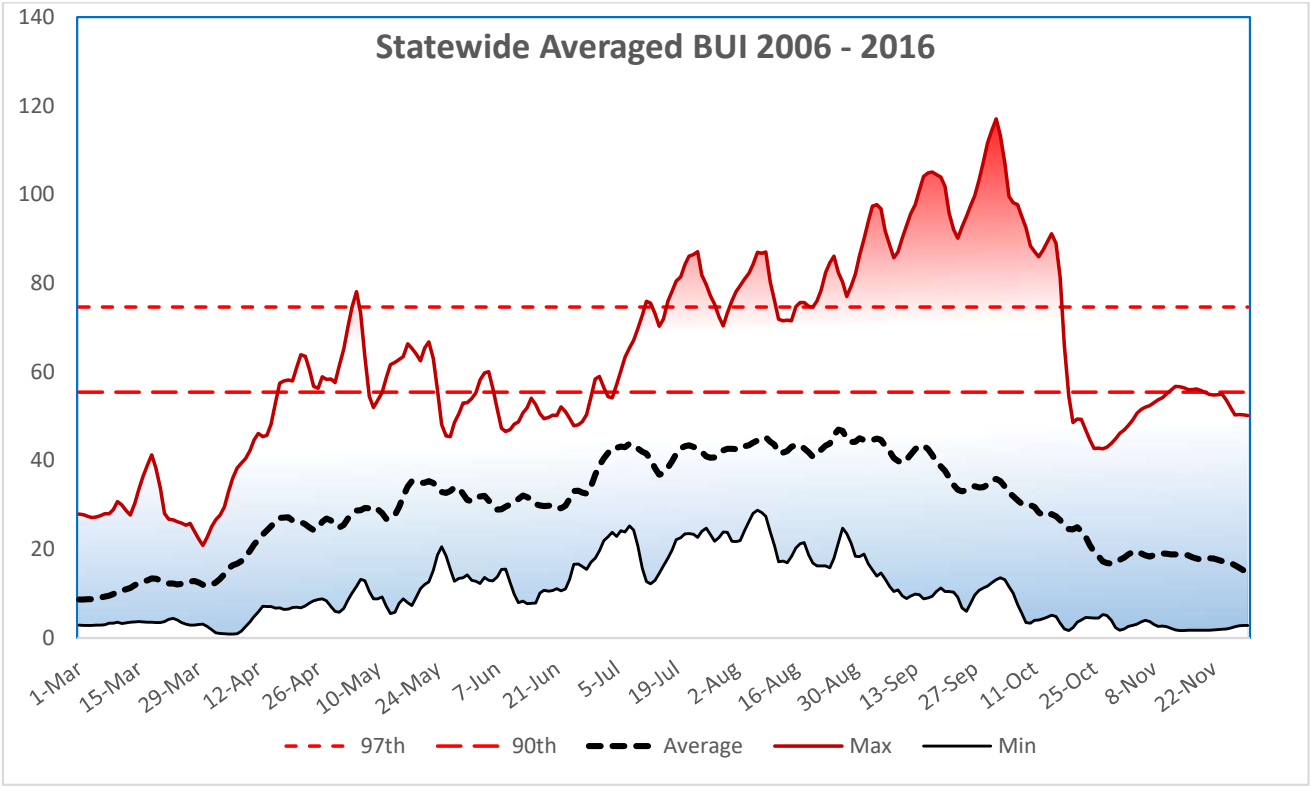


Figure 3 Chart showing average BUI through the year

Organic *peat* soils are more common in Minnesota than in most other lower 48 states. These soils account for ten percent of the state's land cover. Yet, estimates of soil organic carbon content suggests organic soils comprise 70-80 percent of the total soil organic carbon for the state. Globally, peatland accounts for three percent of land cover and 30 percent of soil organic carbon. Peatland soils are associated with wetlands and are typically not available to burn. Low-intensity fires are common during spring conditions when surface vegetation is desiccated. Recent studies have found a long-term benefit of recurring low intensity fires to locking organic carbon in the soil. Severe to extreme drought provides an enhanced risk to the release of long-term carbon stores as high intensity fires can penetrate further into the soil profile. The Northern Peatlands FDRA is where most peat soils occur; however, there are other FDRA's with smaller pockets of peat soils.

Large tracts of inaccessible land, most notably the Boundary Waters Canoe Area Wilderness (BWCAW), occur in northern Minnesota and present fire management challenges uncommon to the eastern United States. Regardless of the relative ratio of public to private land in Minnesota, fire occurrence is still higher on private land and in areas with higher population densities.

Lightning accounts for only two percent of the state's annual fires, but it is a relatively common cause for large fires in the state's most remote areas. In the BWCAW, this is especially true where the Canadian Shield extends into the US and presents a landscape with shallow soils prone to drying out, even under otherwise normal summer conditions. This area is also associated with the furthest south extension of the boreal forest, a primarily coniferous forest that evolved and adapted to fire over the millennia (human and natural caused). The exclusion of fire and other natural disturbances have led to

a heavy fuel loading in much of the BWCAW. The remoteness of the area, the landscape, fuels, and the normally increased volume of lightning during summer months results in a fire regime more common to the western United States.

Affected Target Groups:

People and organizations commonly associated with impacts resulting from fire danger make up the following affected target groups: agency, non-government organizations, industry, and the public. An analysis of the fire workload and each group's involvement will define fire prevention and fire mitigation measures and determine the roles and responsibilities of each group member related to fire danger.

- **Agency**: federal, state, tribal, and local government employees involved in the Minnesota Incident Command System (MNICS) cooperative effort to suppress wildland fires.
- **Non-Government Organizations (NGO)**: for-profit and non-profit organizations who are primarily involved with prescribed fire, or participate with the MNICS Prescribed Fire and Fuels Working Groups, the Prescribed Fire Council, or the Lake States Fire Science Consortium. The majority of fire science, as it applies to prescribed burning or fire danger, is enhanced by the collective participation of Minnesota's NGOs.
- **Industry**: employees affiliated with organizations that utilize natural resources or obtain permits or leases to conduct commercial activities on federal, state, or private lands. The major industry activities in Minnesota include timber harvesting and mining. Other industry activities include wilderness camps, railroads, electric generation, farming, guiding services, and others.
- **Public**: individuals who use public and private lands for non-commercial recreational uses including off-highway vehicle (OHV) travel, camping, hiking, hunting, fishing, skiing, gathering firewood, mountain biking, and general travel. The public group also includes those living within the wildland urban interface (WUI).

Fire Danger Decision Analysis

Decision points may be based upon climatological Breakpoints or fire Business Thresholds.

MN FDOP is a tool 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. Decision points, also referred to as *break points*, have been identified for each Fire Danger Rating Level within each Fire Danger Rating Area.

Climatological Analysis

Climatological breakpoints are points on the cumulative distribution curve of one fire weather or fire danger index computed from climatology (weather) without regard for associated fire occurrence or business. For example, the value at the 90th percentile Energy Release Component (ERC) is the climatological breakpoint, at which only ten 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 (January – December) will be different from the

percentile values for the fire season (June – September). Each agency will have specific direction, which may differ between agencies, 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. Climatological breakpoints were a starting point for establishing the MN FDOP breakpoints, and in some cases individual breakpoints may coincide with a climatological percentile. For instance, the 97th percentile of ERC (Y) represents the breakpoint between Preparedness Level 4 and 5.

Fire Business Analysis

To apply a fire danger system that will assist managers with fire management decisions, the 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.

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. The CFFDRS, adopted for use in Minnesota, Wisconsin, Michigan, and Alaska, utilizes the MesoWest processor. The MesoWest processor was developed at and is supported by the University of Utah's Department of Atmospheric Sciences for displaying and interacting with fire weather and fire behavior indices. Both systems are designed to model worst-case or peak of the day fire danger scenario. NFDRS and CFFDRS, along with other decision support tools, will be utilized to produce fire business levels (thresholds) to address local fire problems by targeting public, industrial, or agency groups.

Response (Dispatch) Level

Response (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.

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 resources and support resources. Specific preparedness actions are defined at each Staffing Level. Although a Staffing Level can be a direct output in WIMS or MesoWest, the outputs are only based upon weather observations and climatological breakpoints. Historical fire occurrence and potential is also considered in establishing Staffing Levels.

For the purposes of this FDOP Staffing Level can be determined by utilizing a matrix of Adjective Rating Level and Preparedness level. The output of this matrix is considered a baseline and can be adjusted up or down based upon other decision support tools and professional judgement.

Preparedness Level

The Preparedness Level is a five-tier (1-5) fire danger rating decision tool that is based on NFDRS and CFFDRS 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.

The basis for Preparedness level in the spring is a breakdown of the 5-day average of Burning Index in Fuel Model X. Summer and fall utilize a breakdown of Build Up Index and Energy Release Component in Fuel Model Y.

In order to establish a State-wide Preparedness level interagency preparedness planning calls are conducted twice weekly (Tuesdays and Fridays) while State-wide Preparedness Level is at a 3 or higher. At Preparedness Level 2 or below preparedness planning calls occur weekly (Tuesdays). Decisions to annually start and stop or adjust mid planning period are made as needed.

Regional and local decisions on preparedness are done per local protocol and indices have been broken down for each of the FDRAs to aid in the support of these decisions.

Fire Danger Adjective Rating Level

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

Based on extensive analysis of historical fire weather patterns and fire occurrence. Minnesota uses a matrix of Initial Spread Index (ISI) and Relative Humidity (RH) during the spring, with an additional qualifier at an ISI above 12 of Fire Weather Index (FWI). A matrix of FWI and FFMC is used to determine the fire danger adjective level during the summer. During fall either the spring or summer matrix is used dependent on the Drought Code (DC) being above or below 250. Above = spring matrix. Below = summer matrix.

Fire Danger Program Continuous Evaluation

The Fire Danger Operating Plan will become effective upon signature of the last party. The document shall be reviewed annually and remain in effect for the life of the Master Cooperative Wildland Fire Management and Stafford Act Response Agreement.

Minor changes, additions, and edits may be made to this Operating Plan in the form of addendums, approved by the MNICS Task Force and signed by the Task Force Chair.

To evaluate the effectiveness of the MN Interagency Fire Danger Operating Plan and its supplemental or subordinate plans annual reviews of these plans will occur. Given the scope of the plans themselves each one has been assigned to an interagency working group for review. Upon completion of the annual review the results will be presented to the MNICS Taskforce and if needed action items will be developed and assigned to the appropriate working group.

Key metrics for review will be identified by each working group and implemented in the review process. At the time of this writing a complete list of key metrics has not been identified for each plan. Necessary elements of fire reporting and other data are nearing completion and will be readily

available for inclusion in key metric evaluation in the near future. Interim adjustments will be approved by the taskforce and distributed via memo to participating agencies prior to annual review if necessary.

The individual plans along with the MNICS working group they are assigned to are listed below. A group of fire danger subject matter experts will be identified by the Prescribed Fire and Fuels Working Team and they will guide other MNICS working teams through continuous evaluation.

MN Interagency Fire Danger Operating Plan assigned to the Prescribed Fire and Fuels Working Team under the guidance of fire danger SMEs. Annual review includes;

- Document review to assess need for updated language or content.

MN Interagency Preparedness Plan assigned to the Prescribed Fire and Fuels Working Team under the guidance of fire danger SMEs. Annual review includes;

- Document review to assess need for updated language or content.
- Comparison of actual Statewide Preparedness Levels to yearlong preparedness indices trends.
- Statewide Fire occurrence association to actual statewide Preparedness Levels.

MN Interagency Staffing Plan assigned to the Operations Working Team and the Dispatch Working Team under the guidance of fire danger SMEs. Annual review includes;

- Document review to assess need for updated language or content.
- Key Metrics to be determined by the assigned working teams.

MN Interagency Prevention Plan assigned to the Prevention Working Team under the guidance of fire danger SMEs. Annual review includes:

- Document review to assess need for updated language or content.
- Key Metrics to be determined by the assigned working teams.

MN Interagency Public Fire Restrictions Plan assigned to the Prevention Working Team under the guidance of fire danger SMEs. Annual review includes:

- Document review to assess need for updated language or content.
- Key Metrics to be determined by the assigned working teams.

Fire Danger Program Needs

Weather Stations

- Add a RAWS in the Southwest Prairie FDRA (New Ulm)
- Add a RAWS in the Northern Peatland FDRA (Birchdale)
- Establish a permanent RAWS at glacial ridge

IT

- Webpage development to display and make readily available Fire Danger Indices. Specifically, five-day average values for preparedness planning.

Training

- Weather Shield web application initial rollout training.
- Build fire danger SME capacity with additional training in the future.
- S-491 National Fire Danger Rating System
- Advanced National Fire Danger Rating System
- Canadian Forest Fire Danger Rating System
- Conduct basic fire danger and implementation of the MN FDOP workshops winter 20-21
- RAWS maintenance training (BLM depot or FTS) on a three-year cycle

Seasonal Fire Danger Risk Assessments

- Coordinate with the Eastern Area Predictive Services Coordinator on any seasonal assessments
- Ensure completion of a pre-season risk assessment each spring prior to fire season, with updates as needed as the season progresses through the seasons
- Continue to monitor fuel moistures as needed to identify key periods of increased fire danger (example, spring dip in foliar moisture of conifers)

FDOP Enhancements

- Enhance and build out supplemental plans including the prevention and public restrictions plan.
- Ensure agency specific guidance continues fully align with FDOP guidance and vice versa.
- Look for opportunities for full inclusion of all signatory agencies in supplemental plans where possible.

Fire Danger Indices

- Explore additional indices to incorporate into fire danger decision making, including
    - CFFDRS - Grass Fine Fuel Moisture Code (GFFMC)
    - NFDRS – Growing Season Index (GSI)
- Assess break points in FDRAs for fit over full fire season.

Appendix A MN Interagency Preparedness Plan

MN Interagency Preparedness Plan

A supplemental plan to the MN Interagency Fire Danger Operating Plan

Introduction

Purpose

Preparedness plans provide management direction – based on pre-identified levels of burning conditions, fire activity, and resource commitment – and are required at national, state or regional, and local levels. Preparedness Levels (1-5) are determined by incremental measures of burning conditions, fire activity, and resource commitment. The fire danger rating is a critical measure of burning conditions used in preparedness planning. The Preparedness Levels are identified and documented further in this preparedness plan.

Preparedness versus Staffing Levels

Preparedness Levels are often confused with Staffing Levels as both may co-exist at the local level, and planning elements may overlap. The best way to differentiate the two is to consider their existence both temporally and spatially.

The preparedness Levels incorporate stable variables (e.g., ERC, BUI, 1000-hr Fuel Moisture, etc.) to help with long-term decisions, such as the need to request severity funding or activation of public-use restrictions. They also consider long term weather forecasts and big picture resource availability. The Staffing Level is intended to provide fire managers with day-to-day (short-term to mid-term) decision support regarding suppression resources staffing.

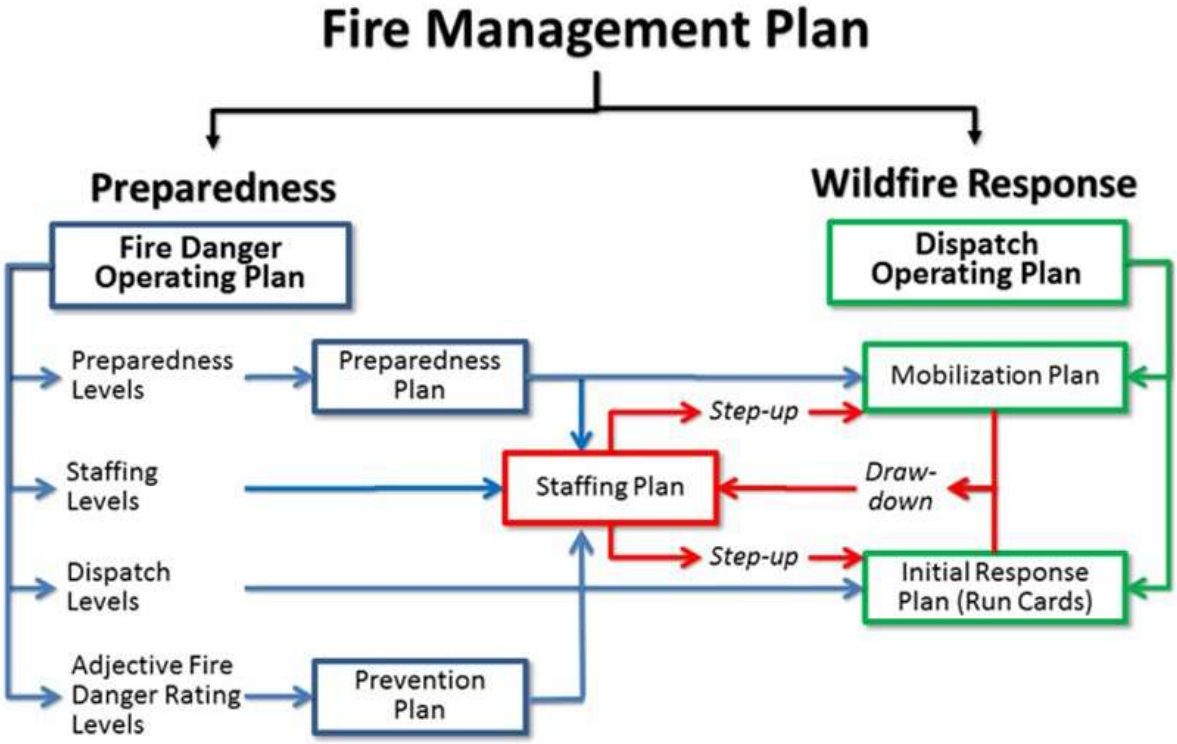
Preparedness Levels exist at every geographic extent from the national to the state and local level and provide a course geographic depiction of the fire season progression. Staffing Levels exist at the lowest geographic extent and may provide a more detailed geographic depiction of local fire danger variations.

Policy and Guidance

Policy and guidance regarding the development of Preparedness Level plans is available in Chapter 10 of the *Interagency Standards for Fire & Aviation Operations (Red Book)*.

Preparedness Level Plans are required at the national, state or regional, and local levels. These plans address the five Preparedness Levels (1-5) and provide management direction based on identified the levels of burning conditions (fire danger), fire activity, resource commitment or availability, such as incident management teams assigned, and other considerations (in contrast to Staffing Levels, which typically only consider fire danger). Preparedness Level Plans may be developed by a state or regional office for agency-specific use. Refer to the National Interagency Mobilization Guide and GACC Mobilization Guides for more information on Preparedness Level Plans.

Specific agency directives and interagency guidance require numerous unit plans and guides to meet fire preparedness and wildfire response objectives. Some of these plans and guides are inter-related, while one or more of the plans or guides provide the basis for other plans and guides. The Preparedness Plan is an operational plan that is tiered from the Fire Danger Operating Plan, as shown in the following figure:



Preparedness Levels are established to assist fire managers with weekly, semiweekly, or monthly planning decisions based upon seasonal fire danger elements. FireFamilyPlus is used to establish fire business thresholds. A statistical analysis of fire occurrence and historical weather was completed for each FDRA. The correlation of various combinations of NFDRS outputs with weather records is listed in **Appendix J** *FDRA Descriptions and Analysis*. The final Preparedness Level determination may incorporate a measure of current and projected levels of resource commitment due to fire activity and a measure of ignition risk. Each agency will consider the management actions below based upon the five Preparedness Levels.

Supplemental preparedness actions to consider include, but not limited to, the following items:

- Management briefings, direction, and considerations
- Support function – consideration given to expanded dispatch activation and other support needs (procurement, supply, ground support, and communication)
- Support staff availability outside of fire organization
- Fire danger or behavior assessment
- Fire information – internal and external
- Multi-agency coordination group or area command activation
- Prescribed fire direction and considerations

Preparedness Level Planning

Preparedness Level Planning Overview

Minnesota's preparedness level is a five-tier fire danger rating system. It is based on NFDRS components (BI in fuel model (X) for springtime and ERC in fuel model (Y) for summer/fall). It is also based on CFFDRS component, (BUI during summer and fall), other climatological outlook indicators, and fire business indicators.

Five-day average values for fire danger indices are calculated and applied to established breakpoints at the statewide and FDRA levels. Five-day averages are used to stabilize day to day variability and include forecasted indices relevant to the planning period being utilized. Climatological outlooks are also used to project through the planning period and beyond to avoid a yo-yo effect between preparedness levels. Other more nuanced indicators are considered, usually during seasonal transitions. For example, when considering the downward trending effect that calculated live fuel moisture has on Burning Index (BI) during late spring, while the concurrent "spring dip" in conifers brings them into their most susceptible state for explosive fire growth.

Fire business indicators that are used to help determine the preparedness level include the current level of fire activity in the geographic area being planned for and the overall relative resource availability. Other pertinent situations are considered, such as outdoor public events (the Fishing Opener) or holiday weekends (Fourth of July) and statewide emergency declarations from the Governor of Minnesota are also acknowledge (emergency declaration for a global pandemic)

When establishing the Statewide Preparedness level, MNICS interagency preparedness planning calls are conducted two times per week (Tuesdays and Fridays) when the Statewide Preparedness Level 3 or higher. When the Preparedness Level 2 or lower, preparedness planning calls are reduced to weekly calls (Tuesdays), or when needed. The decision when to start and stop the annual preparedness planning calls for each year or adjust mid-planning period are made at the MNICS Task Force level when necessary.

Regional and local preparedness decisions are made based on the local protocol. The indices have been broken down for each of the FDRAs to aid in the support of the regional and local preparedness decisions.

Preparedness Level Descriptions

To further enhance an understanding of the fire business and climatological indicators used in preparedness level planning for Minnesota, the following descriptions were developed to generalize the types of conditions for each of the associated preparedness levels.

Preparedness Level 1

Preparedness Level 1 is characterized by winter conditions where snow cover is found in most places from October through March, and the average temperature is below freezing, resulting in little danger of fire occurrence and spread. During the snow-free season, this will include prolonged periods of

above-normal precipitation with vegetation at full green-up, Fire activity at this level is expected to be less than five fires per week statewide.

Preparedness Level 2

Preparedness Level 2 is characterized by mid-summer conditions during periods of normal precipitation or periods when fires may start, but there is little or no danger of fire spread. This level would include periods of snow cover greater than 50 percent in the spring and fall. Fire activity is expected to be greater than five fires per week statewide.

Preparedness Level 3

Preparedness Level 3 is characterized by high danger conditions for fires to start and spread. Emergency mutual aid assistance between Areas or Zones and MNICS agencies is not anticipated. This level of preparedness would include partial snow cover conditions in the spring and late fall. Drought development may occur in portions of the planning area during the summer season. Fire activity is at this level is expected average double-digit fires per day statewide, while lesser fire occurrence is common in the summer and fall.

Preparedness Level 4

Preparedness Level 4 is characterized by high danger conditions for fires to start and spread. Emergency mutual aid assistance between Areas or Zones and MNICS Agencies may be necessary. Requests for cooperator assistance may also occur. Abnormally dry to severe drought classification over significant portions of the planning area is often associated in the summer and fall. Fire activity is expected to average double-digit fires per day statewide, while lesser fire occurrence is common in the summer and fall.

Preparedness Level 5

Preparedness Level 5 is characterized by high danger conditions for fires to start and spread. Emergency mutual aid assistance between Areas or Zones and MNICS Agencies occurs, and out-of-state resources are being considered or are ordered and brought into the state. Requests for cooperator assistance may occur. Severe drought or a higher classification over significant portions of the planning area is associated in the summer and fall. Fire activity is expected to average double-digit fires per day statewide, while lesser occurrence is common in the summer and fall.

Preparedness Planning Tools

Preparedness planning worksheets are provided in this document to aid in establishing preparedness levels at various geographic extents. Statewide preparedness planning may consider preparedness indices from each of the FDRAs in addition to the statewide averaged indices. Regional, zone, or areas preparedness planning may consider indices from the FDRA they most commonly identify with or take a weighted approach when considering multiple FDRA indices. An electronic version of these worksheets for preparedness planning and documentation is available for fire managers to use and are available through the Minnesota Interagency Fire Center (MIFC) Predictive Services Coordinator.

Options for making preparedness indicators readily available, including 5-day average indices, are being pursued for future development. Currently, two interactive spreadsheets exist for querying and summarizing data from WIMS and MesoWest. The data can also be obtained from the MIFC Predictive Services Coordinator. Alternatively, preparedness planning newsletters will be prepared by predictive services that detail the indices for all FDRAs and the entire state in conjunction with statewide preparedness planning calls.

Statewide Preparedness Level Worksheet

A GUIDELINE FOR STATEWIDE PREPAREDNESS LEVEL DETERMINATION

	Level I	Level II	Level III	Level IV	Level V
BI (X) spring, pre-green, floating 5-day average	0 - 23	24 - 47	48 - 95	96 - 130	131 +
BUI after June 1, floating 5-day average	0 - 29	30 - 49	50 - 69	70 - 88	89 +
ERC (Y) after June 1, 5-day average	0 - 15	16 - 22	23 - 27	28 - 30	31 +
8-14 day Weather Forecast	Winter conditions, snow covered, temps below freezing OR Above nrml. precip	Normal conditions for season, adequate precip. expected	Less than normal precip. and RH, higher than normal temps forecast	Dry weather patterns persisting, no change forecast	Dry pattern intensifying. Unstable weather forecast leading to extreme fire behavior conditions.
MN Regional Planning Levels	All Regions/Agencies at P.L. I	One or more Regions/Agencies at P.L. II	Two or more Regions/Agencies at P.L. III	Two or more Regions/Agencies at P.L. IV	Two or more Regions/Agencies at P.L. V
Eastern Area Planning Level	I-II	I-III	I-IV	I-V	I-V
National Planning Level	I-III	I-IV	I-V	I-V	I-V
Fire Occurrence (Initial Attack)	Rare, infrequent fire occurrence	Fires reported in scattered Areas. Generally, less than 10 fires/day Statewide.	Multiple Areas/Agencies reporting fires. 10 to 20 fires/day Statewide	Multiple Areas/Agencies reporting fires. 20 to 30 fires/day Statewide	Multiple Areas/Agencies reporting fires. 30+ fires/day Statewide.
Fire Occurrence (Escaped fires)	None	None	1-2 fires requiring extended attack Statewide (more than mop-up)	3-5 fires requiring extended attack Statewide	5+ fires requiring extended attack Statewide
Resource Availability	Normal complement of personnel.	No shortages expected.	Moderate demand for some in-state resource types expected	Shortage of certain in-state resource types	Most in-state resources committed. Out of State assistance necessary.
In-State Mobilization	None	Less than 5% of statewide resources assigned out of home unit.	Some short-term movement occurring, 5-10% of statewide resources assigned out of home unit.	10-20% of statewide resources assigned out of home unit.	20%+ of statewide resources assigned out of home unit.
Sociopolitical Considerations	Statewide or Regional events such as fishing opener or the Fourth of July; natural events such as floods or windstorms; other unexpected or unusual events that may have large scale impacts should be considered.				
Out of State Mobilization	Apply A designator when resources are out of state and/or E during a declared State of Emergency				

FDRA Preparedness Level Worksheets

FDRA – ARROWHEAD

	LEVEL I	LEVEL II	LEVEL III	LEVEL IV	LEVEL V
BI (X) spring, pre-green, floating 5-day average	0 - 20	21 - 42	43 - 84	85 - 119	120 +
BUI after June 1, floating 5-day average	0 - 12	13 - 24	25 - 49	50 - 68	69 +
ERC (Y) after **June 1**, 5-day average	0 - 14	15 - 20	21 - 25	26 - 28	29 +
8-14-day Weather Forecast	Winter conditions, snow covered, temps below freezing OR Above nrml. precip	Normal conditions for season, adequate precip. expected	Less than normal precip. and RH, higher than normal temps forecast	Dry weather patterns persisting, no change forecast	Dry pattern intensifying. Unstable weather forecast leading to extreme fire behavior conditions.
MN State-wide Planning Level	I-II	I-III	I-IV	I-V	I-V
Fire Occurrence (Initial Attack)	Rare, infrequent fire occurrence	Fires reported in scattered Areas. Generally, less than 5 fires/day Region-wide	Multiple Areas/Agencies reporting fires. 5 to 15 fires/day Region-wide.	Multiple Areas/Agencies reporting fires. 15 to 20 fires/day Region-wide	Multiple Areas/Agencies reporting fires. 20+ fires/day Region-wide.
Fire Occurrence (Escaped fires)	None	None	1 fire requiring extended attack Region-wide (more than mop-up)	2 fires requiring extended attack Region-wide.	3+ fires requiring extended attack Region-wide.
Sociopolitical Considerations	Regional events such as fishing opener or the Fourth of July; natural events such as floods or windstorms; other unexpected or unusual events that may have large scale impacts should be considered.				
Resource Availability	Normal complement of personnel.	No shortages expected.	Most Region/Forest/Unit resources are committed to local preparedness and response.	Shortage of certain resources, mutual aid between Agencies may be necessary.	Most in-state resources committed. Mutual aid is occurring between Agencies. Out of State assistance may be necessary.
Out of State Mobilization	If out of State mobilization is occurring or anticipated to occur, an 'A' designator will be applied at the current Planning Level.				

FDRA – EAST CENTRAL HARDWOODS

	LEVEL I	LEVEL II	LEVEL III	LEVEL IV	LEVEL V
BI (X) spring, pre-green, floating 5-day average	0 - 25	26 - 51	52 - 103	104 - 136	137 +
BUI after June 1, floating 5-day average	0 - 39	40 - 59	60 - 79	80 - 100	101 +
ERC (Y) after **June 1**, 5-day average	0 - 16	17 - 23	24 - 28	29 - 31	32 +
8-14 day Weather Forecast	Winter conditions, snow covered, temps below freezing OR Above nrml. precip	Normal conditions for season, adequate precip. expected	Less than normal precip. and RH, higher than normal temps forecast	Dry weather patterns persisting, no change forecast	Dry pattern intensifying. Unstable weather forecast leading to extreme fire behavior conditions.
MN State-wide Planning Level	I-II	I-III	I-IV	I-V	I-V
Fire Occurrence (Initial Attack)	Rare, infrequent fire occurrence	Fires reported in scattered Areas. Generally, less than 5 fires/day Region-wide	Multiple Areas/Agencies reporting fires. 5 to 15 fires/day Region-wide.	Multiple Areas/Agencies reporting fires. 15 to 20 fires/day Region-wide	Multiple Areas/Agencies reporting fires. 20+ fires/day Region-wide.
Fire Occurrence (Escaped fires)	None	None	1 fire requiring extended attack Region-wide (more than mop-up)	2 fires requiring extended attack Region-wide.	3+ fires requiring extended attack Region-wide.
Sociopolitical Considerations	Regional events such as fishing opener or the Fourth of July; natural events such as floods or windstorms; other unexpected or unusual events that may have large scale impacts should be considered.				
Resource Availability	Normal complement of personnel.	No shortages expected.	Most Region/Forest/Unit resources are committed to local preparedness and response.	Shortage of certain resources, mutual aid between Agencies may be necessary.	Most in-state resources committed. Mutual aid is occurring between Agencies. Out of State assistance may be necessary.
Out of State Mobilization	If out of State mobilization is occurring or anticipated to occur, an 'A' designator will be applied at the current Planning Level.				

FDRA – NORTH CENTRAL WOODLANDS

	LEVEL I	LEVEL II	LEVEL III	LEVEL IV	LEVEL V
BI (X) spring, pre-green, floating 5-day average	0 - 23	24 - 49	50 - 98	99 - 129	130 +
BUI after June 1, floating 5-day average	0 - 39	40 - 59	60 - 79	80 - 100	101 +
ERC (Y) after **June 1**, 5-day average	0 - 16	17 - 23	24 - 28	29 - 31	32 +
8-14 day Weather Forecast	Winter conditions, snow covered, temps below freezing OR Above nrml. precip	Normal conditions for season, adequate precip. expected	Less than normal precip. and RH, higher than normal temps forecast	Dry weather patterns persisting, no change forecast	Dry pattern intensifying. Unstable weather forecast leading to extreme fire behavior conditions.
MN State-wide Planning Level	I-II	I-III	I-IV	I-V	I-V
Fire Occurrence (Initial Attack)	Rare, infrequent fire occurrence	Fires reported in scattered Areas. Generally, less than 5 fires/day Region-wide	Multiple Areas/Agencies reporting fires. 5 to 15 fires/day Region-wide.	Multiple Areas/Agencies reporting fires. 15 to 20 fires/day Region-wide	Multiple Areas/Agencies reporting fires. 20+ fires/day Region-wide.
Fire Occurrence (Escaped fires)	None	None	1 fire requiring extended attack Region-wide (more than mop-up)	2 fires requiring extended attack Region-wide.	3+ fires requiring extended attack Region-wide.
Sociopolitical Considerations	Regional events such as fishing opener or the Fourth of July; natural events such as floods or windstorms; other unexpected or unusual events that may have large scale impacts should be considered.				
Resource Availability	Normal complement of personnel.	No shortages expected.	Most Region/Forest/Unit resources are committed to local preparedness and response.	Shortage of certain resources, mutual aid between Agencies may be necessary.	Most in-state resources committed. Mutual aid is occurring between Agencies. Out of State assistance may be necessary.
Out of State Mobilization	If out of State mobilization is occurring or anticipated to occur, an 'A' designator will be applied at the current Planning Level.				

FDRA – NORTHERN PEATLANDS

	LEVEL I	LEVEL II	LEVEL III	LEVEL IV	LEVEL V
BI (X) spring, pre-green, floating 5-day average	0 - 23	24 - 49	50 - 98	99 - 132	133 +
BUI after June 1, floating 5-day average	0 - 24	25 - 54	55 - 69	70 - 85	86 +
ERC (Y) after **June 1**, 5-day average	0 - 16	17 - 23	24 - 28	29 - 31	32 +
8-14-day Weather Forecast	Winter conditions, snow covered, temps below freezing OR Above nrml. precip	Normal conditions for season, adequate precip. expected	Less than normal precip. and RH, higher than normal temps forecast	Dry weather patterns persisting, no change forecast	Dry pattern intensifying. Unstable weather forecast leading to extreme fire behavior conditions.
MN State-wide Planning Level	I-II	I-III	I-IV	I-V	I-V
Fire Occurrence (Initial Attack)	Rare, infrequent fire occurrence	Fires reported in scattered Areas. Generally, less than 5 fires/day Region-wide	Multiple Areas/Agencies reporting fires. 5 to 15 fires/day Region-wide.	Multiple Areas/Agencies reporting fires. 15 to 20 fires/day Region-wide	Multiple Areas/Agencies reporting fires. 20+ fires/day Region-wide.
Fire Occurrence (Escaped fires)	None	None	1 fire requiring extended attack Region-wide (more than mop-up)	2 fires requiring extended attack Region-wide.	3+ fires requiring extended attack Region-wide.
Sociopolitical Considerations	Regional events such as fishing opener or the Fourth of July; natural events such as floods or windstorms; other unexpected or unusual events that may have large scale impacts should be considered.				
Resource Availability	Normal complement of personnel.	No shortages expected.	Most Region/Forest/Unit resources are committed to local preparedness and response.	Shortage of certain resources, mutual aid between Agencies may be necessary.	Most in-state resources committed. Mutual aid is occurring between Agencies. Out of State assistance may be necessary.
Out of State Mobilization	If out of State mobilization is occurring or anticipated to occur, an 'A' designator will be applied at the current Planning Level.				

FDRA – PRAIRIE PARKLANDS

	LEVEL I	LEVEL II	LEVEL III	LEVEL IV	LEVEL V
BI (X) spring, pre-green, floating 5-day average	0 - 26	27 - 52	53 - 105	106 - 141	142 +
BUI after June 1, floating 5-day average	0 - 24	25 - 54	55 - 69	70 - 85	86 +
ERC (Y) after **June 1**, 5-day average	0 - 16	17 - 23	24 - 28	29 - 31	32 +
8-14 day Weather Forecast	Winter conditions, snow covered, temps below freezing OR Above nrml. precip	Normal conditions for season, adequate precip. expected	Less than normal precip. and RH, higher than normal temps forecast	Dry weather patterns persisting, no change forecast	Dry pattern intensifying. Unstable weather forecast leading to extreme fire behavior conditions.
MN State-wide Planning Level	I-II	I-III	I-IV	I-V	I-V
Fire Occurrence (Initial Attack)	Rare, infrequent fire occurrence	Fires reported in scattered Areas. Generally, less than 5 fires/day Region-wide	Multiple Areas/Agencies reporting fires. 5 to 15 fires/day Region-wide.	Multiple Areas/Agencies reporting fires. 15 to 20 fires/day Region-wide	Multiple Areas/Agencies reporting fires. 20+ fires/day Region-wide.
Fire Occurrence (Escaped fires)	None	None	1 fire requiring extended attack Region-wide (more than mop-up)	2 fires requiring extended attack Region-wide.	3+ fires requiring extended attack Region-wide.
Sociopolitical Considerations	Regional events such as fishing opener or the Fourth of July; natural events such as floods or windstorms; other unexpected or unusual events that may have large scale impacts should be considered.				
Resource Availability	Normal complement of personnel.	No shortages expected.	Most Region/Forest/Unit resources are committed to local preparedness and response.	Shortage of certain resources, mutual aid between Agencies may be necessary.	Most in-state resources committed. Mutual aid is occurring between Agencies. Out of State assistance may be necessary.
Out of State Mobilization	If out of State mobilization is occurring or anticipated to occur, an 'A' designator will be applied at the current Planning Level.				

FDRA – SOUTHEAST HARDWOODS

	LEVEL I	LEVEL II	LEVEL III	LEVEL IV	LEVEL V
BI (X) spring, pre-green, floating 5-day average	0 - 23	24 - 46	47 - 93	94 - 141	142 +
BUI after June 1, floating 5-day average	0 - 39	40 - 59	60 - 79	80 - 100	101 +
ERC (Y) after **June 1**, 5-day average	0 - 16	17 - 23	24 - 29	30 - 32	33 +
8-14 day Weather Forecast	Winter conditions, snow covered, temps below freezing OR Above nrml. precip	Normal conditions for season, adequate precip. expected	Less than normal precip. and RH, higher than normal temps forecast	Dry weather patterns persisting, no change forecast	Dry pattern intensifying. Unstable weather forecast leading to extreme fire behavior conditions.
MN State-wide Planning Level	I-II	I-III	I-IV	I-V	I-V
Fire Occurrence (Initial Attack)	Rare, infrequent fire occurrence	Fires reported in scattered Areas. Generally, less than 5 fires/day Region-wide	Multiple Areas/Agencies reporting fires. 5 to 15 fires/day Region-wide.	Multiple Areas/Agencies reporting fires. 15 to 20 fires/day Region-wide	Multiple Areas/Agencies reporting fires. 20+ fires/day Region-wide.
Fire Occurrence (Escaped fires)	None	None	1 fire requiring extended attack Region-wide (more than mop-up)	2 fires requiring extended attack Region-wide.	3+ fires requiring extended attack Region-wide.
Sociopolitical Considerations	Regional events such as fishing opener or the Fourth of July; natural events such as floods or windstorms; other unexpected or unusual events that may have large scale impacts should be considered.				
Resource Availability	Normal complement of personnel.	No shortages expected.	Most Region/Forest/Unit resources are committed to local preparedness and response.	Shortage of certain resources, mutual aid between Agencies may be necessary.	Most in-state resources committed. Mutual aid is occurring between Agencies. Out of State assistance may be necessary.
Out of State Mobilization	If out of State mobilization is occurring or anticipated to occur, an 'A' designator will be applied at the current Planning Level.				

FDRA – SOUTHWEST PRAIRIE

	LEVEL I	LEVEL II	LEVEL III	LEVEL IV	LEVEL V
BI (X) spring, pre-green, floating 5-day average	0 - 24	25 - 51	52 - 102	103 - 144	145 +
BUI after June 1, floating 5-day average	0 - 39	40 - 54	55 - 69	70 - 85	86 +
ERC (Y) after **June 1**, 5-day average	0 - 17	18 - 24	25 - 30	31 - 33	34 +
8-14 day Weather Forecast	Winter conditions, snow covered, temps below freezing OR Above nrml. precip	Normal conditions for season, adequate precip. expected	Less than normal precip. and RH, higher than normal temps forecast	Dry weather patterns persisting, no change forecast	Dry pattern intensifying. Unstable weather forecast leading to extreme fire behavior conditions.
MN State-wide Planning Level	I-II	I-III	I-IV	I-V	I-V
Fire Occurrence (Initial Attack)	Rare, infrequent fire occurrence	Fires reported in scattered Areas. Generally, less than 5 fires/day Region-wide	Multiple Areas/Agencies reporting fires. 5 to 15 fires/day Region-wide.	Multiple Areas/Agencies reporting fires. 15 to 20 fires/day Region-wide	Multiple Areas/Agencies reporting fires. 20+ fires/day Region-wide.
Fire Occurrence (Escaped fires)	None	None	1 fire requiring extended attack Region-wide (more than mop-up)	2 fires requiring extended attack Region-wide.	3+ fires requiring extended attack Region-wide.
Sociopolitical Considerations	Regional events such as fishing opener or the Fourth of July; natural events such as floods or windstorms; other unexpected or unusual events that may have large scale impacts should be considered.				
Resource Availability	Normal complement of personnel.	No shortages expected.	Most Region/Forest/Unit resources are committed to local preparedness and response.	Shortage of certain resources, mutual aid between Agencies may be necessary.	Most in-state resources committed. Mutual aid is occurring between Agencies. Out of State assistance may be necessary.
Out of State Mobilization	If out of State mobilization is occurring or anticipated to occur, an 'A' designator will be applied at the current Planning Level.				

Appendix B Staffing Plan

MN Interagency Staffing Plan

A supplemental plan to the MN Interagency Fire Danger Operating Plan

Introduction

Purpose

This Staffing Plan is intended to provide day-to-day guidance for decisions regarding the *degree of readiness* of initial attack (IA) resources. The Staffing Level is used to make daily internal fire operation decisions that affect agency personnel. The plan identifies at each Staffing Level:

- Daily staffing
- Draw-down levels
- Step-up actions

This plan will function most effectively when decisions are made in preparation for escalating fire danger and potential fire activity. Waiting until the day of a critical event during extreme fire danger will prove this plan ineffective.

> *"You need a fire danger system that will help you make a judgment decision today on what kind and number of fires you can expect tomorrow." (Lancaster, 2004)*

Preparedness versus Staffing Levels

Preparedness Levels are often confused with Staffing Levels because both can exist at the local level, and planning elements from each plan may overlap. The best way to differentiate the two is to consider their existence both temporally and spatially.

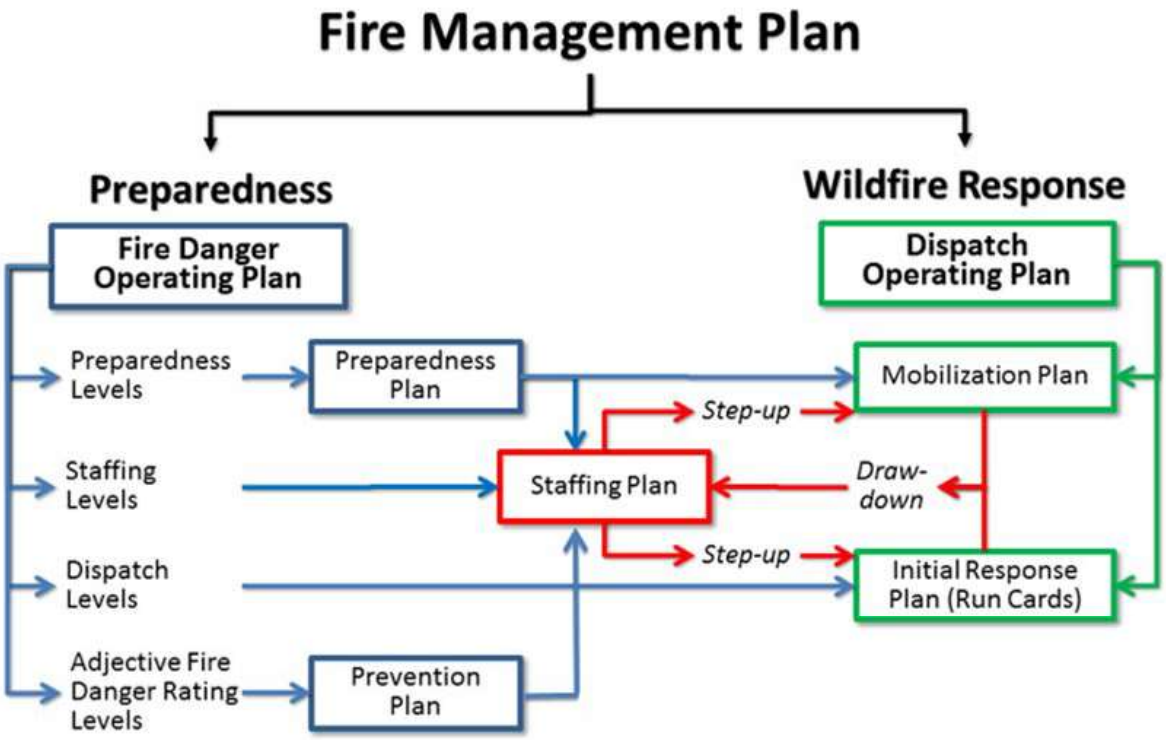
Preparedness Levels incorporate stable variables (e.g., ERC, BUI, 1000-hr Fuel Moisture, etc.) to help with long-term decisions, such as the need to request severity funding or activation of public-use restrictions. They also consider long term weather forecasts and big picture resource availability. Staffing Level is intended to provide fire managers with day-to-day (short-term) decision support regarding staffing of suppression resources.

Preparedness levels exist at every geographic extent from the national level to the state and local level and provide a course geographic depiction of the progression of fire season. Staffing Levels exists at the lowest geographic extent and may provide a more detailed geographic depiction of variations in local fire danger.

Policy and Guidance

Policy and guidance regarding the development of Staffing Plans can be found in **Chapter 10** of the *Interagency Standards for Fire & Aviation Operations (Red Book)*.

Agency directives and interagency guidance may require numerous unit plans and guides to meet fire preparedness and wildfire response objectives. Some of these plans and guides are inter-related; one or more plans/guides provide the basis for other plans/guides. The Staffing Plan is an operational plan tiered from the Fire Danger Operating Plan as shown to the right:



Terminology

Staffing Level

Staffing Level is the bottom line of fire-danger rating and can be thought of as a *readiness* level. Staffing Levels are expressed as numeric values where one (1) represents the low end of the fire danger continuum and five (5) at the high end.

Staffing Level is intended to provide fire managers with day-to-day (short-term) decision support regarding staffing of suppression resources. Staffing Levels can be used to determine when additional workforce and resources may be necessary to ensure appropriate staffing in response to escalating fire danger.

Step-up Plan

A Step-Up Plan includes supplemental preparedness actions designed to enhance the unit's fire management capability during short periods (usually one burn period in anticipation of wind events, dry cold fronts, and lightning events) where normal staffing cannot foreseeably meet initial attack, prevention, or detection needs.

Draw-Down Level

Draw-Down Level is the degree of response capabilities of an agency due to the impact of emergency activity within their home jurisdiction or their commitment of resources to the mutual aid system for incident response outside of their jurisdiction. Draw-down Level is expressed as either:

1) The predetermined number or type of suppression resources
2) The percentage of remaining capacity of suppression resources that are required to maintain viable initial attack (IA) capability

Staffing Level Planning

Staffing Level Planning Overview

The Staffing Level depicted in the *MN Interagency Staffing Plan* is based on a matrix that cross-references adjective fire danger rating and preparedness level. As a result, the underlying NFDRS and CFFDRS indices that determine both preparedness and adjective rating levels are influential to the Staffing Level. It also means that the underlying staffing indices change with the seasons as they do for adjective rating and preparedness levels. In short, the indices that impact staffing through various seasons are - from NFDRS - ERC in fuel model (Y), BI in Fuel Model (X), - from CFFDRS - FFMC, FWI, ISI, BUI, DC, and RH. Further information related to the underlying indices can be found in the *MN Interagency Preparedness Plan* and *MN Interagency Prevention Plan*.

It is recognized that Staffing Level determination is completed frequently (daily during spring fire season) by fire managers and Preparedness Level is meant to exist in longer periods. For that reason, it is not expected that fire managers will calculate local preparedness levels daily. Rather, they will reference the FDRA or Regional Preparedness Level pertinent to their local conditions or generate one of their own that remains valid for a period of time.

Using preparedness level as one axis of the Staffing Level matrix has the benefit of building resiliency into staffing during critical times of the year, especially during the spring when fire weather conditions can routinely outdo forecasts.

To determine an adjective rating, fire managers can use the matrix for adjective level determination from the *MN Interagency Prevention Plan*. While the responsibility for creating public-facing adjective rating levels falls with the state of Minnesota's responsibility, adjective ratings used for determining Staffing Level can be completed by any fire manager. In some cases, based on the circumstances and timing that various adjective ratings are determined, there may be discrepancies between the public-facing adjective level and the adjective level used for establishing Staffing Levels.

It is also worth noting that individual agency participation in this Staffing Level is based on agency needs and existing guidance that remains in place in conjunction with this plan. In some instances, other tools may be used in addition to, or in-place of, the Staffing Level tools depicted in this plan.

Staffing Level Tools

Staffing Level Worksheet

Process for identifying the appropriate daily and forecast staffing levels.

1. Use the Preparedness Level table for your FDRA to identify your Zone/Area Preparedness Level.
2. Use the Fire Danger Rating tables to identify the appropriate fire danger based on the representative local Remote Automated Weather Station indices outputs.
3. Use the Staffing Level Matrix to identify the recommended Staffing level

Fire Danger Rating	Preparedness Level I	II	III	IV	V	Staffing Level
LOW	1	1	2	3	3	
MODERATE	2	2	3	3	4	
HIGH	2	3	3	4	4	
VERY HIGH	3	4	4	4	5	
EXTREME	3	4	4	5	5	

4. Use the Adjustment Matrix to calculate the final Staffing Level.

Daily Staffing Adjustment Table		Significant Weather Event: No	Significant Weather Event: YES
Ongoing Fire Activity: No		No Adjustment	Bump up 1 level *
Ongoing Fire Activity: YES		Bump up 1 Level *	Bump up 2 levels *

* Not to exceed Staffing Level 5 (highest level)

5. Establish the Daily Initial Response from the Run Card.

MN Staffing Guide

Zone	SL 1		SL 2		SL3		SL4		SL5	
Chippewa		engine	1	engine	2	engine	3	engine	4	engine
		tracks		tracks		tracks		tracks		tracks
		dozer		dozer		dozer	1	dozer	1	dozer
		crew		crew		crew		crew		crew
Superior East	1	engine	1	engine	2	engine	2	engine	3	engine
		tracks		tracks		tracks		tracks		tracks
		dozer		dozer		dozer		dozer		dozer
		crew		crew		crew		crew		crew
Superior West	1	engine	1	engine	2	engine	2	engine	3	engine
		tracks		tracks		tracks		tracks		tracks
		dozer		dozer		dozer		dozer	1	dozer
		crew		crew		crew		crew		crew
Deer River	2	engine	6	engine	10	engine	11	engine	12	engine
	2	tracks	4	tracks	4	tracks	4	tracks	4	tracks
		dozer		dozer	2	dozer	2	dozer	2	dozer
		crew		crew		crew	1	crew	1	crew
Aitkin	3	engine	6	engine	8	engine	11	engine	11	engine
	1	tracks	3	tracks	6	tracks	2	tracks	2	tracks
		dozer		dozer	1	dozer	1	dozer	1	dozer
		crew		crew		crew		crew		crew
Hibbing	4	engine	6	engine	8	engine	10	engine	10	engine
	1	tracks	3	tracks	3	tracks	4	tracks	5	tracks
		dozer		dozer	1	dozer	2	dozer	3	dozer
		crew		crew		crew	1	crew	2	crew
Tower	4	engine	7	engine	7	engine	10	engine	10	engine
		tracks	1	tracks	2	tracks	3	tracks	3	tracks
		dozer		dozer	2	dozer	3	dozer	3	dozer
	1	crew	1	crew	1	crew	1	crew	1	crew
Cloquet	2	engine	4	engine	6	engine	10	engine	11	engine
	1	tracks	2	tracks	3	tracks	4	tracks	4	tracks
		dozer		dozer		dozer	1	dozer	1	dozer
		crew		crew		crew	1	crew	1	crew
Two Harbors	1	engine	3	engine	5	engine	7	engine	10	engine
		tracks	1	tracks	1	tracks	1	tracks	2	tracks
		dozer		dozer	1	dozer	3	dozer	4	dozer
		crew		crew		crew	1	crew	1	crew
Littlefork	1	engine	3	engine	5	engine	7	engine	7	engine
		tracks	1	tracks	2	tracks	2	tracks	2	tracks
		dozer		dozer		dozer	1	dozer	1	dozer
		crew		crew		crew		crew		crew
Baudette	2	engine	2	engine	5	engine	6	engine	10	engine
	0	tracks	1	tracks	2	tracks	5	tracks	6	tracks
	0	dozer	0	dozer	0	dozer	1	dozer	2	dozer
	0	crew	0	crew	0	crew	0	crew	0	crew

MN Staffing Guide

Warroad	3	engine	7	engine	17	engine	17	engine	17	engine
	0	tracks	4	tracks	9	tracks	10	tracks	11	tracks
	0	dozer	0	dozer	1	dozer	3	dozer	4	dozer
	0	crew	0	crew	0	crew	1	crew	2	crew
Bemidji	7	engine	13	engine	20	engine	24	engine	26	engine
	0	tracks	3	tracks	3	tracks	4	tracks	4	tracks
	0	dozer	1	dozer	3	dozer	4	dozer	4	dozer
	0	crew	0	crew	0	crew	0	crew	0	crew
Park Rapids	3	engine	4	engine	8	engine	12	engine	13	engine
	3	tracks	3	tracks	3	tracks	4	tracks	4	tracks
	2	dozer	2	dozer	2	dozer	4	dozer	4	dozer
	0	crew	0	crew	0	crew	0	crew	0	crew
Backus	1	engine	4	engine	6	engine	8	engine	10	engine
	0	tracks	2	tracks	3	tracks	3	tracks	3	tracks
	0	dozer	0	dozer	0	dozer	2	dozer	3	dozer
	0	crew	0	crew	0	crew	0	crew	0	crew
North Metro	0	engine	4	engine	4	engine	5	engine	7	engine
(Cambridge)	0	tracks	1	tracks	2	tracks	3	tracks	3	tracks
	0	dozer	0	dozer	0	dozer	0	dozer	1	dozer
	0	crew	0	crew	0	crew	1	crew	2	crew
Sandstone	2	engine	3	engine	5	engine	8	engine	10	engine
	1	tracks	2	tracks	3	tracks	3	tracks	3	tracks
	0	dozer	0	dozer	0	dozer	1	dozer	1	dozer
	0	crew	0	crew	0	crew	0	crew	0	crew
Little Falls	4	engine	6	engine	10	engine	12	engine	14	engine
	0	tracks	3	tracks	4	tracks	5	tracks	6	tracks
	0	dozer	0	dozer	1	dozer	1	dozer	2	dozer
	0	crew	0	crew	0	crew	1	crew	1	crew
Lewiston	4	engine	4	engine	4	engine	4	engine	4	engine
	0	tracks	0	tracks	0	tracks	0	tracks	0	tracks
	0	dozer	0	dozer	0	dozer	0	dozer	0	dozer
	0	crew	0	crew	0	crew	0	crew	0	crew
Voyageurs NP		engine		engine		engine		engine		engine
		tracks		tracks		tracks		tracks		tracks
		dozer		dozer		dozer		dozer		dozer
		crew		crew		crew		crew		crew
USFWS		engine		engine		engine		engine		engine
		tracks		tracks		tracks		tracks		tracks
		dozer		dozer		dozer		dozer		dozer
		crew		crew		crew		crew		crew
BIA		engine		engine		engine		engine		engine
		tracks		tracks		tracks		tracks		tracks
		dozer		dozer		dozer		dozer		dozer
		crew		crew		crew		crew		crew

MN Staffing Guide

MN Agencies										
		engine		engine		engine		engine		engine
		tracks		tracks		tracks		tracks		tracks
		dozer		dozer		dozer		dozer		dozer
		crew		crew		crew		crew		crew
		engine		engine		engine		engine		engine
		tracks		tracks		tracks		tracks		tracks
		dozer		dozer		dozer		dozer		dozer
		crew		crew		crew		crew		crew
Totals	**45**	engine	**81**	engine	**130**	engine	**164**	engine	**185**	engine
	9	tracks	**33**	tracks	**48**	tracks	**54**	tracks	**59**	tracks
	2	dozer	**3**	dozer	**14**	dozer	**30**	dozer	**37**	dozer
	1	crew	**1**	crew	**1**	crew	**7**	crew	**9**	crew

Notes:

State crews are 5 person CCM crews or equivalent

USFS engine staffing note:

Staffing level 1 & 2	Minimum Engine crew of 2 with an ENGB/ICT5
Staffing level 3	Minimum Engine crew of 3 with an ENGB/ICT4
Staffing level 4	Minimum Module of 4 (engine & chase truck) with an ENGB/ICT4

Appendix C Prevention Plan

MN Interagency Prevention Plan

A supplemental plan to the MN Interagency Fire Danger Operating Plan

Introduction

Purpose

Prevention plans document the wildland fire problems identified by a prevention analysis. This analysis will examine human-caused fires, and 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 groups are documented in the Fire Danger Operating Plan.

Terminology

Prevention or Mitigation Plan

The Prevention or Mitigation Plan outlines how the Adjective Fire Danger Ratings are communicated to the public and applied as responsible personnel and assigned activities. Prevention activities are intended to reduce the occurrence of unwanted human-caused fires and include, but are not limited to:

- Education (signage, school programs, radio and news releases, recreation contacts, local business contacts, exhibits);
- Engineering (public utility company, government agency/cooperator coordination);
- Enforcement/industrial program monitoring (patrol, permitting, inspections including firewood cutting, logging, mining, power line maintenance, and area closures); and area closures); and
- Administration (patrol, communication, FDOP, sign, and other plans and planning activities).

Adjective Fire Danger Rating

In 1974, the Forest Service, Bureau of Land Management, and State Forestry organizations established a standard adjective description for five fire danger levels for use in public information releases and fire prevention signing. For this purpose, only fire danger is expressed using the adjective levels and color codes described below:

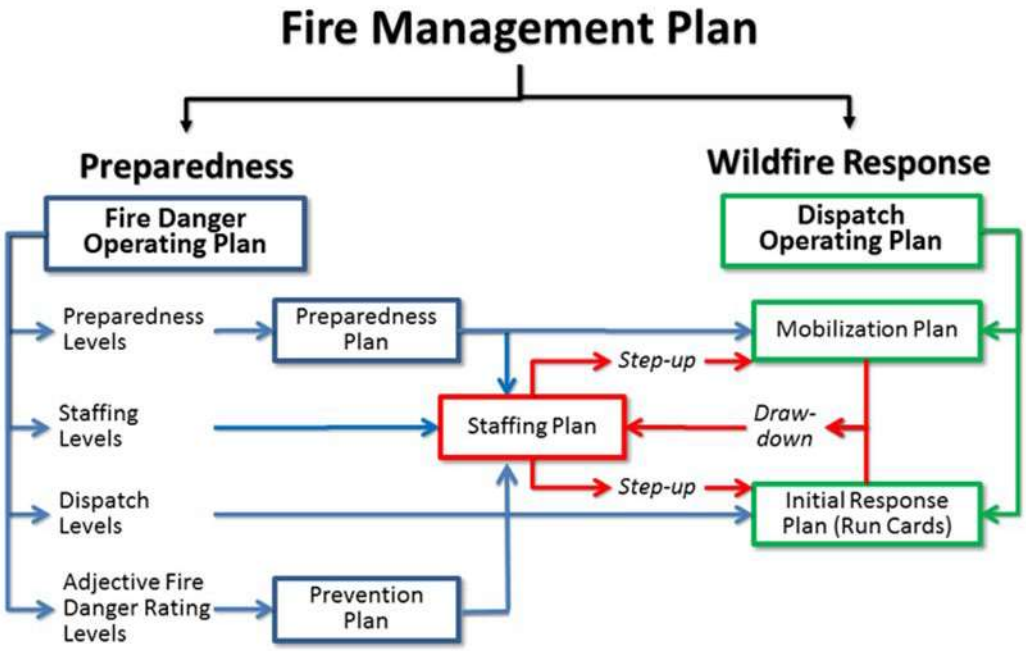
Fire Danger Rating and Color Code	DESCRIPTION
Low (L) (Green)	Fuels do not ignite readily from small firebrands although a more intense heat source, such as lightning, may start fires in duff or punky wood. Fires in open cured grasslands may burn freely a few hours after rain, but woods fires spread slowly by creeping or smoldering, and burn in irregular fingers. There is little danger of spotting.
Moderate (M) (Blue)	Fires can start from most accidental causes but, except for lightning fires in some areas, the number of starts is generally low. Fires in open cured grasslands will burn briskly and spread rapidly on windy days. Timber fires spread slowly to moderately fast. The average fire is of moderate intensity, although heavy concentrations of fuel, especially draped fuel, may burn hot. Short-distance spotting may occur but is not persistent. Fires are not likely to become serious and control is relatively easy.
High (H) (Yellow)	All fine dead fuels ignite readily, and fires start easily from most causes. Unattended brush and campfires are likely to escape. Fires spread rapidly, and short-distance spotting is common. High-intensity burning may develop on slopes or in concentrations of fine fuels. Fires may become serious and their control difficult unless they are attacked successfully while small.
Very High (VH) (Orange)	Fires start easily from all causes and, immediately after ignition, spread rapidly and increase quickly in intensity. Spot fires are a constant danger. Fires burning in light fuels may quickly develop high intensity characteristics such as long-distance spotting and fire whirlwinds when they burn into heavier fuels.
Extreme (E) (Red)	Fires start quickly, spread rapidly, and burn intensely. All fires are potentially serious. Development into high intensity burning will usually be faster and occur from smaller fires than in the very high fire danger class. Direct attack is rarely possible and may be dangerous except immediately after ignition. Fires that develop headway in heavy slash or in conifer stands may be unmanageable while the extreme burning condition lasts. Under these conditions the only effective and safe control action is on the flanks until the weather changes or the fuel supply lessens.

Policy and Guidance

Policy and guidance regarding the development of Prevention/Mitigation Plans can be found in chapter 9 of the Interagency Standards for Fire & Aviation Operations (Red Book).

Unit-level Fire Prevention/Mitigation Plans may be required and completed by conducting a wildland fire prevention/mitigation assessment. The purpose of the plan is to develop a strategy that will identify actions to reduce unwanted human-caused ignitions, thereby reducing wildland fire damage and losses, unnecessary risks to firefighters, and suppression costs. As fire danger moves from low to extreme, as defined in the FDOP, and human activity increases, prevention and mitigation activities must be increased to maintain effectiveness.

The Prevention or Mitigation Plan is an operational plan tiered from the Fire Danger Operating Plan as shown below:



Plan Components

Prevention/Mitigation Workload Analysis

The ability to regulate, educate, or control a user group is based upon the interface method and how quickly they can react to the action taken. Each action will result in a positive or negative impact on user groups. Consequently, the decision tool that would be most appropriate depends upon the target group's sensitivity to the implementation of the action and ultimately changes their behavior. The table in **Appendix L** *Fire Danger Issues* table illustrates the differences between target groups (industry and public) and the associated fire cause.

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

The Prevention Plan will be used to support decisions that 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.

Adjective Fire Danger Rating Determination

To determine Fire Danger Adjective Rating Levels, this plan utilizes a CFFDRS based process that has been used in Minnesota for some time. The process was based on an extensive analysis of historical fire weather patterns and fire occurrence.

This process uses a matrix of Initial Spread Index (ISI) and Relative Humidity (RH) during the spring, with an additional qualifier at an ISI above 12 of Fire Weather Index (FWI). A matrix of FWI and FFMC is used to determine the fire danger adjective level during the summer. During the fall season, either the spring or summer matrix (reference the Prevention Plan Adjective Rating Tools) will be use used dependent on whether the Drought Code (DC) is above or below 250.

- Above = spring matrix.
- Below = summer matrix.

When determining an adjective rating, fire managers can use the matrix for adjective level determination from this prevention plan. While the responsibility for creating public-facing adjective rating levels falls with the state of Minnesota, adjective ratings used for determining Staffing Level can be used by any fire manager. There maybe be discrepancies between the public-facing adjective level and the adjective level used for establishing Staffing Levels, dependent upon the circumstances and timing when various adjective ratings are determined.

Mitigation

The Mitigation section of the Prevention Plan required enhancements for future revisions of the Prevention Plan that will employ prevention Subject Matter Experts (SME) to help describe these efforts in Minnesota.

Describe actions initiated to reduce impacts of wildland fire to communities (e.g., Firewise programs, community wildfire protection program (CWPP) agreements, fuels reduction projects, etc.).

Note: Incorporate associated planning documents by reference (e.g., CWPP, Firewise, etc.).

Prevention

The Prevention section of the Prevention Plan requires enhancements for future revisions of the Prevention Plan that will employ prevention SMEs to help describe these efforts in Minnesota.

Describe efforts to prevent unwanted human-caused fires, efforts involved:

- Complete fire risk assessments
- Determine the severity of the situation
- Facilitate community awareness and education in fire prevention including prescribed burning
- Coordinate announcement of interagency restrictions and closure
- Coordinate fire prevention efforts with the public, special target groups, state and local agencies, and elected officials
- Promote public and personal responsibility regarding fire prevention in the wildland/urban interface
- Assist Incident Management Teams in accomplishing their objectives in working with the public to develop fire protection plans

Education

The Education section of the Prevention Plan requires enhancements for future revisions of the Prevention Plan that will employ prevention SMEs to help describe these efforts in Minnesota.

Describe facilitating and promoting awareness and understanding of wildland fire. Education efforts may include:

- Equipment use
- Debris burning
- Campfire safety
- Vehicle maintenance (e.g., securing tow chains, no dragging vehicle parts, proper tire pressure, brake maintenance, etc.)

Note: Incorporate education plans by reference.

Enforcement

The Enforcement section of the Prevention Plan requires enhancements in future revisions of the Prevention Plan employing prevention SMEs to help describe these efforts in Minnesota.

Describe actions necessary to establish and carry out regulations, restrictions, and closures.

During times of high fire danger, restrictions and closures may be imposed to mitigate the risk of wildland fires. Emergency closures have a substantial impact on the public and are only used under the most severe conditions. All special orders and closures will be coordinated with local cooperators and regional agencies.

Fire restrictions and closures require a high degree of coordination among every level within each MNICS agency and the tribes, between all agencies and the tribes within the restriction area, between restriction areas, and the restriction area and geographic area restriction coordinator. The process must be continuous from the time restrictions are first proposed, through the period of implementation, and until the rescinding of all restrictions and closures. The cooperators in the restriction area will continuously monitor weather, fuel conditions and other factors that will indicate when restrictions or closures are warranted. The decision criteria are a combination of all values, not simply one or two.

Adjective Rating Tools

Spring Fire Danger Matrix

(Snow Melt – June)

Thresholds to consider next adjective higher:

Windspeed > 15 mph
- High Rates of Spread

Relative Humidity <32%
- Increased potential for multiple fires per day.

Relative Humidity < 22%
- Extreme Fire Behavior Likely

Forecast Minimum RH (%)	Forecast ISI (Canadian Initial Spread Index)					
	Table 1	0 - 1.9	2.0 - 3.9	4.0 - 7.9	8.0 - 11.9	12.0+
	61+	LOW	LOW	LOW	LOW	MODERATE
	45-60	LOW	LOW	LOW	MODERATE	See Table 2
	36-44	LOW	LOW	MODERATE	MODERATE	See Table 2
	29-35	LOW	MODERATE	HIGH	HIGH	See Table 2
	20-28	MODERATE	MODERATE	HIGH	HIGH	See Table 2
	<20	MODERATE	MODERATE	HIGH	VERY HIGH	EXTREME

Forecast Minimum RH (%)	Fire Weather Index (FWI)			
	Table 2	< 15	15-24	25+
	45-60	MODERATE	HIGH	HIGH
	36-44	HIGH	HIGH	VERY HIGH
	29-35	HIGH	VERY HIGH	VERY HIGH
	20-28	VERY HIGH	VERY HIGH	EXTREME

Summer Fire Danger Matrix

(June – September)

Forecast FWI

(Canadian Fire Weather Index)

Forecast FFMC (Canadian Fine Fuel Moisture Code)	FFMC \ FWI	0-9	10-15	16-25	26-39	40+
	0-84	LOW	LOW	LOW	MODERATE	⇩⇩
	85-88	LOW	LOW	MODERATE	MODERATE	HIGH
	89-90	LOW	MODERATE	MODERATE	HIGH	HIGH
	91-92	MODERATE	MODERATE	HIGH	HIGH	VERY HIGH
	93+	⇨	HIGH	HIGH	VERY HIGH	EXTREME

Fall Fire Danger

(October – Snow Cover)

Drought Code < 250	**Drought Code >250**
• Use Summer Fire Danger Table	• Use Spring Fire Danger Tables

Spring Fire Danger Matrix- Arrowhead

(Snow Melt – June)

Thresholds to consider next adjective higher:

Windspeed > 15 mph
- High Rates of Spread

Relative Humidity <32%
- Increased potential for multiple fires per day.

Relative Humidity < 22%
- Extreme Fire Behavior Likely

Forecast Minimum RH (%)	Forecast ISI (Canadian Initial Spread Index)					
	Table 1	0 - 1.9	2.0 - 3.9	4.0 - 7.9	8.0 - 11.9	12.0+
	61+	LOW	LOW	LOW	LOW	MODERATE
	45-60	LOW	LOW	LOW	MODERATE	See Table 2
	36-44	LOW	LOW	MODERATE	MODERATE	See Table 2
	29-35	LOW	MODERATE	HIGH	HIGH	See Table 2
	20-28	MODERATE	MODERATE	HIGH	HIGH	See Table 2
	<20	MODERATE	MODERATE	HIGH	VERY HIGH	EXTREME

Forecast Minimum RH (%)	Fire Weather Index (FWI)			
	Table 2	< 15	15-24	25+
	45-60	MODERATE	HIGH	HIGH
	36-44	HIGH	HIGH	VERY HIGH
	29-35	HIGH	VERY HIGH	VERY HIGH
	20-28	VERY HIGH	VERY HIGH	EXTREME

Summer Fire Danger Matrix- Arrowhead

(June – September)

Forecast FWI

(Canadian Fire Weather Index)

Forecast FFMC (Canadian Fine Fuel Moisture Code)	FFMC \ FWI	0-5	6-10	11-18	18-30	31+
	0-79	LOW	LOW	LOW	MODERATE	MODERATE
	80-85	LOW	LOW	MODERATE	MODERATE	HIGH
	86-89	LOW	MODERATE	MODERATE	HIGH	HIGH
	90-92	MODERATE	MODERATE	HIGH	HIGH	VERY HIGH
	93+	MODERATE	HIGH	HIGH	VERY HIGH	EXTREME

Fall Fire Danger

(October – Snow Cover)

Drought Code < 250	**Drought Code >250**
• Use Summer Fire Danger Table	• Use Spring Fire Danger Tables

Appendix D Public Fire Restrictions Plan

To standardize regulations on open burning, the state and various federal agencies have established five classes of regulations affecting open burning. The DNR, USFS (CPF and SUF), the NPS-Voyageurs National Park VOP), FWS, and BIA adhere to the classes listed to the maximum extent possible) considering statutory authority and existing conditions. The goal of these categories is to make restrictions easier to administer and more understandable to the public.

All wildfire-related laws, rules, and regulations will remain in effect until changed or modified by the issuance of burning restrictions through the Commissioner's Office of the DNR, the Forest Supervisor's Office of the USFS, the USFWS, and the Minneapolis Office of the BIA or the International Falls Office of the NPS.

Before issuing or modifying restrictions of a Class IV or V nature, the above agency heads (or designee) will consult with each other about actionable intent, possible effects, the areas included, public reaction, restriction needs, interagency coordination (to be done by initiating agency), news releases, and other areas of concern. Whenever possible, Class IV and V regulations will be instituted on a county-wide basis. Restriction boundaries will keep national forest and reservation boundaries as complete units.

When any Class IV or V category closure order or restriction is issued or modified, all other agencies named in this agreement will be provided a copy of the closure order.

CLASS I – Normal Regulations

- Unrestricted burning permits issued under local authority with limitations commensurate with local conditions
- Prescribed burning allowed
- DNR Special permits are allowed
- No restriction on campfires or recreational fires

Guidance Criteria

Fire Danger: Low to moderate
Risk: Low to high
State Regional Preparedness Level: 1 or 2

CLASS II – Controlled Regulations

- No general public burning permits will be issued
- Prescribed burning allowed
- DNR Special permits are allowed
- No restrictions on campfires or recreational fire
- Normal spring burning regulations will be designated by Class II restrictions

Guidance Criteria

Fire Danger: Moderate to high
Risk: Low to High

State Regional Preparedness Level: 2 or 3

CLASS III – Restricted Regulations, Fire Restriction Recommendations

- Burning permits for the general public will not be issued
- Prescribed burning is allowed
- DNR Special permits may be issued based on local conditions and resource availability.
- Campfires in dispersed areas are prohibited. Campfires or recreational fires are allowed (only in a designated fire receptacle designed for such use) and associated with a residence, dwelling, staffed campground, or resort
- No use of fireworks allowed outside of municipalities

Guidance Criteria

Fire Danger: High to Very High
Risk: High to Very High
State- Regional Preparedness Level: 3 or 4

CLASS IV – Restricted Regulations, Fire Restriction Recommendations

- No burning permits for the general public.
- DNR Special permits may be issued. No prescribed burning on private lands. State and federal agencies may burn under an Approved Prescribed Burn Plan.
- Campfires or recreational fires not allowed. Gas or propane camp stoves, grills are allowed. Charcoal fires are allowed (in a grill designed for that purpose) and associated with an occupied dwelling on private land.
- No use of fireworks allowed outside of municipalities.
- No welding, acetylene torches, or other devices with open flame allowed in forest areas except under special permits.
- If regional preparedness level reaches Preparedness Level 4, Class IV restrictions are recommended for that region, as determined by the MNICS Task Force.

Guidance Criteria

Fire Danger: High to Very High
Risk: High to Very High
State Preparedness Level: 4

CLASS V – Restricted Regulations, Fire Restriction Recommendations

- No burning permits issued
- No open burning, including cooking fires associated with residential areas
- No prescribed burning on state and private land. Federal agencies with an approved Prescribed Burn Plan may burn with the informed consent of MNICS agency partners
- No campfires or recreational fires, including propane and gas fire devices
- Charcoal grills allowed (only in a grill designed for that purpose) and associated with an occupied dwelling on private lands
- No outdoor smoking allowed on public lands
- Travel or entry on public lands may be restricted
- Recreational activities may be restricted
- Industrial operations may be restricted

Criteria

Fire Danger: High to Extreme
Risk: High to Extreme
State Preparedness Level: 5

Approved by the MNICS Board of Directors as signed below:

Jeremy Bennett, Bureau of Indian Affairs: Signed by: Jeremy Bennett 0C457F26D2E74DD...

Paul Lundgren, MN DNR, Div. of Forestry: Signed by: Lundgren,Paul J 57D3E2D3DE9A469...

Joe Neuberger, MN DPS, HSEM: Signed by: E511CD213DC6443...

Robert Degross, National Park Service: Signed by: Robert DeGross 9432756A09A3475...

Seth Grimm, US Fish & Wildlife Service: Signed by: Seth Grimm CDFD28374A4B440...

Tom Hall, Superior National Forest: Signed by: Thomas B. Hall 8012E8768262433...

Michael Stansberry, Chippewa National Forest: Signed by: Michael Stansberry BB42338DB7D64C8...

Appendix E Run Cards

The following run cards are included in the MN FDOP to aid in planning purposes.

DNR Division of Forestry Run Cards

Baudette

STAFFING LEVEL				
1	2	3	4	5
√ for Burn Permits	√ for Burn Permits	√ for Burn Permits		
GO!	**GO!**	**GO!**	**GO!**	**GO!**
Closest Engine		Closest Engine	2 Closest Engines ICT4 Tracked Vehicle/Skidgine	2 Closest Engines ICT4 2 Tracked Vehicles Dozer
MAKE NOTIFICATIONS!	MAKE NOTIFICATIONS!	MAKE NOTIFICATIONS!	MAKE NOTIFICATIONS! Region Fire/Duty Officer	MAKE NOTIFICATIONS! Region Fire/Duty Officer
	PUT ON Standby 2nd Engine	PUT ON Standby Tracked Vehicle(s) 2nd Engine	PUT ON Standby 3rd Engine Additional Tracks Dozer/Skidgine	PUT ON Standby 3rd Engine Helicopter Additional Tracks 2nd Dozer/Skigine Crew
√AVAILABILITY OF?	√AVAILABILITY OF? Tracked vehicle	√AVAILABILITY OF? Helicopter ICT4 Dozer/Skidgine	√AVAILABILITY OF? Helicopter Air Tankers Additional Engines Additional Tracks Crew ICT3	√AVAILABILITY OF? 2nd Helicopter Air Tankers ICT3 Additional Engines Additional Tracks Additional Crew

Cloquet

STAFFING LEVEL				
1	2	3	4	5
√ for Burn Permits	√ for Burn Permits			
GO!	**GO!**	**GO!**	**GO!**	**GO!**
Closest Engine	Closest Engine	2 Closest Engines Tracked Vehicle	2 Closest engines ICT4 Tracked vehicle Helicopter	3 Closest Engines ICT4 Tracked vehicle Dozer
MAKE NOTIFICATIONS!	**MAKE NOTIFICATIONS!** **Duty Officer**	**MAKE NOTIFICATIONS!** **Duty Officer**	**MAKE NOTIFICATIONS!** **Duty Officer**	**MAKE NOTIFICATIONS!** **Duty Officer**
	PUT ON STBY. Additional Engine	PUT ON STBY. Helicopter Additional Engine	PUT ON STBY. 3rd Engine Additional tracks	PUT ON STBY. 4th Engine 2nd helicopter Crew
√AVAILABILITY OF?	√AVAILABILITY OF? Tracked vehicle	√AVAILABILITY OF? AATK / Air tankers ICT3 Additional engines Additional tracks Crew	√AVAILABILITY OF? AATK / Air tankers ICT3 Additional engines Additional tracks Crew	√AVAILABILITY OF? AATK / Air tankers ICT3 Additional engines Additional tracks Additional Crew

Hibbing

STAFFING LEVEL				
1	2	3	4	5
√ for Burn Permits	√ for Burn Permits			
GO!	**GO!**	**GO!**	**GO!**	**GO!**
Closest Engine	Closest Engine	2 Closest Engines Tracked Vehicle	2 Closest engines ICT4 Tracked vehicle Helicopter	3 Closest Engines ICT4 Tracked vehicle Dozer Helicopter
MAKE NOTIFICATIONS! **Call SLC Dispatch**	**MAKE NOTIFICATIONS!**	**MAKE NOTIFICATIONS!**	**MAKE NOTIFICATIONS!** **Call SLC Dispatch**	**MAKE NOTIFICATIONS!**
		PUT ON STBY. Helicopter	PUT ON STBY. 3rd Engine Additional tracks	PUT ON STBY. 4th Engine 2nd helicopter Crew
√AVAILABILITY OF?	√AVAILABILITY OF? Tracked vehicle	√AVAILABILITY OF? Helicopter ICT4	√AVAILABILITY OF? AATK / Air tankers ICT3 Additional engines Additional tracks Crew	√AVAILABILITY OF? AATK / Air tankers ICT3 Additional engines Additional tracks Additional Crew

Littlefork

STAFFING LEVEL				
1	2	3	4	5
√ for Burn Permits	√ for Burn Permits	√ for Burn Permits	√ for Burn Permits	√ for Burn Permits
GO!	**GO!**	**GO!**	**GO!**	**GO!**
Closest Engine	Closest Engine	Closest Engine Tracked Vehicle	2 Closest engines ICT4 Tracked Vehicle Helicopter	3 Closest Engines ICT4 Tracked Vehicle Dozer Helicopter
MAKE NOTIFICATIONS!	**MAKE NOTIFICATIONS!**	**MAKE NOTIFICATIONS!**	**MAKE NOTIFICATIONS!** Duty Officer	**MAKE NOTIFICATIONS!**
		PUT ON STBY. Helicopter	PUT ON STBY. 3rd Engine Additional tracks	PUT ON STBY. 4th Engine 2nd Helicopter Crew
√AVAILABILITY OF?	√AVAILABILITY OF? Tracked vehicle	√AVAILABILITY OF? Helicopter ICT4	√AVAILABILITY OF? Air tankers ICT3 Additional engines Additional tracks Crew	√AVAILABILITY OF? Air tankers ICT3 Additional engines Additional tracks Additional Crew

Tower

STAFFING LEVEL				
1	2	3	4	5
√ for Burn Permits	√ for Burn Permits			
GO!	**GO!**	**GO!**	**GO!**	**GO!**
Closest Engine	Closest Engine	Closest Engines	2 Closest engines Tracked vehicle	3 Closest Engines ICT4 Tracked vehicle Helicopter
MAKE NOTIFICATIONS! Duty Officer	MAKE NOTIFICATIONS! Duty Officer	MAKE NOTIFICATIONS! Duty Officer	MAKE NOTIFICATIONS! Duty Officer	MAKE NOTIFICATIONS! Duty Officer
		PUT ON STBY. Tracked vehicle Additional Engine	PUT ON STBY. Helicopter 3rd Engine Additional tracks Dozer	PUT ON STBY. 4th Engine Additional tracks Additional Dozer Crew
√AVAILABILITY OF?	√AVAILABILITY OF? Additional engines Tracked vehicle	√AVAILABILITY OF? Helicopter ICT4 Dozer	√AVAILABILITY OF? AATK / Air tankers Additional engines Additional tracks Crew Dozer	√AVAILABILITY OF? AATK / Air tankers ICT3 Additional engines Additional Crew

Two Harbors - North

STAFFING LEVEL				
1	2	3	4	5
√ for Burn Permits	√ for Burn Permits			
GO!	**GO!**	**GO!**	**GO!**	**GO!**
Closest Engine	Closest Engine	Closest Engine	2 Closest engines ICT4 Dozer	3 Closest Engines ICT3 Dozer Helicopter
MAKE NOTIFICATIONS! County	MAKE NOTIFICATIONS! County	MAKE NOTIFICATIONS! County	MAKE NOTIFICATIONS! County	MAKE NOTIFICATIONS! County
		PUT ON STBY.	PUT ON STBY. 3rd Engine Additional Dozer	PUT ON STBY. 4th Engine Additional Dozer Crew
√AVAILABILITY OF?	√AVAILABILITY OF? Tracked vehicle	√AVAILABILITY OF? Dozer Helicopter ICT4	√AVAILABILITY OF? AATK / Air tankers ICT3 Additional engines Helicopter Crew	√AVAILABILITY OF? AATK / Air tankers ICT3 Additional engines Additional tracks Additional Crew

Two Harbors - South

STAFFING LEVEL				
1	2	3	4	5
√ for Burn Permits	√ for Burn Permits			
GO!	**GO!**	**GO!**	**GO!**	**GO!**
Closest Engine	Closest Engine	Closest Engine Tracked Vehicle	2 Closest engines ICT4 Tracked Vehicle Helicopter	3 Closest Engines ICT3 Tracked Vehicle Dozer Helicopter
MAKE NOTIFICATIONS! County	MAKE NOTIFICATIONS! County	MAKE NOTIFICATIONS! County	MAKE NOTIFICATIONS! County	MAKE NOTIFICATIONS! County
		PUT ON STBY.	PUT ON STBY. 3rd Engine Dozer Additional tracks	PUT ON STBY. 4th Engine Crew
√AVAILABILITY OF?	√AVAILABILITY OF? Tracked vehicle	√AVAILABILITY OF? Helicopter ICT4	√AVAILABILITY OF? AATK / Air tankers ICT3 Additional engines Additional tracks Crew	√AVAILABILITY OF? AATK / Air tankers ICT3 Additional engines Additional tracks Additional Crew

Bemidji

STAFFING LEVEL				
1	2	3	4	5
√ for Burn Permits	√ for Burn Permits	√ for Burn Permits	√ for Burn Permits	√ for Burn Permits
GO!	**GO!**	**GO!**	**GO!**	**GO!**
Closest Engine	Closest Engine	2 Closest Engine Tracked Vehicle	2 Closest Engines ICT4 Tracked Vehicle Helicopter	3 Closest Engines ICT4 Tracked Vehicle Dozer Helicopter
MAKE NOTIFICATIONS!	MAKE NOTIFICATIONS!	MAKE NOTIFICATIONS! Region Fire/Duty Officer if going to extended attack plan	MAKE NOTIFICATIONS! Region Fire/Duty Officer if going to extended attack plan	MAKE NOTIFICATIONS! Region Fire/Duty Officer if going to extended attack plan
	PUT ON Standby Additional Engine	PUT ON Standby Helicopter Additional Engines Additional Track Vehicles	PUT ON Standby 3rd Engine Additional Tracks S.E.A.T Dozer	PUT ON Standby 4th Engine 2nd Helicopter S.E.A.T Crew
√AVAILABILITY OF?	√AVAILABILITY OF? Tracked vehicle	√AVAILABILITY OF? Helicopter ICT4	√AVAILABILITY OF? Air Tankers ICT3 Additional Engines Additional Tracks Crew	√AVAILABILITY OF? Air Tankers ICT3 Additional Engines Additional Tracks Additional Crew

Cambridge

STAFFING LEVEL				
1	2	3	4	5
√ for Burn Permits	√ for Burn Permits	√ for Burn Permits	√ for Burn Permits	√ for Burn Permits
GO!	**GO!**	**GO!**	**GO!**	**GO!**
Closest Engine	Closest Engine	Closest Engine - ICT4 Tracked Vehicle	2 - Closest Engine - ICT4 Tracked Vehicle	2 Closest Engines ICT4 Tracked Vehicle Consider - Helicopter
MAKE NOTIFICATIONS!	MAKE NOTIFICATIONS!	MAKE NOTIFICATIONS! Region Fire/Duty Officer if going to extended attack plan	MAKE NOTIFICATIONS! Region Fire/Duty Officer if going to extended attack plan	MAKE NOTIFICATIONS! Region Fire/Duty Officer if going to extended attack plan
	Consider Additional Engine	Consider Helicopter Additional Engines Additional Track Vehicles	Consider 3rd Engine Additional Tracks S.E.A.T Dozer	Consider 3th Engine 2nd Helicopter S.E.A.T Crew
√AVAILABILITY OF?	√AVAILABILITY OF? Tracked vehicle	√AVAILABILITY OF? Helicopter	√AVAILABILITY OF? Air Tankers ICT3 Additional Engines Additional Tracks Crew	√AVAILABILITY OF? Air Tankers ICT3 Additional Engines Additional Tracks Additional Crew

Little Falls

STAFFING LEVEL				
1	2	3	4	5
√ for Burn Permits	√ for Burn Permits	√ for Burn Permits	√ for Burn Permits	√ for Burn Permits
GO!	**GO!**	**GO!**	**GO!**	**GO!**
Closest Engine	Closest Engine	Closest Engine - ICT4 Tracked Vehicle	Closest Engine - ICT4 Tracked Vehicle	2 Closest Engines ICT4 Tracked Vehicle Consider - Helicopter
MAKE NOTIFICATIONS!	MAKE NOTIFICATIONS!	MAKE NOTIFICATIONS! Region Fire/Duty Officer if going to extended attack plan	MAKE NOTIFICATIONS! Region Fire/Duty Officer if going to extended attack plan	MAKE NOTIFICATIONS! Region Fire/Duty Officer if going to extended attack plan
	Consider Additional Engine	Consider Helicopter Additional Engines Additional Track Vehicles	Consider 2rd Engine Additional Tracks S.E.A.T Dozer	Consider 3th Engine 2nd Helicopter S.E.A.T Crew
√AVAILABILITY OF?	√AVAILABILITY OF? Tracked vehicle	√AVAILABILITY OF? Helicopter	√AVAILABILITY OF? Air Tankers ICT3 Additional Engines Additional Tracks Crew	√AVAILABILITY OF? Air Tankers ICT3 Additional Engines Additional Tracks Additional Crew

Park Rapids

STAFFING LEVEL				
1	2	3	4	5
√ for Burn Permits	√ for Burn Permits	√ for Burn Permits	√ for Burn Permits	√ for Burn Permits
GO!	**GO!**	**GO!**	**GO!**	**GO!**
Closest Engine	Closest Engine	2 Closest Engine Tracked Vehicle	2 Closest Engines ICT4 Tracked Vehicle Helicopter	3 Closest Engines ICT4 Tracked Vehicle Dozer Helicopter
MAKE NOTIFICATIONS!	MAKE NOTIFICATIONS!	MAKE NOTIFICATIONS! Region Fire/Duty Officer if going to extended attack plan	MAKE NOTIFICATIONS! Region Fire/Duty Officer if going to extended attack plan	MAKE NOTIFICATIONS! Region Fire/Duty Officer if going to extended attack plan
	PUT ON Standby Additional Engine	PUT ON Standby Helicopter Additional Engines Additional Track Vehicles	PUT ON Standby 3rd Engine Additional Tracks S.E.A.T Dozer	PUT ON Standby 4th Engine 2nd Helicopter S.E.A.T Crew
√AVAILABILITY OF?	√AVAILABILITY OF? Tracked vehicle	√AVAILABILITY OF? Helicopter ICT4	√AVAILABILITY OF? Air Tankers ICT3 Additional Engines Additional Tracks Crew	√AVAILABILITY OF? Air Tankers ICT3 Additional Engines Additional Tracks Additional Crew

Sandstone

STAFFING LEVEL				
1	2	3	4	5
√ for Burn Permits	√ for Burn Permits	√ for Burn Permits	√ for Burn Permits	√ for Burn Permits
GO!	**GO!**	**GO!**	**GO!**	**GO!**
Closest Engine	Closest Engine	2 Closest Engines- ICT4 Tracked Vehicle	2 - Closest Engines - ICT4 Tracked Vehicle	3 Closest Engines ICT4 Tracked Vehicle Consider - Air Resources
MAKE NOTIFICATIONS!	MAKE NOTIFICATIONS!	MAKE NOTIFICATIONS! Region Fire/Duty Officer if going to extended attack plan	MAKE NOTIFICATIONS! Region Fire/Duty Officer if going to extended attack plan	MAKE NOTIFICATIONS! Region Fire/Duty Officer if going to extended attack plan
	Consider Additional Engine	Consider Helicopter Additional Engines Additional Track Vehicles	Consider 3rd Engine Additional Tracks S.E.A.T Dozer	Consider 4th Engine 2nd Helicopter S.E.A.T Crew
√AVAILABILITY OF?	√AVAILABILITY OF? Tracked vehicle	√AVAILABILITY OF? Helicopter	√AVAILABILITY OF? Air Tankers ICT3 Additional Engines Additional Tracks Crew	√AVAILABILITY OF? Air Tankers ICT3 Additional Engines Additional Tracks Additional Crew

Warroad

STAFFING LEVEL				
1	2	3	4	5
√ for Burn Permits	√ for Burn Permits	√ for Burn Permits		
GO!	**GO!**	**GO!**	**GO!**	**GO!**
Closest Engine	Closest Engine	Closest Engine Tracked Vehicle	2 Closest Engines ICT4 Tracked Vehicle Helicopter	3 Closest Engines ICT4 Tracked Vehicle Dozer Helicopter
MAKE NOTIFICATIONS!	MAKE NOTIFICATIONS!	MAKE NOTIFICATIONS!	MAKE NOTIFICATIONS! Region Fire/Duty Officer	MAKE NOTIFICATIONS! Region Fire/Duty Officer
		PUT ON Standby Helicopter Additional Tracks	PUT ON Standby Additional Engines Additional Tracks Dozer	PUT ON Standby 4th Engine 2nd Helicopter Crew
√AVAILABILITY OF?	√AVAILABILITY OF? Tracked vehicle	√AVAILABILITY OF? Helicopter ICT4	√AVAILABILITY OF? Air Tankers ICT3 Additional Engines Additional Tracks Crew Water Tender	√AVAILABILITY OF? Air Tankers ICT3 Additional Engines Additional Tracks Additional Crew Water Tender

Forest Service Run Cards

YEAR 20

FMU A:
Community Wildfire Protection

Superior National Forest
Preplanned Dispatch Run Card

Resources	**DISPATCH ACTION BASED**		
	Staffing Level 1&2	**Staffing Level 3**	**Staffing Level 4**
IC	1	1	1
Engine or IA Module	1	1	2
Aerial Recon		CONSIDER	1
Water Delivery Aircraft			1
Dozer			CONSIDER
Local VFD			CONSIDER
Notify:	• Zone Duty Officer • LEO for human starts	• Zone Duty Officer • LEO for human starts • County Emergency Management	• Zone Duty Officer • Forest Duty Officer • LEO for human starts • County Emergency Management
Special Considerations:			• Consider ICT3

YEAR 20

FMU B:
General Wildfire Protection

Superior National Forest
Preplanned Dispatch Run Card

Resources	**DISPATCH ACTION BASED**		
	Staffing Level 1&2	**Staffing Level 3**	**Staffing Level 4**
IC	1	1	1
Engine or IA Module	1	1	2
Aerial Recon		CONSIDER	1
Water Delivery Aircraft			1
Dozer			CONSIDER
Notify:	• Zone Duty Officer • LEO for human starts	• Zone Duty Officer • LEO for human starts • County Emergency Management	• Zone Duty Officer • Forest Duty Officer • LEO for human starts • County Emergency Management
Special Considerations:	• Consult with Zone Natural Resource staff if managing fire for resource benefits.	• Consult with Zone Natural Resource staff if managing fire for resource benefits.	• Consider ICT3 • Consult with Zone Natural Resource staff if managing fire for resource benefits.

YEAR 20

FMU C:
Fire Restoration
Other Management
Areas

Superior National Forest
Preplanned Dispatch Run Card

Resources	**DISPATCH ACTION BASED**		
	Staffing Level 1&2	**Staffing Level 3**	**Staffing Level 4**
IC	1	1	1
IA Module	1	1	2
Aerial Recon		CONSIDER	1
Water Delivery Aircraft			CONSIDER*
Dozer			
Notify:	• Zone Duty Officer • LEO for human starts	• Zone Duty Officer • LEO for human starts • County Emergency Management	• Zone Duty Officer • Forest Duty Officer • LEO for human starts • County Emergency Management

Special Considerations:

- MIST tactics will be utilized.
- Permission to use motorized equipment (aerial water, pumps, chainsaws, ATV's, motorboats, ground application foam) must be approved by the District Ranger.
- Permission to use aerial retardant or aerial foam must be approved by the Forest Supervisor.
- Permission to use heavy equipment must be approved by the Regional Forester.
- Contact Zone Archeologist for a Resource Advisor for fires in RNA's, PRNA's, UBA's, etc.
- Management of fire for resource benefits in this FMU must be in line with objectives for the management unit.

YEAR 20

FMU D:
Wilderness
Adjacent to WUI

Superior National Forest
Preplanned Dispatch Run Card

Resources	**DISPATCH ACTION BASED**		
	Staffing Level 1&2	**Staffing Level 3**	**Staffing Level 4**
IC	1	1	1
IA Module	1	1	2
Aerial Recon	CONSIDER	1	1
Water Delivery Aircraft		CONSIDER*	CONSIDER*
Dozer			
Notify:	• **Contact Zone Duty Officer First** • LEO for human starts	• **Contact Zone Duty Officer First** • LEO for human starts • County Emergency Management	• **Contact Zone Duty Officer First** • Forest Duty Officer • LEO for human starts • County Emergency Management

Special Considerations:

- MIST tactics will be utilized within the BWCA Wilderness.
- Duty Officer contact Line Officer and Zone Wilderness Program Leader.
- Permission to use motorized equipment (aerial water, pumps, chainsaws, ATV's, motorboats, ground application foam) within the Wilderness must be approved by the District Ranger.
- Permission to use aerial retardant or aerial foam within the Wilderness must be approved by the Forest Supervisor.
- Permission to use heavy equipment within the Wilderness must be approved by the Regional Forester.
- Contact Zone Archeologist for a Resource Advisor for Wilderness fires.
- Coordinate with partner agencies (OMNR, Quetico Provincial Park, MN DNR, Voyager's NP).
- WFDSS decision is required for fires being management for resource benefits.

***Must have appropriate level of approval in order to utilize mechanized equipment within the wilderness.**

YEAR 20

FMU E:
Wilderness
Remote:

Superior National Forest
Preplanned Dispatch Run Card

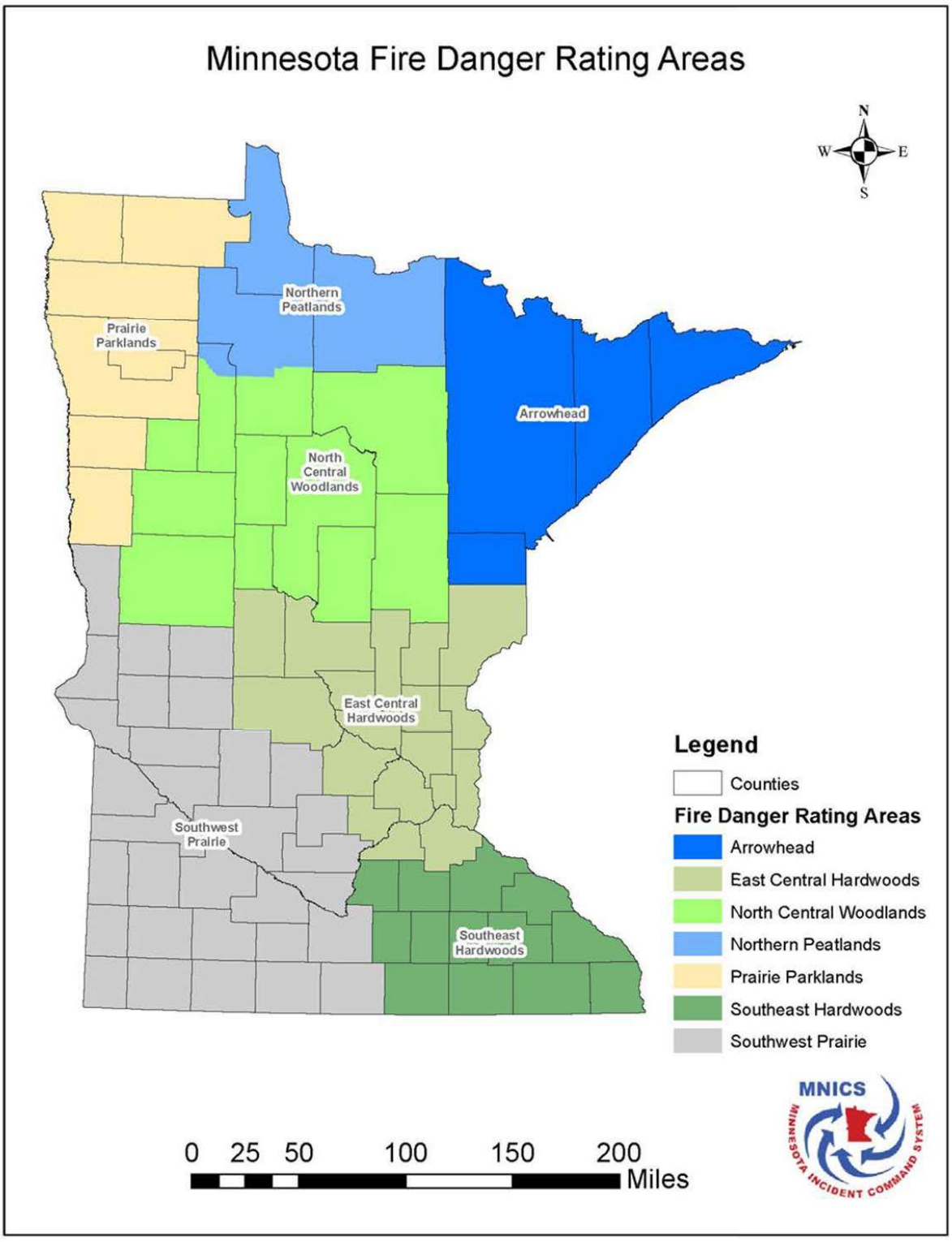
Resources	**DISPATCH ACTION BASED**		
	Staffing Level 1&2	**Staffing Level 3**	**Staffing Level 4**
IC	1	1	1
IA Module	1	1	2
Aerial Recon	CONSIDER	1	1
Water Delivery Aircraft			CONSIDER*
Notify:	• **Contact Zone Duty Officer First** • LEO for human starts	• **Contact Zone Duty Officer First** • LEO for human starts • County Emergency Management	• **Contact Zone Duty Officer First** • Forest Duty Officer • LEO for human starts • County Emergency Management

Special Considerations:

- MIST tactics will be utilized within the BWCA Wilderness.
- Duty Officer contact Line Officer and Zone Wilderness Program Leader.
- Permission to use motorized equipment (aerial water, pumps, chainsaws, ATV's, motorboats, ground application foam) within the Wilderness must be approved by the District Ranger.
- Permission to use aerial retardant or aerial foam within the Wilderness must be approved by the Forest Supervisor.
- Permission to use heavy equipment within the Wilderness must be approved by the Regional Forester.
- Contact Zone Archeologist for a Resource Advisor for Wilderness fires.
- Coordinate with partner agencies (OMNR, Quetico Provincial Park, MN DNR, Voyager's NP).
- WFDSS decision is required for fires being management for resource benefits.

***Must have appropriate level of approval in order to utilize mechanized equipment within the wilderness.**

Appendix F FDRA Map



Appendix G FDRA Analysis Topography

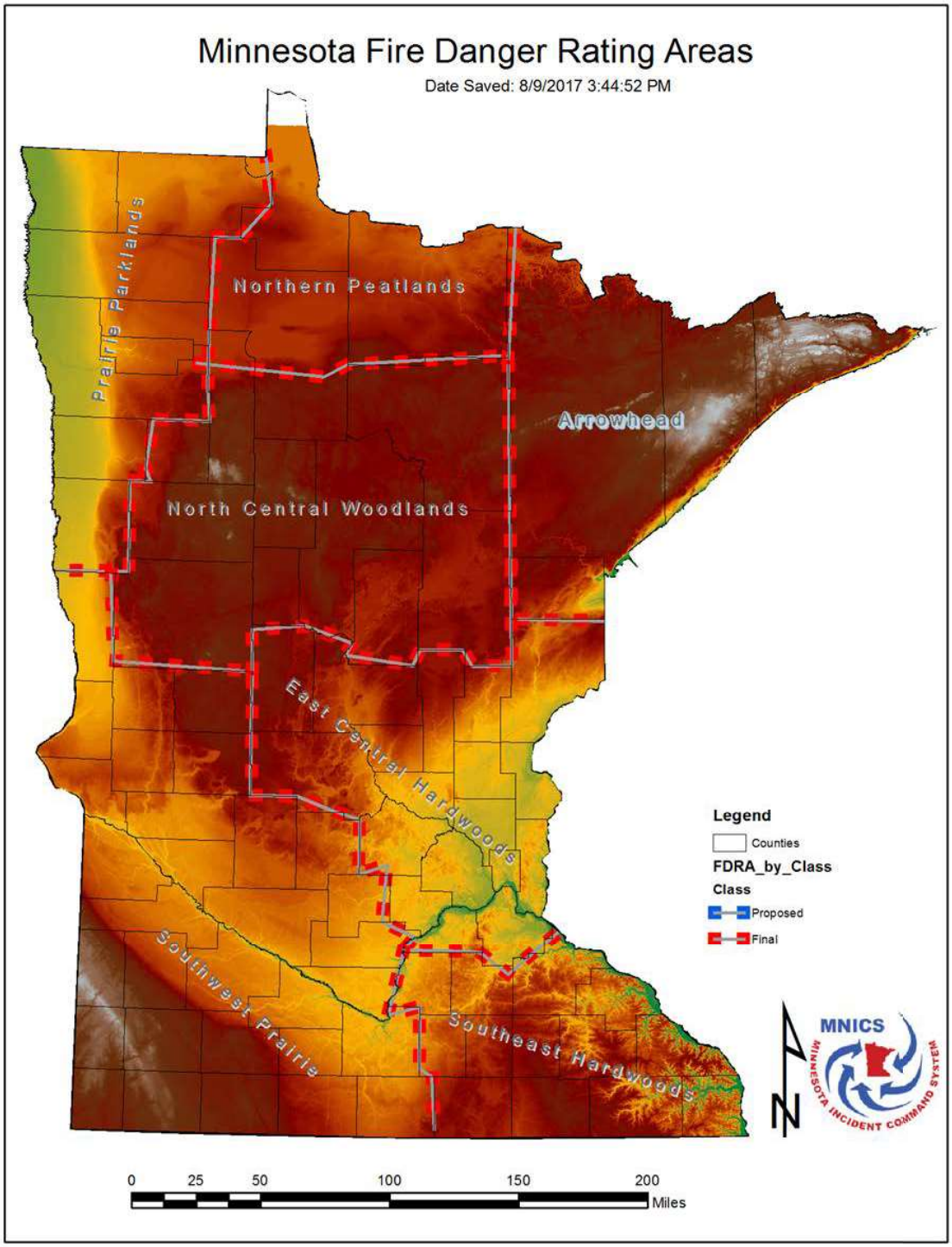


Figure 4 USGS Digital Elevation Model

Appendix H FDRA Analysis Vegetation

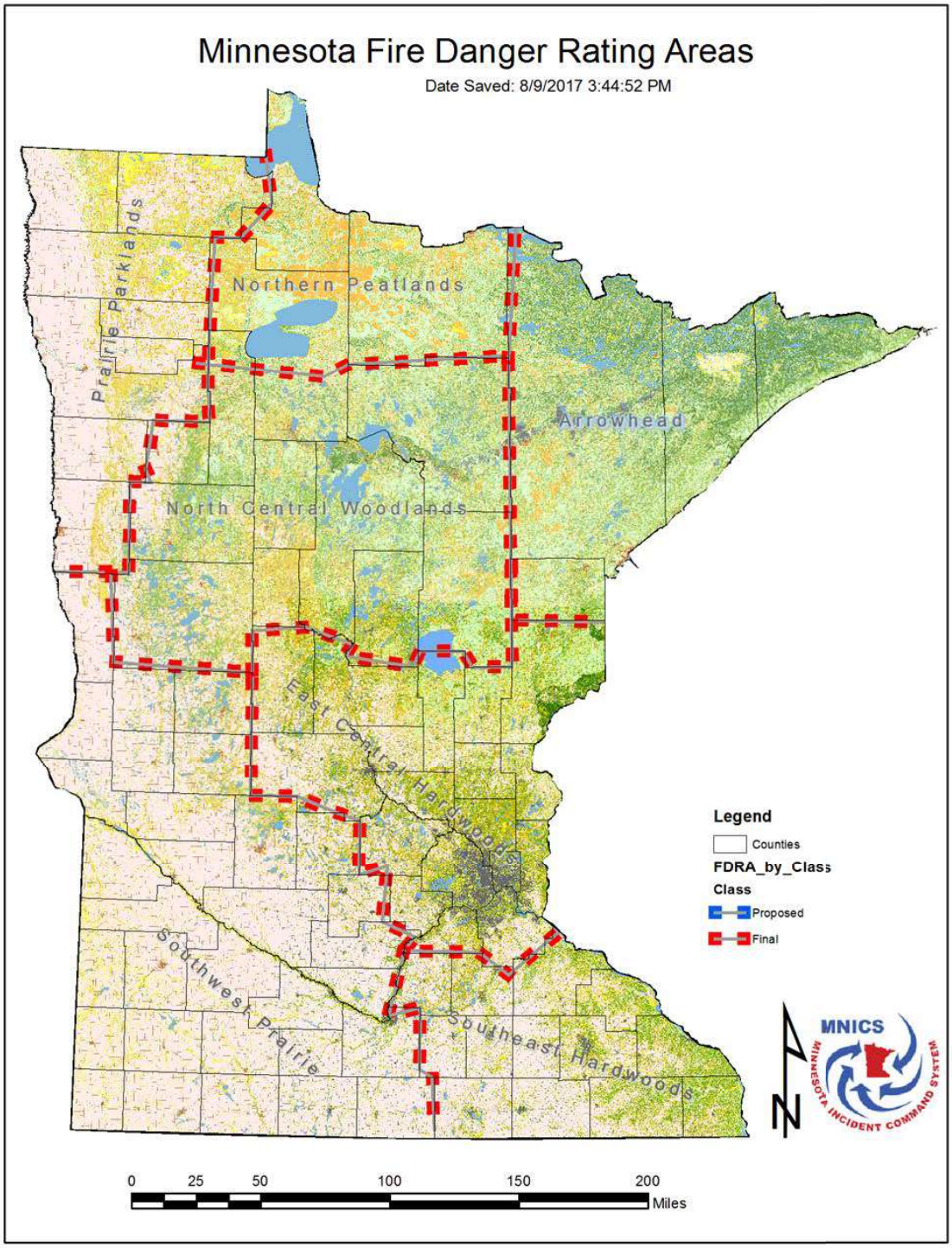


Figure 5 FB13 derived data from National land Cover Dataset

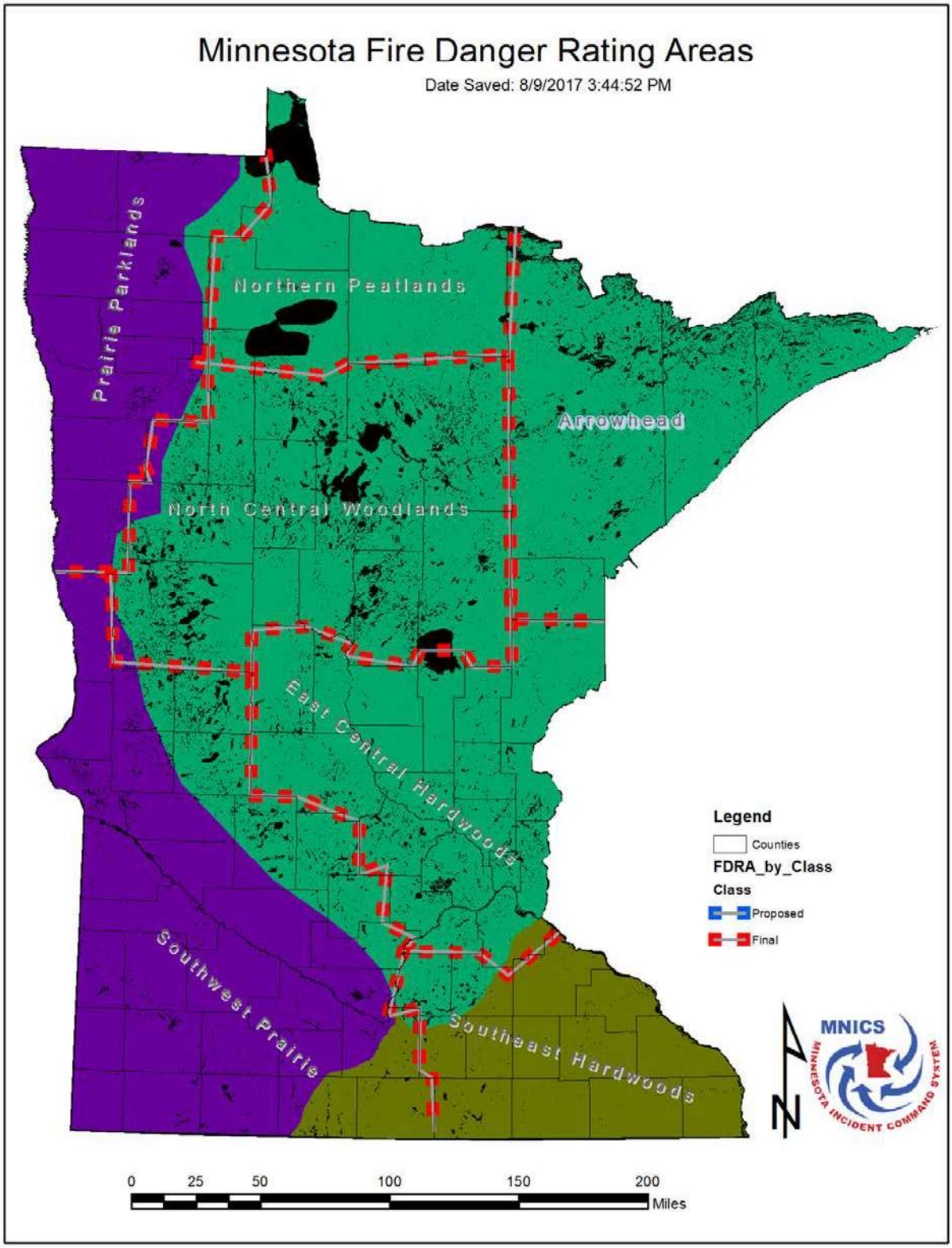


Figure 6 Landfire Biophysical Settings

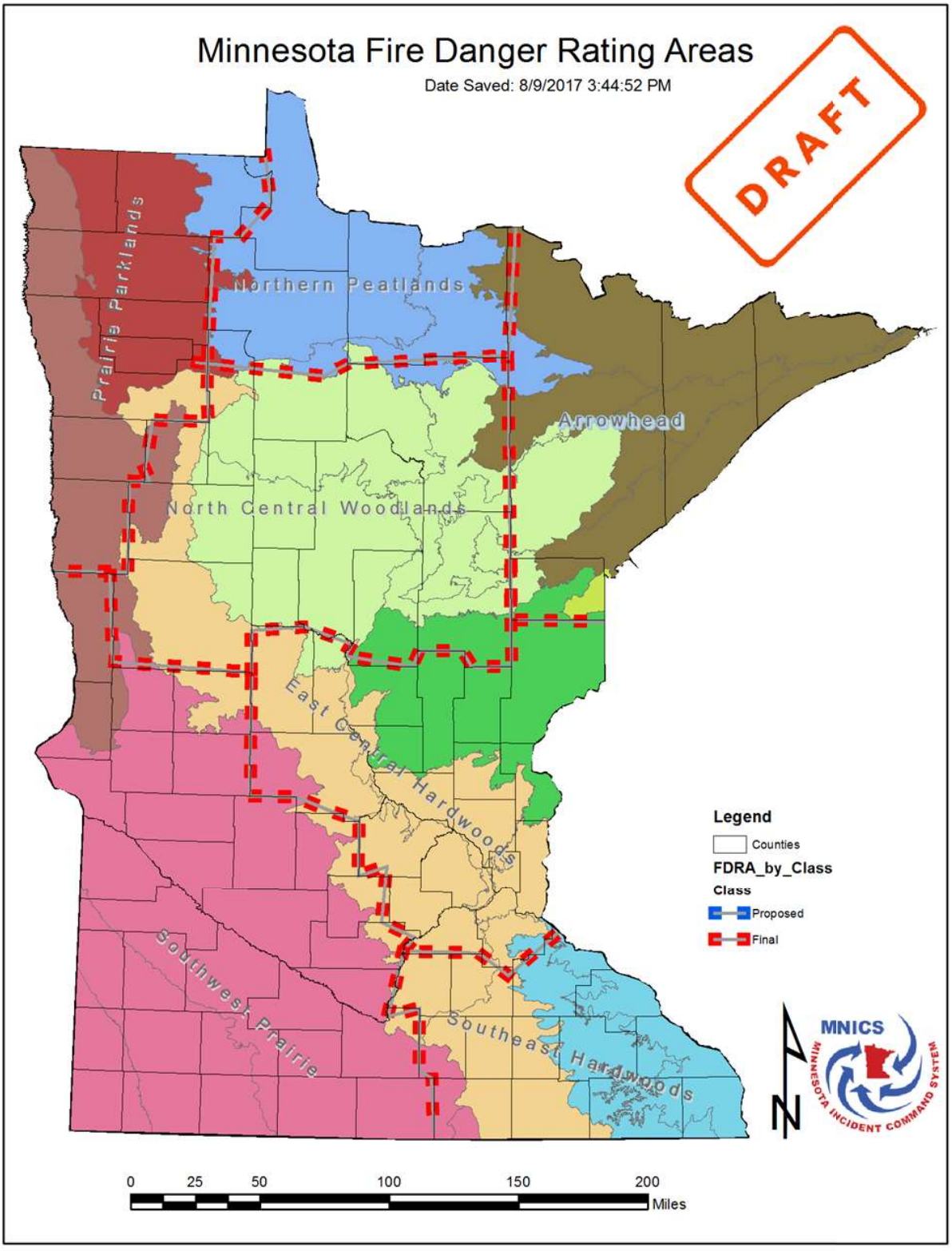


Figure 7 Ecological Sections

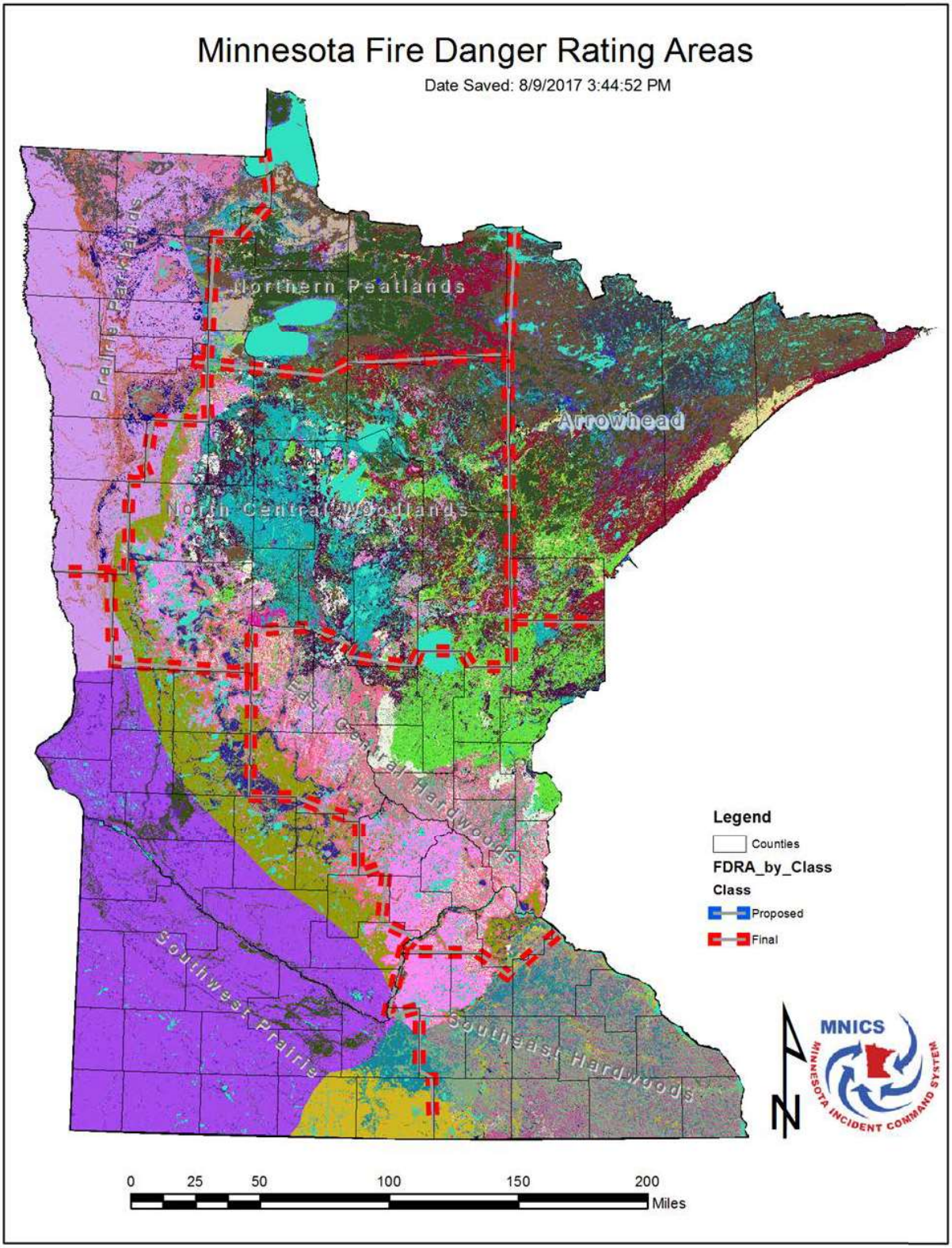


Figure 8 Biophysical Classifications

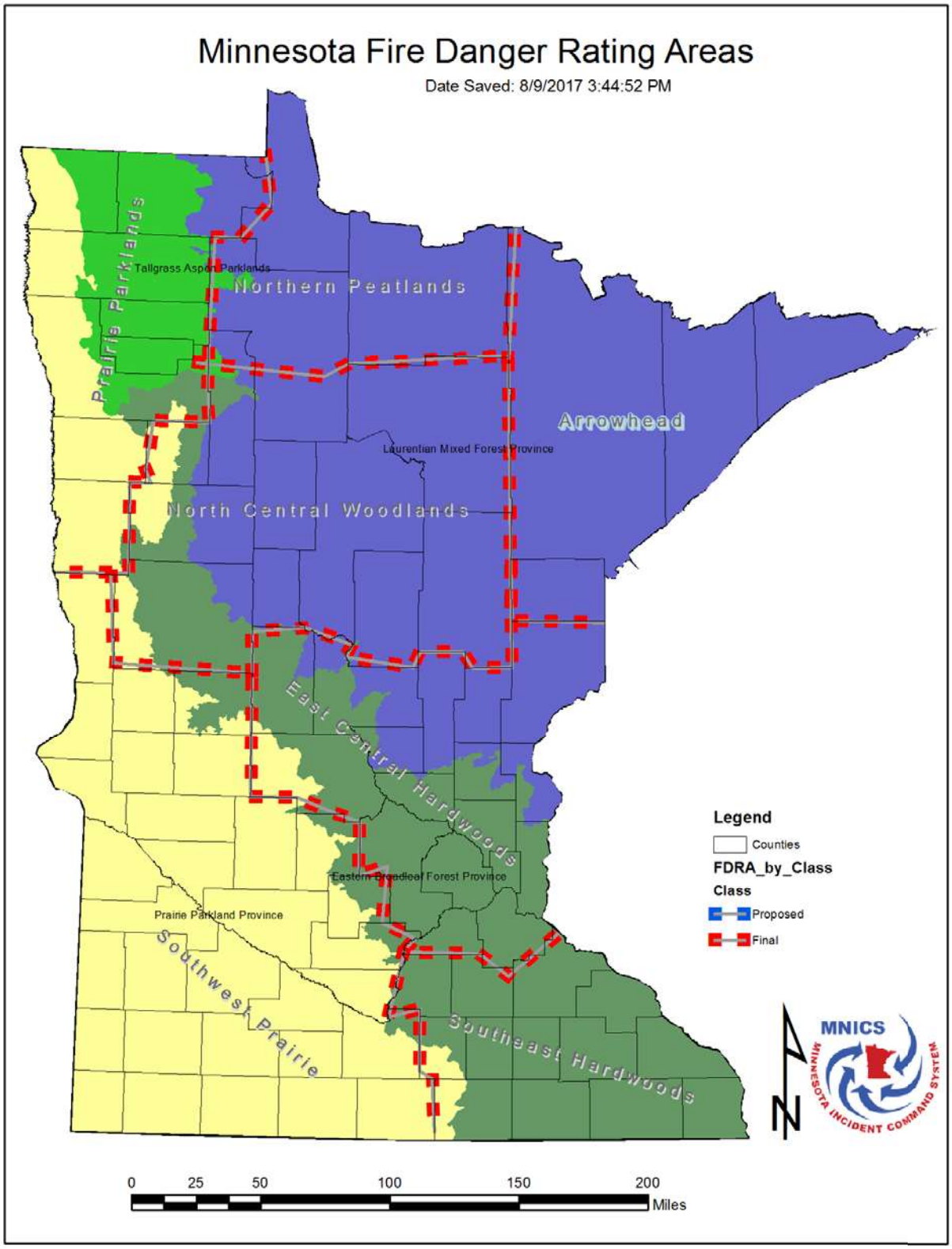


Figure 9 Ecological Provinces

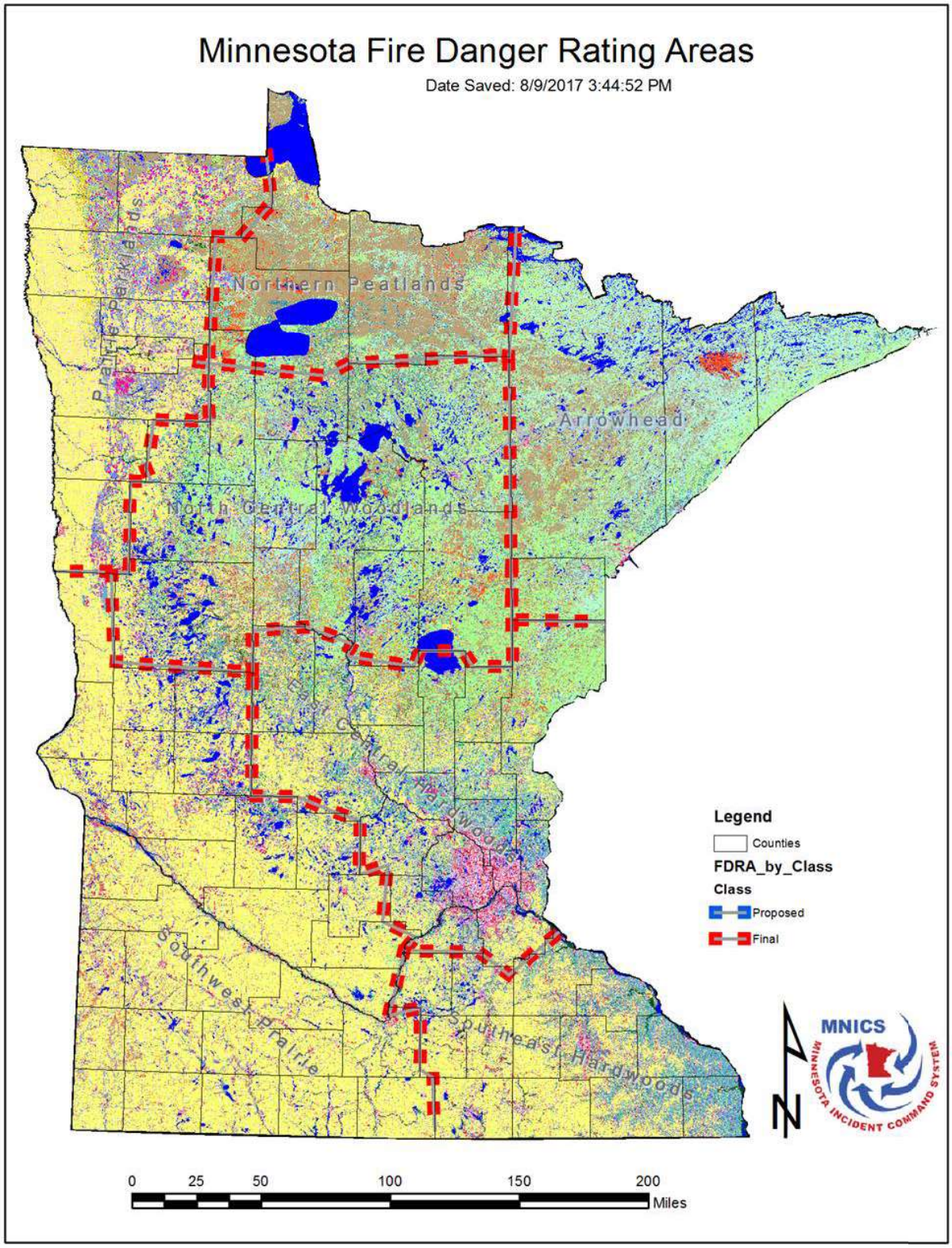


Figure 10 Existing Vegetation

Appendix I FDRA Analysis Climate

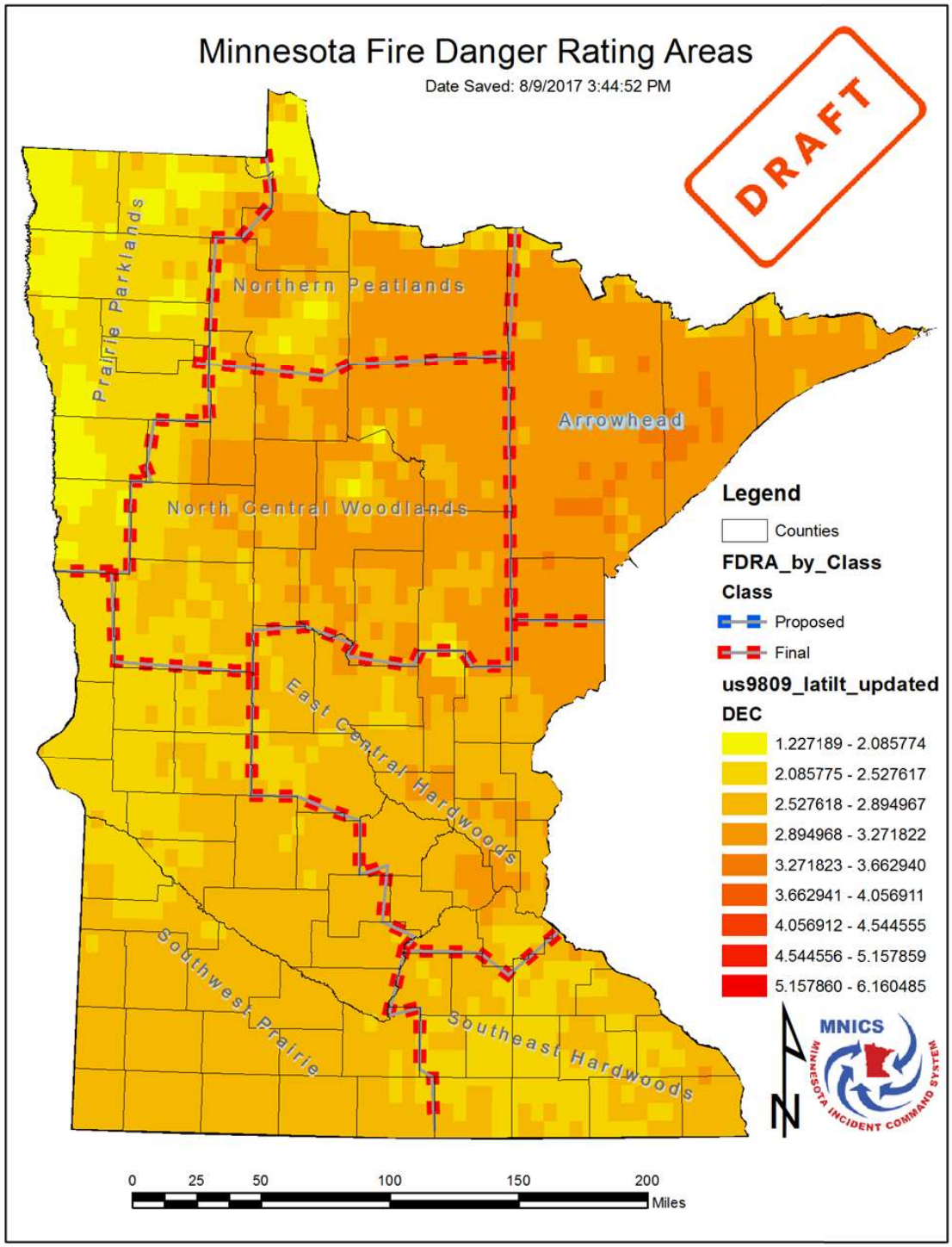


Figure 11 PRISM Solar Data

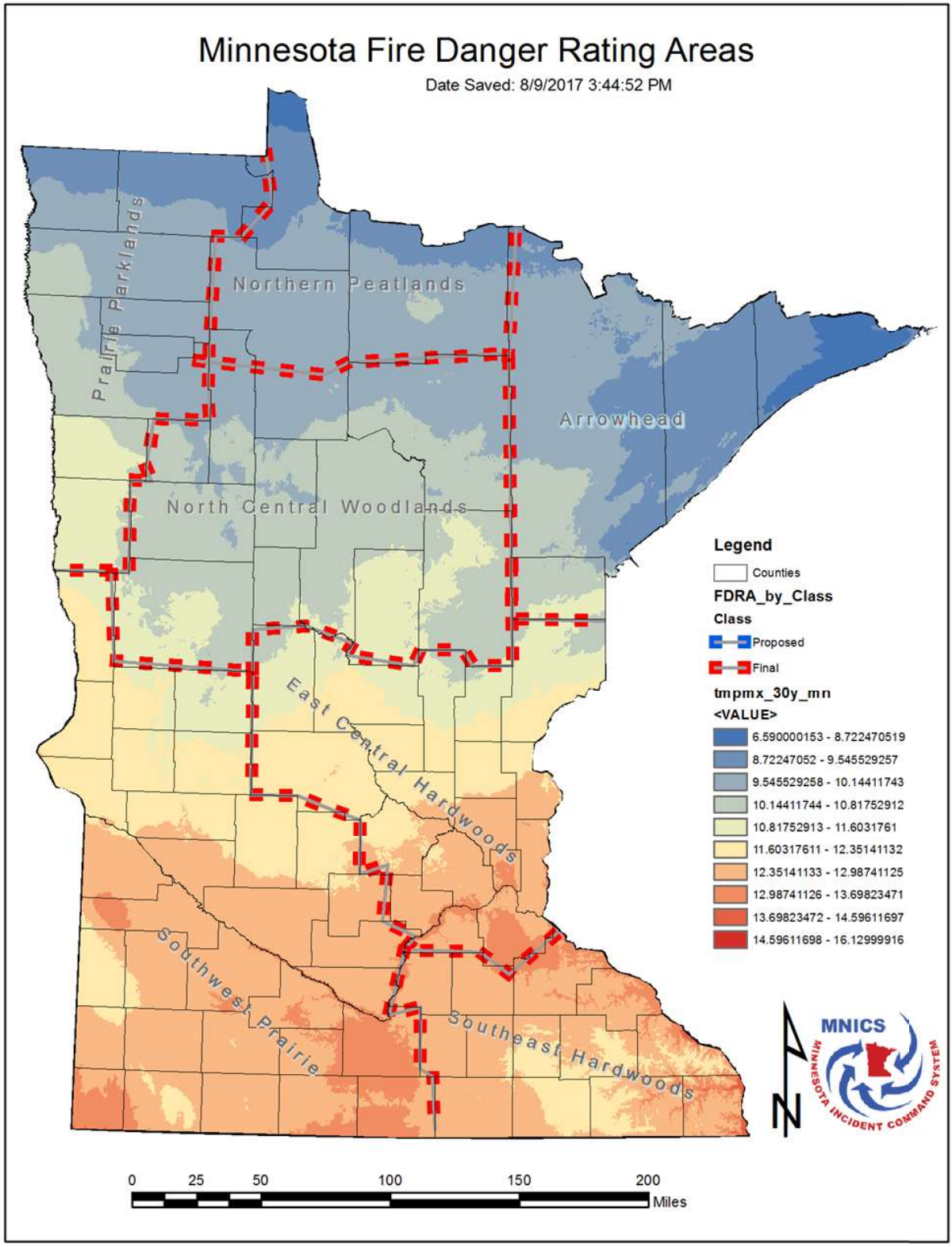


Figure 12 PRISM Temperature Data

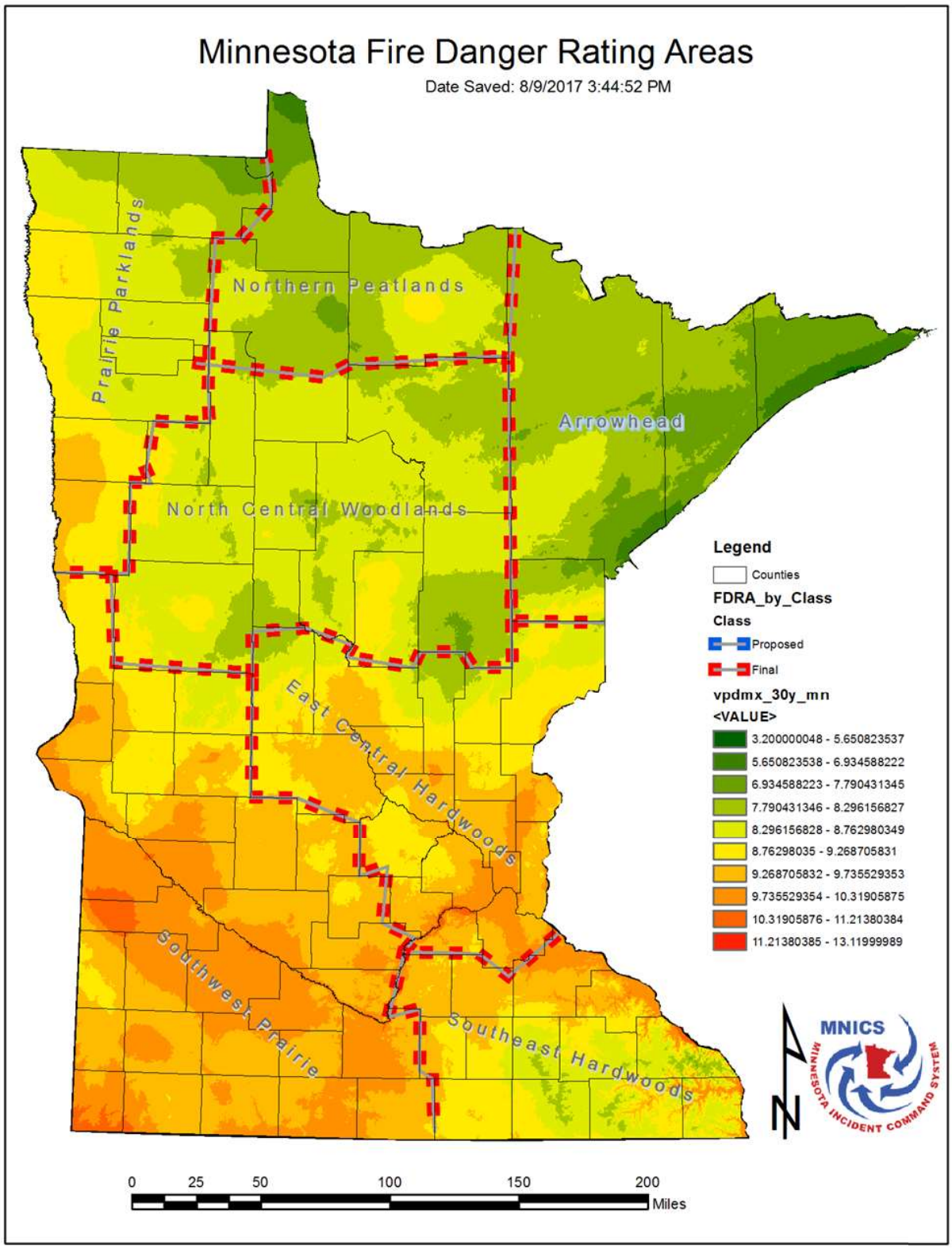


Figure 13 PRISM Vapor Pressure Deficit Max Data

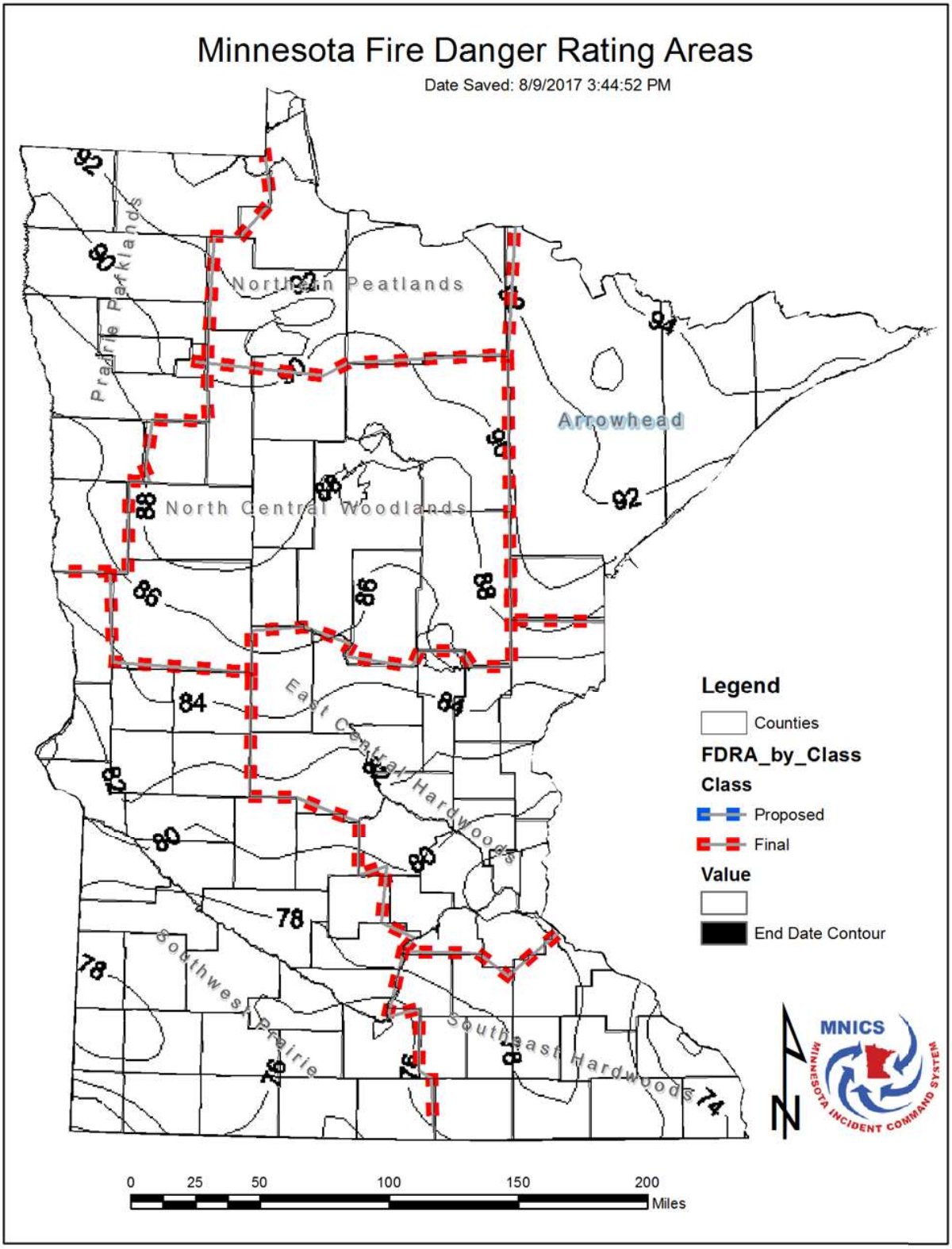


Figure 14 NOHRSC Snow Data

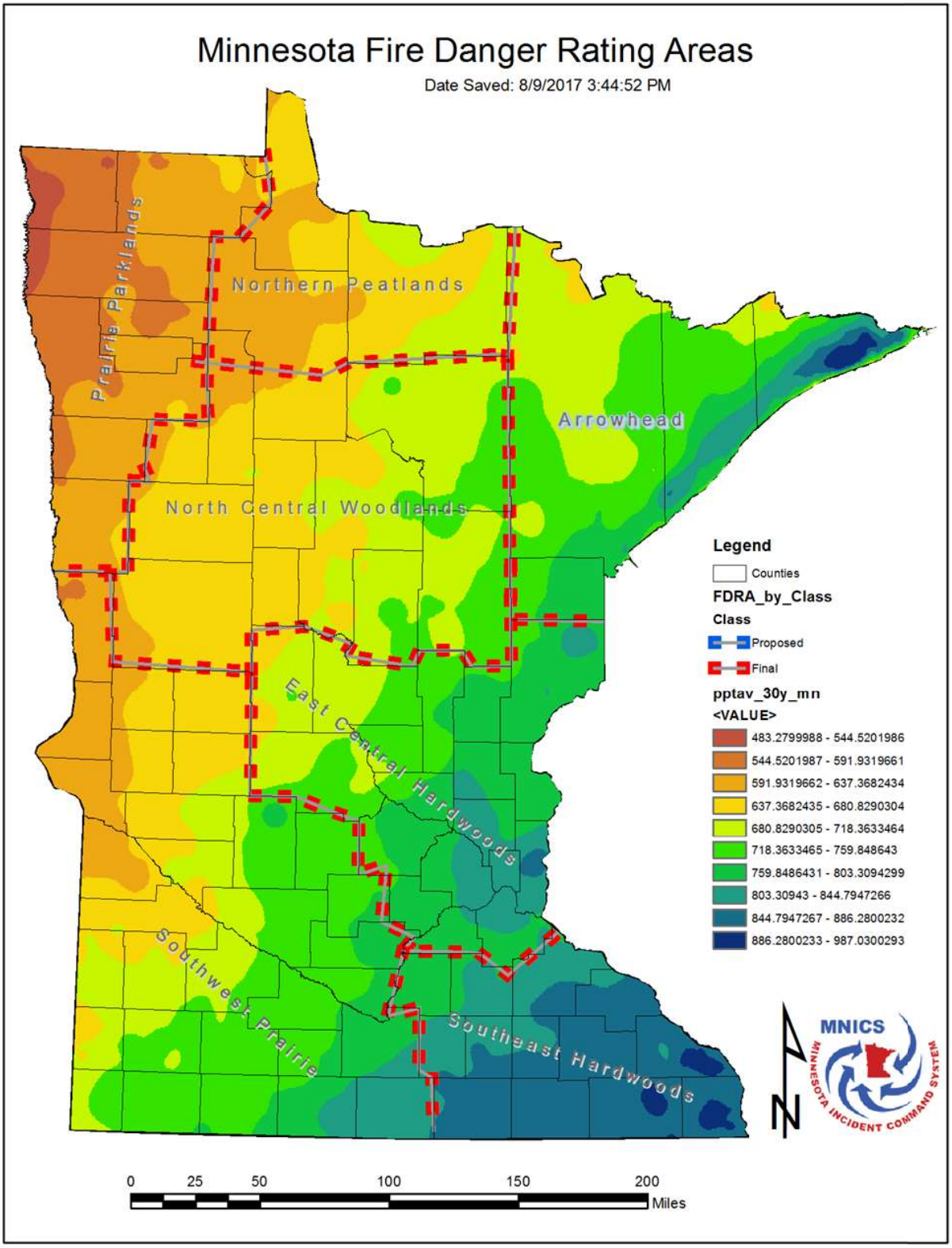


Figure 15 PRISM Precipitation Data

Appendix J FDRA Descriptions and Analysis

Arrowhead

General Location

The Arrowhead Fire Danger Rating Area (FDRA) is located in northeast Minnesota and includes the counties of St. Louis, Lake, Cook, and Carlton. The area encompasses approximately 11,507 square miles or approximately 13.6 percent of the state. The Arrowhead region is defined by the Canadian border to the north, Lake Superior to the east, the southern boundary of Carlton County to the south, and the western boundaries of Carlton and St. Louis counties to the west. Large population areas include the Duluth area in the southeast portion of the area, the Iron Range area, from Ely to Virginia/Hibbing, and the Lake Superior side (North Shore) of the Superior National Forest. Small residential areas are scattered throughout the forest.

Vegetation

Vegetation for the Arrowhead FDRA is characterized by broad areas of conifer forest, mixed hardwood and conifer forests, and conifer bogs and swamps.

The upland vegetation consists of mostly fire-dependent forests and woodlands. Forests with red and white pine were widespread in the past, mixed with aspen, paper birch, spruce, and balsam fir; much of the pine was cut in the late 1800s and early 1900s, leaving the forest dominated mostly by aspen and paper birch. Jack pine forest are present on droughty ridges and bedrock exposures, as well as on local sandy outwash deposits. The highlands along Lake Superior have a local climate moderated by the lake that favors forest dominated by sugar maple with some white pine, yellow birch, and white cedar. Peatland and wet forest containing aspen, paper birch, spruce, balsam fir, white cedar, and black ash are present across the area as inclusions within broader upland forest areas; sparsely vegetated cliffs and bedrock outcrops are common in the rugged terrain along Lake Superior and in the border lacks region of the northern part of the area

Climate

The Arrowhead FDRA is located within the Great Lakes Fire Climate Region characterized by long, cold winters and warm, moist summers. The FDRA receives more of its precipitation as snow than any other area of the state, has the longest period of snow cover, and the shortest growing season. The average annual precipitation is around 28 inches, with most of the precipitation occurring in the snow-free time of the year. Because of this, waiting times between “fire ending” rain events define the number and severity of fires during the season. Fire season generally lasts from mid to late April through late September, with peaks in the spring and fall, corresponding to cured fuel conditions. Fires can and do occur during mid-summer but are less likely to be severe unless drought conditions are present. The main precursors of fire weather conditions are large, dry, Omega high-pressure systems from Canada,

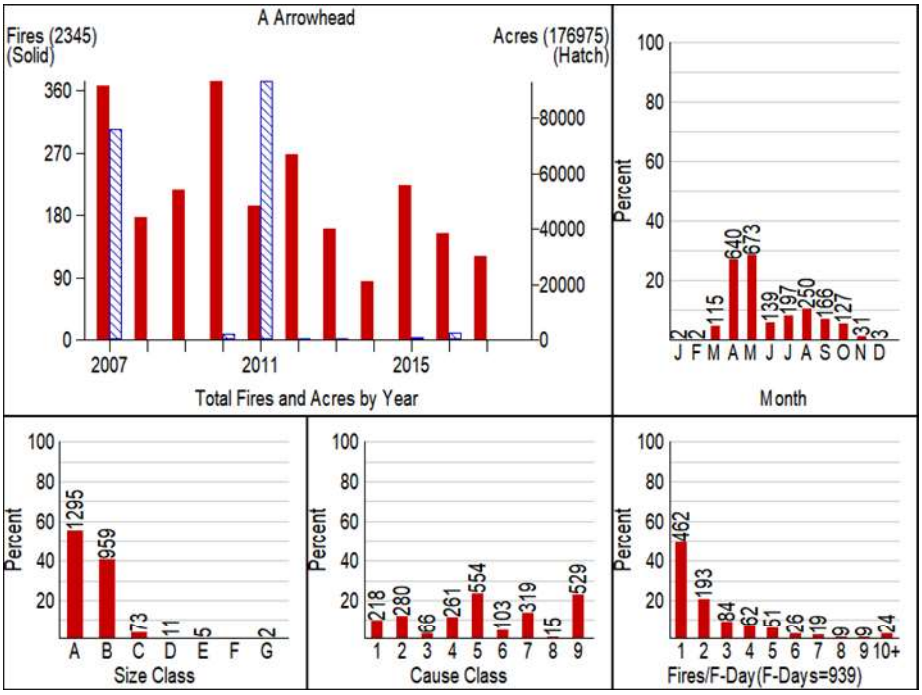
which become warmer and dryer as they move southward. These warm, dry weather patterns may set over the region for one to two weeks, blocking or re-routing passage of some weather fronts, drying the fuels even more. Usually, they are followed by a cold front with winds, thunderstorms, and lightning.

Topography

The landscape ranges from rugged lake-dotted terrain with thin glacial deposits over bedrock to hummocky or undulating plains with glacial drift to flat poorly drained peatlands.

Topography ranges from level and rolling in the southwest to rough and rugged in many areas of the northern and eastern portion. The highest point in Minnesota is Eagle Mountain (outside of Grand Marais) at 2300 feet.

Arrowhead – 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	6 =Railroad
2 = Equipment	7 =Arson
3 = Smoking	8 =Children
4 = Campfire	9 =Misc
5 = Debris Burning	

East Central Hardwoods

General Location

The East Central Hardwoods Fire Danger Rating Area spans from the Twin Cities northwest to the Brainerd Lakes area and east to the Wisconsin border. The counties included in this FDRA are Todd, Morrison, Mille Lacs, Kanabec, Pine, Isanti, Benton, Chisago, Sherburne, Stearns, Wright, Carver, Anoka, Ramsey, Washington, Hennepin, Scott, and Dakota. The area encompasses approximately 11,615 square miles or approximately 13.8 percent of the state. The majority of this FDRA is in private ownership; however, several large public lands are found within this FDRA, including state forests, state parks, state wildlife management areas, the Sherburne National Wildlife Refuge, and Camp Ripley Military Training Center. This FDRA includes the largest metropolitan areas found in the state, including the Twin Cities and St. Cloud metropolitan areas.

Vegetation

The western counties of this FDRA have a mix of agriculture and natural areas. Otherwise, the FDRA is vegetated with forest dominated by northern red oak, sugar maple, aspen, and birch. Sandy terraces along the St. Croix River and small sand plains in other parts of the FDRA have fire-dependent woodlands or forests of jack pine, bur oak, northern pin oak, and aspen. Fire dependent pine, oak, and aspen forests are also present occasionally with mesic hardwood forests on coarse till and drumlins. Peatlands and other wetland communities are present mostly as inclusions within the broad areas of hardwood forest.

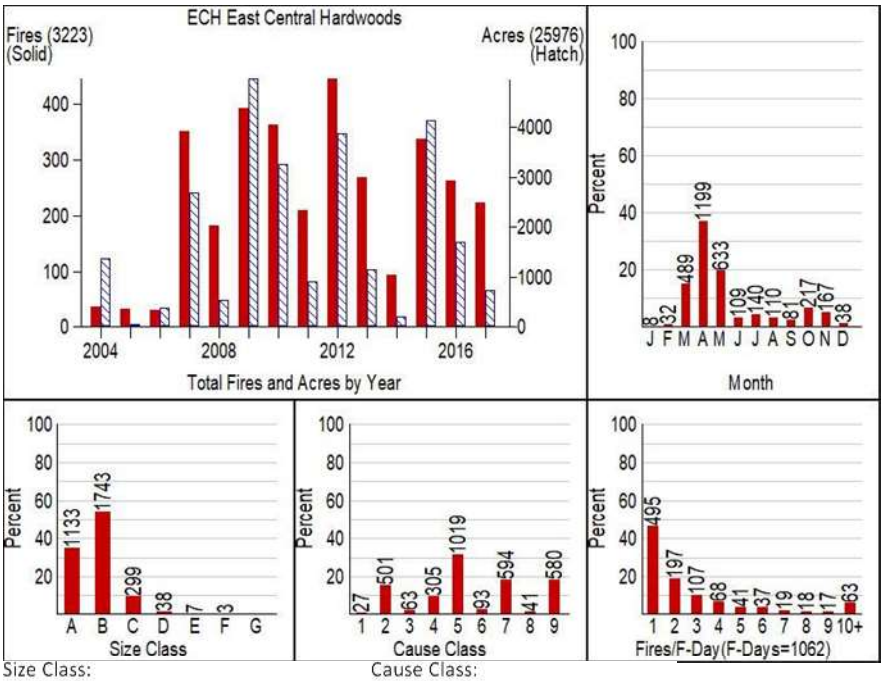
Climate

The climate in this FDRA is characterized by a wide range in temperatures – having some of the coldest and hottest temperatures in the continental United States. The area can experience droughts, floods, and extreme wind events, including tornadoes and derechos. Precipitation can vary from rain to ice and snow, with half of the annual precipitation falling in the summer, months mostly as thunderstorm events. Snow typically persists from December through March. Factors that contribute to fire occurrence include frequency and intensity of drying events, snowpack, and the levels of dead and live herbaceous fuel moistures.

Topography

This FDRA has complex and variable topography as a result of many glacial episodes, which created fairly level to undulating ground moraines and drumlins. The FDRA has several large lakes and rivers, the most prominent of which are Lake Mille Lacs, the Mississippi River and St. Croix River.

East Central Hardwoods – 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	6 =Railroad
2 = Equipment	7 =Arson
3 = Smoking	8 =Children
4 = Campfire	9 =Misc
5 = Debris Burning	

North-central Woodlands

General Location

The Central Woodlands Fire Danger Rating Area (FDRA) is located north-central Minnesota, including the entirety of Atkin, Becker, Cass, Crow Wing, Hubbard, Itasca, Mahnomen and Otter Tail counties, as well as the southern portions of Clearwater and Beltrami counties. In Clearwater and Beltrami counties the northern border of the FDRA is at the southern edge of the Red Lake Reservation and Minnesota State Highway 1. The area encompasses approximately 16,181 square miles or approximately 19.2 percent of the state. This FDRA is located in the north-central part of the state with the Northern Peatlands FDRA to the north, the Arrowhead FDRA to the east, and the Prairie Parklands FDRA to the west. The southern edge borders both the Southwest Prairie FDRA and the East Central Hardwoods FDRA.

Vegetation

The vegetation of the Central Woodlands FDRA includes a small amount of the Prairie Parkland and Tallgrass Aspen Parklands Provinces and a minimal section of the Eastern Broadleaf Forest Province, but the majority is represented by the Laurentian Mixed Forest Province (LMF). In the LMF province section, the northern Minnesota Drift and Lake Plains (MDL) is the most representative of the

ecological section. The vegetation reflects the complicated geology of the area. Mesic forest of sugar maple, basswood, paper birch, aspen, and northern red oak are common. Also, fire-dependent communes of jack pine and red pine were historically present on sandy sites. Mixed pine and boreal hardwood forest with quaking aspen and paper birch are also common in the FDRA. Acid peatland communities can be found in eastern part of the FDRA.

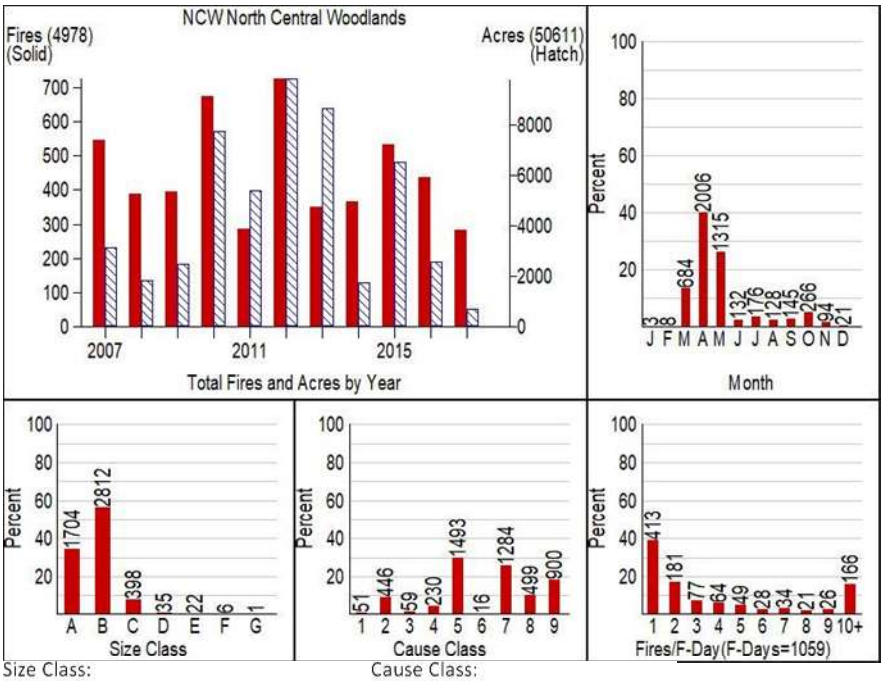
Climate

In this FDRA the total annual total precipitation is between 26 and 28 inches. Approximately 65 percent of the total annual precipitation falls in the spring and summer months, with a winter precipitation average of two inches. The annual average minimum temperature is 30 degrees Fahrenheit and the annual average maximum temperature is 51 degrees Fahrenheit. The lowest temperatures in this FDRA occur in January when temperatures of negative two to zero degrees are the average but, well below zero degrees Fahrenheit is not uncommon.

Topography

During the Ice Age (200,000 before present (BP) to 15,000BP), this FDRA, like most of Minnesota, was covered by glaciers and later by Lake Agassiz as the glaciers melted. As the glaciers grew and receded, they left deposits of glacial till. These deposits led to the development of rolling hills, and the many lakes that are now found throughout the area. This FDRA has a variety of topography from flat plains to gently rolling hills with several hundred lakes and wetlands. The western edge of this area is flat with hilly topography developing in the eastern and southern portions of the area.

North-central Woodlands – 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	6 =Railroad
2 = Equipment	7 =Arson
3 = Smoking	8 =Children
4 = Campfire	9 =Misc
5 = Debris Burning	

Northern Peatlands

General Location

The Northern Peatlands Fire Danger Rating Area (FDRA) is located in north-central Minnesota along the international border with Canada. It includes the Red Lake Nation and the counties of Koochiching, Lake of the Woods, Northern Beltrami, and a small portion of northern Clearwater. This area encompasses approximately 7,120 square miles or 8.4 percent of Minnesota. The FDRA is generally described as the western boundary of the Red Lake Nation, north to Lake of the Woods (including the NW Angle) then east along the Canadian border to Rainy Lake and Voyageurs National Park, then south to the headwaters of the Littlefork River (Minnesota Trunk Highway 1).

Vegetation

Extensive acid peatland communities, such as black spruce bogs and poor swamp forests, reside in the eastern portion. Tamarack swamps, rich fens, and other rich peatland communities tend to be common in the western portion. Mesic and wet forests of aspen, paper birch, spruce, balsam fir, white cedar, and black ash are typical in the southern part of the area. Fire-dependent forests of jack pine and red pine can be found on sandy uplands and boreal areas along the borders of the area.

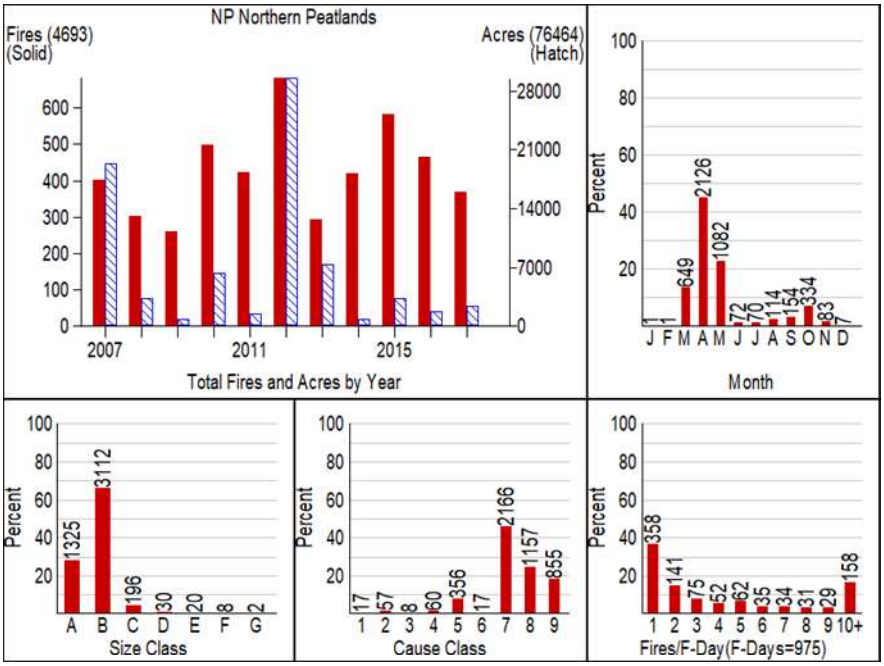
Climate

Total annual precipitation is 24-27 inches, with wetter values to the south and east. Approximately 45 percent of the precipitation occurs during the growing season. Only about five to ten percent of the precipitation falls from November through February. This FDRA has among the lowest annual average temperatures in the state. Temperatures ranging as low as minus 30 to minus 40 degrees Fahrenheit during the height of winter are not uncommon. Snow cover persists for a greater period in this area of the state, with over 60 inches of snow on average per year.

Topography

Generally, the Northern Peatlands FDRA is flat and poorly drained. About half of it consists of clayey deposits from Glacial Lake Agassiz. The lake deposits are covered primarily by bogs, swamps, fens, and other peatland vegetation. At the eastern edge, the peatlands are acidic, deep, and old (>4,000 years). At the western edge of the section, the peatlands are richer in minerals, shallower, and younger (~1,000 years). Some areas, especially along the eastern and southern borders, have uplands formed of glacial till that was eroded and flattened by wave action from Glacial Lake Agassiz. Uplands formed of sandy shoreline deposits that mark recessional stages of Glacial Lake Agassiz are present across the FDRA. These low, sandy uplands are less extensive than either the peatlands or glacial till uplands.

Northern Peatlands – 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	6 =Railroad
2 = Equipment	7 =Arson
3 = Smoking	8 =Children
4 = Campfire	9 =Misc
5 = Debris Burning	

Prairie Parklands

General Location

The Prairie Parkland Fire Danger Rating Area (FDRA) is located in the very northwest corner of the state and includes the counties of Kittson, Roseau, Marshall, Polk, Pennington, Red Lake, Norman, and Clay. This area encompasses approximately 9,579 square miles or approximately 11.4 percent of the state. The Prairie Parkland's area is defined by the Red River of the North (Minnesota-North Dakota state line) as its west boundary, roughly Interstate highway 94 (Clay-Wilkin county line) as its south boundary, roughly a line following State Highway 32 north from its southern boundary to Fertile, then east to roughly Lengby, then north to Grygla then Warroad (the eastern county lines of each county) and the Canadian-United States border on its north boundary.

Vegetation

Approximately 75 percent of this FDRA is comprised of agriculture. The historical Glacial Lake Agassiz once covered almost all of this FRDA over 10,000 years ago. Sediments deposited by Lake Agassiz resulted in rich soil making this area highly desirable for agriculture. Despite a large amount of agriculture, there are relatively large remnants of natural areas remaining in the northern and eastern portions of the FDRA. This FDRA contains some of the largest tallgrass prairie and parkland expanses in the world. These expanses are characterized by a mosaic of aspen (Populous tremuloides) groves, prairie, brush prairie, sedge dominated wet meadows, marshes, peatlands, and riparian zones of the rivers and streams. Fire historically influenced the shape, size, and composition of the mosaic of woodland, open prairie and shrubland on the upland sites. The coarse soils of the Lake Agassiz beach ridges strung though much of the central portion of the FDRA support bur oak woodlands, savanna, and small areas of xeric prairie. Hardwood forests exist in southeast Polk County and conifer/deciduous forest exist in the northeast and southeast portions of Roseau County.

Wetlands can be characterized into two major types based on their hydrology. It is thought that groundwater movement is responsible for the wetlands that occur on the coarse gravel beach ridges and glacial till deposits. Wetlands found between the beach ridges are thought to be influenced by surface water flow. Vegetation, consisting of sedges, willows, and broadleaf cattail (Typha latifolia), are similar between the two types despite the differences in hydrology. Cattail, mainly invasive narrow leaf (Typha angustifolia) and hybrid (Typha x glauca) have displaced much of the native sedges and cattail in the wetlands of this area. Many wetlands exhibit shallow to moderately deep peat development and several large (in excess of 25,000 ac) peat expanses exist in the northeast portion of the FDRA.

Much of the area of the natural vegetation remaining is protected by state and federal agencies or private conservation organizations. Private property not tilled for row crop or small grain production is typically pastured or reserved for recreational activities. There is a fair amount of USDA conservation reserve program grasslands remaining along the Lake Agassiz beach ridge corridor and in portions of north-central Marshall county, northeast Kittson County and western Roseau County.

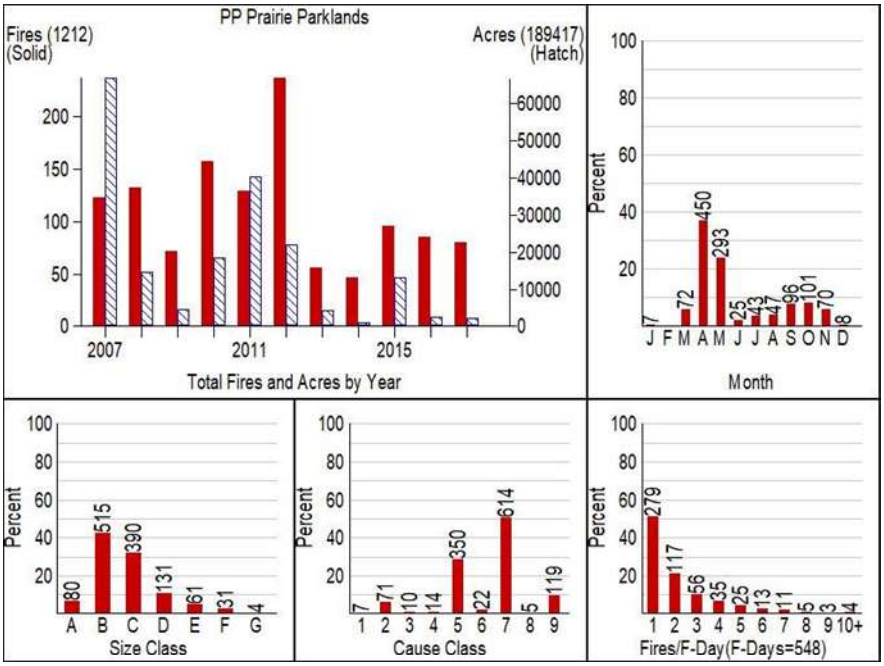
Climate

Total annual precipitation is 21-24 inches making this area the driest in the state. Approximately 40 percent of the precipitation occurs during the growing season. Only about 10-15 percent of the precipitation falls from November through February. Low precipitation, little spring infiltration, and desiccating winds from the Great Plains promote conditions that are conducive to spring fires. This FDRA has among the lowest annual average temperatures in the state. Temperatures such as minus 30 to minus 40 F° during the dead of winter are not uncommon. The snow cover tends to persist for a greater period in this area of the state, only being surpassed by the northcentral and northeastern portions which typically receive significantly more average snowfall.

Topography

This FDRA is best characterized as having a level or flat topography almost throughout the entire area. The Wisconsinian glaciation and subsequent formation and recession of Glacial Lake Agassiz about 10,000 years ago left much of this landscape with little relief and poor drainage. There are minor punctuated areas of relief through the center portion of the FDRA consisting of gravel and sand ridges created through wave and ice action as Glacial Lake Agassiz receded, draining north via the Red River into Lake Winnipeg and eventually into Hudson Bay. Other areas of notable relief include a portion of the Hardwood Hills ECS Subsection located in southeast Polk County near Lengby and the Bemis Hill area of Beltrami Island State Forest in southeast Roseau County.

Prairie Parklands – Fire Summary Graph



Size Class:				Cause Class:	
A =	0 —	.25	acres	1 = Lightning	6 =Railroad
B =	.30 —	9	acres	2 = Equipment	7 =Arson
C =	10 —	99	acres	3 = Smoking	8 =Children
D =	100 —	299	acres	4 = Campfire	9 =Misc
E =	300 —	999	acres	5 = Debris Burning	
F =	1000 —	4999	acres		
G =	5000 +		acres		

Southeast Hardwoods

General Location

The Southeast Hardwoods Fire Danger Rating Area (FDRA) is located in the 13 counties in the South East Corner of Minnesota. The counties include Le Sueur to Wabasha in the northern part and on the Iowa border from Freeborn to Houston. This area encompasses approximately 7,780 square miles or approximately 8.2 percent of the land in Minnesota. The area is defined by the Mississippi River to the east, the Iowa border to the south, including the boundary of the Minnesota River in Le Sueur County on the western edge.

Vegetation

The vegetation varies greatly depending on topography, with bur oak savanna in the west and tallgrass prairie and maple-basswood forests common throughout the FDRA. The oak savanna developed on rolling moraine ridges and in the dissected ravines. Maple-basswood was restricted to the portions of the FDRA with the greatest fire protection, either in steep dissected ravines or where the stream orientation reduced fire frequency. In the eastern half of this FDRA the vegetation was more tallgrass prairie and bur oak savanna, with the prairie being restricted to broader ridge tops, where fire could spread, but it could also occur on steep slopes with a south/southwest aspect.

Climate

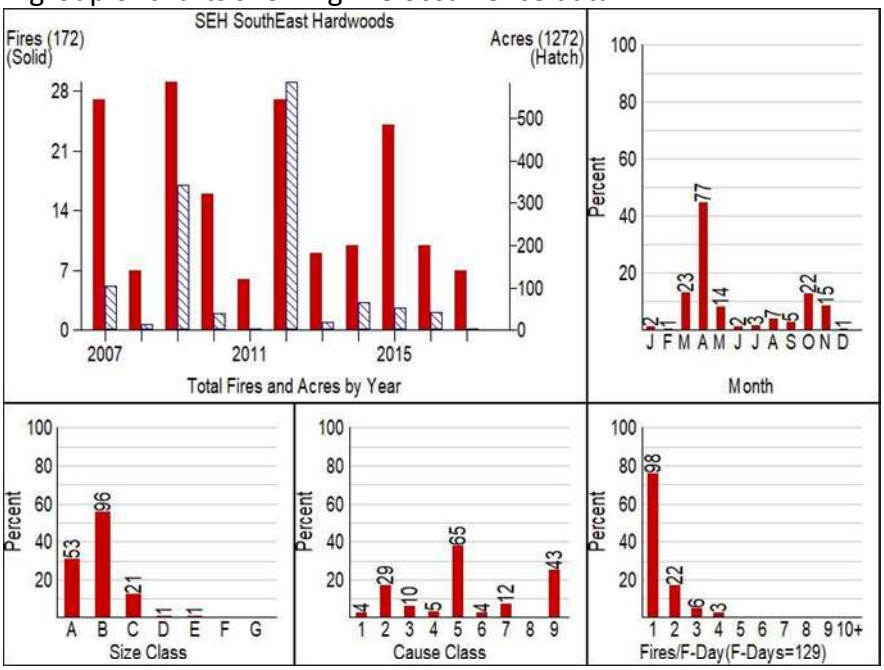
Annual normal precipitation ranges from 28 inches to 34 inches in the southeast (Midwest Climate Center 1992). Approximately 45 percent of the precipitation occurs during the growing season. The growing season in this FDRA is the longest throughout the state and can reach up to 160 days near the eastern border along the Mississippi River.

Topography

This FDRA can be split into two separate and very different topographies. In the western half of this FDRA rolling hills and small sand plains (such as the Anoka Sand Plain), formed from sand deposited by meltwater from the Grantsburg sublobe during the last glaciation. Large areas of prairie, savanna, and oak woodland are present on the gently undulating glacial till in the western half of this FDRA. This landscape afforded few impediments to the spread of fire, including fires that spread from the adjacent prairies to the west. The eastern half of this FDRA can be classified as a plateau that has been highly eroded and dissected by streams and rivers over the past 10,000 years. Here the most important factors influencing vegetation patterns were slope, aspect, flooding, and possibilities of burning due to the prairie fires from the west. Peatlands were nearly absent in this FDRA, limited to local areas where seeps and springs maintained saturated conditions for accumulation of peat.

Southeast Hardwoods – Fire Summary Graph

A group of charts showing fire occurrence data



Size Class:

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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	

Southwest Prairie

General Location

The Southwest Prairies Fire Danger Rating Area is defined by the counties that exist partially, if not entirely, within the North-central Glaciated Plains ecological section of the Prairie Parkland Province as defined by the Field Guide to the Native Plant Communities of Minnesota: The Tallgrass Parkland and Tallgrass Aspen Parklands Provinces (Minnesota Department of Natural Resources, 2005). The counties include Big Stone, Blue Earth, Brown, Chippewa, Cottonwood, Douglas, Faribault, Grant, Jackson, Kandiyohi, Lac Qui Parle, Lincoln, Lyon, Martin, McLeod, Meeker, Murray, Nicollet, Nobles, Pipestone, Pope, Redwood, Renville, Rock, Sibley, Stevens, Swift, Traverse, Watonwan, Wilkin, and Yellow Medicine. The majority of this FDRA is in private ownership. The area encompasses approximately 20,590 square miles or approximately 24.4 percent of the state.

Vegetation

Today, this FDRA is checker boarded with annually cropped agricultural fields, urban populations, and parcels of perennial vegetation. An extensive road system defines all of these areas. Historically, this

FDRA consisted mostly of an upland prairie system that hosted smaller communities of marsh, wetland prairie, and wet meadows. The vegetative areas surrounding the river systems consisted of both prairie and woodland communities. Aside from an increase of woody vegetation within the upland prairie system, the present parcels of perennial vegetation still represent the historical systems.

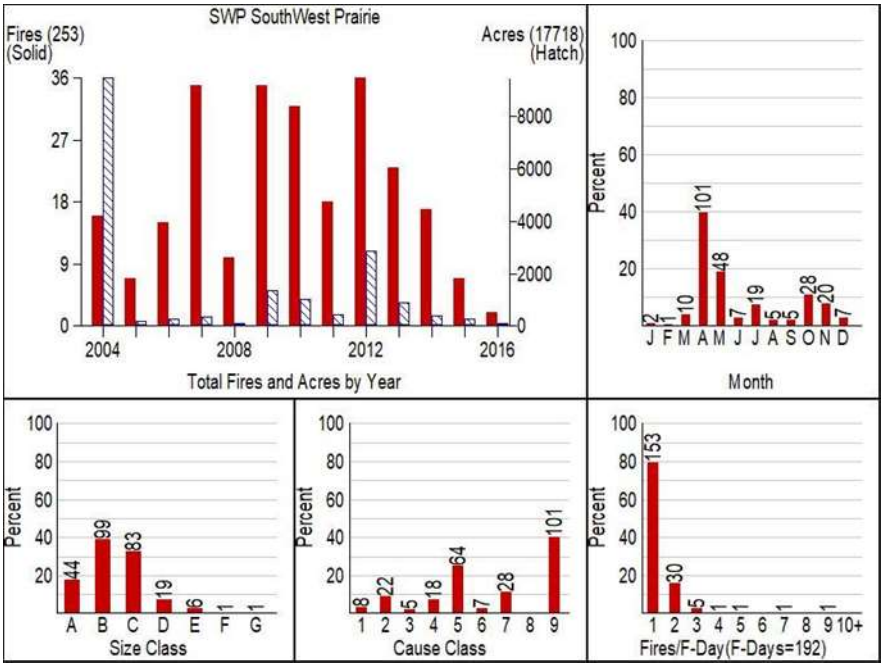
Climate

This FDRA differs in climate from the rest by mainly having fewer days of snow cover caused by having less annual precipitation and higher average temperatures. Factors that contribute to fire occurrence include frequency and intensity of drying events and levels of dead and live herbaceous fuel moistures.

Topography

This FDRA consists of level deposits of glacial till. It is best described as flat to rolling plains containing features such as moraines and lake plains. The FDRA is deeply dissected by numerous rivers, the largest being the Minnesota River.

Southwest Prairie – Fire Summary Graph



Size Class:

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C =	10 —	99	acres
D =	100 —	299	acres
E =	300 —	999	acres
F =	1000 —	4999	acres
G =	5000 +		acres

Cause Class:

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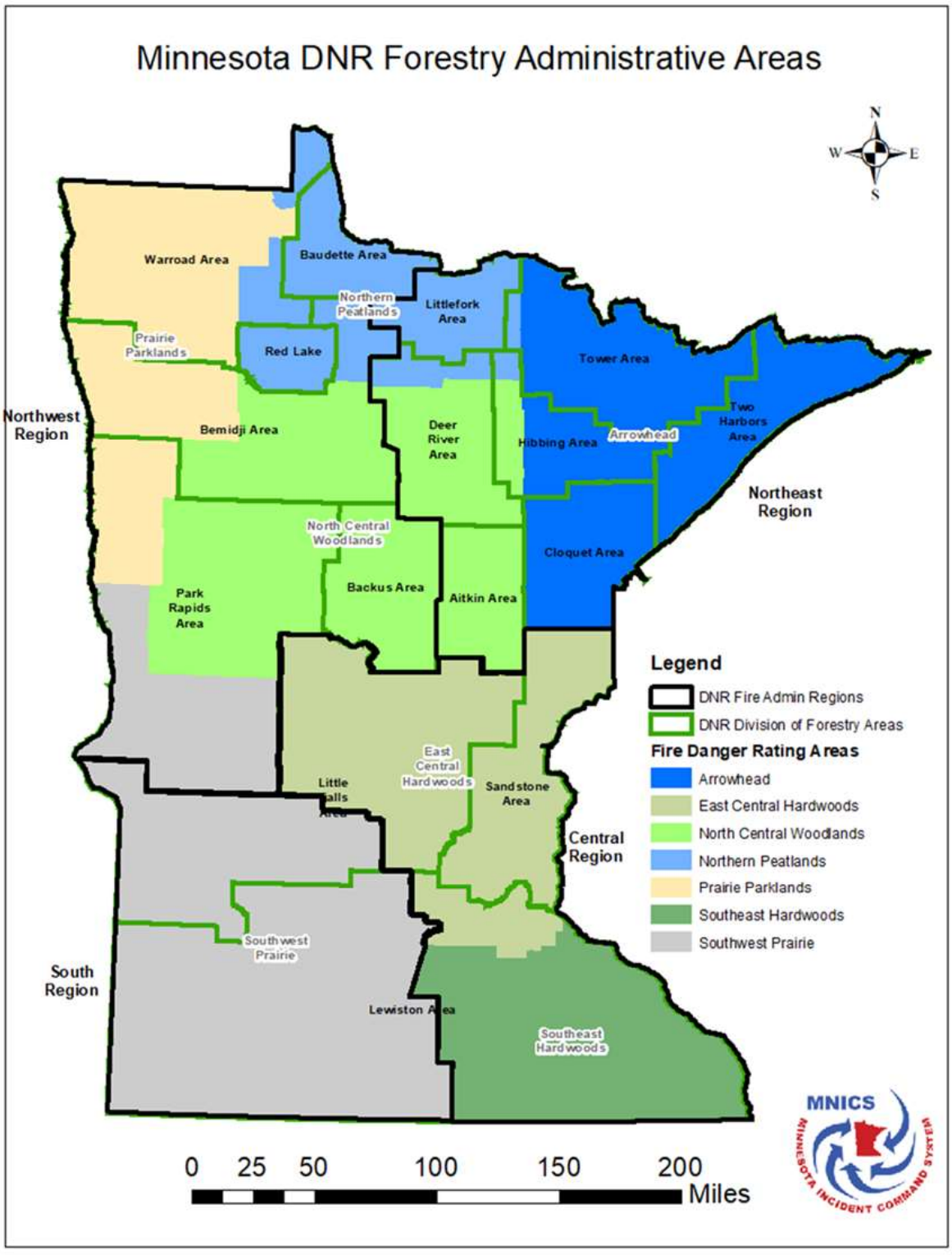
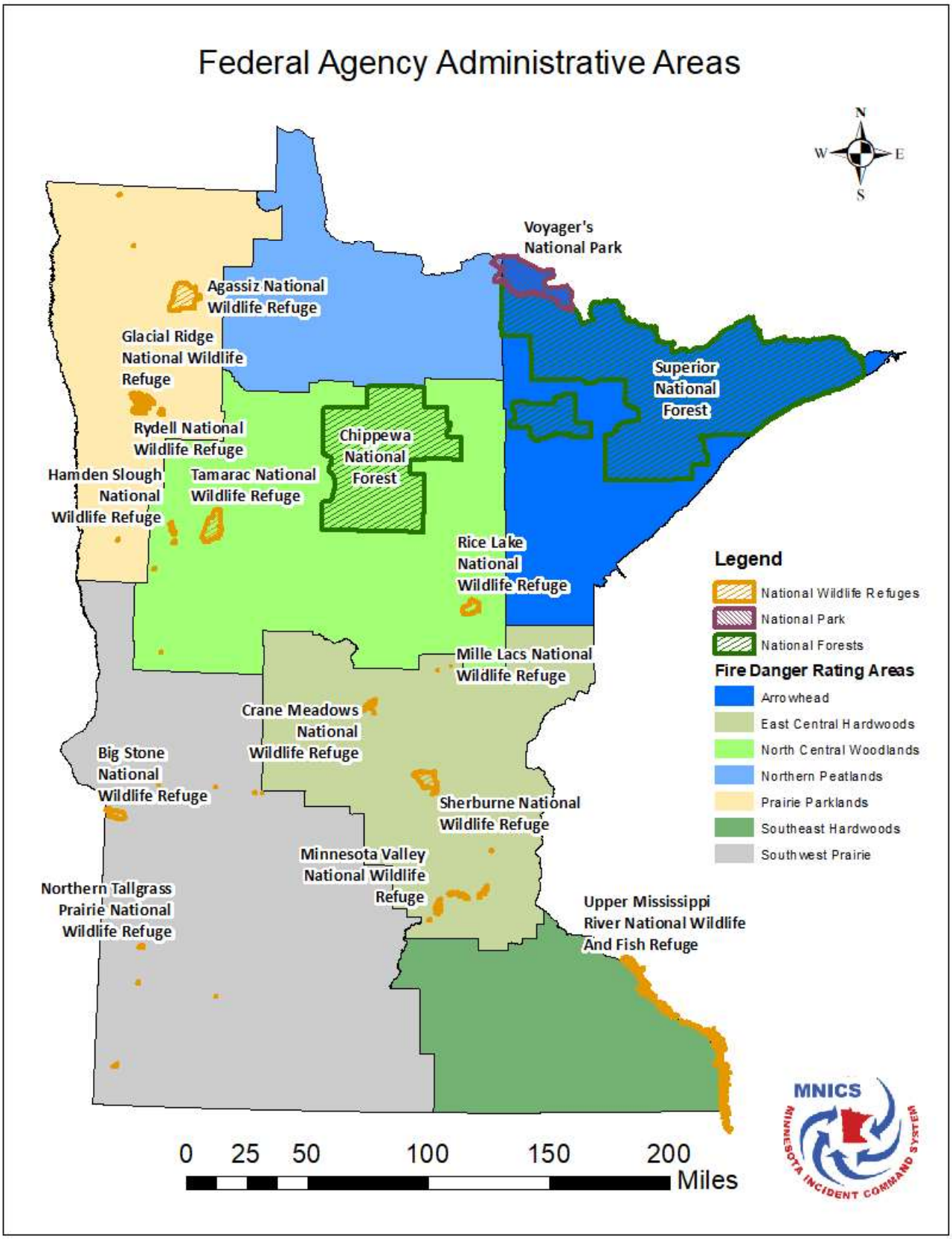
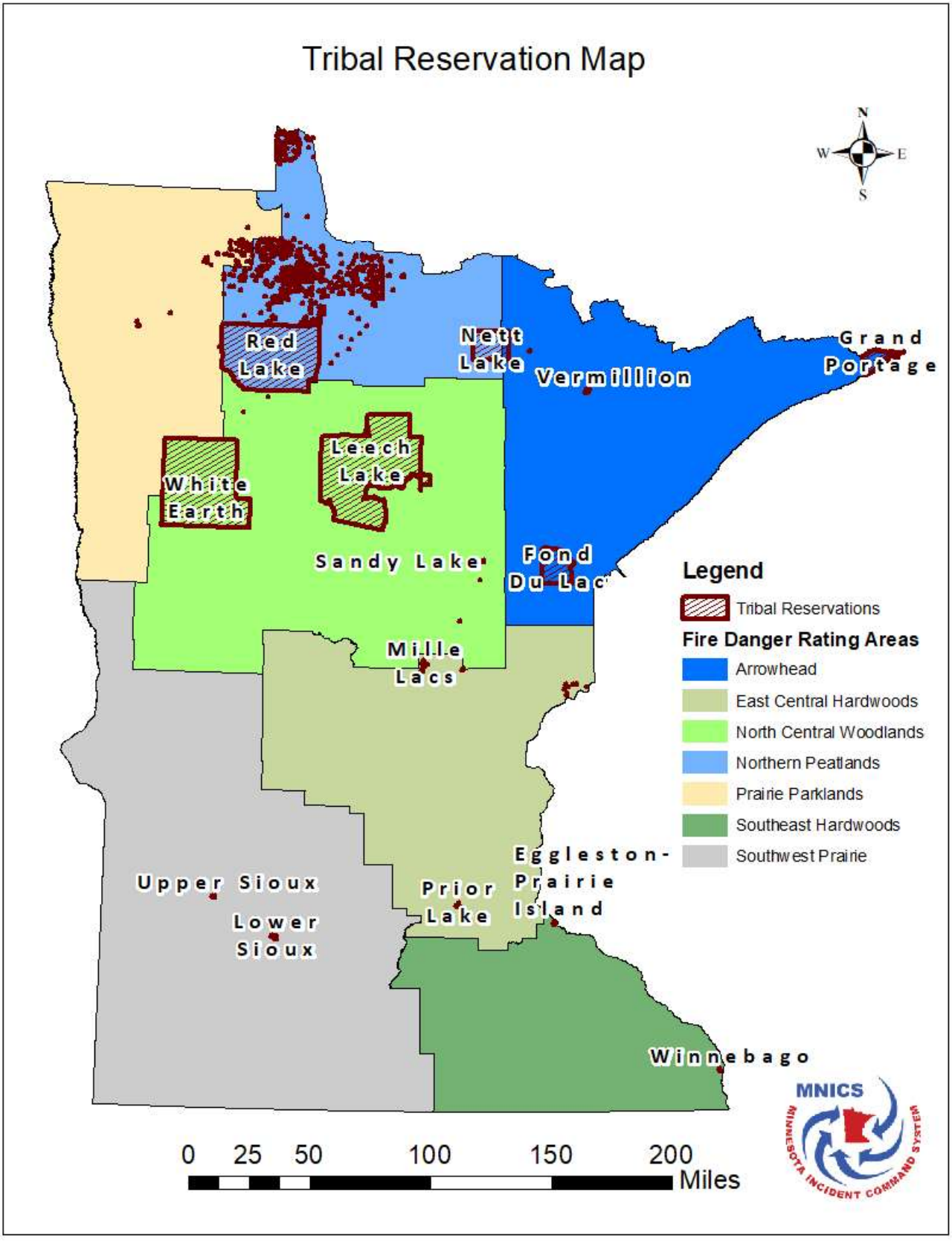
2 = Equipment	7 =Arson
3 = Smoking	8 =Children
4 = Campfire	9 =Misc
5 = Debris Burning	

Appendix K Administrative Area Maps




Federal Agency Administrative Areas
N
W
E
S
Voyager's
National Park
Agassiz National
Wildlife Refuge
Glacial Ridge
National Wildlife
Refuge
Superior
National
Forest
Rydell National
Wildlife Refuge
Chippewa
National
Forest
Hamden Slough
National
Wildlife Refuge
Tamarac National
Wildlife Refuge
Rice Lake
National
Wildlife Refuge
Mille Lacs National
Wildlife Refuge
Crane Meadows
National
Wildlife Refuge
Big Stone
National
Wildlife Refuge
Sherburne National
Wildlife Refuge
Minnesota Valley
National Wildlife
Refuge
Northern Tallgrass
Prairie National
Wildlife Refuge
Upper Mississippi
River National Wildlife
And Fish Refuge
Legend
National Wildlife Refuges
National Park
National Forests
Fire Danger Rating Areas
Arrowhead
East Central Hardwoods
North Central Woodlands
Northern Peatlands
Prairie Parklands
Southeast Hardwoods
Southwest Prairie
0 25 50 100 150 200
Miles
MNICS
MINNESOTA INCIDENT COMMAND SYSTEM


Tribal Reservation Map
N
W
E
S
Red Lake
Nett Lake
Vermillion
Grand Portage
Leech Lake
White Earth
Sandy Lake
Fond Du Lac
Mille Lacs
Upper Sioux
Lower Sioux
Prior Lake
Eggleston-Prairie Island
Winnebago
Legend
Tribal Reservations
Fire Danger Rating Areas
Arrowhead
East Central Hardwoods
North Central Woodlands
Northern Peatlands
Prairie Parklands
Southeast Hardwoods
Southwest Prairie
0 25 50 100 150 200
Miles
MNICS
MINNESOTA INCIDENT COMMAND SYSTEM

Appendix L Fire Danger Issues Table

FDRA	Problem / Issue	Affected Target Group			Degree of Control	Anticipated Communication with Target Group	Potential Impacts	Index / Component	Management Action
		Agency	Public	Industrial / Agricultural					
Arrowhead, North Peat, Prairie Pk., N. Cent Woodlands	Dry Lightning Event	USFS, BIA, NPS, MN State, FWS, Tribal	Recreational Users		Low	Communication with Predictive Services and National Weather Service and relay to Dispatch and Coordination Centers, Fire Danger Outlooks; Public Notification	Fire Patrol/Detection, Workload and suppression costs; Tourism economy	ERC; IC; BI, LAL, FM100, FM1000, DMC; DC; BUI; FFMC; POI;	Detection/Patrols, Extended staffing, modified response plan; closures (roads/rec)
ALL	Debris Burning / Ditch Burning	MN State, USFS, BIA, Tribal, NPS, FWS, Local gov't	Resident Landowners; Hunting Camps; Cabin Owners; Motorists	Farmers; Contractors; timber industry; Utilities	High	Permitting System notifications & maps; PSA/New releases; Adj. Ratings; Signage; Law Enforcement; Firewise/Fire Prevention events	Enforcement; Fire Patrol/Detection, Workload and suppression costs; Smoke Impacts to Roads; Property loss	DMC; DC; IC; ISI; FFMC; FWI; ERC; RH; POI;	Restrict burning; Detection/Patrols, Extended staffing, modified response plan; Citations/Civil Penalties;
ALL	Arson	MN State, USFS, BIA, Tribal, NPS, FWS, Local gov't	Landowners		Low	Prevention events; Investigation Coordination across agencies; Media Distribution;	Enforcement staffing; Patrol/detection; Investigation / Prevention Teams; Extended Litigation / Case Management	ISI; Occurrence; Timing/seasonality ; Temperature;	Detection/Patrols, Extended staffing, modified response plan; Criminal/Civil Penalties; Invest. / Prevention Teams; consequences/outcome via PIO; Coord. w/ Judicial Branch
Prairie Pklns, SW Prairie, EC Hwds, NC Wdlns, N. Peatlands	Agricultural Burning / Veg. Maintenance • Incl. Invasive Control	MN State, Tribal, FWS, Local Gov't, NRCS, SWCD	Landowners	Contractors; Farmers	High	Permitting System notifications & maps; PSA/New releases; Adj. Ratings; Signage; Law	Enforcement; Fire Patrol/Detection, Workload and suppression costs; Smoke Impacts to	DMC; DC; IC; ISI; FFMC; FWI; ERC; RH; POI	Restrict burning; Detection/Patrols, Extended staffing, modified response plan; Citations/Civil Penalties; Coord. w/ NRCS regarding

FDRA	Problem / Issue	Affected Target Group			Degree of Control	Anticipated Communication with Target Group	Potential Impacts	Index / Component	Management Action
		Agency	Public	Industrial / Agricultural					
Note: May occur statewide						Enforcement; Firewise/Fire Prevention events; NRCS/FSA & SWCD Technical Bulletins	Roads; Property loss; Economic Hardship; Media & Info. Distribution		maintenance requirements.
Prairie Pkinds, NC Wdlns, Arrowhead, N. Peatlands	Pipeline ROW, Transmission Lines: • Access • Supp. Activity • Fuel Mgmt	MN State, USFS, BIA, Tribal, NPS, FWS, NTSB, Local gov't		Utilities; Maintenance Contractors	Moderate	Permitting System notifications & maps; Adj. Ratings; Updated agreements and activity notification; Coordinated training with utilities	Critical infrastructure failure; Fire spread in light fuels; Limited access; Region-wide economic effects; Public and responder life safety issues	DMC; DC; 1000hr; IC; POI; FWI; ISI Note: 2 issues recognized re surface vs ground fires in disturbed peat.	Coordinated Training and Communications; Pre-suppression Planning specific to individual utilities/sites (SOPs); Increased Patrol by utilities;
ALL	Wildland Urban Interface • Potential for complexity	MN State, USFS, BIA, Tribal, NPS, FWS, Local gov't, RFD	All citizens	Businesses	Low	PSA/New releases; Adj. Ratings; Signage; First Responders Cooperation; Firewise/Ready-Set-Go events; Fire Prevention events; Media/Public Info dist'n; AQI Outreach	Loss of home/community; increased hazards for responders; public health; evacuations; displaced citizens Local economic impacts	ISI; BUI; 100hr; RH; AQI; BI; ERC; FWI	Ensure coord plans in place; Fuel reduction projects; Increased staffing; coordinated training with Locals; Reverse 911 coordination; CPAWS coord. With LGU's;
	Railroad • Increased use of Oil Tx on existing rail corridors	MN State, USFS, BIA, Tribal, NPS, FWS, NTSB,		Railroads; Maintenance Contractors	Moderate	Adj. Ratings; Updated agreements and activity notification; Coordinated	Critical infrastructure failure (Haz Mat); Fire spread in light fuels; Limited access;	DMC; 100hr; IC; POI; FWI; ISI, ERC, BI, RH	Coordinated Training and Communications; Pre-suppression Planning specific to response to RR fires (SOPs); Increased

FDRA	Problem / Issue	Affected Target Group			Degree of Control	Anticipated Communication with Target Group	Potential Impacts	Index / Component	Management Action
		Agency	Public	Industrial / Agricultural					
		FRA, Local gov't				planning meetings;	Region-wide economic effects; Public and responder life safety issues		Patrol by railroads; Limit maintenance activities. Implementation of Minn. Statutory requirements
	Fireworks (exploding targets)	MN State, USFS, BIA, Tribal, NPS, FWS, Local gov't	Public	Firework Retailers	Moderate	PSA/New releases; Adj. Ratings; Signage; First Responders Cooperation; Firewise/Ready-Set-Go events; Fire Prevention events; Media/Public Info dist'n;	Socio-political events; Local economic short term; personal and responder safety	IC, FFMC, ISI, POI, BUI, ERC, RH	Implementation of Minn. Statutory requirements
Arrowhead N. Peatlands C. Woodlands	Limited access for response	MN State, USFS, BIA, Tribal, NPS, FWS			Moderate -High	PSA/New releases; Adj. Ratings; Signage; Coord. with EACC/partners for resources;	Timber losses; increased cost due to large fire growth;	DC; DMC; 100hr; IC; POI; FWI; ISI, ERC, BI, RH, 1000hr	Detection/Patrols, Extended staffing, modified response plan; closures (roads/rec); Fire Mgmt in remote areas
	Personal/Recreational Activities (chainsaws, ATV/UTV/ORV, shooting)	MN State, USFS, BIA, Tribal, NPS, FWS, Counties	Recreationists; Personal woodcutters; etc.	Outfitters;	Moderate	PSA/New releases; Adj. Ratings; Signage; Law Enforcement; Firewise/Fire Prevention events; Activity restrictions;	Timber losses, increased cost due to large fire growth; property loss;	DC; DMC; 100hr; FWI, ERC, 1000hr; BUI; FFMC; POI; IC	Closure plans; Statutory burning bans; restrictions on use; response/dispatch levels; Citations/Civil Penalties; Investigation Teams
	Commercial/Industrial/Ag Equipment Use	MN State, Co. Sheriff, Tribal, USFS, FWS, BIA, Local Gov't		Like: Farming Timber Construction	Moderate - High	PSA/New releases; Adj. Ratings; Signage; Law Enforcement;	Economic losses, increased cost due to large fire growth; property loss;	DC; DMC; 100hr; FWI, ERC, 1000hr; BUI; FFMC; POI; IC	Closure plans; Statutory burning bans; restrictions on use; response/dispatch levels; Citations/Civil

FDRA	Problem / Issue	Affected Target Group			Degree of Control	Anticipated Communication with Target Group	Potential Impacts	Index / Component	Management Action
		Agency	Public	Industrial / Agricultural					
				Other contractors		Activity restrictions; Coordination w/ Industry Associations;			Penalties; Investigation Teams
	Holiday / Significant Events (fishing opener, etc.)								
	Air Quality / Smoke Related	MPCA, MN State, Tribal, USFS, FWS, BIA, Local Gov't	Unhealthy for Sensitive Group (Individuals), Whole Public; Private Landowners	Permitted Facilities; Air Transportation ; Health care facilities RxBurn Contractors; Ag Burners	Low	Communication with Predictive Services and National Weather Service and relay to Dispatch and Coordination Centers; Air Quality Forecasts & Alerts; Agency Distributed Social media; Public Notification; SMP coordination and Cooperation.	Region-wide health impacts; Public and responder life safety issues; Economic impacts due to permit restrictions;	AQI; 5-3-1 Rule;	Restricting Open burning in affected area.
	Juvenile fire-setting								
	Drought Conditions Peat Fire Conditions								
	Limited Resources								Workforce Dev. Planning; Staffing/Drawdown
	Atypical Fuel Loading • Insect & Disease Issues								

FDRA	Problem / Issue	Affected Target Group			Degree of Control	Anticipated Communication with Target Group	Potential Impacts	Index / Component	Management Action
		Agency	Public	Industrial / Agricultural					
	• Significant Weather Events (storms, tornadoes, etc.)								

Appendix M Combined Forest Service DNR Recommended Staffing Level Actions

Notes:

Green shaded boxes are from the SUF-CPF Mob Guide

Blue shaded boxes are based on DNR Preparedness and Response Guide

Staffing Level Actions

PREPAREDNESS LEVEL I & II	
Fire danger tends to be low. Initial attack activity is light and can be handled by local resources. Fire Management Zones are experiencing low fire danger with no long-term commitment of local resources. Potential for fire starts is low-moderate. (less than 10 new starts per day Statewide) PL-1 includes periods of normal to above normal precipitation in the green season when fire occurrence is highly unlikely.	
MANAGEMENT	
Management Recommendations	**Responsibility**
Ensure staffing levels are adequate for indices	Zone Duty Officer
Dispatch daily operations	Zone / Forest Dispatcher
No detection, unless requested	Zone Duty Officer
Hangar – Project flights	Forest Dispatcher
Aviation assets may be on one hour call-back	FAO, Zone Duty Officer
Rx burning according to prescription	Fuels Specialist/ZFMO/Rangers
Zone reporting (weather, status, situation) **Weekly** at PL-II	Zone Duty Officer
Region Duty Officer on call at PL-II	Region Duty Officer
Region / Zone Duty Officer not authorized at PL-I. At PL-II Zone Duty Officer may be filled locally or forwarded to the Region Duty Officer.	Zone / Region Duty Officer
INITIAL ATTACK RESOURCES	
Management Recommendations	**Responsibility**

PREPAREDNESS LEVEL III	
Class A, B, or C fires are occurring in State. Initial attack resources are in place and able to suppress fires as they occur. Limited extended attack expected. No resource shortages, fires can be handled with local resources. Potential for new starts is moderate. (10-20 new starts per day Statewide) 1-2 fires requiring extended attack statewide.	
MANAGEMENT	
Management Recommendations	**Responsibility**
Staff according to moderate staffing	Zone Duty Officer
Dispatch Daily Operations	Unit/Zone Duty Officer
Detection upon request	Zone Duty Officer
Zone Duty Officer on call	Zone Duty Officer
Rx burning according to prescription	Fuels Specialist/ZFMO/Rangers
Zone reporting (weather, status, situation) **Daily**	Zone Duty Officer
Region Duty Officer on call	Region Duty Officer
Zone Duty Officer on call (may forward to 400 if fire #'s are low)	Zone Duty Officer
INITIAL ATTACK RESOURCES	
Management Recommendations	**Responsibility**
Type III helicopter within 100 miles	Aviation Supervisor
SEAT / Fireboss within 180 miles	Aviation Supervisor

PREPAREDNESS LEVEL IV	
Long term fire indices such as ERC, BUI and DMC indicate High-Extreme fire danger. Zones are starting to experience multiple fire occurrences. (20-30 new starts per day Statewide) Extended attack fires may be occurring. Zones require additional outside resources, including overhead, crews or equipment. 3-5 fires requiring extended attack statewide.	
MANAGEMENT	
Management Recommendations	**Responsibility**
Dispatch daily operations/expanded	Forest Dispatcher
Canvas cooperators for resources	Forest Dispatcher
Consider daily contact with Canada	Zone Duty Officer
Detection scheduled	Zone Duty Officer
Two Detection Aircraft if possible	FAO
Order additional Duty Officer(s)	Zone Duty Officer
Consider assigning Information Officer	Zone Duty Officer
Consider FBAN or LTAN	Zone Duty Officer
EACC, R9 F&A, and Operations briefed	Zone Duty Officer
Rx burning needs approval	Zone Duty Officer
Enact startup plan for Tanker base	FAO
Consider Severity Request	Zone Duty Officer
Zone reporting *(weather, status, situation)* Daily	Zone Duty Officer
Region Duty Officer on call	Region Duty Officer
Zone (Area) Duty Officer on call	Zone Duty Officer
INITIAL ATTACK RESOURCES	
Management Recommendations	**Responsibility**
Type III helicopter within 70 miles	Aviation Supervisor
SEAT / Fire boss within 150 miles	Aviation Supervisor

PREPAREDNESS LEVEL V	
Fire Danger is usually extreme. Overhead teams may be assigned on forest. All Forest and most state resources are committed. Out of state resources may be on order. Multiple fires and project fires may be occurring. (30+ new starts per day Statewide). 5+ fires requiring extended attack statewide.	
Management Recommendations	**Responsibility**
Consider Expanded dispatch / IA operations	Forest Dispatcher
Consider additional aviation resources	FAO & Forest/Zone Duty Officer
Detection scheduled	Zone Duty Officer
Two Detection Aircraft if possible	FAO
Evaluate staffing Ely Tanker Base	FAO / Duty Officer
Zone FMO's on duty	ZFMO
Rx burning needs approval	Zone Duty Officer
Off-Forest resource ordering	Zone and Forest Duty Officers/Dispatch
Pre-positioning of resources	FFMO/DSP/ZFMOs/FAO
Consider further restrictions	Forest Supervisor
Staff briefings	Forest Supervisor
SO staff supporting districts	Forest / Zone Duty Officer
Consider FBAN at MIFC	Forest Supervisor
Public information staffed	Forest / Zone Duty Officer
Forest staff briefings	Forest / Zone Duty Officer

MNICS Task Force briefed	Forest / Zone Duty Officer
EACC briefed	Forest / Zone Duty Officer
Type 3 IC on duty	Forest / Zone Duty Officer
Zone reporting (weather, status, situation) Daily	Zone Duty Officer
Region Duty Officer on call	Region Duty Officer
Zone (Area) Duty Officer on call	Zone Duty Officer
INITIAL ATTACK RESOURCES	
Management Recommendations	**Responsibility**
Type III helicopter within 50 miles	Aviation Supervisor
SEAT / Fireboss within 100 miles	Aviation Supervisor

Appendix N RAWS Information

Responsible Party

Updated 12/3/2019

STATION	Owner	Person Responsible for this station
210801 **Agassiz**	FWS	Darrin Franco 218-844-3410 Darrin_franco@fws.gov
211502 **Badoura**	MNS	Brian Hoffman 218-472-3262
210301 Baudette	MNS	Taylor Schenk 218-634-2172
210901 **Bemidji**	MNS	Ben Lang 218-308-2067
213501 Big Stone	FWS	Phil Millette 320-589-4977; phil_millette@fws.gov
212601 Brainerd	MNS	Alex Brothen 218-203-4428
214201 Carlos Avery	MNS	Lisa Mueller 763-284-7206
211604 Cass Lake	USFS	USFS ~ Mike Mackey 218-239-0566
211005 **Cutfoot**	USFS	USFS ~ Mike Mackey 218-239-0566
212201 Detroit Lakes	FWS	Darrin Franco 218-844-3410; Darrin_franco@fws.gov
211004 **Effie**	MNS	Harlow Thompson 218-360-1190 cell; 218-743-3694, Effie or Chris Rogers
210509 **Ely**	USFS	USFS – SUF Travis Durkin: 218-365-7614; travis.durkin@usda.gov
210607 Fernberg	USFS	USFS – SUF Travis Durkin: 218-365-7614; travis.durkin@usda.gov
210703 Grand Portage	BIA	Erik Carlson 218-475-2415 x2035
210512 Hibbing	MNS	Kirk Johnson 218-231-8054
211702 Hill City	MNS	Gene Grell 218-429-3019
210602 Isabella	USFS	USFS – SUF Wendy McCartney, 218-387-3236 (O) or 218-206-3143 (C) wendy.mccartney@usda.gov

STATION	Owner	Person Responsible for this station
211401 **Itasca**	MNS	Ben Lang 218-308-2067
210507 Kabnam/Voyageurs	NPS	Kurt Fogelberg 218-283-6660
210902 Kelliher	MNS	Morgan Michels 218-647-8268
210101 Kittson	MNS	Adam Fisher 218-386-1304
214501 Litchfield	FWS	Jared Culbertson 320-693-2849 x117; jared_culbertson@fws.gov
213102 Little Falls	MNS	Jason Kern 320-616-2450 X 230
210405 Littlefork	MNS	Brittney King 218-278-6651
210503 **Meander**	USFS	USFS – SUF Travis Durkin: 218-365-7614; travis.durkin@usda.gov
215601 MN Valley	FWS	Dan Paulson 952-361-4508; daniel_paulson@fws.gov
211803 Moose Lake	MNS	Mike Trierweiler 320-245-6789 x231 (Sandstone)
213301 **Mora**	MNS	Bobby Gajewski 320-679-3683
210514 **Orr**	MNS	Joe Weflen 218-300-7823
216901 Red Stone	NPS	Seth Hendricks 507-825-5464 x222
211703 Rice Lake	FWS	Adam Muilenberg 218-768-2402 or Kris Larson, 763-389-3323
210203 **Roseau**	MNS	Adam Fisher, 218-386-1304 x308
210511 Saginaw	MNS	Pat Wherley 218-878-5646
210709 Seagull	USFS	USFS – SUF Wendy McCartney, 218-387-3236 (O) or 218-206-3143 (C) wendy.mccartney@usda.gov
214001 Sherburne	FWS	Kris Larson 763-389-3323 X 16; kris_larson@fws.gov
210519 **Skibo**	USFS	USFS – SUF Travis Durkin: 218-365-7614; travis.durkin@usda.gov
213403 St Croix	MNS	Mike Trierweiler 320-245-6789 (Sandstone)
Red Lake RLNM5	BIA	Tony Arola, 218-280-4055 or Scott Abel, 218-679-1601

Station Meta Data

STATION NAME	WIMS ID	NESDIS ID	NWS ID	AGENCY	AVAIL DATA (WIMS)	AVAIL DATA (MESO)
Agassiz	210801	8376767	AGRM5	US FWS	1998-Present	1998-Present
Badoura	211502	7070004	BDRM5	MNS	1996-Present	1998-Present
Baudette	210301	7070133	BTTM5	MNS	1998-Present	1998-Present
Bemidji	210901	707026A	BMJM5	MNS	1996-Present	1998-Present
Big Stone	213501	8378F40	BSTM5	US FWS	2005-Present	2005
Brainerd	212601	707035	BIRM5	MNS	1996-Present	1998-Present
Carlos Avery	214201	7070434	CAVM5	MNS	1999-Present	1999-Present
Cass Lake	211604	333126	CASM5	USFS / CPF	2001-Present	2001-Present
Cutfoot	211005	328D01	CUTM5	USFS / CPF	2001-Present	2001-Present
Detroit	212201	8376650	DMLM5	US FWS	2002-Present	2002-Present
Effie	211004	7070503	EFFM5	MNS	1996-Present	1998-Present
Ely	210509	3286F2E	ELOM5	USFS / SUF	1996-Present	1998-Present
Fernberg	210607	327F565	FRNM5	USFS / SUF	2001-Present	2011
Grand	210703	5214233	GPTM5	BIA	2005-Present	2007-PResent
Hibbing	210512	707056A	HIBM5	MNS	1996-Present	1998-Present
Hill City	211702	707076	HCYM5	MNS	1996-Present	1998-Present
Isabella	210602	3286E19	ISAM5	USFS / SUF	2001-Present	2001-Present
Itasca	211401	7070865	ITCM5	MNS	1998-Present	2007
Kabnam	210507	FA63E4C		NPS	1996-Present	1998-Present
Kelliher	210902	7070952	KDNM5	MNS	1997-Present	1999-Present
Kittson	210101	AAAE47	KITM5	MNS	2013-Present	2013-Present
Litchfield	214501	8379150	LFSM5	US FWS	2005-Present	2010- Present
Little Falls	213102	7070A0	LXLM5	MNS	1998-Present	2002-Present
Littlefork	210405	7070B3C	LITM5	MNS	1997-Present	1998-Present
Meander	210503	328713E	MEAM5	USFS / SUF	2002-Present	2002-Present
MN Valley	215601	837AA1	TS642	US FWS	2007-Present	2007-Present
Moose Lake	211803	7070C55	MZHM5	MNS	1996-Present	1998-Present

STATION NAME	WIMS ID	NESDIS ID	NWS ID	AGENCY	AVAIL DATA (WIMS)	AVAIL DATA (MESO)
Mora	213301	7070D6	JMRM5	MNS	1998-Present	1998-Present
Orr	210514	7070E3B	ORBM5	MNS	1997-Present	2007-Present
Redstone	216901	CA5273	RPPM5	NPS	2008-Present	2010-Present
Red Lake	210903	32A2EB9	RLNM5	BIA	9/2019-Present	9/2019-Present
Rice Lake	211703	8379067	RLKM5	US FWS	2005-Present	2010-Present
Roseau	210203	7070F0C	RNRM5	MNS	1996-Present	1998-Present
Saginaw	210511	707102B	SNWM5	MNS	1997-Present	1998-Present
Seagull	210709	3331F0B	SEAM5	USFS / SUF	1997-Present	1998-Present
Sherburne	214001	8376509	CSCM5	US FWS	1997-Present	1998-Present
Skibo	210517	AAB044		USFS / SUF	2015-Present	2015-Present
St. Croix	213403	AAC421		MNS	2012-Present	2012-Present

Appendix O MIFC Predictive Services and Intelligence Routine Procedures and Products

The main objective of Intel Duties is to provide up to date information and data to the Wildfire field workers and firefighters so they can make appropriate decisions and plans for prescribed burns and fighting fires.

Seasonal Schedule

- Winter: Freeze stations as temps drop
- Spring: Start up stations as temps rise
- Autumn: Annual maintenance and Cure Stations as criteria is met.

Specifics can be found in the MNCC Intelligence Standard Operating Procedures.

Daily Schedule

0800-0930

- Record precipitation amounts
- Create 24-hour accumulated precipitation map
- Create lightning map and a spreadsheet of lightning strikes detailed data
- Email rainfall amounts, maps and lightning maps and lightning strike data
- Post rainfall amounts to MNICS.org
- Check for new National SIT report (if not there, check back later) ~ SAVE
- SAVE EACC SIT report
- Weather from the DNR wildfire website
- Check email using Outlook 365
- If a Fire Behavior Report is available in the email, save and post to the DNR Fire page and MNICS.org website

0930-1000

- Copy and Save all current DNR area status reports
- Type up daily summary worksheet
- Update the daily DNR SIT report using the information from the worksheet

1015-1030

- Update website maps

1030-lunch

- Update FAMWEB SIT report with RX burn info
- (Email planned Rx to “Rx burn notice” group)

- Update DNR Rx burn database (work on database throughout the day)

1400-1430

- Edit state-of-the-weather (SOW) Observations in WIMS by 1430*** unless a RAWS transmits after that time
- If the thousand hour (TH) fuel moisture (FM) have any under 20, fill out the Thousand Hour Fuel form and email to the group. Upload as .pdf to MNICS.org
- Run a WIMS DIDX observed and forecasted report – Export-update website
- Make Observed and Forecasted fire maps and update DNR website

1500-1530

- Copy Canadian Indices and paste on the an Excel sheet
- Check Weather from the DNR wildfire website
- Go to DNR morning SIT report and get fire YTD totals (DNR Intranet)
- Go to MNICS sit report and get YTD totals then subtract the difference from DNR sit (DNR homepage)
- Update SIT report and post to website **finish before 1600** (FAMWEB)

1600

- Create the PM Brief and email to the MNCC Duty Officer group

Appendix P Document Change Log

It is expected that periodic changes, additions, and edits will occur to the MN FDOP, its supplemental plans, and appendices. In order to track those changes over time a log will be used.

Comments, suggestions, or other feedback can be directed to DNR Predictive Services Coordinator travis.verdegan@state.mn.us, or to the MNICS Prescribed Fire and Fuels Working Team.

Date	Source	Change	Date Approved by MNICS Taskforce
December 2020	Board of Directors	Version 1.0 Signed and Approved	December 2020