USDA-FOREST SERVICE FS-2500-8 (6/06)

Date of Report:10/5/2014

BURNED-AREA REPORT
(Reference FSH 2509.13)

PART I - TYPE OF REQUEST

A. Type of Report

[X] 1. Funding request for estimated emergency stabilization funds
[ ] 2. Accomplishment Report
[ ] 3. No Treatment Recommendation

B. Type of Action

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

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

[ ] 3. Final Report (Following completion of work)

PART II - BURNED-AREA DESCRIPTION

A. Fire Name: Rowena Fire

B. Fire Number: OR-954S 000023

C. State:OR

D. County:Wasco

E. Region: 06

F. Forest:22

G. District: N/A

H. Fire Incident Job Code: PNJA4T 1502

I. Date Fire Started: 8/5/2014

J. Date Fire Contained: 8/12/2014

K. Suppression Cost: $4,260,883

L. Fire Suppression Damages Repaired with Suppression Funds
1. Fireline waterbarred (miles): 4.9
2. Fireline seeded (miles):
3. Other (identify):

M. Watershed Number: 170701050406 – Murdock/Columbia River; 170701050405 – Chenoweth Creek

N. Total Acres Burned: 3397
NFS Acres(1302) Other Federal ( ) State (28) Private (2067)

O. Vegetation Types: Pine/Oak and some Douglas Fir

P. Dominant Soils: Shallow to deep, nearly level to very steep loam and stoney to gravely loam

Q. Geologic Types: This entire slope is underlain by Columbia River Basalt flows. The unit that caps the hill and forms the gentle slopes along the ridge top is Wanapum Basalt. Most of the steep north-facing slope is mapped as Grand Ronde Basalt.

R. Miles of Stream Channels by Order or Class: 3.7 miles of first order streams

S. Transportation System

Trails: 0 miles Roads: 0 miles

PART III - WATERSHED CONDITION

A. Burn Severity (acres): 2662 (low) 558 (moderate) 177 (high)

The field observations of burn severity generally coincide with the descriptions in the USDA Forest Service Field Guide for Mapping Post-Fire Soil Burn Severity[1].

High Severity Burn

All or nearly all of the pre-fire ground cover and surface organic matter (litter, duff, and fine roots) is generally consumed, and charring may be visible on larger roots. The prevailing color of the site is often "black" due to extensive charring. Bare soil or ash is exposed and susceptible to erosion, and aggregate structure may be less stable. White or gray ash (up to several centimeters in depth) indicates that considerable ground cover or fuels were consumed.

Moderate Severity Burn

Up to 80 percent of the pre-fire ground cover (litter and ground fuels) may be consumed but generally not all of it. Fine roots (~0.1 inch or 0.25 cm diameter) may be scorched but are rarely completely consumed over much of the area. The color of the ash on the surface is generally blackened with possible gray patches. There may be potential for recruitment of effective ground cover from scorched needles or leaves remaining in the canopy that will soon fall to the ground. The prevailing color of the site is often "brown" due to canopy needle and other vegetation scorch. Soil structure is generally unchanged.

Unburned and Low Severity Burn

Surface organic layers are not completely consumed and are still recognizable. Structural aggregate stability is not changed from its unburned condition, and roots are generally unchanged because the heat pulse below the soil surface was not great enough to consume or char any underlying organics. The ground surface, including any exposed mineral soil, may appear brown or black (lightly charred), and the canopy and understory vegetation will likely appear "green."

B. Water-Repellent Soil (acres): 100

C. Soil Erosion Hazard Rating (acres):
163 (low) 1887 (moderate) 1619 (high)[2]

[1] Rocky Mountain Research Station General Technical Report RMRS-GTR-243,October 2010. Annette Parsons, Peter R. Robichaud, Sarah A. Lewis, Carolyn Napper, and Jess T. Clark.

[2] Ratings derived from Soil Survey of Wasco County, Oregon Northern Part. USDA Soil Conservation Service, March, 1982.

D. Erosion Potential: 9.08 tons/acre[3]

E. Sediment Potential: 2675 cubic yards / square mile

PART IV - HYDROLOGIC DESIGN FACTORS

A. Estimated Vegetative Recovery Period, (years): 5 years

B. Design Chance of Success, (percent): 60%

C. Equivalent Design Recurrence Interval, (years): 10 years

D. Design Storm Duration, (hours): 24 hours

E. Design Storm Magnitude, (inches): 2.2 inches

F. Design Flow, (cubic feet / second/ square mile)[4]: Gooseberry Creek – 104.8 cfs/mi^2; Rowena Gap – 114.3 cfs/mi^2 ; Badger Trib – 81 cfs/mi^2

G. Estimated Reduction in Infiltration, (percent): 3%

H. Adjusted Design Flow, (cfs per square mile)[5]: Gooseberry Creek – 112.2 cfs/mi^2; Rowena Gap – 141.0 cfs/mi^2 ; Badger Trib – 97.0 cfs/mi^2

PART V - SUMMARY OF ANALYSIS

A. Describe Critical Values/Resources and Threats:

The BAER team evaluated the risk level to each identified critical value using the matrix below. All values at risk except for soil productivity are located on non-forest lands that are directly downstream of burned National Forest land. Treatments on FS lands would indirectly be a benefit to those values. They include private rural residences and property, infrastructure and facilities. All of these off-Forest values could be at risk of accelerated erosion and sedimentation, and flash floods.

Magnitude of Consequences on Probability of Damage or Loss

Probability of Damage or Loss	Magnitude of Consequences		
	Major	Moderate	Minor
	• Loss of life or injury to humans • Substantial property damage • Irreversible damage to critical natural or cultural resources	• Injury or illness to humans • Moderate property damage • Damage to critical natural or cultural resources resulting in considerable or long term effects	• Property damage is limited in economic value and/or to few investments • Damage to natural or cultural resources resulting in minimal, recoverable or localized effects
	RISK		
Very Likely (>90%)	**Very High**	**Very High**	**Low**
Likely (>50% to <90%)	**Very High**	**High**	**Low**

[3] Erosion Potential calculated using the ERMiT model – "Robichaud, Peter R.; Elliot, William J.; Pierson, Fredrick B.; Hall, David E.; Moffet, Corey A. 2014. Erosion Risk Management Tool (ERMiT)."

[4] Pre-fire design flow calculated using regression equations from "Magnitude and frequency of floods in eastern Oregon 1982, Harris, D. D.; Hubbard, L. E. USGS Water-Resources Investigations Report: 82-4078".

[5] Post-fire design flow calculated using the Forest Service Peak Flow Calculator – "Elliot, William J.; Hall, David E.; Robichaud, Peter R. 2010. Forest Service Peak Flow Calculator. Ver. 2012.08.02. Moscow, ID: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station." Pre and Post-fire curve numbers (CN) were derived from Greg Kuyumjian's recommendations.

Possible (>10% to <50%)	**High**	**Intermediate**	**Low**
Unlikely (<10%)	**Intermediate**	**Low**	**Very Low**

The Very High and High Risk are unacceptable risk levels due to threats to human life, property, infrastructure and resources, therefore treatments should be applied. An Intermediate Risk could be unacceptable if human life or safety is the critical value at risk.

Human Life and Safety

Magnitude and Probability of Consequences for Human Life and Safety Values

HUMAN LIFE & SAFETY Value at Risk	Risk	Probability of Damage or Loss	Magnitude of Consequences
Debris flows, slope failure severe storm event Private Access Roads, Rowena Residences	Intermediate	Possible	Moderate

Roads

Segments of two roads on private land are located below a steep and potentially unstable slope where burn severity is high. The potentially unstable slope is located on National Forest lands. It is at risk of accelerated erosion or exacerbated instability should a heavy precipitation or high runoff event occur as a result of an intense storm event. Anyone using the road segment during or immediately after a storm could be at risk of being harmed, stranded or worse should a washout or slide occur.

Private Residences

Some private residences in eastern Rowena are located below a steep and potentially unstable slope where burn severity is high. The potentially unstable slope is located on National Forest lands. They are at risk of accelerated erosion or exacerbated instability should a heavy precipitation or high runoff event occur as a result of an intense storm event. People occupying these residences during or immediately after a storm could be at risk of being harmed, stranded or worse should a washout or slide occur.

Property

Magnitude and Probability of Consequences for Property

PROPERTY Value at Risk	Risk	Probability of Damage or Loss	Magnitude of Consequences
Roads: Two private access roads	High	Likely	Moderate
Private Residences: Rowena Residences	Intermediate	Possible	Moderate

Roads

Structural stability of two private roads is at High risk of likely erosion damage. These roads cross below a steep, potentially unstable headwall where burn severity is high. Neither of these roads have structures at the ephemeral crossings that would be able to pass flow under the roads. One of the roads crosses through an old debris fan that was deposited many decades ago when the steep headwall failed. These roads provide access to three residences

Private Residences

Some private residences in eastern Rowena are located below a steep and potentially unstable slope where burn severity is high. They are at risk of accelerated erosion or exacerbated instability should a heavy precipitation or high runoff event occur as a result of an intense storm event. These structures are at risk of damage if the high severity burned headwall fails.

Natural Resources

Magnitude and Probability of Consequences for Natural Resources

NATURAL RESOURCES Value at Risk	Risk	Probability of Damage or Loss	Magnitude of Consequences
Soil Productivity: steep slopes & draws (slope stability; mass wasting)	Low	Likely	Minor

Surface soils of the Bald series consist of well drained soil formed in loess and volcanic ash and underlying colluvium weather from basalt. Steep slopes associated with these soil types are at greatest risk of wildfire induced accelerated erosion. Erosion rates on these soils are rated severe and are estimated to be approximately 9 tons/acre where burn severity was high.

B. Emergency Treatment Objectives:

Diminish the risk of threats to human life and safety posed by accelerated erosion on steep slopes.

To minimize post-wildfire accelerated erosion on steep slopes (i.e. 60-70%) where burn severity was high and indirect effects of hieghtened runoff and erosion would likely result in unwanted effects to soil productivity and damage to private infrastructure. Treatment would be aimed at reduction of erosion, trapping potential sediment and slowing the development of concentrated flow

C. Probability of Completing Treatment Prior to Damaging Storm or Event:

Land **90** % Channel ___ % Roads/Trails ___ % Protection/Safety ___ %

D. Probability of Treatment Success

	Years after Treatment		
	1	3	5
Land	70%	75%	80%
Channel			
Roads/Trails			
Protection/Safety			

E. Cost of No-Action (Including Loss): $100,000

If the proposed treatment wasn't implemented, the risk to certain critical values could be high. None of these values are on National Forest lands. The cost of not conducting treatments could potentially be as high as $100,000. This estimate is coarse and may be low, but represents damage to houses and two access roads below a high severity burned headwall on National Forest land.

F. Cost of Selected Alternative (Including Loss): $17,000

G. Skills Represented on Burned-Area Survey Team:

[X] Hydrology [X] Soils [X] Geology [ ] Range [ ]
[ ] Forestry [ ] Wildlife [X] Fire Mgmt. [ ] Engineering [ ]
[ ] Contracting [ ] Ecology [ ] Botany [ ] Archaeology [ ]
[ ] Fisheries [ ] Research [X] Landscape Arch [ ] GIS

Team Leader: Mark Kreiter

Email: mkreiter@fs.fed.us Phone:541-308-1744_ FAX: 541-386-1916

H. **Treatment Narrative:**

(Describe the emergency treatments, where and how they will be applied, and what they are intended to do. This information helps to determine qualifying treatments for the appropriate funding authorities. For seeding treatments, include species, application rates and species selection rationale.)

Land Treatments:

Purpose: Provide ground cover, increase infiltration, shorten water flow paths, trap sediment and slow development of concentrated flow in a high burn severity headwall approximately 0.7 miles upstream of private roads and houses.

The emergency treatment consists of wood straw mulch application by hand on approximately 2 acres of the headwall. Application will be at a rate to achieve 70% ground cover as recommended by the manufacturer. An additional 2 acres will have slash applied by hand crews utilizing burnt understory material on site. Additional wood straw will be applied in areas that are not achieving 70% ground cover.

The treatment site was modeled using ERMiT to determine reduction of sediment delivery that may result from the proposed treatments. If the site is not treated, it is estimated that it will deliver 9.36 tons of sediment per acre in the first year following the fire. Treating as described above is estimated to reduce this amount to 1.77 tons of sediment per acre in the first year after the fire.

Monitoring of the 2000 Bobcat Fire in central Colorado suggests effective treatment of high severity burn areas on slopes up to 54% with application of straw mulch. Soils are similar to those in the Rowena treatment area and monitoring showed a reduction of over 95% in mean sediment yield compared to untreated control plots.[6]

I. **Monitoring Narrative:**

(Describe the monitoring needs, what treatments will be monitored, how they will be monitored, and when monitoring will occur. A detailed monitoring plan must be submitted as a separate document to the Regional BAER coordinator.)

Effectiveness monitoring would be conducted in the spring of 2015 after the snows have melted to evaluate the effectiveness of the land treatments. A monitoring plan would be prepared during BAER implementation with specific objectives and a predominantly qualitative and occular methodology of how to measure the effectiveness of manual mulching efforts.

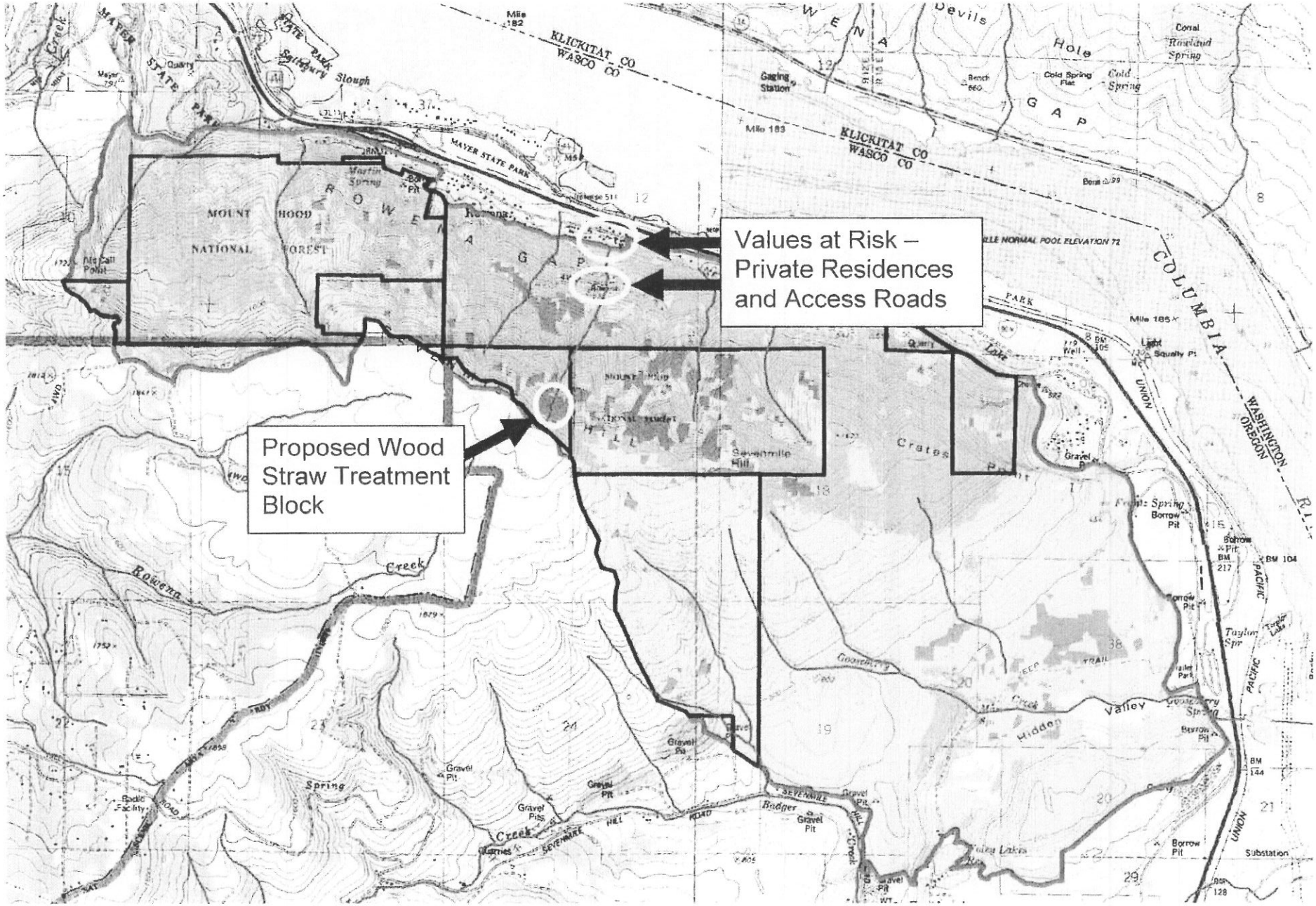
[6] Robichaud, Peter R.; Ashmun, Louise E.; Sims, Bruce D. 2010. Post-fire treatment effectiveness for hillslope stabilization. Gen Tech. Rep. RMRS-GTR-240. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. 62 p.

Part VI – Emergency Stabilization Treatments and Source of Funds

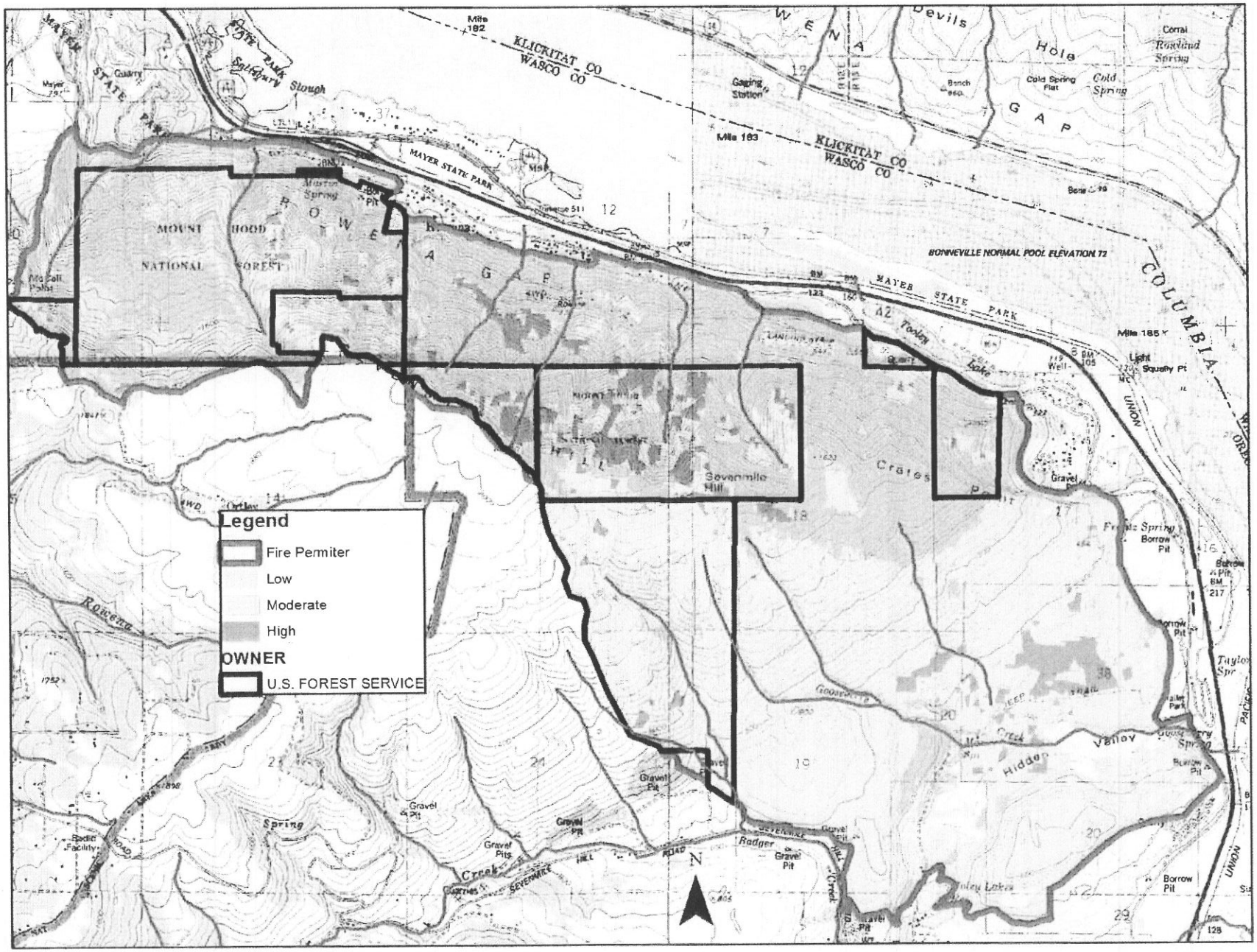
Interim #

			NFS Lands				Other Lands			All
		Unit	# of		Other	# of	Fed	# of	Non Fed	Total
Line Items	Units	Cost	Units	BAER $	$	units	$	Units	$	$
A. Land Treatments										
	ac	4000	4	$16,000	$0		$0		$0	$16,000
				$0	$0		$0		$0	$0
				$0	$0		$0		$0	$0
Insert new items above this line!				$0	$0		$0		$0	$0
Subtotal Land Treatments				$16,000	$0		$0		$0	$16,000
B. Channel Treatments										
				$0	$0		$0		$0	$0
				$0	$0		$0		$0	$0
				$0	$0		$0		$0	$0
Insert new items above this line!				$0	$0		$0		$0	$0
Subtotal Channel Treat.				$0	$0		$0		$0	$0
C. Road and Trails										
				$0	$0		$0		$0	$0
				$0	$0		$0		$0	$0
				$0	$0		$0		$0	$0
Insert new items above this line!				$0	$0		$0		$0	$0
Subtotal Road & Trails				$0	$0		$0		$0	$0
D. Protection/Safety										
				$0	$0		$0		$0	$0
				$0	$0		$0		$0	$0
				$0	$0		$0		$0	$0
Insert new items above this line!				$0	$0		$0		$0	$0
Subtotal Structures				$0	$0		$0		$0	$0
E. BAER Evaluation										
	ea	5200	1	$5,200			$0		$0	$0
Insert new items above this line!				—	$0		$0		$0	$0
Subtotal Evaluation				—	$0		$0		$0	$0
F. Monitoring										
	ea	1000	1	$1,000	$0		$0		$0	$1,000
Insert new items above this line!				$0	$0		$0		$0	$0
Subtotal Monitoring				$1,000	$0		$0		$0	$1,000
G. Totals				$17,000	$0		$0		$0	$17,000
Previously approved										
Total for this request				$17,000						

Rowena Fire – Proposed Treatment Block and Values at Risk



Rowena Fire Soil Burn Severity



PART VII - APPROVALS

1. _____ 10/08/2014
Forest Supervisor (signature) Date

2. _____ 10.24.14
Regional Forester (signature) Date