USDA Forest Service Date of Report: September 7, 2004
1700

BURNED-AREA REPORT
(Reference FSH 2509.13, Report FS-2500-8)

PART I - TYPE OF REQUEST

A. Type of Report

[**X**] 1. Funding Request for Estimated FFF-FW22 Funds
[ ] 2. Accomplishment Report
[ ] 3. No Treatment Recommendation

B. Type of Action

[**X**] 1. Initial Request (Best estimate of funds needed to complete eligible rehabilitation measures)

[ ] 2. Interim Report
[ ] Updating the initial funding request based on more accurate site data and design analysis
[ ] Status of accomplishments to date

[ ] 3. Final report - following completion of work

PART II - BURNED-AREA DESCRIPTION

A. Fire Name: **Fischer Fire** B. Fire Number: WA-OWF-689 (**P6BAZ4)**

C. State: **Washington** D. County: **Chelan**

E. Region: **Region 6** F. Forest: **Okanogan & Wenatchee** NF's

G. District: **LakeWenatchee & Leavenworth Ranger Districts**

H. Date Fire Started: **8-8-2004** I. Date Fire Controlled: 100% contained on 8-30-04

J. Suppression Cost: **$14,700,000 (8/28/04)**

K. Fire Suppression Damages Repaired with FFFS-PF12 Funds:

1. Fireline waterbarred (miles) **15.2 (8.5 cat; 6.7 hand)**
2. Fireline seeded (miles) **None to date**
3. Other (identify) **20 miles road maintenance**

L. Watershed Number: **(17020011)**

M. NFS Acres Burned: **10,855** Total Acres Burned: **16,439** See Appendix A.
Ownership type:

(1,066)State (126)BLM (2,627)PVT (multiple owners) (1,765) Longview Fibre

N. Vegetation Types: **Lowest elevations(2000-2500'): bitterbrush/bunchgrass and open ponderosa pine/Douglas-fir forest; middle elevations (2500-4000): Douglas-fir PNV currently supporting open and closed stands of Douglas-fir and ponderosa pine; Highest elevations; closed subalpine fir PNV on northerly exposures and mostly closed Douglas-fir PNV on southerly aspects. 4000-4650'**

O. Dominant Soils: **Nard Soil Series on North and East Facing Slopes; Scotties Soil Series on South and West Facing Slopes. Soils developed from residium from sandstone with a thin mantle of volcanic ash on soil surfaces. Nard soils have more clay accumulation in subsoils horizons while Scotties soils have less clay accumulation and have surface and profile rock fragments.**

P. Geologic Types: **The lands impacted by the Fischer Canyon fire lie within the Chiwaukum Graben, an erosional down-dropped lowland bounded on the east by the Entiat fault and on the west by the Leavenworth fault. The upland areas in the vicinity of Blagg and Tibbets Mountains, and extending to the northwest and southeast, are underlain by foliated metamorphic rocks (schist, gneiss) of the Late Cretaceous Swakane Biotite Gneiss. These older rocks are exposed within small horst, an up-thrown structural block bounded by northwest-southeast trending normal faults, within the Chiwaukum Graben. The remainder of the Fischer Canyon fire, namely the foothills rising from the Wenatchee River valley, is underlain by the Chiwaukum Graben fill comprised of interbedded sandstone, siltstone, shale, and conglomerate belonging to the Eocene Chumstick Formation.**

Q. Miles of Stream Channels by Class:

I-0 II-.5 IV-50.6

R. Transportation System:

Trails: Numerous (all user-built) miles Roads: **53** miles

PART III - WATERSHED CONDITION

A. Fire Severity-See App. A- (*1) (acres): 14,164 (low) 2,107 (moderate) 166 (high)

(*1) Fire severity figures based on 8/27/04 survey information (16,437 ac. fire area).

B. Water-Repellent Soil (acres): none observed

C. Soil Erosion Hazard Rating (acres):

325 (low) **3,309** (moderate) **12,790** (high)

D. Erosion Potential: **40** tons/acre

E. Sediment Potential: **25,600** cubic yards / square mile (*4)

(*4) Assumptions for items D and E:

Landform sediment delivery and routing efficiency is considered to be approx. 30%--which would deliver 40 tons/acre or 25,600 cubic yards/sq. mile. The 30% delivery ratio was based on a storm interval of 10 years 60 minute convection storm.

PART IV - HYDROLOGIC DESIGN FACTORS

A. Estimated Vegetative Recovery Period: 30 years

B. Design Chance of Success: **70** percent

C. Equivalent Design Recurrence Interval: **10** years

D. Design Storm Duration: **1** hour

E. Design Storm Magnitude: **0.6** inches

F. Design Flow: **32 (*1)** cubic feet/second/square mile

G. Estimated Reduction in Infiltration: **5 (*2)** percent

H. Adjusted Design Flow: **35** cubic feet/second/square mile

(*1) Design flow assumption: Peak snowmelt runoff has been identified as the most likely to cause damage in the burned area.

(*2) Estimated Reduction in Infiltration (item G) is an area weighted average for the burned area. Estimated reduction in infiltration in burned area as follows: moderate severity (30%) and high intensity (50%). Infiltration reduced due to dry soil conditions.

PART V - SUMMARY OF ANALYSIS

A. Describe Watershed Emergency:

The Fischer Fire area and potentially impacted areas downstream had many important characteristics that determined the proposed alternative. The following summary describes the conditions that warrant emergency rehabilitation actions. This initial assessment and the resulting prescriptions have been developed utilizing experience gained from substantial analysis done for the Blag Analysis Area which was burned over in the fire. See Appendices A and B for fire area maps.

1. **Critical Natural/Cultural Resources FSM 2523.2 (including water quality)** - The Fischer Fire burned area is composed of very erosive soils within the Chumstick sandstone formation. Soils are shallow sandy loam residual soils mixed with volcanic ash over sandstone bedrock. Many slopes are rock controlled dip slopes. The steep landforms over much of the burned area rapidly deliver water and the eroded material it carries to stream channels, which initiates flooding in the larger stream channels. Sediment loading in first and second order streams is high as a result of previous events and ongoing soil creep.

Large portions of the burned area are also at risk to soil productivity losses as a result of noxious weed invasion particularly along the roads and user-built trails. Seed sources exist along roadways in and adjacent to the fire area, as well as the fire camps used for suppression activity. There are no known cultural resources within the fire area.

Water quality in Derby Canyon is a concern due to the presence of Listed steelhead in the lower portion. Additionally, all of the primary drainages drain directly into the Wenatchee River which also supports listed fish species.

2. **Threats to Human Life, Safety and Property –** Many homes, related structures, pastures, and orchards are within or directly below the burned area. Many of these developed areas fall in or immediately adjacent to the drainage ways. Where the headwaters of these canyons have been burned, either wholly or in part, the risk of flooding has increased somewhat for these structures, especially in Derby Canyon. The Icicle Irrigation ditch and the Wenatchee Reclamation District ditch both skirt the lower area of the fire and are subject to sedimentation and damage from upslope erosion and debris. The Icicle ditch has already experienced significant sedimentation and damage from falling debris. Flooding from the damaged ditch has already damaged the railroad. Also, loss of ditch water threatens numerous commercial orchards.

Furthermore, the burned area contains approximately 53 miles of roads. Roads are at risk to failure and erosion due to inadequate drainage, especially in the moderate and high fire severity areas. If these roads fail there is a significant risk of additional soil erosion and water quality degradation and property damage to homes directly downslope in Olalla Canyon.

Burnout of roots and shrubs has formed escarpments up to 4 feet in road fill on steep mountain slopes along Forest Road 7402 in Williams Canyon. The larger scarps are accelerated by the fire. These new escarpments, combined with the loss of root cohesion in the fill slope elevates the risk of losing portions of this road fill to failure. Saturated fill conditions increase the potential to start small, shallow-rapid failures along the road which could entrain additional material in a failure as it moves down slope.

B. Emergency Treatment Objectives:

The primary objectives of emergency treatments are to reduce sedimentation and erosion from inadequately drained roads and user built trails; reduce the likelihood of fire-induced road failures (where fill-supporting trees have been burned and destroyed and are no longer able to help support road fill slopes on the slopes; and to initiate noxious weed treatments to reduce weed population expansion into the burned area. Only those treatments that are likely to substantially reduce risks have been considered. Proposed structural treatments to roads and trails are intended to reduce accelerated erosion and sedimentation potential from these facilities.

C. Probability of Completing Treatment Prior to First Major Damage-Producing Storm:

Land **80** % Channel __ % Roads **90** % Other __ %

D. Probability of Treatment Success

	<----Years after treatment----->		
	1	3	5
Land	**50%**	**70%**	**80%**
Channel	n/a	n/a	n/a
Roads	**80%**	**80%**	**80%**
Other	**n/a**	**n/a**	**n/a**

E. Cost of No Action (Including Loss): **$7,700,000**

F. Cost of Selected Alternative (Including Loss): **$3,402,709**

G. Skills Represented on Burned-Area Survey Team:

[**X**] Hydrology	[**X**] Soils	[**X**] Geology	[ ] Range
[ ] Timber	[**X**] Wildlife	[ ] Fire Mgmt.	[**X**] Engineering
[ ] Contracting	[**X**] Ecology	[ ] Research	[ ] Archaeology
[ ]		[**X**] Fish Biologist	

Team Leaders: **\s\ Terry Lillybridge**

Phone: **(509) 664.9233**

Electronic Addresses: tlillybridge@fs.fed.us

H. Treatment Narrative:

The following treatments have been proposed to mitigate the threats to life, safety & property, and to reduce loss of critical natural resources (site productivity and degradation of water quality) as a result of the Fischer Fire:

Overall Goal of Proposed BAER Treatments: To complete a combination of comprehensive treatments to reduce concentrated runoff and effectively reduce the threat of sedimentation and fill loss from roads and trails. Additionally, there is a need to address increases in weed populations into the burned area.

Land Treatments

Purpose: Reduce concentrated runoff and sheet erosion on sensitive hillslope soils. Reduce the threat of debris torrents, severe channel scour, and flooding of private lands. Encourage natural vegetation recovery and discourage the rapid spread of noxious weeds. Refer to Appendix C.

Treatment #L1: Herbicide treatment of roadsides on NFSL; 40 acres, 1 treatment. Spot apply herbicide to noxious weed species growing along NFS roads in the Fischer fire area. This treatment would prevent seed production which would reduce weed spread.

Treatment #L2: Use Wyden agreement to treat private land. Herbicide treatment of roadsides on private lands; 20 acres, 1 treatment. Spot apply herbicide to noxious weed growing along roads on private land leading to the Fischer fire area. This treatment would prevent seed production along roads in private land thus reducing weed spread onto NFS lands. May best be done via an agreement with the county weed board.

Treatment #L3: Prep roadside **seedbed and hydro-seed roadsides where herbicide was used on NFSL**; 40 acres, 1 treatment. This treatment will fill the niche once occupied by weeds and provide ongoing competition to germinating weed seed thus reducing weed spread.

Treatment #L4: Use Wyden agreement to treat private land. Prep roadside seedbed and hydro-seed roadsides where herbicide was used on private land, 20 acres, 1 treatment. This treatment will fill the niche once occupied by weeds and provide ongoing competition to germinating weed seed thus reducing weed spread. May best be done via an agreement with the county weed board.

Treatment #L5: Release of bio-agents for knapweed. Release *Larinus minutis* on knapweed at three sites totaling 85 acres. This one time treatment will eventually reduce numbers of knapweed individuals to a manageable level.

Treatment #L6: Release of bio-agents for Dalmatian toadflax. Release *Mecinthus jacinus* on toadflax at 4 sites totaling 276 acres. This one time treatment will eventually reduce numbers of toadflax individuals to a manageable level.

Treatment #L7: Prepare a seed bed along NFS roadsides where herbicide was applied and hand seed roadside, 1 treatment, 40 acres. This treatment will provide competition for weed seed bank.

Treatment #L8: Prepare **a seedbed along private roadsides where herbicide was applied and hand seed** roadsides, 1 treatment, 20 acres. This treatment will provide competition for weed seed bank. May best be done via an agreement with the county weed board.

Channel Treatments

NONE PROPOSED

Road and Trail Treatments

Purpose: Prevent concentrated run off from Forest Service roads and user-built trail systems in the Fischer Fire area. Prevent road washouts, general erosion and delivery of sediment to sensitive high gradient steelhead habitat, and downstream private lands and uses.

Road Treatments

Purpose: Implement actions to: (1) minimize the potential for concentration of accelerated surface runoff from Forest Service roads within the Fischer Fire on the Leavenworth Ranger District, (2) minimize the potential for road-related surface/mass erosion and accelerated sediment delivery to aquatic habitat {and downstream private/public water supplies] in the Wenatchee River] and (3) ensure that the public is aware of road-related and other hazards in the burned area and that road user safety features are in place. The treatments will meet the intent of the applicable direction requiring road drainage to be designed to minimize accelerated sedimentation and handle storm flood events. Also refer to the Land Treatment section for details on noxious weed treatments associated with the road network. Refer to Appendices D & E for rationale.

Treatment #R1 – Install Small Armored Outsloped Dips: Construct rolling out sloped dips with low-point armor and aggregate surfacing to improve ditch relief and ability of road to better handle anticipated increases in surface runoff. Armor dip inlets and outlets, especially on exposed fills. Dip installation sites are: (1) locations where no drainage feature existed before (e.g., inadequate frequency of ditch relief) or (2) locations where existing dips are inadequate to handle anticipated flows or (3) locations where an existing damaged or inadequate culvert can be replaced with a low maintenance rolling dip. Logs, wattles or straw bale structures will be installed within run-out area of dips to help further disperse surface runoff and minimize sediment delivery potential (also called "grade-sags", "outsloped rolling dips", etc.).

Treatment #R2 – Treatment of Small Dips on Roads with Buried Power Cables: Treatment is for use on roads on Fischer Fire with buried power cable. Roads 7402000 between road 7402125 and 7402315, including all of the intersections, road 7402125, entire length, and road 7402315, entire length. Buried cable must be located and marked prior to beginning work. Treatment is essentially the same as #R1 except that work will be performed by a road grader to reshape or install rolling dips. Soil disturbance will be a maximum of 3 inches depth and all materials used to construct dips will be from local borrow source or designated site. All dips will be low point armored and armored surfaced to depth of soil disturbance to maintain, at minimum, the original buried depth of power cable.

Treatment #R3 – Install Outsloped Dips (non-armored): Same as R1 but without aggregate surfacing and armoring (low-point and fill slope).

Treatment #R4 – Install Large Armored Flood Relief Dips: Construct large, armored rolling dips (surface armor & aggregate and fill slope armor) immediately downgrade of major stream/draw crossings to deflect flood flows off the roadway and back into the stream/draw bottom. These are differentiated from R1 armored dips because of the larger size of the flood relief dips.

Treatment #R5 – Treatment of Large Dips on Roads with Buried Power Cables: Treatment is the same as #R2 but differentiated from #R2 armored dips because of the larger size of the flood relief dips

Treatment #R6 – Pull Existing Culverts: Remove existing culverts to re-establish more natural flow patterns and reduce the risk of pipe plugging, runoff concentration and accelerated sedimentation.

Treatment #R7 – Harden Drainage Features: Clear blockages from existing culvert installations. Install rock headwall, collar and apron to improve efficiency of structure and to minimize scour and slough. Install rock, log terraces, straw bales or other materials below the outlet of the drainage feature to disperse surface runoff (primarily hand labor tasks).

Treatment #R8 - Modify Draw Crossings: ***(intent of R8 = retain existing crossing structure)***
Partial removal of excess fill material at draw crossing. Installation of armored emergency overflow dip, additional armoring of fill slope, in order to improve potential for crossing to withstand higher flows, with reduced sedimentation.

Treatment #R9 - Upgrade Stream Crossing: ***(intent of R9 = replace existing crossing structure)***
On Road 7400000, replace existing undersized and damaged culverts at four locations with larger structures. Armor the inlet and outlet, R4 grade sag below structure and provide aggregate surfacing. This work is to correct alignment problems, replace damaged culverts, and handle anticipated increased stream flow from burned area.

Treatment #R10 - Stabilize Roadbed: Spot rock selected locations/road sections with native pit-run and/or crushed aggregate to help reshape and stabilize road prism to improve surface drainage and minimize accelerated sediment delivery (e.g., surface road on either side of stream crossings or other riparian road sections). There are no local rock sources, which leads to higher unit costs of rock.

Treatment #R11 - Road Surface Water Management: Blade road surface, pull specific ditch line sections, remove outside berms and outslope where appropriate to improve road surface drainage. Inslope above switchbacks where appropriate to utilize run-out ditch and minimize surface runoff through curve. In slope as directed to avoid runoff concentration on unstable fill slope sections. Remove soil, rock and woody debris blocking selected ditch lines to improve drainage function.

Treatment #R12 – Miscellaneous Structure Work:
Construct Armored Dike:
On Road 7400000 construct dike to keep runoff in draw and off of road. Approximate location is at MP 2.284 to MP 2.347, as staked. Pit run from designated source is approx. 240 cubic yards. Dike will be about 6 feet wide and 3 feet high. ($12,000)

Treatment #R13 – Check Dams: Logs, wattles or straw bale structures will be installed within run out area of dips to help further disperse surface runoff and minimize sediment delivery potential.

Treatment #R14 – Install Waterbars: Construct waterbars (low standard drain dips) to improve ditch relief and ability of Maintenance Level 1 roads to better handle anticipated increases in surface runoff.

Treatment #R15 – Roadside Seeding: Seed selected road cut and fill slope locations where accelerated vegetative cover is needed to reduce potential for post-fire surface erosion and sediment delivery. Reduction in potential for noxious weed recruitment is a secondary benefit of erosion control seeding.

Treatment #R16 – Road fill removal and re-contouring: Remove fill on 1.5 miles of FS road 7402 (upper Olalla Canyon) to reduce risk to life and property of residences immediately downslope from unstable fill areas. Also includes an additional 7 acres of seeding to stabilize disturbed area. Refer ti Appendix D for rationale. NOTE: THE NEED FOR THIS TREATMENT WILL BE VALIDATED BY A GEOTECHNICAL ENGINEER BEFORE IMPLEMENTATION.

Trail Treatments

Treatment #T1 – Close, sign and patrol Trails. Use work crews to close numerous user-built trails, provide for signing and for patrol.

PART VI

9/8/2004 12:13			NFS Lands				Other Lands				All
Fischer Fire		Unit	# of	WFSU	Other		# of	Fed	# of	Non Fed	Total
Line Items	Units	Cost	Units	SULT $	$		units	$	Units	$	$
A. Land Treatments											
#L1 Herbicide roadsides NFS lands(1yrs)	Ac	$315	40	$12,600	$0			$0		$0	$12,600
#L2 Herbicide Trt (private-Wyden)-1yrs	Ac	$315	0	$0	$0		20	$6,300		$0	$6,300
#L3 Hydroseed NFS roadsides	Ac	$1,625	40	$65,000							$65,000
#L4 Hydroseed Private roadsides-Wyden	Ac	$1,625		$0	$0		20	$32,500		$0	$32,500
#L5 Knapweed Biocontrols	ea	$1,250	3	$3,750			0	$0		$0	$3,750
#L6 Toadflax Biocontrols	ea	$1,250	4	$5,000							$5,000
#L7 Prepare seedbed NFS roadsides	Ac	$500	40	$20,000							$20,000
#L8 Prepare seedbed Private roadsides	Ac	$500					20	$10,000			$10,000
Subtotal Land Treatments				$106,350	$0			$48,800		$0	$155,150
Insert new items above this line!											
				$0	$0			$0		$0	$0
B. Channel Treatments				$0	$0			$0		$0	$0
				$0	$0			$0		$0	$0
				$0	$0			$0		$0	$0
				$0	$0			$0		$0	$0
Insert new items above this line!											
Subtotal Channel Treat.				$0	$0			$0		$0	$0
C. Road and Trails											
#R1 Install armored outslope dips	ea	$1,250	10	$12,500	$0			$0		$0	$12,500
#R2 Treatment of large dips w/buried cable	ea	$1,250	41	$51,250	$0						$51,250
#R3 Install Outslope Dips (non-armored)	ea	$625	99	$61,875							$61,875
#R4 Install armored flood relief dips	ea	$3,125	6	$18,750	$0						$18,750
#R5 Treatment of small dips w/buried cable	ea	$3,750	3	$11,250							$11,250
#R6 Pull existing culverts	ea	$1,250	4	$5,000	$0						$5,000
#R7 Harden Drainage Features	ea	$250	19	$4,750							$4,750
#R8 Modify Stream Crossings	ea	$3,125	2	$6,250							$6,250
#R9 Upgrade Stream Crossings	ea	$37,500	6	$225,000							$225,000
#R10 Stabalize Roadbed (yards of rock)	yds	$63	2250	$141,750							$141,750
#R11 Road Surface Water Mgt (Blading)	mi	$938	21	$19,698							$19,698
#R12 Miscellaneous Structure Work	ea	$15,000	1	$15,000							$15,000
#R13 Check Dams	ea	$94	244	$22,936							$22,936
#R14 Install Waterbars	ea	$250	30	$7,500							$7,500
#R15 Roadside Seeding Application	ac	$250	10	$2,500							$2,500
#R16 Road fill removal & recontour	mi	$53,400	2	$106,800							$106,800
#T1 Close, sign and patrol trails	ea	$20,000	1	$20,000							$20,000
Insert new items above this line!											
Subtotal Road & Trails				$732,809	$0			$0		$0	$732,809
D. Structures				$0	$0			$0		$0	$0
				$0	$0			$0		$0	$0
Insert new items above this line!				$0	$0			$0		$0	$0

Subtotal Structures											
E. BAER Evaluation(not added in total)				$40,000	$0			$0		$0	$40,000
BAER Cultural Resouce Survey				$3,000	$0			$0		$0	$3,000
					$0			$0		$0	$0
Insert new items above this line!											
Subtotal Evaluation				$3,000	$0			$0		$0	$3,000
F. Monitoring				$0	$0			$0		$0	$0
Monitoring (weeds & road seeding)				$28,200	$0			$0		$0	$28,200
Insert new items above this line!											
Subtotal Monitoring				$28,200	$0			$0		$0	$28,200
G. Totals				**$870,359**	**$0**			**$48,800**		**$0**	**$919,159**

PART VII - APPROVALS

FISCHER FIRE

1. ***\s\ James L. Boynton*** ***9/8/2004***

Forest Supervisor Date

2.

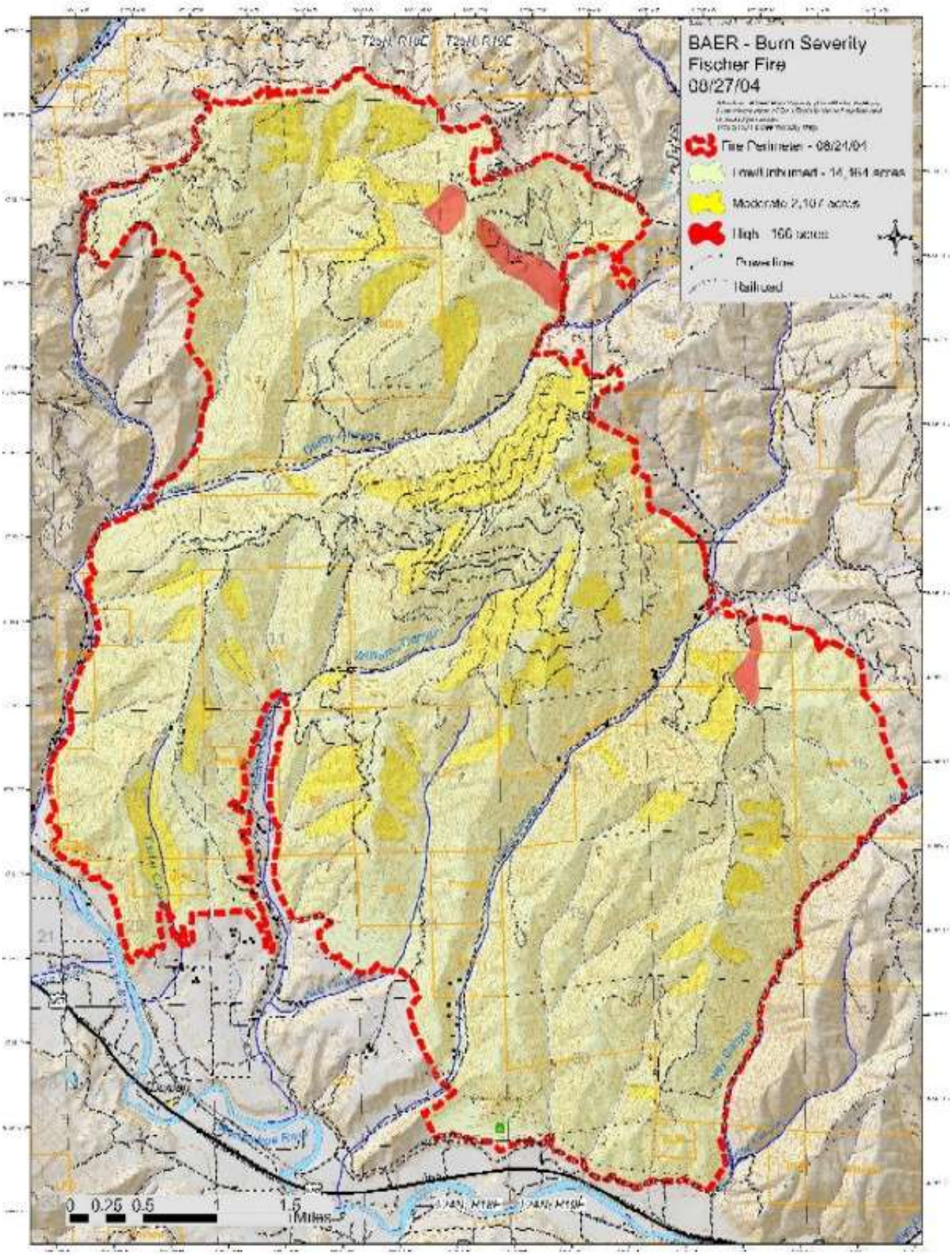
Regional Forester Date

3.

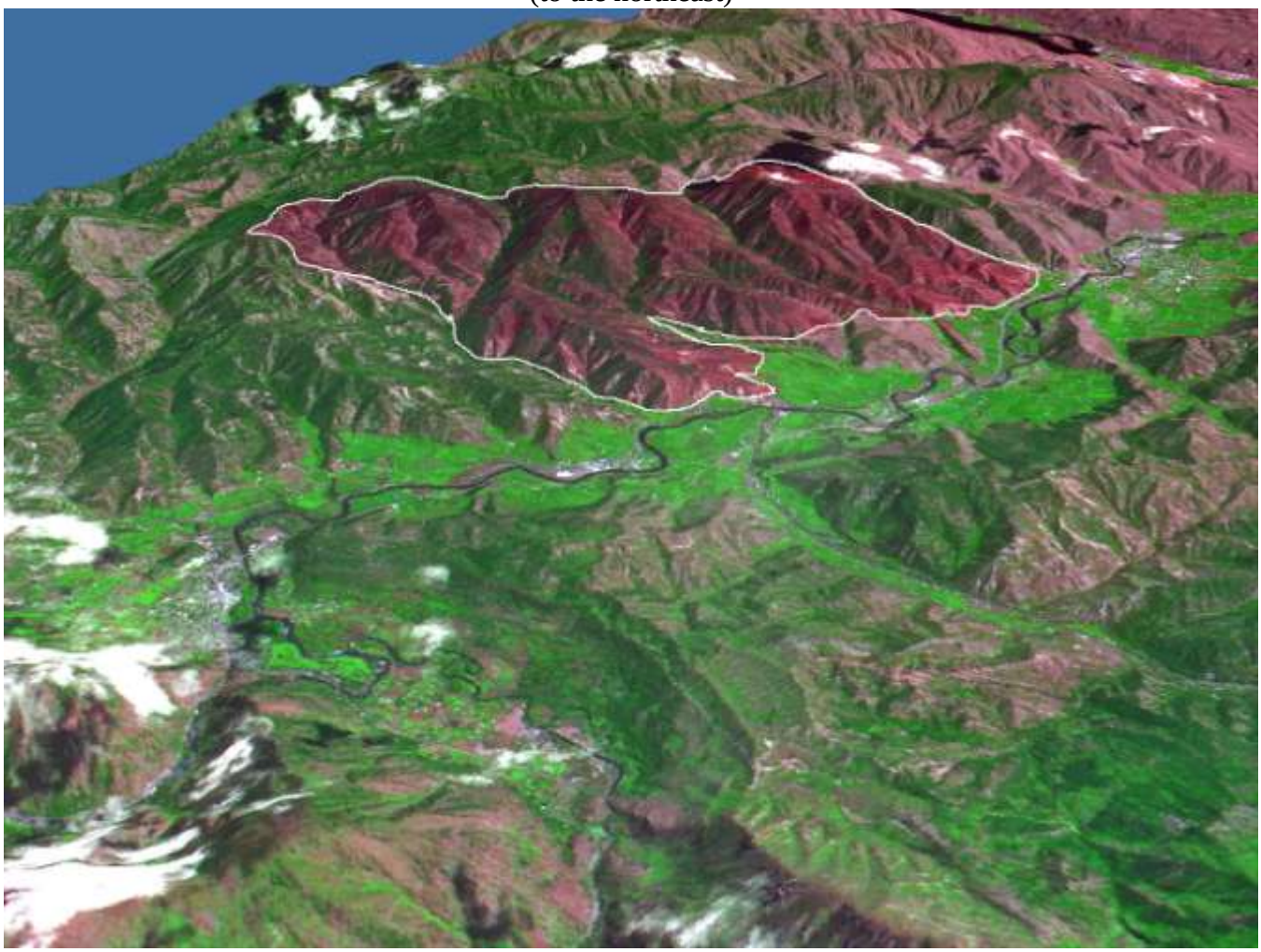
Chief Date

Appendix A

Fischer Fire Burn Severity



Appendix B
Perspective View of Fischer Fire
(to the northeast)



Appendix C
Noxious Weed Management Rationale

A major ecological concern within the burned area is the opportunity afforded to noxious weed species to increase and spread. Certain species of noxious weeds are already known to be invading native habitat away from roadsides. The area was surveyed for noxious weeds in preparation for publication of the Blag EA in 2001 and 2002.

Weed Presence

Noxious weed species found within and adjacent to the burned area are: diffuse knapweed (*Centaurea diffusa*), Dalmatian toadflax (*Linaria dalmatica*), bull thistle (*Cirsium vulgare*), Canada thistle (*Cirsium arvense*), St. Johnswort (*Hypericum perforatum*), whitetop (*Cardaria draba*), ox-eye daisy (*Leucanthemum vulgare*), and sulfur cinquefoil (*Potentilla recta*). Other non-natives present in the area but not listed as noxious weed species include cheatgrass (*Bromus tectorum*), tumble mustard (*Sisymbrium altissimum*) dog fennel (*Anthemis cotula*), western salsify (*Tragopogon dubius*) prickly lettuce (*Lactuca serriola*), sweet clover (*Melilotus*) . Noxious weed species are present within the burn area on both private and federal lands--mostly along roads with the exception of one noxious weed species, Dalmatian toadflax which is known to be invading native habitat off road. Noxious weed seed is spreading via wind, wildlife, recreational activities, and sheep grazing. User trails created by mountain bikes and ORVs are common on ridges in this area and are yet another vector for weed spread off road. All weed species could potentially disperse into the burned area from adjacent private, state, and National Forest System Lands.

In addition to the aforementioned weed species, babysbreath (*Gypsophila paniculata*) and kochia (*Kochia scoparia*) are present in fire camp and in staging areas. These species are also state-listed noxious weeds, however, they are more widespread in Chelan County.

The fire began on August 8, 2004, prime time for the production and dispersal of weed seed. The weed seed bank has been building in this area for at least 15 + years and any attempt to prevent the continued spread of weeds in this freshly burned area must include an assessment of weeds in adjacent areas and must involve all landowners. Dozer lines on ridgetops outside the fire area are at risk for weed invasion as well as any newly disturbed ground surface within the fire perimeter due to fire or suppression activities.

Major roads within the fire perimeter are forest roads 7401(North Fork Derby), 7400 (Derby), 7402 (Blag Mountain), Tibbetts Mountain spur 112, Hay Canyon (7411). Diffuse knapweed is known to infest all of these roadsides. Canada thistle is present on road spurs of the 7401 road in section 33 at the top of Steven's, Posey and Anderson canyons outside the fire perimeter. It has also been inventoried on North Fork Derby (7401) and spurs off the Derby Canyon road (7400) and Blag Mountain Road (7402). Bull thistle has been inventoried on the 7402 road, and spurs of the 7400 road. Dalmatian toadflax is present on the sides of Tibbetts Mountain and the west slopes of Hay Canyon as well as on the west slopes of Ollala Canyon near the top in section 8. It has been documented along roadsides on spurs of 7400 and 7402, as well as Tibbetts Mountain spur road. St. Johnswort is known from one location on Blag Mountain road and sulfur cinquefoil is known from spurs of 7402, 7401, and 7400. Ox-eye daisy is known to occur on the 7402 road and outside the fire perimeter on road 7500. Whitetop was inventoried on USFS land in Olalla Canyon in surveys for the Blag project in 2002 but in 2004 was reported on private land along Derby Canyon road.

Weed Prevention Measures

Fire suppression related activities to prevent the spread of non-native invasive plants include requirements for cleaning equipment before use on the fire, and equipment cleaning for demobilization. Fire suppression rehab included hydroseeding of disturbed roadsides, turnouts, and safety zones, and seeding of bulldozed and hand fire line.

Disturbed Areas

Maps are available that show disturbed areas from fire suppression and support activities including fire lines, fire camp, helispots, access roads, safety zones, and drop points.

Disturbances on major roads included the opening of closed spur roads with known weed infestations, the creation of turnouts and safety zones, as well as the removal of water bars on the North Fork Derby road. These activities will spread weed seed along the roads and open up fresh ground for invasion. Weed treatment in these areas will be via fire suppression funds.

Weed Treatment

The Decision Notice for the Forest-wide Noxious Weed Environmental Assessment, Wenatchee National Forest, October 1998 provides for weed pulling, and use of herbicide treatment on Forest Roads 7400, 7401 and 7402 and their associated spurs.

The bio-agent *Larinus minutis* for diffuse knapweed and the bio-agent *Mecinthus jacinus* for Dalmatian toadflax could be released on both private and federal lands where infestations are dense. Recommended release areas for toadflax on USFS lands by subwatershed are 120 acres in Hay Canyon, 75 acres in main Olalla Canyon, 44 acres in North Fork Olalla, and 37 acres in the Pinnacles Tributaries. Recommended release areas for diffuse knapweed by subwatershed on USFS lands are 34 acres in East Fork Derby, 17 acres in Olalla and North Fork Olalla, and 34 acres in Williams.

Spot application of herbicides to noxious weed species can be done along roadsides within the fire perimeter. This will prevent seed production and assist in the prevention of the further spread of weeds from roadside to native habitat. The recommendation is for treatment of weeds on both private and National Forest land. Private land treatment would require a Wyden Agreement and is probably best completed via agreement with the county where they would select specific sites and methods. Approximately 20 miles of Forest Service roadside (40 acres) would be spot treated with herbicide for 3 consecutive years. This includes roads 7400, 7401, 7402 and drivable spurs on USFS land.

The road systems accessing the canyons on the south side of the fire area are mostly on private land and it is recommended to use BAER funds for this weed treatment via the Wyden Amendment. The actual implementation of weed control efforts on private lands would be done via agreement with the Chelan County Noxious Weed Control Board. Please see document entitled 'Request for Wyden Authority to Abate Weed Encroachment From Private Property onto Forest Service Lands'.

Roadsides treated with herbicide would be hydro-seeded with a seed mix approved by the NRCS and the Forest Service. On the 2002 Hayman fire in Colorado, 1500 acres of aerial hydromulching was applied to steep, inaccessible areas that drain directly to the South Platte River. The effectiveness of this treatment is expected to be high but there are no postfire effectiveness data available at this time (USDA Forest Service, 2003). Local experience with broadcast seeding along roadsides after herbicide treatment has met with marginal success given the lack of seedbed preparation. It seems reasonable to assume that better results could be attained with a process that lays down seed, mulch and fertilizer simultaneously. It may provide the kick start needed for the grass seed mixture to out-compete the weed seed bank in the harsh environment of a roadside.

If the alternative with hydroseeding is not chosen, seed would be distributed by hand after seed bed preparation along roadsides. Seed bed preparation could be done with hand tools, with a spike tooth harrow, or some other implement that could be moved along the roadside.

Monitoring

The biocontrol release on 361 acres would be monitored yearly for 3 years. Monitoring will consist of photopoints and ocular estimates of noxious weed species cover at each release site. Estimated costs are for 1 GS-9 botanist, 2 weeks each year ($2400 per year) for 3 years for a total of $7200.

The herbicide treatments and seeding will be monitored using transects (100 meter) placed along the road in areas where populations are the heaviest. Point intercept of target weed species would be tallied. Transects would be photographed prior to each treatment for a visual record.

The first visit to the site will be summer of 2005 during the first growing season. Subsequent visits will be scheduled at the same time of year for the next 2 seasons for 3 total seasons of monitoring.

Estimated Monitoring Costs are: $7,000 per year for 3 years (for a total of $21,000) to cover the costs of a 2- person crew for 1 month each year. Crew will consist of 1 GS-9 botanist and 1 GS-7 botany tech.

Appendix D
Road Treatment #R16 Rationale

Existing Condition

Forest Service Road 7402 is located approximately mid-slope between Blag Mountain and the base of the upper end of Olalla Canyon. The road runs along contour on steep sideslopes over 30°. The road construction method used was most likely sidecasting. The road fill is unstable as evidenced by active ravel and rockfall, tension cracks, recent slump scarps resulting in over-steepened embankment fill, downslope deposition of slump blocks, and pistol-butted trees. The embankment instability has been exacerbated by loss of root cohesion due to the fire. Burnout of tree and shrub roots has been determined to be a direct causative factor in many of the failures noted along the road.

Steep ephemeral draws descend from Forest Service lands along FSR 7402 to the head of Olalla Canyon. Six homes or outbuildings at the base of these draws in Olalla Canyon could be directly affected by slope movements initiating on Forest Service lands above. Three other structures could potentially be affected depending on magnitude of the event.

The area of concern is located on steep slopes and soils are generally non-cohesive loamy sands, sands, and gravelly sands. The area is susceptible to rockfall, debris flows, and landslides with shear planes in colluvial material/soils. Based on field observations, our main concerns are threats to life and property from shallow rapid debris flows under saturated conditions caused by convective thunderstorms during the summer, a combination of spring runoff and rainfall, or rain on snow events. More coherent slides observed in the field deposited on sideslopes or within upper reaches of ephemeral draws which can increase debris flow risk providing multiple midslope initiation points or providing material for entrainment.

Mitigation alternatives:

1) No action.
2) Evaluation of road fill by Forest Service Geotechnical Engineer. $15,000.00
   Slope stability modeling by Forest Service Engineering Geologist.
   **NRCS funding constraints appear to preclude providing engineering evaluation of potential mitigation measures (e.g. deflection berms) that could be placed on private lands downslope of potential hazards.
3) Obliteration of 2 mile stretch of Forest Service Road 7402 $105,000.00
   Cost includes pulling sidecast material back into road prism and recontouring to approximate undisturbed sideslopes, and seeding on disturbed ground.

***Photos of slope instability below.

Site P4. Tension cracks on road surface; oversteepened embankment fill at toe of slump block.

Site P5. Oversteepened embankment fill at slump scarp.

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Appendix E

Rationale for Roads Treatments (#R1-R15)

The Roads proposed for treatment under BAER and the maintenance level recommendation from the Blag Roads Analysis are listed in Table 1. The majority of roads recommended for treatment were constructed over soils rated as having severe erosion hazard (Table 2).

A majority of the Fischer Fire was mapped as low burn intensity, which implies that those areas would not contribute to an emergency watershed condition, but it is clear that runoff rates are likely to increase throughout the burn due to decreases in evapotranspiration—primarily from conifer mortality. Additionally, delivery of debris into drainageways are sure to increase. Increases in surface flow over the road prisms listed above is likely to overwhelm drainage structures, leading to accelerated erosion from road prisms. Consequently, without treatment, attainment of recommended maintenance levels for these roads will be unlikely and the risk of accelerated erosion unacceptable.

Table 1.

Road Number	Recommended Maintenance Level
7400-000	2
7402-000	2
7402-125	1
7402-200	2
7402-240	2
7402-315	2
7403-000	1
7410-112	1
7411-000	2
7411-100	1

Roads analysis recommended keeping all of the roads on the transportation system, and keeping most of the roads in a condition passable to high clearance vehicles.

Erosion hazard ratings for the Fischer Burned area are listed in Table 2.

Table 2.

Erosion Hazard	Acres
Severe	12790.2
Moderate	3309.3
Low	324.8