

Theodore Roosevelt National Park Loop 2008 South Unit Prescribed Fire

April 13, 2008

Prepared by Jon Freeman

Burn Unit Summary

The Loop 2008 South Unit Prescribed Fire was completed during one operational period on April 13, 2008. It consisted of four separate units ranging from 19 to 98 acres and totaling 219 acres of mixed, open grasslands and barren badlands. The vegetation type is a mix of native perennial and non-native annual grass with a minor component of silver sage, greasewood, and juniper. Brushy areas were confined primarily to the drainages. Grazing intensity was patchy, but high in some areas. Vegetation type is characterized as Fuel Model 1/GR 2, short grass prairie/low load, dry climate grass.



Loop 7 – Ignition along Coal Vein road

Personnel

Burn Boss: Gary Luce
Ignition Specialist: Rod Skalsky, Kenn Perreault (trainee – Loop 6)
Holding Specialist: Eric Allen
Fire Monitor: Jon Freeman
4 Type 6 Engines
1 5-Person Squad (holding)

Weather conditions

Originally the prescribed fire was planned for April 12th, but gusty north winds, in excess of 25mph, moved the burn to Sunday the 13th. The National Weather Service in Bismarck predicted a shift to more southerly winds overnight, bringing sunny and warm weather on Sunday. The NWS forecast was generally quite accurate, though their predicted relative humidity was far lower than actually occurred. Conditions remained fairly consistent and predictable throughout the burning period, which resulted in a very successful operation. It was critical to complete this project on Sunday as the NWS issued a fire weather watch for Monday the 14th due to high temperatures and low relative humidity.

Objectives

- Provide for firefighter and public safety during the implementation of this plan.
- Reduce 1-hr dead and down fuels in prairie by at least 75% immediate post-burn.
- Retard encroachment of woody plant species such as snowberry and juniper.
- Maintain mixture of native cool and warm season grasses.
- Stress cool season exotic grass species.
- Reduce likelihood of high severity catastrophic wildfires through fuel reduction.



Loop 6 – North side ignitions

Environmental Data

- Live fuel moisture (juniper): 85.3%
- Soil Moisture: 47.2%
- Fuel loading: 1.51 tons/acre

Weather Observations

Date	Time	Temp	RH	Wind Speed	Wind Direction	Comments
4/13/08	0930	44	59	1-3 G5	S/SW	Calm, Cool, and Cloudless
4/13/08	1000	45	53	3-5 G7	SW	“
4/13/08	1030	51	47	2-4 G7	SW	
4/13/08	1100	53	49	3-6 G10	S/SW	
4/13/08	1200	55	41	1-4 G8	SW	
4/13/08	1300	58	44	2-4 G7	SE	
4/13/08	1400	62	39	4-7 G10	SE-SW	
4/13/08	1430	61	38	4-6 G8	SE	
4/13/08	1530	62	39	2-4 G8	S/SW	
4/13/08	1630	60	40	5-8 G10	S	
4/13/08	1730	63	40	6-8 G10	S	
4/13/08	1830	60	46	6-8 G12	S/SW	

Wind speed in miles per hour, Temperature in degrees Fahrenheit

Fire Behavior

Fire behavior was driven by terrain and ignition patterns as winds were primarily light. In some locations, grazed patches and densely vegetated drainages contributed to changes in fire behavior. Areas of continuous cured native perennial grass and mixed annual Brome grass allowed extensive flanking and head fires to cross the prescribed fire areas.



Flanking fire moving SW across Loop 9

Fire Behavior Observations

Time	Location	Fire Type	ROS	FL	Comments
1030	Loop 7 S. end	H	15 ch/hr	3'	
1100	Loop 7 S. end	H	8 ch/hr	2'	6 ch/hr flanking
1200	Loop 7 S. end	B	2 ch/hr	1'	
1200	Loop 7 N. end	H	60 ch/hr	5'	
1300	Loop 9 NW corner	F	15 ch/hr	3'	
1400	Loop 9 NW corner	H	40 ch/hr	4'	
1500	Loop 8 on road	H	40 ch/hr	5'	10 ch/hr flanking
1600	Loop 6 W. bluff	F	12 ch/hr	2'	
1730	Loop 6 W. bluff	F	5 ch/hr	1'	

B=backing fire; F=flanking fire; H=head fire

ROS = rate of spread measured in chains per hour (1 chain = 66 feet or ≈ 20 meters)

Fire Progression

Ignitions began at the SE corner of Loop 7 (98 acres) at 1015 at a critical section of mowline. Personnel then proceeded to ignite along the north and south perimeters moving northwest towards the paved park road. Holding for Loop 7, as well as the additional three units, revolved around park roads, badlands/bentonite cliffs, and mowlines. Both ignition and holding were very successful and the unit was tied in at 1200. One engine remained at Loop 7 while the remaining resources proceeded to Loop 8 and 9.

Loops 8 and 9 were treated as a single unit, with ignitions beginning at 1300 in the northeast corner of Loop 9 (68 acres). Again, ignitions were begun here, not only to take advantage of prevailing winds, but to secure a critical section of mowline. Ignitions continued along the eastern perimeter, reaching a dense stand of juniper at 1330. The most intense fire behavior of the afternoon occurred in these juniper, which resulted in significant overstory mortality. Ignitions began on the north end

of the paved park road at 1345 and proceeded south. Both ignitions teams met at the south end of Loop 9 at another section of mowline, and tied in the unit at 1530.

Ignitions on Loop 8 (19 acres) began at 1430 in the northeast corner and proceeded counterclockwise around the unit. Loop 8 was also surrounded by non-vegetated cliffs, as well as the paved park road, and no holding issues were encountered.

The final unit of the day was Loop 6 (38 acres), where ignitions began at 1700. Crews began lighting off of the paved park road and moved south along the east and west perimeters (non-vegetated badlands), meeting at a steep, juniper-covered hillside with a mowline at the ridgeline. Ignitions occurred at the mowline, and fire was allowed to back down into the juniper. By 1800 hours fire behavior was decreasing with minimal fire spread on the juniper slopes.

With this completed, the unit was tied in at 1815, ending a very safe and successful day of prescribed fire.