



United States
Department of
Agriculture

Forest
Service

Black Hills
National
Forest

Highway 385 North
RR 2, Box 200
Custer, SD 57730

Black Hills
Westberry
1988

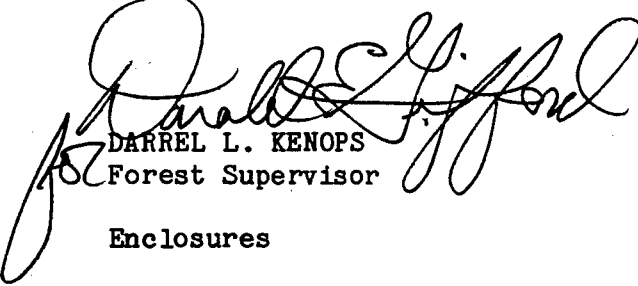
Reply to: 2520

Date: August 4, 1988

Subject: Burned Area Report - Westberry Fire

To: Regional Forester, R-2

Attached for your consideration is the final "Burned Area Survey Report" and request for emergency rehabilitation funds. Seed mixture and rate of application as discussed with Dave Smith are acceptable.


DARREL L. KENOPS
Forest Supervisor

Enclosures

SL:mgb



Caring for the Land and Serving People

FS-6200-28(7-82)

WEST BERRY TRAILS FIRE
Black Hills National Forest

The West Berry Trails Fire is located in Sections 35 & 36, Township 2 North, Range 6 East, Section 31, Township 2 North, Range 7 East, Sections 5,6,7,8 & 18, Township 1 North, Range 7 East, Sections 1,2,3,12 & 13, Township 1 North, Range 6 East, BHM. See the attached map. The fire was man caused.

The area is within the Steeply Dipping Plateau Lands Landtype Association. They are characterized as having broad, open, grassy ridgetops, narrow valleys and steep to very steep sideslopes. Dissection is strong. Sandstone, limestone and shale outcrops can be found throughout the area. Dominant soils are Vanocker and Hilger. Ponderosa pine, western wheatgrass, green needlegrass, leadplant and big & little bluestem are the dominant plant species found throughout the area.

The fire burned approximately 800 acres of National Forest land and 3000 acres of private lands.

High, moderate and low intensity burns are fairly evenly distributed throughout the burned area. Approximately 460 acres on National Forest land and 530 acres of private lands are in the high intensity category. The high intensity burned areas are confined mainly to slopes 30% and steeper. 210 acres of National Forest and 1920 acres of private lands are in the moderate category. The remaining 130 acres on National Forest and 550 acres on private lands burned with a low intensity.

Visual aesthetics are crucial to the area. The burn is adjacent to Rapid City, SD, the major city in the Black Hills area. Much of the burned area is visible from the city. The private lands within and adjacent to the burned area contain numerous dwellings and single family housing developments. Concern has already been expressed by the public to "green-up" the burned area as soon as possible on both the NFS lands and private lands within the burn.

The proposed rehabilitation plan includes seeding 460 acres of NFS land that burned with a high intensity. The steep to very steep sideslopes have little or no effective ground cover remaining to reduce soil erosion. In addition, 8 channel stabilization structures will be installed to reduce channel scouring and deposition of sediments, ash and charcoal on downstream private lands.

The seed mixture proposed to be used follows:

pubescent wheatgrass	5 lbs/ac
intermediate wheatgrass	5 lbs/ac
timothy	1 lb/ac
alsike clover	1 lb/ac
annual ryegrass	5 lbs/ac

Channel stabilization structures consist of straw bales held in place by steel posts or heavy rebar and reinforced with rock where necessary.

The same recommendations apply for private lands within the burned area.

AUGUST 2, 1988

BURNED AREA REPORT

(Reference FSH 2509.13, Report FS-2500-A)

>PART I - TYPE OF REQUEST<

1. Type of Report

A. ☒ Funding (Request for estimated FFF funds) B. ☐ Accomplishment Report

2. Type of Action

A. ☒ Initial (estimated funding is first requested)B. ☐ Interima. ☐ Updating the initial funding requestb. ☐ Supplying information for accomplishments to date on emergency work underwayC. ☐ Finala. ☐ Best estimate for funds needed to complete eligible rehabilitation measureb. ☐ Following completion of funded work

PART II - FIRE LOCATION

1. Fire Name (From Form FS-5100-29) | 2. Forest Supervisor's Fire No. | 3. State | 4. County
(From FS-5100-29) | | |

West Berry Trails | #SD-SDS-82089 | SD | Pennington

5. Region | 6. Forest | 7. Ranger District | 8. Date Fire | 9. Date Fire | 10. Estimated Suppression
Started | Controlled |
02 | Black Hills | Pactola | 7-26-88 | 7-31-88 | \$ 1.34 million

11. Fire Suppression Damages Repaired with FFF 102 Funds

a. 5 miles (firelines waterbarred) b. 7 acres (firelines seeded) c. Other (identify)

12. Fire Intensity

a. 16 % (low) b. 27 % (medium) c. 57 % (high)

PART III - NATIONAL FOREST SYSTEM PROBLEM INVENTORY

1. Watershed No. | 2. NFS Acres Burned | 3. Water Repellant Soil
1012011091 | 800 | 40 % of NFS acres burned

4. Vegetation Types

Ponderosa Pine/Little Bluestem and Little
Bluestem/Western Wheatgrass | Limestone and sandstone

6. Soil Erosion Hazard Rating

a. 20 % (low) b. 40 % (medium) c. 40 % (high) | 7. Erosion Potential
30270 cu. yds/sq. miles

8. Miles of Forest Stream Channels By Regional Order or Classes

1st order-1.8 miles Includes only public lands in burn. All

2nd order-1.5 miles channels within burn area are intermittent. All

3rd order-0.0 miles drain into Rapid Creek which is a domestic water
supply and Value Class I cold water fisheries.9. Miles of Forest Service
Trails

0

10. Miles of Forest Service Roads By Maintenance Levels

a. 0 miles (Level I) b. 6 miles (Level II) c. 0 miles (Level III, IV, V)

PART IV - CALCULATED RISK AND CLIMATIC EVALUATION

1. Estimated Design Recurrence Period (Years) | 2. Chance to Success Desired By Management (Percent)
5 | 603. Equivalent Design Recurrence Period (Years) | 4. Related Design Storm Duration (Hours)
10 | 30 minute5. Related Design Storm Magnitude (Inches) | 6. Related Design Flow (cfsm)
1.4 | 1257. Estimated Reduction In Infiltration (Percent) | 8. Adjusted Related Design Flow (cfsm)
20% | 150

>PART V - SUMMARY OF SURVEY AND ANALYSIS<

1. Skills Represented on Burned Area Survey Team (x appropriate boxes)

a. ☒ Hydrology b. ☒ Soils c. ☐ Geology d. ☒ Range e. ☐ Timber f. ☐ Wildlife
g. ☐ Fire Mgmt. h. ☒ Eng. i. ☐ Contr. j. ☐ Local Mgmt. k. ☐ Research l. ☐ Other

(identify)

2. Describe Emergency Protection of channels draining into Rapid Creek which is a domestic water supply and Value Class I fisheries. High erosion potential on 400 acres of steep slopes.

3. Emergency Rehabilitation Objective Maintain water quality to state water quality standards for designated beneficial uses of Rapid Creek. Maintain soil productivity by meeting soil loss tolerance limits within 4 years as directed in the Black Hills N.F. Forest Plan. Maintain vegetative productivity on all slope classes.

4. Probability of Completing Treatment Prior to First Major Damage Producing Storm

a. 20 %(land) b. 20 %(channel) c. 20 %(roads) d. _____ %(other) _____
(identify)

5. Net Environmental Quality Benefit Index

a.[x] Significant b.[] Not Significant

6. Net Social Well Being Benefit Index

a.[x] Significant b.[] Not Significant

7. Benefit/Cost Ratio

3.62:1

8. Net Benefits

\$58,982

9. Cost Effectiveness Index

a. [x] I

b. [] I

c. [] I

d. [] IV

NFS lands only

>PART VI - ELIGIBLE EMERGENCY REHABILITATION MEASURES OR TREATMENTS & SOURCE OF FUNDS<

Note: Emergency rehabilitation is work done promptly following a wildfire and is not to solve watershed problems that existed prior to the wildfire.

[illegible]

Forest Plans									
E. TOTAL				16,900				20,100	37,000

>PART VII - APPROVALS<

1. FOREST SUPERVISOR (Signature)	2. DATE	3. REGIONAL FORESTER (Signature)
# /S/DARREL L. KENOPS	# 8/3/88	#

**EXAMINING IMPACTS OF MANAGEMENT ALTERNATIVES FOR AN
EMERGENCY PROGRAM**

(Reference FSH 2509.13)

Fire Name	Date of Report
West Berry Trails	Aug. 2, 1988

A. ENVIRONMENTAL QUALITY BENEFIT INDEX

Environmental Factor (a)	Weight Factor	Without Treatment		With Treatment		Difference	
	(b)	Actual	Weighted	Actual	Weighted	Actual	Weighted
	(b)	(c)	(d)	(e)	(f)	(g)	(h)
1. Erosion and sediment *	9	2	18	1	9	1	9
2. Aesthetic land quality *	8	2	16	1	8	1	8
3. Water quality *	9	2	18	1	9	1	9
4. Site productivity *	6	1	6	0	0	1	6
5. Wildlife habitat *	8	1	8	0	0	1	8
6. Fish habitat *	8	1	8	0	0	1	8
7. Other *							
8. TOTAL *	48	////////	74	////////	26	////////	48
9. Average weighted index *	////////	////////	1.54	////////	0.54	////////	1.0
10. Net environmental quality benefit index*	////////	////////	////////	////////	////////	////////	1.0

B. SOCIAL WELL-BEING BENEFIT INDEX

Social Criteria (a)	Weight Factor	Without Treatment		With Treatment		Difference	
	(b)	Actual	Weighted	Actual	Weighted	Actual	Weighted
	(b)	(c)	(d)	(e)	(f)	(g)	(h)
1. Life, health, safety *	10	2	20	1	10	1	10
2. Employment *	1	0	0	0	0	0	0
3. Recreational opportunity *	3	1	3	0	0	1	3
4. Economic stability *	2	1	2	0	0	1	2
5. Income distribution *	1	0	0	0	0	0	0
6. Preserve special sites *	1	0	0	0	0	0	0
7. Other *							
8. TOTAL *	18	////////	25	////////	10	////////	15
9. Average weighted index *	////////	////////	1.39	////////	0.56	////////	0.83
10. Net social well-being benefit index *	////////	////////	////////	////////	////////	////////	0.83

C. REMARKS

*

D. EXPECTED DAMAGE REDUCTION BENEFIT SUMMARY

Note: At current Water Resources Council interest rate 8.875 percent

Economic Benefit Indices (a)	Units of Measure (b)	Damage Expected				Expected \$ Damage Reduction (g)
		Without Treatment		With Treatment		
		No. of Units (c)	Present Value(\$) (d)	No. of Units (e)	Present Value(\$) (f)	
I. Watershed Impacts Sediments						
1. Downstream water storage *						
2. Sediment removal *	Cubic Yards	8,368	95,558	2,712	33,416	\$62,142
3. Fish habitat *						
4. Water quality *						
II. Flood Water						
1. Land *						
2. Water Improvements *						
3. Subtotal, Watershed *						
III. Resource Related Impacts						
1. Range *	Aum's	750	10,762	500	\$7,175	\$3,587
2. Wildlife and recreation *						
3. Timber *						
4. Subtotal, Resource Related *						
IV. Other Impacts						
1. * Soil Fertility	Tons	9624	\$43,957	3121	\$15,404	\$28,553
2. Subtotal, Other *						
V. TOTAL DOLLARS *			150,277		55,995	94,282

E. REMARKS

1. Canyon Lake is downstream. Even though sediment can reduce the capacity of the reservoir, the amount of usable water for the Rapid City water supply is not expected to be significantly reduced.
2. Sediment delivery is estimated at 15% erosion rate. Sediment removal cost is \$15.00/yd.
3. Fish habitat is not expected to be significantly reduced except by sediment. Sediment removal cost is reflected in I-2.
4. Water treatment costs are not expected to increase since infiltration galleries are below Canyon Lake, which will trap most of the sediment.
5. Major flooding is not expected to occur because of the relatively small watershed areas affected.
6. Range RPA value for Black Hills is \$14.35/AUM. Limited grazing will occur for 3 years without treatment, 2 years with treatment.
7. No change in wildlife, recreation or timber expected with or without treatment.
8. Lost soil fertility estimated at \$6.00 per ton soil lost.

ON-SITE AND OFF-SITE DEVELOPMENTS SUBJECT TO HAZARDS¹

(Reference FSH 2509.13)

Fire Name West Berry Trails

Date of Report

8-2-88

Line Items	Type of Units	Number of Units	Estimated Value \$
(a)	(b)	(c)	(d)
1. Community and urban development	People	*	*
2. Municipal and domestic water supply	People Served	*	*
3. Transportation systems	Miles	1	\$60,000
4. Water distribution system (irrigation)	Miles	*	*
5. Agricultural development (crops, facilities)	Acres	*	*
6. Industrial development (dams, power, manufacturing)	Number	*	*
7. Power and communication lines	Miles	*	*
8. Recreation development	PAOT	*	*
9. Fish habitat	Miles	*	*
10. Other (specify)		*	*
2	XXXXXXXXXX	XXXXXXXXXX	
11. Total Hazard Potential	XXXXXXXXXX	XXXXXXXXXX	*

12. Narrative (Optional- if additional space is needed, attach another sheet).

The watersheds involved are within the Rapid Creek watershed. Rapid creek provides domestic use water to Rapid City, population about 50,000. The size of the affected watersheds on NFS lands is about 2 sq. mi. Should the design storm occur and no treatment is done, the additional amount of flooding (over that expected from pre-fire conditions) is insignificant. Therefore no estimated values for lines 1, 2, 4, 5, 6, 7, 8 and 9 are included. Costs of sediment removal and effects on recreation in fish habitat are addressed on form 2500-8a.

¹ Hazards from floods, floating debris, erosion, or sediment because a watershed is impaired by wildfire. (Do not include value of resources damaged or destroyed by the fire reported on FS-5100-29.)

² Indicates values threatened by design storm. Does not enter into the B/C.

SUMMARY OF EMERGENCY REHABILITATION NEEDS BY LANDOWNERSHIP
(Reference FSH 2509.13)

Fire Name
* West Berry Trail
Date of Report
* August 2, 1988

Landownership	A. Acres Burned	B. Emergency Rehabilitation Needs			
		(1) Land (acres)	(2) Channel (miles)	(3) Road & Trail (miles)	(4) Other
Federal (NFS) *	800	460			
Other (specify) *	3000	530			
Subtotal (NFS) *					
Non-Federal (State & County) *					
Indian reservation *					
Private *					
Subtotal (Non-Federal) *					
TOTAL *	3800	990			

C. Source of Emergency Rehabilitation Funds for Needed Work (\$)

Landownership	1. PFF		2. Emergency Flood Prevention	3. FR & T	4. Other Federal (Enter fund)	5. Non- Federal (Enter fund)	6. Total
	(a) 092	(b) 102					
Federal (NFS) *	16,900						16,900
Other (specify) *						20,100	20,100
Subtotal (NFS) *							
Non-Federal (State & County) *							
Indian reservation *							
Private *							
Subtotal (Non-Federal) *							
TOTAL *	16,900					20,100	37,000

D. Remarks

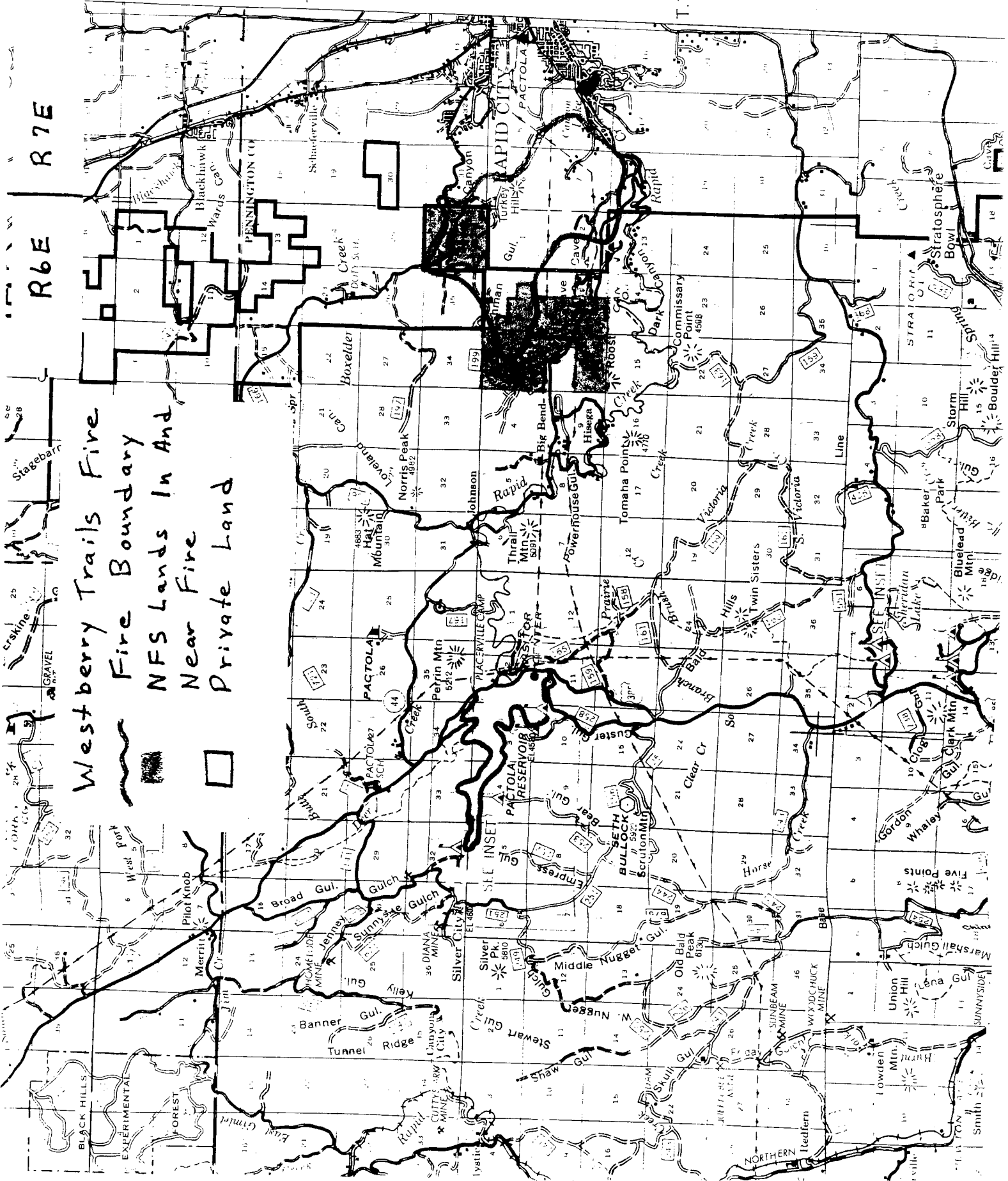
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Fire Intensity Map 7-1988
Showing Hot Areas in Blue
Weathering Trails Fire

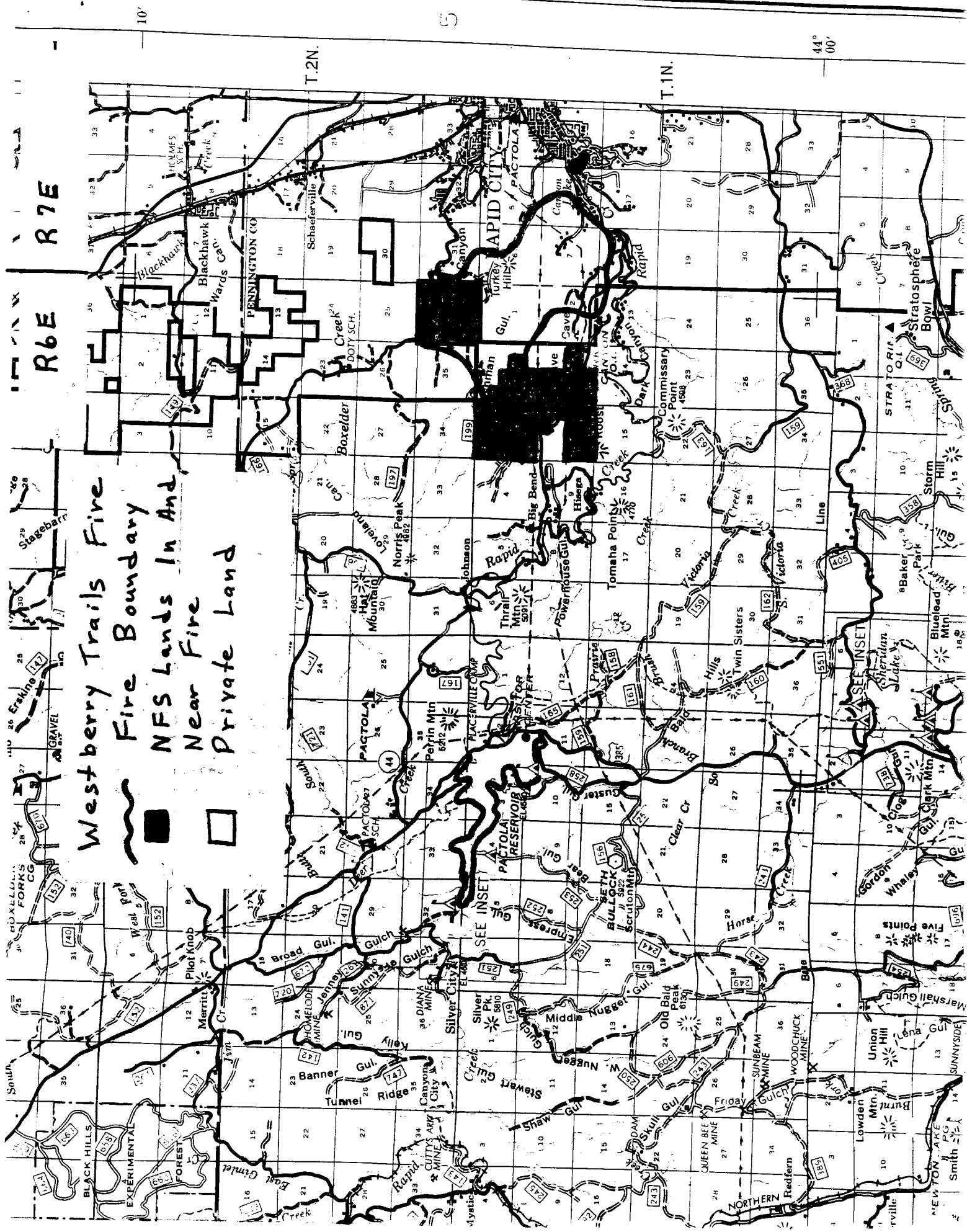


R6E R7E

Westberry Trails Fire
Fire Boundary
NFS Lands In And
Near Fire
Private Land



[illegible]



Westberry Trails Fire
Fire Boundary
NFS Lands In And
Near Fire
Private Land

R6E
R7E

T.2N.

T.1N.

44° 00'

