Date of Report: 10/12/2018

BURNED-AREA REPORT (Reference FSH 2509.13)

PART I - TYPE OF REQUEST

A. Type of Report	i e
[X] 1. Funding request for estimated emer[] 2. Accomplishment Report[] 3. No Treatment Recommendation	gency stabilization funds
B. Type of Action	
[X] 1. Initial Request (Best estimate of fun	ds needed to complete eligible stabilization measures)
[] 2. Interim Report # [] Updating the initial funding request [] Status of accomplishments to date	based on more accurate site data or design analysis
[]3. Final Report (Following completion or	f work)
PART II - BU	RNED-AREA DESCRIPTION
A. Fire Name <u>: Maple</u>	B. Fire Number <u>: 00207</u>
C. State: WA	D. County: Mason
E. Region: 6	F. Forest: Olympic
G. District: Hood Canal	H. Fire Incident Job Code: P6L2NE
l. Date Fire Started: 8/4/2018	J. Date Fire Contained: 10/5/2018
K. Suppression Cost <u>: \$4.7 M, as of 10/5/18</u>	3
L. Fire Suppression Damages Repaired with Sup 1. Fireline waterbarred (miles): 0.25 2. Fireline seeded (miles): NA 3. Other (identify): Suppression resurface grading along 2480 and 2401	pression Funds hab to clean woody debris from ditches along 2500, 2480;
M. Watershed Number <u>: 171100180202 – Hamm</u>	a Hamma River / 171100180201 Jefferson Creek
N. Total Acres Burned: 3300 NFS Acres(2990) Other Federal () State	(310) Private ()
Vegetation Types: Fire primarily burned in the	e Western Hemlock Zone, plants associated in this area are

sword fern, Oregon-grape, salal, rhododendrons, huckleberry, and devil's club. Higher elevation ridgetops

burned in the Pacific Silver Fire Zone and a variety of huckleberry are associated with this area.

P. Dominant Soils:

The dominant soil order within the fire perimeter are Andisols with medial and/or lithic modifiers. Dominant soil textures are moderately coarse sandy loams, with fine sandy loams concentrated on lower toeslopes and low terraces. Soils within the burned area generally have extremely high rock content throughout the profile, ranging from 35% to 90%. Unconsolidated materials and highly fragmental (>90% rock fragments) shallow soils comprise over 50% of the fire perimeter.

Q. Geologic Types:

The Maple fire environment is dominated by rock outcrop, talus/scree slides, and shallow soils. There is some evidence of recent shallow landslides and debris flows, with these generally being contained to mid-backslope positions. Existing drainage ways are very narrow and over steepened and are generally bedrock controlled. Dominant lithology within the fire perimeter is mainly marine basalt with some sandstone sedimentary inclusions.

- R. Miles of Stream Channels by Order or Class: Perennial streams 6.7 mi., Intermittent 20.5 mi.
- S. Transportation System:

Trails: 3.4 miles

Roads: 6.0 miles

PART III - WATERSHED CONDITION

A. Burn Severity (acres):

Severity	Acres Burned	Percent
High	· 98	3%
Moderate	458	14%
Low	818	25%
Unburned/V.		
Low	1898	58%
Total	3273	

B. Water-Repellent Soil (acres):

The BAER team was unable to conduct in depth field testing of soil water repellency across all areas of the fire due to hazardous field conditions and safety concerns regarding the high number of very tall snags that were observed by the Agency Administrator and Incident Commander. No firefighters or BAER personnel were allowed on the steep slopes deep in the interior of the fire. The extent of water repellent soils is estimated to be 139 acres or 5% of soils. (100% high and 50% of moderate burn severity areas).

C. Soil Erosion Hazard Rating (acres):

D. Erosion Potential:

ERMIT - 8.28 tons/acre

E. Sediment Potential: 348 cubic yards / square mile

F. Debris Flow Potential: The USGS preliminary debris hazard assessment predicted the likelihood of debris flow (%), potential volume of debris flow (m3), and combined relative debris flow hazard based upon a design storm. Much of the burn area is estimated to have a low to moderate to high potential for post-fire debris flow occurrence. There are a few steeper, more severely burned subwatersheds thathave a high (> 50%) likelihood of debris-flow initiation in response to a relatively modest 15-minute peak storm intensity of >20 mmh⁻¹ Predicted magnitudes for these higher likelihood tributaries are largely expected to be between 1,000 and 10,000 m³, with only one small watershed having an estimated volume in excess of 10,000 m³.

PART IV - HYDROLOGIC DESIGN FACTORS

A.	Estimated Vegetative Recovery Period, (years):	3 – 5 years
В.	Design Chance of Success, (percent):	70%
C.	Equivalent Design Recurrence Interval, (years):	_5_
D.	Design Storm Duration, (hours):	3 hours
E.	Design Storm Magnitude, (inches):	2.5 inches
F.	Design Flow, (cubic feet / second/ square mile):	133
G.	Estimated Reduction in Infiltration, (percent):	27%
H.	Adjusted Design Flow, (cfs per square mile):	<u> 376</u>

PART V - SUMMARY OF ANALYSIS

The Maple Fire was discovered on 8/4/2018 and has burned approximately 3300 acres within the Jefferson Creek tributary to the Hamma Hamma watershed near Brinnon, WA on the Hood Canal Ranger District. Several main roads imperative to USFS and DNR land management, and a secondary road with critical safety access to a USFS radio repeater were evaluated. Two trails were also identified to be evaluated when conditions are safe to do so. The area is characterized by mostly inaccessible and steep terrain. The soil burn severity map shows that 17% of the fire burned at high and moderate soil burn severity. The rest of the fire was either low soil burn severity or unburned. Increased postfire soil erosion, runoff and debris flows within the burned area is likely to cause flooding on roadways and deposition of materials on the road prism. area is very steep and there already has been substantial dry ravel and burnt tree debris deposition onto roads. This process is expected to continue throughout the winter and the concern is that road drainage could be overwhelmed and water could be diverted down the road causing extensive damage to the road prism and road fill. Long duration winter storms are the primary precipitation events of concern. Based on historic precipitation patterns, most of the damage producing storm events occur in November through January. Every concave feature on the steep slopes has the potential to transport large volumes of water pre-burn, these drainages are expected to convey larger volumes of water post fire and likely overwhelm the road drainage structures. All three roads in the burned area were maintained before the fire and will be graded for surface drainage with suppression funds. Hillslope recovery of pre-fire stability and watershed hydrologic response is expected within 3 years following the fire.

A. Describe Critical Values/Resources and Threats:

This area is easily accessible from Olympia, visitors to the Olympic Peninsula/National Park and the greater Seattle area due to paved road access from Highway 101 up to the fire perimeter. Potential impacts on human life and safety, property, natural resources and cultural resources were identified by the local District/BAER team. Disciplines that identified critial values participated in an initial BAER field survey. The BAER team assessed the the area for post-fire emergencies and identified the following threats to critical values. Interim reports may be submitted as additional assessments are completed in the interior of the fire along the system trails and/or the need to repair or maintain BAER treatments emerges.

The risk matrix, Exhibit 2 of Iterim Directive No 2520-2018-1, (see below) was used to evaluate the Risk Level for each value identified during the assessment. The project file on Pinyon has all specialist reports, maps, photos and relevant project information.

Probability	Magnitude of Consequences						
of Damage	Major	Moderate	Minor				
or Loss		RISK					
Very Likely	Very High	Very High	Low				
Likely	Very High	High	Low				
Possible	High	Intermediate	Low				
Unlikely	Intermediate	Low	Very Low				

The following critical values table is the summary of the critical values that were identified within or immediately adjacent to the Maple Fire.

The same was a second s						1	
Maple BAER - FS Critic				,			
High / Very High Risk	<u> </u>						
Intermediate Risk		!			├─-	-	
Low / Very Low Risk					├		
					L		
Life/ Property/ Resources *	Critical Velos	Throat to Value	Probability of Correspo or Line	Magnitude of Consequence	Rlsk	Treatment	Motes
Human Life & Safety	Intersection of open road FSR 2300 and closed road FSR 249h	Potential exposure of public and amployees to fazard trees, rock fall, debris flow, flooding	Pensible - Shere are connerous yeary fall trees and small rocks are boulders; Vary steep drainages with some high and moderate hum severity	Major - Palling trees land rocks could result to Injury or loss of life	- Hingon .	Installing after and burned error starting signs at intersection of FSE 2500 and FSE 2480, Glots is necessary to allow USPS access to main road into the bars size for monitoring and fand mesagement. Use plurgage to relations that this is not a vehicle closer that area is closed to all users.	
Hueroon Life & Sofety	Intersection of open section of FSR 2480 and closed road PSR 2401.	Potential exposure of public and amployees to larger direcs, rock fall, dedarks foru, Roce lag	Possible - there are numerous very ball trees and areal rocks and boulers; Vary steep draininges with some high and moderate burns severity	Major - Felling trees and rocks could result. In severe Injury or loss of Me	High	Index gabe and Durned seas usersing alger at phenocities of Part-400 and PREDBOTS, Girts is increasing to allow USSP3 admiss/DNB seccess to their land for selvage legging. Use algrage to reinforce that this is not a whitele closure this area is closed to all secre.	
Humun Life & Safety	Open road FSR 2441 before it drops into tire area	Potential disposure of public and employees to hexard trees, rock full, debris flow, flooding	Pemilije - Chere are namerode wary tell trees and small racin shi houdging. Yany steep drainings with some high and moderate feers servirity	Major-falling typen and rocks could meet in seven trijury ar less of life	10 10	Intel® deciblect, clearre and harmed area warning signs of taped ridge before the nerview moud dropp above. Into the intersection with PSR2403 and a poor torm enound. Ope algainge to rainform that this is not a vehicle doorer - this area is closed to all surers.	
Hayain Afir W Sofety	Symbien Hilbing Trails-Upper Ele Lake, Lower ER Lake, Jefferson Hidger Trails and Parkking/Dispersed Camping	Potential exposure of public and employees to hexard trees, rockfelf, debris flow, flooding	Pumilife - there are numerous way sall treas and profit recks topition; Very steep drefrages with some high and moderate burn severity	Mujor - falling trees and rocks could result in savere injury or fast of life	High	install humand area werning and hazard signs et trailineade to inform public of persunalst timests – plan to open ends symmer; Avec alcomes will be in effect with gettes at all winbursed intersections until winter storms have passed to protect inters from diptris flow and flooting.	
Property	PSR 2480 Road Prism - MI3 - 1,2 miles	High poburtial for eliminand runoff from mod/legh 300 hillstops above could overwhelm existing drainway-festures, outly dever water only road and cases loss of road 161. High potential of lesified burnt trees, only reas and rock delvix to ephilement I channals bundating the road, plugging the ordwarts and rendering oil drainage instead of the colours and rendering oil drainage instead in the colours and rendering oil drainage instead in the colours and	blimity—flood modeling in representative of the hape such perfessional judgement ferent recent ERFC events predict es substantial increase in the emotent of maneriel that will render reschaininge in effective 	Moderate - de mage er less ef road prissty increused sodiment thto Hamma Herma Rher, cittcal fab Joshitet; Muin admin & DNR access route.		Treatall (6) armored relling diparen MILA, to add culvert create finish reductions; etcrim (respection and creapeases	

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				The second	T 20.00 00	To You the second and	
Property	PSR 2421 Road Prism - and access to Jefferron Ridge Repeater Site - ML2 - 4,5 m Bas	high potential for alevaled runoff from mod/high 505 hillslopes above could overwhelm existing drissage heaters, could other water onto read end cause loss of head fill. High potential of visuals burn tense of viral high high soft of head for high potential channels under the country of the control of the	Likely -flood shodeling to representative drainages and professional judgement from recent EHFC a warte predict a supplantable increase in the amount of material that will render road drainage ineffective	idindinata-damage or loss of road prism; Access routa to Jefferson Ridge Radio Repeater		(imisal) (2) water bear to add cubert cross drain redundancy; storm inspection and response	
Property	FSR 2401 Road Prism - ML3 - 8.6 miles	High potential for elevated ranolf from modifially 555 hillstopes show could courable in estilar giralage features, could divest water onto root and cause loss of rout Ki. Rija phorsatial of bulkad born trees, dry ravel ard rock febrir in ephamsard channels innedating the road, phaging the celevate and rand ering all drainage ineffective.	Listely - Rood modeling in representative drafusges and professional judgement from recent ERFO events predict a substantial because in the amount of material that will payder rood theirs go ineffective	Maderate - dayage or loss of road primy foreased settment into Jefferson Creak, tributary to Herena Hamma critical habitet; public access road		Tradell (6) armonred milling dips, to sold colvent cross drain reckenduncy; storza i inspection and response	
Property	Jefferson Ridge Trail, 4805	Potential of elevated ruse of end water themselved bown the traft loss of trail tread; soll reads and delath from way steep mod/filight SSS slopes along trail	Possible - there are numerous aphenisms of rishtages that will have element monif from over 100 inches of rate that fall in this area.	Moderate - demage or loss of trail prism	(atermediate	Intermediate risk does not warrant treatment	Oue to safety cencerns, brails have not been inspected yet for day savel and district deposition and trail drainage issues; potential treatment - additional drainage features to protect trail treat.
Property	Lower Elk Lake Yell, #805	Potential of elevated resolf and water diversion down the trait; loss of teall treeds soil arraction and delth from very steep mod/high SSS slopes along treil	Possible - there are numerous chireneral definings that will have elevated neroff from over 100 inches of rain that fail in this area	Moderate - demage or loss of trail prient	Intermediata	Intermediate risk does not warrant treatment	Due to selety concerns, trails have not been inspected yet for dry result and debris deposition and trail drainage insues potential treatment - additional distantial treatment of protect trail treed.
Property	Upper Elk Lafes, #805.1	diversion down the trail loss of trail tread; soli	Possible -there are numerous sepheneral dreinages that will have elevated runoff from evan 200 inches of rain that full in this area	Moderate - demags or lost of trell priors	(1)Earrind(1884	intermediate risk does not warrant treatment	Due to safety concerns, traffs have not been inspected yet for day ravel and debris deposition and trail drainage (essue) potential treatment - additional drainage features to protect trail tread.
Property	Jefferson Creek Bridge - PSR2480	Potential scouring of brudge abuttments during high flows, debris dem, flooding and impoundment at bridge, damage to abutments from mobilized debris	Possible - bridge is below mod/high sits with substanial debris (burnt trees) sincady building in ephemeral drainages	Mejor - loss of Infolge Investment	MEAN.	Scorm Inspection as part of FSR 2480 inspection	
Property	Hamme Hamme Pever Bridge - FSR2480	Potential debris dum, ficoding and impoundment at bridge, damage to abutments	Unitively - bridge is below Low/Unburned SBS	Major - loss of bridge investment	intermedirte		

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THE PERSON NAMED IN CO. LEGISLA	al Values Table						
High / Very High Risk		1					
ncermediate Risk					<u> </u>		
ow / Very Low Risk		1			L		
					I	<u> </u>	
Life/ Property/ Resources	Critical Value	Threat to Volue	Probability of Domega or Loss	Magaitade of Connections	Pilnk	Typet/immit	Notas
Hunsan Life & Safety	Intersection of open road FSR 2500 and closed Yold FSR 2480	Potential expensive of public and employees to leazed trees, reck fall, debris flow, flooding	Panellis - there are numerous way fall trees and small recise and boulders; Very steep drakanges with some high and moderate burn screenty	Major - failing times and rocks could result to lightly or loss of Me	High	Install glade and burned arise werehold signs of historication of PSR 2500 and PSR 2400. Glab is necessary to allow USPS access to main road into the burn area for monitoring and hard management. Use eignage to reinforca that this is not a wehide closura - this were is closed to all users.	
Human Life & Safety	Intersection of open section of PSB 2480 and closed road PSR 2401	Potential exposure of public and orn playans to baserd tress, rock fell, debris flow, flooding	Promittie - there are numerous ways fall trees and small rocks and foulders; Very sheep drainages with some high and moderate burn severity	Major - folling truth and rocks could moult in seven injury of form of life	•	Install geta and burned area unmaking signs of intersection or PSP40-50 and PSP600-51 (State is microstary to allow USFS admissionMM scores to their land for selvage logging. Use algregate to relinfered that this is made a vipitide closure - this wree is closed to all secons.	·
luman Life & Safety	Open poed FSR 2443 before it drops into Vite area	Persential exposure of public and employees to hazard trees, rockfull, delars frow, flooding	Possible -there are numerous way tall trues and small rocks and poulders; Very stroop challenges buth some high and moderate learn severity	Major-failing trains and racta could visult in assess lajury or loss of Ma	1 1 1	Institut monohood: closure and bursend area werning stages at top of ridge before the narrest ord frame down close the laborarection witch restablish and a poor turn enough, then shape to reinforce that this is not a verified closure - this area is closed to all users.	
herpum Elife-M. Sufferty	System Hiting Teetle-Upper Elk Laise, Lower Elk Laise, Jefferson Ridge; Traille and Parking/Dispersed Camping	Potential exposure of public and employees to hazard trees, ruck fail, debuts flow, flooding	Possible - there are numerous topy off trees and entall rects and boolders; Yery steep drainings with some high and muderate fains severity	Major - falting tress and rocks could result in severe injury or loss of life	High	Ireball busmed area wereing and bussess signs at malifensite to inform public of protential thanks – plan to appan seed summer; Area closers will be in effect with gates at all unburned interspections until white retorms have passed to protect exercision debris flow and flooding.	,
Property	PSR 2480 Road Prism - ML3 - 1.2 miles	overwhelm existing similarge features, could divert water unto road and cause loss of road	I Burly - fixed modeling in representant the chartungus and professions of judgement from resett ERFO events product a substantial increase in the amount of mutotful that will render road drainage inell'octive	Modurate - da maga or loss of road prising Increased sediment Into Hanama Hammia River, critical fish habitat: Main admin & DNR access route.	Иùgh	Install (fil) ermonred milling dipt son Mill., to add colvent cross dimin; redundaric;p; storm; inspection and nasposane	

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B. Emergency Treatment Objectives:

The primary objective of the Burned Area Emergency Response report is to recommend reasonable and necessary actions to protect, reduce and minimize threats to human life, safety, property, and to prevent unacceptable loss to cultural and natural resources on National Forest System lands from "imminent post-wildfire threats" (FSM 2523.02). The timely application of the proposed treatments is expected to substantially reduce the probability of damage to the BAER critical values identified in the section above. Recommended emergency treatment objectives include the following:

Protection and Safety Treatments

- 1. Implement physical road closures to protect the lives and safety of forest visitors and workers.
- Installation of hazard warning signs at every entrance into the burned area to protect the life and safety
 of forest visitors and workers. Emphasize hazards and closure of roads to pedestrians as well as
 vehicles.

Property - Road Treatments

- 1. Protect road investments from potential infrastructure damage due to elevated runoff, erosion and deposition.
- 2. Reduce potential sediment delivery into the Hamma Hamma River degrading water quality and critical habitat for the salmon.
- 3. Inspect roads for damage and inspect bridges for debris jam build up and potential impacts to the life and safety of road users.

Land Treatments - Ecological Integrity

- 1. Reduce the potential for introduction/spread of invasive weeds by preventative seeding and monitoring of treatment effectiveness.
- C. Probability of Completing Treatment Prior to Damaging Storm or Event:

D. Probability of Treatment Success

	Years	Years after Treatment				
	1	3	5			
Land (invasives)	80	80	80			
			,			
Channel	N/A	N/A	N/A			
	,					
Roads/Trails	80	90	95			
Protection/Safety	95	95	95			

E. Cost of No-Action (Including Loss): \$750,000

The market value cost to to reconstruct the road prism along the 2421, 2401 or 2480 road if failure occurs is between \$5,000 to \$50,000 per failure depending on the depth of road fill and extent of damage. There are 12 locations where road treatments were deemed necessary. If these locations resulted in failures due to no action the cost to reconstruct could be as much as \$600,000.

- F. Cost of Selected Alternative (Including Loss): \$88,226 Assumes \$58,226 for treatments and 95% chance of success for treatments.
- G. Skills Represented on Burned-Area Survey Team:

[X] Hydrology [] Forestry [] Contracting [X] Fisheries	[X] Soils [X] Wildlife [] Ecology [] Research	[] Geology [] Fire Mgmt. [X] Botany [] Landscape Arch	[] Range [X] Engineering . [] Archaeology [] GIS	[X] Trails/Recreation
p 2	[]	[]	110.0	5

Team Leader: Dana Butler

Email: <u>danabutler@fs.fed.us</u> Phone: 360-956-2280 FAX: 360-956-2330

Dana Butler – Hydrology Justin Urresti – Soils John Laliberte – Engineering Cheryl Bartlett – Botany Nicole Lagioia – Recreation Marc McHenry - Fisheries Betsy Howell – Wildlife

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:

Proposed Actions to Address Risks to Natural Resource Critical Values

1) Seed trail corridors with a mix of locally sourced, genetically appropriate native species suitable for the site in order to prevent weeds from becoming established. Seed mixes will include (but are not limited to) species that establish quickly and complete well with weeds that are readily available such as California brome (*Bromus carinatus*), blue wild rye (*Elymus glaucus*), yarrow (*Achillea millefolium*), goldenrod (*Solidago canadensis*), fringecup (*Tellima grandiflora*), and large leaf avens (*Geum macrophyllum*). Seeding will occur either in fall or early spring of 2019.

Weeds	prevention: Seeding	Length	Approx. acres
Trails:	Elk Lake, #805	1.8 miles	4.3
	Jefferson Ridge, # 808	1.6 miles	3.8
Road:	2421, MP 2.6-5.3	2.7 miles	6.5
	Total		14.6 acres

Costs of we	eds prev	ention: Seeding and Effectiven	ess Monitoring
GS 11 Botanist	3 days	Administration, coordination and implementation	\$1,100
WCC crew	5 days	Implementation	\$4,200
Supplies	N/A	Seeds	\$3,650
GS 09 Invasive Plant Coordinator	1 day	Effectiveness Monitoring	, \$290
GS 05 Invasive Plant Tech	2 days	Effectiveness Monitoring	\$300
GS 04 Invasive Plant Tech	2 days	Effectiveness Monitoring	\$270
		Tota	l: \$9,810

2) Monitor disturbance corridor managed by the Olympic NF inside the burn area not treated with preventative seeding in spring and early summer, 2019 to detect new occurrences of invasive plants. A 2 person crew can accomplish this work in two days at the following location:

Weeds monitoring		Length	Approx. acres
	2401, MP 3.2 - 6.2	3.0 miles	10.6
Total:	<u> </u>		10.6 acres

Costs associated with these activities include:

Costs of weeds monitoring							
GS 09 Invasive Plant Program Coordinator	1 day	Administration and monitoring/treatment	\$290				
GS 05 Invasive Plant Tech	2 days	monitoring/treatment	\$300				
GS 04 Invasive Plant Tech	2 days	monitoring/treatment	\$270				
		Total:	\$860				

Roads and Trail Treatments:

The prescribed treatments for roads are designed to help preserve infrastructure while improving road surface drainage and providing redundancy to existing culverts to minimize damage caused by increased runoff and sediment transported from steep burned slopes above. Road treatments include: installing rolling dips and water bars to help handle increased flood flows and enlarging the area around culvert inlets.

The 2421 is at risk of losing road prism due to increased water and debris overwhelming road drainage structures. Before the road accesses the stable, convex ridge, the road passes through areas with moderate burn severity and pockets of high burn severity upslope. The treatments are only recommended within these moderate soil burn severity areas. The burned hillslopes above the road are very steep and every concave will likely transport elevated storm flows and transport staged material onto the road prism. Safety concern is to maintain critical road for access to radio repeater site.

The 2480 road with access to the 2401 road is a critical road for adjacent landowner administrative access. The WA DNR expects to salvage this winter with frequent timber haul on the 2401 road. A gate will be installed to allow for administrative access and easy closure while keeping the public and USFS staff safe. DNR will maintain the 2401, 2421 and 2480 roads through their property before, during and after salvage haul. These roads are cost share roads and the Olympic National Forest has jurisdiction on safety and environmental standards.

The 2480 road at the junction with the 2500 road provides critical administrative access to the 2421 radio repeater road and administrative access into the burned area that is not in conflict with the expected salvage sale. A gate is needed to allow for relatively easy administrative access on this mainline road while keeping the public out of the area and safe. The 2500 road is the access to Lena Lake trail area which sees hundreds of visitors on weekends even throughout the winter. The recreation area is north of the fire and north of the Hamma Hamma River along the 2500 road and is expected to open once closure gate and signage are in place. Road work on the 2401 will be above DNR land and their timber salvage haul route.

Road Number	Length	MTC IVI	Increase Culvert Basin size	Rolling Dips	Water Bars	Increase Culvert Inlet	Rolling Dip*	Water Bars	Totals
2480000	1.2	3	4	4		\$240	\$4,000	\$ 0	\$4,240
2401000	2.5	3	. 6	5		\$360	\$10,000	\$0	\$10,360
2421000	5.2	2	3		3	\$180	\$0	\$750	\$930
*different p	orices=diff	erent co	mplexity		Totals	\$780	\$14,000	\$750	\$15,530

Costs of Engineering Contract Administration								
Engineer	8 days	Layout/Administration	\$4,000					

Road storm inspection and response is needed to inspect drainage features to evaluate debris deposition and drainage functionality post storm events. Treatments will include cleaning burnt debris and fallen rocks out of ditches and culvert inlets. Bridge storm inspections are needed to ensure that debris jams do not buildup against the auto bridge at Jefferson Creek. Jefferson Creek drains the burned area with the highest percentage of high and moderate soil burn severity. A hydrologist and/or bridge engineer will inspect the bridges after high flow events for one year following containment of the fire. If debris jams are discovered, a recommendation will be made to remove the debris jams and prevent potential loss of the structures.

)TEM	UNIT	UNIT	NO. OF UNITS	TOTAL
Storm Inspection and Response	Days	\$500	8	\$4,000
3.6 miles of road (ditches); 60 culverts	CY	\$20	200	\$4,000
TOTAL				\$8,000

Protection/Safety Treatments:

The prescribed treatments for emergency closure are designed to control access to mitigate risks to life and safety. The warning signs and gates are temporary in nature and will be removed when the risk is mitigated and the closure is revoked. These costs are for contract labor and have overhead built in.

There will be road closure warning signs and burned area hazard warning signs at each road closure. Additional signs will be installed at Highway 101 to inform forest users before they get close to the closure area. The warning signs, gates and barrier are temporary in nature and will be removed when the risk is mitigated and the closure order is revoked.

There will be two medium grade swing gates and one closure barrier installed. The swing gates need to be medium grade to maintain functionality and prevent damage to the gates. There will be a swing gate put in at the intersection of the 2480 and 25 Road to prevent access into the fire perimeter across the Hamma Hamma Bridge. This will allow for FS administrative access to the radio repeater road, storm patrol and other administrative use and land management within the fire perimeter.

There will be a swing gate at junction of the 2480 and 2401 roads to prevent access into the burned area while allowing the WA DNR frequent access for salvage logging and timber haul. There will be an ecoblock closure barrier installed on top of the ridge on the 2441 road to prevent access into the burned area.

Warning signs are needed to protect human life and safety of visitors to NFS lands along the Elk Lake and Jefferson Ridge Trails. Closure and warning signs will be placed at the trailheads to advise forest visitors of closures and hazards. The closure signs will be removed when the current closure order is lifted and warning signs will be left in place for 2-3 years.

ITEM	UNIT	UNIT COST:	NO OF UNITS	IJOJIAL COSI
Area/Road Closure Signs	Each	\$191.88	8	\$1,535
Trail Area Warning Signs	Each	\$243.35	4	\$973
Installation	Hours	\$130	4	\$520
Closure Gates	Each	\$6,675	2	\$13,350
Closure Barrier	Each	\$2,950	1	\$2,950
TOTAL FOR CLOSURE TREATMENTS				\$19,328

Costs of Engineering Contract Administration							
Engineer	3 days	Layout/Administration	\$1,500				

Monitoring Narrative:

N/A - other monitoring identified in storm inspection monitoring and invasives monitoring

Part VI – Emergency Stabilization Treatments and Source of Funds Interim #

Part VI - Emergency	/ Stabil	<u>ization T</u>	reatme	ents and S	ource o	of	<u>Funds</u>	<u> </u>	Interin	1#	
			NFS La	nds				Other L	ands		All
		Unit	# of		Other	Ø	# of	Fed	# of	Non Fed	Total
Line Items	Units	Cost	Units	BAER\$	\$	Ø	units	\$	Units	\$	\$
						8					
A: Land Treatments											
Forest Botanist	Days	\$366	. 3	\$1,098	\$0			\$0		\$0	\$1,098
Invasive Plant Coord.	Days	\$290	2	\$580		×					\$580
GS05 - Invasives Tech	Days	\$150	4	\$600							\$600
GS04 - Invasives Tech	Days	\$135	.4	\$540		×					\$540
Supplies - Seed				\$3,650		×					\$3,650
WCC Crew	Days	\$840	5	\$4,200	\$0			\$0		\$0	\$4,200
Subtotal Land Treatments				\$10,668	\$0	×		\$0		\$0	\$10,668
B. Channel Treatments											
N/A				\$0	\$0			\$0		\$0	\$0
Subtotal Channel Treat.				\$0	\$0	*		\$0		\$0	\$0
C. Road and Trails											
Rolling Dips	Each	\$1,000	4	\$4,000	\$0			\$0		\$0	\$4,000
Rolling Dips (intense)	Each	\$2,000	5	\$10,000	\$0		T	\$0		\$0	\$10,000
Water Bars	Each	\$250	3	\$750	\$0		$\neg \neg$	\$0		\$0	\$750
Increase Culvert Inlet	Each	\$60	· 13	\$780	\$0			\$0		\$0	\$780
Contract Admin	Days	\$500	8	\$4,000		8		\$0		\$0	•
Storm Inspection	Days	\$400	8	\$3,200	\$0		$\neg \neg$	\$0		\$0	\$3,200
Storm Response	CY	\$20	200	\$4,000	\$0	8	T	\$0		\$0	\$4,000
Subtotal Road & Trails				\$26,730	\$0	8		\$0		\$0	\$26,730
D. Protection/Safety						ä			-		
Closure Signs	Each	\$192	8	\$1,535	\$0	8		\$0		\$0	\$1,535
Trail Warning Signs	Each	\$243	4	\$973	\$0	8		\$0		\$0	\$973
Sign Installation	Each	\$130	4	\$520	\$0			\$0		\$0	\$520
Closure Gates	Eash	\$6,675	2	\$13,350	\$0			\$0		\$0	\$13,350
Closure Barrier	Each	\$2,950	1	\$2,950	\$0			·\$0		\$0	\$2,950
Contract Admin	Days	\$500	3	\$1,500	\$0	8		\$0	•	\$0	\$1,500
Subtotal Safety				\$20,828	\$0			\$0		. \$0	\$20,828
E. BAER Evaluation						8					
				\$8,891				\$0		\$0	\$7,520
Subtotal Evaluation					\$8,891			\$0		\$0	\$7,520
F. Monitoring					9						
N/A				\$0	\$0			\$0		\$0	\$0
Subtotal Monitoring				\$0	\$0			\$0		\$0	\$0
G. Totals				\$58,226	\$8,891			\$0		\$0	\$65,746
Previously approved											
Total for this request				\$58,226		ğ				T	

PART VII - APPROVALS

Forest Supervisor (signature)

*l0/17/1*8 Date

Regional Forester (signature)

1.

10/16/2018

Date