```
          I
16.0      I    23.    54.    90.   130.
```

```
==================================================================
HEAT PER UNIT AREA, BTU/SQFT                                (V4.4)
==================================================================
  1-HR    I       MIDFLAME WIND, MI/H
  MOIS    I
          I     2.0    4.0    6.0    8.0
  (%)     I-------------------------------------------------------
          I
 8.0      I   689.   689.   689.   689.
          I
10.0      I   662.   662.   662.   662.
          I
12.0      I   648.   648.   648.   648.
          I
14.0      I   635.   635.   635.   635.
          I
16.0      I   610.   610.   610.   610.
```

```
==================================================================
FIRELINE INTENSITY, BTU/FT/S                                (V4.4)
==================================================================
  1-HR    I       MIDFLAME WIND, MI/H
  MOIS    I
          I     2.0    4.0    6.0    8.0
  (%)     I-------------------------------------------------------
          I
 8.0      I   418.   971.  1620.  2342.
          I
10.0      I   362.   841.  1403.  2028.
          I
12.0      I   327.   759.  1267.  1832.
          I
14.0      I   297.   689.  1150.  1662.
          I
16.0      I   259.   602.  1005.  1453.
```

```
==================================================================
FLAME LENGTH, FT                                            (V4.4)
==================================================================
  1-HR    I       MIDFLAME WIND, MI/H
  MOIS    I
          I     2.0    4.0    6.0    8.0
  (%)     I-------------------------------------------------------
          I
 8.0      I    7.2   10.6   13.5   16.0
```

10.0	6.8	10.0	12.6	14.9
12.0	6.5	9.5	12.0	14.3
14.0	6.2	9.1	11.5	13.6
16.0	5.8	8.5	10.8	12.8

REACTION INTENSITY, BTU/SQFT/M (V4.4)

1-HR MOIS (%)	MIDFLAME WIND, MI/H 2.0	4.0	6.0	8.0
8.0	2691.	2691.	2691.	2691.
10.0	2585.	2585.	2585.	2585.
12.0	2532.	2532.	2532.	2532.
14.0	2481.	2481.	2481.	2481.
16.0	2383.	2383.	2383.	2383.

EFFECTIVE WINDSPEED, MI/H (V4.4)

1-HR MOIS (%)	MIDFLAME WIND, MI/H 2.0	4.0	6.0	8.0
8.0	2.0	4.0	6.0	8.0
10.0	2.0	4.0	6.0	8.0
12.0	2.0	4.0	6.0	8.0
14.0	2.0	4.0	6.0	8.0
16.0	2.0	4.0	6.0	8.0

DIRECTION OF MAXIMUM SPREAD, DEG (V4.4)

```
  1-HR   I       MIDFLAME WIND, MI/H
  MOIS   I
         I     2.0    4.0    6.0    8.0
  (%)    I-------------------------------------------------------
         I
 8.0     I   180.   180.   180.   180.
         I
10.0     I   180.   180.   180.   180.
         I
12.0     I   180.   180.   180.   180.
         I
14.0     I   180.   180.   180.   180.
         I
16.0     I   180.   180.   180.   180.


SIZE-LINKED-TO-DIRECT
 1--RATE OF SPREAD, CH/H ---   OUTPUT FROM DIRECT. RANGE=   23.  TO  185.
 2--EFFECTIVE WIND, CH/H ---   OUTPUT FROM DIRECT. RANGE=    2.0 TO    8.0
 3--ELAPSED TIME, HR -------     .5


=================================================================
AREA, ACRES                                                (V4.4)
=================================================================
  1-HR   I       MIDFLAME WIND, MI/H
  MOIS   I
         I     2.0    4.0    6.0    8.0
  (%)    I-------------------------------------------------------
         I
  8.0    I    18.9   66.8  141.0  238.7
         I
 10.0    I    15.4   54.3  114.5  193.9
         I
 12.0    I    13.1   46.2   97.4  165.0
         I
 14.0    I    11.2   39.6   83.6  141.5
         I
 16.0    I     9.3   32.8   69.2  117.2


=================================================================
PERIMETER, CHAINS                                          (V4.4)
=================================================================
  1-HR   I       MIDFLAME WIND, MI/H
  MOIS   I
         I     2.0    4.0    6.0    8.0
  (%)    I-------------------------------------------------------
         I
  8.0    I    50.   100.   154.   213.
         I
 10.0    I    45.    90.   139.   192.
         I
 12.0    I    42.    83.   128.   177.
```

14.0	39.	77.	119.	164.
16.0	35.	70.	108.	149.

LENGTH-TO-WIDTH RATIO (V4.4)

1-HR MOIS (%)	MIDFLAME WIND, MI/H 2.0	4.0	6.0	8.0
8.0	1.5	2.0	2.5	3.0
10.0	1.5	2.0	2.5	3.0
12.0	1.5	2.0	2.5	3.0
14.0	1.5	2.0	2.5	3.0
16.0	1.5	2.0	2.5	3.0

FORWARD SPREAD DISTANCE, CH (V4.4)

1-HR MOIS (%)	MIDFLAME WIND, MI/H 2.0	4.0	6.0	8.0
8.0	16.6	38.4	64.1	92.7
10.0	14.9	34.6	57.8	83.6
12.0	13.8	32.0	53.3	77.1
14.0	12.7	29.6	49.4	71.4
16.0	11.6	26.9	45.0	65.0

BACKING SPREAD DISTANCE, CH (V4.4)

1-HR MOIS (%)	MIDFLAME WIND, MI/H 2.0	4.0	6.0	8.0
8.0	2.4	2.8	2.8	2.7

10.0	I	2.2	2.5	2.5	2.5
	I				
12.0	I	2.0	2.3	2.3	2.3
	I				
14.0	I	1.9	2.1	2.2	2.1
	I				
16.0	I	1.7	1.9	2.0	1.9

MAXIMUM WIDTH OF FIRE, CH (V4.4)

1-HR MOIS (%)	MIDFLAME WIND, MI/H 2.0	4.0	6.0	8.0
8.0	12.7	20.6	26.8	31.8
10.0	11.4	18.6	24.2	28.7
12.0	10.6	17.2	22.3	26.5
14.0	9.8	15.9	20.6	24.5
16.0	8.9	14.5	18.8	22.3

CONTAIN-LINKED-TO-DIRECT-AND-SIZE
1--RUN OPTION ---------- 1.=COMPUTE LINE BUILDING RATE
2--MODE OF ATTACK --------- 2.=REAR
3--RATE OF SPREAD, CH/H --- OUTPUT FROM DIRECT. RANGE= 23. TO 185.
4--INITIAL FIRE SIZE, AC -- OUTPUT FROM SIZE. RANGE= 9. TO 239.
5--LENGTH-TO-WIDTH RATIO -- OUTPUT FROM SIZE. RANGE= 1.5 TO 3.0
6--BURNED AREA TARGET, AC - 400.0

TOTAL LENGTH OF LINE, CHAINS (V4.4)

1-HR MOIS (%)	MIDFLAME WIND, MI/H 2.0	4.0	6.0	8.0
8.0	292.*	289.#	291.#	294.#
10.0	298.*	297.#	298.#	302.#
12.0	303.*	302.#	304.#	308.#
14.0	309.*	308.#	311.#	315.#
16.0	315.*	315.#	319.#	323.#

```
          I

            * = FIRE IS TOO INTENSE FOR DIRECT ATTACK BY
                HAND CREWS.
              EQUIPMENT SUCH AS DOZERS, PUMPERS, PLOWS,
                AND RETARDANT AIRCRAFT CAN BE EFFECTIVE.

            # = CONTROL EFFORTS AT THE HEAD OF THE FIRE
                WILL PROBABLY BE INEFFECTIVE.
```

TOTAL CONTAINMENT TIME, HOURS (V4.4)

1-HR MOIS (%)	MIDFLAME WIND, MI/H 2.0	4.0	6.0	8.0
8.0	3.5*	1.2#	.5#	.2#
10.0	4.1*	1.5#	.7#	.3#
12.0	4.6*	1.7#	.8#	.4#
14.0	5.2*	1.9#	1.0#	.5#
16.0	5.9*	2.2#	1.2#	.7#

```
            * = FIRE IS TOO INTENSE FOR DIRECT ATTACK BY
                HAND CREWS.
              EQUIPMENT SUCH AS DOZERS, PUMPERS, PLOWS,
                AND RETARDANT AIRCRAFT CAN BE EFFECTIVE.

            # = CONTROL EFFORTS AT THE HEAD OF THE FIRE
                WILL PROBABLY BE INEFFECTIVE.
```

TOTAL LINE BUILDING RATE, CH/H (V4.4)

1-HR MOIS (%)	MIDFLAME WIND, MI/H 2.0	4.0	6.0	8.0
8.0	82.*	239.#	553.#	1372.#
10.0	72.*	202.#	438.#	933.#
12.0	65.*	179.#	373.#	734.#
14.0	60.*	160.#	323.#	604.#

```
         I
16.0     I    53.*  140.#  275.#  489.#
         I
```

* = FIRE IS TOO INTENSE FOR DIRECT ATTACK BY HAND CREWS.
EQUIPMENT SUCH AS DOZERS, PUMPERS, PLOWS, AND RETARDANT AIRCRAFT CAN BE EFFECTIVE.

\# = CONTROL EFFORTS AT THE HEAD OF THE FIRE WILL PROBABLY BE INEFFECTIVE.

```
DIRECT
 1--FUEL MODEL -------------      9 -- HARDWOOD LITTER
 2--1-HR FUEL MOISTURE, % --     8.0  10.0  12.0  14.0  16.0
 3--10-HR FUEL MOISTURE, % -     9.0
 4--100-HR FUEL MOISTURE, %     14.0
 7--MIDFLAME WINDSPEED, MI/H     2.0   4.0   6.0   8.0
 8--TERRAIN SLOPE, % -------     5.0
 9--DIRECTION OF WIND VECTOR      .0
     DEGREES CLOCKWISE
      FROM UPHILL
10--DIRECTION OF SPREAD ----      .0  (DIRECTION OF MAX SPREAD)
    CALCULATIONS
     DEGREES CLOCKWISE
      FROM UPHILL
```

```
=================================================================
RATE OF SPREAD, CH/H                                        (V4.4)
=================================================================
  1-HR   I       MIDFLAME WIND, MI/H
  MOIS   I
         I     2.0    4.0    6.0    8.0
  (%)    I-------------------------------------------------------
         I
 8.0     I     2.     5.    10.    16.
         I
10.0     I     2.     5.     9.    15.
         I
12.0     I     2.     5.     8.    13.
         I
```

14.0	I	2.	4.	8.	12.
	I				
16.0	I	2.	4.	7.	11.

HEAT PER UNIT AREA, BTU/SQFT (V4.4)

1-HR MOIS (%)	MIDFLAME WIND, MI/H 2.0	4.0	6.0	8.0
8.0	343.	343.	343.	343.
10.0	330.	330.	330.	330.
12.0	323.	323.	323.	323.
14.0	317.	317.	317.	317.
16.0	304.	304.	304.	304.

FIRELINE INTENSITY, BTU/FT/S (V4.4)

1-HR MOIS (%)	MIDFLAME WIND, MI/H 2.0	4.0	6.0	8.0
8.0	14.	34.	64.	102.
10.0	12.	30.	55.	88.
12.0	11.	27.	50.	80.
14.0	10.	24.	45.	72.
16.0	9.	21.	40.	63.

FLAME LENGTH, FT (V4.4)

1-HR MOIS (%)	MIDFLAME WIND, MI/H 2.0	4.0	6.0	8.0

8.0	I	1.5	2.3	3.0	3.8
	I				
10.0	I	1.4	2.1	2.9	3.5
	I				
12.0	I	1.3	2.0	2.7	3.4
	I				
14.0	I	1.3	2.0	2.6	3.2
	I				
16.0	I	1.2	1.8	2.4	3.0

==========
REACTION INTENSITY, BTU/SQFT/M (V4.4)
==========

1-HR MOIS (%)	MIDFLAME WIND, MI/H 2.0	4.0	6.0	8.0
8.0	2221.	2221.	2221.	2221.
10.0	2134.	2134.	2134.	2134.
12.0	2090.	2090.	2090.	2090.
14.0	2049.	2049.	2049.	2049.
16.0	1969.	1969.	1969.	1969.

==========
EFFECTIVE WINDSPEED, MI/H (V4.4)
==========

1-HR MOIS (%)	MIDFLAME WIND, MI/H 2.0	4.0	6.0	8.0
8.0	2.0	4.0	6.0	8.0
10.0	2.0	4.0	6.0	8.0
12.0	2.0	4.0	6.0	8.0
14.0	2.0	4.0	6.0	8.0
16.0	2.0	4.0	6.0	8.0

SIZE-LINKED-TO-DIRECT
1--RATE OF SPREAD, CH/H --- OUTPUT FROM DIRECT. RANGE= 2. TO 16.
2--EFFECTIVE WIND, CH/H --- OUTPUT FROM DIRECT. RANGE= 2.0 TO 8.0

3--ELAPSED TIME, HR ------- 1.0

AREA, ACRES (V4.4)

1-HR MOIS (%)	MIDFLAME WIND, MI/H 2.0	4.0	6.0	8.0
8.0	.3	1.3	3.5	7.2
10.0	.3	1.1	2.9	5.9
12.0	.2	.9	2.4	5.0
14.0	.2	.8	2.1	4.3
16.0	.2	.7	1.7	3.6

PERIMETER, CHAINS (V4.4)

1-HR MOIS (%)	MIDFLAME WIND, MI/H 2.0	4.0	6.0	8.0
8.0	7.	14.	24.	37.
10.0	6.	13.	22.	33.
12.0	5.	12.	20.	31.
14.0	5.	11.	19.	29.
16.0	5.	10.	17.	26.

LENGTH-TO-WIDTH RATIO (V4.4)

1-HR MOIS (%)	MIDFLAME WIND, MI/H 2.0	4.0	6.0	8.0
8.0	1.5	2.0	2.5	3.0
10.0	1.5	2.0	2.5	3.0
12.0	1.5	2.0	2.5	3.0

14.0		1.5	2.0	2.5	3.0
16.0		1.5	2.0	2.5	3.0

FORWARD SPREAD DISTANCE, CH (V4.4)

1-HR MOIS (%)	MIDFLAME WIND, MI/H 2.0	4.0	6.0	8.0
8.0	2.2	5.4	10.1	16.2
10.0	2.0	4.9	9.1	14.6
12.0	1.8	4.5	8.4	13.4
14.0	1.7	4.2	7.8	12.5
16.0	1.5	3.8	7.1	11.3

BACKING SPREAD DISTANCE, CH (V4.4)

1-HR MOIS (%)	MIDFLAME WIND, MI/H 2.0	4.0	6.0	8.0
8.0	.3	.4	.4	.5
10.0	.3	.3	.4	.4
12.0	.3	.3	.4	.4
14.0	.2	.3	.3	.4
16.0	.2	.3	.3	.3

MAXIMUM WIDTH OF FIRE, CH (V4.4)

1-HR MOIS (%)	MIDFLAME WIND, MI/H 2.0	4.0	6.0	8.0
8.0	1.7	2.9	4.2	5.5

```
 10.0    I     1.5    2.6    3.8    5.0
         I
 12.0    I     1.4    2.4    3.5    4.6
         I
 14.0    I     1.3    2.2    3.3    4.3
         I
 16.0    I     1.2    2.0    3.0    3.9
```

```
CONTAIN-LINKED-TO-DIRECT-AND-SIZE
 1--RUN OPTION -------------     1.=COMPUTE LINE BUILDING RATE
 2--MODE OF ATTACK ---------     2.=REAR
 3--RATE OF SPREAD, CH/H ---     OUTPUT FROM DIRECT. RANGE=     2. TO    16.
 4--INITIAL FIRE SIZE, AC --     OUTPUT FROM SIZE.   RANGE=     0. TO     7.
 5--LENGTH-TO-WIDTH RATIO --     OUTPUT FROM SIZE.   RANGE=    1.5 TO    3.0
 6--BURNED AREA TARGET, AC -  100.0
```

```
=================================================================
TOTAL LENGTH OF LINE, CHAINS                                (V4.4)
=================================================================
  1-HR   I       MIDFLAME WIND, MI/H
  MOIS   I
         I     2.0    4.0    6.0    8.0
  (%)    I-------------------------------------------------------
         I
 8.0     I   200.   203.   201.   200.*
         I
10.0     I   205.   208.   207.   205.
         I
12.0     I   208.   212.   211.   210.
         I
14.0     I   211.   215.   214.   213.
         I
16.0     I   215.   218.   218.   217.
         I

           * = FIRE IS TOO INTENSE FOR DIRECT ATTACK BY
               HAND CREWS.
             EQUIPMENT SUCH AS DOZERS, PUMPERS, PLOWS,
               AND RETARDANT AIRCRAFT CAN BE EFFECTIVE.
```

```
=================================================================
TOTAL CONTAINMENT TIME, HOURS                               (V4.4)
=================================================================
  1-HR   I       MIDFLAME WIND, MI/H
  MOIS   I
         I     2.0    4.0    6.0    8.0
  (%)    I-------------------------------------------------------
         I
 8.0     I   44.3   17.3    8.7    5.0*
         I
10.0     I   50.5   19.9   10.1    5.9
```

12.0	55.9	22.1	11.3	6.7
14.0	61.3	24.4	12.5	7.4
16.0	68.6	27.3	14.1	8.5

* = FIRE IS TOO INTENSE FOR DIRECT ATTACK BY HAND CREWS.
EQUIPMENT SUCH AS DOZERS, PUMPERS, PLOWS, AND RETARDANT AIRCRAFT CAN BE EFFECTIVE.

TOTAL LINE BUILDING RATE, CH/H (V4.4)

1-HR MOIS (%)	MIDFLAME WIND, MI/H 2.0	4.0	6.0	8.0	
8.0	5.	12.	23.	40.*	
10.0	4.	10.	20.	35.	
12.0	4.	10.	19.	32.	
14.0	3.	9.	17.	29.	
16.0	3.	8.	15.	26.	

* = FIRE IS TOO INTENSE FOR DIRECT ATTACK BY HAND CREWS.
EQUIPMENT SUCH AS DOZERS, PUMPERS, PLOWS, AND RETARDANT AIRCRAFT CAN BE EFFECTIVE.

APPENDIX #6
AGENCY ADMINISTRATOR
GO/NO-GO PRE-IGNITION APPROVAL

Prescribed Fire Name: Date:

A) Instructions
The Agency Administrator's Go/No-Go Pre-Ignition Approval is the first of two GO/NO-GO decisions that must be completed before a prescribed fire can be implemented. The Agency Administrator's Go/No-Go Pre-Ignition Approval is the final management approval prior to execution of the prescribed fire and evaluates whether compliance requirements, prescribed fire plan elements, and internal and external notifications have been completed. The Agency Administrator's Go/No-Go Pre-Ignition Approval is valid for 30 days. If ignition of the prescribed fire is not initiated prior to expiration date determined by the Agency Administrator, a new approval will be required.

B) Key Elements
1. Is the prescribed fire plan up to date?
   Hints: changes, amendments, seasonality.

2. Have all compliance requirements been completed?
   Hints: cultural, threatened and endangered species, smoke management.

3. Is risk management in place and the residual risk acceptable?
   Hints: Prescribed Fire Mitigation Table and Prescribed Fire Complexity Rating Guide completed with rationale and mitigations identified.

4. Will all elements of the prescribed fire plan be met?
   Hint: preparation work, mitigation, weather, organization, prescription.

5. Have all internal and external notifications and media releases been completed?

6. Are key park staff fully briefed, and understand the implementation of the prescribed fire?

7. Other?

Recommended by:_____ Date _____
FMO/Burn Boss

Approved by:_____ Date _____
Park Superintendent

Approval expires: _____(May not be more than 30 days after approved date.)
Date

APPENDIX #7
Prescribed Fire Operations
GO/NO-GO Checklist

Prescribed Fire Name: Units 3,4,5,6, and 7b Date:

	YES	NO
- Has Agency Administrator GO/NO-GO Pre-Ignition Approval been approved?		
Narrative/Comments:		
- Are current and forecasted weather conditions favorable for execution of the prescribed fire? (hints: spot weather, dialogue with fire weather forecaster, climatological analysis complete)		
Narrative/Comments:		
- Have all key personnel listed on the Incident Action Plan (IAP) been briefed with an opportunity to give feedback? (hints: safety, objectives, assignments)		
Narrative/Comments:		
- Has all pre-burn preparedness work been completed? (hints: fuels and weather observations, signs, closures, smoke management, unit preparation)		
Narrative/Comments:		
- Are all equipment and supplies required in the prescribed fire plan in place and functional? (hints: pumps, radios, ignition devices, hose lays, vehicles, aviation, etc.)		
Narrative/Comments:		
- Are all holding resources described in the IAP committed and can be on-scene within specified time frames?		
Narrative/Comments:		
- Are all personnel certified for their assigned positions? (hints: Check Red Cards)		
Narrative/Comments:		
- There are no extenuating circumstances that preclude successful completion of this project? (hints: regional & national preparedness, unusual circumstances, unusual drought, outstanding issues, other fires, recent fire escapes, etc.)		
Narrative/Comments:		
IF ALL BOXES HAVE BEEN CHECKED "YES" YOU MAY PROCEED WITH THE TEST FIRE.		

	YES	NO
TEST FIRE DOCUMENTATION AND RESULTS:		
- Observed Fire Behavior within Prescription?		
Narrative/Comments:		
- Test fire was successful?		
Narrative/Comments:		
- Are all prescription parameters in the prescribed fire plan favorable for implementing the project? (hints: each plan element, pre-burn, smoke management, cooperator coordination)		
Narrative/Comments:		
IF LAST 3 BOXES ARE ALL "YES", YOU MAY PROCEED WITH PRESCRIBED FIRE.		

Signatures

RX BURN BOSS:	IGNITION SPECIALIST:
HOLDING OPERATIONS:	DATE:

APPENDIX #8

IAP/BRIEFING GUIDE

I. Present Handouts
   - A. Map of Burn
   - B. Organization Chart

II. Describe Area Of Burn
   - A. Vegetation Type
   - B. Acreage
   - C. Slope
   - D. Roads/Access
   - E. High Values at risk
   - F. Water Sources-natural, tanker and hydrants
   - G. Natural/Manmade barriers

III. Weather Forecast- Use National Weather Service "Forestry" and "Smoke Management" Forecasts for applicable Zones. Use "Fire Weather Special Request" Form if updates are deemed necessary.
   - A. Wind direction and Speed
   - B. Relative Humidity
   - C. Temperatures
   - D. Predicted Changes

IV. Organization
   - A. Organization Chart – Location on Map
   - B. Equipment - tankers, refueling, etc.
   - C. Fire Monitoring
   - D. Any other resources
   - E. Transition Fire Plan

V. Firing Sequence
   - A. Test fire
   - B. Type and Sequence of Firing

VI. Radio Assignments
   - A. Given Day of Burn
   - B. Communication Plan

VII. Safety
   - A. Winds
   - B. Escape Routes and Safe Zones
   - C. Hazards – crew and equipment (wildlife, research plots, trash, etc.)
   - D. Personal Protective equipment (PPE)
   - E. Refueling – fuel handling, gloves, spilling, etc.
   - F. Activation of emergency and headlights on major roads
   - G. Other public safety considerations

VIII. Comments and Questions Period

APPENDIX #9

ADEQUATE HOLDING RESOURCES WORKSHEET

Project Name: Units 3, 4, 5, 6, and 7b Fuel Models Inside Project Area: 3

Prepared By/Date: Bobby Bloodworth Fuel Models Outside Project Area: 9

Characteristics	Output type	Modeling Predictions Inside Project Area	Modeling Predictions Outside Project Area	Unit of Measure
CRITICAL FIRE INPUTS	1 Hr Fuel Moisture	8	8	%
	Wind Speed	8	8	MPH
	Slope	5	5	%
KEY FIRE BEHAVIOR OUTPUTS	Rate of Spread	185	16	ch/hr
	Fire line Intensity	2342	102	BTU/ft/sec
	Flame Length	16	3.8	Feet
	POI			%
	Spotting Distance			Miles
	Scorch Height			Feet
FIRE SIZE	Projection Time	.5	1	Hours
	Forward Spread	92.7	16.2	Chains
	Backward Spread	2.7	0.5	Chains
FIRE CONTAINMENT	Method Of Attack	Rear	Rear	Head/Rear
	Max Escape Target	400	100	Acres
	Max Containment Time	5.9	68.6	Hours
	Total Line Building Rate	1372	40	Ch/hr

1. Choose worst case total line building rate above that is needed for containment of slop over or spot fire : 40ch/hr
2. Estimate potential number spot fires or slop overs at on time: 1
3. TOTAL LINE BUILDING RATE NEEDED (multiply line 1 times line 2) 40ch/hr
4. Production Rates: Ease of Access: POOR-FAIR-GOOD-EXCELLEN(circle)
   Fuel Resistance to Control LOW- MODERATE-HIGH-EXTREME(circle)

(refer to fire line handbook) Hand Crew Production 8 ch/hr
Engine Production (Crew of 2) 25 ch/hr
Dozer Production (Type ___) ch/hr

On Site Organization	Total # Planned On Burn	Total # Available for Spot Fire or Slop Over Control		Line Building Production Rates		Spot Fire or Slop Over Line Building Capacity
Overhead	1		X	8	ch/hr	
Firing Crew	2	2	X	8	ch/hr	16
Holding	3	2	X	8	ch/hr	16
Other Personnel			X	8	ch/hr	
Engine (Crew of 2)	2	1	X	25	ch/hr	25
Dozer (Size)			X		ch/hr	
Other Equipment: ATV's	2	2	X	8	ch/hr	16

5. **TOTAL SLOP OVER OR SPOT FIRE LINE BUILDING RATE CAPACITY 73 ch/hr**

6. DETERMINATION OF ADEQUATE HOLDING RESOURCES (Line 5 minus Line 3) 33 ch/hr

If number on line 6 is positive then adequate holding forces will be available. If number is negative, more holding resources are needed to control potential spot fires or slopovers.

APPENDIX #10
POST-PROJECT EVALUATION

Instructions for Completion of Post-Project Evaluation Form

This form is to be completed and submitted for review within 30 days of declaring the project complete.
Block 1 Self-explanatory
Block 2 Copy of the Project Objectives as listed in the Project Plan.
Block 3 Give quantitative results of how well objectives were met, i.e. % of 1 hour and 10 hour fuels removed, % of burn area with fuels reduced, % of area with acceptable/unacceptable scorch, etc.
Block 4 Give a short narrative of problems encountered and suggestions for improving or refining operations and prescriptions i.e. firing pattern, equipment limitations, drought index, effectiveness of barriers.
Block 5 Self-explanatory - for providing feedback to the Program

Block 1)
Individual Leading Evaluation:_____

Management:_____
Project Name:_____

Acres Treated:_____
Fire Number:_____

Total Cost:_____
Cost/Acre:_____

(Block 2)
Objectives:

(Block 3)
Results:

(Block 4)
Problems Encountered, Methods to Improve Next Operation:

Review & Signature:

Burn Boss:_____

Comments:

FMO: _____

Comments:

APPENDIX #11

PRESCRIBED FIRE MONITORING FORM

WEATHER OBSERVATIONS

FIRE NAME:

LOCATION:

DATE:

OBSERVER:

LOCATION	ELEV	TIME	WIND DIR	WIND SPEED	DRY BULB	WET BULB	RH/DP	ASPECT	FDRM	PIG	REMARKS

FIRE BEHAVIOR/SMOKE OBSERVATIONS

TIME	LOCATION	ROS	ROS DIR	FL	FZD	FUEL MODEL	% SHADING	MIX HGT	DIR	COLOR	VISIBILITY	5% SLOPE

REMARKS:

Appendix #12
JOB HAZARD ANALYSIS

United States Department of Interior NATIONAL PARK SERVICE	1. WORK PROJECT/ACTIVITY Prescribed Fire	2. LOCATION George Washington Carver NM	3. UNIT Units 3, 4, 5, 6, 7b
JOB HAZARD ANALYSIS (JHA)	4. NAME OF ANALYST Scott Bressler	5. JOB TITLE Supervisory Forestry Technician	6. DATE PREPARED 01-18-02
7. TASKS/PROCEDURES	8. HAZARDS	9. ABATEMENT ACTIONS ENGINEERING CONTROLS – SUBSTITUTION - ADMINISTRATIVE CONTROLS - PPE	
1. Ignition Operations	A. Proximity to intense heat and erratic fire behavior.	A. Use Personal Protective Equipment (PPE), maintain close supervision, and lookouts. Thorough briefing on expected fire behavior. Adjust ignition patterns as needed to reduce exposure and fire behavior.	
	B. Noise of fire obscures verbal warnings.	B. Handheld radios for all ignition personnel.	
	C. Ignition sources.	C. Use only qualified personnel for ignition operations. Igniters stay alert to location of torch flame. Close air vent when not igniting. Make sure that target area is clear before using hand flares or very pistols. Wear proper PPE.	
	D. Incorrect ignition locations. Careless ignition use.	D. Thorough briefing of ignition plan. Follow burn boss's instructions. Know location of other igniters and personnel. Radios for all igniters. Close supervision.	
	E. Poor footing, heavy fuels accumulation.	E. Be constantly aware; identify hazard areas; slow down.	
	F. Poor visibility due to smoke.	F. Post lookouts on roads to gauge visibility. Stage emergency vehicles with headlights and emergency lights on along roads to alert traffic. Use law enforcement to control traffic.	
2. Motor Vehicle Operation	A. General operations and public traffic.	A. Defensive driving techniques. Observe posted speed limits and obey all driving laws and regulations. Use spotter when backing. Use headlights while driving.	
	B. Secure loads.	B. Check loads for security before departing – use tie downs.	
	C. Hauling flammable substances.		

	D. Transporting sharp tools.	C. Use appropriate containers for hauling drip torch fuels and gasoline. Secure containers on vehicle. D. Use guards and secure tools in engine compartments or on vehicles.

JOB HAZARD ANALYSIS

United States Department of Interior NATIONAL PARK SERVICE	1. WORK PROJECT/ACTIVITY Prescribed Fire	2. LOCATION George Washington Carver NM	3. UNIT Units 3, 4, 5, 6, 7b
JOB HAZARD ANALYSIS (JHA)	4. NAME OF ANALYST Scott Bressler	5. JOB TITLE Supervisory Forestry Technician	6. DATE PREPARED 01-18-02
7. TASKS/PROCEDURES	8. HAZARDS	9. ABATEMENT ACTIONS ENGINEERING CONTROLS – SUBSTITUTION - ADMINISTRATIVE CONTROLS - PPE	
2. Motor Vehicle Operation (Cont.)	E. Loading vehicles.	E. Use of proper lifting techniques.	
	F. Trailer use.	F. Use safe loading and operation procedures. Refer to Job Hazard Analysis on trailer use. Use spotter when backing.	
	G. Smoke on Roadways	G. Use smoke ahead signs and smoke monitors.	
3. ATV Operation	A. Operation accidents	A. Proper ATV procedures. Refer to Job Hazard Analysis on ATV operations for more detail. Use qualified atv operators and wear DOT approved helmets.	
4.Holding Operations	A. Proximity to intense heat and erratic fire behavior.	A. Use Personal Protective Equipment (PPE), maintain close supervision. Thorough briefing on expected fire behavior. Use appropriate tactics to insure personnel are not subjected to unnecessary heat.	
	B. Fatigue	B. Rotate personnel on different tasks. Limit smoke exposure. Take adequate breaks. Drink plenty of water.	
	C. Excessive Smoke Exposure	C. Rotate personnel so that one group is not always in the smoke.	
	D. ATV Operations	D. Stay alert and watch for ATV traffic on fireline	
	E. Poor visibility due to		

5. Mop-up Operations	smoke. A. Poor footing B. Falling snags	E. Stay alert. Watch for tripping and overhead hazards, sudden drop-offs, ATV traffic. A. Be constantly aware; identify hazard areas; slow down. B. Be alert, post lookouts when necessary. Flag off dangerous areas. Watch for strong winds. Use qualified fallers only.

JOB HAZARD ANALYSIS

United States Department of Interior NATIONAL PARK SERVICE	1. WORK PROJECT/ACTIVITY Prescribed Fire	2. LOCATION George Washington Carver NM	3. UNIT Units 3, 4, 5, 6, 7b
JOB HAZARD ANALYSIS (JHA)	4. NAME OF ANALYST Scott Bressler	5. JOB TITLE Supervisory Forestry Technician	6. DATE PREPARED 01-18-02
7. TASKS/PROCEDURES	8. HAZARDS	9. ABATEMENT ACTIONS ENGINEERING - CONTROLS – SUBSTITUTION - ADMINISTRATIVE CONTROLS - PPE	
6. Monitoring Operations	C. Fatigue A. Possibility of entrapment B. Proximity to intense heat and erratic fire behavior.	C. Rotate personnel on different tasks. Take adequate breaks. Drink plenty of water. A. Stay in communication and relay location to Burn Boss and Ignition Specialists. Identified escape routes and safe zones in briefing. B. Use Personal Protective Equipment (PPE), maintain close supervision. Thorough briefing on expected fire behavior. Use appropriate tactics to insure personnel are not subjected to unnecessary heat.	

10. SUPERVISOR'S SIGNATURE		11. TITLE	12. DATE

Appendix #13
5 Year Burn Schedule

Fiscal Year	Burn Unit Name	Acres Total	Acres Grassland	Acres Woods	Project Type	Project Classific
2004	Unit 4/South Central Carver Branch	21	11	10	Prescribed Burn	Hazard Fuel Re
2004	Unit 1	4	4	0	Prescribed Burn	Hazard Fuel Re
2004	Unit 2	3.5	3	0.5	Prescribed Burn	Hazard Fuel Redu
2004	7/East Carver Branch/North Central Carver Branch	82	51	31	Prescribed Burn	Hazard Fuel Redu
Totals		110.5	69	41.5		
2005	Unit 4/South Central Carver Branch	21	11	10	Prescribed Burn	Hazard Fuel Redu
2005	Unit 5	42	42	0	Prescribed Burn	Hazard Fuel Re
2005	Unit 3	3	3	0	Prescribed Burn	Hazard Fuel Re
2005	Unit 6/West Carver Branch	17	15	2	Prescribed Burn	Hazard Fuel Redu
2005	Unit 7b/Southeast Carver Branch	5	3	2	Prescribed Burn	Hazard Fuel Re
Totals		88	72	14		
2006	7/East Carver Branch/North Central Carver Branch	82	51	31	Prescribed Burn	Hazard Fuel Redu
2006	Unit 1	4	4	0	Prescribed Burn	Hazard Fuel Re
2006	Unit 2	3.5	3	0.5	Prescribed Burn	Hazard Fuel Redu
2006	Unit 8/Harkin's Area	4.5	1.5	3	Prescribed Burn	Hazard Fuel Redu
Totals		94	59.5	34.5		
2007	Repeat 2005					
2007	Unit 4/South Central Carver Branch	21	11	10	Prescribed Burn	Hazard Fuel Redu
2007	Unit 5	42	42	0	Prescribed Burn	Hazard Fuel Re
2007	Unit 3	3	3	0	Prescribed Burn	Hazard Fuel Redu
2007	Unit 6/West Carver Branch	17	15	2	Prescribed Burn	Hazard Fuel Redu
2007	Unit 7b/Southeast Carver Branch	5	3	2	Prescribed Burn	Hazard Fuel Re
Totals		88	74	14		
2008	Repeat 2006					
2008	7/East Carver Branch/North Central Carver Branch	82	51	31	Prescribed Burn	Hazard Fuel Re
2008	Unit 1	4	4	0	Prescribed Burn	Hazard Fuel Redu
2008	Unit 2	3.5	3	0.5	Prescribed Burn	Hazard Fuel Redu
2008	Unit 8/Harkin's Area	4.5	1.5	3	Prescribed Burn	Hazard Fuel Re
Totals		94	59.5	34.5		

*Note: Five Year Burn schedule was not actually implemented until FY2005, so projects are one year behind schedule.

A. SIGNATURE PAGE

OZARK NATIONAL SCENIC RIVERWAYS
PRESCRIBED FIRE PLAN

UNIT NAME: Stegall Mountain

Prepared By: /s/Scott Bressler Date: 10/02/001
Lead Forestry Technician/Engine Foreman

Reviewed By: /s/Bobby Bloodworth Date: 2/17/06
Fire Management Officer

_____ Date: _____
Chief Natural Resources

_____ Date: _____
Chief Ranger

_____ Date: _____
Missouri Department of Conservation

Regional
Review By: /s/Bobby Bloodworth Date: 1/29/02
MWR Fuels Specialist

Technical
Review By: /s/Mike Beasly Date:11/29/01
Fuel Management Specialist
Yosemite National Park

Approved By: _____ Date: _____
Superintendent

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APPENDECIES

1. Technical Reviewer Checklist and Comments
2. Reviewers' Comments
3. Maps
4. Risk Mitigation and Complexity Worksheets
5. Fire Modeling Outputs
6. Agency Administrator Go/No-Go Pre-ignition Approval
7. Prescribed Fire Operations Go/No-Go Checklist
8. IAP/Briefing Guide
9. Adequate Holding Resources Worksheet
10. Post-Project Analysis
11. Prescribed Fire Monitoring Form

B. EXECUTIVE SUMMARY

This will be the fifth entry with prescribed fire in this unit. It was previously burned in spring of 1994,1996, 1998 and 2002. The unit is part of Stegall Mountain Natural Area. Missouri Department of Conservation (MDC) and Ozark National Scenic Riverways (ONSR) have jointly developed management direction. Most of the area is a mosaic of glade and Savannah sites, which have become more forested and the glades, therefore, are "in imminent danger of...losing their open glade species."

The goals for this burn are to restore fire and associated natural processes to the natural communities in order to retain species composition and other characteristics of natural communities. This goal was developed jointly by ONSR and MDC during the natural area nomination process and is supported by the ONSR Resource Management Plan (RMP) project statements: OZAR #125 Develop/Implement Natural Area Management Plans; OZAR #73 Monitor and Mitigate Identified Park Threats; OZAR #121 Monitor and Protect Select Vegetation Communities; and OZAR #253 Participate on State Wildlife Management in the Park. The approved 1994 ONSR Fire Management Plan direction is to "maintain natural processes;" it allows prescribed burns "predicated on adequate vegetation studies, prescription development and coordination with adjacent agencies within the Natural Zone." The ONSR glade vegetation study and Stegall Mountain Natural Area Nomination provide the basis for establishing quantifiable objectives, developed through coordination with MDC and ONSR biologists.

C. DESCRIPTION OF PRESCRIBED FIRE AREA

GENERAL AREA:

LOCATION:

Legal:

1. T 28 N, R 2 W, SEC 17, 18, 19, 20
2. Latitude N 37'05 00"
   Longitude W 91'12 30"
3. UTM Zone_____, Easting__. Northing__.

Fire Management Zone: Suppression (Mixed Hardwood Forest).

District: North .

GEOGRAPHIC ATTRIBUTES:

Size: 1015 – 693 acres on Missouri Department of Conservation and 322 on Ozark National Scenic Riverways.

Elevation Range: Upper 1348' – Lower 680' – Change in Elevation 668'

Slope Range: 5-45%

Aspect Range: Generally northwest. East slopes, ridge-tops and west slopes occur on two main ridges.

DESCRIPTION OF PROJECT BOUNDARIES:

This area includes portions of Peck Ranch Wildlife Area managed by the Missouri Department of Conservation and Stegall Mountain near Rocky Falls is managed by Ozark National Scenic Riverways. The area is all in a State Natural Area. The boundary is divided into sections A-J based on landmarks, as indicated on the Project Map. The east boundary is the Ozark Trail (a hiking trail), Kelley Hollow Drainage and an old logging spur from the ridge road to the south. The south boundary is an old logging road and an improved gravel road leading to Stegall Mtn. Lookout Tower. The west boundary is the drainage in White Oak Hollow and 700' of hand-line to Shannon County road #525. The north boundary from west to east includes Shannon County road #525, Rocky Creek and about ½ mile of a dirt road from Rocky Falls to the Ozark Trail at the mouth of Kelley Hollow.

VEGETATION DESCRIPTION:

95% of the fuels adjacent to the unit are classified as Fuel Model 9.

Vegetation type	Fuel Model NFFL	Estimated Acres	Estimated Tons Per Acre
80% Oak-Pine Forest	9	812	3.5
20% Rhyolyte Glades	1	203	4

PROJECT MAP (attachment)

VICINITY MAP (attachment)

D. GOALS AND OBJECTIVES

GOALS

1. Provide for firefighter safety.
2. Burn with 1000 hour fuel moisture of approximately 17-19% to produce a moderately intense burn that will minimize damage to over-story trees, yet maximize the reduction of woody encroachment on glade and Savannah sites.
3. Promote natural ecological processes
4. Reduce hazardous fuels.
5. Promote public awareness and support for the NPS Fire Management Program.
6. Keep the fire from escaping or damaging public or government property.
7. Enhance Wildlife habitat.
8. Protect riparian areas.
9. Provide for training opportunities for firefighters.
10. Provide an opportunity to work with other agencies in a fire environment.

SPECIFIC OBJECTIVES:	PROPOSED REDUCTION WITHIN ONE YEAR	ACTUAL RESULTS
Kill saplings less than 4 inches d.b.h. in upland forest (ELT-ridge and side slope), opening up the stand structure for a more Savannah like appearance.	20-40%	
Top kill blackjack oak, winged elm and winged sumac <2 inches d.b.h. on glades and in glade margins.	70-90%	
Top kill blackjack oak and winged elm >2 inches d.b.h. on glades and in glade margins.	50-70%	
Burn unit with moderate intensity	75-90%	

Range of Acceptable Results Expected Across The Project Area

Throughout the entire unit a mosaic of different levels of fire severity are desired and acceptable.

E. PROJECT COMPLEXITY

This burn rates as a low complexity project that should pose no unusual risks to personnel safety or property. Burn duration will be 24 hours or less, with isolated residual burning expected in fuel jackpots.

HAZARD, RISK AND COMPLEXITY WORKSHEETS (attached)

F. ORGANIZATION

This burn unit overlaps two public ownerships, NPS and MDC. In order to ensure responsibility for the fire resides with an employee of that agency, the burn will be conducted under a unified command structure (I.C.S.). NPS and MDC will share Burn Boss responsibilities. The burn organization will be set up under the I.C.S. structure.

Personnel:

1. Fire Program Coordinators — NPS and MDC
2. Prescribed Burn Bosses — NPS and MDC
3. Division A — TBD
4. Division B — TBD
5. Division C — TBD
6. Group D/Interior Ignition Team — TBD
7. Fire Effects Monitors — NPS and MDC
8. Safety Officer — TBD
9. Fire Weather — TBD
10. Crew: Respective agencies will assign available, qualified individuals to specific teams by day prior to burn.