

**WILDLIFE and AQUATIC TECHNICAL SPECIALIST REPORT for
BURNED AREA EMERGENCY RESPONSE (BAER)
for the RIM FIRE**

Resource Specialty: Wildlife
Fire Name: Rim Fire/ CA-STF-002857
Month/Year: September 2013
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1.0 INTRODUCTION

1.1 Objectives

The purpose of this Resource Assessment has two primary purposes.

- Assess the post-fire effects of the Rim Fire on federally listed wildlife species and their habitats.
- Develop treatments of vital habitat for species at risk to prevent permanent impairment of ecosystem structure and function.

In some instances, direct effects of the fire are documented, but do not necessarily meet the purpose of BAER and so are not a detailed analysis. This specialist report also includes an assessment of several additional locally important wildlife species as well as spring developments for wildlife use.

If necessary, a separate biological assessment will be completed to document determinations of effects to listed species as a result of BAER treatments. Mitigations to reduce impacts to wildlife and funding to pay for biologists time during treatment implementation has been incorporated into treatments proposed by the Rim Fire BAER Team.

1.2 Background

The Rim Fire started in the afternoon of August 17, 2013 near the confluence of the Clavey River and the Tuolumne River, north of Highway 120 and the community of Groveland. It quickly spread in every direction, forming multiple flaming fronts as it proceeded up the Tuolumne River, the Clavey River, Middle Fork Tuolumne River, South Fork Tuolumne River, and other drainages, including Cherry Creek. The total acreage within the burn perimeter is approximately 256,000 acres of which 154,000 acres were on the Stanislaus National Forest. The remaining acres are composed of Yosemite National Park (78,100 acres), private timberland owned by Sierra Pacific Industries (16,000 acres), other private land (7,700 acres) and BLM land (130 acres). The Rim fire is currently over 80% contained.

2.0 POTENTIAL VALUES AT RISK

2.1 Federally-listed and Other Locally Important Wildlife Species

The potential values at risk for wildlife species are stability and viability of suitable habitat which may result in extirpation. Federally threatened and endangered species are those listed under the Endangered Species Act by the US Fish and Wildlife Service. There is one federally listed species, the valley elderberry longhorn beetle known to occur within the Rim Fire area, and one species proposed for federal listing as endangered, the Sierra Nevada yellow-legged frog, known to occur within the Rim Fire area (Table 1).

Table 1. Federal Threatened, Endangered and Forest Service Sensitive Wildlife Species considered in this BAER Assessment

Common Name	Scientific Name	Status	Status and Location within Rim Fire Area
Valley elderberry longhorn beetle	<i>Desmocerus californicus dimorphus</i>	USFWS Threatened	Within the burn area in the central river canyon areas below 3,000 feet elevation
Bald Eagle	<i>Haliaeetus leucocephalis</i>	Forest Service Sensitive, federally protected under GBEPA	REDACT
Sierra Nevada yellow-legged frog	<i>Rana sierrae</i>	Proposed as Endangered	REDACT
California red-legged frog	<i>Rana draytonii</i>	Threatened	Suitable and presumed unoccupied habitat present

Forest Service Region 5 sensitive wildlife species are known to occur in the Rim Fire area, including territories (Protected Activity Centers, PACs) for California spotted owls, great gray owls, and northern goshawks. These species are associated with forested habitats with dense mature forest characteristics, so the loss of overstory canopy and large trees likely affected individuals, habitat availability, and connectivity with other suitable habitat in their range. Although the burn severity and associated effects to important habitat areas varied, an initial assessment of PACs suggests a number of territories were affected by the fire (Table 2).

Table 2. Protected Activity Centers in the Rim Fire

Habitat Type	Number of Territories	Acres	% of Total on Stanislaus NF
Spotted Owl Protected Activity Center (PAC)	46	14,000	21
Northern Goshawk PAC	25	4,500	26
Great Gray Owl PAC	13	1,000	52

Two sensitive aquatic species, the foothill yellow-legged frog (*Rana boylei*) and western pond turtle (*Actinemys marmorata*), are also known to occur within the Rim Fire area. Both of these species are known from multiple locations, including some populations that are spatially isolated from other populations. which were affected to varying degrees by the fire, Suitable habitat for two other Forest Service sensitive species is also present in the fire area for the California red-legged frog (*Rana draytonii*, federally threatened) and hardhead (*Mylopharodon conocephalus*).

These sensitive species will not be further discussed in this BAER assessment because sensitive species are not considered a critical value, as defined under FSM 2523.1: *Critical habitat or suitable occupied habitat for federally listed threatened or endangered terrestrial, aquatic animal, or plant species on NFS lands.* A determination under BAER will not be made for sensitive species or MIS in this report. Nonetheless, the value of these species will be considered as part of future planning.

2.2 Protected Meadows

A number of fenced meadows are within the fire perimeter. These meadows were fenced to prevent cattle grazing in areas containing special resources, including aspen stands and a fen. While the meadows are small, isolated areas in the landscape, they are part of the surrounding ecosystem and can serve as a source for native herbaceous vegetation in addition to providing important wildlife habitat. A number of other fences within the fire area are generally associated with ongoing range management. The permanent fences associated with Upper, Lower, and Hidden Femmons meadows were destroyed in the fire. A number of other important fences protecting meadows were also damaged to a lesser extent, including Boggy Meadow, John's Meadow and Long John Meadow.

3.0 RESOURCE CONDITION ASSESSMENT

A Soil Burn Severity Map was created in order to assess the potential watershed response for the watersheds affected by the Rim Fire. The BAER process uses the term "soil burn severity" to differentiate post-fire soil properties from fire effects on vegetation (such as tree mortality), and/or general fire effects on the long-term ecosystem health. The data used to create the map was collected by both satellite imagery and flights over the burn area in addition to on-the-ground data collection. An approximate break-down of the fire area by burn severity is found in Table 3.

Table 3. Total Soil Burn Severity in Acres and Percentage for the Rim Fire

Severity	Acres	Percentage of Total
High	16,796	7
Moderate	94,940	37
Low	143,225	56
Unburned/Very Low	1,934	<1
<i>Total</i>	<i>256,895</i>	<i>100</i>

For the purposes of impacts to forest-associated terrestrial wildlife species, burned vegetation severity proves to be a more useful means of assessing impacts than soil burn severity. Vegetation burn severity evaluates the damage to vegetative components. By comparing the soil burn severity map with field visits and infrared satellite imagery, it appears that moderate to high soil burn severity generally captures the areas that burned with enough intensity to kill most of the overstory tree canopy. The low to very low soil burn severity areas tended to be patchy in burn severity or consist largely of brush and herbaceous species, which are quick to resprout or recover from fire. Burned oak trees will also resprout from the surviving root mass, but many structural and other values of large trees can take 50-100 years to recover. Low severity areas may have adverse wildlife impacts, including the loss of individual elderberry shrubs, nest trees, and the consumption of logs and snags but most overstory trees are expected to survive. The maps in Appendix A were derived from this application of vegetation burn severity. Regardless, the moderate to high severity burning in 111,732 acres resulted in a substantial loss of vegetative cover.

The Rim Fire poses numerous risks to species and their habitat from injury, mortality, disturbances, and degradation from post-fire impacts including invasive non-native plants, habitat type conversions, increased sediment delivery, alterations to water quality, reduction of stream shading, and changes to stream channel configuration. The affected area is also at risk from potential long-term disturbance and habitat impacts from increased access by people, vehicles, permitted livestock grazing, illegal OHV use, mountain bikes, horseback riders, and garbage dumping. Many wildlife species that survived the fire are likely to experience difficulty in finding adequate food and shelter. As a result, an additional loss of individuals after the fire is likely.

In regard to mature-forest associated species, such as California spotted owl, northern goshawk, great gray owl, and Pacific fisher, the impact of lost forest cover as a direct result of the fire is extreme. Specific territories (PACs) for the bird species have been identified and protected from various vegetation management activities in an attempt to retain important mature forest characteristics such as dense conifer overstory, large trees, snags, and logs. These territories have been exposed to a number of large fires in the last 40 years, leaving many areas isolated, fragmented, and of relatively low quality compared to more intact breeding areas elsewhere. Fisher have not been documented on the Stanislaus National Forest in decades, although they occur immediately south, across the Merced River. The loss and fragmentation of forested areas in the Rim Fire will continue to limit opportunities for fisher to expand their range to the north.

3.1 Valley Elderberry Longhorn Beetle (*Desmocerus californicus dimorphus*)

3.1.1 Existing Environment

The elderberry beetle (VELB) is thought to range from the Central Valley into the eastern portion of the Coast Range and the foothills of the Sierra Nevada up to approximately 3,000 feet elevation (USFWS 1999). Elderberry plants (*Sambucus sp.*) are the sole host plant for larval development and adult feeding. The US Fish and Wildlife Service considers plants with stems over 1' in diameter to provide potentially suitable habitat. This species is most often found along the margins of rivers and streams in the lower Sacramento River and upper San Joaquin Valley and the current known range of the VELB extends from southern Shasta County south to Fresno County (Barr 1991). A greater abundance of this species occurs in dense native plant communities with a mature over story and a mixed understory (Barr 1991).

Valley elderberry longhorn beetle have not been observed on the Stanislaus National Forest; however, systematic surveys to determine the extent of occupation on the forest have not been conducted. The distinctive exit holes in elderberry stems have been documented on the Forest, including plants in the Rim Fire area. Plants with exit holes occur in large river canyons, including the Tuolumne River. The nearest documented occurrence of VELB is a beetle in the Jamestown area (Tuolumne County) approximately 30 miles northwest of the fire. A number of occurrences in the Tuolumne and Clavey river canyons have been documented and are shown on the map in Appendix 1. Several of these sites contain multiple plants. Most of these sites are alongside roads, due to the limited access and past management in much of the river canyons. It is likely that numerous other elderberry plants and associated VELB occur throughout the river canyons and other areas below 3,000 feet. These potential habitat areas are shown in Map 1 and amount to approximately 23,700 acres within the fire perimeter.

The Rim Fire may have eliminated much of the suitable and sole habitat for VELB in the Tuolumne and Clavey river canyons. Although the damaged plants are expected to resprout and new plants may appear

as the existing seed bank was scarified by fire, because the VELB is relatively poor at recolonizing new locations, the local population may be greatly reduced or eliminated. Roy Bridgman drove the Lumsden Road (1N10) after the fire and was unable to locate any elderberry plants; they appeared to have burned along with the various other shrubs in the canyon to an extent that they were unrecognizable. Other locations along the Cherry Lake Road burned but locations further up the Tuolumne River may not have burned or burned with lower intensity.

3.1.2 Initial Post-fire Concerns

The main concerns for post-fire effects were potential damage to plants and/or individuals during emergency and ongoing road and hydrologic repairs near elderberry. As a direct result of the fire the root system of plants may have burned, but likely survived intact. Although the roots of burned plants will eventually resprout and provide potentially suitable habitat for VELB, they currently do not, and will not until stems reach over 1” in diameter. Regardless, they currently do not provide suitable habitat and there is no risk of damaging individual beetles because they likely died in the fire if the entire plant was consumed. In technical discussions with Jeremiah Karuzas of the Sacramento office of the US Fish and Wildlife Service, he agreed that there was no post-fire risk to individual beetles associated with burned plants since they would have also burned. There is still some risk to beetles if they occur in partially burned or unburned plants, so a GIS shapefile was provided to the BAER team lead, road specialist, and the Stanislaus National Forest road specialist to reduce the risk of potentially impacting any unburned plants, if they remain.

3.1.3 Post-fire Effects Assessment

Because the river canyons burned numerous elderberry plants in addition to the known plants mapped along roadsides, the VELB may have suffered substantial mortality and loss of habitat as a direct result of the Rim Fire. The post-fire hydrological effects (increased sedimentation and peak flows) are not likely to affect the natural re-growth of elderberry bushes. Because of their location in the river canyons and their large growth form, adverse impacts from post-fire effects such as off-highway vehicles, weeds, or cattle grazing are not expected.

3.2 Bald Eagle (*Haliaeetus leucocephalis*)

3.2.1 Existing Environment

Bald eagles are a Forest Service Region 5 sensitive species and are protected under the Bald and Golden Eagle Protection Act. Bald eagles occur in a variety of habitats but require large trees or snags with heavy limbs or broken tops near large bodies of water or rivers with abundant fish. Bald eagles feed on fish, carrion, and occasionally small mammals.

A pair of bald eagles has nested for over a decade on the REDACT and within the last year a second pair of eagles has begun nesting in the REDACT. Bald eagles have also nested on REDACT. These water bodies also provide dispersal and wintering habitat to northern migrants and juveniles.

3.2.2 Initial Post-Fire Concerns

The initial concern was for the loss of the nest tree as a direct result of the fire. There is also some post-fire risk of fish die-off as a result of sediment and ash inputs to the lake.

3.2.3 Post-fire Effects Assessment

The vegetation burn severity near REDACT was relatively moderate, leaving many trees intact. A boat survey will be conducted by the local FS unit to conclusively determine if the known nest tree was damaged. Regardless, numerous green trees remain around the shoreline that would likely provide suitable nest trees, including several osprey nests. No immediate fish die-off was observed at REDACT. Much of the watershed above the lakes was outside the fire perimeter, so most post-fire impacts would likely occur downstream of the lakes. Regardless, if fish populations occur in REDACT, eagles will respond to the availability of prey and may utilize other large waterbodies in the area.

3.3 Sierra Nevada yellow-legged frog (*Rana sierrae*)

3.3.1 Existing Environment

The Sierra Nevada yellow-legged frog (SNYLF) is a Forest Service sensitive species and has recently been proposed for listing under the Endangered Species Act as an endangered species (Federal Register 2013). The SNYLF is a highly aquatic frog that is associated with streams, ponds, and lakes at an elevation range from 4,500 to 12,000 feet. Breeding habitat is located along shallow, seasonally inundated shorelines and is associated with relatively deep water. Deep water (>5 feet) is essential for successful overwintering; however, local observations indicate successful overwintering in much shallower habitats. Post-metamorphic life stages can inhabit a wide range of seasonal and perennial waterbodies during the active season. Within the Rim Fire area, SNYLF are known from one stream, REDACT, which is a tributary to REDACT. No focused surveys were completed as a part of the BAER evaluation process; however, existing information was sufficient for this assessment.

3.2.2 Initial Post-Fire Concerns

The initial concern was increased sediment delivery to suitable habitat. Excessive sedimentation could temporarily make the habitat unsuitable for all life stages. Increased sedimentation and/or peak flows could also cause injury/mortality of all life stages, eggs masses and tadpoles in particular.

3.2.3 Post-fire Effects Assessment

The fire affected approximately 240 acres (24%) of the REDACT watershed area (approximately 1,000 acres). Approximately 230 acres were burned in the unoccupied steep canyon leading down to REDACT, with the remaining 10 acres of burned area occurring along the eastern watershed boundary. Within these 10 acres, a majority of the fire severity, both soil and vegetation, was classified as unburned-very low. To date (20 September 2013), the fire has not burned within 0.5 mile of the occupied portion of the stream; however, the fireline is uncontained in this part of the fire.

Hydrologic modeling did not specifically include modeling for REDACT; however, if other watersheds with similar fire severity patterns are indicative of what could happen in REDACT, any changes in stream discharge or sediment delivery to the stream would not excessively alter the existing habitat capability.

3.4 California red-legged frog

3.4.1 Existing Environment

Suitable habitat for the frog has been defined by the U.S. Fish and Wildlife Service to consist of four primary constituent elements: breeding habitat, non-breeding aquatic habitat, upland habitat, and dispersal habitat at elevations lower than 4,000 feet above sea level. All four habitat elements are required in close proximity for suitable habitat to be present; however, these elements only need to be present periodically for the frog to persist on the landscape. Much of the project area at the appropriate

elevations (<4,000 feet) contain the required habitat elements. Surveys have occurred extensively throughout the Rim Fire area, but frogs have not been detected to date. Historic occurrence records exist within the fire area, including REDACT in Yosemite National Park, and in close proximity to the fire area at REDACT on the Stanislaus National Forest. Frogs have not been detected at these locations for over 40 years.

3.4.2 Initial Post-Fire Concerns

As with the Sierra Nevada yellow-legged frog, the initial concern was increased sediment delivery to suitable habitat. Excessive sedimentation could temporarily make the habitat unsuitable for all life stages. Increased sedimentation and/or peak flows could also cause injury/mortality of all life stages, eggs masses and tadpoles, in particular. High severity fire would also reduce the quality of upland and dispersal habitats by reducing the overhead cover provided by vegetation.

3.4.1 Post-Fire Effects Assessment

For the primary aquatic features providing the required habitat elements, none were severely affected by the Rim Fire. These features include REDACT, and several pond habitats located on privately owned lands. Similar to the Sierra Nevada yellow-legged frog, these watersheds were not specifically modeled for changes in hydrology or sediment delivery, but the post-fire response is not expected to excessively degrade the aquatic habitats required by the frog. The fire did extensively affect upland and dispersal habitat; however, the recovering vegetation should provide adequate levels of overhead cover within the upcoming year.

3.5 Protected Meadows

3.5.1 Existing Environment

The fenced meadows were visited and assessed with Range Conservationist Dawn Coultrap. These and other meadows may also be described and discussed in the range or hydrology reports. Some of the meadows, such as Abernathy Meadow, and Femmons Meadow burned with enough severity that all the existing and surrounding vegetation burned, while other meadows, such as those near the Cottonwood Road burned with low to mixed severity. The protective fencing in the higher severity burns resulted in substantial damage to fencing.

3.5.2 Initial Post-Fire Concerns

The initial concern regarding the protected meadows was that the burned vegetation could expose meadows to soil loss through erosion, particularly where they are associated with water features.

Allowing cattle grazing before the vegetation has sufficiently recovered could also result in adverse impacts to the meadows. While most of the surrounding riparian areas and the deforested landscape is expected to recover with substantial herbaceous and eventually shrub cover, the area does not likely contain a sufficient seed bank and is expected to have limited capability to reseed the first season. Shrubs and hardwood trees which will readily resprout after fire will also be limited initially. Grazing by cattle could have adverse effects to ground cover, species composition, ecological function, compaction, competitive ability against weed species, and hydrologic function.

3.5.3 Post-fire Effects Assessment

The immediate risk of adverse effects associated with post-fire hydrologic function appeared to be very low. This determination was based on a lack of substantial downcutting or other features that would be affected by the loss of vegetation or other fire-related impacts.

The risk associated with grazing is more substantial. The meadows that suffered from fire damage not only lost vegetative cover and likely some of the seed banked in the soil, they are needed to provide a source for the surrounding burned forest.

4.0 EMERGENCY DETERMINATIONS

Table 3 below illustrates the risk assessment process defined under BAER.

Table 3. BAER Risk Assessment*

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

*FSM 2523.1 Exhibit 02

4.1 VELB Risk Assessment: It is my determination that an emergency does not exist for VELB as a result of post-fire effects of the Rim Fire. This determination is based on the following: 1) individuals and many of the suitable plants were damaged in the fire, eliminating suitable habitat, 2) all road repair actions will not necessarily occur near known plant sites, and 3) if road repairs occur near known plants, the individuals tasked with identifying repair needs have location information available, should repairs occur at a later date. Therefore, I do not expect adverse impacts to VELB.

4.2 Bald Eagle

No risk assessment or determination of emergency will be done for bald eagle as it is not a critical value under BAER.

4.3 Sierra Nevada yellow-legged frog

It is my determination that an emergency does not exist for the Sierra Nevada yellow-legged frog as a result of post-fire effects of the Rim Fire. This determination is based on the following: 1) to date (20 September 2013), fire has not burned across sections of REDACT where the frog is present, 2) the fire has only burned approximately 10 acres of the portion of the watershed having the potential to affect occupied habitat and is more than 0.5 miles from the stream, and 3) the fire severity in the portion of the watershed having the potential to affect occupied habitat is classified as unburned-very low. Since direct effects to individuals have not occurred and no indirect effect to habitat is expected, I do not expect substantial adverse impacts to the Sierra Nevada yellow-legged frog or proposed critical habitat.

4.4 California red-legged frog

It is my determination that an emergency does not exist for the California red-legged frog as a result of post-fire effects of the Rim Fire. This determination is based on the minimal fire extent in the most suitable watersheds, low potential for excessive sediment delivery to aquatic habitats, and the short-term loss (<2 years) of overhead cover in upland and dispersal habitats.

4.5 Protected Meadows

It is my determination that the meadows are very likely to be damaged by grazing and the magnitude of consequences may be major; thus the risk is very high. This determination is based on the documented impacts to these meadows prior to fencing, the value of meadows to wildlife, and the compounded effect of the impacts of the fire on existing vegetative cover. The direct impacts to the meadows may also be compounded by grazing impacts to associated drainages and to surrounding vegetation, which may then impact the hydrology of the meadows.

5.0 TREATMENTS TO MITIGATE THE EMERGENCY

5.1 Protected Meadows

It is expected that the surrounding landscape will provide sufficient forage to support range cattle, but the vegetation will need at least one season to recover shrub growth, seed banks, and ground cover before subjected to grazing. Repair and replacement of fences would protect the individual meadows, but is not expected to be effective given the density of surrounding dead trees that will fall and compromise the fences. Fence repair would be more effective if coordinated with adjacent tree salvage activities to remove the numerous dead trees. If cattle cause adverse hydrologic effects or encourage noxious weed spread, those effects in the surrounding landscape are likely to affect the meadows.

6.0 ADDITIONAL RECOMMENDATIONS

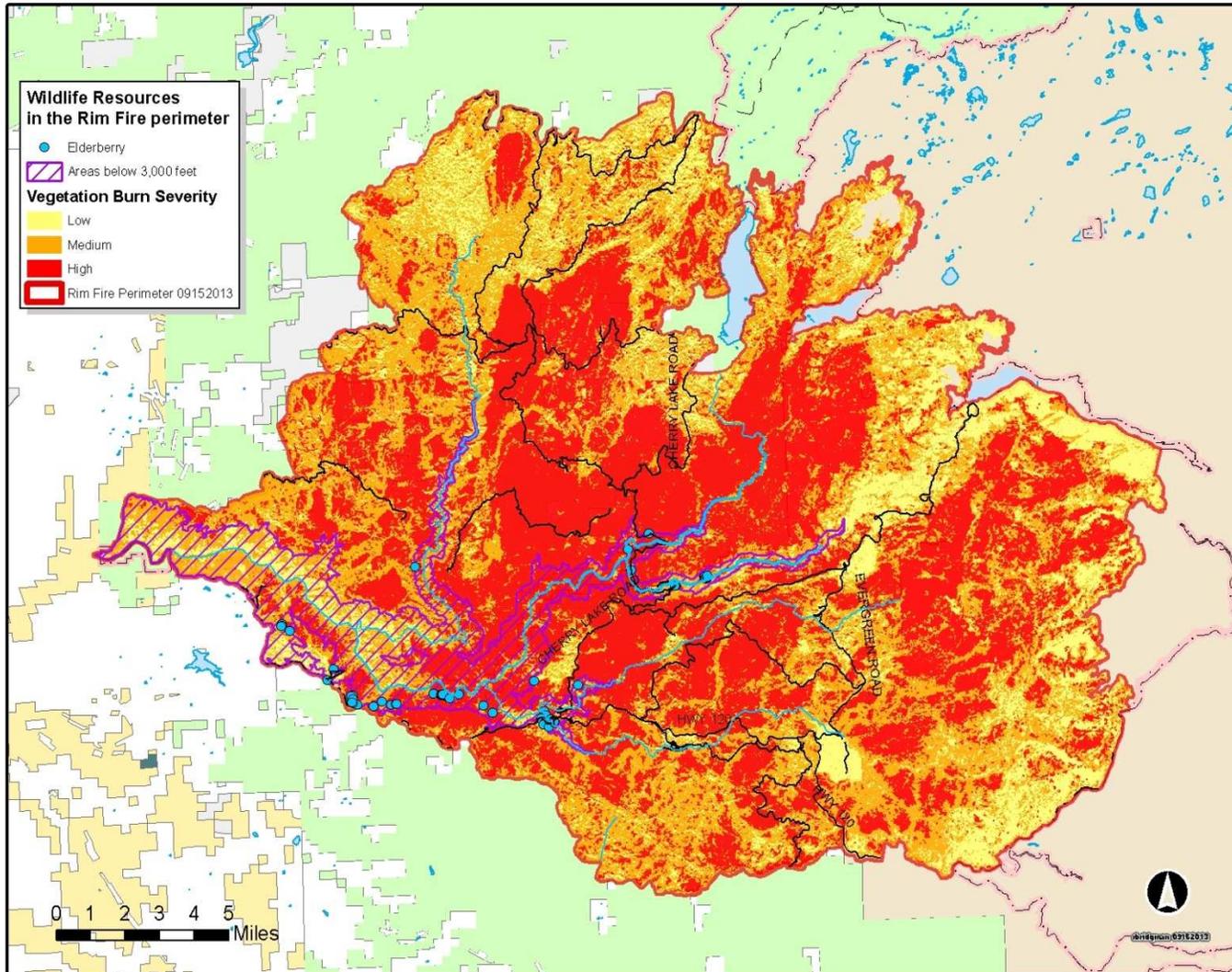
No additional recommendations were identified.

7.0 REFERENCES

Federal Register. 2013. Endangered and threatened wildlife and plants; endangered status for Sierra Nevada yellow-legged frog and northern distinct population segment of mountain yellow-legged frog, and threatened status for Yosemite toad; proposed rule. Volume 78, Number 80:24472-24514.

APPENDIX 1: MAPS

**Map 1. Rim Fire Vegetation Burn Severity and
Valley Elderberry Longhorn Beetle Habitat**



**Map 1. Rim Fire Vegetation Burn Severity and
Designated Wildlife Habitat Areas**

