

Burn Plan

	Print Name	Signature	Date
Burn Plan Prepared by:			
Burn Boss:			

Signatures required prior to ignition; (Preparer=Agency Employee, Reviewer=Qualified Burn Boss, Approver=Agency Administrator/Designee, Burn Boss=On-site Burn Boss)

Burn Boss Qualification: RXB3 RXB2 TN Burn Manager **CPBM #:**
RX Complexity Type: Low (Type 3) Moderate (Type 2) **Burn Permit #:**

Description of Prescribed Fire Area

Burn Location			
Landowner Name:	Email:	Phone#:	
Address:	Lat:	Long:	
	Unit Location on Property:		
Physical Description			
Unit Acreage:	Slope: 0-25% <input type="checkbox"/> 26-40% <input type="checkbox"/> 41-55% <input type="checkbox"/> 56-75% <input type="checkbox"/> 76+% <input type="checkbox"/>	Aspect:	South/Flat <input type="checkbox"/> North <input type="checkbox"/> East <input type="checkbox"/> West <input type="checkbox"/> Ridgetop <input type="checkbox"/>
Elevation (feet):			
Fuels/Vegetation Description			
Fuels:	Short Grass (1ft) <input type="checkbox"/> Tall Grass (2.5 ft) <input type="checkbox"/> Brush (2 ft) <input type="checkbox"/> Timber (litter/understory) <input type="checkbox"/> Hardwood Litter <input type="checkbox"/> Pine Litter <input type="checkbox"/> Slash <input type="checkbox"/> Other (explain) _____	Burn Season: Growing <input type="checkbox"/> Dormant <input type="checkbox"/>	
Unique Features, Natural Resources, Values at Risk (name and location of structures, utilities, fences, livestock, protected areas, T&E species)			
Inside the Unit:			
Outside the Unit:			
Previous Treatments (if any)			
Type/Date/Result:			

Prescribed Burn Justification (goals, objectives, rationale, purpose)

Resource Goals	
<p>General (check all that apply):</p> <ul style="list-style-type: none"> <input type="checkbox"/> Warm Season Grass Management <input type="checkbox"/> Warm Season Grass Site Prep <input type="checkbox"/> Cool Season Grass Management <input type="checkbox"/> Woody Encroachment Management <input type="checkbox"/> Brush Management <input type="checkbox"/> Promote Species Diversity <input type="checkbox"/> Improve Forage Quality <input type="checkbox"/> Wildlife Habitat Improvement <input type="checkbox"/> Forest Stand Improvement <input type="checkbox"/> Tree Planting Site Prep <input type="checkbox"/> Fuel Reduction <input type="checkbox"/> Other___ 	<p>Specific:</p>
Prescribed Fire Objectives	
<ul style="list-style-type: none"> <input checked="" type="checkbox"/> Complete a safe fire operation with no injuries/adverse effects to personnel and the public <input type="checkbox"/> Top-Kill live woody vegetation less than 2" basal diameter <input type="checkbox"/> Consume available fine fuels <input type="checkbox"/> Reduce Invasive species <input type="checkbox"/> Provide training opportunities where appropriate <input type="checkbox"/> Other (specify)_____ 	

Prescription

Narrative	
<p>In order to meet the prescribed fire goals and objectives; weather, environmental, and fire behavior conditions must meet specific criteria prior to the start of, and during, fire operations. The parameters below represent the broadest possible conditions that will allow for a successful burn. However, it is important to note that conditions at the edge of each range may compound or mitigate each other. Low humidity and high wind speeds on the same day may pose safety and containment problems, while both are still within the acceptable range. Conversely, a burn could be implemented and meet objectives with higher winds if humidity levels are also high. Empirical evidence and judgement may be utilized to further calibrate prescription within parameters.</p>	
Parameters	
Weather Conditions	Acceptable Range
Temperature (°F)	
Relative Humidity (%)	
Wind Speed Surface (mph)	
Wind Speed Eye Level (mph)	
Wind Direction	
Transport Wind Speed (mph)	
Transport Wind Direction	
Mixing Height (ft)	>1700

Environmental Conditions (*use if relevant to fuel model)	Acceptable Range
1 Hour Fuel Moisture (%)	
10 Hour Fuel Moisture (%)	
* 100 Hour Fuel Moisture (%)	
Burning Index (BI)	
Days Since Last Rain	
Keetch-Byram Drought Index (KBDI)	
Past/Current/Forecast weather and environmental conditions are available at Fire Weather Intelligence Portal	
Additional Considerations	
Preparedness Level (Area GACC)	≤4

Scheduling

Ignition Time Frame
Approximate Date Range:
Project Duration: Most burns typically last tow burning periods, beginning ignition early to late morning and ceasing ignition by early to late afternoon. Day two consists primarily of monitoring. Some interior burning of pockets or residual smoke may continue into the evening of day one. All burns will be monitored until declared out by the Burn Boss
Constraints (rationale for not burning): Fire Weather Watch or Red Flag Warning, Burn Ban in place, outside of Prescription parameters, no permit issuance, or conflicts with other management activities.

Pre-burn Considerations

Firebreaks			
Type (select all that apply): <input type="checkbox"/> Plow or Blade <input type="checkbox"/> Mow <input type="checkbox"/> Wet <input type="checkbox"/> Natural <input type="checkbox"/> Manmade Road <input type="checkbox"/> Other _____	Location (describe line type and distance related to unit boundary):		
Method and Frequency for Obtaining Weather			
A fire weather forecast will be obtained prior to ignition. On-site weather observations will be taken prior to ignition and during burn operations with documented observations every hour at minimum. Weather documentation resources are on page 13. If possible, submit a Spot Forecast Request . Spot forecasts are maintained by the Weather Service in perpetuity for retrieval at any future time and may include smoke modeling on request.			
Notifications (should be made prior to and upon completion of burn)			
Names	Phone #	Name	Phone #
FD:		Neighbor 1:	
FD:		Neighbor 2:	
LE:		Other:	
TDF:		Other:	

Organization and Equipment

Personnel			
<p>Between planning the prescribed fire and declaring the fire out, three distinct phases occur. These phases are 1) ignition and holding, 2) holding and monitoring, and 3) monitoring. Ignition and holding require a Burn Boss and ignition/holding personnel. Each phase beyond ignition and holding are step down organizations and require less personnel at each phase determined by the Burn Boss. An agency representative or designee(s) can do monitoring. The organization chart at the end of this template may be used as a guide to identify positions needed. The numbers/organization of the chart may need to be adjusted depending on the size and/or complexity of the burn. One person can hold more than one position on the organization chart. The Burn Boss will complete an organization chart and/or ICS 214 for the prescribed fire and include with the post-burn documentation.</p>			
<p>Crew Size (minimum # of personnel required for ignition and holding):</p>			
Minimum Equipment & Supplies			
Type	Number	Type	Number
Pumper/engine		Backpack Pumps (bladder bags)	
UTV w/sprayer		Hand Tools (assortment)	
ATV w/sprayer		Drip Torch	
ATV or UTV w/o sprayer		Drip Torch Fuel (gallons)	
Dozer/Tractor Plow		Radios (handheld)	
Other: Local VFD to slow traffic on Highway		Belt Weather Kit/Kestrel	
		Smoke/Prescribed Fire Signs	
		Other: Terra-Torch	

Communication

Radio Frequencies (*required)								
*Channel Name	RX FREQ	CG	NAC	TX FREQ	CG	NAC	BW	ASSIGNMENT
Important Phone Numbers (those not already stored in device)								
Position	Name	Phone #	Position	Name	Phone #			
1.)			4.)					
2.)			5.)					
3.)			6.)					

Public and Personnel Safety

Personnel Safety

Job Hazard Analysis (JHA): JHA has been included to assist with identifying and mitigating safety hazards associated with prescribed burning. Safety hazards unique to a specific burn unit should be identified below as well as the measures that need to be taken to reduce the hazards.

Additional Safety Hazards Not listed in JHA:

Mitigation Measures to Reduce Hazards: Employ LCES during prescribed fire activities. Avoid wildlife and provide space for them to move out of the way if possible. Recognize and avoid troublesome vegetation and have line personnel be aware of any allergies. Assure fire apparatus and line personnel have fluids to remain hydrated. Assure all equipment is serviced and functional prior to ignition. Assure designated water handling equipment is running during ignitions. Assure only qualified operators operate ATVs. Rotate out personnel from heavy smoke areas as needed. Restrict unauthorized access to burn area. Brief Personnel on elements identified in JHA.

Emergency Medical Procedures

<p>Injury: EMTs and anyone trained in CPR, First Aid, or AED operation will be identified at the briefing. The location of first aid/trauma kits, AEDs, and other similar medical equipment will also be identified during the briefing.</p>	<p>Emergency: If a medical emergency takes place, the Burn Boss should be immediately notified and told the nature of the emergency. The Burn Boss should: <ol style="list-style-type: none"> 1. Obtain clear patient assessment and location. 2. Initiate 911, establish on scene care provider. 3. Identify transportation needs. 4. Document all information. </p>	<p>Evacuation: Injured personnel will be transported, if possible, along the perimeter of the burn unit to the nearest road/access point. If evacuation by air is necessary, the Burn Boss will coordinate with the emergency responders to determine the best spot for a landing zone.</p>
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Is it serious or non-emergency? If serious announce over the radio. Declare "Medical emergency, please clear the air." Provide burn boss/dispatch with type of injury, # of people injured, and basic vital signs. Utilize EMT's and first responders to stabilize and comfort the patient(s). For minor injuries, transport to the doctor via state vehicle(s) and notify Burn Boss of destination, ETA and "Non-emergency" if so appropriate. If helicopter is used a minimum of 100' x 100' helispot is needed and notify dispatch of any hazards (power lines).

Nearest Medical Emergency Facilities

Name	Address	Phone #	Ground Time	Air Time

Test Fire

Planned Location
A test fire should be initiated on the downwind portion of the burn unit in representative fuels nearest the proposed blacklining anchor point. Exact location will be determined by the Burn Boss based on the on-site weather observations the day of the burn. Test fire results will be noted within the test fire results section on page 13 of "Burn Day Resources".

Ignition Plan

Techniques, Sequences, Patterns	
<p>Procedure: The Burn Boss will determine the ignition strategy and sequence of fire activities on the day of the burn based on the observed and forecasted weather and fuel conditions. The selected firing strategy will be represented at the pre-burn briefing. The Burn Boss (or Firing Boss, if utilized) shall coordinate all ignition crews to maintain safe procedures. The burn unit will be ignited by an ignition team(s) on the ground. Predominantly, a backing, flanking, and then head firing pattern will be utilized. To reduce intensity and provide escape lanes for wildlife, the Burn Boss should employ slow backing fires, dot ignition patterns or flanking fires when possible. Hand ignitions will only take place in the interior of burn unit if the ignition team has good black or other adequate safety zones and escape routes to utilize should the need arise. All interior ignition personnel should scout their interior routes prior to ignition, to mitigate hazards. Variations of ground ignition methods can be utilized at discretion of Burn Boss.</p>	
<p>Devices: Drip torches will be the primary tool for ignition. Fusees, flares, or ATV drip torches may augment ignition.</p>	<p>Minimum Ignition Staffing: The Burn Boss will designate the minimum ignition staffing during the pre-burn briefing based on forecasted environmental parameters the day of the burn. The Burn Boss may utilize single ignitors or teams operating under the direction of a Firing Boss, Squad Boss, or the Burn Boss depending on the size of the burn team. Appropriate span of control will not be exceeded.</p>

Holding Plan

General Procedures	
<p>General: Holding resources will follow ignition along control lines monitoring for: creep in the line, high fire intensity along the control line, engaged snags/aerial fuels, and spot fires outside of control lines. Holding resources should patrol back along the control lines to the point of initial ignition as often as possible.</p>	<p>Critical Points or Actions Needed</p>
Mop-up	
<p>General: As a general rule, all surface fuels will require complete mop-up within 30 feet of the unit perimeter once ignition is complete. Aerial fuels should be mopped to a distance three times their height to the fireline with a minimum distance of 60 feet. Combinations of high winds and low relative humidity will increase the distance to which combusting fuels will need to be extinguished.</p>	<p>Unit Mop-up Standards:</p>

Contingency

Rationale	
Some spotting or creeping across fire breaks may occur as normal activity on the prescribed burn. These small fires outside the control lines can usually be suppressed by onsite resources. However, it is part of the planning process to identify what resources are available in the event any fire outside of the control lines cannot be suppressed by personnel on the prescribed fire. It is also necessary to establish trigger points in order to determine at what point these contingency resources will be utilized and how they will be requested.	
Contingency Resources Available	
On-site:	Off-site:
Trigger Points (when will contingency resources be ordered)	
IF (fire outside of control lines)	THEN (actions to be taken)
Spot fire outside fire break	Direct attack will be used. Fires outside control lines will be completely extinguished. Ignition will stop, if necessary, while spot fire is being controlled.
Multiple spot fires outside fire break(s)	If safe to do so, all ignition operations will cease on the burn unit. The Burn Boss will coordinate resources on burn to suppress spot fires.
Fire becomes established outside burn unit	Assess on site resources and direct attack strategy. Order additional outside resources. The Burn Boss may declare a wildfire. All resources will be notified upon conversion.

Wildfire Declaration

Pre-Declaration	
<p>The prescribed fire will be declared a wildfire when the Burn Boss determines that one or more of the following events has occurred, or is likely to occur, and that these conditions cannot be mitigated within the next operational period by implementing the contingency actions using on-site holding resources and listed contingency resources. Once declared a wildfire, the incident cannot return to prescribed fire status.</p> <ul style="list-style-type: none"> • Fire requires additional resources (beyond on-site contingency) to contain fire outside unit • Fire burns onto adjacent property • Real property or an improvement is destroyed due to fire outside the firebreak • Fire outside firebreak actively burning into following burning period (burning period is 24 hrs) 	
Post-Declaration	
<p>IC Assignment: The Burn Boss will transition into the role as IC or transition the wildfire over to the IC designated during the pre-burn briefing.</p>	<p>Notification Workflow:</p>

Smoke Management & Air Quality

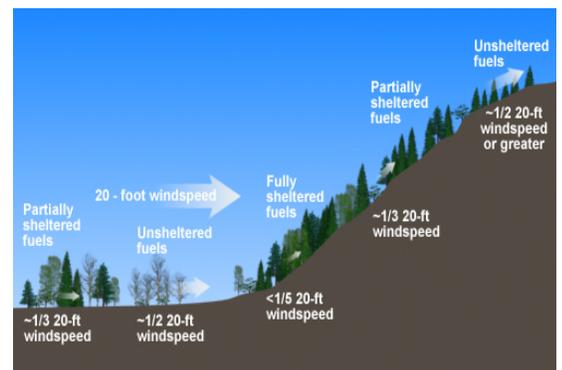
Regulatory		
Prescribed fire operations will comply with TDEC and local air quality board regulations		
Identified Smoke Sensitive Receptors (SSR): <input type="checkbox"/> School(s) <input type="checkbox"/> Hospital <input type="checkbox"/> Assisted Living <input type="checkbox"/> Class 1 Area <input type="checkbox"/> Nonattainment Area <input type="checkbox"/> Swine/Poultry Facility <input type="checkbox"/> Other:____ <input type="checkbox"/> None	Mitigation Strategies to Reduced Impacts to SSRs:	Distance and Direction of SSRs from Unit:

General Burning Guidelines and Tools

Smoke Management Guidelines		
Action	Purpose	Recommended Completion
Identify Smoke Sensitive Areas	To plan for potential impacts and mitigate	When writing burn plan
Develop Smoke Contingency Actions	Have pre-determined actions known if smoke becomes hazardous	When writing burn plan
Determine Category Day	Provide guidance on smoke dispersion based on Transport Winds and Mixing Height	Day Before and Day of Burn
Configure Smoke Model	Have documented predicted movement of smoke if burn is complex or large	Day of Burn
Check Air Quality Index	Determine if smoke will reduce air quality to unhealthy levels. Avoid burning with AQI >100	Day of Burn
Smoke Observations	Monitoring Smoke Impacts	During Burn and After

Minimum combinations for transport wind speeds and mixing heights (above ground level)		
Clean Air Act establishes 1700ft as lower permissible limit for prescribed burning. Lower Transport Wind Speed limit is 7mph.	Minimum Mixing Height (ft)	Minimum Transport Wind Speed (mph)
	2700	7
	2300	8
	1700	9

Prescription Guidance	
Temperature: Dormant Season Range= 30°-60° Growing Season Range= 60°-90°	Relative Humidity: All Seasons=30-55%
Wind Speed: Transport= 9-20 mph 20ft Surface=6-20 mph Eye Level Unsheltered=5-10 mph Eye Level Sheltered Timber=1-3 mph	Fire Behavior Indexes: 1hr <1/4" Diameter= 6-20% 10hr 1/4"-1" Diameter=8-17% 100hr 1"-3" Diameter=≥15% Burning Index=0-24 Days Since Last Rain=1-7



General Burning Guidelines and Tools Continued

The Keetch-Byram Drought Index (KBDI) reflects current soil moisture, with higher numbers being drier.	
KBDI	Fire Behavior and Effects
0-200	Soil moisture and large class fuel moistures are high and do not contribute much to fire intensity. Typical of spring dormant season following winter precipitation
200-400	Typical of late spring, early growing season. Lower litter and duff layers are drying and beginning to contribute to fire intensity.
400-600	Typical of late summer, early fall. Lower litter and duff layers actively contribute to fire intensity and will burn actively. Soil moisture levels are very low. 450-600 TAKE CAUTION! Damage to tree roots possible.
600-800	Often associated with more severe drought with increased wildfire occurrence. Intense, deep burning fires (root damage) with significant downwind spotting can be expected. Fires at these levels can damage tree roots severely causing mortality. Live fuels can also be expected to burn actively at these levels. Be careful of objectives! Do not burn in timber.

Additional Planning Elements and/or Narratives:

Burn Day Resources

Go/No-Go Checklist

Yes	No	Answer the Following Questions
		Has landowner signed contract and understands responsibilities?
		Is the landowner or representative on site?
		Has landowner contacted neighboring landowners about the burn?
		Has a burning permit been obtained and permit # identified on page 1 of the plan?
		Has 911 or appropriate fire department been notified of burn?
		Has District Dispatcher been notified with location and GPS coordinates?
		Are ALL fire prescription elements met?
		Are ALL smoke management specifications met?
		Is the fire weather forecast favorable?
		Is burn site weather favorable?
		Has an Air Quality Permit been issued for the project if required?
		Is the Air Quality Index Good (green) or Moderate (yellow)?
		Are ALL personnel required in the prescription plan on site?
		Have all personnel been briefed on the prescribed burn plan requirements?
		Have personnel been briefed on safety hazards, escape routes and safety zones?
		Are all personnel wearing proper personal protective equipment?
		Is all the required equipment in place and in working order?
		Do control lines appear to be properly installed?
		Are available resources (including contingency) adequate for containment of escapes under worst-case scenario?
		In your opinion, can the burn be carried out according to plan and meet planned objectives?

If all questions were answered “YES” proceed with burn. If “NO” describe how issue will be mitigated.

Mitigation Strategies:

Test Fire Documentation

Weather at Test Fire					
Time	Temp (°F)	RH (%)	Wind Speed (mph) Eye Level	Wind Direction	
Fire Behavior at Test Fire					
Backing Fire		Flanking Fire		Head Fire	
Flame Length	Rate of Spread	Flame Length	Rate of Spread	Flame Length	Rate of Spread
Smoke Conditions at Test Fire					
Direction		Production		Dispersion	
Comments/Observations					

Weather Observation Log

Time	Temp. (°F)		Humidity (%)		Wind Speed & Direction (eye level)	
	For.	Obs.	For.	Obs.	forecast	observed

Post Burn Activities

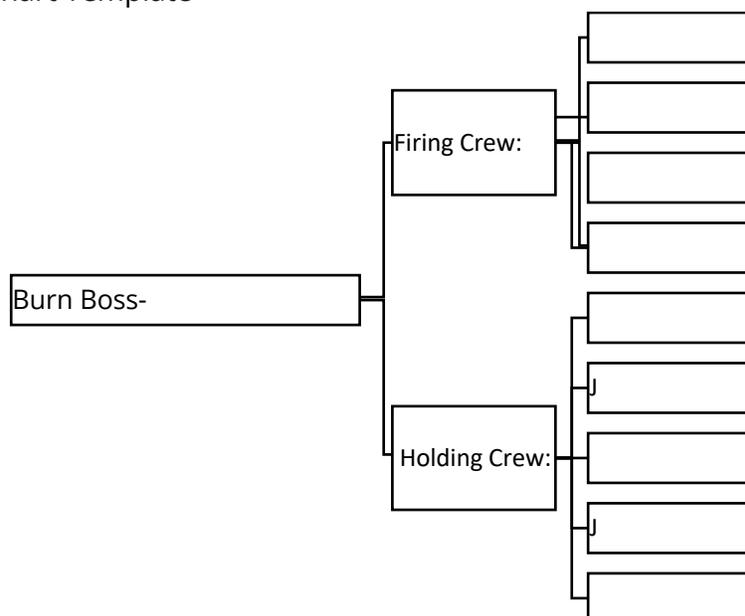
Checklist	
<input type="checkbox"/> Conduct AAR	<input type="checkbox"/> Notify Dispatch
<input type="checkbox"/> Assure Unit is Secure	<input type="checkbox"/> Notify Pre-burn Contacts of Completion
	<input type="checkbox"/> Complete Database Entry
	<input type="checkbox"/> Submit Documentation
Post Burn Evaluation	
1st Order Fire Effects: <input type="checkbox"/> Fuels Receptive <input type="checkbox"/> Fire Behavior Favorable <input type="checkbox"/> Current and Forecasted Weather <input type="checkbox"/> Objectives Met <input type="checkbox"/> Smoke Volume and Movement Favorable	Comments:

MAPS:

RX Briefing Checklist

Burn Organization	Communications
A. Organizational Chart/Personnel Assignments B. Equipment Assignments C. Other Resources	A. Procedures 1. Pre-burn Contacts 2. Transition to Wildfire Communication B. Frequencies/Channels 1. Burn Crew (Tac) 2. Dispatch (Command) 3. Cooperators 4. Others
Burn Objectives	Firing Sequence
A. Resource B. Operational	A. Test Burn B. Ignition Equipment (Type, Number, Etc.) C. Pattern and Sequence of Firing (Map)
Description of Burn Area	Contingency Plan
A. Review Map of Burn/Topographical Features/Acreage B. Values at Risk C. Problem Areas D. Fuel Type (Both Inside and Outside the Burn Unit) E. Roads/Access F. Water Sources G. Natural/Manmade Barriers	A. Slop Over/Spot Fire/Escape B. Assignments/Organizational Chart C. Strategy D. Tactics
Expected Weather	Safety
A. Wind Direction and Speed B. Relative Humidity C. Temperature D. Fuel Moisture E. Atmospheric Stability F. Predicted Changes	A. Inspect Personal Protective Equipment B. Lookouts, Escape Routes and Safety Zones C. Hazards (Footing, Natural, Manmade, Smoke [visibility], Etc.) D. Potential Problems E. Other (Air Operations, Flammable Fuel Handling, Etc.)

Burn Day Organization Chart Template



Job Hazard Analysis

JOB HAZARD ANALYSIS TN Division of Forestry	1. WORK PROJECT/ACTIVITY Prescribed Fire Operations	2. LOCATION State of Tennessee	3. UNIT Any
4. TASKS/PROCEDURES	5. HAZARDS	6. MITIGATION ACTIONS	
Travel to, from, and on project	Vehicle accidents, slippery road surfaces, soft shoulders, narrow roadways, weather, darkness, smoke	Driving defensively. Use seat belts. Identify road conditions during briefings. Post road guards. Mark hazards. Use headlights. Perform pre-use inspections on equipment. Scout roads and identify turnouts before ignition of project. Maintain communications. Provide road system map for project. Use backers and chock vehicle tires. Face vehicles out.	
Qualifications for assigned position	Lack of experience, injuries	Workers recruited for burn assignments shall meet age, health, physical, and qualification requirements established for firefighting duties.	
Briefing	Lack of communications	Provide project briefing before burning will clarify firing order, organization responsibilities, communications, hazards, weather, and expected fire behavior.	
Personal Protective clothing and equipment	Injuries, burns, and death	Wear hard hat with chin strap, safety glasses, Fire resistant pants and shirts. Keep sleeves rolled down. Wear leather, lace type, boots with skid resistant soles, and tops at least 8 inches high. Carry drinking water and fire shelter. Wear OSHA approved firefighting gloves. Wear hearing protection when working around equipment where noise level exceeds 90 dba. Wear additional protective equipment as dictated by Health and Safety Manual.	
Ignition Operations	Injuries and death, falls, snags, bees, snakes, smoke, burns, rolling material	Always have an escape route. Maintain LCES. Follow the Standard Fire Orders and Watch Out Situations. Maintain communications with other lighters and RX Fire Ignition specialist. Hand held radios shall be provided to all lighters. Do not fill drip torches near ignition sources. Do not spill burn mix on clothing.	
Fuel Mixing	Burns, spills, fuel saturated clothing and boots	No smoking within 25 feet of mixing and filling area. Do not fill or mix in pick up beds with bed liners. Avoid use of cellular telephones in and around fill or mixing area. Avoid fuel contact with bare hands, clothing and boots. Provide pour spouts. Use only approved fuel containers. Follow fuel mixture ratio guidelines.	
Holding/Mop Up/Patrol Crews	Smoke, burns, falls, back injuries, bees, poison oak, snags, rolling material, eye injuries, heat stress. dehydration, CO poisoning	Wear PPE's listed above. LCES, Follow Standard Fire Orders and Watch out Situations. Receive briefing from Burn Boss or designee. Identify hazards in project area mark for others. Use warning lights and provide traffic control on roadways during smoky and nights operations. Drink lots of fluids before, during and after work. Periodically rotate crews from work sites with high smoke levels to areas of less smoke or smoke free areas. Protective clothing and equipment shall be the same as required for firefighting. Maintain communications.	
ATV/UTV Operations	Crash, roll over, bodily injury, transporting/loading or unloading	Use proper ramps and 4 tie down points and engage emergency brake for transportation. Operators should be properly qualified and where PPE identified as dictated by the Health and Safety Manual. Drive defensively and pay attention to all objects and personnel in vicinity.	