## Weather for Brush Pile Burning

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#### Brush Pile Burning Objectives

- Burn the pile safely
- Burn the pile completely
- Keep the fire from moving away from the pile area

Weather – While we will not cover as much information in this workshop as we would in a prescribed burn school, we want you to:

- Understand why weather is important
- Understand the critical elements of weather
- Know where to get forecasts for burning
- Understand which elements of a forecast are important
- When to get a forecast and for what period

#### The Importance of Weather

Days before the burn

Determine a favorable day to burn
Moisture content of the larger fuels

Day of the burn

Safety

Days after the burn

Reduce the risk of having an ember start a larger fire

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### Past and Current Weather

#### •Affects on a Brush Pile

- -Fire Intensity.
- -Fire Behavior.
- -Effectiveness of pile burning
- -Personnel comfort and safety.
- -Keeping the fire from escaping beyond the brush pile.

#### Factors affecting brush pile burns

• Temperature

- Fuel Moisture Humidity
- Stability
- Wind

#### Temperature

• The warmer the temperature, the quicker the fuel will ignite.

#### Atmospheric Pressure

#### Low Pressure (L)

 Low pressure areas have less atmospheric mass above their location

#### High Pressure (H)

High pressure areas
 have more
 atmospheric mass
 above their location.

Weather maps use the reporting stations to plot the pressure values much like a topography map to find areas of low and high pressure.

#### Weather Maps

- •Begin watching these maps a week or more out so you will know where the low and high pressures are relative to your location.
- •If you have a low pressure (frontal boundary) moving quickly toward your location it should be monitored closely.



#### Dew Point Facts

 The dew point is one of the most reliable measures of atmospheric moisture



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#### **Dew Point and Moisture**



### **Relative Humidity**

- What does it mean for brush pile burning?
  - The amount of water in the dead fuel in the pile and in the surrounding dead or dormant vegetation.
  - More water in the dead fuel, the less it will burn.
  - Dead fuel responds over time to relative humidity.
    - Some fuel responds quickly (grass).
    - Other fuel may take a long time to respond (logs or slash).
  - Fuel Moisture greater than 40% greatly reduces the chance for a spot fire.

### Atmosphere Stability

- Very unstable air can cause extreme fire behavior and can be a very dangerous time to implement a prescribed burn.
- A burn NEEDS some instability. The prescription should be designed to account for any problems caused by the instability.

### Wind

- Wind combined with higher temperatures can increase drying of vegetation.
- Wind speed and direction has a direct influence on Fire Intensity.
  - Adds oxygen to increase fire temperature.
  - Dries vegetation in the pile.
- May cause long range spotting downwind.

#### Wind

- Wind over 15 mph can cause long range spotting
- Too little wind can cause vortices (whirlwinds) which can lift embers and carry them away from the burn pile.
- Wind speed and a constant direction is an important weather factor to consider on the day of the burn and for several days following the burn.
- Gusty wind days should be avoided.

#### Wind

# Surface Wind – 10 meters, 33 feet Wind speed used in TCEQ Outdoor Burning rules

#### Weather forecasts for Brush Pile Burning

- Where to get a forecast
- Know the critical elements that will help you safely burn a brush pile
- Know where to get forecasts and how to interpret them.
- Know which forecasts to get and when to get them.

## Types of Fire Weather Forecasts

- General Forecast
  - Temperature, rainfall, weather map.
- Point forecast general forecast for a smaller area (within 3 miles of a selected point.
- Fire Weather Forecast Watches/Red Flag warnings.
  - Low Rh, High winds, and low fuel moistures

#### General Forecast

- Daily and weekly forecast
- www.weather.com (Weather Channel)
- Local TV news/weather
- Local radio weather
- Many different web based weather sites.

Why General Forecasts May <u>Not Fit Your Site</u>

- They tend to average conditions over a large area.
- Area issued for a predetermined time period.
- May not stress important elements.
- May not fit local topography.

#### Point Forecast

- Applicable to your location (within a 3 mile area).
- Daily and weekly forecast.
- Temperature, rainfall probabilities, wind, speed and direction.
- Other weather conditions at nearest reporting station.
- Forecast.weather.com

#### Weather Forecast Sites

- There are many weather forecast sites on the internet.
- For brush pile burning, a site with access to a point forecast, and a fire weather forecast is ideal.

### Weather Forecast Site

- Forecast.weather.gov (one stop shop).
  - General weather forecast
  - Point weather forecast
  - Spot forecast
  - Fire weather forecast
  - Weather map
  - Radar map
  - Hourly weather forecasts
  - And lots of other weather information





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#### Smoke

- Objectives are to minimize impact
- Probably not a problem unless a large number of big piles
- Burn during days of good ventilation rates
- Category day is a good measure of smoke ventilation
  - Found on the fire weather site for your county
    - <u>Category Day Guideline</u>
    - 1 No Burning
      2 No Burning until inversion has lifted
      3 Daytime only
      4 Anytime
      5 Excellent smoke dispersion

#### Smoke

• Inversions

- Low mixing height sometimes just few hundred feet
- Has the potential to keep the smoke close to the ground
- Smoke can actually flow along creeks and rivers to cities
- Can create an unhealthy situation with smoke sensitive people

#### Weather

- One of the most important factors to consider when burning brush piles
- The more you understand weather the better
- Know where to get weather forecasts and use them
- Become an amateur weather geek!