Fuels and Fire Behavior Advisory

Northwest Texas, western Oklahoma, southwest Kansas, southeastern Colorado and far eastern New Mexico

Date Advisory Effective – March 7, 2024

Subject: Abnormally wet conditions during the 2023 growing season resulted in above normal fine fuel loading across the Great Plains. Accelerated drying of these freeze-cured grasses triggered an outbreak of significant fires in late February, including the largest wildfire in Texas history. Periods of increased wildfire potential may continue to impact the region until consistent precipitation and warmer soil temperatures result in the lush growth of new grass.

Discussion: The above normal grass loading observed regionally requires less drying and only elevated fire weather to increase wildfire activity. Last year's grass crop has experienced drying, however winter precipitation induced localized greenup of cool season grasses. At the end of February, the impacts from accumulating snow across the Texas panhandle were erased within 48 hours, with fire returning to the landscape as very dry and breezy conditions redeveloped. Resistance to control may increase on windy, sunny and dry days, especially when it has been at least five days since a wetting precipitation event.

Difference from normal conditions: Grass loading is at least 115% of normal across large parts of the Great Plains, per data from the UNL's Grass-Cast, Observations from Smokehouse Creek, Windy Deuce and other large incidents in Texas and Oklahoma suggest that elevated to critical fire weather may result in extreme fire behavior and rates of spread over 5 mph. The Plains outbreak on 26-27 February occurred amid ERC-Y values near the 80th percentile, with Nelson 1-hour dead fuel moisture near 6%, 10-hour fuel moisture near 8% and 100-hour fuel moisture near 10%. Any sharp drying trend may quickly become problematic when cured fuels are exposed to fire-effective weather.

Concerns to Firefighters and the Public:

- Expect extreme to unprecedented fire growth and intensity. Flow aligned with terrain features may enhance wind speeds beyond what is forecast.
- Typical barriers to fire spread, like roadways, rivers and hardwood river bottoms have been ineffective at stopping fire progression on windy days.
- Heavier woody fuels have been supporting residual heat through moisture events and are potential sources for reignition as few as two days after wetting precipitation.
- Critical fire weather may be associated with: dry return flow behind departing high pressure, pre-frontal warm, dry and windy conditions to the west of eastward-moving drylines, warm and dry westerly downslope flow off the Southern Rockies and sharp wind shifts associated with dry cold fronts. Stronger cold fronts often accelerate southwards through the Plains ahead of schedule.

Above normal grass loading is evident in the Texas panhandle (courtesy of TAMFS).

Mitigation Measures:

- Prepare for the additional staffing and resources required by the increased workload from initial attack and mop-up.
- Wider than normal control lines may need to be constructed to reduce spotting. Using heavy equipment such as dozers and graders (maintainers) in tandem with engine support will improve the success of holding operations.
- Suppression difficulty and resistance to control – be flexible with your suppression strategy as the fire may outpace traditional fire suppression tactics. Fire managers should be prepared to support periods of more frequent fire occurrence, as well as complex, long-duration incidents.
- Stay alert for abrupt changes in fire weather and be prepared to respond quickly; be able to respond to wind shifts and unanticipated changes in direction of spread.

Issued By: Southern, Rocky Mountain, and Southwest Area decision support groups in coordination with state and federal partners.

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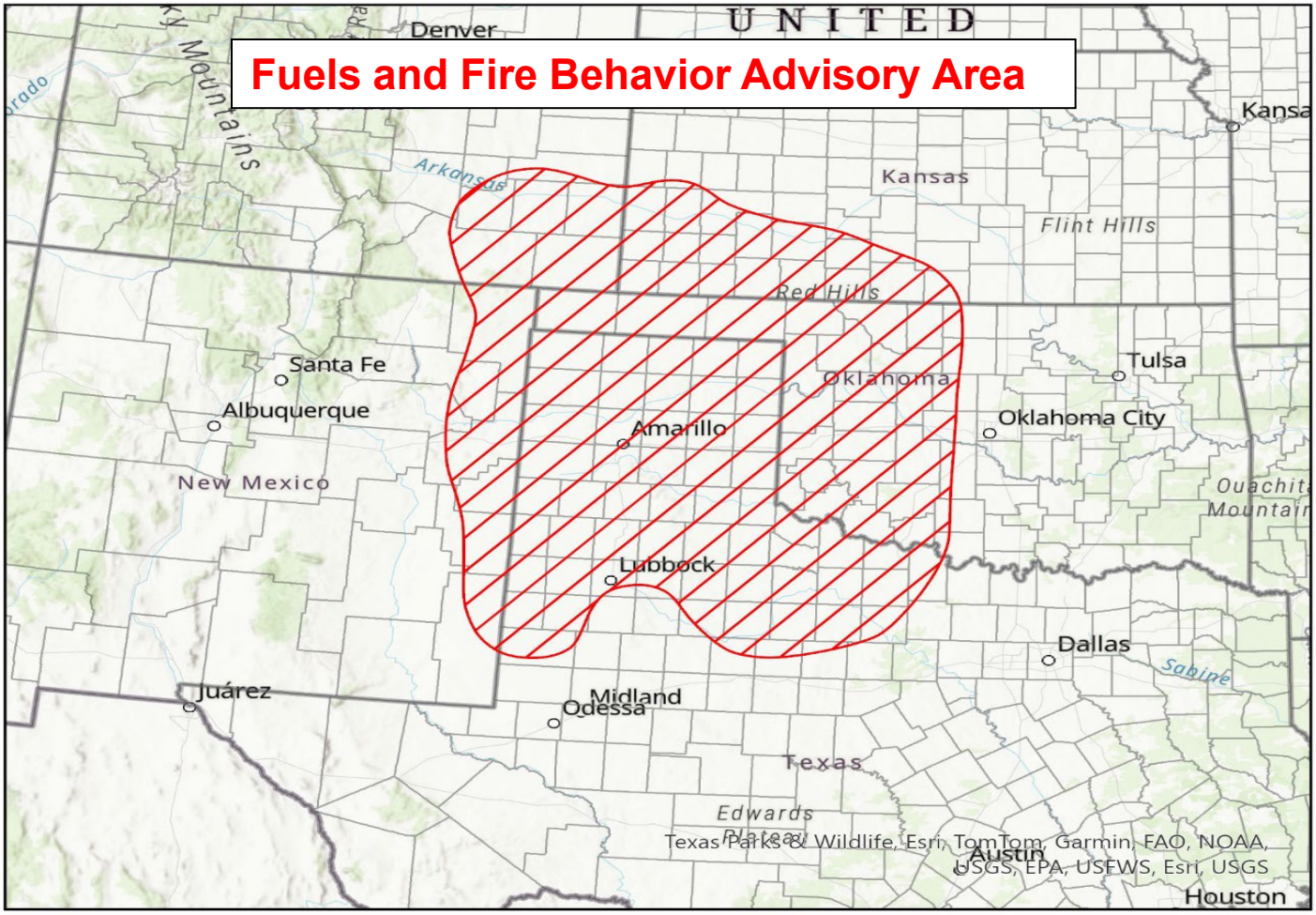

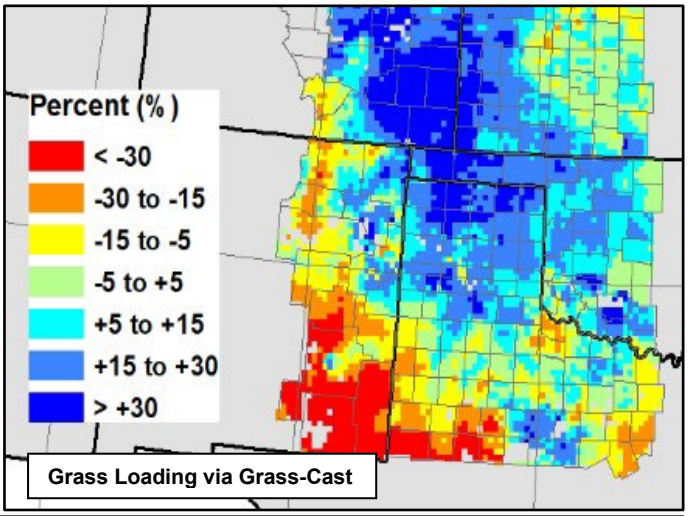

The Smokehouse Creek fire in Texas and Oklahoma burned in complex terrain with heavy grass loading (via Inciweb, left). A wet growing season in 2023 led to above normal grass loading in the Plains – expressed as % of 36-year average (via Grass-Cast, right).

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