

# Fuels and Fire Behavior Advisory

## Minnesota's Forests and Grasslands

*Effective August 18<sup>th</sup> 2021 Valid for 14 Days*

### **Subject: Minnesota Drought Hits a Historic New Level D4 – Exceptional Drought**

**Discussion:** Highlighting the severity and longevity of the drought situation in MN is the fact that D4 – Exceptional Drought (the highest classification) has come to the drought monitor for the first time in the 21 years drought has been mapped this way. Periodic “wet” patterns have come and gone this summer, but they have at best brought a limited amount of relief and in many instances have come with high densities of lightning raising concerns for additional fire occurrence.

The fire environment has shown the effects of the drought as reflected by lowering water tables and drying soils to extremely low moisture levels. Many locations in MN have organic soil layers (peat) that have developed over the millennia to depths of multiple feet and fires have been burning deeply into these layers. The Oxcart fire from March 29<sup>th</sup> was recently found to still have burning pockets of peat raising concerns for extremely long holdovers and potential for burning through the winter.

Deep duff layers in forest fuels are holding lightning ignitions for weeks before being detected. A series of monitored fires burning just north of the Canadian border in the Quetico Provincial Park have continued burning actively despite seeing several rounds of rainfall over the course of the summer.

**Difference from normal conditions:** Fire occurrence so far this summer has been running 3 to 4 times the 10-year average for June and July. June had 228 fires (10-year average is 67) and July had 251 (10-year average 78). From August 1<sup>st</sup> – 15<sup>th</sup> 150 fires have been reported, the 10-year average for the entire month is 60.

Fire danger indices from the Canadian Forest Fire Danger Rating System (CFFDRS) and the National Fire Danger Rating System (NFDRS) have been setting and resetting new record maximums at many Remote Automated Weather Stations (RAWS). For instance, the CFFDRS Drought Code (DC), considered extreme at values of 360+ and typically averages 240 to 280, at many RAWS is 600 to 800 with some individual stations poised to reach above 800.

### **Concerns to Firefighters and the Public:**

- Increased ignitions are likely from lightning in forest fuels and human caused ignitions including agricultural harvesting operations in croplands and grass fuels.
- Deep seated ground fires in duff layers of forest fuels and organics soils common to lowland grasses will require intensive mop up and monitoring to ensure line security.
- Water from the air (aircraft or rainfall), while effective at slowing forward spread, will not secure the fire line for long durations without ground resource support.
- Early signs of fall (yellowing leaves and leaf drop) are showing in drought stressed vegetation. As this accelerates large quantities of newly available dead fuel will cover the landscape dramatically changing the fire environment for the worse.
- Extreme fire behavior, common under record setting conditions, will occur where fires, fuels, and weather elements (namely wind) align to create the worst conditions.

### **Mitigation Measures:**

- Staff resources adequately to deal with increased fire occurrence and advanced fire behavior including deep seated ground fires that require intensive long duration mop up periods.
- Discuss options, like mineral soil breaks using heavy equipment or indirect attack, to mitigate the amount of effort needed to create high levels of line security.
- Don't underestimate the potential for holdovers in duff and organic soils.
- Ensure firefighters adequately assess potential fire behavior daily and have trigger points for when to disengage
- Brief out of state resources on current and expected fire behavior. Familiarize them to the local fire environment and suppression tactics used in deep-seated ground fires.
- Discuss the limitations and mitigations for the use of lookouts in forests and shrublands with flat terrain.

# Fuels and Fire Behavior Advisory Minnesota's Forests and Grasslands

Effective August 18<sup>th</sup> 2021 Valid for 14 Days

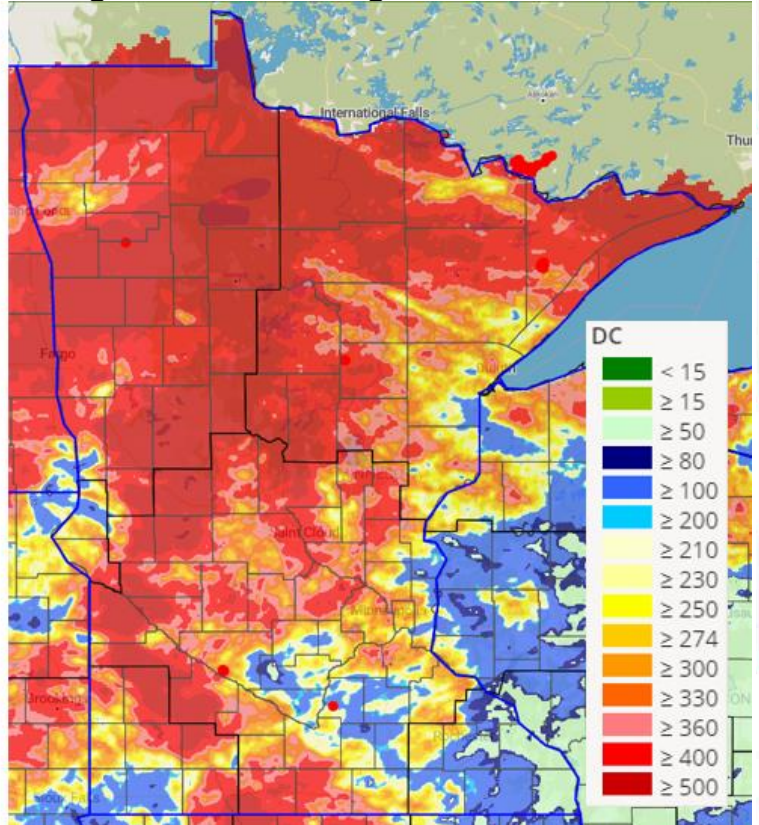
## Fire Whirls Over an Expanse of Burning Peat



## Fire Activity Picking Up On Border Fires



## Drought Code As of August 18<sup>th</sup>



**Area of Concern:** Minnesota, statewide, forest and grassland fuels

**Issued By:** Travis Verdegan, Predictive Services, MIFC, Grand Rapids, MN.