PRESCRIBED BURNING GUIDELINES

Before Executing Burn

1. County Forester and Burn Boss will analyze risk and determine if the prescribed burn can be conducted safely.

2. County Forester will initiate the **PRESCRIBED BURNING CONTRACT,** which must be signed by the landowner and the District Forester. The landowner is given a copy and the original is retained in the County in the landowner's file.

3. A **BURN PLAN** complete with **MAP** of the burn area will be prepared by the Burn Boss in consultation with the County Forester, and will consider these factors:

    A. Objective of the burn.
    B. Season of year as it relates to objective.
    C. Type of fire as it relates to objective.
    D. Weather conditions as related to safety and the environment.
    E. Review personnel burning assignments and equipment (PPE, dozers, ATV, etc.).
    F. Security and safety regulations—fire lines, smoke on highways, proximity to populated areas, and other hazards.
    G. Voluntary Smoke Management Guidelines including preparing a smoke trajectory map.
    H. Burn Day Checklist. Determine "Recommended Range" on Burn Day Checklist.

4. District Forester will review, approve, and sign the Burn Plan.

5. Fire lines will be constructed.

6. Adjoining landowners will be notified.

7. Coordinate date and time of burn with District Forester, dispatcher, pilots, and fire departments.

Executing the Burn

1. The Burn Boss will be in charge of the prescribed burn. The Burn Boss will be responsible for all operations and will consider the following:

    A. The local weather forecast as it relates to fire behavior and environmental impact.
    B. Notification of appropriate fire department and AFC Dispatch.
    C. Review personnel burning assignments and equipment (PPE, dozers, ATV, etc.).
    D. Review Burn Day Checklist.
    E. Setting and observing a test burn to determine expected fire behavior.
    F. Execute burn to meet planned objectives.
    G. Temperature, relative humidity, wind speed, and wind direction will be taken hourly with the belt weather kit during the prescribed burn.
    H. The Burn Boss will ask for additional assistance if fire behavior conditions worsen.
    I. Smoke Management Guidelines will be followed. See Arkansas Voluntary Smoke Management Guidelines.

1/3

PRESCRIBED BURNING GUIDELINES

Executing the Burn, continued

2. The District Forester will be apprised of all planned prescribed fires.

3. If a prescribed burn escapes, it is then an uncontrolled wildfire and should be contained quickly and efficiently. Additional suppression resources should be considered.

4. The minimum size burning crew, including the Burn Boss, will be three AFC employees. A minimum of one fire plow unit will be on site. Radio contact with all personnel on the fire, dispatcher or district office will be maintained throughout the burn.

Upon Completion of Burn

1. Burns involving heavy fuels will be checked during the night, the following day and as often thereafter as is necessary to ensure the fire does not escape or smoke does become a problem. Mop-up standards will equal or exceed those for wildfires.

2. The County Forester will evaluate the burn as soon after the fire as possible and will consider the following:

   A. Objectives met
   B. Mortality or damage of desirable trees
   C. Any escape
   D. Recommendations for improvements

3. The County Forester will evaluate the burn 3 to 6 months after burn and will consider:

   A. Damage to desirable trees (crown scorch, bole damage, etc.)
   B. Control of undesirable species
   C. Soil movement or other adverse effects
   D. Recommendations for improvements

4. Immediately after the burn, the County Forester will enter cost data on the Prescribed Burn Cost Data sheet.

5. The Burn Plan will remain in the County in the landowner's file.

2/3

Billing

1. After the burn, the County will submit to the District Office an invoice for the landowner and a copy of the invoice for AFC records. The actual cost of the prescribed burn as calculated on page 6 of the Burn Plan will be entered only on the AFC copy of the invoice.

2. The District will send the landowner a copy of the invoice for payment.

3. When the District receives payment, the District will execute a receipt and mail the yellow copy to the landowner. The District will send one copy to the county office to be placed in the landowner's file. The District will forward a copy of the invoice with payment and white copy of the receipt to Little Rock. The District will keep the original invoice and copy of the receipt and payment on file.

ARKANSAS FORESTRY COMMISSION
PRESCRIBED BURNING CONTRACT

DISTRICT _____

The Arkansas Forestry Commission and _____
(landowner or agent), agree that the Commission shall conduct the work described below in
Sec. _____ Twp _____ Range _____, _____ County.

A. The Commission agrees:

1. to establish fire lines as necessary and to burn, by prescription, _____ acres at $18.00 per acre with a $250.00 minimum charge.

2. to relieve the landowner of liability for any loss or injury to Commission personnel and equipment due to Commission actions while carrying out the work covered by this agreement.

B. The landowner agrees:

1. to assume responsibility for all boundary lines.

2. to relieve the Commission and its personnel of liability from any accidental losses, injury or damages to the landowner's property and improvements while carrying out this agreement.

3. to pay the Commission for all work covered by this agreement within thirty days after receiving an invoice.

C. It is mutually agreed that the date and time of work will be at the discretion of the Commission. In the event either party decides to cancel the agreement, the other party must be notified in writing.

The parties enter into this contract this _____ day of _____, _____.
(Day) (Month) (Year)

_____ _____
Landowner District Forester

PRESCRIBED BURNING GUIDELINES

Before Executing Burn

4. County Forester will analyze risk and determine if the prescribed burn can be conducted safely.

5. County Forester will initiate the **PRESCRIBED BURNING CONTRACT,** which must be signed by the landowner and the District Forester. The landowner is given a copy and the original is retained in the County in the landowner's file.

6. A **BURN PLAN** complete with **MAP** of the burn area will be prepared by the Burn Boss and will consider these factors:

   I. Objective of the burn.
   J. Season of year as it relates to objective.
   K. Type of fire as it relates to objective.
   L. Weather conditions as related to safety and the environment.
   M. Review personnel burning assignments and equipment (PPE, dozers, ATV, etc.).
   N. Security and safety regulations—fire lines, smoke on highways, proximity to populated areas, and other hazards.
   O. Voluntary Smoke Management Guidelines including preparing a smoke trajectory map.
   P. AFC Burn Day Checklist. Determine "Recommended Range" on Burn Day Checklist.

7. District Forester will review, approve, and sign the Burn Plan.

8. Fire lines will be constructed.

9. Adjoining landowners will be notified.

10. Coordinate date and time of burn with District Forester, dispatcher, pilots, and fires departments.

Executing the Burn

2. The Burn Boss will be in charge of the prescribed burn. The Burn Boss will be responsible for all operations and will consider the following:

   J. The local weather forecast as it relates to fire behavior and environmental impact.
   K. Notification of appropriate fire department and AFC Dispatch.
   L. Review personnel burning assignments and equipment (PPE, dozers, ATV, etc.).
   M. Review Burn Day Checklist.
   N. Setting and observing a test burn to determine expected fire behavior.
   O. Execute burn to meet planned objectives.
   P. Temperature, relative humidity, wind speed, and wind direction will be taken hourly with the belt weather kit during the prescribed burn.
   Q. The Burn Boss will ask the District Office for additional assistance if fire behavior conditions worsen.
   R. Smoke Management Guidelines will be followed. See Arkansas Voluntary Smoke Management Guidelines.

PRESCRIBED BURNING GUIDELINES

Executing the Burn, continued

3. The District Forester will be apprised of all planned prescribed fires.

4. If a prescribed burn escapes, it is then an uncontrolled wildfire and should be contained quickly and efficiently. Additional suppression resources should be considered.

5. The minimum size burning crew, including the Burn Boss, will be three AFC employees. A minimum of one fire plow unit will be on site. Radio contact with all personnel on the fire, dispatcher or district office will be maintained throughout the burn.

Upon Completion of Burn

4. Burns involving heavy fuels will be checked during the night, the following day and as often thereafter as is necessary to ensure the fire does not escape or smoke does become a problem. Mop-up standards will equal or exceed those for wildfires.

5. The County Forester will evaluate the burn as soon after the fire as possible and will consider the following:

   E. Objectives met
   F. Mortality or damage of desirable trees
   G. Any escape
   H. Recommendations for improvements

6. The County Forester will evaluate the burn 3 to 6 months after burn and will consider:

   E. Damage to desirable trees (crown scorch, bole damage, etc.)
   F. Control of undesirable species
   G. Soil movement or other adverse effects
   H. Recommendations for improvements

7. Immediately after the burn, the County Forester will enter cost data on the Prescribed Burn Cost Data sheet.

8. The Burn Plan will remain in the County in the landowner's file.

PRESCRIBED BURNING GUIDELINES

Billing

1. After the burn, the County will submit to the District Office an invoice for the landowner and a copy of the invoice for AFC records**.** The actual cost of the prescribed burn as calculated on page 6 of the Burn Plan will be entered only on the AFC copy of the invoice.

2. The District will send the landowner a copy of the invoice for payment.

3. When the District receives payment, the District will execute a receipt and mail the yellow copy to the landowner. The District will send one copy to the county office to be placed in the landowner's file. The District will forward a copy of the invoice with payment and white copy of the receipt to Little Rock. The District will keep the original invoice and copy of the receipt and payment on file.

ARKANSAS FORESTRY COMMISSION
PRESCRIBED BURNING CONTRACT

DISTRICT _____

The Arkansas Forestry Commission and _____ (landowner or agent), agree that the Commission shall conduct the work described below in Sec. _____ Twp _____ Range _____, _____ County.

D. The Commission agrees:

1. to establish fire lines as necessary and to burn, by prescription, _____ acres at $18.00 per acre with a $250.00 minimum charge.

2. to relieve the landowner of liability for any loss or injury to Commission personnel and equipment due to Commission actions while carrying out the work covered by this agreement.

E. The landowner agrees:

4. to assume responsibility for boundary lines.

5. to relieve the Commission and its personnel of liability from any accidental losses, injury or damages to the landowner's property and improvements while carrying out this agreement.

6. to pay the Commission for all work covered by this agreement within thirty days after receiving an invoice.

F. It is mutually agreed that the date and time of work will be at the discretion of the Commission. In the event either party decides to cancel the agreement, the other party must be notified in writing.

The parties enter into this contract this _____ day of _____, ____.
(Day) (Month) (Year)

_____ _____
Landowner District Forester

Date:_____

ARKANSAS FORESTRY COMMISSION
PRESCRIBED BURN
INVOICE

MAIL CHECK OR
MONEY ORDER TO: _____

_____

_____

_____

BILLED TO: _____

_____

_____

_____

PRESCRIBED BURN SERVICES **$18/acre ($250 minimum)**

TOTAL ACRES _____

TOTAL COST _____

Agency Use: Actual Cost $_____

ARKANSAS FORESTRY COMMISSION
PRESCRIBED BURN PLAN

1. UNIT INFORMATION

Landowner's name and phone#:_____
Tract size (acres):_____
Location (S/T/R):_____
County:_____

2. OFFICIAL NOTIFICATIONS BEFORE BURN

AFC Dispatch: 1-800-830-8015
Sheriff's office (phone #):_____
Fire Dept. (name & phone #):_____

3. NEIGHBOR NOTIFICATIONS (within ¼ mile)

Name & Phone:_____
Name & Phone:_____
Name & Phone:_____
Name & Phone:_____
Name & Phone:_____

4. PRESCRIBED BURN OBJECTIVE

☐ Natural Regeneration site prep

Artificial Regeneration site prep
☐ Windrows
☐ Slash
☐ Other (define)_____

☐ Undesirable Species

☐ Hazard Reduction

☐ Wildlife Habitat

Other burn objectives:_____
_____

PREPARED	**APPROVED**
Burn Boss:_____	District Forester:_____
Date:_____	Date:_____

5. MANAGING THE BURN (Describe how each of the following will be addressed)

Fireline preparation:

Firing techniques:

Fire sensitive areas (adjacent young pine plantations, buildings, etc.):

Smoke sensitive areas (smoke screening map prepared on topographic and/or county road that will identify roads, drainages, and residences):

Contingencies (include safety zones, escape routes, escape response procedures):

BURNING ASSIGNMENTS

Burn Boss:_____

INSTRUCTIONS TO IGNITION PERSONNEL

Ignition Person	Instructions
1)	
2)	

DIVISION ASSIGNMENT

Division A

Crew Member	Assignment

Division B

Crew Member	Assignment

Division C

Crew Member	Assignment

Division D

Crew Member	Assignment

Division E

Crew Member	Assignment

Burning Assignments, continued

SPECIAL ASSIGNMENT

Crew Member	Division Location & Assignment

EQUIPMENT ASSIGNMENT BY DIVISION

	A	B	C	D	E	F
PPE						
Plow						
Torch						
Rakes						
Fuel						
Water						
Food						
Radios						
Extra Radio Battery						
ATV						
Chainsaw						
First Aid Kit						

Provide for the prescribed burn crew a map with physical and topographic features and division assignment boundaries. Designate safety zones, drop points, and what equipment and materials are located at these drop points.

BURN DAY CHECKLIST

Date of Burn:_____

Parameters	Do Not Burn	Recommended Range	Forecasted Weather Conditions
Date of Burn			
Air Temp (°F)			
Relative Humidity (%)	< or = 25%		
Prob. of Ignition	> or = 80%		
Mid Flame Windspeed			
Wind Direction			
Smoke Category Day	1 or 5		

CHECK (√) AND BURN ONLY IF ALL ITEMS ARE ADDRESSED:

- ☐ Burning assignments
- ☐ Map for crew
- ☐ Extra precautions for fire sensitive areas
- ☐ Smoke sensitive areas not threatened
- ☐ Official notifications made
- ☐ Neighbor notifications made
- ☐ Personal Protective Equipment in use
- ☐ Equipment assigned to divisions on site and available
- ☐ Transport truck(s) and other equipment in a safe area
- ☐ Fireline width adequate
- ☐ Forecasted temperature within recommended range
- ☐ Forecasted relative humidity > 25%
- ☐ Forecasted probablility of ignition < 80%
- ☐ Forecasted mid flame wind speed within recommended range
- ☐ Forecasted wind direction as recommended
- ☐ Forecasted smoke Category day 2, 3, or 4

Hourly Belt Weather Recording During the Burn

	1	2	3	4	5	6	7	8
Temp								
RH								
Wind speed								
Wind direction								

PRESCRIBED BURN COST DATA

Burning
Fuel _____ Gals. @_____ = $_____

Tractor
Hours_____ @ $21.50/hr =$_____
_____ @ $21.50/hr =$_____
_____ @ $21.50/hr =$_____
_____ @ $21.50/hr =$_____

Man Hours by Job Title
Ranger I- hours_____ @ $7.63/hr =$_____
Ranger II-hours_____ @ $10.37/hr =$_____
Ranger III-hours_____ @ $13.25/hr =$_____
Forester-hours_____ @ $16.64/hr =$_____

Mileage:
Auto
Miles_____ @ .29 cents/mile =$ _____
_____ @ .29 cents/mile =$ _____
_____ @ .29 cents/mile =$ _____
_____ @ .29 cents/mile =$ _____

Plow Truck
Miles_____ @ .35 cents/mile =$ _____
_____ @ .35 cents/mile =$ _____
_____ @ .35 cents/mile =$ _____
_____ @ .35 cents/mile =$ _____

TOTAL COST $_____

COST PER ACRE $_____

PRESCRIBED BURN EVALUATION

INITIAL EVALAUTION (immediately after burn)

1. Date evaluated:_____
2. Objectives met: Y/N (if no explain)_____

   _____
3. Mortality or damage of desirable trees: Y/N (if yes explain)_____

   _____
4. Any escape: Y/N (if yes explain)_____

   _____
5. Recommendations for improvements (breakovers, smoke problems, etc.)_____

   _____

Evaluator:_____

Title:_____

FUTURE EVALUATION (within 3-6 months)

1. Date evaluated:_____
2. Damage to desirable trees (crown scorch, bole damage, etc.):_____

   _____
3. Control of undesirable vegetation:_____

   _____
4. Soil movement or other adverse effects:_____

   _____
5. Recommendations for improvements:_____

   _____

Evaluator:_____

Title:_____

TO DETERMINE SMOKE CATEGORY DAY

Perform the burn when atmospheric conditions are favorable enough to disperse the smoke.

The smoke category day represents a range using the transport wind speed (miles per hour) and the mixing height (feet) (Table 1). The National Weather Service measures the transport windspeed and mixing height each morning and a prediction is made for the afternoon by 8:00 a.m. each day. The predicted afternoon mixing height and transport wind speed will be used by the AFC to calculate the category day.

SMOKE DISPERSAL CATEGORIES FOR PRESCRIBED BURNING

CATEGORY DAY	GUIDELINES
1	No burning.
2	No burning until dry bulb temperatures reach the same temperature given for 1700 mixing height. Fire should be substantially burned out by 4:00 p.m.
3	Daytime burning only when dry bulb temperatures reach the same temperature given for 1700 mixing height.
4	Burning anytime. For night burns, use backing fires with surface wind speeds greater than 4 mph.
5	"Unstable" and windy. No burning

Mixing height represents the top of the atmospheric volume available for dispersion and acts as a lid to trap smoke beneath it. At this height, airmass stability is strong enough and deep enough to inhibit further upward transport of smoke. With higher mixing heights, smoke concentrations will be less – especially at long distances from the fire. Mixing height is given in feet, and heights of less than 1,700 feet are often associated with air pollution.

Transport windspeed is the arithmetic average of all windspeeds within the mixing layer, including surface windspeed. Windspeeds usually increase with height, and smoke concentrations usually decrease as transport windspeed increases. Transport windspeed is given in miles per hours (mph), and windspeeds less than 7 mph indicate stagnant conditions which often result in air pollution.

Table 1. Relationship between category day, transport wind speed (miles per hour), and mixing height (feet). Exercise extra caution with high transport wind speeds and low mixing height, or low transport wind and high mixing height. These conditions can cause smoke dispersion and burn behavior problems.

Transport Wind (m.p.h.)	**CATEGORY DAY** **Mixing Height (feet)**														
	500	**1000**	**1500**	**2000**	**2500**	**3000**	**3500**	**4000**	**4500**	**5000**	**5500**	**6000**	**6500**	**7000**	**7500**
7	1	1	1	1	2	2	2	2	3	3	3	3	3	3	3
8	1	1	1	2	2	2	2	3	3	3	3	3	3	3	4
9	1	1	1	2	2	2	3	3	3	3	3	3	3	4	4
10	1	1	2	2	2	3	3	3	3	3	3	4	4	4	4
11	1	1	2	2	2	3	3	3	3	3	4	4	4	4	4
12	1	1	2	2	3	3	3	3	3	4	4	4	4	4	4
13	1	1	2	2	3	3	3	3	3	4	4	4	4	4	4
14	1	1	2	2	3	3	3	3	4	4	4	4	4	4	4
15	1	2	2	3	3	3	3	4	4	4	4	4	4	4	4
16	1	2	2	3	3	3	3	4	4	4	4	4	4	4	5
17	1	2	2	3	3	3	4	4	4	4	4	4	4	5	5
18	1	2	2	3	3	3	4	4	4	4	4	4	4	5	5
19	1	2	2	3	3	3	4	4	4	4	4	4	5	5	5
20	1	2	3	3	3	4	4	4	4	4	4	5	5	5	5

TO DETERMINE PROBABILITY OF IGNITION (PERCENT)

DEFINITION: <u>Probability of Ignition-</u> A rating of the probability that a firebrand (glowing or flaming) will cause a fire, if it lands on receptive fuels. It is calculated from air temperature, fuel shading, and fuel moisture.

STEP 1: OBTAIN THE FOLLOWING SITE DATA FOR DETERMINING DEAD FUEL MOISTURE:

Time of day
Month
Dry bulb temperature
Relative Humidity
Aspect (N, S, E, W, Level)
Percent slope
Exposure of fine dead fuels to sun or not

GO TO STEP 2

STEP 2: CONSIDER DAY OR NIGHT CONDITIONS:

a. Daylight hours (0800-1959). **GO TO STEP 3**
b. Nighttime hours (2000-0759). **GO TO STEP 7**

STEP 3: DETERMINE REFERENCE FUEL MOISTURE FROM DRY BULB TEMPERATURE AND RELATIVE HUMIDITY USING TABLE 3A.

GO TO STEP 4

STEP 4: CONSIDER EXPOSED OR SHADED FUEL CONDITIONS:

a. At least 50% of fine dead fuels are exposed to sun. Use "Clear and/or no canopy" portions on tables 3B-3D.
b. At least 50% of fine dead fuels are shaded from clouds or canopy.

GO TO STEP 5

STEP 5: DETERMINE FUEL MOISTURE CORRECTION VALUE CONSIDERING MONTH, TIME OF DAY, ASPECT, AND PERCENT SLOPE:

a. May, June, July—use table 3B.
b. February, March, April, August, September and October-use table 3C.
c. November, December, January—use table 3D.

GO TO STEP 6

STEP 6: DETERMINE DEAD FUEL MOISTURE CONTENT (DAYTIME) BY ADDING CORRECTION VALUE (STEP 5) TO REFERENCE FUEL MOISTURE (STEP 3). DETERMINE PROBABILITY OF IGNITION USING TABLE 6D.

END

STEP 7: DETERMINE DEAD FUEL MOISTURE CONTENT (NIGHTTIME) FROM DRY BULB TEMPERATURE AND RELATIVE HUMIDITY USING TABLE 3E. DETERMINE PROBABILITY OF IGNITION USING TABLE 6D.

END