



# Post-Fire BAER Assessment

## Burned Area Emergency Response (BAER)

### Information Brief

CentralWashingtonFireRecovery.info



## Diamond Creek Fire – Values at Risk Matrix and Treatments

November 2017

### EMERGENCY DETERMINATION

The BAER team began assessing the area for post-fire emergencies on September 29, 2017. In that time the team has identified the following values at risk to post-fire threats. Interim reports may be submitted as additional assessments are completed. The risk matrix below, Exhibit 2 of Interim Directive No.: 2520-2014-1 was used to evaluate the Risk Level for each value identified during Assessment. Only values at risk that had a risk of Intermediate or above are discussed.

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

The table below describes the values at risk, probability of damage or loss, magnitude of consequences, risk, rationale for emergency treatment or actions and proposed treatments. Emergency Treatments activities (\*public health and safety, land, channel, road and trail treatments, protection and safety or public engagement actions).

<b>Critical Value at Risk</b>	<b>Description of Threat</b>	<b>Probability Magnitude Risk</b>	<b>Rationale for Emergency Management Actions</b>	<b>Risk Reduction Treatments/ Management Actions</b>
<b>Human Life and Safety</b> Public Health	Risk to public and employees to exposure to non-controlled human waste at burned vault toilets at Billy Goat TH.	Very Likely Major Very High	To avoid potential impacts to public health from exposure to human waste.	Treat and cover pit toilet.
<b>Human Life and Safety</b> Road Access	Risk to employees to exposure to hazard trees on road access and within the Billy Goat TH area.	Very Likely Major Very High	To avoid potential risk to health and safety from hazard trees for employees that complete work at Billy Goat TH area.	Create safe access for workers to treat and cover pit toilet.
<b>Human Life and Safety</b> Backcountry Cabin Access	Risk to employees and visitors at Stubb cabin from flooding at this administrative site	Likely Major Very High	To increase awareness of increased post-fire flood risk. To avoid impacts to human health and safety from being caught in flood waters and debris.	Do not use cabin for administrative use until flood risk is reduced. Communicate increased risk of flooding for public safety and property protection.  Public Information/Outreach and agency coordination
<b>Human Life and Safety</b> Road Access	Damage to FS Roads from loss of water control on FS Roads: 51300 and 5130570	Very Likely Major Very High  Likely Major Very High	To mitigate imminent hazards to travel on the road system from flooding risk.	Install gate to control access for public and employee safety. Signage to communicate risks. Drainage improvement treatments to increase stability of road infrastructure will reduce risks of damage on ~4 miles of road. Storm patrol needed to maintain road system integrity by using staged or contracted equipment to maintain functional drainage during storm events

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<b>Human Life and Safety</b> Road Access	Risk of flood damage to FS bridges posing risk to human life and safety	Possible Major High	To reduce impacts of post-fire flow increases to bridge infrastructure from flood waters and debris that impair safe use of bridge.	Inspect bridges in 2018, reassess conditions and determine if stabilization work is necessary.
<b>Human Life and Safety</b> Lost River Mazama	Risk to downstream private property from flooding in the Lost River and Mazama communities	Possible Major Very High	To increase awareness of increased post-fire flood risk and to avoid impacts to human health and safety from being caught in flood waters.	Communicate increased risk of flooding for public safety and property protection.  Public Information/Outreach and agency coordination
<b>Human Life and Safety</b> Lost River Mazama	Risk to downstream private property from flooding in the Lost River and Mazama communities	Possible Major Very High  Possible Major High	To increase awareness of increased post-fire flood risk and to avoid impacts to human health and safety from being caught in flood waters.	Communicate increased risk of flooding for public safety and property protection. Public Information/Outreach and agency coordination
<b>Human Life and Safety</b> Trail Access	Risk to employees and visitors at trail crossings below High and Moderate burn severity areas on Trails with increased risk of flooding (Trail # 514 Diamond Jack, Ashnola, Spotted Creek, 500 Lake Creek, Drake Creek Trails)	Possible Major High	To avoid impacts to human health and safety from being caught in flood waters.	Signage to communicate increased risk of flooding for public safety for travel within burned areas in the Wilderness.  Public Information/Outreach with Trail community, agency coordination
<b>Human Life and Safety</b> Trail Access	Risk to hikers along trails along portions of trails in High and Moderate SBS: FS Trail # 447, 477 Hidden Lakes, 484 Monument/Shellrock, 500 Lake Creek, 502 Larch Creek/Billy Goat, 504 Andrews Creek, 510 Chewuch, 514 Diamond Jack, 533 Boundary Trail	Possible Major High	To increase awareness of increased post-fire conditions and risks of traveling and camping in burned areas. To reduce risk to hikers and campers from burned area hazards (stump holes, hazard trees, and rock fall hazards, safe campsite location and water quality impacts) in areas within and below areas of moderate and high burn severity.	Administrative closure of Trails if hazardous.  Further assessment may occur in spring to determine hazard.  Signage and public outreach and coordination with local Trails groups to communicate post-fire risks

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<p><b>Human Life and Safety</b> SUP/Private Access</p> <p><b>Property</b> SUP Access</p>	<p>Risk to flooding at:</p> <p>Backcountry Outfitter Guide camps</p> <p>Corral (FS 51300580 spur) that sits low in the floodplain</p> <p>Cabin (FS 51300580 spur)</p>	<p>Likely Major Very High</p> <p>Possible Moderate Intermediate</p> <p>Possible Moderate Intermediate</p>	<p>To increase awareness of increased post-fire flood risk. To avoid impacts to human health and safety from being caught in flood waters and debris. To notify of increased potential for damage to the corral from increased post-fire flows.</p>	<p>Notify owners through certified letters of risk to increased risk of flooding.</p>
<p><b>Human Life and Safety</b> Road Access/Lost River Bridge (County)</p>	<p>Increased flood risk to County residents/visitors using Lost River bridge.</p>	<p>Possible Major Intermediate</p>	<p>To avoid impacts to human health and safety from being caught in flood waters and debris.</p>	<p>Public Information/ Outreach, agency coordination.</p> <p>Certified letters Communicate risk of increased flows in the Upper Lost River watershed on NFS lands to local County/ EMS/Engineer, NRCS, NWS managers to best engage with community.</p>
<p><b>Property</b> Road Infrastructure</p>	<p>Damage to FS Roads from loss of water control on roads 51300, 5130570,</p> <p>5130580, 5130545, 5130565,</p>	<p>Major Moderate Very High</p> <p>Possible Minor Low</p>	<p>To mitigate imminent hazards to the roads system vary from minor sloughing and culvert blockage to partial or total loss of road template.</p>	<p>Install gate to manage access and reduce degradation of road.</p> <p>Drainage improvement treatments to increase stability of road infrastructure will reduce risks of damage on ~4 miles of road.</p> <p>Storm patrol needed to maintain road system integrity by using staged or contracted equipment to maintain functional drainage during storm events</p>
<p><b>Property</b> Road Access/ Bridges</p>	<p>Risk of damage to FS bridges</p>	<p>Possible Major Intermediate</p>	<p>To reduce impacts of post-fire flow increases to bridge infrastructure from flood waters and debris.</p>	<p>Inspect bridges in spring 2018, reassess</p>

Critical Value at Risk	Description of Threat	Probability Magnitude Risk	Rationale for Emergency Management Actions	Risk Reduction Treatments/ Management Actions
<p><b>Property</b> Trail Infrastructure</p>	<p>Damage to FS Trails from loss of water control is expected from risk of increased runoff and erosion from burned areas on Trails # Trail # 447, 477 Hidden Lakes, 484 Monument/ Shellrock, 500 Lake Creek, 502 Larch Creek/ Billy Goat, 504 Andrews Creek, 510 Chewuch, 514 Diamond Jack, 533 Boundary Trail</p>	<p>Possible Major High</p>	<p>Trail segments with high erosional hazard were susceptible to accelerated erosion pre-fire, therefore trails within high and moderate burn severity, are prone to increased post-fire runoff, concentration of flow, and erosion of the trail surface.</p>	<p>Drainage structures will be installed along ~41 miles of trail to control runoff and avoid, minimize and mitigate damage to the trail bed and downslope hillslopes.</p>
<p><b>Natural Resources</b> Soil Productivity</p>	<p>Approximately 58% of the fire area is burned at High and Moderate soil burn severity posing a moderate threat to soil productivity.</p> <p>The extent and degree of changes is unknown. Loss of productivity due to erosion is considered to be long-term but recovery of hill-slope stability is likely to occur within 3-5 years following the fire.</p>	<p>Likely Major Very High</p>	<p>Hillslope treatments are limited due to wilderness, timing and topographic limitations, therefore treatments to control water on road and trail infrastructure in areas of High and Moderate soil burn severity will help to avoid further degradation to soil productivity</p>	<p>Road and trail drainage treatments are proposed to control the increase in runoff and avoid erosion of road and trail bed and sedimentation into streams.</p> <p>Natural recovery of effective groundcover is the most cost-effective approach to emergency stabilization.</p>
<p><b>Natural Resources</b> Hydrologic Function</p>	<p>Risk of impacts to hydrologic function from increased runoff and erosion.</p> <p>Approximately 58% of the fire is burned at High and Moderate soil burn severity posing a moderate threat to hydrologic function with lasting impacts to hydrologic response.</p>	<p>Very Likely Moderate Very High</p>	<p>Hillslope treatments are limited due to timing and topographic limitations, therefore treatments to control water on road and trail infrastructure in areas of High and Moderate soil burn severity will help to avoid further degradation to hydrologic function.</p>	<p>Road and trail drainage treatments are proposed to control the increase in runoff and avoid erosion of road and trail bed and sedimentation into streams.</p> <p>Natural recovery of effective groundcover is the most cost-effective approach to emergency stabilization.</p>

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<p><b>Natural Resources</b> Riparian Function</p>	<p>Increased post-fire flows expected are not likely to degrade riparian function. Channel widening or incision is unlikely to occur in the wilderness portion/majority of the fire resulting in low threat to degradation to riparian areas from increased flows, channel erosion and loss of riparian vegetation.</p>	<p>Unlikely Minor Very Low (wilderness)</p> <p>Very Likely Moderate High (Eightmile at/ below stream crossings)</p>	<p>Hillslope treatments are limited due to timing and topographic limitations, therefore treatments to control water on road and trail infrastructure in areas of High and Moderate soil burn severity will help to avoid further degradation to riparian function.</p>	<p>Road and trail drainage treatments are proposed to control the increase in runoff and avoid erosion of road and trail bed and sedimentation into streams</p> <p>Natural recovery of effective groundcover is the most cost-effective approach to emergency stabilization.</p>
<p><b>Natural Resources</b> TES</p>	<p>Lost River and Eightmile Creek Risk to Bull Trout and Steelhead populations from the threat of increased post-fire flows, erosion and sedimentation of critical habitat.</p>	<p>Very Likely Moderate Very High</p>	<p>Hillslope treatments are limited due to timing and topographic limitations, therefore treatments to control water on road and trail infrastructure in areas of High and Moderate soil burn severity will help to avoid further degradation to riparian function and aquatic habitat.</p>	<p>Road and trail drainage treatments are proposed to control the increase in runoff and avoid erosion of road and trail bed and sedimentation into streams</p> <p>Natural recovery of effective groundcover is the most cost-effective approach to emergency stabilization, fire disturbance is within historical range of variability</p>
<p><b>Natural Resources</b> MIS, R6 Sensitive Species Habitat</p>	<p>Threats to the Redband and Westslope cutthroat trout.</p>	<p>Very Likely Minor Low</p>	<p>Hillslope treatments are limited due to timing and topographic limitations, therefore treatments to control water on road and trail infrastructure in areas of High and Moderate soil burn severity will help to avoid further degradation to riparian function and aquatic habitat.</p>	<p>Road and trail drainage treatments are proposed to control the increase in runoff and avoid erosion of road and trail bed and sedimentation into streams</p> <p>Natural recovery of watershed conditions</p>

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<p><b>Natural Resources</b> Native or naturalized plant communities.</p>	<p>Risk to forested native or naturalized vegetative communities due to significant tree mortality, where natural regeneration is delayed to the loss of the canopy</p>	<p>Likely Moderate High</p>	<p>There are populations of 2 invasive species (Class B noxious weed) along the travel routes in the burn area. Nearby infestations of invasive plant species are likely to move into the burned area, due to the wind-blown dispersal nature of the seed and the inability of the existing native seed bank to offer natural competition.</p>	<p>Early Detection Rapid Response treatments for invasive species</p>
<p><b>Natural Resources</b> Native or naturalized plant communities.</p>	<p>Risk to Whitebark pine recovery Federal Candidate and Sensitive</p>	<p>Likely Minor Very Low</p>	<p>Whitebark pine burned within this fire perimeter. The natural seed production of the pine and burn intervals may or may not line up to provide seed production post fire.</p>	<p>Natural recovery of watershed and vegetative conditions, some restoration planting may occur through restoration effort.</p>
<p><b>Natural Resources</b> TES Wildlife</p>	<p>Threats to Twisp wolf pack, lynx and wide ranging carnivore critical habitat from vegetation loss, degraded soil productivity and hydrologic and riparian function.</p>	<p>Likely Minor Very Low</p>	<p>Natural recovery of watershed and vegetative conditions, some restoration planting may occur through restoration effort.</p>	<p>Natural recovery of watershed and vegetative conditions, some restoration planting may occur through restoration efforts</p>