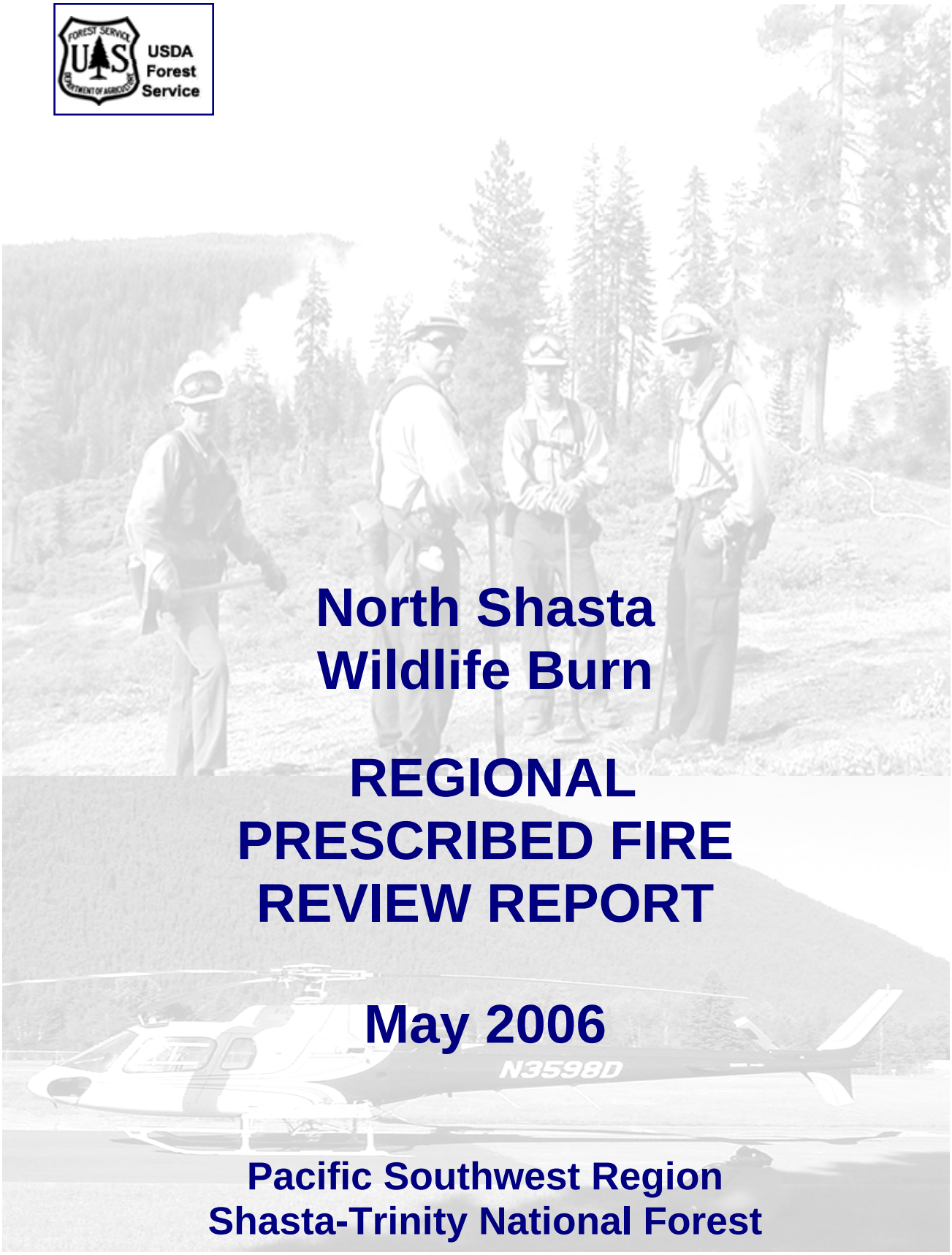
USDA Forest Service



North Shasta Wildlife Burn

REGIONAL PRESCRIBED FIRE REVIEW REPORT

May 2006

Pacific Southwest Region
Shasta-Trinity National Forest

I. OVERVIEW

NORTH SHASTA WILDLIFE BURN PROJECT

On April 30, 2004, the District Ranger on the Shasta-Trinity National Forest (Forest), Shasta-McCloud Management Unit (District), signed a Decision Memo (DM) for the North Shasta Wildlife (NSW) Burn Project. The project was analyzed as the "North Mt. Shasta Wildlife Habitat Enhancement Project" for actions that had been categorically excluded (CE) from documentation in an Environmental Analysis or Environmental Impact Statement using CE #6 (timber stand and/or wildlife habitat improvement activities which do not include the use of herbicides, or do not require more than one mile of low standard road construction).

The project area was reviewed by an interdisciplinary (ID) team that determined there were no extraordinary circumstances or significant impacts to the environment. The ID team conclusion included a finding of no effects to cultural resources, soils or hydrology, and sensitive or threatened and endangered species or to their critical habitats.

The NSW Burn Project is a multi-year wildlife habitat enhancement project. The project area is dominated by brush fuel-types. The purpose of the NSW Burn Project was to convert approximately 1,800 acres of a mature and decadent shrubfield to an early successional condition. Burning would be done on 12 areas ranging in size from 27 to 362 acres. The project area is relatively flat with slopes no greater than 10 to15 percent. Soils are sandy with pumice gravel and moderate to low erodibility. There are no streams within the areas proposed for burning. The benefits of the project include forage for deer and other wildlife species and reduced hazard from wildland fire.

The NSW Burn Project appeared in the Forest's Schedule of Proposed Actions, and a scoping letter was sent to all interested parties. In response, the District received one letter and one telephone call, both in support of the project.

On March 10, 2005, the Deputy Forest Supervisor approved the NSW Burn Plan which was consistent with the purpose and objectives found in the project's DM and resource specialist reports. The prescribed fire complexity rating for the NSW Burn Plan was moderate.

The District initiated the NSW Burn Project on Monday, February 13, 2006, burning 75 acres, and on Tuesday, February 14, burning an additional 10 acres. The project continued on Thursday, February 23, 2006, and Friday, February 24, burning an additional 70 acres and 61 acres, respectively.

During the early morning of Sunday, February 26, 2006, Yreka Interagency Communications Center Dispatch reported active fire at the NSW Burn Project area. Evidence at the scene suggests that this fire may have been caused by burning fuel (a remnant from the prescribed fire burn project) pushed by significant wind gusts through containment lines. The wildfire, later called the Hotlum Fire, burned approximately 3,000 acres, and spread to both sides of US Highway 97, near the town of Weed in Siskiyou County, California. Mandatory evacuation efforts of the Mt. Shasta Vista subdivision began when the fire jumped the highway. The fire burned brush, sage, juniper, mountain mahogany, manzanita, ponderosa pine, and damaged several buildings and vehicles.

GENERAL WEATHER

Based on data gathered from the Remote Automated Weather Station located at the Weed Airport (Weed RAWS), February 2006 began with light precipitation for the first four days of the month, with a total of 0.27 inches. Dry, mild weather existed between February 5 and February 16, 2006. Maximum temperature of 65 degrees was recorded on February 10. A weak weather system brought a few hundredths of an inch of precipitation to the area between February 17 and February 18. Dry and mild weather returned to the area between February 19 and February 26, 2006. The month ended with wet weather, the last two days receiving 1.73 inches of precipitation. In total, the area received precipitation 1.72 inches below normal and daytime temperatures were higher than normal.

SPECIFIC WEATHER

Based on data gathered from the portable RAWS located on-site at the NSW Burn Project area, the maximum temperature for re-ignition of the burn on Thursday, February 23, 2006, was 60 degrees and the minimum relative humidity was 23 percent, both occurring as normally expected during mid-afternoon. Afternoon winds were light northwesterly 5 to 7 miles per hour (mph) with no wind gusts.

On the second day of the burn, Friday, February 24, afternoon temperatures were a little cooler and the relative humidity was somewhat higher. The maximum temperature that afternoon was 54 degrees and the minimum relative humidity was 33 percent. Afternoon winds were lighter than the previous day averaging only 1 to 2 mph from the north, with no wind gusts.

On Saturday, February 25, the maximum afternoon temperature reached 59 degrees, the relative humidity decreased, and the wind speed began to increase. The minimum afternoon relative humidity reached 13 percent by 3:00 p.m. and hit its lowest point of 11 percent at 10:00 p.m. The highest hourly wind speeds of 8 mph were recorded at 6:00 p.m. However, winds were gusting to 14 mph by mid- to late-morning and to 20 mph by early afternoon. Winds were out of the southeast to southwest during this period.

On the day of the escape, Sunday, February 26, there was no change in afternoon temperatures with a maximum temperature of 60 degrees. This is about 10 degrees above the monthly normal. The lowest afternoon relative humidity remained in the teens, with the lowest readings between 12 and 15 percent. The main weather change on this day was the increase in wind speeds. Winds continued out of the southeast to southwest 10 to 15 mph from the early morning hours through the afternoon with wind gusts mainly between 25 and 30 mph. The strongest wind gusts occurred at 2:00 p.m. according to the Weed RAWS (gusts to 70 mph). There was no data available after 1:00 p.m. from the portable RAWS.

WEATHER FORECASTS

Site specific weather forecasts (spot forecasts) for this project area can be obtained from either the National Weather Service in Medford, Oregon, or from the Predictive Services Unit (PSU) at the USDA Forest Service Northern Operations Center in Redding, California.

A site specific weather forecast for the NSW Burn Project was prepared by the Redding PSU on Wednesday, February 22, 2006. This spot forecast covered the outlook period from Wednesday night through Sunday, February 26, 2006. This was the weather forecast that was used for the Thursday, February 23, burn operations.

The detailed weather forecast for Thursday correctly predicted all weather elements. Sunday's cold front came through the area later than predicted in

the outlook period weather forecast. The forecast predicted maximum temperatures and wind speeds lower than actually measured and afternoon minimum relative humidity percentages higher than actually measured.

A second site specific weather forecast prepared by the Redding PSU for the NSW Burn Project was issued on Friday, February 24, 2006, for that day's burn operations. As with the previous site specific weather forecast, the predicted weather elements for the first three periods (Friday, Friday night, and Saturday) were accurate. The outlook period for Sunday, February 26 through Tuesday, February 28, called for "eye level winds south-southeast to west-southwest generally 7 to 15 mph with gusts 20 to 28 mph, probably strongest Sunday." The strongest sustained wind speeds reported by the portable RAWS on Sunday morning were 15 mph with wind gusts to 35 mph.

II. CHRONOLOGY OF EVENTS

Thursday, February 23, 2006:

● At 11:50 a.m., the test burn was started for the NSW Burn Project.

● At 12:00 p.m., burn operations began on the south side of Unit C of the project.

● In the afternoon, burn operations were moved into the perimeter of Unit C.

● At 4:30 p.m., burning was completed on the north side and east side perimeter of Unit C.

● The NSW Burn Project was patrolled until 5:30 p.m.

● At 5:30 p.m., all burning resources were released from NSW Burn Project.

Friday, February 24, 2006:

● At 12:00 p.m., the test burn was started for the NSW Burn Project.

● At 12:30 p.m., burning was continued in Unit C of the project.

● At 1:00 p.m., burn operations were relocated to south facing slopes of Unit C to improve burning conditions.

● At 4:00 p.m., burning personnel began ignition on the upper northwest area of Unit B.

● At 5:14 p.m., burning was completed for the NSW Burn Project.

Saturday, February 25, 2006:

● At 11:45 a.m., Division 7 patrolled the NSW Burn Project.

● At 1:00 p.m., Battalion Chief BC-71 was notified by Division 7 to organize assistance from Fire Engine E-62 and begin mop-up of 50 feet along the north dozer line of Unit C.

● At 4:46 p.m., E-62 departed from the NSW Burn Project area while Division 7 continued to patrol the area.

● At 6:00 p.m., Division 7 departed from the NSW Burn Project area.

● At 11:30 p.m., Division 7 received a call from California Department of Forestry and Fire Protection (CDF) Battalion Chief BC-2613 that he was responding to the NSW Burn Project area with three CDF Fire Engines; Division 7 called Battalion Chief BC-61 and Fire Captain 62 to also respond to the project area along with Division 7.

Sunday, February 26, 2006:

● At 12:00 a.m., Division 7 arrived at the NSW Burn Project and determined that all fire was within control lines.

● At 12:02 a.m., BC-61 and Fire Captain 62 arrived at the NSW Burn Project.

● At 12:30 a.m., Division 7 communicated and coordinated with other fire resources at the NSW Burn Project (Fire Engines E-2663, E-1212, E-3110, E-62; and BC-2613).

● At 1:27 a.m., 2 to 3 acres of fire were reported outside the north dozer line boundary of Unit C. One dozer and two fire crews were ordered for the project area.

● At 2:30 a.m., Division 7 ordered two additional Fire Engines and one Water Tender Operator to replace E-62 and E-2663 for dayshift operations.

● At 2:49 a.m., CDF Dozer D-2640 arrived at the project area to improve Unit C's north dozer line.

● At 4:00 a.m., two CDF fire crews arrived at the project area to start constructing hand line; little to no fire activity is reported.

● At 4:08 a.m. and 5:11 a.m., two CDF Fire Engines (E-1212 and E-3110) were released from the project area as the fire is quiet.

● At 8:00 a.m., BC-71 arrived at the Unit C project area; Division 7 briefed BC-71 about the current fire situation.

● At 8:34 a.m., Battalion Chief BC-51 arrived at the project area and concurred with Division 7 that there are no holding problems; "No open flame showing, winds still blowing 20-30 mph."

● At 11:00 a.m., Division 7 departed the project area with radio traffic quiet.

● At 11:41 a.m., BC-71 ordered an additional dozer and two fire crews for the NSW Burn Project.

● At 11:45 a.m., the Weed RAWS recorded declining relative humidity, steady winds at 35 mph, and wind gusts at 50 mph.

● At 11:59 a.m., the NSW Burn Project was declared a wildland fire.

III. FINDINGS

The following section documents the region's findings of factual events leading up to and possibly causing the apparent escaped NSW Burn Project. It is not intended to be an investigation of Forest personnel or the subsequent wildfire.

1. The DM for the NSW Burn Project was signed on April 30, 2004, by the Shasta-McCloud District Ranger and is in compliance with all established laws, regulations, and policies.

2. The NSW Burn Plan was approved by the Deputy Forest Supervisor on March 10, 2005, and is consistent with the purpose and objectives found in the project's DM and resource specialist reports.

3. The NSW Burn Plan was created utilizing regional format Version 4. Regional policy states that each Prescribed Fire Burn Plan is written in the standard regionally approved format, which is currently Version 5.

4. The project was rated at a moderate complexity in the NSW Burn Plan.

5. The NSW Burn Project was an on-going burn operation that started on February 13 and other portions continued on February 14, February 23, and February 24, 2006.

6. An on-site live fuel moisture sample near the portable RAWS was taken on January 26, 2006, with a reading of 120.4 percent. The live fuel moisture in the NSW Burn Plan called for a mid-range of 120 percent, with the hot range at 99 percent and the cold range at 140 percent.

7. The NSW Burn Project unit lay-outs originally followed reforestation units. Some units contained "dog-legs." The NSW Burn Project Unit B and C boundaries were modified on-site during implementation. The NSW Burn Project file did not contain documentation for these unit boundary modifications.

8. On Thursday, February 23, 2006, the NSW Burn Project was ignited following a successful test burn, with 70 acres burned that day.

9. The spot weather forecast and on-site fire weather observations for Thursday, February 23, 2006, indicated temperatures in the mid-50s and northwest to north wind direction conditions. The fire prescription parameters in the NSW Burn Plan called for the temperature and the wind direction mid-range to be "61-80" degrees with "south-southwest-southeast" winds, respectively. The NSW Burn Plan states that the information obtained from the spot forecast must ensure that site conditions will be within designated fire prescription parameters. On-site fire weather observations indicated warming temperatures reaching prescription parameters in the afternoon.

10. On Friday, February 24, following a successful test burn, the NSW Burn Project continued and an additional 61 acres burned that day.

11. All key fire personnel involved in all aspects of the NSW Burn Project had appropriate-level qualifications and experience - with the exception of the Burn Boss trainee for the Friday, February 24, 2006, burn operations. The Burn Boss for the Friday, February 24, burn operations was qualified as a Type 2 Burn Boss; however, the Burn Boss trainee was not. Regional policy states that a Type 2 Burn Boss will execute prescribed fire burn plans rated at a moderate complexity level.

12. The spot weather forecast issued Friday morning, February 24, predicted winds of 3 to 7 mph and wind gusts of 9 to12 mph. On-site fire weather observations indicated actual wind speed gusts of 3 to 5 mph. The wind speed mid-range in the NSW Burn Plan called for “2-7” mph. The NSW Burn Plan states that the information obtained from the spot forecast must ensure that site conditions will be within designated fire prescription parameters.

13. The outlook period from Friday’s, February 24, spot weather forecast predicted sustained winds of 4 to 8 mph with wind gusts of 11 to 15 mph for Saturday, February 25, and sustained winds of 7 to15 mph with wind gusts of 20 to 28 mph for Sunday, February 26, 2006.

14. On Saturday, February 25, the NSW Burn Project area was patrolled and a 50-foot mop-up conducted by Division 7 and E-62.

15. The Burn Boss was not identified in the NSW Burn Plan for Saturday’s, February 25, operational shift. The Forest’s Fire Management Plan states that the available qualified burn bosses are listed by name in the burn plan prior to implementation.

16. Daily spot weather forecasts were not requested for Saturday, February 25, or Sunday, February 26, 2006. The Weather Collection and Forecasts Section of the NSW Burn Plan states that spot forecast information is requested daily during burning and mop-up operations.

17. Both the Weed RAWS and portable RAWS reported poor relative humidity recovery and increasing winds during late-evening Saturday, February 25/early-morning Sunday, February 26, 2006. Fire resources were dispatched to the NSW Burn Project during this time.

18. The weather conditions at the NSW Burn Project area met “red flag” criteria during late-evening, Saturday, February 25, and early Sunday, February 26, 2006. However, no evidence was found to indicate that a red flag warning was issued by the National Weather Service.

IV. FOLLOW-UP ACTIONS

The Forest will draft an action plan that will include a schedule of items that need to be addressed to minimize future resource damage and future prescribed fire escapes. The Regional Forester will review and finalize the action plan, and will incorporate the lessons learned into training courses that will strengthen the Region’s Prescribed Fire Program.

HOTLUM FIRE – SHASTA-TRINITY NF