

# Appendix K

## Prescribed Burn Plan

ADMINISTRATIVE UNIT: National Park Service / C&O Canal NHP

Prescribed Fire Project Name: Ft. Duncan Rx Burn

PREPARED BY:

NCR FMO / RXB2

DATE: \_\_\_\_\_

TECHNICAL REVIEW BY:

RXB2 / Antietam NB FMO

DATE: \_\_\_\_\_

COMPLEXITY RATING:

LOW

APPROVED BY:

C&O CANAL NHP Superintendent

DATE: \_\_\_\_\_

### ELEMENT 1: AGENCY ADMINISTRATOR PRE-IGNITION APPROVAL

Chesapeake And Ohio Canal National Historical Park  
Wildland Fire Management Plan  
December 2009

Instructions: The Agency Administrator's Pre-Ignition Approval is the intermediate planning review process (i.e.: between the Prescribed Fire Complexity Rating System Guide and Go/No-Go Checklist) that should be completed before a prescribed fire can be implemented. The Agency Administrator's Pre-Ignition Approval evaluates whether compliance requirements, Prescribed Burn Plan Elements, and internal and external notifications have been or will be made. This document also expresses the Agency Administrator's intent to implement the Prescribed Fire Plan. If ignition of the prescribed fire is not initiated prior to the expiration date determined by the Agency Administrator, a new approval will be required.

YES	NO	KEY ELEMENT QUESTIONS
		Is the Prescribed Fire Plan up to date? <i>Hints: amendments, seasonality.</i>
		Will all compliance requirements be completed? <i>Hints: cultural, T&amp;E Species, smoke management, NEPA.</i>
		Is Risk Management in place and residual risk acceptable? <i>Hints: Prescribed Fire Complexity Rating Guide completed with mitigation measures identified and documented.</i>
		Will all elements of the Prescribed Fire Plan be met? <i>Hints: preparation work, mitigation, weather, IAP, prescription</i>
		Will internal and external notifications and media releases be completed?
		Will key Agency staff be fully briefed and understand this project?
		Are there any extenuating circumstances that would preclude successful implementation of the plan?
		Have you determined if/when you are to be notified that contingency actions are being taken? Will this be communicated to the RXB2?
		Other:

Recommended By: \_\_\_\_\_ Date: \_\_\_\_\_

Approved By: \_\_\_\_\_ Date: \_\_\_\_\_

Approval Expires: \_\_\_\_\_

**ELEMENT 2: Prescribed Fire GO/NO-GO Checklist**



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Has the burn unit experienced unusual drought conditions or contain above normal fuel loadings which were not considered in the prescription development? If <b>no</b> , Proceed with checklist. If <b>yes</b> , go to next item.	YES	NO
If yes, have appropriate changes been made to the Ignition and Holding plan and the mop up and patrol plans? If <b>yes</b> , proceed to the checklist below. If <b>no</b> , STOP		

YES	NO	QUESTIONS
		Are ALL fire prescription elements met?
		Are ALL of the smoke management specifications met?
		Has ALL required current and projected fire weather forecast been obtained and are they favorable?
		Are all planned operations personnel and equipment on site and operational?
		Has the availability of all contingency resources been checked and are they available?
		Have All personnel been briefed on the project objectives, their assignment, safety, hazards, escape routes & safety zones.
		Have all of the pre-burn considerations indentified in the Rx Burn plan been completed or addressed?
		Have All of the required notifications been made?
		Are ALL permits and clearances obtained?
		In your opinion, can the burn be carried out according to the Rx Burn Plan and will it meet the planned objectives?

If all of the questions were answered "YES" proceed with a test fire. Document the current conditions, location, and results.

\_\_\_\_\_  
Burn Boss

\_\_\_\_\_  
Date

### ELEMENT 3: COMPLEXITY ANALYSIS SUMMARY

PRESCRIBED FIRE NAME: Ft Duncan Rx

Chesapeake And Ohio Canal National Historical Park  
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ELEMENT	RISK	POTENTIAL CONSEQUENCES	TECHNICAL DIFFICULTY
1. Potential for Escape	Low	Low	Low
2. Number & dependence of activities	Low	Low	Low
3. Off-site values	Low	Low	Low
4. On-Site values	Low	Low	Low
5. Fire Behavior	Low	Low	Low
6. Management Organization	Low	Low	Low
7. Public & Political interest	Low	Low	Low
8. Fire Treatment Objectives	Low	Low	Low
9. Constraints	Low	Low	Low
10. Safety	Low	Low	Low
11. Ignition Procedures	Low	Low	Low
12. Interagency coordination	Low	Low	Low
13. Project Logistics	Low	Low	Low
14. Smoke Management	Low	Low	Low

#### COMPLEXITY RATING SUMMARY

Risk = **Low**

Consequences = **Low**

Technical Difficulty = **Low**

Summary Complexity Determination = **Low**

Rationale: Due to the small size of the unit and the straightforward ignition method (strip/head), there is very little chance of escape. Even with changes in weather, the resources on hand will be able to control.

#### ELEMENT 4: DESCRIPTION OF PRESCRIBED FIRE AREA

This Prescribed Fire Plan is being written to include the grass field at the end of Pleasantville Rd. near Ft Duncan in Dargan MD.

#### Ft. Duncan Unit

##### A. Physical Description

1. Location: End of Pleasantville Rd. adjacent to parking area. West of District Maintenance Shop.
2. Size Total: 11 ac. in 2 separate units



3. Topography: Rolling hills, elevation varies from 545' – 565'
4. Project Boundary: Gravel Road to the North and woodland surrounding three remaining sides.

**B. Vegetation/Fuels Data**

1. On-site fuels data: This unit is comprised of grasses. These grasses are mostly Orchard Grass and Fescue.
2. Adjacent fuels data: Adjacent fuels are upland hardwood woodland (primarily FM 8/9)

**C. Description of unique features:** There are no unique features within this burn unit.

**ELEMENT 5: GOALS and OBJECTIVES**

**A. Goals:**

The primary goal of this project is restoration of the open area to a natural meadow like state comprised of Warm Season Grasses (WSG). This will also help to maintain the historic vista while reducing mowing costs.

**B. Objectives:**

1. Resource Objectives: This burn will aid in the reduction of hazard fuels, invasive and pioneer woody species, including; downed materials, cool season grass thatch, exotic or non-native species, and pioneer woody species such as Black Locust, eastern Red Cedar, Box Elder, etc... The scenic vistas will be restored to maintain the character of the C&O canal when operational. Woody stems will be reduced by 50% in burn area.
2. Prescribed Fire Objectives: The fire will burn hot enough to consume thatch and downed woody debris. This fire will be managed so as to maximize residence time on unwanted native pioneer species such as Black Locust and Eastern Red Cedar. This will prevent undesirable woody species from encroaching on the historic vista and encourage Warm Season Grasses.

**ELEMENT 6: FUNDING**

**A. Cost:**

This project is expected to cost between \$1,100 and \$2,200 from planning to implementation and monitoring.

**B. Funding Source**

This project will be funded by FMPC utilizing Wildland Urban Interface funding (W12) which has been targeted for prescribed fire.

**ELEMENT 7: PRESCRIPTION**

A. Environmental Prescription

This prescribed burn will take place in the early spring of 2011, while the majority of grasses are still dormant and cured. This burn will ideally take place prior to green-up which typically occurs in mid to late April.

Burning will not be conducted when the Keech-Byram Drought Index is higher than 400 which may cause the fire to burn into the ground and cause extensive mop up. Burning will also not take place when regional fire activity is high or when Park activities warrant. Antietam NB's FTS weather station (180303) will be used to document weather conditions.

Weather Index	Acceptable Range
Temperature (degrees F)	32-70
Relative Humidity (%)	20-70
Wind Direction	Preferred sw-nw
Wind Speed (mph)	3-12
1 hour Fuel Moisture (%)	<10
10 hour Fuel Moisture (%)	>7
100 hour Fuel Moisture (%)	>12
1000 hour Fuel Moisture (%)	>20
KBDI (0-800)	<400

B. Fire Behavior Prescription

The *BEHAVE 4+* fire modeling system was used to calculate the fire behavior parameters. Flame lengths of up to 4' will be acceptable to achieving objectives while being able to maintain control of the fire by on-site resources. The weather parameters and firing techniques listed in this plan will dictate fire behavior which can be managed by on-site resources. In some locations, especially interior, flame length may exceed 4' which is acceptable. Flame length at the control lines will be less than 4' to ensure complete control of the fire. The presence of 2 Type 6 Engines, expected prevailing westerly winds, and controlled firing patterns will ensure that firefighters will be able to safely conduct this burn. NFDRS Fuel Model 1 –Short Grass represents the primary fuel model in this unit. Rates of Spread (ROS) of 15-24 chains per hour can be expected. This range is well within the control capabilities of on-site resources.

## ELEMENT 8: SCHEDULING

A. Ignition Time Frames / Seasons:

This burn will take place in late winter or early spring while majority of grasses are still dormant and cured but prior to full green-up.

B. Projected Duration:

This burn is expected to last only one day (probably 1-2 hrs), and impact to C&O Canal personnel is expected to be minimal.



C. Constraints:

This burn will not be conducted on holidays, weekends, or times of high visitor use. Burning will also be suspended if the Keech-Byram Drought Index (KBDI) is greater than 400 or when regional wildfire activity is high.

**ELEMENT 9: PRE-BURN CONSIDERATIONS**

A. Considerations

1. On-site:

Containment lines are established – mowed

Snags are felled as necessary

Pre-burn photos are taken at predetermined points to record conditions.

Burn notices are placed at strategic locations in the Park website.

Equipment is pre-positioned and checked for operability.

2. Off-site

Plan is completed with all applicable signatures

Notification has been made to all adjacent property owners.

Notification has been made to local Comm. Ctr. And VFD

Needed supplies and equipment is assembled.

B. Method and Frequency for Obtaining Weather and Smoke Management Forecasts:

Weather data will be obtained through WIMS from the Antietam NB RAWS station (180303) located near Sharpsburg MD. Spot weather forecast will be requested prior to burn and on-site conditions will be recorded and broadcast to all affected personnel.

Weather data will be collected every 30 minutes.

C. Notifications:

Notices will be placed at conspicuous locations such as the Pleasantville Maintenance Shop to explain that a prescribed fire is planned and access to certain areas may be restricted.

The following agencies will be notified prior to ignition:

- |  |                |
|--|----------------|
| 1. Washington Co. Emergency Communication Ctr. | (240) 313-2910 |
| 2. Washington Co. Environmental Health Dept.   | (301) 791 3270 |
| 3. Potomac Valley Fire Co.                     | (301) 432-2130 |
| 4. Maryland DNR/Forest Service                 | (301) 791-4010 |
| 5. NCR Communication Ctr.                      | (301) 714-2235 |



**ELEMENT 10: BRIEFING**

1. Burn Organization
2. Burn Objectives
3. Description of Burn Unit
4. Expected Weather & Fire Behavior
5. Communications
6. Ignition Plan
7. Holding Plan
8. Contingency Plan
9. Wildfire Conversion
10. Safety

**ELEMENT 11: ORGANIZATION and EQUIPMENT**

The following are the recommended minimum number of resources required to implement this prescribed fire project. The Burn Boss (RXB2) has the discretion to increase these numbers depending on seasonal drought, weather conditions, experience level, etc. Additional resources will be ordered through NCRCC at (301) 714-2235.

**A. Positions:**

A minimum of 12 personnel will be needed for the burn

- (1) Burn Boss (RXB2)
- (3) Squad Bosses (FFT1)
- (8) Firefighters (FFT2)

**B. Equipment:**

- (2) Type 6 Engines

Hand Tools, Chain Saw w/ fuel and PPE, extra hose, First Aid Kit

- (5) Radios – portable

**C. Supplies**

Drinking water, 1 case

Kit with all documentation paperwork, OF-288s, CA-1s, CA-16s, CTRs, etc

**ELEMENT 12: COMMUNICATION****A. Radio Frequencies**

Command and Tactical – 172.425 NAC: 4C5 (CHOH Freq.)

Emergency and Region Communication Center – Receive: 170.3625 and Transmit: 163.150  
NAC: 4C5

Air Operations – Aerial resources will not be utilized on this project.

**B. Telephone Numbers:**

NCRCC (NPS Dispatch)	301 714-2235
Chief Ranger B. Clawson	301 714-2222
FMO J. Seabright	240 818-7151

### Element 13: PUBLIC AND PERSONNEL SAFETY

- A. Safety Hazards:
- Public access to areas surrounding the burn sites will be closed, and the burn should not have effect on public safety.
  - Snags and vehicle traffic are the primary hazards to fire personnel that have been identified.
- B. Measures Taken to Reduce the Hazards:
- Restricted public access to burn areas: trail closures, firefighters or other employees posted to restrict access to closed areas.
  - Potential snags will be felled prior to conducting the burn. Any snags that develop during the burn will be dealt with in the safest manner possible by a qualified sawyer. This can include closing an area in which snags cannot be safely felled.
  - All personnel will be briefed of all anticipated hazards and how to avoid or mitigate danger during the burn operation.
- C. Emergency Medical Procedures:
- At least one firefighter, mostly likely several, will be EMT-B qualified or higher and available to respond to any medical incidents during the burn. Sharpsburg Area EMS (SAEMS) will be notified via Washington County Communications Center for any ALS or ambulance transport needs.
- D. Emergency Evacuation Methods:
- All areas of each burn unit are located close enough to a road that a litter carry-out can be initiated with available resources on site. If additional personnel are required SAEMS and Sharpsburg Volunteer Fire Department, or any mutual-aid company, can provide assistance with, or conduct, any necessary rescue operations. Both companies also have access to 4-wheelers and other off-road vehicles, some able to provide ALS equipment and care, in the event of an incident.

If necessary, Maryland State Police provide air-evacuation for all medical air flights, and are generally available to respond to our location in short time-frame.

In the event of an evacuation of personnel or visitors, the park tour roads will be adopted for the flow of traffic.

### ELEMENT 14: TEST FIRE

- A. Purpose and Location:



A test fire will be ignited immediately prior to ignition of the main unit to ensure control can be maintained and objectives will be met. Location of the test fire will be at the discretion of the Burn Boss.

B. Test Fire Documentation:

**ELEMENT 15: IGNITION PLAN**

A. Firing Method:

Ignition will be by hand, utilizing drip torches.

B. Techniques:

Once black line is established, Strip head method will be used.

C. Sequences:

Holding resources on flanks. Strips will run perpendicular to wind and tie into control lines at either end of unit. Small head fire will run into previously ignited strip ensuring complete control.

D. Ignition Staffing

Ignition squad will consist of one FFT1 supervising two FFT2 who will ignite the unit.

**ELEMENT 16: HOLDING PLAN**

A. General Procedures for Holding:

Entire burn unit is accessible by Engines thus combination of mowed strip/wet line will serve as adequate line to burn from. Firefighters with hand tools and backpack pumps will ensure blackline is sufficient prior to ignition. Expected fire behavior is LOW at the control lines with flame lengths of <4'.

B. Critical Holding Points and Actions:

It will be important to immediately respond to any spot fires or slop overs to prevent the fire from leaving park property.

C. Minimum Organization or Capabilities Needed:

One squad consisting of one FFT1 and 2-3 firefighters will be tasked as the holding team. Depending on weather conditions and fire behavior, additional personnel may supplement this team.

**ELEMENT 17: CONTINGENCY PLAN**

A. Trigger Point:

Spot Fires

Slop Over of control line

Prescription parameters exceeded such as drop in RH or increase in wind speed.

B. Actions Needed:

Immediate suppression. Any spot fire or slop over which cannot be contained within 30 minutes will be declared a wildfire.

C. Additional (contingency) Resources

Potomac Valley Fire Co. will be dispatched. Expected time until on scene is approx 10 minutes or less.

## ELEMENT 18: WILDFIRE CONVERSION

A. Wildfire Declared By:

Burn Boss

B. IC Assignment

Burn Boss (RXB2) will assume the role of ICT4 until relieved by qualified ICT

C. Notifications:

Burn Boss will notify C&O Canal Chief Ranger and/or Superintendent through NCRCC (301 714-2235

D. Extended Attack Actions

The on-site resources will immediately transition to suppression actions under the direction of the IC. The typical weather conditions combined with shortened length of daylight will aid in suppression actions. A large number of fire apparatus will be available to quickly respond to support NPS actions. Based on topography, anticipated weather conditions, and available resources, a declared wildland fire is expected to be contained within one operational period.

## ELEMENT 19: SMOKE MANAGEMENT and AIR QUALITY

A. Compliance

Burn will be conducted in winter or early spring with a slightly unstable atmosphere (mixing heights of >500m), which will result in good smoke dispersion and little to no impact on the health of any park visitor or neighbors.

Information source: <http://www.weather.gov/data/LWX/FWFLWX>

B. Permits to be obtained:

Verbal authorization upon notification via Wash. Co. Environmental Health Dept.

C. Smoke Sensitive Areas:

No Smoke sensitive areas in the vicinity

D. Impacted Areas:



With prevailing winds from the West, most smoke will be pushed toward woodland before dissipating.

E. Mitigation measures:

This Rx burn will be conducted during a slightly unstable atmosphere with conditions conducive to good column development and smoke dispersion.

## ELEMENT 20: MONITORING

A. Fuels Information (forecast and observed) Required and Procedures

The onsite fuels data has been referenced in Element 4 of this plan. Prior to burning, the unit will be checked to ensure that no drastic changes have occurred in fuel loading or type. During the burn, weather observations will be collected and broadcast every ½ hour.

After the burn is completed, the site may be seeded with Warm Season Grasses (WSG) if necessary. This site will be monitored by C&O Natural Resource staff with the use of established photo points to document achievement of objectives.

B. Weather Monitoring Required and Procedures:

A spot weather forecast will be obtained from NWS/Sterling @ <http://spot.nws.noaa.gov/cgi-bin/spot/spotmon?site=lwx>

Current seasonal weather will be collected from Antietam NB's FTS RAWS station.

[http://www.fs.fed.us/land/wfas/fdr\\_obs.dat](http://www.fs.fed.us/land/wfas/fdr_obs.dat) On site weather will be collected every 30 minutes during the burn. These weather observations will be included in the C&O Canal project file.

C. Fire Behavior Monitoring Required and Procedures

The fire will be constantly monitored by the burn boss. If any trigger points are met, or if the fire behavior moves out of prescription, the burn boss will implement any necessary changes in tactics to maintain firefighter and public safety.

D. Monitoring Required to Ensure That Prescribed Fire Plan Objectives are Met:

The burn boss will ensure that the fire is burning sufficiently to remove any woody stems under 2". Following the burn, monitoring will be conducted to observe Fire effects on invasive woody species and grasses (desirable and undesirable). Warm Season Grasses will be reinforced by seed if determined necessary. Plots will be established in the fields in accordance with RM-18, chapter 8, *Monitoring & Ecology*. Shenandoah NP Fire Effects Monitoring crew will work with Park NR staff to document changes in conditions to assist in the development of future projects.

E. Smoke Dispersal Monitoring Required and Procedures:

The burn boss will ensure that the amount and direction of smoke dispersal is monitored. The plan calls for the majority of smoke to drift over NPS lands that are not developed. A slightly unstable atmosphere will ensure good column development as well as smoke dispersion.

**ELEMENT 21 POST BURN ACTIVITIES****A. Post Burn Activities That Must Be Completed:**

Re-seeding of Warm Season Grasses as necessary to achieve desired conditions

Monitoring of vegetation (photo plots – 3 mo., 6 mo., 1 yr, etc...)

**APPENDICES**

- A. Maps: Vicinity, Project
- B. Technical Review Checklist
- C. BEHAVE 4.0 Fire Behavior Modeling Documentation
- D. Job Hazard Analysis

**TECHNICAL REVIEWER CHECKLIST**

<b>FIRE PLAN ELEMENTS:</b>	<b>S / U</b>	<b>COMMENTS</b>
<b>1. Signature page</b>		
<b>2. GO/NO-GO Checklists</b>		
<b>3. Complexity Analysis Summary</b>		
<b>4. Description of the Prescribed Fire Area</b>		
<b>5. Goals and Objectives</b>		
<b>6. Funding</b>		
<b>7. Prescription</b>		
<b>8. Scheduling</b>		
<b>9. Pre-burn Considerations</b>		
<b>10. Briefing</b>		



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**U = Unsatisfactory**

**Not Recommended for Approval:**

Date \_\_\_\_\_



# Prescribed Burn Section 7

Chesapeake and Ohio Canal NHP  
National Park Service  
U.S. Department of the Interior



CHOH Fire GIS - JHH

September 2009



