

ELDORADO NATIONAL FOREST

Amador Ranger District

Biological Assessment Forest Projects Plan (Phase 1) August 2022

PROJECT LOCATION:

Amador, El Dorado, and Calaveras counties, California

7.5-minute Quad	Township	Range	Section(s)
West Point	7N	13E	2,13,24
Devils Nose	7N	14E	1, 3, 8, 9, 10, 11, 12, 13, 14, 16, 17, 18, 19, 20
Garnet Hill	7N	15E	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 16, 17, 18
Calaveras Dome	7N	16E	5,6
Oma Ranch	8N	13E	35,36
Caldor	8N	14E	13, 14, 20, 21, 22, 23, 24, 25, 28, 29, 30, 36
Peddler Hill	8N	15E	1, 2, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36
	9N	15E	36
Bear River Reservoir	8N	16E	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33
	9N	16E	12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 25, 26, 27, 28, 29, 30, 31, 32, 33, 35, 36
		17E	7, 18, 31

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I. INTRODUCTION

The Forest Projects Plan (Phase 1), (FPP or Proposed Action) is a large, 25,671-acre landscape-level forest stand and wildlife habitat improvement and protection project located on U.S. Forest Service (USFS or Forest Service) lands, primarily within the Upper Mokelumne River Watershed. The FPP is designed to help prevent high-intensity, large-scale wildfires, improve forest conditions, and protect important wildlife habitat and other resources. The Proposed Action analyzed in this document encompasses Phase 1 of a two-phased approach. Phase 1 proposes non-commercial actions to reduce forest ladder fuels and implement other forest management activities on the Eldorado National Forest (ENF)'s Amador Ranger District.

Section 7 of the Endangered Species Act (ESA) of 1973 as amended directs federal departments and agencies to ensure that any actions they authorize, fund, or carry out are not likely to jeopardize the continued existence of any endangered or threatened (T&E) species or result in the destruction or adverse modification of their Critical Habitats. Directive 2672.4 in the Forest Service Manual (FSM), pursuant to legal requirements set forth for implementing Section 7 of the ESA (16 U.S.C. 1536 (c)), requires a biological assessment (BA) be prepared for all Proposed Actions that may have effects upon T&E species. This BA is designed to document potential impacts of the FPP to T&E species and provide guidance to determine whether formal consultation or conference is required with the United States Department of Interior Fish and Wildlife Service (USFWS).

ACTION AREA DEFINED

The Action Area is defined under the ESA as the areas that would be affected directly or indirectly by the Proposed Action. For the purposes of this document, this Action Area (approximately 77,464 acres) includes the proposed 25,671-acre FPP treatment areas, plus a 1-mile buffer. Refer to **Map 1** for a depiction of the Action Area.

Forest Projects Plan (FPP), Phase 1

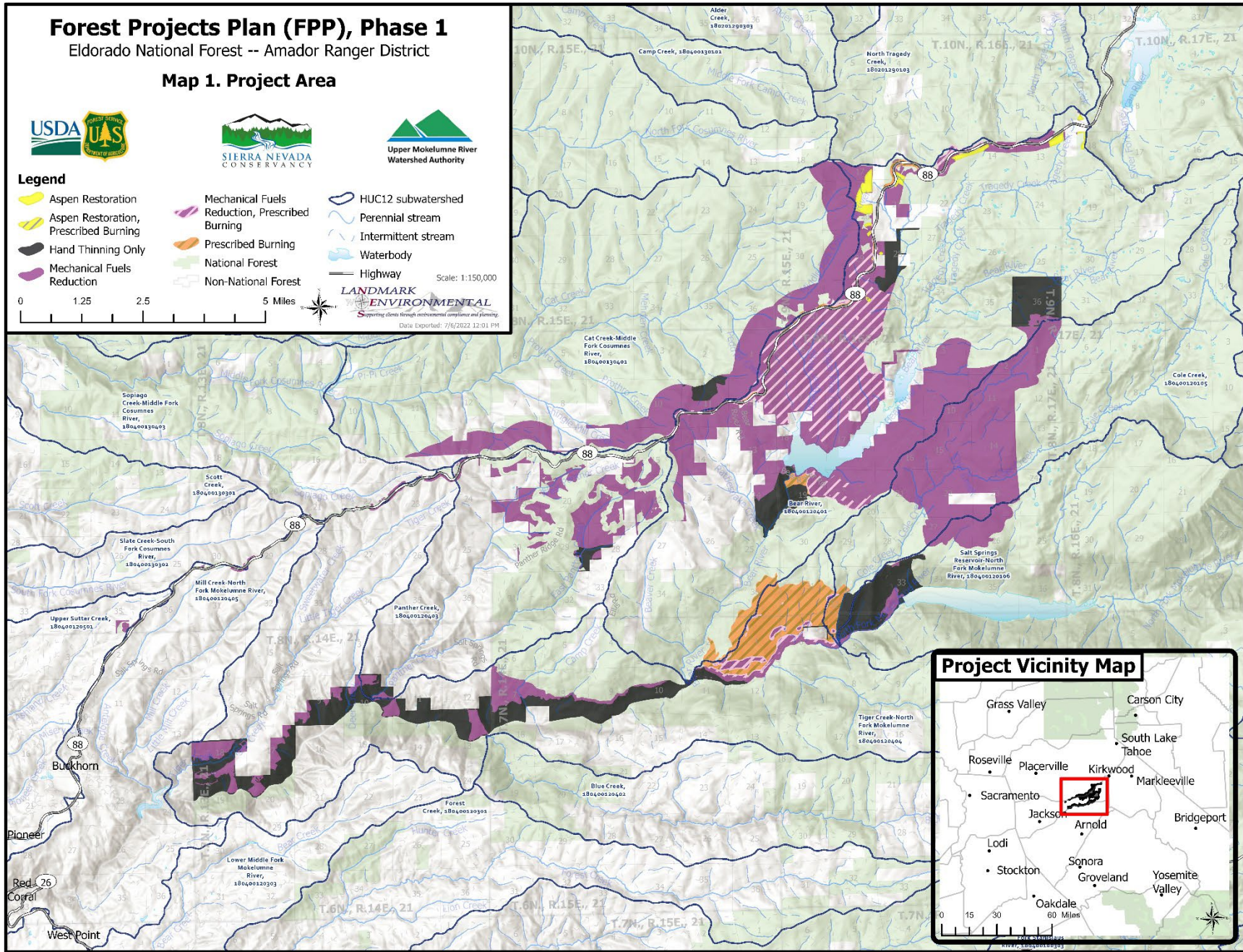
Eldorado National Forest -- Amador Ranger District

Map 1. Project Area



Legend

- Aspen Restoration
 - Aspen Restoration, Prescribed Burning
 - Hand Thinning Only
 - Mechanical Fuels Reduction
 - Mechanical Fuels Reduction, Prescribed Burning
 - Prescribed Burning
 - National Forest
 - Non-National Forest
 - HUC12 subwatershed
 - Perennial stream
 - Intermittent stream
 - Waterbody
 - Highway
- Scale: 1:150,000
- 0 1.25 2.5 5 Miles
- LANDMARK ENVIRONMENTAL**
Supporting clients through environmental compliance and planning.
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SPECIES CONSIDERED

Following Section 7(c) of the ESA, the USFWS Information for Planning and Conservation (IPaC) website (<https://ecos.fws.gov/ipac/>) was accessed on July 25, 2022 to: 1) obtain a current list of T&E species that may be present in the vicinity of the Proposed Action and 2) to locate any proposed or designated Critical Habitat that may be present in the vicinity of the Proposed Action. The full IPaC report can be found in **Appendix A**. The scope of this BA encompasses all federally listed species identified in the IPaC report (Table 1).

Table 1 is included in this analysis to aid in determining which T&E species or Critical Habitat need to be considered for analysis. The potential for direct, indirect, and cumulative effects to individuals and Critical Habitat were considered. Species that could potentially be affected are indicated with a “Yes” and are analyzed in detail in this BA. Species that would not be affected were not analyzed in detail following the rationale listed below:

1. No effect to downstream water quality or quantity.
2. Project does not occur within or affect suitable habitat.
3. Project does not occur within known or suspected species range.
4. Project does not affect identified management areas.
5. Project does not affect specific habitat features important to the species.
6. Project limited operating period (LOP) or design avoids seasonal effects.

Table 1. Evaluation of Potential for the Proposed Action to Affects Federally Listed Species.

Species	Status ¹	Project Potential for Effects	Species potentially affected by Project	
			No	Yes
Monarch butterfly (<i>Danaus plexippus</i>)	FC	The Eldorado National Forest is not within the overwintering range of this species, which is limited to forested areas along the coast of California and Mexico. The Proposed Action will not alter the amount or distribution of flowering shrubs and herbs that may provide foraging habitat for adult monarch butterflies.	2,5	
California red-legged frog (<i>Rana draytonii</i>)	FT	Occurs on the Eldorado National Forest. The Action Area is within the historical and current range of this species. There is some potential for CRLF individuals to occur in aquatic and terrestrial habitats within the Project area, which contains suitable breeding habitat. One documented occurrence within the Action Area.		✓
Critical Habitat	CH	There is no CRLF Critical Habitat in the Action Area.	4	
Foothill yellow-legged frog (<i>Rana boylei</i>)	FPE	Occurs on the Eldorado National Forest. The Action Area is within the Southern Sierra Distinct Population Segment (DPS) of this species, which is currently proposed for listing under the ESA as endangered. FYLF are documented in the Action Area, within the North Fork Mokelumne River and its tributaries, up to approximately 3,100 feet msl. This species does not appear on the IPaC list; however, the Forest Service is seeking conference with USFWS under Section 7(a)(4) regarding potential effects of the Project on this species.		✓
Sierra Nevada yellow-legged frog (<i>Rana sierra</i>)	FE	Occurs on the Eldorado National Forest between approximately 5,187 and 8,986 feet above mean sea level (msl), and primarily within high elevation lakes. There are documented occurrences of SNYLF within the Action Area, primarily within in the Bear River and Cole Creek watersheds above approximately 6,000 feet msl.		✓
Critical Habitat	CH	The Action Area overlaps with SNYLF Critical Habitat Subunit 2F, East Amador.		✓

Species	Status ¹	Project Potential for Effects	Species potentially affected by Project	
			No	Yes
Yosemite toad (Anaxyrus canorus)	FT	Occurs on the Eldorado National Forest, where it occupies high elevation meadow complexes. Action Area is outside of areas that are known to be occupied by YT and will not affect habitat for this species.	2,3	
Critical Habitat	CH	Critical habitat for Yosemite toad occurs on the Eldorado National Forest. However, there is no Critical Habitat in the Action Area.	4	
Delta smelt (Hypomesus transpacificus)	FT	Endemic to the Sacramento-San Joaquin delta and Suisun Bay; spawns in sloughs and channels of the upper delta or north of Suisun Bay. The Action Area is outside the geographic range of this species.	1,2,3	
Critical Habitat	CH	There is no Critical Habitat for Delta smelt on the ENF.	4	
Sierra Nevada red fox (Vulpes vulpes necator)	FE	Species may occur on the Eldorado National Forest above 8,100 feet msl. Action Area is outside the elevational range of and will not affect habitat for this species.	2,3	

¹FE = Federal Endangered; FC = Candidate for listing under the ESA; FPE = Federal Proposed Endangered; FT = Federal Threatened; CH = Critical Habitat

II. CONSULTATION TO DATE

USFWS's IPaC database was queried on July 25, 2022 to generate a project-specific species list, provided as **Appendix A**. As summarized in Table 1, the Proposed Action is within the range of and could potentially result in effects to three listed species, California red-legged frog (CRLF), foothill yellow-legged frog (FYLF), and Sierra Nevada yellow-legged frog (SNYLF).

As described below, the Proposed Action is being conducted consistent with the Eldorado National Forest (ENF) Land and Resource Management Plan (LRMP) (ENF 1989), as amended under the Sierra Nevada Forest Plan Amendment (SNFPA) (USDA Forest Service 2001 and 2004). The Regional Forester consulted with the California and Nevada Operations Office of USFWS and obtained a Biological Opinion (BO) for the amendment, dated January 11, 2001. The determination in the BO is that the selected action is not likely to jeopardize the continued existence of species listed pursuant to the ESA (bald eagle (which was subsequently delisted), CRLF, valley elderberry longhorn beetle, and Lahontan cutthroat trout).

On December 19, 2014, USFWS issued the Programmatic Biological Opinion on Nine Forest Programs on Nine National Forests in the Sierra Nevada of California for Endangered Sierra Nevada Yellow-Legged Frog, Endangered Northern Distinct Population Segment of the Mountain Yellow-Legged Frog, and the Threatened Yosemite Toad (Service File FF08ESMF00-2014-F-0557) (USFWS Programmatic BO) to USDA-FS. The USFWS Programmatic BO addresses the implementation of the following activities on nine national forests in the Sierra Nevada, including the ENF and TNF: 1) timber harvest, vegetation management, fuels management, and watershed restoration; 2) road and trail maintenance; 3) maintenance of developed recreation and administrative infrastructure; 4) special use permits; 5) rangeland management; 6) biological resources management; 7) invasive species management; 8) mining; and 9) lands and real estate. The USFWS Programmatic BO includes conservation measures applicable to each of these activities which are designed to reduce adverse effects to the three listed amphibians. USFWS allows USDA-FS to append individual projects to the USFWS Programmatic BO provided that they are consistent with the Biological Assessment and that USFWS agrees their inclusion is appropriate. If USFWS does not concur that a project is appropriate for appendage to the USFWS Programmatic BO, USDA-FS must consult separately for the specific project in question.

III. CURRENT MANAGEMENT DIRECTION

Current management direction on desired future conditions for federally threatened, endangered, proposed and candidate species in the Eldorado National Forest (ENF) can be found in the following documents, filed at the District Office:

- FSM and Handbooks (FSM/FSH 2670);
- National Forest Management Act (NFMA);
- ESA;
- National Environmental Policy Act (NEPA);
- ENF LRMP (1989);
- Recovery Plan for the California Red-Legged Frog (USFWS 2002);
- USFWS Programmatic BO (USFWS 2014)
- Regional Forester policy and management direction.

The ENF LRMP (USDA-FS 1990) was amended in 2001 by the Record of Decision for the SNFPA (USDA Forest Service [USDA-FS] 2001), which was then replaced in its entirety by the 2004 Record of Decision (ROD) for the SNFPA Final Supplemental Environmental Impact Statement (USDA-FS 2004). Detailed information including specific standards and guidelines for species management can be found in the SNFPA 2004. General Forest Service direction for T&E species and for evaluation of Critical Habitat is summarized below.

FSM 2670.31 THREATENED AND ENDANGERED SPECIES

- 1) Place top priority on conservation and recovery of endangered, threatened, and proposed species and their habitats through relevant National Forest System, State and Private Forestry, and Research activities and programs.
- 2) Establish through the Forest planning process objectives for habitat management and/or recovery of populations, in cooperation with States, the USFWS, and other Federal agencies.
- 3) Through the biological evaluation process, review actions and programs authorized, funded, or carried out by the Forest Service to determine their potential for effect on threatened and endangered species and species proposed for listing.
- 4) Avoid all adverse impacts on threatened and endangered species and their habitat except when it is possible to compensate adverse effect totally through alternatives identified in a biological opinion rendered by the USFWS, or when the USFWS BO recognizes an incidental taking. Avoid adverse impacts on species proposed for listing during the conference period and while their federal status is being determined.
- 5) Initiate consultation or conference with the USFWS when the Forest Service determines that proposed activities may have an adverse effect on threatened, endangered, or proposed species or when Forest Service projects are for the specific benefit of a threatened or endangered species.
- 6) Identify and prescribe measures to prevent adverse modification or destruction of Critical Habitat and other habitats essential for the conservation of endangered, threatened, and proposed species. Protect individual organisms or populations from harm or harassment as appropriate.

CRITICAL HABITAT

USFWS issued a final ruling on Critical Habitat for the SNYLF on August 26, 2016 (USFWS 2016). This final ruling designated approximately 1,082,146 acres in 15 California counties as Critical Habitat for the SNYLF. Subunit 2F, East Amador occupies approximately 107,278 acres in eastern Amador County. The 77,464-acre Action Area overlaps approximately 27,364 acres of land within Subunit 2F.

Critical Habitat is defined in Section 3 of the ESA as:

1. The specific area within the geographical area occupied by the species, at the time it is listed, of which is,
 - a. essential to the conservation of the species,
 - b. may require special management considerations or protections
2. Specific areas outside the geographical area occupied by a species at the time of listing, upon a determination that such areas are essential for the conservation of the species.

A Critical Habitat designation does not signal that habitat outside the designated area is unimportant or may not be needed for recovery of the species. Therefore, the types of effects and the analysis conducted to determine the extent of the potential effects to T&E species and their habitat will not differ between general suitable habitat and the habitat occurring within the designated Critical Habitat boundary. Areas that are important to the conservation of the species, both inside and outside Critical Habitat designation/proposal are still subject to: 1) the *conservation actions* implemented under Section 7(a)(1) of the ESA, 2) the *regulatory protections* afforded by the requirements in Section 7(a) (2) of the Act for Federal agencies to ensure their actions are not likely to jeopardize the continued existence of any endangered or threatened species, 3) the *prohibitions* of Section 9 of the Act if actions occurring in these areas may affect the species and 4) the *conferencing requirements* stated in Section 7(a)(4) of the Act for Federal agency actions which are likely to result in the destruction or adverse modification of Designated Critical Habitat for the species.

IV. DESCRIPTION OF THE PROPOSED ACTION

LOCATION

The FPP comprises 25,671 acres entirely within National Forest System (NFS) lands administered by the ENF on the Amador Ranger District between approximately 2,700 and 8,000 feet above mean sea level (msl) within:

- T7N, R13E, Sec. 2, 13, 24, Mount Diablo base and meridian (MDB&M) within the U.S. Geological Service (USGS) 7.5-minute West Point Quadrangle
- T7N, R14E, Sec. 1, 3, 8, 9, 10, 11, 12, 13, 14, 16, 17, 18, 19, 20, MDB&M within the USGS 7.5-minute Devils Nose Quadrangle
- T7N, R15E, Sec. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 16, 17, 18, MDB&M within the USGS 7.5-minute Garnet Hill Quadrangle
- T7N, R16E, Sec. 5, 6, MDB&M within the USGS 7.5-minute Calaveras Dome Quadrangle
- T8N, R13E, Sec. 35, 36, MDB&M within the USGS 7.5-minute Omo Ranch Quadrangle
- T8N, R14E, Sec. 13, 14, 20, 21, 22, 23, 24, 25, 28, 29, 30, 36, MDB&M within the USGS 7.5-minute Caldor Quadrangle
- T8N, R15E, Sec. 1, 2, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, MDB&M within the USGS 7.5-minute Peddler Hill Quadrangle

- T8N, R16E, Sec. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, MDB&M within the USGS 7.5-minute Bear River Reservoir Quadrangle
- T9N, R15E, Sec. 36, MDB&M within the USGS 7.5-minute Peddler Hill Quadrangle
- T9N, R16E, Sec. 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 25, 26, 27, 28, 29, 30, 31, 32, 33, 35, 36, MDB&M within the USGS 7.5-minute Bear River Reservoir Quadrangle
- T9N, R17E, Sec. 7, 18, 31, MDB&M within the USGS 7.5-minute Bear River Reservoir Quadrangle

FPP treatment areas fall within areas administered by three counties (Amador, El Dorado, and Calaveras counties).

Treatments are not proposed on private lands, nor in designated wilderness areas, proposed wilderness areas, inventoried roadless areas, or research natural areas. The FPP is located outside of, and complements, several other recent NEPA planning projects: Scottiagio Fuels Reduction Project, Scottiagio Forest Health Project, Panther Fuels Reduction Project, View 88 Fuels Reduction Project, Power Fire Reforestation, and the Power Fire Pre-Commercial Thin Project.

Eighty-four percent of the FPP is within the Wildland Urban Interface (WUI), including the WUI defense zone (32 percent of the FPP area) and the WUI threat zone (52 percent). The FPP is within 5 miles of four U.S. Census defined populated areas (i.e., Buckhorn, Pioneer, Red Corral, and West Point). Approximately 17 percent of the FPP is located within lands identified by the Amador-Calaveras Consensus Group (ACCG) as having very high or high wildfire risk.

PURPOSE AND NEED FOR ACTION

The past decade has brought major environmental changes in the Sierra Nevada, including unprecedented drought, bark beetle and other insect outbreaks, large high-intensity wildfires, and associated tree mortality. While ecosystems of the Sierra Nevada have evolved to be well-adapted to fire, the recent increases in the size, frequency, and intensity of fires have resulted in ecosystem transitions, changes in hydrology, and associated effects to sediment and nutrient fate and transport. These dramatic shifts have reduced habitat quality and quantity for sensitive species and pose a significant risk to natural biodiversity (North et al. 2021).

The purpose of the Proposed Action is to improve the quality and resiliency of wildlife habitat quality by:

1. Protecting wildlife habitat, aspen stands, forest resources and developed communities within the Wildland Urban Interface (WUI) and beyond from potential severe wildfire effects.

As a result of decades of fire suppression and lack of recent management, aspen stands and conifer forests in the Project area have an abundance of dense small diameter trees, thick undergrowth and a high density of surface fuels. These conditions, together with periodic drought and a warming climate, weaken mature trees and create a higher potential for uncharacteristically severe, stand-replacing wildland fire leading to higher mortality of vegetation, damage to wildlife habitat, and severe impacts on special status species that rely on these habitats, soils, and watershed values. Further, wildland fire results in the destruction of homes and property; and risk of safe egress/ingress. Action is needed to improve timber stand conditions in order to protect wildlife habitat, reduce fire severity and to make the stands more resilient to wildfire. The Project area incorporates late seral/old forest ecosystems, aquatic ecosystems, and aspen stands and areas in close proximity to private property, summer tract homes, recreational facilities, and important infrastructure which are at risk in the event of a large fire occurring in the area. Removing dense understory trees, shrubs, and surface vegetative debris reduces fuel loading, fuel continuity, competition for limited resources (water, sunlight, nutrients), and increases the ability for

the public to evacuate unharmed and for fire-fighting assets to directly suppress fire in a safe and efficient manner.

The proposed treatments would be implemented across the landscape including within Protected Activity Centers (PACs) which have traditionally been excluded from these types of fuel treatments both inside and outside the WUI areas. The proposed treatments within PACs would contribute toward meeting fuels objectives for PAC protection, maintain habitat structure and function (SNFPA Record of Decision (ROD) p. 60), and are expected to enhance old forest stand habitat by supporting the health and growth of larger trees.

2. Strategically placing treatments which complement and extend continuity of existing forest and fuel treatments to create a fire resilient landscape.

There is a need to strategically place fuel reduction treatments that are effective, connect past treatments and complement planned and completed treatments on adjacent NFS and private lands. The Forest Service has completed NEPA planning and is currently implementing thinning treatments on nearby NFS lands including Scottiagio Fuels Reduction Project, Scottiagio Forest Health Project, Panther Fuels Reduction Project, and the Power Fire Pre-Commercial Thin Project. Forest Service partners are in the process of completing surface fuel reduction and prescribed fire readiness treatments within portions of the View 88 Project. The proposed activities would complement and extend the efficacy of this collective work particularly within the WUI surrounding portions of the Proposed Action area.

3. Strategically placing treatments to prepare the landscape for prescribed burning and improve the safety and efficacy of wildfire suppression efforts.

There is a need to strategically place fuel reduction treatments to facilitate prescribed burning. The current surface fuel loading and ladder fuels in this area create hazards to communities and firefighters. These hazards can be reduced through widespread reduction of surface and ladder fuels, tree thinning and prescribed burning. As demonstrated in the recent Caldor Fire, these treatments would facilitate fire suppression tactical operations in the event of a wildfire. The Forest Service is implementing ongoing prescribed fire treatments on nearby NFS lands and the proposed activities would complement and extend the efficacy of this work.

EXISTING CONDITION

Lands proposed for treatment under the FPP are dense with trees of varying size, shrubs, and surface fuels and therefore at risk of loss to wildfire. Treatment areas were strategically placed within the WUI, and in locations that connect to past and future treatment areas on both public and adjacent private lands. The dominant forest types within the proposed project landscape are Sierran mixed conifer (27 percent), predominately in the lower elevations (< 6,000 ft), and red fir (26 percent), predominantly in the higher elevations (> 6,000 ft). The dominant seral stage within the Proposed Action area is mid-seral closed (56 percent of the FPP area), followed by late-seral closed (11 percent) and mid-seral open (11 percent). Based on 2019 LiDAR returns, 66 percent of the Proposed Action area has \geq 50 percent canopy cover.

Mature wildlife forest habitat (e.g., conifer/mixed conifer/hardwood forest types, greater than 24 inches diameter at breast height [dbh], greater than or equal to 40 percent canopy) makes up 11 percent of the Proposed Action area, and immature wildlife forest habitat (e.g., conifer/mixed conifer/hardwood forest types, 11–24 inches dbh, less than 40 percent canopy) makes up 49 percent of the Proposed Action area (USDA 2019).

Seventeen percent of the FPP falls within areas identified as high- risk to high-valued resources and assets, and according to a USFS R5 analysis, 6 percent of the FPP has stand densities considered to be at high risk to mortality

from drought, insects, disease, and wildfire (USDA 2021(b)). According to fire modeling inputs used in the ACCG 2020 wildfire risk assessment, 6 percent of the FPP falls within areas predicted to have high-intensity wildfire.

Riparian woodlands composed of deciduous trees and shrubs can be found along perennial and some intermittent watercourses. The predominant forest types within the FPP landscape are further described below.

SIERRAN MIXED CONIFER

Sierran mixed conifer is predominantly found in the lower elevations of the FPP with stands at varying density and age. Stands with residual larger trees commonly have dense understories of shrubs and small-diameter trees (**Figure 1a**). Some stands were managed in the past through timber harvest, prescribed burning, and other activities; however, in many of these areas, the elapsed time since management has resulted in development of significant understory of small trees (**Figure 1b**). Relatively dense pole-sized stands with a moderate shrub understory are found in many locations (**Figure 1c**). There are also areas with limited tree cover and dense understories of shrubs such as dogwood, deer brush, white thorn, and whiteleaf manzanita (**Figure 1d**).

Figure 1. Existing condition of Sierran mixed conifer habitats in proposed treatment areas.



Figure 1a: example of dense stand of multi-storied/multi-aged trees with no recent understory treatment.



Figure 1b: example of dense stand selectively harvested in the past where there has been no treatment of the understory in recent years.



Figure 1c: example of pole-sized mixed conifer stand naturally regenerated after past timber harvest



Figure 1d: example of areas with sparse tree overstory with dense shrub understories

RED FIR

Red fir (26 percent) is the predominant forest type in the higher elevations (> 6,000 ft). These stands are characterized by high density, regeneration of understory and overstocked stands (USDA Forest Service 2011) with sometimes large components of dead material. Refer to **Figure 2** for a representative photograph of a red fir stand in the FPP.



Figure 2. Existing condition of red fir habitats in proposed treatment area.

ASPEN

Aspen stands within the Proposed Action area have been compromised by fire suppression and conifer encroachment, which, over time, has resulted in fewer and smaller stands comprised of a single age-class of trees. **Figure 3** below illustrates an aspen monitoring stand on the Amador Ranger District with encroaching conifers (young lodgepole pine and red fir).



Figure 3. Existing condition of aspen stand in the proposed treatment area.

DESIRED CONDITION

The goal of the FPP treatments is to reduce understory ladder and surface fuels to ameliorate wildfire behavior and facilitate the future application of prescribed fire. Stands would be less overcrowded, and have fewer small

trees, lower surface fuels, and higher canopy base height (**Figure 4**). Hardwoods would be retained and managed consistent with SNFPA guidelines and direction (SNFPA Record of Decision, p. 53) shrubs and ground cover would be retained in canopy openings to the extent that there is minimal connectivity to overstory trees. In the event of a wildfire, flame lengths and fire intensity would be reduced; crown fire potential would be lessened; suppression effectiveness would be increased; and firefighter safety would be improved.



Figure 4. Example of a forest stand following fuels treatment (mastication).

METHODS

Table 2 below lists the maximum extent (in terms of acres) of each type of treatment proposed under the Proposed Action. A more detailed description of each treatment is in the text following the table. A preliminary list of general management requirements and project-specific ‘Design Criteria,’ are also described below and would be required during Proposed Action implementation.

The Proposed Action includes four categories of treatments:

1. Mechanical Fuels Reduction (treatments of surface and ladder fuels);
2. Hand Thinning (brush and small trees),
3. Prescribed Burning; and
4. Aspen Restoration.

Table 2. Proposed Treatment Activities.

Type of Treatment	Description	Treatment Details	Maximum Extent
TREATMENT ACTIVITIES			
Mechanical Fuels Reduction	Mastication, chipping/grinding or crushing ladder and surface fuels. Equipment typically consists of larger horsepower, low ground pressure track laying equipment, similar in some cases to excavators or tractors.	Mastication/pruning only treatments will be implemented on 14,537 acres. An additional Prescribed burning will be implemented within 4,715 acres following mechanical treatments.	19,252 acres
Hand Thinning Brush and Small Trees	Cutting, bucking, lopping, scattering and/or piling of smaller trees (< 10 inches dbh) ^b and brush using chainsaws.	Hand thinning treatments will be utilized wherever mechanical fuels reduction treatments are determined to not be suitable based on field reconnaissance.	4,337 acres

Type of Treatment	Description	Treatment Details	Maximum Extent
Prescribed Burning	Burning involves ground based or aerial ignition methods to reduce understory fuels.	Fire lines will be constructed where needed to contain the fire. Natural barriers and roads would be utilized as fire containment lines wherever possible. Prescribed burning only treatment will be implemented on 1,888 acres. 4,715 acres will be mechanically treated prior to prescribed burning; and 22 acres of prescribed burning will be implemented as part of aspen restoration.	6,625 acres ^c
Aspen Restoration	Remove encroaching conifers and shrubs to reestablish the historic aspen stand edge, enhance stand function, increase the diversity of age classes, and promote aspen growth	Aspen restoration only will be implemented on 172 acres; an additional 22 acres will be treated with prescribed burns as well.	194 acres
SUPPLEMENTAL ACTIVITIES/TREATMENTS			
Pruning	Pruning tree limbs would occur in conjunction with mechanical fuels reduction and hand thinning.	This involves severing all limbs on live trees up to a height of 8 to 12 feet on the bole, while retaining a minimum of 50 percent but not to exceed 50 percent of total tree height.	TBD
Hazard Tree Felling and Removal	Weak and high- risk trees of all sizes (both dead and unstable live trees) identified as an imminent hazard will be felled and may be removed.	Only hazard trees that pose a risk to project activities would be removed. Hazard trees will be identified and assessed using the 2012 Region 5 Hazard Tree Guidelines for Forest Service.	TBD

The most cost efficient and effective treatment or combination of treatments will be chosen for each area based on in-field verification of on-the-ground conditions, suitability, timing, equipment availability, and post-treatment results. Additionally, two supplemental activities/treatments (pruning and hazard tree felling and removal) may be undertaken at select locations where conditions warrant such supplemental activities.

Actions include thinning brush and small trees, removing ladder fuels, pruning residual trees, and removing or compacting the arrangement of surface fuels in order to prepare the landscape for wildfire resilience and prescribed burning. These are simple, cost efficient and effective fire hazard reduction techniques that will increase the annual acreage of fuels reduction treatments and enable more intensive treatments in key areas. The FPP would also utilize prescribed burning as an initial treatment where site conditions allow.

Mechanical Fuels Reduction

Mechanically reduce live shrubs and small trees generally up to 10 inches dbh. Larger live trees may be masticated where necessary to facilitate machinery movement within the stand. Masticate dead trees up to 16 inches dbh, or larger where necessary to abate an imminent safety hazard. Refer to Figure 5 for photographs of typical mastication equipment. Mechanical fuels reduction treatments within the prescribed fire treatment areas will only occur where required field surveys have been conducted.

Figure 5. Existing condition of Sierran mixed conifer habitats in proposed treatment areas.



Figure 5a: Example of a boom-type masticator.



Figure 5b: Example of a front-mounted masticator.

- Mechanical fuels reduction would be applied:
 - to slopes less than or equal to 40 percent where feasible;
 - within 0.25 mile of road centerline;
 - where hand treatments are not required or specified;
 - within California spotted owl and northern goshawk Protected Activity Centers (PACs), or portions thereof, that are located within WUI Defense and Threat Zones. Note that all areas within 500 feet of the activity center (nest tree) will be treated by hand, consistent with SNFPA (SNFPA ROD, p.60, #72 and #73);
- No live trees shall be cut that are larger than 10 inches dbh and meet minimum merchantable timber specifications (i.e., would produce at least a 10-foot straight log with 6-inch diameter inside bark at the small end. Lodgepole pine is not considered merchantable for this Proposed Action). Exceptions will be made if such removal is necessary to facilitate machinery movement within the stand.
- On slopes of greater than 40 percent, a tethered mastication system may be implemented where feasible and in accordance with soils standards following site specific review and recommendation by a Forest Service soil specialist. Tethered systems consist of a cable winch mounted on a piece of equipment. The winch system either mounts to the working equipment or it is mounted to another piece of equipment, like a dozer, that also acts as the anchor. When mounted to the working equipment, the winch line is anchored to an anchor point, such as a stump or the base of a standing tree, somewhere on the slope. The mechanical influence of the winch is used for enhanced traction and mobility on steep slopes (often called “traction assist”) or for safety on steep slopes (preventing machine sliding and overturning and reducing soil disturbance).
- Ground fuels will be treated through grinding, machine crushing, or chipping.
- In areas adjacent to roads, a “reach-in and grab” mastication system may be utilized. This system keeps the masticator on the road while the arm reaches off the road to remove or masticate adjacent vegetation and ladder fuels.

Hand Thinning (Brush and Small Trees)

Hand thinning may occur where other treatments are not feasible or where this activity will not conflict with other resource concerns/restrictions.

- Brush and live trees up to 10 inches dbh and dead trees up to 16 inches dbh will be hand-thinned in areas where mechanical fuels reduction treatments are unsuited or prohibited. Larger dead trees may also be removed, if necessary to abate an imminent safety hazard.
- Hand thinning within California spotted owl and northern goshawk PACS outside of the WUI and surrounding activity centers within WUI would target select conifer trees less than 6 inches dbh prior to implementing prescribed fire (SNFPA ROD, p. 60, #74). Outside the WUI, stand-altering activities would be limited to reducing surface and ladder fuels through prescribed fire treatments.
- In forested stands with overstory trees 11 inches dbh and greater, prescribed fire treatments will be designed to promote average flame length of 4 feet or less. Hand treatments, including handline construction, tree pruning, and cutting of small trees (less than 6 inches dbh), may be conducted prior to burning as needed to protect important elements of owl habitat.
- Hand thinning may be followed by chipping, lopping and scattering, and/or prescribed burning.

Prescribed Burning

- Implement prescribed burning using ground based or aerial ignition methods to reduce understory fuels. Prescribed understory fire would be prioritized in strategic locations to reduce the risk of large fires within treatment areas and on the surrounding landscape. Prescribed understory burning may take place following mastication or hand thinning, or as a stand-alone treatment.
- Construct hand or machine fire lines where needed to contain the fire. Natural barriers and roads would be utilized as fire containment lines where possible.
- Machine fire lines will only be constructed in areas where adequate Arch surveys have been completed prior to signing this decision.

Aspen Restoration

- Aspen stands will be defined in consultation with the United States Forest Service.
- Remove encroaching conifers generally less than 12 inches dbh and shrubs to reestablish the historic aspen stand edge, enhance stand function, increase the diversity of age classes, and promote aspen growth.
- Treatments for aspen may extend beyond the current perimeter of an aspen stand up to (1) 1.5 times the height of aspen trees in the stand (the maximum extent of lateral aspen roots), (2) the distance required to prevent remaining, adjacent conifers from shading the aspen stand and suppressing aspen regeneration, or (3) up to 100 feet (to conduct treatments or process treatment by-products), whichever is greater.
- Utilize hand thinning, ground based mechanical equipment (e.g., masticator, feller buncher, skidder), chipping, lopping and scattering, and/or prescribed burning.
- Mechanical fuels reduction treatments would be applied to stands on slopes generally less than or equal to 40 percent and hand thinning would be applied on slopes generally greater than 40 percent; removing trees generally less than 12 inches dbh.

Supplemental Activities/Treatments

Pruning

Residual trees may be pruned to raise the base height to live crown and to reduce the risk of wildfire or prescribed fire moving into the crowns. Pruning involves severing all limbs on live trees up to a height of 8 feet to 12 feet on the bole, while retaining a minimum of 50 percent but not to exceed 50 percent of total tree height.

Hazard Tree Felling and Removal

Weak and high- risk trees of all sizes (both dead and unstable live trees) identified as an imminent hazard to the implementation of FPP activities will be felled and may be removed. Hazard trees will be identified and assessed using the 2012 Region 5 Hazard Tree Guidelines for Forest Service.

ANTICIPATED TIMING AND EXTENT OF PROPOSED ACTIVITIES

Under Phase 1 of the FPP:

- Between approximately 500 to 2,000 acres of hand treatments and 500 to 2,000 acres of mechanical fuels reduction treatments could be implemented on an annual basis over the next 5 to 6 years and repeated for 10 to 15 years or more, depending on fuel conditions and funding.
- Approximately 10,000 acres or more may be treated with prescribed fire in the next 5 to 6 years.

The actual number of acres treated will largely depend upon the Forest Service and its' partners' staffing and financial capacities.

DESIGN CRITERIA

At the project level the ENF will implement the following Design Criteria relevant to the protection of aquatic resources to avoid or minimize impacts to CRLF or its habitat.

Table 3. Forest Projects Plan (Phase 1) Project-Specific Design Criteria

Design Criteria ID	Proposed Design Criteria
DC 1	<p>All applicable standards and guidelines described in the Eldorado National Forest Land and Resource Management Plan (Forest Service 1989), as amended by the 2004 Sierra Nevada Forest Plan Amendment (SNFPA) (Forest Service 2004) would be followed during project implementation.</p> <p>Mechanical and fuels prescriptions have been designed to be consistent with Forest-wide management standards and guidelines (SNFPA Record of Decision 2004, pages A-49 to A-59), as well as land allocation standards and guidelines for California spotted owl and Northern Goshawk Protected Activity Centers (SNFPA Record of Decision 2004, pages A-59 to A-61), and Riparian Conservation Area RCAs^a and Critical Aquatic Refuges (SNFPA Record of Decision 2004, pages A-62 to A-66).</p> <p>This Proposed Action would also incorporate the National Best Management Practices (BMPs) for Water Quality Management on National Forest System Lands (Forest Service 2012). In addition, there are other applicable, standard policies, and guidelines included in various Forest Service Handbooks, laws, and regulations that would be adhered to throughout implementation of this Proposed Action.</p>

Design Criteria ID	Proposed Design Criteria										
DC 2	All Proposed Action activities would be consistent with Riparian Conservation Objectives described in the Sierra Nevada Forest Plan Amendment Final Supplemental Environmental Impact Statement (Forest Service 2004a). and the U.S Fish and Wildlife Service Conservation Measures from the programmatic Biological Opinion on three federally listed amphibian species, the Sierra Nevada yellow-legged frog, the Northern Distinct Population Segment of the mountain yellow-legged frog, and the Yosemite toad (USFWS 2014).										
DC 3	If federally listed Threatened, Endangered, or Forest Service Sensitive (TES) botanical, aquatic, or terrestrial species are detected during work, operations would cease in that area and the appropriate biologist would be informed immediately to determine appropriate actions to take. Before restarting activities, consultation may need to be initiated with USFWS for listed species.										
DC 4	Temporary erosion control products (blankets, mats, rolls, etc.) that contain exposed netting would use wildlife friendly loose weave netting or similar materials when netting is left exposed. See Metz (2016), Wildlife-Friendly Plastic-Free Netting in Erosion and Sediment Control Products, for details.										
DC 5	A Limited Operating Period (LOP) restricting all work activities at or below 4,500-feet in elevation would be implemented from first fall frontal system depositing a minimum of 0.25-inch of rain between October 15th through April 15th. Activities may resume after a 72-hour drying period. The LOP may be lifted in locations where sufficient survey data demonstrate the absence of CRLF or suitable breeding habitat. This LOP will not apply are within the Mokelumne River watershed above Panther Creek. The Mokelumne River is a large river that does not provide the right habitat conditions for CRLF breeding. Tributaries are steep and there is no mapped potential or documented actual breeding locations above the Panther Creek confluence.										
DC 6	Storage of fuel or other toxic materials and maintenance of equipment would not occur RCAs ^a .										
DC 7	<p>The table below defines boundaries where mechanical operations are prohibited for the protection of aquatic resources and applies to features identified on map and those found in the field during treatment. Unmapped feature will be treated as Special Aquatic Features^a.</p> <table border="1" data-bbox="354 1356 1380 1858"> <thead> <tr> <th data-bbox="354 1356 602 1423">Aquatic Feature Type</th> <th data-bbox="607 1356 1380 1423">Require Exclusion Zone/Other Criteria</th> </tr> </thead> <tbody> <tr> <td data-bbox="354 1430 602 1514">Perennial and Intermittent Streams</td> <td data-bbox="607 1430 1380 1514">No ground-based equipment within 50 feet of the edge of the stream channel. Equipment is allowed to reach into the equipment exclusion zone to masticate vegetation.</td> </tr> <tr> <td data-bbox="354 1520 602 1572">Ephemeral Streams and Draws</td> <td data-bbox="607 1520 1380 1572">No ground-based equipment within 15 feet of the edge of the stream channel or bottom of the draw.</td> </tr> <tr> <td data-bbox="354 1579 602 1631">Special Aquatic Features^a</td> <td data-bbox="607 1579 1380 1631">No ground-based equipment within 50 feet of the edge of the wet area or riparian vegetation, whichever is greater.</td> </tr> <tr> <td data-bbox="354 1638 602 1858">Dufrene Pond</td> <td data-bbox="607 1638 1380 1858"> <ul style="list-style-type: none"> No ground-based equipment within 50 feet of the exclusion fencing around Dufrene Pond. Mechanical equipment operations will not occur along the north side of Road 08N18 in front of Dufrene Pond (from where the outlet stream meets the roadside ditch to approximately Latitude 38.576155 Longitude -120.252513). Hand thinning, pruning, and hazard tree falling are allowed. </td> </tr> </tbody> </table>	Aquatic Feature Type	Require Exclusion Zone/Other Criteria	Perennial and Intermittent Streams	No ground-based equipment within 50 feet of the edge of the stream channel. Equipment is allowed to reach into the equipment exclusion zone to masticate vegetation.	Ephemeral Streams and Draws	No ground-based equipment within 15 feet of the edge of the stream channel or bottom of the draw.	Special Aquatic Features ^a	No ground-based equipment within 50 feet of the edge of the wet area or riparian vegetation, whichever is greater.	Dufrene Pond	<ul style="list-style-type: none"> No ground-based equipment within 50 feet of the exclusion fencing around Dufrene Pond. Mechanical equipment operations will not occur along the north side of Road 08N18 in front of Dufrene Pond (from where the outlet stream meets the roadside ditch to approximately Latitude 38.576155 Longitude -120.252513). Hand thinning, pruning, and hazard tree falling are allowed.
Aquatic Feature Type	Require Exclusion Zone/Other Criteria										
Perennial and Intermittent Streams	No ground-based equipment within 50 feet of the edge of the stream channel. Equipment is allowed to reach into the equipment exclusion zone to masticate vegetation.										
Ephemeral Streams and Draws	No ground-based equipment within 15 feet of the edge of the stream channel or bottom of the draw.										
Special Aquatic Features ^a	No ground-based equipment within 50 feet of the edge of the wet area or riparian vegetation, whichever is greater.										
Dufrene Pond	<ul style="list-style-type: none"> No ground-based equipment within 50 feet of the exclusion fencing around Dufrene Pond. Mechanical equipment operations will not occur along the north side of Road 08N18 in front of Dufrene Pond (from where the outlet stream meets the roadside ditch to approximately Latitude 38.576155 Longitude -120.252513). Hand thinning, pruning, and hazard tree falling are allowed. 										

Design Criteria ID	Proposed Design Criteria
DC 8	Hand-felling of trees is allowed within the mechanical exclusion zone. Any trees should be felled away from the stream and left in place, bucked and scattered, or removed by reach in and full suspension.
DC 9	If mechanical falling/skidding equipment is used: No new landings would be created in the RCA. Reuse of existing landings within the RCA would be allowed where creation of a new landing is likely to result in more resource damage than use of the existing landing within the RCA.
DC 10	If mechanical falling/skidding equipment is used: Any skid trails or landings within RCAs would be repaired to restore soil infiltration capacity and soil cover to reduce erosion and may include practices such as, reshaping to restore natural surface flow patterns, installation of drainage control features, decompaction, placement of organic material, and seeding on disturbed soil surfaces. Slash would be added to any skid trails while operations are occurring to facilitate incorporation into the substrate and help stabilize soil.
DC 11	Ground cover will be maintained at least at 70 percent in the zone of 50 to 100 feet from the edge of the stream channel. If the existing ground cover is less than 70 percent, then the existing ground cover will be maintained. Tops, limbs, and small trees within the mechanical exclusion zone can be lopped and scattered to meet ground cover criteria.
DC 12	At a minimum, an annual review of burning treatment plans will occur with a Forest Aquatic Biologist, Terrestrial Biologist, and Botanist to ensure conditions for Threatened, Endangered or Sensitive species have not changed and to ensure consistency with FWS consultation determinations.
DC 13	Ignition of prescribed fires would not occur within 50 feet of any perennial or intermittent stream or Special Aquatic Feature. The ignition exclusion zone would be measured from the edge of the channel or high-water mark of the Special Aquatic Feature or the adjacent riparian vegetation if present. a. Fire would be allowed to back into the exclusion zone b. Ignition may occur within the exclusion zones if it is deemed necessary to maintain control of a prescribed burn or to control burn severity. c. No fire ignition within 50 feet of the exclusion fence around Dufrene Pond.
DC 14	Prescribed fire containment lines would be rehabilitated to prevent transport of water and sediment to nearby aquatic systems prior to the onset of winter weather or large summer storms.
DC 49	Large reservoirs will be used for water drafting. If it is necessary to use waterholes, ponds, rivers, and streams for water drafting, the ENF biology staff will be consulted to determine whether surveys for aquatic threatened, endangered and sensitive species are required prior to use. In the event that threatened, endangered and sensitive species are found or are known to occur at drafting sites, sites will not be used unless ENF-approved minimization measures are put into place. Dufrene Pond will NOT be used for water drafting.
DC 50	Downed logs greater than 16 inches in diameter (small end diameter) will be retained during mechanical fuels treatments (i.e., mastication) to the extent practicable.

^aThe Riparian Conservation Area (RCA) is defined as 300 feet on each side of perennial streams and from the edge of special aquatic features (lakes, wet meadows, bogs, fens, wetlands, vernal pools, and springs), and 150 feet from each side intermittent and ephemeral streams. For streams, the RCA is measured from the bank full edge of the stream.

V. EXISTING ENVIRONMENT

This section describes the existing environment within the Action Area, which is defined by a 1-mile buffer surrounding the treatment footprint. The 77,464-acre Action Area encompasses the dispersal distance of the amphibians addressed in this document and represents the extent to which direct, indirect, and cumulative effects may occur. Provided below is a brief species account; a description of habitat (including Critical Habitat) in the Action Area; and a summary of surveys and known occurrences of CRLF in the Action Area.

CALIFORNIA RED-LEGGED FROG

SPECIES ACCOUNT

Rana draytonii has been a federally threatened species since June 24, 1996 (USFWS 1996), and is also a California state species of special concern. A complete species account for CRLF is publicly available in the Federal Register (2010) and can be obtained at <https://www.gpo.gov/fdsys/pkg/FR-2010-03-17/pdf/2010-4656.pdf>. This information is incorporated by reference into this BA. A brief summary of biological and habitat characteristics relevant to this analysis are provided below.

Suitable Habitat

Aquatic Breeding Habitat

All life history stages are most likely to be encountered in and around breeding sites. Breeding habitat consists of low-gradient freshwater aquatic features, including natural and manmade ponds, slow moving streams or pools within streams, backwaters within streams and creeks, and other ephemeral or permanent water bodies that typically become inundated during winter rains and hold water for a minimum of 20 weeks in all but the driest of years (USFWS 2010). This is the average amount of time needed for egg, larvae, tadpole development, and metamorphosis (Storer 1925; Wright and Wright 1949; Bobzien et al. 2000, USFWS 2010). CRLF usually have completed metamorphosis between July and September. During periods of drought, aquatic breeding habitat need not be available every year, but it must be available often enough and for appropriate hydroperiods to maintain a CRLF population during most years (USFWS 2010).

Breeding habitat does not include deep lakes and reservoirs larger than about 50 acres (USFWS 2010). Water bodies free of bullfrogs and nonnative predatory fish are optimal for breeding, but CRLF populations can persist in the presence of one or the other of these predators (USFWS 2010).

Non-breeding Aquatic and Foraging/Sheltering Habitats

Non-breeding aquatic habitat consists of the breeding habitat described above, and also includes perennial streams, plunge pools within intermittent creeks, seeps, quiet water refugia during high water flows, and springs of sufficient flow to withstand the summer dry period (USFWS 2010). CRLF can also use large cracks in the bottom of dried ponds as refugia to maintain moisture and avoid heat and solar exposure.

CRLF often move from their breeding habitat to forage and seek suitable upland habitat if aquatic habitat is not available. This associated foraging/sheltering habitat consists of areas within 300 ft. of the edge of the riparian vegetation, comprised of grasslands, woodlands, and/or wetland/riparian plant species that provides the frog shelter, forage, and predator avoidance (Rathbun et al. 1993; Bulger et al. 2003; Tartarian 2008, USFWS 2010). Suitable sheltering upland habitat includes both natural and manmade structures that provide shade, moisture, and cooler temperatures (USFWS 2006). CRLF will also use small mammal burrows and moist leaf litter as refugia (Jennings and Hayes 1994; Fellers and Kleeman 2007).

Dispersal Habitat

Dispersal habitat consists of upland and riparian habitat contiguous with breeding and non-breeding aquatic habitat that is free of barriers and that connects two or more patches of aquatic breeding habitat within 1 mile of one another (USFWS 2010). Dispersal barriers may include heavily traveled roads (Vos and Chardon 1998) that possess no bridges or culverts, moderate to high density urban or industrial developments with large expanses of asphalt or concrete, and large reservoirs over 50 acres in size that contain predatory species (USFWS 2006).

CRLF have been documented to travel as far as 2.2 miles (3.6 kilometers) from non-breeding to breeding habitats (Bulger et al. 2003). These long-distance movements are assumed migrations rather than use of corridors for moving between habitats (USFWS 2010). These movements have also been found to be with apparent disregard to topography, vegetation type, or riparian corridors (Bulger et al. 2003; Fellers and Kleeman 2007). The USFWS concludes that 2.2 miles (3.6 kilometers) is likely the upward limit of dispersal capability for the CRLF and that a 1-mile dispersal distance will allow for sufficient connectivity between breeding habitats (USFWS 2010). This 1-mile dispersal element also includes areas of non-aquatic (i.e., upland habitat) habitat for shelter.

EXISTING HABITAT IN THE ACTION AREA

Suitable breeding habitat is defined as ponds and perennial and intermittent riverine habitats with gradients of 2 percent or less and below 4,000 feet msl (Mabe, pers. comm., 2022) (the Action Area is located between approximately 2,700 and 8,000 feet msl). Potential aquatic non-breeding and upland habitat is defined to include all aquatic features within 1 mile of aquatic breeding habitat, plus a 300-foot buffer. Dispersal habitat is defined to include all areas within a 1-mile buffer around aquatic breeding habitat.

Map 2 depicts the location of CRLF habitat (including aquatic breeding habitat; aquatic non-breeding and upland habitat; and dispersal habitat) as defined above.

Forest Projects Plan (FPP), Phase 1

Eldorado National Forest -- Amador Ranger District

Map 2. California Red-Legged Frog Habitat & Occurrences



Legend

- Action area
- Treatment area
- Breeding habitat (riverine)
- Breeding habitat (lacustrine)
- Non-breeding habitat
- Dispersal habitat
- Occurrences
- National Forest
- Non-National Forest
- HUC12 subwatershed
- Perennial stream
- Intermittent stream
- Waterbody
- Highway

Scale: 1:150,000
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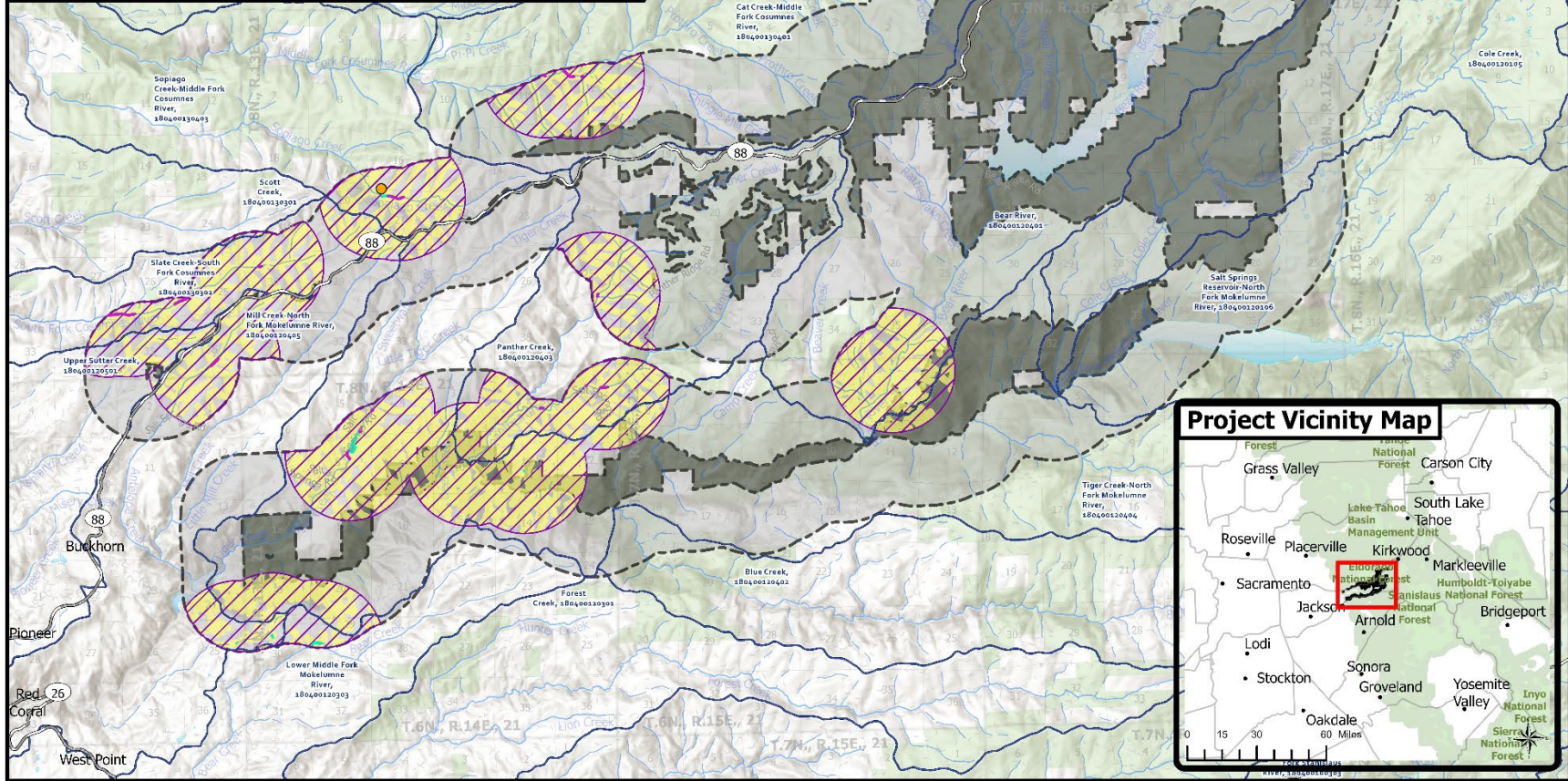


Table 3 summarizes the miles/acres of CRLF habitat in the Action Area, as well as within areas proposed for treatment. There are approximately 2 river miles of potential riverine aquatic breeding habitat and approximately 18 acres of potential lacustrine aquatic breeding habitat in the Action Area; however, none of this potential breeding habitat is in areas proposed for treatment. There are approximately 13,190.1 acres of non-breeding aquatic and upland habitat in the Action Area, of which approximately 1,278 acres (9 percent) overlap with FPP treatment areas; and approximately 19,221.0 acres of dispersal habitat in the Action Area, of which approximately 1,708.1 acres (8 percent) overlaps with FPP treatment areas.

Table 3. Suitable Habitat for California Red-Legged Frog within the Action Area and Proposed Treatment Areas.

HUC 12 Number	HUC 12 Name	Aquatic Breeding Habitat				Acres of Non-Breeding Habitat		Acres of Dispersal Habitat	
		Riverine (River Miles)		Lacustrine (Acres)		Action Area	Treatment Area	Action Area	Treatment Area
		Action Area	Treatment Area	Action Area	Treatment Area				
180400120303	Lower Middle Fork Mokelumne River	0	0	3.0	0	135.6	0	370.4	0
180400120401	Bear River	0	0	0.1	0	1,277.4	107.8	1,594.1	174.3
180400120403	Panther Creek	0.2	0	0	0	2,281.7	141.6	3,132.3	156.6
180400120404	Tiger Creek-North Fork Mokelumne River	0.2	0	11.7	0	4,962.4	1,000.7	6,272.2	1,296.1
180400120405	Mill Creek-North Fork Mokelumne River	0.2	0	1.0	0	1,328.4	2.1	2,225.2	6.3
180400120501	Upper Sutter Creek	0	0	0	0	249.9	0.8	713.1	18.5
1804001303012	Scott Creek	0	0	0	0	7.8	0	29.6	0
180400130302	Slate Creek-South Fork Cosumnes River	0.7	0	0	0	1,371.1	0.6	2,180.5	1.6
180400130401	Cat Creek-Middle Fork Cosumnes River	0.3	0	0	0	817.1	24.2	1,484.8	54.7
180400130403	Sopiago Creek-Middle Fork Cosumnes River	0.3	0	1.7	0	760.2	0	1,218.8	0
Total Habitat		1.9	0	17.5	0	13,190.7	1,277.8	19,221.0	1,708.1

EXISTING SURVEYS AND SIGHTINGS

Based on a review of ENF data, there is one record for CRLF in the Action Area. In 2002, three adult CRLF were observed in Sopiago Creek (**Map 2**) at the site of an old dam that had failed. This portion of the creek is not on land proposed for treatment. The closest known breeding population of CRLF is at Spivey Pond, approximately 20 miles to the northwest of the Action Area.

FOOTHILL YELLOW-LEGGED FROG

SPECIES ACCOUNT

On December 28, 2021, the USFWS proposed to list four of six distinct population segments (DPSs) of the foothill yellow-legged frog, *Rana boylei* (USFWS 2021a). Pertinent to this document, the South Sierra DPS, which extends from the South Fork American River sub-basin to the transition zone between the Sierra Nevada and Tehachapi Mountains, is proposed for listing as endangered. This DPS is also listed as endangered under the California Endangered Species Act (CESA). A species and habitat account for the FYLF is available in the Foothill Yellow-Legged Frog Conservation Assessment (Hayes et al. 2016), which can be obtained from the World Wide Web at:

https://www.fs.fed.us/psw/publications/documents/psw_gtr248/psw_gtr248.pdf. A brief summary of biological and habitat characteristics relevant to this analysis is provided below.

The FYLF is found in most of northern California west of the Cascade Mountains crest, in the Coast Ranges from the California-Oregon border south to the Transverse Mountains in Los Angeles County, and along the western slope of the Sierra Nevada Mountains south to Kern County. This frog can be found from near sea level to 1940m (6,370 ft) where habitat is suitable (Morey and Papenfuss 2000). Within Region 5 this frog is found on, or could occur on, all national forests except for the Cleveland, Inyo, Modoc, and Lake Tahoe Basin National Forests.

FYLF are found in partially shaded, rocky, perennial and ephemeral streams, rivers, and wet terrestrial habitats (Hayes et al. 2016). Breeding habitat ranges from small tributaries to large rivers (Lind 2005). In large rivers breeding sites are commonly point bars or depositional sites near tributary confluences (Kupferberg 1996). Smaller stream breeding habitat is typically classified as a stream with riffles, containing cobble-sized or larger rocks as substrate (Morey and Papenfuss 2000). These streams are further defined by having low-water velocities near tributary confluences in shallow reaches and are wider and shallower than non-breeding sites, have emergent rocks, and are typically asymmetrical with cobble or small boulder bars (Wheeler and Welsh 2008; Kupferberg 1996).

Breeding can occur as early as March but mainly occurs in May to early June and varies in length with an average duration of 49.5 days between first and last egg depositions (Hayes 2016, Wheeler and Welsh 2008, Kupferberg 1996).

EXISTING HABITAT IN THE ACTION AREA

For the purposes of this analysis, suitable habitat is defined to include perennial and intermittent streams below 5,000 feet msl (the Action Area is located between approximately 2,700 and 8,000 feet msl), including a buffer of 25 meters (82 feet) on either side of the stream. **Map 3** depicts the location of FYLF habitat as defined above. As shown in **Table 4** there are approximately 3,250 acres of suitable habitat in the Action Area, of which approximately 525 acres (16 percent) are within proposed FPP treatment areas.

Table 4. Suitable Habitat for Foothill Yellow-Legged Frog within the Action Area and Proposed Treatment Areas.

HUC 12 Number	HUC 12 Name	Acres of Suitable Habitat within Action Area	Acres of Suitable Habitat within Proposed Treatment Areas
180400120105	Cole Creek	22.6	22.4
180400120106	Salt Springs Reservoir-North Fork Mokelumne River	482.3	47.2
180400120303	Lower Middle Fork Mokelumne River	26.0	0
180400120401	Bear River	199.8	21.3
180400120402	Blue Creek	35.3	0
180400120403	Panther Creek	392.7	66.8
180400120404	Tiger Creek-North Fork Mokelumne River	1,343.1	355.5
180400120405	Mill Creek-North Fork Mokelumne River	308.0	0
180400120501	Upper Sutter Creek	38.8	0
180400130302	Slate Creek-South Fork Cosumnes River	108.3	0
180400130401	Cat Creek-Middle Fork Cosumnes River	168.9	11.5
180400130403	Sopiago Creek-Middle Fork Cosumnes River	124.0	0
Total Suitable Habitat		3,249.8	524.6

Forest Projects Plan (FPP), Phase 1

Eldorado National Forest -- Amador Ranger District

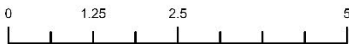
Map 3. Foothill Yellow-Legged Frog Habitat & Occurrences



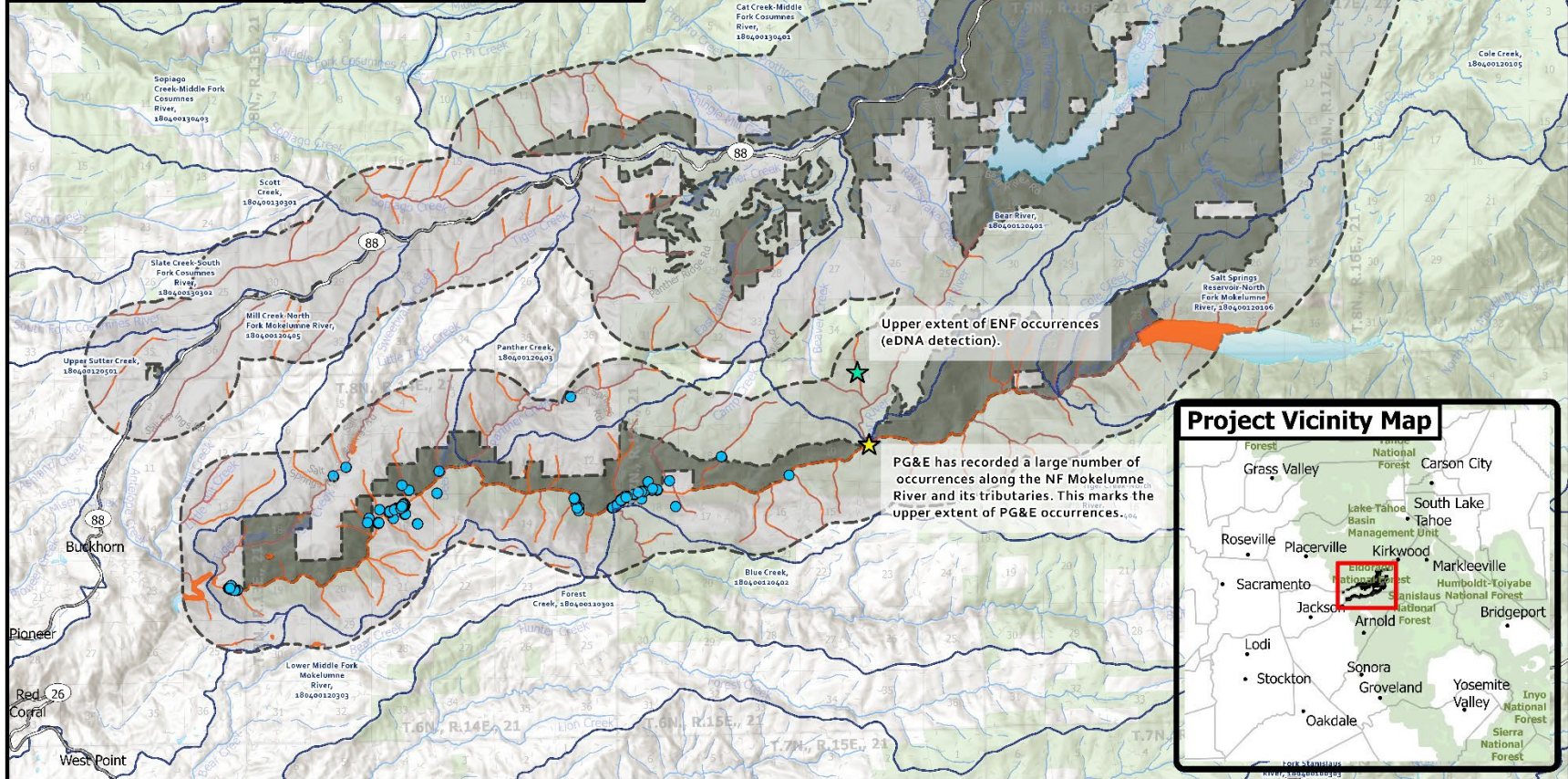
Legend

- Action area
- Treatment area
- Suitable habitat
- Occurrences
- National Forest
- Non-National Forest
- HUC12 subwatershed
- Perennial stream
- Intermittent stream
- Waterbody
- Highway

Scale: 1:150,000



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EXISTING SURVEYS AND SIGHTINGS

Information on FYLF occurrences in the Action Area is based on a review of ENF aquatic survey data and incidental sightings records (2001–2009) and the Pacific Gas & Electric Company’s (PG&E) *Mokelumne River Hydroelectric Project, FERC No. 137-CA 2021 Annual and 15-Year Stream Ecology Monitoring Program Summary Report* (Summary Report) (PG&E 2022). **Map 3** provides a depiction of FYLF occurrences from ENF GIS data. These data indicate there are known populations of FYLF in the Action Area, primarily in the Tiger Creek–North Fork Mokelumne River HUC 12 watershed, along the mainstem North Fork Mokelumne River and its tributaries.

GIS data were not obtained from PG&E and are not shown on the map; however, the Summary Report confirms the presence of FYLF of all life stages along most of the mainstem North Fork Mokelumne River from just above the Tiger Creek Reservoir (at approximately 2,400 feet msl) to the Bear River confluence (at approximately 3,100 feet msl), as well as its direct tributaries. Tributaries that were occupied by FYLF generally corresponded with areas of higher FYLF distribution observed along the mainstem North Fork Mokelumne River during breeding and reach-wide surveys (PG&E 2022).

PG&E has not detected FYLF in the North Fork Mokelumne River upstream of the confluence with the Bear River. However, eDNA sampling conducted by ENF in 2020 indicates that populations may extend upstream from the North Fork Mokelumne River into the Bear River drainage up to approximately 3,300 feet msl (Mabe, pers. comm., 2022).

Both ENF data and the Summary Report also document the presence of adult FYLF in Tiger Creek and Panther Creek, outside of proposed treatment areas.

SIERRA NEVADA YELLOW-LEGGED FROG

SPECIES ACCOUNT

On April 29, 2014, the U.S. Fish and Wildlife Service published a final rule in the Federal Register to list the SNYLF and Northern DPS mountain yellow-legged frogs as endangered with extinction (USFWS 2014). The rule went into effect on June 30, 2014. A critical habitat designation was proposed by the USFWS (2013) and was finalized as of August 26, 2016. A complete species account for SNYLF is publicly available in the Federal Register (2014) and can be obtained at <https://www.govinfo.gov/content/pkg/FR-2013-04-25/pdf/2013-09598.pdf>. This information is incorporated by reference into this BA. A brief summary of biological and habitat characteristics relevant to this analysis are provided below.

Suitable Habitat

On December 19, 2014, USFWS issued a Programmatic BO addressing the effects on the three newly listed amphibians (including SNYLF) of USDA-FS Region 5 Forest Programs, including the ENF (USFWS 2014b). The USFWS Programmatic BO uses the following definition of suitable habitat for SNYLF (USFWS 2014b):

- Typically occurs above 4,500 feet msl, but in some areas (including west side of Plumas National Forest) it may occur as low as 3,500 feet.
- Includes permanent water bodies or those hydrologically connected with permanent water such as wet meadows, lakes, streams, rivers, tarns, perennial creeks, permanent plunge pools within intermittent creeks, and pools, such as a body of impounded water contained above a natural dam.
- Includes adjacent areas up to a distance of 82 feet.

- When water bodies occur within 984 feet of one another (as is typical of some high mountain lake habitat) suitable habitat for dispersal and movement includes the overland areas between lake shorelines.
- In mesic areas such as lake/meadow systems, the entire contiguous or proximate areas are suitable habitat for dispersal and foraging.

Breeding

Breeding occurs soon after spring thaw, ranging from April at lower elevations to June or July in high elevations (Vredenburg et al. 2005). The length of the larval stage depends on elevation; larvae require at least one year before metamorphosis to the adult stage, but most Sierra Nevada populations are composed of larvae in three size classes which may correspond to year classes (Vredenburg et al. 2005). Metamorphosis occurs in July or August (Vredenburg et al. 2005). The time required to reach reproductive maturity is believed to vary between 3 and 4 years after metamorphosis (Vredenburg et al. 2005).

Seasonal Movements and Dispersal

Site fidelity is high for breeding, foraging and overwintering for this species (Matthews and Preisler 2010). Individuals are rarely far from water, usually less than 1 meter and almost always on a wet substrate while basking (Bradford 1984). SNYLF individuals typically travel in or along aquatic corridors, and researchers have documented maximum upstream/downstream movements up to approximately 2 miles (Matthews and Pope 1999; Wengert 2008). In addition, researchers have observed seasonal movement patterns from overwintering habitat to breeding and feeding habitat and back again to overwintering habitat (Matthews and Pope 1999, Pope and Matthews 2001). All age classes (subadult and adult frogs, and larvae) overwinter underwater; in high elevations they are restricted to relatively deep lakes (over 5 feet deep) that do not freeze solid in winter (Knapp 1994, Knapp and Matthews 2000).

Critical Habitat

USFWS has outlined Primary Constituent Elements (PCEs) for SNYLF habitat, defined as the physical and biological features that are essential to the conservation of the species. This includes:

- Aquatic habitat for breeding and rearing. Habitat that consists of permanent water bodies, or those that are either hydrologically connected with, or close to, permanent water bodies, including, but not limited to, lakes, streams, rivers, tarns, perennial creeks (or permanent plunge pools within intermittent creeks), pools (such as a body of impounded water contained above a natural dam), and other forms of aquatic habitat. This habitat must:
 - Be of sufficient depth not to freeze solid during the winter
 - Maintain a natural flow pattern, including periodic flooding
 - Be free of fish and other predators
 - Maintain water during the entire tadpole growth phase (minimum of 2 years)
 - Contain bank and pool substrates consisting of varying percentages of soil or silt, sand, gravel, cobble, rock, and boulders
 - Contain shallower lake microhabitat with solar exposure
 - Contain open gravel banks and rocks projecting above or just beneath the surface of the water
 - Sufficient food resources to provide for tadpole growth and development

- Aquatic nonbreeding habitat (including overwintering habitat). This habitat may contain the same characteristics as aquatic breeding and rearing habitat (often at the same locale), and may include lakes, ponds, tarns, streams, rivers, creeks, plunge pools within intermittent creeks, seeps, and springs that may not hold water long enough for the species to complete its aquatic life cycle. This habitat provides for shelter, foraging, predator avoidance, and aquatic dispersal of juvenile and adult SNYLF.
- Upland areas. (a) Upland areas adjacent to or surrounding breeding and nonbreeding aquatic habitat that provide area for feeding and movement by SNYLF. (b) Upland areas (catchments) adjacent to and surrounding both breeding and nonbreeding aquatic habitat that provide for the natural hydrologic regime (water quantity) of aquatic habitats. These upland areas should also allow for the maintenance of sufficient water quality to provide for the various life stages of the frog and its prey base. These include permanent water bodies for breeding and rearing including lakes, streams, rivers, tarns, perennial creeks (or permanent plunge pools within intermittent creeks), pools (such as a body of impounded water contained above a natural dam), and other forms of aquatic habitat as defined by USFWS (USFWS 2013a).

EXISTING HABITAT IN THE ACTION AREA

For the purposes of this analysis, suitable habitat is defined to include perennial and intermittent streams above 4,500 feet msl, including a buffer of 25 meters (82 feet) on either side of the stream. **Map 4** depicts the location of suitable habitat, as well as federally designated Critical Habitat (Subunit 2F, East Amador) for SNYLF. Note that the Upper and Lower Bear reservoirs were excluded from Critical Habitat by USFWS because of “very low recovery potential due to highly fluctuating water levels, heavy recreational use, and distance from extant frogs” (USFWS 2016 [Table 2]).

As shown in **Table 5** there are approximately 5,081 acres of suitable habitat in the Action Area, of which approximately 1,447 acres (28 percent) are within proposed treatment areas. There are approximately 27,364 acres of Critical Habitat mapped within in the Action Area, of which approximately 12,187 (44 percent) are located within proposed treatment areas.

Table 5. Suitable Habitat and Critical Habitat for Sierra Nevada Yellow-Legged Frog within the Action Area and Proposed Treatment Areas.

HUC 12 Number	HUC 12 Name	Acres of Suitable Habitat		Acres of Critical Habitat	
		Action Area	Treatment Area	Action Area	Treatment Area
180201290102	Silver Lake-Silver Fork American River	149.7	0	998.4	0
180201290103	North Tragedy Creek	399.2	4.0	0.3	0
180400120105	Cole Creek	692.6	311.1	7,289.1	3,746.5
180400120106	Salt Springs Reservoir-North Fork Mokelumne River	152.8	18.3	0.2	0.1
180400120401	Bear River	2,304.1	723.3	19,075.8	8,439.8
180400120403	Panther Creek	298.7	110.5	0	0
180400120404	Tiger Creek-North Fork Mokelumne River	82.2	27.7	0	0
180400130202	Upper North Fork Cosumnes River	206.8	0	0	0
180400130401	Cat Creek–Middle Fork Cosumnes River	794.8	252.0	0.1	0.1
Total Critical/Suitable Habitat		5,080.9	1,446.9	27,363.9	12,186.6

EXISTING SURVEYS AND SIGHTINGS

Information on SNYLF occurrences in the Action Area is based on a review of ENF aquatic survey data and incidental sightings records (1991–2021) and PG&E’s Summary Report (PG&E 2022). **Map 4** provides a depiction of SNYLF occurrences from ENF GIS data. These data indicate there are breeding populations of SNYLF in the

Action Area primarily in the Bear River and Cole Creek HUC 12 watersheds. All mapped occurrences are above approximately 6,000 feet msl. This is consistent with the lower elevation boundary for Critical Habitat, which was generally delineated to encompass the extent of known populations. A breeding population of SNYLF is known to occur within Dufrene Pond, located on a tributary upstream (north) of the Lower Bear River Reservoir. This a unique location where an old drafting pond associated with a perennial spring was occupied by SNYLF and is now an important breeding location, and one of the only occupied locations in the immediate area. SNYLF individuals have also been identified in the drainage ditch along Road 08N18 adjacent to the pond (Mabe, pers. comm., 2022). It should be noted that tributary to Cole Creek that contains historic sightings of SNYLF was surveyed with VES and eDNA in 2020. No observations or eDNA hits were recorded at that time.

GIS data were not obtained from PG&E and are not shown on the map. PG&E conducted surveys for SNYLF between 2002 and 2020 in select habitats, including a segment of Cole Creek between approximately 5,900 and 6,100 feet msl that falls within the Action Area (all other survey sites are located in high-elevation lakes and meadows several miles east of the Action Area). Two SNYLF tadpoles and two subadults were observed in Cole Creek in 2009. No SNYLF were observed in the creek during PG&E's subsequent surveys (in 2014 and 2020) (PG&E 2022), but ENF crew did record a SNYLF in lower Cole Creek (outside of any treatment areas) in 2019.

Forest Projects Plan (FPP), Phase 1

Eldorado National Forest -- Amador Ranger District

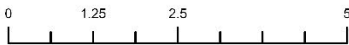
Map 4. Sierra Nevada Yellow-Legged Frog Habitat & Occurrences



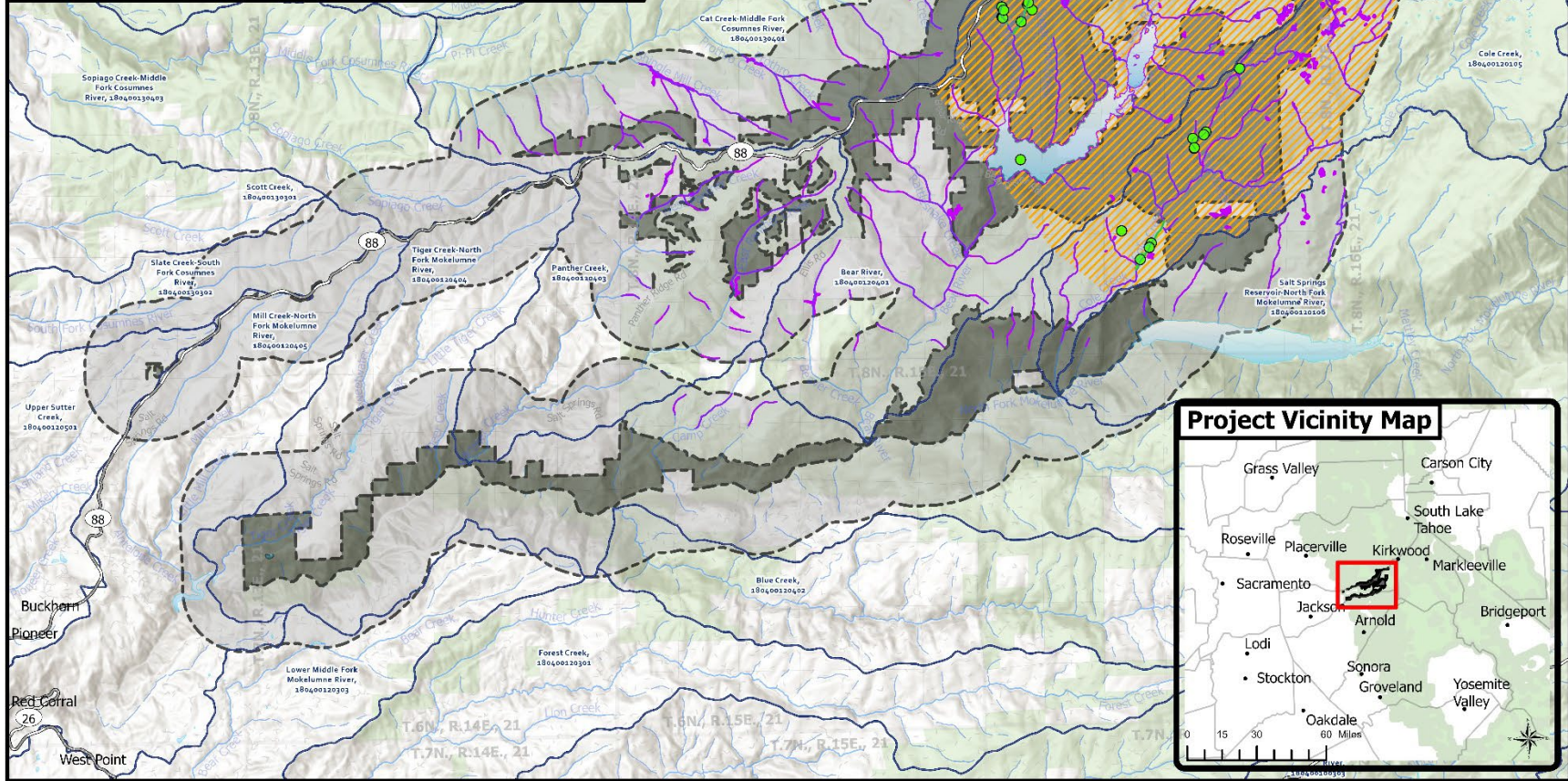
Legend

- Action area
- Treatment area
- Critical habitat
- Suitable habitat
- Occurrences
- National Forest
- Non-National Forest
- HUC12 subwatershed
- Perennial stream
- Intermittent stream
- Waterbody
- Highway

Scale: 1:150,000



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VI. EFFECTS ANALYSIS

This section provides an analysis of the potential effects of the Proposed Action on CRLF, FYLF, and SNYLF individuals and habitat in the Action Area.

CALIFORNIA RED-LEGGED FROG

DIRECT EFFECTS

There are no known breeding populations of CRLF in the Action Area and no breeding habitat or recorded occurrences within the areas proposed for treatment (**Map 2**). The closest known breeding population of CRLF is at Spivey Pond, approximately 20 miles to the northwest of the Action Area. CRLF individuals are therefore unlikely to be present in areas where treatments are proposed and are not expected to be affected by the Proposed Action. However, given the lack of documented surveys in the Action Area, there is still some potential for dispersing individuals to be present in suitable habitats within the FPP treatment areas. As summarized in **Table 6** (refer to Indirect Effects, below), the Proposed Action will require mechanical fuels reduction, hand thinning, and prescribed burns within approximately 1,278 acres of non-breeding/upland habitat (approximately 9 percent of the approximately 13,191 acres of non-breeding/upland habitat in the Action Area); and mechanical fuels reduction, hand thinning, and prescribed burns within approximately 1,708 acres of dispersal habitat (approximately 8 percent of the approximately 19,221 acres of dispersal habitat in the Action Area). Pruning and hazard tree removal would also be implemented within these treatment areas, as necessary.

Table 6 provides a quantification of proposed treatments that would be implemented within suitable habitat for CRLF, by treatment type.

Table 6. Proposed Treatments within California Red-Legged Frog Suitable Habitat.

Habitat Type	River Miles/Acres of Habitat within Action Area	River Miles/Acres of Habitat within Proposed Treatment Areas				
		Mechanical Fuels Reduction	Hand Thinning	Prescribed burn	Aspen Restoration	Total
Aquatic Breeding Habitat ^a – Riverine (Miles)	1.9 mile	0	0	0	0	0 miles
Aquatic Breeding Habitat – Pond (Acres)	17.5 acres	0	0	0	0	0 acres
Aquatic Non-Breeding and Upland Habitat ^b (Acres)	13,190.7 acres	394.8 ^d	679.2	260.0 ^d	0	1,277.8 acres
Dispersal Habitat ^c (Acres)	19,221.0 acres	541.2 ^e	787.7	441.2 ^e	0	1,708.1 acres
Total Miles/Acres of Habitat by Treatment Type		0 miles/ 936.0 acres	0 miles/ 1,466.9 acres	0 miles/ 701.2 acres	0 miles/ 0 acres	

^aIncludes perennial and intermittent streams with gradients of 2 percent or less.

^bNon-breeding aquatic and upland habitat includes aquatic features within 1 mile of aquatic breeding habitat, with a 300-foot terrestrial buffer.

^cDispersal habitat includes all areas within 1 mile around aquatic breeding habitat.

^dIncludes 56.2 acres in which both mechanical fuels reduction and prescribed burns will occur.

^eIncludes 62.0 acres in which both mechanical fuels reduction and prescribed burns will occur.

In the unlikely event that CRLF disperse into the proposed FPP treatment areas, individuals could potentially be directly affected by a) ground-based equipment and tree felling; b) prescribed burning; c) entrapment in plastic monofilament or other tightly woven netting if used for erosion control purposes, and d) use of water drafting equipment. Each of these potential effects is described briefly below.

Ground-Based Equipment and Tree Felling: Use of ground-based equipment (e.g., masticators) during mechanical fuels reduction activities and felling of trees during hand-thinning or hazard tree removal has the potential to affect dispersing CRLF by crushing or burying individuals, or collapsing or otherwise destroying burrows or other refugia. Design criteria **DC 3** requires that, if federally listed species (including CRLF) are detected during implementation of the FPP, operations would cease in that area and the appropriate ENF biologist would be informed immediately to determine appropriate actions. If necessary, consultation with USFWS would be initiated prior to re-starting fuels reduction activities. DC 5 would minimize the potential for effects to any individuals moving through uplands during wet soil conditions by imposing an LOP restricting all work activities at or below the 4,500-foot elevation starting with the first fall frontal system depositing a minimum of 0.25-inch of rain between October 15th through April 15th. Activities would resume after a 72-hour drying period. The LOP may be lifted in locations where sufficient survey data demonstrate the absence of CRLF or suitable breeding habitat. Note that this LOP would not apply are within the Mokelumne River watershed above Panther Creek, due to unsuitability of habitat in this area (large, deep river and steep tributaries). **DC 7** would help avoid impacts to CRLF in or adjacent to aquatic non-breeding habitats by excluding mechanical fuels treatments within 50 feet on either side of perennial and intermittent streams and Special Aquatic Features. Finally, **DC 50**—which states that, to the extent possible, downed logs greater than 16 inches in diameter (small end diameter) will be retained during mechanical fuels treatments—would minimize the potential for effects to CRLF using logs as refugia within uplands.

Considering that CRLF individuals are unlikely to be present within treatment areas; that no treatments are proposed in or directly along potential breeding habitats; and with implementation of applicable Design Criteria (**DC 3, 5, 7, and 50**), use of ground-based equipment or tree felling associated with the Proposed Action is unlikely to affect CRLF individuals.

Prescribed Burning: Prescribed burning is proposed within an approximately 441-acre footprint of potential CRLF dispersal habitat on the border of the Tiger Creek-North Fork Mokelumne River and Bear River HUC 12 watersheds. Prescribed burns will not be implemented in the vicinity of any breeding or non-breeding aquatic habitat for CRLF. In the unlikely scenario that a CRLF individual is present in upland and dispersal habitats during ignition of prescribed burns within dispersal habitat, any individuals underground in burrows would avoid injury from fire; but individuals in the duff would be vulnerable to fire.

The potential for direct impacts to CRLF from prescribed burning would be reduced by implementation of **DC 12**, which requires that, at a minimum, an annual review of burning treatment plans will occur with a Forest Aquatic Biologist, Terrestrial Biologist, and Botanist to ensure conditions for TES species have not changed and to ensure consistency with USFWS consultation determinations; and **DC 13**, which prohibits ignition of prescribed burns within 50 feet of any perennial or intermittent stream or Special Aquatic Features.

However, considering the small footprint in which these treatments would be implemented and the low likelihood for CRLF to be present, the potential for direct effects to CRLF from implementation of prescribed burns is minimal.

Erosion Control Materials: Wildlife, including birds, small mammals, snakes, and amphibians, may potentially become entangled or entrapped in plastic or synthetic mesh erosion control or animal exclusion materials used for construction and forestry projects. In order to avoid mortalities resulting from entrapment or entanglement, **DC 4** requires that temporary erosion control products (blankets, mats, rolls, etc.) that contain exposed netting

would use wildlife friendly loose weave netting or similar materials when netting is left exposed. Implementation of DC 4 would minimize the potential for direct impacts to amphibians, including CRLF, from erosion control materials.

Water Drafting: Water drafting has the potential to affect amphibians, if egg masses and/or tadpoles come into contact with equipment used to suction water from the aquatic habitat. Considering that there is very little suitable aquatic breeding and aquatic non-breeding habitat within the Action Area; and that minimal work is proposed in the vicinity of these habitats, CRLF are unlikely to be affected by water drafting. Furthermore, **DC 49** limits water drafting, to the extent possible, to reservoirs. For the purposes of the FPP, water drafting would likely occur only at Bear Reservoir, which is above the elevation range of and does not provide suitable habitat for CRLF. Use of non-reservoir locations would require consultation with Forest Service biologists to determine whether the location represents suitable habitat for sensitive aquatic species such as CRLF. If required, surveys would be conducted prior to use and, if CRLF were observed, the site would not be used unless ENF-approved minimization measures are implemented. The potential for effects to CRLF is, therefore, negligible.

INDIRECT EFFECTS

There is no suitable aquatic breeding habitat in areas where FPP treatment are proposed (**Table 6**); so, no breeding habitat would be affected during implementation of the treatments. The Proposed Action will, however, result in implementation of approximately 936 acres of mechanical fuels reduction, approximately 1,467 acres of hand thinning, and approximately 701 acres of prescribed burns within aquatic non-breeding and upland habitat and dispersal habitat. Proposed fuels reduction treatments could potentially expose bare soil and destabilize hill slopes. Exposed, unprotected soil has the potential to move into aquatic systems, particularly with the season's first significant rain or during overland flows following snowmelt. Increased sedimentation within aquatic habitats can fill interstitial spaces in stream and lakebed materials with fine particulates, change flow characteristics, reduce dissolved oxygen, and restrict waste removal (Brown et al. 2009, Brown et al. 2014a Chapman 1988). In addition, use of motorized equipment in the vicinity of aquatic habitats can affect water quality if fuels or other toxicants are spilled or leak into the environment.

Sedimentation-related effects are expected to be minimal because the mechanical and hand-thinning treatments are designed to retain the root structures of mature trees and large snags, reducing the potential for destabilization of soils. In addition, mastication and hand thinning followed by lopping or chipping generally increases ground cover in the treated areas. Hazard tree removals may require removal of larger trees; however, this activity is limited to trees that pose a safety risk during Proposed Action activities, and such removals would be relatively minimal. Similarly, prescribed burns are designed to be low intensity, resulting only in the reduction of surface and ladder fuels, and will not generally result in the removal of mature trees or their root systems. Several Design Criteria would further minimize the potential for water quality effects resulting from FPP treatments. General measures **DC 1** and **DC 2** state that the Proposed Action will incorporate the National Best Management Practices (BMPs) for Water Quality Management on National Forest System Lands (USDA 2012), including all BMPs for retaining water quality and soils and avoidance of erosion/sedimentation. All actions within Riparian Conservation Areas (RCAs) would be consist with applicable S&Gs/RCOs. Prohibition of the storage of fuel or other toxic materials and maintenance of equipment within RCAs described in **DC 6** would help maintain water quality within aquatic habitats in and downstream of the FPP treatment areas. Ignition of prescribed fires would not occur within 50 feet of any perennial or intermittent streams that represent suitable habitat for FYLF (however, fire would be allowed to back into the exclusion zone) (**DC 13**).

Mechanical fuels reductions, hand thinning, and prescribed burns can potentially affect the suitability of upland foraging and dispersal habitat through loss of cover (riparian vegetation, burrows, logs, tree roots, and stumps)

which can impact the CRLF's ability to thermo-regulate, forage, or hide from predators. Effects to these habitats would be considered minimal for several reasons.

First, the extent of treatments within suitable habitat would be extremely limited—mechanical treatments and hand thinning would be implemented within only approximately 6 acres of upland habitat, which is less than 2 percent of the upland habitat within the Action Area; and mechanical, hand thinning, and prescribed burn treatments would be limited to approximately 1,708 acres of dispersal habitat, which is less than 1 percent of the total dispersal habitat in the Action Area. The additional Design Criteria listed below would mitigate the potential effects to upland/dispersal habitats by limiting the location and extent of vegetation removal and/or imposing vegetation retention requirements:

- **DC 7** defines exclusion zones where mechanical operations are prohibited for the protection of aquatic resources. Specifically, ground-based mechanical treatments would be excluded within 50 feet from the edge of a perennial or intermittent stream channels and special aquatic features (although equipment may “reach in” to masticate); or within 15 feet of ephemeral streams and draws.
- **DC 9** prohibits creation of new landings within RCAs, reducing the potential for downstream erosion and sedimentation.
- **DC 10** requires that skid trails or landings within RCAs would be repaired to restore soil infiltration capacity and soil cover to reduce erosion and may include practices such as, reshaping to restore natural surface flow patterns, installation of drainage control features, decompaction, placement of organic material, and seeding on disturbed soil surfaces. Slash would be added to any skid trails while operations are occurring to facilitate incorporation into the substrate and help stabilize soil.
- **DC 11** states that ground cover would be maintained at least at 70 percent in the zone of 50 to 100 feet from the edge of all stream channels. If the existing ground cover is less than 70 percent, then the existing ground cover will be maintained. Tops, limbs, and small trees within the mechanical exclusion zone can be lopped and scattered to meet ground cover criteria.
- **DC 50** requires that downed logs greater than 16 inches in diameter (small end diameter) be retained during mechanical fuels treatments (i.e., mastication) to the extent practicable.

Considering that the proposed FPP treatment areas contain no aquatic breeding habitat and minimal aquatic non-breeding habitat; that the Proposed Action, as designed, would retain mature vegetation, and with implementation of applicable Design Criteria, indirect effects to water quality within aquatic habitats or effects to the quantity or quality of cover within surrounding upland and dispersal habitats is expected to be minimal.

CUMULATIVE EFFECTS

Under the ESA, cumulative effects are defined as “those effects of future State or private activities, not involving Federal activities, that are reasonably certain to occur within the action area of the Federal action subject to consultation.” The spatial boundary for analyzing the potential cumulative effects to CRLF from the implementation of Phase I of the FPP is the same as the Action Area, encompassing approximately 77,464 acres. The 1-mile distance encompasses the species’ dispersal distance. Populations or individual CRLF inhabiting the Action Area are expected to spend the majority of their lives within this area and, therefore, actions occurring outside the Action Area would be expected to have no measurable cumulative impact on CRLF or associated suitable habitat.

The Action Area is comprised primarily of rural lands that support forestry, hydroelectric power and water supply facilities, and recreation. Much of this land is federally owned and managed by the Forest Service; in addition, lands that are part of the Pacific Gas & Electric Company’s (PG&E’s) Mokelumne River Project are operated and maintained under a license from the Federal Energy Regulatory Commission (FERC). Future State and private

activities in the Action Area are limited primarily to management of and timber harvest on private forestlands. The State of California reviews timber harvest operations on private lands consistent with the California Forest Practice Act and the California Environmental Quality Act (CEQA) via the Timber Harvest Plan (THP) review process. The THP review process is conducted by the Department of Forestry and Fire Protection (CAL FIRE). As the lead agency, CAL FIRE is charged with reviewing each THP to determine whether the project is feasible and complies with existing laws and regulations. CAL FIRE also must determine whether the plan will result in significant impacts on the environment and on special-status species, such as CRLF. To make these determinations, CAL FIRE consults with other agencies including (but not limited to) California Department of Fish and Game, the California Regional Water Quality Control Board, the California Geologic Survey, as well as to each county planning commission. A review of CAL FIRE’s website indicates that 10 THPs covering approximately 650 acres have been approved in the past 5 years for projects on lands within the Action Area. Eight of the plans are for timber projects on lands owned by Sierra Pacific Industries, the remaining two are individually owned.

Considering the small footprint of current and proposed private forest management and timber harvest projects, and with implementation of environmental measures developed during CAL FIRE’s THP process, including measures to protect special-status amphibians such as CRLF, the effects of management and timber harvest on private lands in the Action Area on CRLF would be minimal and would not contribute to cumulative effects as defined by USFWS.

FOOTHILL YELLOW-LEGGED FROG

DIRECT EFFECTS

There are known breeding populations of FYLF within the proposed FPP treatment areas, primarily within the Tiger Creek–North Fork Mokelumne watershed along the mainstem North Fork Mokelumne River and its tributaries below approximately 3,100 feet msl (**Map 3**). Populations may potentially extend up Bear Creek up to approximately 3,300 feet msl. As summarized in **Table 7**, the ENF proposes to implement treatments within an approximately 355-acre footprint within the Tiger Creek–North Fork Mokelumne watershed. The majority of the treatments would be hand thinning (approximately 221 acres); approximately 94 acres of mechanical fuels reduction and 52 acres of prescribed burning would also be implemented (including approximately 12 acres where mechanical fuels reduction would be followed by a prescribed burn). Pruning and hazard tree removal would also be implemented within these treatment areas, as necessary. FYLF individuals, particularly within breeding populations along the North Fork Mokelumne River and its tributaries, could therefore potentially be directly impacted by implementation of the Proposed Action.

Table 7. Proposed Treatments within Foothill Yellow-Legged Frog Suitable Habitat.

HUC 12 Number	HUC 12 Name	Mechanical Fuels Reduction (Acres)	Hand Thinning (Acres)	Prescribed burns (Acres)	Aspen Restoration (Acres)	Total Habitat Within Proposed Treatment Areas (Acres)
180400120105	Cole Creek	2.7 ¹	10.4	10.4 ¹	0	22.4
180400120106	Salt Springs Reservoir-North Fork Mokelumne River	20.0	27.1	0	0	47.2
180400120303	Lower Middle Fork Mokelumne River	0	0	0	0	0
180400120401	Bear River	0.1	21.2	0	0	21.3
180400120402	Blue Creek	0	0	0	0	0
180400120403	Panther Creek	51.1	15.8	0	0	66.80

HUC 12 Number	HUC 12 Name	Mechanical Fuels Reduction (Acres)	Hand Thinning (Acres)	Prescribed burns (Acres)	Aspen Restoration (Acres)	Total Habitat Within Proposed Treatment Areas (Acres)
180400120404	Tiger Creek-North Fork Mokelumne River	93.6 ²	221.0	52.1 ²	0	355.5
180400120405	Mill Creek-North Fork Mokelumne River	0	0	0	0	0
180400120501	Upper Sutter Creek	0	0	0	0	0
180400130302	Slate Creek-South Fork Cosumnes River	0	0	0	0	0
180400130401	Cat Creek-Middle Fork Cosumnes River	11.5	0	0	0	11.5
180400130403	Sopiago Creek-Middle Fork Cosumnes River	0	0	0	0	0
Total Suitable Habitat to be Treated		179.0	295.4	62.53	0	524.6
Total Suitable Habitat in the Action Area						3,249.8

¹Includes approximately 1 acre where mechanical fuels reduction will be followed by prescribed burns.

²Includes approximately 11.2 acres where mechanical fuels reduction will be followed by prescribed burns.

This section assesses the potential for direct impacts to FYLF related to: a) contact with ground-based equipment, as well as impacts from felled trees, b) burning, desiccation, or other injury from prescribed fire, c) entrapment in plastic monofilament or other tightly woven netting if used for erosion control purposes, and d) tadpoles and/or egg masses coming into contact with water drafting equipment. Each of these potential effects is discussed below.

Ground-Based Equipment and Tree Felling: Unlike most other ranid frogs in California, FYLF are highly associated with water (Pope and Matthews 2001, Pope and Larson 2010) and are rarely encountered far from permanent water (Zeiner et al. 1988, Hayes et al. 2016), although overwintering FYLF have been observed using root wads, woody debris, undercut banks, and boulders adjacent to pools (Van Wagner 1996 in Hayes et al. 2016) and juveniles in at least one location were observed occupying seeps above the winter high flow waterline (Rombough 2006 in Hayes et al. 2016). Due to the highly aquatic nature of this species, FYLF are not expected to be present in upland areas where mechanical fuels reduction and hand thinning treatments would be implemented. Therefore, there would be a low risk for crushing or burying of individuals during use of ground-based mastication equipment or tree felling in upland areas.

Any risk of direct impacts to FYLF from implementation of mechanical fuels reduction and hand thinning would be further minimized through implementation of Design Criteria. **DC 7** would avoid impacts to FYLF in the FPP treatment areas (including, but not limited to, the North Fork Mokelumne River and its tributaries) by excluding mechanical fuels treatments within 50 feet on either side of perennial and intermittent streams and Special Aquatic Features. Considering that FYLF are most likely to be present in or immediately adjacent to the water, this measure would mostly eliminate the potential for direct impacts to FYLF individuals from use of ground-based equipment. Hand thinning would be implemented within the mechanical exclusion zones, as well as along steep slopes where mechanical treatments aren't practicable. While hand thinning is considered a relatively low-impact activity, FYLF individuals, if present along the banks of the streams within treatment areas, could potentially be crushed by hand-felling of small trees. **DC 8** would reduce the possibility of this effect by requiring that trees be felled away from streams, avoiding direct impacts within the stream or adjacent banks.

Finally, in the unlikely event that FYLF are observed in uplands where fuel reduction treatments are being implemented, **DC 3** states that operations would cease in that area and the appropriate ENF biologist would be informed immediately to determine appropriate actions to take. If necessary, consultation with USFWS would be initiated prior to re-starting fuels reduction activities.

Considering that FYLF are unlikely to be present in upland areas where mechanical fuels reduction and hand thinning would be implemented, and with implementation of **DC 3, 7, and 8**, the risk of direct impacts to FYLF individuals from these activities is negligible.

Prescribed Burning: The Proposed Action includes the use of prescribed burns to reduce forest fuels and to prepare the landscape for wildfire. Research on the potential effects of prescribed burns on FYLF (and on amphibians in general) is limited. The effects of fire, in general, are related to fire frequency, severity, and timing, which can vary across the landscape in relation to heterogeneity in vegetation and fuel, topography, local weather, or season (Collins and Stephens 2010). Prescribed burns are intended to be low to moderate severity and to avoid the detrimental effect of high severity wildfires. While amphibian responses to fire are spatially and temporally variable and not completely understood (Pilliod et al. 2003), the immediate effects of wildfire (mortality of individuals, failed reproduction) are expected to pose a small threat to most healthy populations, unless stressors such as drought or persistent habitat change have left populations isolated or with an extremely limited distribution (Hossack and Pilliod 2011). Greenberg and Waldrop (2008) studied the short-term response of reptiles and amphibians to prescribed burning and mechanical fuel reduction in a southern Appalachian upland hardwood forest. They found that the relative abundance of amphibians was not changed by the fuel reduction treatments. An Australian study of the effects of low-intensity fire on six burnt and six unburnt pond habitats found no significant associations between the number of frogs and fire activity (Lemckert et al. 2004).

Prescribed burns would be implemented within a relatively small (approximately 52-acre) footprint within the Tiger Creek–North Fork Mokelumne River watershed. This footprint is upstream of the extent of the mainstem North Fork Mokelumne River that is known to be occupied FYLF; therefore, no prescribed fires would be ignited directly within areas that support breeding populations. Implementation of Design Criteria would minimize the potential for potential direct effects from prescribed burns. **DC 12** requires that, at a minimum, an annual review of burning treatment plans will occur with a Forest Aquatic Biologist, Terrestrial Biologist, and Botanist to ensure conditions for TES species have not changed and to ensure consistency with USFWS consultation determinations. **DC 13** states that ignition of prescribed fires would not occur within 50 feet of any perennial or intermittent stream or Special Aquatic Feature, including all streams that have been identified as suitable habitat for FYLF (**Map 3**). The ignition exclusion zone would be measured from the edge of the channel or high-water mark of the SAF or the adjacent riparian vegetation if present. However, fire would be allowed to back into the exclusion zone; and ignition may occur within the exclusion zones if it is deemed necessary to maintain control of a prescribed burn or to control burn severity.

While **DC 12** and **13** would help minimize the risk to FYLF from prescribed burning, prescribed burns would be allowed to back into riparian areas, potentially affecting individual FYLF on the banks along occupied streams. Therefore, even with implementation of Design Criteria, there remains some risk of harm to or loss of FYLF individuals from implementation of prescribed burns.

Erosion Control Materials: Wildlife, including birds, small mammals, snakes, and amphibians, may potentially become entangled or entrapped in plastic or synthetic mesh erosion control or animal exclusion materials used for construction and forestry projects. In order to avoid mortalities resulting from entrapment or entanglement, **DC 4** requires that temporary erosion control products (blankets, mats, rolls, etc.) that contain exposed netting would use wildlife friendly loose weave netting or similar materials when netting is left exposed. Implementation of DC 4 would minimize the potential for direct impacts to amphibians, including FYLF, from erosion control materials.

Water Drafting: Water drafting could potentially affect FYLF, if implemented within occupied streams in the treatment areas. The primary risk with water drafting is for egg masses and/or tadpoles coming into contact with equipment used to suction water from the aquatic habitat. **DC 49** limits water drafting, to the extent possible, to reservoirs. For the purposes of the FPP, water drafting would likely occur only at Bear Reservoir, which is above

the elevation range of and does not provide suitable habitat for FYLF. Use of non-reservoir locations would require consultation with Forest Service biologists to determine whether the location represents suitable habitat for sensitive aquatic species such as FYLF. If required, surveys would be conducted prior to use and, if FYLF were observed, the site would not be used unless ENF-approved minimization measures are implemented. With implementation, water drafting will have a negligible effect on FYLF.

INDIRECT EFFECTS

Table 7 provides a quantification of proposed treatments that would be implemented within suitable habitat for FYLF, by watershed and treatment type. Overall, the Proposed Action would be implemented within approximately 525 acres, or 16 percent of the suitable habitat for FYLF in the Action Area. This includes approximately 295 acres of hand thinning, 179 acres of mechanical fuels reduction, and 63 acres of prescribed burns (including approximately 12 acres where mechanical fuels reduction would be followed by prescribed burns). Pruning and hazard tree removal may also be implemented, as necessary.

The Proposed Action could potentially result in indirect effects to suitable habitat including a) water quality effects (e.g., sedimentation and contamination from motor fuels or other hazardous substances), b) changes in hydrology within suitable habitat, and c) reduction in canopy cover resulting in increased ambient or water temperatures. These potential effects are described below.

Water Quality/Sedimentation: The proposed fuels reduction treatments (i.e., mechanical treatments, hand thinning, and prescribed burns) could potentially expose bare soil and destabilize hill slopes along approximately 525 acres of suitable habitat for FYLF, including approximately 356 acres of habitat within the Tiger Creek–North Fork Mokelumne River watershed which supports a breeding populations of FYLF. Exposed, unprotected soil has the potential to move into aquatic systems, particularly with the season’s first significant rain or during overland flows following snowmelt. Increased sedimentation within aquatic habitats could in turn affect FYLF. In a study examining the distribution of FYLF relative to sediment movement, Yarnell (2000 in Hayes 2016) found that the highest overall FYLF abundances occurred at sites with intermediate sediment supply rates, where enough transport occurred so that large boulders and cobbles were not buried in finer sediments, and enough deposition occurred to maintain distinct bedforms (pools, riffles, and bars) (Yarnell 2000 in Hayes 2016). Therefore, moderate amounts of sediment may not pose a risk for foothill yellow-legged frog. However, high levels of sediment can fill deep pools used by FYLF, alter primary productivity, fill interstitial spaces in stream and lakebed materials with fine particulates, change flow characteristics, reduce dissolved oxygen, and restrict waste removal (Chapman 1988). Embedded substrate potentially reduces the amount and quality of refugia. Fine sediment can also potentially smother FYLF egg masses, and increased water turbidity could restrict respiration for tadpoles in off-channel habitat.

Sediment-related effects are expected to be minimal for several reasons. The Proposed Action, as designed, would generally result in the removal of brush and live trees up to 10 inches dbh and snags up to 16 inches dbh. With the potential exception of hazard trees that pose a safety risk during implementation of the treatments, larger trees would remain in place, and root systems would remain largely intact and would continue to stabilize soils. While use of ground-based mastication equipment may disturb soils, such disturbance would be limited to uplands within approximately 179 acres of suitable habitat and would not generally occur slopes of 40 percent or greater. On some slopes greater than 40 percent, a tethered mastication system may potentially be utilized, where feasible and in accordance with soils standards following site specific review and recommendation by a Forest Service soil specialist. The effects of tethered mastication are not well documented, but are considered similar to typical mastication. One study on mechanized mastication efforts in the western Lake Tahoe Basin found “relatively low or non-existent environmental impacts” related to both compaction and erosion (with

increased erosion occurring only in area where bare ground was present), at least in the short term (Hatchett et al., 2006).

The potential for sediment-related water quality effects would be minimized through implementation of Design Criteria. All proposed treatment activities would be implemented consistent with BMPs for erosion control and prevention of sediment transport in accordance with the *National Best Management Practices for Water Quality Management on National Forest System Lands* (USDA, Forest Service 2012) (**DC 1**) and consistent with RCOs described in the SNFPA (USDA, Forest Service 2004a) (**DC 2**).

DC 7 defines exclusion zones where mechanical operations are prohibited for the protection of aquatic resources. Specifically, ground-based mechanical treatments would be excluded within 50 feet from the edge of a perennial or intermittent stream channels and special aquatic features, including those that represent suitable habitat for FYLF (although equipment may “reach in” to masticate. In addition, ground cover will be maintained at least at 70 percent in the zone of 50 to 100 feet from the edge of the stream channel (**DC 11**). If the existing ground cover is less than 70 percent, then the existing ground cover will be maintained. Tops, limbs, and small trees within the mechanical exclusion zone can be lopped and scattered to meet ground cover criteria. **DC 9** states that no new landings would be created in the RCA. Reuse of existing landings within the RCA would be allowed where creation of a new landing is likely to result in more resource damage than use of the existing landing within the RCA. Any skid trails or landings within RCAs would be repaired to restore soil infiltration capacity and soil cover to reduce erosion and may include practices such as, reshaping to restore natural surface flow patterns, installation of drainage control features, decompaction, placement of organic material, and seeding on disturbed soil surfaces. Slash would be added to any skid trails while operations are occurring to facilitate incorporation into the substrate and help stabilize soil (**DC 10**).

Several Design Criteria would minimize the potential for soil destabilization resulting from prescribed burns and/or from construction of fire containment lines. As described in **DC 12**, Forest Service will conduct an annual review of burning treatment plans to assess whether conditions related to sensitive species (including FYLF) have changed. Ignition of prescribed fires would not occur within 50 feet of any perennial or intermittent streams that represent suitable habitat for FYLF (however, fire would be allowed to back into the exclusion zone) (**DC 13**). Prescribed fire containment lines would be rehabilitated to prevent transport of water and sediment to nearby aquatic systems prior to the onset of winter weather or large summer storm (**DC 14**).

Finally, in order to avoid contamination and resultant degradation of water quality, **DC 6** prohibits the storage of fuel or other toxic materials and maintenance of equipment within RCAs.

Considering proposed treatments would be limited to 525 acres, or 16 percent of the suitable habitat in the Action Area; that the treatments, as designed, would retain mature vegetation; and with implementation of water quality BMPs and Design Criteria including DC 2, 6, 7, 9, 10, 11, 12, 13, 14, and 15, indirect effects to aquatic breeding or non-breeding habitat as a result of sedimentation are expected to be minimal.

Hydrology: Aquatic habitat for FYLF would be negatively impacted if the Proposed Action resulted in a reduction in the amount or duration of streamflow. Changes in vegetation structure in a watershed have the potential to change the portion of precipitation that ends up as runoff to creeks and streams. In general, reducing vegetative cover increases water yield, and increasing vegetative cover decreases water yield (Hibbert 1967). Because the Proposed Action would thin vegetation, the FPP would more likely increase rather than decrease runoff within stream habitats. The magnitude and duration of such increases is unknown and is dependent on a number of factors. Troendle et al. (2007) note that, “In the case of fuels management activity, hydrologic impact is relatively small because only a portion of the forest canopy is usually removed. (And) at least 20 percent of the basal area in a forested watershed above the point of streamflow measurement must be removed to reliably generate a measurable change in yield.”

Considering that hand thinning and mechanical fuels treatments are limited to removal of only small trees and would generally retain mature trees greater than 10 inches dbh and snags greater than 16 inches dbh; and that prescribed burns are limited in scope and would be designed, to the extent possible, to reduce understory fuels while retaining large trees, reductions in basal area would be minimal. In addition, ground cover will be maintained at least at 70 percent in the zone of 50 to 100 feet from the edge of the stream channel (**DC 11**). Therefore, impacts to suitable habitat resulting from changes in runoff to streams and creeks are expected to be minimal.

Canopy Cover: FYLF are known to favor channels with at least some shading (greater than 20 percent) cast by riparian vegetation (Hayes and Jennings 1988 in Hayes 2016). Conversely, the species is rarely found in habitats when canopy closure is too great (more than 90 percent) (Fitch 1936, Hayes and Jennings 1988, Moyle 1973, Van Wagner 1996). Changes in density of canopy along aquatic habitat for FYLF would be minimal. Overall, the proposed treatments, including mechanical fuels reduction, hand thinning, and prescribed fire are focused on removal of understory trees and ladder fuels and would generally retain the canopy provided by mature trees greater than 10 inches dbh and snags greater than 16 inches dbh. Pruning would be limited to severing of limbs up to a height of 8 to 12 feet on the bole, while retaining a minimum of 50 percent but not to exceed 50 percent of total tree height. Larger hazard trees may be removed, but only where they pose an immediate risk to Proposed Action activities.

These changes are not expected to result in measurable changes in canopy, and would not result in increased water temperature along streams within the Treatment Units.

CUMULATIVE EFFECTS

Under the ESA, cumulative effects are defined as “those effects of future State or private activities, not involving Federal activities, that are reasonably certain to occur within the action area of the Federal action subject to consultation.” The spatial boundary for analyzing the potential cumulative effects to FYLF from the implementation of Phase I of the FPP is the same as the Action Area, encompassing approximately 77,464 acres. The 1-mile distance encompasses the species’ dispersal distance. Populations or individual FYLF inhabiting the Action Area are expected to spend the majority of their lives within this area and, therefore, actions occurring outside the Action Area would be expected to have no measurable cumulative impact on FYLF or associated suitable habitat.

As described for CRLF, the Action Area is comprised primarily of rural lands that support forestry, hydroelectric power and water supply facilities, and recreation. Much of this land is federally owned and managed by the Forest Service; in addition, lands that are part of the PG&E’s Mokelumne River Project are operated and maintained under a license from the FERC. Future State and private activities in the Action Area are limited primarily to management of and timber harvest on private forestlands. The State of California reviews timber harvest operations on private lands consistent with the THP review process, which includes a review by CDFW of potential project impacts on listed species. A review of CAL FIRE’s website indicates that 10 THPs for approximately 650 acres have been approved in the past 5 years for projects on lands within the Action Area. Eight of the plans are for timber projects on lands owned by Sierra Pacific Industries, the remaining two are individually owned.

Considering the small footprint of current and proposed private forest management and timber harvest projects, and with implementation of environmental measures developed during CAL FIRE’s THP process, including measures to protect special-status amphibians such as FYLF, the effects of management and timber harvest on private lands in the Action Area on FYLF would be minimal and would not contribute to cumulative effects as defined by USFWS.

SIERRA NEVADA YELLOW-LEGGED FROG

DIRECT EFFECTS

There are known breeding populations of SNYLF within the proposed FPP treatment area in the Cole Creek watershed, along Cole Creek and its tributaries; and in the Bear River watershed, along the Little Bear River and its tributaries (**Map 4**). Most notably, there is a breeding population of SNYLF in Dufrene Pond, located along a tributary to the Lower Bear River Reservoir. As summarized in **Table 8**, the ENF proposes to implement treatments within approximately 1,447 acres of suitable habitat for SNYLF, including approximately 311 acres within the Cole Creek watershed and approximately 723 acres within the Bear River watershed. Therefore, the Proposed Action could potentially affect SNYLF individuals, particularly within breeding populations along the Little Bear and Cole Creek rivers and their tributaries.

Table 8. Proposed Treatments within Sierra Nevada Yellow-Legged Frog Suitable Habitat.

HUC 12 Number	HUC 12 Name	Mechanical Fuels Reduction (Acres)	Hand Thinning (Acres)	Prescribed Fire (Acres)	Aspen Restoration (Acres)	Total Habitat Within Proposed Treatment Areas (Acres)
180201290102	Silver Lake-Silver Fork American River	0	0	0	0	0
180201290103	North Tragedy Creek	4.0 ^a	0	1.7 ^a	0	4.0
180400120105	Cole Creek	303.0	2.1	6.0	0	311.1
180400120106	Salt Springs Reservoir-North Fork Mokelumne River	8.8	9.4	0	0	18.3
180400120401	Bear River	566.3 ^b	112.8	271.4 ^{b,c}	38.4 ^c	723.3
180400120403	Panther Creek	88.1	22.4	0	0	110.5
180400120404	Tiger Creek-North Fork Mokelumne River	0	0	27.7	0	27.7
180400130202	Upper North Fork Cosumnes River	0	0	0	0	0
180400130401	Cat Creek-Middle Fork Cosumnes River	240.9	11.1	0	0	252.0
Total Suitable Habitat to be Treated		1,211.1	157.9	306.8	38.4	1,446.9
Total Suitable Habitat in the Action Area						5,080.9

^aIncludes approximately 1.7 acres where mechanical fuels reduction will be followed by prescribed fire.

^bIncludes approximately 259.3 acres where mechanical fuels reduction will be followed by prescribed fire.

^cIncludes approximately 6.2 acres where aspen restoration will be followed by prescribed fire.

This section assesses the potential for direct impacts to SNYLF related to a) ground-based equipment and tree felling; b) prescribed burning; c) entrapment in plastic monofilament or other tightly woven netting if used for erosion control purposes, and d) use of water drafting equipment.

Ground-Based Equipment and Tree Felling: Similar to FYLF, SNYLF are a highly aquatic species that is rarely far from water (usually less than 1 meter) and is almost always found on a wet substrate while basking (Bradford 1984). Movement is typically in or along stream corridors (Matthews and Pope 1999; Wengert 2008); although overland movements between aquatic breeding habitats may occur in the early spring when there is still snow on the ground and the soil is wet (e.g., between ponds within high elevation meadow complexes).

The Proposed Action would include a total of 1,211 acres of mechanical fuels reduction within SNYLF habitat (including approximately 303 acres within the Cole Creek watershed and 566 acres within the Bear River watershed); approximately 158 acres of hand thinning; and removal of hazard trees as required during implementation of the Proposed Action. Due to the highly aquatic nature of this species, SNYLF are not generally

expected to be present in upland areas when mechanical fuels reduction, hand thinning, and hazard tree removal would be implemented. However, there would still be some potential for direct effects to SNYLF (e.g., crushing or burying), particularly during the early season when soils are wet and SNYLF are potentially moving between breeding habitats.

In the case that SNYLF are present in upland areas during implementation of forest treatments, Design Criteria for aquatic resources would further minimize the potential for impacts. Applicable Design Criteria include **DC 7**, which imposes riparian exclusions for mechanical treatments. This includes a specific prohibition for use of ground-based equipment within 50 feet of the exclusion fence around Dufrene Pond and along the north side of Road 08N18 in front of Dufrene Pond (from where the outlet stream meets the roadside ditch to approximately Latitude 38.576155 Longitude -120.252513). Hand thinning, pruning, and hazard tree falling would be permitted at these locations. Additional Design Criteria include a requirement to fell trees away from streams and adjacent banks (**DC 8**); and requirements for consultation with Forest Service biologists if individuals are identified in treatment areas (**DC 3**). Refer to the previous section on effects to FYLF resulting from ground-based equipment and tree felling for a more complete description of these measures. Finally, as required by standard water quality BMPs, mechanical equipment would be operated only in dry conditions when soil moisture is less than 20 percent by weight, and work activities would cease during rain events or other adverse operating conditions (**DC 1**). This would further avoid effects to SNYLF, which are more likely to be moving through dispersal habitats during wet soil conditions.

Considering that SNYLF are unlikely to be present in upland areas where mechanical fuels reduction and tree-felling would be implemented, and with implementation of **DC 1, 3, 7, and 8**, the risk of direct impacts to SNYLF individuals from these activities is negligible.

Prescribed Burning: The Proposed Action includes prescribed fire within approximately 307 acres of suitable habitat for SNYLF, mostly in the Bear River watershed (approximately 271 acres), including the area around Little Bear River which is known to be occupied by SNYLF (**Table 8**). SNYLF individuals could potentially be directly impacted by prescribed burning, particularly if implemented along the banks of the river where frogs may potentially be present. As described for FYLF, while amphibian responses to fire are not completely understood, SNYLF are unlikely to be directly harmed by prescribed fire treatments for several reasons. Prescribed fires are designed to produce low-intensity fires that would remove primarily small trees and ladder fuels. Design Criteria that would be implemented to minimize the potential for direct impacts to SNYLF from prescribed burns include **DC 12**, which requires an annual review of burning treatment plans will occur with a Forest Aquatic Biologist; and **DC 13** which prohibits the ignition of prescribed fires and burn piles within 50 feet of any perennial or intermittent stream or Special Aquatic Feature, including all streams that have been identified as suitable habitat for SNYLF, as well as Dufrene Pond, which is known to be occupied by the species (**Map 5**). While **DC 12** and **13** would help minimize the risk to SNYLF from prescribed burning, prescribed burns would be allowed to back into riparian areas, potentially affecting individuals along the banks along occupied streams.

Erosion Control Materials: Wildlife, including birds, small mammals, snakes, and amphibians, may potentially become entangled or entrapped in plastic or synthetic mesh erosion control or animal exclusion materials used for construction and forestry projects. In order to avoid mortalities resulting from entrapment or entanglement, **DC 4** requires that temporary erosion control products (blankets, mats, rolls, etc.) that contain exposed netting would use wildlife friendly loose weave netting or similar materials when netting is left exposed. Implementation of **DC 4** would minimize the potential for direct impacts to amphibians, including SNYLF, from erosion control materials.

Water Drafting: Water drafting could potentially affect SNYLF, if implemented within occupied streams in the treatment areas. The primary risk with water drafting is for egg masses and/or tadpoles coming into contact with equipment used to suction water from the aquatic habitat. **DC 49** limits water drafting, to the extent possible, to

reservoirs. For the purposes of the FPP, water drafting would likely occur only at Bear Reservoir, which is above the elevation range of and does not provide suitable habitat for SNYLF. Use of non-reservoir locations would require consultation with Forest Service biologists to determine whether the location represents suitable habitat for sensitive aquatic species such as SNYLF. No drafting of water from Dufrene Pond would be permitted. If required, surveys would be conducted prior to use and, in the event that individuals are observed, the site would not be used unless ENF-approved minimization measures are implemented.

INDIRECT EFFECTS

Provided below is a discussion of potential indirect effects to habitat, including both suitable habitat and Critical Habitat, resulting from implementation of the Proposed Action.

Suitable Habitat

Table 8 provides a quantification of proposed treatments that would be implemented within suitable habitat for SNYLF, by watershed and treatment type. Overall, the Proposed Action would be implemented within approximately 1,447 acres, or 24 percent of the suitable habitat in the Action Area. The majority of the acreage would be treated with mechanical fuels reduction (approximately 1,211 acres). Hand thinning would occur within approximately 158 acres and aspen restoration within approximately 38 acres. In addition, ENF will implement approximately 307 acres of prescribed burn (including approximately 259 acres where mechanical fuels reduction would be followed by prescribed fire, and 6 acres where aspen restoration would incorporate prescribed fire).

Similar to FYLF, fuels reduction treatments would occur in uplands and are not expected to result in the loss of aquatic habitat for SNYLF. However, the Proposed Action could potentially result in indirect effects to suitable habitat including a) water quality effects (e.g., sedimentation and contamination from motor fuels or other hazardous substances), b) changes in hydrology within suitable habitat, and c) reduction in canopy cover resulting in increased ambient or water temperatures. These potential effects are described below.

Water Quality/Sedimentation: The proposed fuels reduction treatments (mechanical, hand thinning, aspen restoration, and prescribed burns) could potentially expose bare soil and destabilize hill slopes along approximately 1,449 acres of suitable habitat, including approximately 311 acres of habitat within the Cole Creek watershed and 726 acres of habitat within the Bear River watershed, which support SNYLF populations. Exposed, unprotected soil has the potential to move into aquatic systems, which could in turn affect SNYLF. As described for FYLF, the Proposed Action, as designed, would minimize erosion effects as it would target removal of brush and small trees. With the potential exception of hazard trees, large trees would remain in place, and root systems would remain largely intact and would continue to stabilize soils.

As described in Section II of this document, USFWS has issued a Programmatic BO (2014) which addresses the effects of vegetation and fuels management on SNYLF. DC affirms that the Proposed Action will be implemented consistent with the conservation measures in the USFWS Programmatic BO, which, in turn, incorporates appropriate RCOs and S&Gs for aquatic species, including SNYLF. In addition, a number of Design Criteria, including **DC 1, DC 7, DC 9, DC 10, DC 11, DC 12, DC 13, and DC 14** would further minimize the potential for increased erosion and sedimentation within suitable aquatic habitats. Refer to the description of indirect effects to FYLF for a complete description of these measures.

Finally, in order to avoid contamination and resultant degradation of water quality, **DC 6** prohibits the storage of fuel or other toxic materials and maintenance of equipment within RCAs.

Considering proposed treatments would be limited to approximately 1,447 acres, or 24 percent of the suitable habitat in the Action Area; that the treatments, as designed, would retain mature vegetation; and with

implementation of water quality BMPs and Design Criteria including **DC 1, DC 6, DC 7, DC 9, DC 10, DC 11, DC 12, DC 13, and DC 14** indirect effects to aquatic breeding or non-breeding habitat as a result of sedimentation are expected to be minimal.

Hydrology: Changes in vegetation structure in a watershed have the potential to change the portion of precipitation that ends up as runoff to creeks and streams. Aquatic habitat for SNYLF would be negatively impacted if the Proposed Action resulted in a reduction in the amount or duration of streamflow. As described for FYLF, proposed treatments are focused on the removal of small trees, understory vegetation, and ladder fuels; mature trees will be retained. As required by **DC 11**, ground cover within mastication areas will be maintained at least at 70 percent in the zone of 50 to 100 feet from the edge of the stream channel. Impacts to suitable habitat resulting from changes in runoff to streams and creeks are, therefore, expected to be minimal/unmeasurable.

Canopy Cover: While the relationship between canopy cover surrounding aquatic habitats and microclimatic requirements of SNYLF are not known, amphibians in general, including SNYLF, require warm water and basking sites. Consistent with this, USFWS states that, in upland habitat for SNYLF “in areas that contain riparian habitat and upland vegetation (for example, mixed conifer, ponderosa pine, montane conifer, and montane riparian woodlands), the canopy overstory should be sufficiently thin (generally not to exceed 85 percent) to allow sunlight to reach the aquatic habitat and thereby provide basking areas for the species.” (USFWS 2016). As described previously, the Proposed Action is designed to retain mature trees and would result in only minor changes in density of canopy along aquatic habitat for SNYLF; therefore, no resultant changes in water temperature would occur. Reduction of canopy cover may also potentially benefit the species by increasing the number of basking sites.

Critical Habitat

The 77,464-acre Action Area includes approximately 27,364 acres that fall within SNYLF Critical Habitat Subunit 2F, East Amador. As shown in **Table 9**, proposed treatments would be implemented within approximately 12,187 acres of Critical Habitat, or approximately 11 percent of the 107,278 acres within Subunit 2F, East Amador. Proposed activities would include mechanical fuels reduction (approximately 11,081 acres); hand thinning (approximately 746 acres); and aspen restoration (approximately 193 acres). In addition, approximately 4,404 acres within Critical Habitat would be treated with prescribed burns, primarily in areas that will also be mechanically treated (approximately 4,216 acres) and in aspen restoration areas (approximately 22 acres).

Table 9. Proposed Treatments within Sierra Nevada Yellow-Legged Frog Critical Habitat.

	Within Action Area (Acres)	Within Treatment Area (Acres)	Treatment Details			
			Mechanical Fuels Reduction (Acres)	Hand Thinning (Acres)	Prescribed Fire (Acres)	Aspen Restoration (Acres)
Critical Habitat	27,363.9	12,186.6	11,080.7 ^a	746.2	4,404.1 ^{a,b}	193.3 ^b
Suitable Habitat ^c that falls within Critical Habitat	2,674.9	916.5	804.3 ^d	71.8	267.4 ^{d,e}	38.4 ^e

^aIncludes approximately 4,215.6 acres where mechanical fuels reduction will be followed by prescribed fire.

^bIncludes approximately 22.2 acres where aspen restoration will be followed by prescribed fire.

^cSuitable habitat for SNYLF is defined to include perennial and intermittent streams above 4,500 feet msl, including a buffer of 25 meters (82 feet) on either side of the stream.

^dIncludes approximately 259.3 acres where mechanical fuels reduction will be followed by prescribed fire.

^eIncludes approximately 6.2 acres where aspen restoration reduction will be followed by prescribed fire.

While there are approximately 27,364 acres of Critical Habitat mapped within the Action Area, only a small portion of this acreage supports aquatic breeding or non-breeding (i.e., overwintering) habitat for SNYLF, defined by USFWS to include permanent water bodies, or those that are either hydrologically connected with, or close to, permanent water bodies (USFWS 2013a). “Suitable habitat” for SNYLF, defined in this document to include all perennial and intermittent streams plus an 82-foot buffer, serves as an appropriate proxy for aquatic breeding and overwintering habitat for the purposes of this analysis. Refer to **Table 9** for a quantification of the suitable habitat for SNYLF that falls within Critical Habitat, and to **Map 4** for a depiction of suitable habitat that is mapped within Critical Habitat. Of the total 27,364 acres of Critical Habitat in the Action Area, approximately 2,675 acres contain suitable aquatic breeding/overwintering habitat for SNYLF; of which approximately 916 acres, or 34 percent, lie within areas proposed for treatment. The majority of the treatments would be mechanical fuels reduction (approximately 804 acres), with a small amount of hand thinning (approximately 72 acres) and aspen restoration (approximately 38 acres). In addition, 267 acres of prescribed burning are proposed, including 259 acres within areas that will also be mechanically treated, and 6 acres within aspen restoration areas.

The Proposed Action would result in the destruction or adverse modification of Critical Habitat if it significantly alters water chemistry or temperature; significantly increases sediment deposition within aquatic habitats or disturbs riparian foraging and dispersal habitat; significantly alters channel or lake morphology, geometry, or water availability; and/or significantly reduces or limits the availability of breeding or overwintering aquatic habitat for SNYLF (USFWS 2013).

As described in Section III of this document, a Critical Habitat designation does not signal that habitat outside the designated area is unimportant or may not be needed for recovery of the species; therefore, the types of effects and the analysis conducted will not differ between general suitable habitat and the habitat occurring within the designated Critical Habitat boundary. The previous discussion on indirect effects to SNYLF suitable habitat assesses the potential for the Proposed Action to affect SNYLF aquatic habitat through water quality effects (e.g., sedimentation and contamination from motor fuels or other hazardous substances); potential changes in hydrology within suitable habitat; and potential reduction in canopy cover resulting in increased ambient or water temperatures. Overall, this analysis concludes that the Proposed Action, as designed, would generally retain mature trees (i.e., trees larger than 10 inches dbh and snags larger than 16 inches dbh) and associated canopy cover; and, with incorporation of water quality BMPs and applicable Design Criteria (i.e., **DC 1, 2, 6, 7, 9, 10, 11, 12, 13, 14, and 15**) would not impair water chemistry or temperature; significantly increase sediment deposition within aquatic habitats; significantly alters channel or lake morphology, geometry, or water availability; and/or significantly reduce the availability of breeding or overwintering aquatic habitat for SNYLF.

The Proposed Action would result in temporary disturbance to riparian and upland habitats providing foraging and dispersal habitat for SNYLF in and immediately adjacent to the 917 acres of “suitable habitat” identified in **Table 9**. The remaining uplands adjacent to the 1,750 acres of suitable habitat would not be affected. Mechanical fuels reductions, hand thinning, and prescribed burns can potentially affect the suitability of uplands through loss of cover (riparian vegetation, burrows, logs, tree roots, and stumps). As described previously, large trees and snags would generally be retained; and **DC 7, DC 9, DC 10, DC 11, and DC 50** would promote the retention and/or restoration of vegetation by excluding mechanical treatments and ignition of prescribed burns from within 50 feet of aquatic resources; prohibiting creation of new landings and requiring the restoration of landings in RCAs; maintaining a minimum of 70 percent ground cover within 50 to 100 feet of stream channels, and retaining large downed logs.

The proposed fuels reduction treatments are intended to result in a forest structure (characterized by larger, more widely spaced overstory trees, with hardwoods, shrubs and ground cover retained in canopy openings) that is more resilient to drought and disease and less prone to stand-reducing wildfire. Therefore, while in the short term, proposed fuels treatments may result in temporary disturbance of riparian and upland habitat, the longer-

term purpose of the Proposed Action is intended to reduce the potential for stand-reducing fire, which may preserve and maintain habitat for wildlife, including SNYLF, over the long term.

CUMULATIVE EFFECTS

Under the ESA, cumulative effects are defined as “those effects of future State or private activities, not involving Federal activities, that are reasonably certain to occur within the action area of the Federal action subject to consultation.” The spatial boundary for analyzing the potential cumulative effects to SNYLF from the implementation of Phase I of the FPP is the same as the Action Area, encompassing approximately 77,464 acres. The 1-mile distance encompasses the species’ dispersal distance. Populations or individual SNYLF inhabiting the Action Area are expected to spend the majority of their lives within this area and, therefore, actions occurring outside the Action Area would be expected to have no measurable cumulative impact on SNYLF or associated suitable habitat.

As described for CRLF, the Action Area is comprised primarily of rural lands that support forestry, hydroelectric power and water supply facilities, and recreation. Much of this land is federally owned and managed by the Forest Service; in addition, lands that are part of the PG&E’s Mokelumne River Project are operated and maintained under a license from the FERC. Future State and private activities in the Action Area are limited primarily to management of and timber harvest on private forestlands. The State of California reviews timber harvest operations on private lands consistent with the THP review process, which includes a review by CDFW of potential project impacts on listed species. A review of CAL FIRE’s website indicates that 10 THPs for approximately 650 acres have been approved in the past 5 years for projects on lands within the Action Area. Eight of the plans are for timber projects on lands owned by Sierra Pacific Industries, the remaining two are individually owned.

Considering the small footprint of current and proposed private forest management and timber harvest projects, and with implementation of environmental measures developed during CAL FIRE’s THP process, including measures to protect special-status amphibians such as SNYLF, the effects of management and timber harvest on private lands in the Action Area on SNYLF would be minimal and would not contribute to cumulative effects as defined by USFWS.

VII. DETERMINATION SUMMARY

CALIFORNIA RED-LEGGED FROG

There are no known breeding populations of CRLF in the Action Area and no breeding habitat or recorded occurrences within the areas proposed for treatment (**Map 2**). The closest breeding population of CRLF is at Spivey Pond, approximately 20 miles to the northwest of the Action Area. There are approximately 319 acres of non-breeding aquatic and upland habitat in the Action Area, of which approximately 6 acres (2 percent) overlap with FPP treatment areas; and approximately 19,221 acres of dispersal habitat in the Action Area, of which approximately 1,708 acres (approximately 1 percent) overlap with the FPP treatment areas. The Proposed Action, which is designed to retain large trees and sufficient cover within riparian areas, would include implementation of Design Criteria, including (but not limited to) excluding mechanical fuels reduction and prescribed burns from riparian areas; ceasing operations and consulting with the Forest Service (and USFWS, if necessary) if CRLF are observed; reviewing burn treatment plans on an annual basis; and prohibiting the use of plastic or synthetic mesh erosion control materials. Considering that there are no known breeding populations or other known occurrences in areas proposed for treatment; that the FPP will not be implemented within breeding habitat, and will affect only approximately 9 percent of the non-breeding aquatic and upland habitat in the Action Area and approximately 8 percent of the dispersal habitat within the Action Area; and with incorporation of Design Criteria, ***the Proposed Action may affect, but is not likely to adversely affect, CRLF.***

FOOTHILL YELLOW-LEGGED FROG

There are known breeding populations of FYLF within the proposed FPP treatment areas, primarily within the Tiger Creek–North Fork Mokelumne watershed along the mainstem North Fork Mokelumne River and its tributaries below approximately 3,100 feet msl (**Map 3**). Populations may potentially extend up Bear Creek up to approximately 3,300 feet msl. There are approximately 3,250 acres of suitable habitat within the Action Area, of which approximately 525 acres (16 percent) are proposed for treatment, including approximately 355 acres within the Tiger Creek–North Fork Mokelumne watershed. FYLF are highly aquatic and individuals are unlikely to be present in uplands where treatments would be implemented. The potential for direct impacts would be minimized through implementation of Design Criteria, such as the exclusion of mechanical fuels reduction and prescribed burning activities from riparian areas; ceasing operations and consulting with the Forest Service (and USFWS, if necessary) if FYLF are observed; reviewing burn treatment plans on an annual basis; and prohibiting the use of plastic or synthetic mesh erosion control materials. Potential impacts to suitable habitat including increased erosion and sedimentation, changes in hydrology, and changes in canopy cover would be minimal because the Proposed Action is designed to retain large trees, thus preserving root systems that would stabilize soils and retaining existing canopy cover. Design criteria, such as riparian exclusion zones and requirements for retention of ground cover, would further minimize the potential for impacts. However, while prescribed burns would be excluded from within 50 feet of aquatic habitats, including those known to be occupied by FYLF; fire would be allowed to back into the riparian areas. Therefore, there remains some potential for FYLF along occupied stream to be affected by this activity. ***The Proposed Action may affect, and is likely to adversely affect, FYLF.***

SIERRA NEVADA YELLOW-LEGGED FROG

There are known breeding populations of SNYLF within the proposed FPP treatment area in the Cole Creek watershed, along Cole Creek and its tributaries; and in the Bear River watershed, along the Little Bear River and its tributaries and Dufrene Pond (**Map 4**). There are approximately 5,081 acres of suitable habitat in the Action Area, of which approximately 1,447 acres (28 percent) fall within proposed treatment areas. This includes approximately 311 acres within the Cole Creek watershed and approximately 723 acres within the Bear River watershed where SNYLF may potentially be present. SNYLF are highly aquatic, and individuals are unlikely to be present in uplands where treatments would be implemented. The potential for direct impacts would be minimized through implementation of Design Criteria, such as the exclusion of mechanical fuels reduction and prescribed burning activities from riparian areas; ceasing operations and consulting with the Forest Service (and USFWS, if necessary) if SNYLF are observed; reviewing burn treatment plans on an annual basis; and prohibiting the use of plastic or synthetic mesh erosion control materials. Potential impacts to suitable habitat including increased erosion and sedimentation, changes in hydrology, and changes in canopy cover would be minimal because the Proposed Action is designed to retain large trees, thus preserving root systems that would stabilize soils and retaining existing canopy cover. Design criteria, such as riparian exclusion zones and requirements for retention of ground cover, would further minimize the potential for impacts. However, while prescribed burns would be excluded from within 50 feet of aquatic habitats, including those known to be occupied by SNYLF; fire would be allowed to back into the riparian areas. Therefore, there remains some potential for SNYLF along occupied stream to be affected by this activity. ***The Proposed Action may affect, and is likely to adversely affect, SNYLF.***

SIERRA NEVADA YELLOW-LEGGED FROG CRITICAL HABITAT

The 77,464-acre Action Area includes approximately 27,364 acres that fall within SNYLF Critical Habitat Subunit 2F, East Amador. Approximately 12,187 acres of Critical Habitat are proposed for treatment, which is approximately 44 percent of the Critical Habitat in the Action Area. Only a small portion of the Critical Habitat

supports aquatic breeding or non-breeding (i.e., overwintering) habitat for SNYLF, defined by USFWS to include permanent water bodies, or those that are either hydrologically connected with, or close to, permanent water bodies (USFWS 2013a). Of the total 27,364 acres of Critical Habitat in the Action Area, approximately 2,675 acres contain suitable aquatic breeding/overwintering habitat for SNYLF; of which approximately 916 acres (34 percent) lie within areas proposed for treatment. The Proposed Action, as designed, would generally retain mature trees (i.e., trees larger than 10 inches dbh and snags larger than 16 inches dbh) and associated canopy cover; and, with incorporation of water quality BMPs and applicable Design Criteria would not impair water chemistry or temperature; significantly increase sediment deposition within aquatic habitats; significantly alters channel or lake morphology, geometry, or water availability; and/or significantly reduce the availability of breeding or overwintering aquatic habitat for SNYLF. Considering the nature of the proposed fuels reduction treatments, and with implementation of Design Criteria, the Proposed Action may result in a short-term reduction in habitat suitability within upland and dispersal habitat, but ***may affect, and is likely to adversely affect approximately 916 acres of Critical Habitat within Subunit ELD-1.***

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APPENDIX A
USFWS Species List