

# California Cooperative Forest Management Plan (2023)

## Shady Creek Outdoor School

18601 Pathfinder Way, Nevada City, CA 95959  
Sutter County Superintendent of Schools



Plan preparer: Erin Andrew, M.S., Sierra Streams Institute  
Funding provided by: California Wildlife Conservation Board



## **Purpose of this Plan**

This Multi-Agency Cooperative Forest Management Plan was developed for use in California by the California Department of Forestry and Fire Protection (CAL FIRE), the United States Forest Service (USFS) and Natural Resources Conservation Service (NRCS) using information from a national joint Forest Stewardship, American Tree Farm System (ATFS), NRCS Planning Process and the California Forest Improvement Act.

This management plan template meets management plan requirements for grant agreements and other provisions available through CAL FIRE, USFS, NRCS, and the ATFS. Signature Pages are provided to document acceptance of this management plan in meeting those requirements. Signatures are only required for that entity providing funding as requested by the landowner.

This management plan is a tool for and belongs to the landowner. This forest management plan outlines the conditions and capability of property resources, documents the landowner's objectives and decisions and identifies potential resource improvement projects. It is meant to be a flexible and educational document that considers a planning horizon of at least five years but may include objectives that require a much longer time frame.

## **Acknowledgements**

Thank you to Forestry Technicians Annie Baker and Gary Wells for field data collection and processing, and Joshua Zupan for editing this document. Kevin Whitlock, RPF and Dr. Jeff Lauder provided keen insight for the development of this Plan. Funding was provided by the California Wildlife Conservation Board (WCB).

Contents

- Certifications..... 5
  - Landowner Certification..... 5
  - USFS Forest Stewardship Program Certification..... 6
  - NRCS Cost Share Program Certification ..... 7
  - ATFS Program Certification ..... 8
  - CFIP Certification ..... 9
- Landowner Information ..... 10
- Management Plan History ..... 10
- Property Facts..... 11
- Property History ..... 12
- Current Property Conditions..... 13
  - Property Infrastructure..... 13
    - Structures..... 13
    - Roads ..... 13
    - Electrical Improvements..... 13
    - Water Improvements ..... 13
- Forest Resource..... 13
- Access and Security..... 15
- Recreation & Aesthetics ..... 16
- Soils ..... 16
- Streams, Wetlands and Ponds ..... 17
- Wildlife..... 17
  - Fish and Aquatic Species ..... 17
  - Upland Wildlife ..... 18
  - Threatened or Endangered Species ..... 19
- Invasive Species and Pests..... 21
- Air Resources..... 22
- Future Property Conditions..... 23
- Landowner Management Objectives ..... 23
  - Constraints and Proposed Alternatives ..... 24
  - Economic Sustainability..... 24
  - Roads ..... 25

Fire Protection .....	28
Forest Resource.....	29
Access and Security.....	30
Recreation & Aesthetics .....	31
Soils .....	31
Streams, Wetlands and Ponds .....	33
Wildlife.....	35
Invasive Species and Pests.....	36
Air Resources.....	38
Climate Considerations and Carbon Sequestration.....	38
Family Legacy.....	40
Livestock .....	40
Vegetation Unit Descriptions.....	41
Planned Management Activities/Projects .....	43
Required Permits and Monitoring.....	45
California Environmental Quality Act (CEQA) and National Environmental Protection Act (NEPA) .....	46
Additional Professional Assistance.....	47
Contacts .....	47
Grants .....	48
Maps.....	51
Appendix 1 – Standards and Specifications.....	57
Appendix 2 – Taxes and Land Use.....	58
Property Tax.....	58
Income Tax.....	58
Estate Tax.....	58
Record Keeping.....	58
Land Use .....	58
Appendix 3 – Past Plans and Updates.....	59
Appendix 4 – Supporting Data.....	60
Appendix 5 – Archeological Statement .....	61
Appendix 6 – References .....	62

# Certifications

Note to the landowner: This Forest Management Plan is provided as a guide to help you accomplish the objectives that you have for your forest. This Forest Management Plan will guide you in achieving the benefits of managing your forest and forest related resources. With this Forest Management Plan, you are eligible to participate in the CAL FIRE's California Forest Improvement Program (CFIP), US Forest Service's Forest Stewardship Program (FSP), the American Forest Foundation's American Tree Farm System (ATFS) and the Natural Resources Conservation Service (NRCS) programs. This plan will need to be reviewed and approved by representatives for each of the programs that are providing funding.

## Landowner Certification

"I have reviewed this plan and approve its content." Name (print or type):

Signature:

Date:

Mailing Address:

Phone number:

E-mail:

# USFS Forest Stewardship Program Certification

## **Plan Preparer**

"I certify that this Forest Management Plan meets the requirements of the federal Forest Stewardship Program."

Plan Preparer Name (print or type):

Signature:

Date:

## **Stewardship Forester**

"I certify that this Forest Management Plan meets the requirements of the federal Forest Stewardship Program."

Stewardship Forester Name (print or type):

Signature:

Date:

Forest Stewardship Tracking Number:

# NRCS Cost Share Program Certification

## **Technical Service Provider**

“I certify that this Forest Management Plan meets the requirements of the USDA-NRCS Programs and/or the Quality Criteria for forest activity plans in Section III of the USDA NRCS Field Office Technical Guide.”

Technical Service Provider Name (print or type):

Signature:

Date:

Registered Professional Forester #:

## **District Conservationist**

“I certify that this Forest Management Plan meets the requirements of the USDA-NRCS Programs and/or the Quality Criteria for forest activity plans in Section III of the USDA NRCS Field Office Technical Guide.”

District Conservationist Name (print or type):

Signature:

Date:

# ATFS Program Certification

“I certify that this Forest Management Plan meets the requirements of the American Forest Foundation’s American Tree Farm System.”

ATFS Inspecting Forester (print or type):

Signature:

Date:

Inspector Number:

Certified Tree Farm Number (e.g. CA 1234):

Date of ATFS Certification:



# CFIP Certification

## **Plan Preparing Registered Professional Forester**

“I certify that I, or my supervised designee, personally inspected this California Forest Improvement Program (CFIP) plan area, and that the plan fully complies with the CFIP and Professional Foresters Law, and meets Federal Forest Stewardship Management Plan Standards. I further certify that this plan is based upon the best available site and landowner information, and if followed, will not be detrimental to the productivity of the natural resources associated with this property.”

Name (print or type): Kevin Whitlock

Signature:

Date:

Registered Professional Forester #: 2436

Organization or Company: Under the Trees, Inc.

Mailing Address: P.O. Box 363, Nevada City, CA 95959

Phone Number: 530-559-0901

## **CAL FIRE Unit**

“I certify that I, or my supervised designee, personally inspected this California Forest Improvement Program (CFIP) plan area, and that the plan fully complies with the CFIP and Professional Foresters Law, and meets Federal Forest Stewardship Management Plan Standards.”

Forestry Assistance Specialist Name (print or type):

Signature:

Date:

Unit & Mailing Address:

## **CAL FIRE State or Region CFIP Coordinator**

“I certify that the plan fully complies with the CFIP and Professional Foresters Law, and meets Federal Forest Stewardship Management Plan Standards.”

CFIP Coordinator Name (print or type):

Signature:

Date:

Registered Professional Forester #

## Landowner Information

Landowner(s) Name: Sutter County Superintendent of Schools  
Mailing Address: 13032 Bitney Springs Rd, Nevada City, CA 95959  
Phone Number: 15302737736  
E-mail: ChristopherL@sutter.k12.ca.us

### **Landowner's Representative (if applicable)**

Landowner's Representative Name (if applicable): Kevin Whitlock, RPF  
Representative's Registered Professional Forester # (if applicable):2436  
Mailing Address: P.O. Box 363, Nevada City, CA 95959  
Phone Number: 530-559-0901  
E-mail: underthetrees@att.net

## Management Plan History

There is no previous management plan written for this property.

# Property Facts

Public Land Survey System (PLSS) Description:

A portion of the South ½, Section 16 and a portion of the NW ¼, Section 21, T17N., R8E., MDB&M.

Nearest City or Town: Nevada City, California

County: Nevada

Assessor's Parcel Number(s):

**Parcel 1:** 060-410-001

**Parcel 2:** 060-410-002

GPS Coordinates: 39.3322612, -121.0954682

Tract and Farm Number (if applicable): N/A

Total Ownership Acreage: 129.7

Total Forested Acreage: 116

Does the Landowner reside on the property? Yes or No: No

The terrain of the property is hilly overall, with most slopes less than 35%. The steepest parts of the property are on both sides of Shady Creek. Infrastructure exists on much of the flat terrain, to the west. Elevation ranges from 1900 feet to 2260 feet, with the steepest slopes over 50%.

Describe the overall slope of the property by percent of land in each of the following categories:

- Flat (grade less than 5%): 15 percent
- Gentle (grade 6% to 35%): 73 percent
- Steep (grade greater than 35%): 12 percent

## **Road System**

Approximately 25 percent of the property is accessible by road. The total length of improved road is .5 miles. The total length of unimproved road is .5 miles.

## **Watershed Information**

According to the State Water Resources Control Board, almost the entirety of the parcel exists within the Blind Shady Creek watershed (#5517310004), with 128.7 acres. The remaining acre at the very northwest corner of the property is within New Bullards Bar Reservoir watershed (#551740004).

Shady Creek (CAR5173101220110209094927) runs through the property. Water bodies that exceed water quality standards are added to a list (303d) as required and named through California's Clean Water Act. The creek has a 303d listing for previous detection of copper, iron, and abnormal pH.

## Property History

This property has not experienced wildfire for quite some time. The closest fire on record indicates that the 5800-acre 1960 North San Juan fire narrowly missed the northwestern portion of the property.

A fuel break was masticated along the northern boundary of the campus in 2008. The forest has since grown over, concealing the break. AmeriCorps crews have pulled Scotch broom (*Cytisus scoparius*) and maintained trail on the property over the years.

Multiple trails have been developed for recreation.

# Current Property Conditions

## Property Infrastructure

### Structures

Shady Creek school has many buildings, including cabins, a conference center, dining hall, an amphitheater, and adobe homes from previous land use (among others). Within the past few years, a shade structure was put over the amphitheater, a large tent (40 ft. x 80 ft.) constructed, and a new HVAC system put in at the Raptor Ridge Crescent Lodge.

### Roads

Roads on the Shady Creek property are used regularly. Stream crossings are accessible by trail only.

Road maintenance consists of road resurfacing one section at a time each year. All other road maintenance is done by hand (including weed removal) or with a tractor. Road conditions are generally good due to this routine maintenance.

### Electrical Improvements

The power line enters the property aboveground near the entrance, and after approximately 500 feet the line goes belowground through the rest of the property. A solar panel powers the electric gate.

### Water Improvements

The property has two wells, one for irrigation and fire suppression and the other is for the potable system. The tanks are all on the western side of the property: six 5,000-gallon tanks, one 2,000-gallon tank, and one 4,000-gallon tank.

## Forest Resource

The forest structure of the property primarily consists of a hardwood-conifer forest type, with isolated pockets of ponderosa pine. Oak (*Quercus spp.*) is the predominate regenerating tree type. Honeysuckle (*Lonicera sp.*), kitkitdizzi (*Chamaebatia foliolosa*), whiteleaf manzanita (*Arctostaphylos viscida*) and Scotch broom are the primary understory species. Large ponderosa pine (*Pinus ponderosa*) trees exist along Shady Creek and in patches throughout the property, with the largest area to the northeast of the property. A small (few acre) stand is along the southeast boundary. Some patches of pine mortality have been observed, particularly on south campus. No silvicultural practices have occurred recently, but trail maintenance by removing encroaching vegetation and thinning near buildings and infrastructure has taken place.

Overall, regeneration is adequate where there are existing forest stands. Ponderosa pine recruitment is low, possibly due to fire exclusion. Forest soils are productive here, indicated by the dense over- and understory vegetation.

# Current Property Conditions

## Primary species include:

**Ponderosa pine** (*Pinus ponderosa*) exists in the western United States into southern Canada and Mexico, growing up to 10,000 feet elevation. They are attractive trees, with long trunks with brown-reddish plates developing as they age. The p. ponderosa var. ponderosa variety (in California) is three-needled. These trees are very fire resistant due to their thick bark and self-pruning tendency. Many animals benefit from their seeds, especially mice, chipmunks, squirrels and birds. These trees are susceptible to bark beetles; although many are native, bark beetles can have devastating consequences in stressed trees. Tree stress is much more common in today's fire-suppressed, drought-susceptible, overstocked stands.

**Interior live oak** (*Quercus wislizeni*) has both tree and shrub forms. It lives in California south to northern Baja California, and grows from 1,000 – 6,200 feet. They typically occupy dry, shallower soils, in valleys, canyons, and foothills. Interior live oak grow in oak woodlands, chaparral, and oak-mixed conifer habitats. Grey pine and poison-oak are common associates. Primary wood products use is as firewood. Leaves are evergreen. Sprouts readily after fire, browsing, cutting, or other disturbances.

**Canyon live oak** (*Quercus chrysolepis*) takes a tree or shrub form. It is also known as “golden cup oak” due to its fuzzy yellow acorn cap. These trees are native to Oregon, California, Nevada, Arizona and Mexico, growing at 300 – 9,000 feet on shallow soils, canyon walls, cliffs, and rocky outcrops west of the Sierra Nevada. Young leaves tend to be spiny, which acts as a deterrent for herbivory, but leaves may also have smooth margins. It is used for firewood.

**California black oak** (*Quercus kelloggii*) has a range extending from western Oregon south to northern Baja California. It grows in foothills and lower mountains at 200 – 8,000 feet. It hybridizes readily with interior live oak (*Quercus wislizeni*), called “Oracle oak”. Rather than existing in black oak stands, it is most common in mixed-conifer and ponderosa pine forests as an associated species. Trees can get up to 80 feet in height, and 4 feet in diameter, though that is becoming less common. Oak are excellent wildlife trees, supporting insect, rodent, bird and small mammal life cycles—and this tree is no exception. The wood is used for making furniture, cabinets, flooring, high-grade lumber, and for fuelwood.

**Incense-cedar** (*Calocedrus decurrens*) is not a true cedar and is in the cypress family. They are shade-tolerant, slow-growing trees that develop large, irregular crowns that may almost reach the ground. Mature trees may have upright branches (candelabra shape), with fluted base. These trees are more susceptible to fire and have proliferated in forests with fire's absence. They occur at 2,000-6,000 feet often in mixed-conifer or hardwood-mixed conifer stands in the Sierra Nevada. Their range is from northern Oregon to Baja California. These trees are used to make wooden pencils.

***For a detailed discussion of individual forest stands please see the Vegetation Unit Descriptions section of this plan.***

# Current Property Conditions

## Access and Security

The property has been surveyed, as selling of land has occurred over the years. Rebar has been identified on a couple of corners, but not all.

There are concerns about property trespass, but there have not been notable incidents reported. There is a secure gate at the entrance of the property.

Because this is an outdoor school, camp and events center, the public does access this property often. Hiking trails are restricted to within the perimeter of the property and are not shared with adjacent landowners.

# Current Property Conditions

## Recreation & Aesthetics

This property is visually stunning, with unique infrastructure (e.g. adobe-style homes), hiking paths, and hilly topography. Sleeping accommodations, a swimming pool, amphitheater, low ropes course, and basketball and volleyball courts offer many activities. Charming Shady Creek tends to have water year-round in this segment, and adventurers can splash in it during the dry season. Outdoor school events, weddings and retreats are held here. Additionally, a raptor house with “ambassador birds” educate numerous children and adults.

## Soils

A soil “series” are a classification level developed by the United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS), and consist of groupings based on similar soil characteristics (soil chemistry, physical properties, formation). Erosion hazard potential and productivity values were provided (as available) by the Tahoe National Forest Soil Survey (USFS, 2002) and the Nevada County Soil Survey (1975). ***Table 1 details the proportion of these soils on the property.***

Chaix series support ponderosa pine, sugar pine, incense-cedar, black oak, bear clover and manzanita. These soils are on mountains with slopes of 5 to 75 percent. Chaix is moderately deep, excessively drained soil that formed from igneous rock (mainly granite or granodiorite). Elevations are from 1,200 to 6,500 feet. Runoff is slow to rapid, with moderately rapid permeability. *Erosion hazard potential is slight to moderate.* Projected bole volume growth is 82 ft<sup>3</sup>/acre/year.

Placer diggings are areas along natural drainage ways that have been placer mined or areas along those drainageways where natural deposits and sorting of gravelly, cobbly, or stony materials has taken place.

Hotaw series support conifer and mixed hardwoods (e.g. ponderosa pine, canyon live oak) and an understory of shrubs, grasses and forbs. These soils exist on backslopes and shoulders of mountains and hills from 2 to 75 percent slope, with elevations at 1,800 – 5,300 feet. These soils are well drained, with moderately high to high permeability above bedrock. *Erosion hazard potential is high.*

Slopes are steep with shallow, rocky soil on either side of Shady Creek, which could become more eroded over time, or through forestry practices where care is not taken to protect the soil. Removal of forest products incorrectly, road building in unsuitable areas, and poorly located skid trails can dramatically increase water erosion. It is highly advisable that an RPF or Civil Engineer be consulted before any future road building is undertaken on the property.



# Current Property Conditions

Table 1. Soil types on the Shady Creek School property, according to the Natural Resources Conservation Service (NRCS)

Soil Type	NRCS Soil Symbol	Acres
Chaix sandy loam, 15-50 percent slopes, eroded	CdE2	70.0
Chaix-Hotaw complex, 5-15 percent slopes, eroded	ChC2	0.2
Chaix-Hotaw complex, 15-30 percent slopes, eroded	ChD2	33.2
Chaix-Rock outcrop complex, 30-75 percent slopes, C Low-Mid Montane	CkF	22.7
Placer diggings	Pr	3.7
<b>Total:</b>		<b>129.7</b>

## Streams, Wetlands and Ponds

One Class I watercourse is on the property: Shady Creek flows from the north to the south, and typically has some water year-round. The creek is shallow in the summer but is likely to support fish during spring high flow periods. It is generally in good condition, with a stable bed and banks, and is relatively clear of logs and debris. Rocks of various sizes line the creek, including large smooth rocks up to 3' in diameter. Channel depth is up to 3.5', and channel width is 8' on average. The gradient is gentle at 2 percent. Shading is adequate for this section of Shady Creek.

Four Class III ephemeral drainages are identified, two of which flow into Shady creek. Gradients for these are around 10%. Another is located in the northeastern corner of the property and flows northwest through the forest. It is a shallow drainage, with no rock bed, with a gradient less than 5%. A small portion of a Class III drainage is found in the northwestern corner of the property, and generally flows southwest with a gentle gradient less than 5%.

The bridge crossing over Shady Creek washed away during the 2023 winter storms.

## Wildlife

### Fish and Aquatic Species

The foothill yellow-legged frog (*Rana boylei*) has been identified here, which are typically found in gently flowing water, or on rocks or banks nearby. Occasional pools provide still water for additional habitat, supporting benthic macroinvertebrates (BMIs) such as stoneflies, water beetles and caddisflies. Riparian cover of Shady Creek is adequate, with willow (*Salix spp.*) and other riparian-associated species found along the creek.

# Current Property Conditions

## Upland Wildlife

A wide variety of animals are known to be present in the area, including numerous bird species, mice (*Peromyscus spp.*), black bear (*Ursus americanus*), black-tailed jackrabbit (*Lepus californica*), striped skunk (*Mephitis mephitis*), coyote (*Canis latrans*), and rattlesnake (*Crotalus spp.*).

Multiple habitat types exist here that can support diverse wildlife. Although Scotch broom does inhibit growth of multiple native species, monocultures are a cover for rodents, securing them from predators, enabling population booms. Dusky-footed woodrat (*Neotoma fuscipes*) dens have been spotted in the forestland here. The numerous oak trees here in particular are highly beneficial for wildlife, as their acorns are consumed by many species, and insects use them to complete their life cycles. Standing dead ponderosa pine have been observed, serving as snag habitat for insects and birds.

Some animals may use the trails on the property to move unencumbered (and to track prey); deer are known for this.

Shady Creek itself is an excellent water source for wildlife.

# Current Property Conditions

## Threatened or Endangered Species

The California Department of Fish and Wildlife Natural Diversity Data Base (CNDDDB) is a source for identifying special status flora and fauna in the state. Spatially, the extent of the search using the RareFind 5 tool within CNDDDB constituted two quads (French Corral and Nevada City), which meets the requirements of identifying special status species three miles from the site. **Table 2 details the species that may exist on the property, and Table 3 explains the California Rare Plant Rank system.**

**A special-status species known to be present on the property is the foothill yellow-legged frog (*Rana boylei*), last reported in 2016 in Shady Creek.** This is a State Threatened species. It is small to medium-sized for a frog, with rough skin that is gray to brown in color but has yellow underneath. Disease and non-native species threaten the frog populations, as well as water diversion (U.S. Fish and Wildlife Service, n.d.). They eat a wide variety of insects such as spiders, grasshoppers, and BMIs. To defend themselves, they dive into the creek or stream bottom and hide. Egg masses average 900 eggs, which are often covered in silt, believed to be for protection. Their calls are not often heard (CaliforniaHerps.com, 2023).

This Plan does not include recommendations for land management activities close to the creek; however, the RPF presiding over forest management activities should be notified to consult with CAL FIRE and the Department of Fish and Wildlife so that a suitable buffer can be established if needed. This applies to other species listed below in *Table 2*, if spotted on the property.



*Rana boylei*. U.S. Fish and Wildlife Service, 2021.

*Table 2. Status of plants and wildlife that could occur on the property*

Wildlife Type	Scientific Name	Common Name	Federal Status	State Status	CDFW Status	CA Rare Plant Rank
Animals - Amphibians	<i>Rana boylei</i> pop. 3	foothill yellow-legged frog - north Sierra DPS	None	Threatened	-	-
Animals - Birds	<i>Aquila chrysaetos</i>	golden eagle	None	None	FP ; WL	-
Animals - Birds	<i>Strix nebulosa</i>	great gray owl	None	Endangered	-	-

# Current Property Conditions

Animals - Birds	<i>Strix occidentalis occidentalis</i>	California Spotted Owl	None	None	SSC	-
Animals - Birds	<i>Haliaeetus leucocephalus</i>	bald eagle	Delisted	Endangered	FP	-
Animals - Birds	<i>Progne subis</i>	purple martin	None	None	SSC	-
Animals - Insects	<i>Bombus occidentalis</i>	western bumble bee	None	Candidate Endangered	-	-
Animals - Mammals	<i>Erethizon dorsatum</i>	North American porcupine	None	None	-	-
Animals - Mammals	<i>Corynorhinus townsendii</i>	Townsend's big-eared bat	None	None	SSC	-
Animals - Mammals	<i>Myotis yumanensis</i>	Yuma myotis	None	None	-	-
Animals - Mollusks	<i>Margaritifera falcata</i>	western pearlshell	None	None	-	-
Animals - Reptiles	<i>Emys marmorata</i>	western pond turtle	None	None	SSC	-
Animals - Reptiles	<i>Phrynosoma blainvillii</i>	coast horned lizard	None	None	SSC	-
Plants - Bryophytes	<i>Mielichhoferia elongata</i>	elongate copper moss	None	None	-	4.3
Plants - Vascular	<i>Allium sanbornii</i> var. <i>sanbornii</i>	Sanborn's onion	None	None	-	4.2
Plants - Vascular	<i>Carex xerophila</i>	chaparral sedge	None	None	-	1B.2
Plants - Vascular	<i>Rhynchospora capitellata</i>	brownish beaked-rush	None	None	-	2B.2
Plants - Vascular	<i>Fritillaria eastwoodiae</i>	Butte County fritillary	None	None	-	3.2
Plants - Vascular	<i>Lilium humboldtii</i> ssp. <i>humboldtii</i>	Humboldt lily	None	None	-	4.2
Plants - Vascular	<i>Lewisia cantelovii</i>	Cantelow's lewisia	None	None	-	1B.2
Plants - Vascular	<i>Clarkia biloba</i> ssp. <i>brandegeae</i>	Brandegee's clarkia	None	None	-	4.2
Plants - Vascular	<i>Cypripedium fasciculatum</i>	clustered lady's-slipper	None	None	-	4.2
Plants - Vascular	<i>Brodiaea sierrae</i>	Sierra foothills brodiaea	None	None	-	4.3
Plants - Vascular	<i>Erigeron petrophilus</i> var. <i>sierrensis</i>	northern Sierra daisy	None	None	-	4.3
Plants - Vascular	<i>Fremontodendron decumbens</i>	Pine Hill flannelbush	Endangered	Rare	-	1B.2

CDFW= California Department of Fish and Wildlife Status; this status applies to animals only. For CDFW species that do not have a designated status, they are pending status evaluations. If assigned a status, there are the following descriptors: FP (fully protected, for rare species that face possible extinction), SSC (Species of Special Concern: for vertebrates with declining population levels, limited ranges, and/or continuing threats have made them vulnerable to extinction), and WL (Watch List: Previously designated SSC, but no longer merit that status, need for clarification of status). CA Rare Plant Rank: this status applies to plants only. This was originally developed by the California Native Plant Society (CNPS) to categorize and define rarity in CA flora.

# Current Property Conditions

Table 3. California Rare Plant Ranking descriptions

CA Rare Plant Rank	Description
1A	Plants presumed extinct in California and rare/extinct elsewhere
1B.1	Plants rare, threatened, or endangered in California and elsewhere; seriously threatened in California
1B.2	Plants rare, threatened, or endangered in California and elsewhere; fairly threatened in California
1B.3	Plants rare, threatened, or endangered in California and elsewhere; not very threatened in California
2A	Plants presumed extirpated in California, but more common elsewhere
2B.1	Plants rare, threatened, or endangered in California, but more common elsewhere; seriously threatened in California
2B.2	Plants rare, threatened, or endangered in California, but more common elsewhere; fairly threatened in California
2B.3	Plants rare, threatened, or endangered in California, but more common elsewhere; not very threatened in California
3.1	Plants about which we need more information; seriously threatened in California
3.2	Plants about which we need more information; fairly threatened in California
3.3	Plants about which we need more information; not very threatened in California
4.1	Plants of limited distribution; seriously threatened in California
4.2	Plants of limited distribution; fairly threatened in California
4.3	Plants of limited distribution; not very threatened in California

## Invasive Species and Pests

Noxious weeds have been observed on the property:

Himalayan blackberry (*Rubus armeniacus*) is native to Armenia and northern Iran and is a sprawling shrub with thorns that outcompetes native vegetation due to the thickets they form. Blackberry occurs primarily on edges and open areas on the property where sunlight is abundant, and along Shady Creek.

Scotch broom (*Cytisus scoparius*) is from northern Africa and parts of Europe, introduced as an ornamental and erosion control. It grows in sunny sites, and spreads rapidly on roadsides and borders of forests. It has a seedbank that can remain dormant for up to 80 years. It also is quite flammable, increasing wildfire risk. Scotch broom exists throughout the forests at Shady Creek.

Current eradication measures include small-scale removal of the broom and blackberry over the years, particularly along the trails.

# Current Property Conditions



*Scotch broom along road to the event center*

## Air Resources

The Shady Creek property has treated unwanted vegetation over the years through hand cutting, chipping, and masticating – either by hired staff, assistance from volunteers, or hired contractors. Burning of brush piles has occurred, but past prescribed burning on the property has not been reported.

**See the *Future Property Conditions: Air Resources Section for more information.***

# Future Property Conditions

## Objectives

Objectives for the Shady Creek Action Committee include:

1. *Improve defensible space from wildfire and manage to reduce the potential for high-severity wildfire.*
2. *Promote healthy, productive forests that are beneficial for wildlife.*

Cultivating a low-severity fire for when wildfire occurs is a goal for this property. This may be accomplished via mechanical means and/or through the application of prescribed fire. It is not a matter of *if*, but *when* fire will burn in the area, and preparedness via fuels reduction and defensible space improvements can give time for fire personnel, students and staff for ingress and egress. Additionally, low-severity fire is better aligned with the land historically and would result in ecological benefits.

Shady Creek staff have referred to the presence of invasive species (notably Scotch broom and Himalayan blackberry) on the property, recognizing that these species degrade the quality and health of their land, and so removal of these plants is a priority for them. Forest health, wildfire risk and wildlife habitat are interrelated, and so targeted treatments to address any of these aspects will quite likely improve others.

Aesthetics matter at Shady Creek Outdoor School, as it is a center for outdoor education and recreation. Ensuring that this space has a pleasing forest component benefits staff and the public who travel to be here.

In the past, removal of trees, brush and invasive species has occurred along trails, access points, and near buildings. However, approximately 2/3 of the property is to the east of Shady Creek, which could benefit from thinning. The Committee recognizes that this area has not experienced management for a long time, and breaking up fuel continuity on the property could help mitigate fire severity on both local and landscape scales. They are open to the use of prescribed fire after preparation to achieve this goal.

Family legacy and income from wood products were not discussed as objectives from NCSA, however it is understandable that maintenance of an aesthetically pleasing, healthy forest resilient to wildfire would please future generations and be beneficial in the event of a parcel sale.

Management for livestock is not applicable for this property.

Measures can be taken to address property trespass. ***See the Access and Security section under Future Property Conditions for more information.***

# Future Property Conditions

## Constraints and Proposed Alternatives

The project as proposed in this Plan will produce the most desired outcome in order to meet the landowner objectives (above), maintaining high-quality timber stands, decreasing wildland fire potential, and improving the health of forestland for the watersheds and wildlife.

The following is an explanation of options that the landowner has (in no order of importance) regarding forest management:

1. The landowner may continue with the management practices recommended in this Forest Management Plan, which align with their objectives.
2. Some land use alternatives to current use and landowner objectives include expanding farming acreage, adding more trails for recreation and managing the remaining timber resources for potential harvesting.
3. Opting to not pursue this project is an option for the landowner, but there are risks involved. Wildfire will occur in the future on the forestland of the project area, and with the same or increased contiguous, dense fuel loading, fire has the potential to carry quickly and at high severity. Non-native invasive species will continue to reduce biodiversity on the land, inhibiting growth of native trees, shrubs and understory species, ultimately reducing habitat and carbon sequestration potential. Hands-on educational opportunities within our community on the benefits of prescribed fire and other fuels treatments and stewardship learning with children would be missed.
4. The timing of the proposed project in this Plan can be delayed, but with potential risk (see above paragraph), particularly in regard to wildfire outbreak potential.
5. Another option is for the landowner to sell the property; however, this is not feasible as the landowners are not willing sellers at this time.

## Economic Sustainability

This property derives income from educational activities and other special events. Should the landowners request a cost benefit analysis for the property, the confidential analysis will include timber management and carbon sequestration as income streams.

Smaller-scale planning of periodic timber harvests can provide increased economic benefit. This Forest Management Plan also provides for an assessment of resources and presentation of management opportunities.

Timber Yield Tax is required when landowners harvest their trees, or timber. It is based on values of local market transactions. For more information, consult the California Department of Tax and Fee Administration at <https://www.cdtfa.ca.gov/taxes-and-fees/timber-tax.htm>.

After a wildfire, a portion of the forest stand loss on your property can be claimed on your federal income tax statement. Seeking tax advice from an agent is encouraged.



# Future Property Conditions

## Roads

Shady Creek currently has one access road, off of Tyler Foote Crossing Road and Pathfinder Way. In the event that emergency evacuation is needed, having only one route in and out of the property could be restrictive. Exploring the construction of a road connecting Albion Way off of Tyler Foote Crossing road to Pathfinder Way is suggested. Though potentially more costly, a route connecting Milhous Drive to the south of the property to Pathfinder may be worth exploring as another ingress/egress route for emergency purposes.

For the reduction of soil erosion on roads, ensure that the roads are well constructed, and on ridgetops rather than slopes where possible. Ensuring that drainage structures have been properly sized and installed is important to prevent water erosion from the wet season. Checking culverts annually and clearing debris as needed before the rains is a good preventive measure. Properly constructed water bars are effective at limiting erosion. Rocking the road with 1 ½" gravel is an improvement to limit erosion and dust

Noxious weeds often develop in disturbed areas, such as roadsides. On and off-road vehicles (OHVs) can transport the seeds from roads to other areas. Targeting weeds on and along roadsides is a relatively manageable process opposed to trekking through the backcountry, and is encouraged to limit spread as soon as they are identified. Washing of vehicle tires and undercarriages, particularly with OHVs and land-altering machinery prior to any construction or fuel treatment activities is a best management practice.

It is highly advisable that a Forest or Civil Engineer be consulted before any future road building is undertaken on the property.

Trail construction and maintenance should follow the same guidelines as for roads, except that high use trails will be built with a maximum slope of 6%. Mulching of trails with fir needles, forest litter, or some other suitable material will help reduce erosion.

Rolling dips or water bars should be maintained on all traveled roads within the property. They should also be installed on older roads and trails, which have evidence of erosion occurring. Water breaks should not exceed the following standards (based on a moderate Erosion Hazard Rating):

- <11% Gradient – 200'
- 11-25% Gradient – 150'
- 26-50% Gradient – 100'
- >50% Gradient – 75'

Water breaks should be located to allow water to be discharged into some form of vegetative cover, rocks or other non-erodible material and should be constructed to provide for unrestricted discharge at the lowest end of the water break so that water will be discharged and spread in such a manner that erosion will be minimized.

# Future Property Conditions

Water breaks should be cut diagonally a minimum of six inches into the firm roadbed or skid trail and should have a continuous firm embankment of at least six inches in height at the lower edge of the water break cut.

Avoid using roads during wet periods if such use would likely damage the road drainage features. Consider gates, barricades, or signs to limit use of roads during the winter period (Nov. 15th - April 15th) or other wet periods.

## Culvert & Ditches:

Culverts and ditches must be kept free of debris and obstructions. Ditches on newly constructed and/or graded roads may require frequent cleaning and checking after each major storm until re-vegetation has occurred. While clearing ditches, follow these guidelines:

- Leave grass in the ditch unless it has filled with sediment and is no longer functioning.
- Avoid undercutting the road shoulders and banks.
- Check culverts for blockage by debris.
- Do not leave a berm on the side of the road; berms will channel water down the road.

## Existing Road Practices

Identify and prioritize mitigation measures for existing roads that cause resource or watershed impacts. Mitigation measures may include any of the following:

- a) Relocating road segments that adversely impact soil or water resources.
- b) Reconstructing road segments to modify, improve, or restore road drainage.
- c) Improving roads with deferred maintenance needs to current standards.
- d) Improving stream crossings to accommodate bedload and debris and provide for aquatic habitat and passage.
- e) Hardening road surfaces (that is, running surface or inside ditches) to prevent the generation of fine-grained surface material and/or armor portions of the road prism subject to concentrated runoff.
- f) Putting roads in storage, while maintaining hydrologic and geomorphic functionality of drainage features.
- g) Closing roads seasonally to protect water resources.
- h) Restoring surface and subsurface hydrologic properties by removing roads from sensitive environments including riparian areas and meadows. May include relocation or decommissioning.
- i) Permanently closing roads that cause significant adverse impacts to soil or water resources.
- j) Decommissioning or converting unnecessary roads to other uses, such as trails. Assess risk of impact to water quality by decommissioning, placing road in storage, or converting to other

# Future Property Conditions

use, and various treatments for each option.

- k) The road system should be inspected prior to the summer season; problem areas should be identified and corrected.
- l) Maintain road surfaces to dissipate intercepted water in a uniform manner along the road by out-sloping with rolling dips, in-sloping with drains, or crowning with drains. Where feasible and consistent with protecting public safety, utilize out-sloping and rolling the grade (rolling dips) as the primary drainage technique.
- m) Adjust surface drainage structures to minimize hydrologic connectivity by:
  - a. Discharging road runoff to areas of high infiltration and high surface roughness.
  - b. Armoring drainage facility outlet as energy dissipater and to prevent gully initiation.
- n) Clean ditches and drainage structure inlets only as often as needed to keep them functioning. Prevent unnecessary or excessive vegetation disturbance and removal on features such as swales, ditches, shoulders, and cut and fill slopes.
- o) Minimize diversion potential by installing diversion prevention dips that can accommodate overtopping runoff.
  - a. Place diversion prevention dips downslope of crossing, rather than directly over the crossing fill, and in a location that minimizes fill loss in the event of overtopping.
  - b. Armor diversion prevention dips when the expected volume of fill loss is significant.
- p) Maintain road surface drainage by removing berms, unless specifically designated otherwise.
- q) Install and preserve markers to identify and protect drainage structures that can be damaged during maintenance activities (that is, culverts, subdrains, and so forth).
- r) When grading roads or cleaning drainage structure inlets and ditches, avoid undercutting the toe of the cut slope.
- s) Grade road surfaces in accordance with road management objectives and assigned maintenance level. Grade only as needed to maintain a stable running surface and adequate surface drainage.
- t) Accompany grading of hydrologically connected road surfaces and inside ditches with erosion and sediment control installation.
- u) Enforce pre-haul maintenance, maintenance during haul, and post haul maintenance (putting the road back in storage). Require the commercial operator to leave roads in a satisfactory condition when project is completed.
- v) Restrict or prohibit road use during periods when such use would likely damage the roadway surface or road drainage features.

# Future Property Conditions

## Fire Protection

Wildfire in our area is typically human-caused. Developing defensible space around our homes and applying appropriate forest management practices can limit or shape the impact that wildfire has. Maintaining defensible space around infrastructure is required by law (Public Resources Code 4291).

### *Understory thinning and burning.*

There are also forested areas where the crowns of the overstory trees are touching and/or intermingled. If understory ladder fuels were to carry fire into the canopies of these trees, under the right circumstances a crown fire would result. Such fires are difficult to control and could move rapidly through dense canopies, pushed by the winds that are common during the summer. Most crown fires require surface fires to maintain the heat necessary to advance. If understory vegetation is adequately thinned or burned with a controlled, low-intensity flame, the likelihood of a crown fire developing or advancing will be reduced.

Management practices:

- All dead and dying vegetation should also be removed from the thinning zones.
- Undesirable plant species should be removed from the thinning zones due to their susceptibility to wildland fire.
- All burning shall be in compliance with CAL FIRE and the Northern Sierra Air Management District laws and regulations. **See the Air Resources section for more information.**

### *Fuel modification along roads and trails*

In addition to providing travel routes, roads and trails can act as firebreaks for certain types of fire providing control points for fire suppression. But roads and trails are also a common location for fire ignitions. Fuel modification along roads and trails can reduce the availability of fuels for such ignitions as well as slow the rate of spread and reduce fire intensity once fuels are ignited. This increases the time before fires build up enough energy to become difficult to control and increases the effective response time for fire control resources. Working with neighbors to accomplish vegetation management along roads can be an excellent way to pool resources and efficiently complete the work.

Management practices:

- Remove and treat limbs, residual slash, windfalls, live roadside brush, and small trees within, or obtruding into, the designated brushing limits (minimum 10 feet along the shoulder on both sides of the road).

### *Pile Burning Requirements*

- Only dry, natural vegetative material such as leaves, pine needles and tree trimmings may be burned.
- The burning of trash, painted wood or other debris is not allowed.
- Do NOT burn on windy days.

# Future Property Conditions

- Piles must be no larger than four (4) feet in diameter and in height. Vegetative slash can be added to the pile as it burns down. Small piles burn with less danger of scorching the crowns of the residual leave trees.
- Clear a 10-foot diameter down to bare soil around all piles.
- Have a shovel and a water source nearby.
- An adult is required to be in attendance of the fire(s) at all times.
- Cover piles with waterproof tarp /paper prior to winter
- Take all preventative measures to reduce/eliminate scorching of nearby green trees.
- Burn permits - Prior to burning the Landowner shall acquire all necessary burn permits. The Northern Sierra Air Quality Management District may also have permitting requirements, such as a smoke management plan prior to burning.

## Forest Resource

The transition of forests over time is known as forest succession, and the species that regenerate after the fire or some other major disturbance event are known as “pioneer” species. The shrubs, grasses, forbs and stump sprouts are present as part of this natural succession process, as the stand begins the reinitiation phase.

Often, landowners are concerned with the high density of their trees and are prioritizing tree *removal* rather than planting; however, circumstances may arise where planting is desirable. Waiting to see what comes up after invasive species removal or a disturbance such as fire is encouraged, but if you are not seeing much natural regeneration, then source seeds or seedlings with care. **See the Climate Considerations and Carbon Sequestration section below.**

Monitoring and addressing resource needs after planting is very important to ensure success. Thinning competing vegetation and irrigation are common practices that address the needs of plantings. On a large planting site both of these practices may not be feasible or cost effective, but pulling, cutting, or spraying encroaching vegetation with a targeted herbicide is encouraged. Herbicide use should be followed according to label instructions. Tree tubing or wire cages can be placed around the seedlings for protection from browsing.

Regenerating Rangeland Oaks in California is a great resource on oak planting from UCANR (2016): <https://anrcatalog.ucanr.edu/pdf/21601e.pdf>

Forest management in the form of thinning ladder fuels and reducing overall forest density will improve forest health and resilience to stressors. Currently, the stands are overstocked with small-diameter biomass; with maintenance, this ensures protection of the forest component, and therefore, habitat and biodiversity protection. Climate refugia sites developed on the project area will serve as habitat in predicted drought conditions and will retain microclimatic factors needed to sustain existing flora and fauna. **For more information see the Planned Management Activities section.**

# Future Property Conditions

## Access and Security

The best way to prevent timber theft, vandalism, and trespass is to protect your property with the following simple steps: Mark forest boundaries. Most property boundaries in forests are obscure, giving timber thieves a good excuse for removing trees through unauthorized logging. Your forest boundaries should be clearly marked with a combination of ownership signs, paint marks, posted signs, flagging, and fencing, where appropriate. Posted signs should be placed conspicuously, without creating a visual nuisance.

Posting property marks a boundary and provides an added measure of protection through state law providing a landowner's right to prohibit trespassing for any purpose. Any signs you post must be properly placed and maintained. Signs must be at least 11 inches square, include the owner's name and address, and be placed not more than 660 feet apart.

At least one sign must be set on each side of the protected area and on each side of each corner. Ideally, extra signs are placed so that one is visible wherever the boundary is crossed. Landowners must replace illegible signs within a year. If forest property boundaries are made clear, the crime of timber theft is both more pronounced and easier to prosecute.

1. Know who the adjacent property owners are. Invite neighboring property owners to double check and agree to property line. If any areas are in question, hire a professional survey crew to set the property line. Mark the line with flagging or paint only after agreed upon or professional survey. Too often, adjacent property owners play boundary tag, removing, and posting boundary limits when the other is not around. This may actually encourage timber theft activities. Discuss boundary markers, your views toward hunters, and any plans either of you may have for cutting firewood and/or cutting timber. Trees on the property line belong to both landowners, whether or not the line is marked as a boundary. Accordingly, removal of a tree on or near a boundary line could be construed as theft. If differences with adjoining landowners cannot be resolved, agree to a "buffer" zone in which neither landowner will harvest without further discussion and/or establish a tree-by-tree agreement.

2. Patrol your property. Forest owners should make a habit of actively patrolling the boundaries of their forestland. If there is logging activity in the vicinity, the patrols should be increased.

3. Keep in touch with neighbors about activities on their properties. Let each other know when you may plan to have any outsiders working on your property.

4. Mow and trim the grass and brush along the roadways on your property, to demonstrate a presence. Neglected or "abandoned" properties may be more tempting to a timber thief.

5. Install a chain or gate across any roads entering your property. Such a deterrent will help keep honest people honest, and dishonest people out.

# Future Property Conditions

## Recreation & Aesthetics

This property has much to offer in terms of recreation and aesthetics. However, noxious weeds do limit the potential for forest development and can be unsightly. Monitoring and prompt removal will limit spread. Planting with a native grass and forb mix can enhance vegetative beauty.

**Regular trail maintenance should continue for the property, to remove fallen limbs and debris.**

## Soils

As most of the organic nutrients of the soil are found in the surface leaf litter and in the top few inches of soil, disturbance to this zone should be kept at a minimum to ensure continued productivity of the soil. It is important to provide for replenishment of the nutrients in this zone, especially following removal of vegetation. This can be done by retaining a mixture of conifers and hardwoods as this enhances leaf litter decomposition and by allowing foliage and limbs of trees and shrubs that are cut to rot into the ground as these portions of the plants contain the majority of the nutrients in the plants.

The most obvious cause of soil degradation and consequent loss of soil productivity is from soil erosion. Soil erosion is a constantly occurring natural event which can be greatly aggravated by human disturbance. In mountainous areas road building, vegetation removal, and fire are the main causes of accelerated erosion. Whenever soil is exposed to rainfall impact and/or water is concentrated on bare soil, erosion will increase. For these reasons, it is best to maintain a continuous vegetative cover or at least minimize disturbance to the ground cover (leaf and twig cover).

In general, roads are known to be the main contributors of sediment to stream systems. Sediment is eroded primarily because of drainage structures which have been improperly sized, installed, constructed, and/or maintained. Drainage structure failures are more often caused by high rainfall from summer thunderstorms which overload or plug them than from winter rainfall. This can be alleviated to a degree by installing culverts of adequate size, installing trash racks on culverts, keeping culvert inlets free of debris, constructing waterbars and rolling dips of a sufficient depth so they will not fill up with sediment or debris, and keeping them cleaned out.

Another source of sediment is from rill or gully erosion from road surfaces. Gully erosion most often occurs because of improper sloping of roads which concentrates water on the road surface or in inboard ditches, inadequate water barring for the road gradient and soil type, inadequate maintenance of water-bars which allows water to broach them, and/or rutting of the road surface (and broaching of water bars) by driving on it when it is wet. Rill erosion occurs for the above reasons plus inadequate vegetation on cut banks and fill slopes.

Most of the above causes of erosion can be minimized through regular maintenance of roads. Drainage structures should be checked periodically during the summer but especially after

# Future Property Conditions

severe thunderstorms. Before the winter rain period all drainage structures should be inspected, cleaned out, and repaired. Ideally these should be inspected periodically during the winter. It will soon be evident where the problem spots are and corrective measures can then be taken.

Soil disturbance from fuels management activities, including mastication, could result in the introduction and spread of noxious weeds into areas that are currently not infested, as well as the potential spread of existing infestations into new areas. Invasive weeds can increase fire hazards and have adverse effects on native plant communities and the wildlife that depend on them, and on the value of agricultural lands. The most aggressive exotic plants degrade natural areas because they can exclude native species, displace natural communities, promote faunal change, reduce biological diversity, disrupt ecosystem processes, alter fire frequencies, reduce recreational values, threaten endangered species, and fundamentally alter the unique character of California.

The tires or undercarriage of vehicles and equipment working in infested areas can inadvertently pick up and transport noxious weed seed and/or stolons. Erosion control measures such as use of contaminated straw bales and seed can also result in the inadvertent introduction of new invasive plants to the project area, which can in turn spread into adjacent undisturbed woodlands or adjacent agricultural lands or residences.

Forest landowners who wish to practice good stewardship on their lands need to assess the potential negative impact of their management activities on soil and water resources both on and off their property. Soil and water conservation is focused on the prevention of erosion and off-site movement of sediments, nutrients, and pesticides, the maintenance of normal water levels in wetlands, and the reduction of flood flows into estuaries.

It is necessary to monitor soil productivity to detect significant changes caused by management actions. Maintaining soil productivity also requires restoring or improving soils in areas where they have been degraded. Controlling soil erosion, compaction, and maintaining the nutrient balance during timber harvest, reforestation, and vegetative manipulation is vital to long-term soil productivity and protection of down-stream water quality. Practices include maintaining ground cover to reduce soil loss and limiting heavy equipment use on soils during wet weather.

If practices are not performed properly, they have the potential for significant topsoil and nutrient loss. This often results in reduced productivity and increased off-site water pollution. Additionally, the cumulative effects of drainage projects in a region often result in reduced water storage capacity and increased downstream flooding, as well as reduced fish/wildlife habitat and species diversity.

Soils are an important environmental variable in that they reflect many of the processes that shape the natural landscape. They are good indicators of the parent geologic formations beneath them and thus can aid in defining geologic strata. Soils are also the products of topography, hydrology, climate and flora, which allow them to be used as general environmental indicators.

To minimize soil compaction, rutting, and gullyng with resultant sediment production and loss of soil productivity, tractor operations should be limited to periods when the soil moisture content is sufficiently low that excessive rutting or other soil damage does not occur.

Mechanical slash treatment involves the use of heavy equipment to clear an area of unwanted



# Future Property Conditions

vegetation or planting obstructions. This may be as simple as masticating brush and small trees, or as major as completely clearing a site of undesirable trees and brush with a dozer. When mechanical treatment is necessary, consider these guidelines:

- Avoid removing the forest's litter layer as much as possible on slopes. This can be done by hand clearing, mastication, or using a raised dozer blade to move only woody material and avoid soil gouging. Do not expose more than 50% of the soil surface.
- Do not operate under wet soil conditions.
- Stabilize bare soil areas on cleared sites with a temporary cover crop.

## Streams, Wetlands and Ponds

Forest management activities have the potential to affect the hydrologic, soil, and aquatic resources by causing soil disturbance, altering vegetative cover, and changing local drainage patterns. The effects of the proposed management activities are most closely related to the harvesting and reforestation techniques used. Ground-based mechanical systems have the highest potential impacts. Applying effective Best Management Practices (BMPs) are recommended in this case to reduce the magnitude of the effects to soil, water, and aquatic resources. In addition, management requirements were developed to avoid sensitive watershed areas or minimize soil/water/aquatic concerns. The primary concern to water quality is the impairment of beneficial uses due to an increase of fine sediment caused by accelerated erosion from the proposed projects. In this case, the risk of direct effects to forest soils, water quality, and aquatic species is expected to be low in the projects proposed because project design minimizes activities that might otherwise have an impact to these resources.

*Best Management Practices (BMPs) to be used:*

Effectiveness of the BMPs in mitigating direct and indirect effects is largely related to proper implementation and the magnitude of climatic events the first several seasons after project completion. There is a risk that heavy precipitation or rain or accumulations of snow could overwhelm erosion control structures and render them ineffective. The increased sediment delivery to channels would occur only during rare events and for short periods of time where overland flow from disturbed areas occurs. BMPs have been selected below using specific information regarding soil, slope, geology, and climate conditions typically found in the project area.

To ensure recognition and protection of areas related to water-quality protection, delineate on a project-area map or a project map any of the following: 1. Location of stream courses and riparian zones to be protected, including the width of the protection zone required for each stream. 2. Wetlands (meadows, lakes, springs, and so forth) to be protected. 3. Boundaries of harvest units. 4. Specified roads. 5. Roads where log hauling is prohibited, or restricted. 6. Structural improvement. 7. Area of different skidding and/or yarding method application. 8. Sources of rock for road work, riprapping, and borrow materials. 9. Water sources that are available for purchasers' use. 10. Other features that are required by contract provisions. 11. Site

# Future Property Conditions

preparation/fuel treatment.

The watercourses throughout the property are classified as Class II and III. To protect the quality of water in these creeks care needs to be taken to prevent sediment and debris from entering them. A buffer of undisturbed vegetation, leaf litter, and soil needs to be maintained on either side of the creeks to act as a sediment filter strip and to protect stream banks from erosion.



*Shady Creek in Winter*

- Class II buffers should be a minimum of 50 feet wide on slopes up to 30%, 75 feet wide on 30-50% slopes, and 100 feet wide on slopes greater than 50%.
- Class III buffers should be a minimum of 25 feet wide on slopes up to 30%, 50 feet wide on slopes greater than 30%.

Management activities proposed in vicinity of a watercourse will require appropriate buffering and protection measures per the California Forest Practice rules. These are based on the size, seasonality, habitat, and other conditions of the watercourses. The buffer zone includes Equipment Limitation Zones (ELZ) where heavy machinery may only be operated under very specific provisions, or Watercourse and Lake Protection Zones (WLPZ), where only hand-work may be done.

In general, conservation practices for riparian habitat and wetlands include promoting the growth of native vegetation and refraining from the use of vehicles or other equipment in the area. Even wetland areas or fens can be damaged by foot traffic and should be kept to a minimum. Road crossings should be inspected on a regular basis especially after large storm events (once they dry out); appropriate steps should be taken to repair or maintain their function as costs for repair can quickly escalate and more damage can happen downstream, especially with increase sedimentation from a washed-out road.

*Use of heavy equipment for release and follow-up operations shall be restricted as follows:*

- a) No operations on excessively wet or saturated soil conditions as defined in the California Forest Practice Rules;

# Future Property Conditions

b) No equipment shall be used within 50' of any stream or lake transition line without approval from a responsible agency. Streams and watercourses shall be flagged prior to the start of operations; and

c) No equipment shall cross watercourses except Class III watercourses that are entirely dry at the time of operations without an approved CDF&W Lake & Stream Alteration agreement.

*Hand cutting within 50' of a watercourse shall follow the following guidelines:*

a) Watercourse protection measures for shade canopy retention and soil stability shall be followed as described in the Forest Practice Rules;

b) All riparian vegetation found along streams and lakes, and within marshes, wet meadows, and other wet areas shall be retained and protected;

c) Other vegetation shall be left as necessary to maintain stream temperatures;

d) All snags within the stream and lake protection zone and all live trees and snags with visible evidence of use as nesting and roosting by rare, threatened, or endangered bird species shall be left undisturbed; and

e) All areas below the stream and lake transition line of watercourses shall be kept free of slash and debris. Accidental deposits shall be immediately removed, consistent with the requirements found in the Forest Practice Rules.

## Wildlife

Managed forests promote biodiversity. Thinning ladder fuels and reducing overall forest density will not only improve forest health and resilience to stressors but develop habitat for wildlife. Forest stands on this property are overstocked with small-diameter biomass; with maintenance, this ensures protection of the forest component, and therefore, habitat and biodiversity protection. Additional measures that can be taken to improve habitat include:

- *Incorporate brush piles.* Brush piles offer perches for birds and cover for small animals. Brush piles should have the largest materials at the bottom, with the smallest-diameter brush at the top. Piles that are close to water are appealing to wildlife, and in openings where there is otherwise not much forest cover.
- *Retain snags.* "Snags" are trees that are dead or dying. Snags are excellent for wildlife, as they offer cavities for nesting, limbs for perching, and numerous insects. "Choice" snags are trees that have cavities, loose bark, limbs, and signs of insect presence (holes, sawdust-like frass, galleries under bark). Leaving 9-12 snags/acre with preference for at least 18" diameter trees greater than 20' in height is a good rule of thumb.
- *Put up nest boxes.* Nest boxes encourage nest sites for wildlife where they may otherwise not be present.
- *Exclude livestock from riparian areas.* Using fencing to prevent browsing and trampling of

# Future Property Conditions

soils and streams can restore vegetation, which provides cover and food for wildlife. Streams with shaded water are cooler and reduce evaporation which benefits aquatic species.

- *Promote habitat connectivity.* Habitat connectivity refers to two or more areas of undeveloped habitat that are connected to each other in an otherwise isolated area. These areas are also referred to as “wildlife corridors”. These strips or patches of connectivity can attract wildlife and enable them to travel or dwell with a sense of safety.
- *Add water sources where feasible and protect pools.* Incorporating bird baths or above/in-ground holding ponds are activities that support wildlife needs. Allow water to naturally pool and protect those pools from vehicles and heavy recreational use. This limits erosion, maintains water quality, and serves as a source for drinking, dwelling or breeding- even if pools are temporary.
- *Plant grasses, forbs, and trees.* Herbaceous cover benefits many animals, including when the cover is in forest openings. Snakes, raptors, turkey, sparrows and foxes are some of the many animals that use these openings for hunting, feeding, and cover (Brittingham, 2016). Planting native bunchgrass is also a great idea. For example, deergrass (*Muhlenbergia rigens*) is easy to grow, and does well in almost any soil (California Native Plant Society, n.d.). Native trees offer seed sources and cover that animals in the foothills are adapted to, and fruit trees attract numerous animals, including deer and bear (Brittingham, 2016).

## Invasive Species and Pests

Tree diseases are common, varied, and often occur concomitantly. Diseases may be caused by biotic pathogens, including fungi. The mistletoe plant is a defoliator of trees (commonly oak), and insects can cause injury and potentially death. Drought, wind, smog, frost, flooding, high temperatures, fire and lightning cause tree damage, and the stress from these events can prompt attack by bark beetles.

### *Bark beetles*

Many bark beetles are native species, fulfilling ecological roles- thinning forests, facilitating decomposition, and serving as a food source for wildlife. However, dense stands coupled with drought can snowball into extensive bark beetle outbreaks. Generally, trees that are more spaced out are not competing as much for water and sunlight and are less stressed. Forest thinning, tree watering, and removing dead trees around your property are preemptive management tools that can limit bark beetle outbreak severity and the range of the beetles. There are hundreds of species of bark beetles found in the conifer forests of the West particular to different tree parts, from cones to tiny branches to the main stems of their hosts (US Forest Service CA Forest Insect and Disease Training Manual, 2015).

Common beetles in forests of the Sierra Nevada include the pine engraver beetle (*Ips pini*), mountain pine beetle (*Dendroctonus ponderosae*, red turpentine beetle (*Dendroctonus valens*),

# Future Property Conditions

and Douglas-fir beetle (*Dendroctonus pseudotsuae*). If it is suspected that trees are impacted by beetles (pitch tubes, small holes through the bark, or boring dust and/or frass), a forestry specialist, Registered Professional Forester (RPF), or the Nevada County Department of Agriculture can be consulted for further assistance. **For more information, see the attached factsheet from the US Forest Service in the binder.**

Bark beetle infestation is evident on ponderosa pine trees on the property, but not at a large scale. Preventive measures are addressed via the thinning practices recommended in this Plan.

## *Invasive plants*

Monitoring for aggressive noxious weeds is necessary for action to occur as soon as they are spotted. Weed prevention also includes washing equipment and vehicles before entering the property (particularly if returning from areas where weeds were identified) and after use. **To address the invasive plant species identified on the property, see Table 4.**

There are many methods of weed control, and the following are common.

- *Mechanical control* is generally the physical action of pulling, cutting or burning the plants.
- *Chemical control* is the killing or injury of plants through application of herbicides or other chemicals. Some chemicals are available for public use at garden stores or nurseries, whereas others have restricted uses and should only be applied by a certified applicator.
- *Controlled grazing* (commonly via goats, sheep and cattle)
- *Biological control* (the application of naturally-occurring host-specific insects, mites of pathogens (CAL IPC, 2023)).
- *Competitive planting* (seeding and planting native plants before, during or after invasion)
- *Physical barriers* (tarps, mulch to suppress growth)

For more weed removal options, consult the California Invasive Plant Council’s Weed Control User Tool: <https://weedcut.ipm.ucanr.edu/#gsc.tab=0>

Table 4. Guidelines for treatment of invasive plant species on the property

Species	Proposed Initial Treatment Options	Follow-up Treatment Options
Scotch broom ( <i>Cytisus scoparius</i> )	Hand pull in winter or spring and/or cut at the base in the months of May-October. Treat cut stumps with Triclopyr.	Maintain the chemical treatment options or continue pulling plants.
Himalayan blackberry ( <i>Rubus armeniacus</i> )	Hand pull in spring or late fall, when soil is moist. May apply Triclopyr or Glyphosate.	Re-treat when new, sprouting leaves are fully expanded.

# Future Property Conditions

## Air Resources

According to the California Air Resources Board (2022), particulate matter (PM) at 2.5 microns or less can be inhaled into the deepest parts of the lung, as they are very small. Smoke from wildfires are mostly of this sized particle, and can aggravate existing health problems and increase the risk of heart attack or stroke. Carbon monoxide is also produced from wildfires, and in highest concentrations with smoldering material.

Residential landscape debris burning of vegetation is allowed during certain times of the year. Debris burning is limited to dry, woody, natural vegetation that can be burned within the permissible burn day and with limited smoke production.

The Air Quality Management District issues burn permits for the purpose of regulating particulate matter release. All burning must be in compliance with Cal Fire and the Northern Sierra Air Management District (Nevada County) laws and regulations in order to mitigate as many negative impacts on air quality as possible. Consult CAL FIRE for the current burn day status AND the Northern Sierra Air Management District (Nevada County).

- CAL FIRE Burn Permits: <https://burnpermit.fire.ca.gov/current-burn-status/>
- Northern Sierra Air Management District: <https://myairdistrict.com/index.php/burning-info/burn-day-status/>

Check to see if burn permits are required. The burning must occur on the property where the vegetation grew.

Alternatives to burning biomass include cutting up and scattering the material by hand, or using mechanical means to chip or masticate it. This is not actually removing the materials from the site, but rather reconfiguring it. Composting, if on a small scale, is a feasible option. Waste Management of Nevada County has a greenwaste pickup program. They can be contacted at:(530) 274-3090.

The Nevada County Fire Safe Council has a chipping and shredding program. You can submit a request at [https://clienthub.getjobber.com/client\\_hubs/0ea7b196-f50e-4e4b-9a3a-f2f6486280f3/public/work\\_request/new?source=social\\_media](https://clienthub.getjobber.com/client_hubs/0ea7b196-f50e-4e4b-9a3a-f2f6486280f3/public/work_request/new?source=social_media)

## Climate Considerations and Carbon Sequestration

### *Thinning to increase carbon storage*

Thinning of ladder fuels and smaller trees has been shown to lead to a net carbon gain due to decreased competition for larger trees (which are known to accumulate more carbon per growth year than smaller trees) and reduced likelihood of catastrophic wildfire that fully consumes and volatilizes all carbon back into the atmosphere (Hurteau et al., 2011; Hurteau and North, 2010). Thinning on this property may have a similar effect, particularly if follow-up treatments are done over the years. There is a carbon cost to implementation, however, including emissions from heavy equipment and from burning of any fuels that are not chipped or removed in some other

# Future Property Conditions

way. There are many carbon calculators on the internet that can help give landowners a sense for carbon impact. This tool is from the US Forest Service, the CarbonPlus Calculator:

<http://www.itreetools.org/forestcarboncalculator/>

## *Reforestation with climate-smart species*

Planting trees can add carbon storage potential to the property. Areas where large patches of invasive species are removed can be planted with native species. Sourcing plants grown with seed locally or within one's seed zone has been a standard recommendation, to give the plants adapted to your area a better chance of success. Our seed zone is 525, as depicted in this Seed Zone Map: <https://www.fire.ca.gov/media/oxgkjqdf/catreeseedzones.pdf>

However, there are additional considerations for the success of your plantings based on projected drought and drier conditions with climate change: An approach to consider:

1. Planting using seeds adapted to drier, hotter conditions originating from lower elevation may have greater success in respect to climate change (Young et al. 2020, North et al. 2018), *and*:
2. Having different seed sources for a given species will promote genetic variation, which may benefit your future trees and forest to be more resilient to stressors.

Additional research supports planting not in the traditional rows, or "pines in lines", format when we traditionally think about plantations, but rather, in clumps with openings between them, emulating historic patterns and reducing potential fire severity (Larson and Churchill 2012, North et al. 2018).

In sum, different seed sources from further south or downslope could be a climate-smart choice. And, as always, forestry professionals are available to discuss these kinds of questions. They can also recommend species to plant that are appropriate for your soils, elevation, topography, and projected climate conditions.

You may be eligible for financial assistance with procuring seedlings and planting labor through the nonprofit One Tree Planted at <https://onetreepanted.org/>.



*Potential Burn Site on the Property after pre-treatment*

# Future Property Conditions

## Family Legacy

Conservation easements are voluntary agreements with a nonprofit, land trust or government agency determining what activities can and cannot be performed on a landowner's property for conservation purposes, into perpetuity.

Finding a local land trust organization could be a next step for those wishing to explore this option further to see what the details and requirements are.

### *Forest Legacy Program*

A conservation program called the California Forest Legacy Program helps to protect and manage, for future generations, environmentally important forest areas that are threatened by conversion to non-forest uses. The program may only purchase a conservation easement from a landowner that is willing to sell their development rights for their forested property. Another program is the Federal Forest Legacy Program, which has the same overall objectives but differs based on the source of funding, property requirements, and application timeline.

## Livestock

This property could support livestock, but that is not the goal of the landowner at this time.

Part of the responsibility of owning animals is to ensure that they do not cause environmental degradation (e.g., contribute significantly to erosion, denude landscapes, and contaminate water bodies). Consult the NRCS Conservation Practice Standards page, where you can look up a specific activity regarding farming and livestock and find best management practices:

<https://www.nrcs.usda.gov/resources/guides-and-instructions/conservation-practice-standards>



# Vegetation Unit Descriptions

## Forest Stands

Forest stands were delineated using aerial photos, topography, and forest type. Two stand types were identified on the Shady Creek property. Aspect varies quite a bit for these stands, as the terrain is hilly. Data was collected using a modified Forest Inventory and Analysis (FIA) protocol developed by the US Forest Service, using variable-radius plots. The Forest Vegetation Simulator (FVS) is a US Forest Service software that calculates stand-level data and can simulate different forest management scenarios. FVS was used to determine tree species ratios per stand and stocking levels.

Site index is based on measuring the height and deriving the age of dominant and co-dominant trees in the forest stand, and relating this to a standard base age, for example fifty (50) years. Site class, usually numbered in Roman numerals from I (best) to V (worst) is a grouping of site indexes used when the California Forest Practice Rules apply to commercial timber-harvesting operations. Site Index is determined by measuring tree heights and using increment borings of dominant trees to determine tree age, and then using Dunning (1942) Site Classifications for the Sierra Nevada. The estimated growth rates for the stands were obtained by calculating the differences in merchantable board feet per acre per year over a 10-year span. ***See Figure 6 for the diameter distribution.***

The **hardwood-conifer stands** consist of 77 acres of hardwood-conifer forest, with 47% canyon live oak, 34% black oak, 15% ponderosa pine, 3% incense-cedar and 1% Douglas-fir. Toyon (*Heteromeles arbutifolia*), Scotch broom, honeysuckle, kitkitdizze, deerbrush (*Ceanothus integerrimus*), whiteleaf manzanita, grasses, forbs and poison oak (*Toxicodendron diversilobum*) occupy the understory. There are some dense manzanita patches here, particularly off of Pathfinder way as it enters the property. Regeneration is adequate (primarily oak species). There are some large, mature ponderosa pine here. The oldest core was collected at 140 years of age from a dominant ponderosa pine, but there are likely older trees. Site information suggests Site Class III (Dunning, 1942) and projected growth rate for the stand is 353 board feet/acre/year.

This stand type represents the majority of the forestland on the property and is distributed throughout. Slopes were averaged from our plots to 12 percent and up to 2000 feet. The terrain is quite hilly. The 1960 North San Juan Fire burned the northwest corner of the property, a few acres at most, according to CAL FIRE. Soils are Chaix sandy loam, Chaix-Rock outcrop complex, Chaix Chaix-Hotaw complex and Placer diggings. ***For detailed soil descriptions, see the preceding soil section and Table 1.***

*The general objective for these stands* are to masticate the manzanita west of Pathfinder way, treat Scotch broom and Himalayan blackberry and chip existing brush piles. Heterogenous forest thinning below the fire break is also recommended. ***See Table 5 for recommended practices.***

The **ponderosa pine stands** consist of 39 acres of ponderosa pine forest, with 60% ponderosa pine, 22% black oak, 8% incense-cedar, 6% canyon live oak, and 4% interior live oak. with an understory of whiteleaf manzanita, Scotch broom, deerbrush, kitkitdizze, honeysuckle, toyon, grasses and some forbs. The understory varies; for example deep needle duff may inhibit growth of other plants. This applies to dense manzanita as well—some of which is more mature

# Vegetation Unit Descriptions

(overhead) in the stand. Like many areas in the foothills with fire exclusion, pine regeneration remains low, with high oak regeneration. The oldest core of a dominant Ponderosa was collected at 144 years of age. Site information suggests Site Class II (Dunning, 1942), and projected growth rate for the stand is 524 board feet/acre/year.

These stands are distributed throughout this property, with hilly topography averaged to 15% slope to 2100 feet. On either side of Shady Creek, slopes exceed 30%, and alongside the creek are some large Ponderosa pine benefiting from perennial water access. Soil types are Chaix sandy loam, Chaix-Rock outcrop complex, and Placer diggings.

*The general objective for these stands is to develop a shaded fuel break along the northern boundary, extending into the hardwood-conifer forest, and incorporate heterogeneous forest thinning below the break. The landowner is open to the use of prescribed fire in the thinned forest as well. Additionally, ponderosa pine hazard trees, Scotch broom and interspersed Himalayan blackberry will be targeted for removal.*

Basal Area (BA) is the area of a cross-section of a tree at 4.5 feet above the ground, and can be summed per species by diameter groupings, or classes, to highlight trends in the forest structure. For all of the stands, BA is highest in the 10" diameter classes, consisting of black oak, canyon live oak, and some interior live oak. Ponderosa pine contributes much of the basal area after the 18" diameter class, indicating that ponderosas represent the larger trees in general onsite.

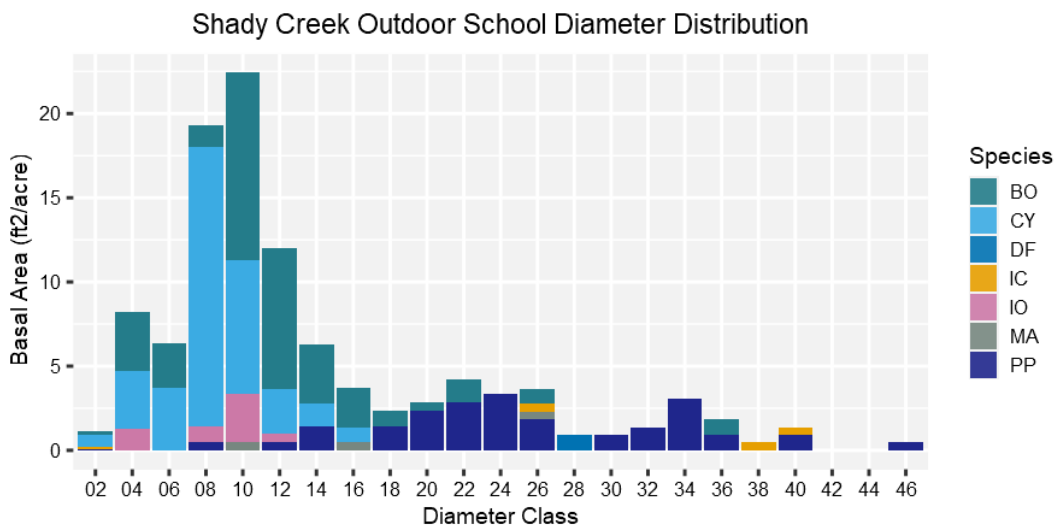


Figure 6. Distribution of species at Shady Creek Outdoor School based on 2-inch diameter classes. IC= incense-cedar, PP= ponderosa pine, IO= interior live oak, CY= canyon live oak, DF= Douglas-fir, MA= madrone, BO= black oak.

# Planned Management Activities

Installing a shaded fuel break below Tulane Drive, along the northern border of the property, will better defend homes to the north of the break and the Shady Creek property forestland to the south. Shaded fuels breaks will not necessarily *stop* a fire, but can slow its progress, reducing fire severity and allowing more time for ingress/egress for landowners and personnel. A shaded fuel break is not a conventional fuel break in the sense that many overstory trees will be retained, with a focus on removal of smaller diameter materials and brush.

Managing for “clumpiness” (or breaking up of forest cover, with clumps of trees separated by variable-sized gaps) has been linked to both increased forest resilience to fire and increased habitat quality for wildlife (Larson and Churchill, 2012; Fertel et al. 2022). A guiding principle towards development of these gaps and clumps is the natural range of variation (NRV), or forest structure pre-colonization in the western United States (USDA Forest Service, 2019). The spatial structure of fire-frequent forests visited by low- and moderate-intensity fires consist of three elements: openings, widely-spaced single trees, and tree clumps. Thinning on the Shady Creek property will incorporate this approach to management for landscape-scale forest heterogeneity. A combination of hand-thinning and mastication should be utilized to comply with forest practice rules and circumvent rocky soils.

Zones of relatively high-water availability on the proposed thinning sites will be unthinned and serve as the groups of trees needed to achieve spatial variation. These will also be “climate refugia” sites, offering habitat for wildlife. These areas refer to zones of high relative water availability, which could be critical for drought-stressed sites now and under future climate change conditions (Mclaughlin et al. 2017).

A foliar systemic herbicide (e.g. Triclopyr) can be applied to the Scotch broom with a particular focus near the property entrance on Pathfinder Way. This should occur when students and staff are not around, under the supervision of a licensed applicator to ensure health and quality of people and surrounding natural resources. The broom can be subsequently masticated or manually cut or pulled. Additionally, mastication of manzanita in this same area is recommended, as breaking up the dense brush may help reduce wildfire severity and enable native grasses and forbs to regenerate.

Increasing the use of prescribed fire is a goal of many land managers in the Sierra Nevada foothills, and is suggested here, although the burning may be more complex due to topography and site access. Low-intensity, controlled fire reduces fuels, controls species composition (e.g. blackberry and broom), opens growing space for a greater diversity of native flowering species, and improves the health of residual trees. A burn plan and possessing the proper permits are necessary for implementation. **See the Air Resources section above.** Virtual and in-person training resources are available to guide the public. **See the additional professional resource section below.**

All of the above practices should include consistent, long-term monitoring after implementation, which will prompt follow-up treatments to address noxious weeds, sprouting from stumps, weeds, and eventual forest regrowth. Opening up land from management offers sunlight for the seed bank, which may consist of invasive species.

This project is not anticipated to generate any income from forest products.

# Planned Management Activities

Table 5. Recommended practices for the Shady Creek property.

Date	Recommended Practice(s) Description	Location	Desired Future Conditions
2023-2026	Targeted foliar spray of Triclopyr on Scotch broom. Follow up with manual and mechanical removal.	West of Shady Creek (14 acres)	Increased forb and grass diversity, natural tree regeneration;  Improved aesthetics
2023-2026	Masticate dense manzanita	A northwest section of the property (3 acres)	Reduced wildfire severity due to gaps in fuels
2023-2026	Develop a shaded fuel break with hand thinning where mastication is not feasible due to slope and terrain.	Along the northern boundary of the property (14 acres, 3450 linear feet)	Increased wildfire safety for Shady Creek school and neighboring parcels
2023-2026	Thin oak trees up to 6" DBH, leaving occasional clumps, gaps, and individual trees. Spray stumps with herbicide.	North and center of the property (10 acres)	Spatially heterogeneous forestland reducing wildfire severity, emulating historic conditions
2023-2026	Chip or burn existing vegetation piles	On campus (<1 acre)	Space made available for other activities
2023-2026	Removal of dead/dying ponderosa pine snags	On east campus (<1 acre)	Improved safety for people and infrastructure;  Reduction of forest fuels that may carry high severity wildfire
2023-2033	Develop burn plan, apply prescribed fire in thinned forest	Near proposed fuel break (approximately 4 acres)	Reduced wildfire severity risk;  Improved forest health and species diversity
2023-2033	Monitor trails and continue trail maintenance	All trails throughout the property	Recreational value of the property is maintained;  Ensured safety for people and infrastructure
2023-2033	Monitor for any new noxious weeds on the property. Clean boots and equipment to avoid transporting seeds.	Entire Property	Maintain native grass and forb cover in forest understory

# Planned Management Activities

## Required Permits and Monitoring

A burn permit from the Northern Sierra Air Quality Management District (NSAQMD) is required for any burn over 1 acre. Additional information on the specific fees and conditions of permitting is available by calling the NSAQMD at 530.274.9360 and requesting 'the outdoor burning specialist'. Rules and conditions are complex, and changeable, and calls to the AQMD in advance of a planned burn day are highly suggested to get clear and current information. Placer County RCD may offer financial assistance to cover part of the smoke permit or smoke management plan. You do not have to live in Placer County to be eligible.

Although monitoring is generally a useful tool after project implementation, if grant funds are awarded from the Wildlife Conservation Board (WCB) for the implementation of these recommendations, monitoring is required. A Landowner Access Agreement will be developed and signed by Woolman and Sierra Streams Institute (SSI), the grant applicant. This agreement essentially requires the landowner to uphold the outcome that has been met on the property, and to not drastically change the property to undo the goals of this project. SSI and the landowner will acknowledge that if the parcels are selected for monitoring by WCB and are not found to have upheld a degree of forest maintenance, SSI would be held financially responsible to WCB. The landowner would have an obligation to inform the new landowner of the Access Agreement if the home is sold. This agreement is not recorded or on file with the County Assessor's office.

If funds are not awarded, monitoring is still highly encouraged. Monitoring can inform the landowner on the effectiveness of treatments and if follow-up is warranted. Monitoring can vary from informal, with general observations, to more thorough (e.g., the development of a complete research report).

Monitoring is expected after vegetation management work is complete if the WCB funds are used to implement the recommendations.

# California Environmental Quality Act (CEQA) and National Environmental Protection Act (NEPA)

Forest management activities including conservation practices may impact special environmental and/or cultural values such as threatened or endangered species and archaeological sites. Landowners need to know their locations and what they can do to protect them. Environmental and cultural reviews by regulatory agencies are required when a ground practice is proposed, and a permit and/or government assistance becomes part of the project.

The Title 14 CCR § 1038 *Forest Fire Prevention Exemption* document is an option for the Shady Creek Property. An RPF would need to be the signatory on this form, as required by the Lead Agency, CAL FIRE. This exemption is valid for one year and could be renewed annually from the date signed by CAL FIRE.

Section 21080 of the Public Resources Code exempts from the application of CEQA those projects over which public agencies exercise only ministerial authority. Therefore, the State Clearinghouse would not need the documentation.

## **Additional CEQA/NEPA Notification for Ground Practices**

Any future ground practice to implement this plan using public entity reimbursement funds requires a signed CAL FIRE CFIP Environmental Checklist, to comply with CEQA, or an NRCS CPA-52 Checklist, to comply with NEPA. The checklist must be filled out by an RPF or Certified Planner.

Along with this checklist a process of “discovery” or survey for unknown values along with a discussion of possible mitigations is required. The site specific environmental/cultural documentation will need to be completed with the schedule of activities, project map and project specifications.

As part of the above process, project notification must be provided to the following Agencies:

- County Planner
- CA Department of Fish and Wildlife
- Regional Water Quality Control Board
- If the project adjoins public land (for example, the US Forest Service, US Fish and Wildlife Service, BLM, National, State, or local parks, etc.) notify that agency
- If the project adjoins a State Highway, notify CALTRANS
- If the project is in the Coastal Zone, notify the Coastal Commission

If the project will cause ground-disturbance, notification must also be provided to:

- Native American Heritage Commission
- Tribal contacts
- Local Historical Society

# Professional Assistance

## Contacts

CAL FIRE Forestry Assistance Specialists (FAS)

David Ahmadi - [david.ahmadi@fire.ca.gov](mailto:david.ahmadi@fire.ca.gov) (El Dorado, Nevada, Placer, Sacramento, Sierra, Sutter, Tahoe Basin, Yuba Counties)

Nevada County Resource Conservation District - <https://www.ncrcd.org/>

Phone: (530) 272-3417, ext. 5529 or 5530

Monday-Friday 7:30am-4pm

113 Presley Way, Suite 1, Grass Valley, CA 95945

Placer County Resource Conservation District - <https://placerrcd.org/>

Phone: 530-390-6680

Email: [info@placerrcd.org](mailto:info@placerrcd.org)

Mailing Address: 11641 Blocker Dr. #120, Auburn, CA 95603

University of California Division of Agriculture and Natural Resources - <https://ucanr.edu/>

UC Cooperative Extension Forest Advisors

Ricky Satomi (Sutter, Yuba, Butte, Nevada Counties)

Phone: (530) 822-6213

Email: [rpsatomi@ucanr.edu](mailto:rpsatomi@ucanr.edu)

Rob York (Statewide), Kristen Shive (Statewide)

(530) 333-4475

Email: [ryork@berkeley.edu](mailto:ryork@berkeley.edu)

Email: [kshive@berkeley.edu](mailto:kshive@berkeley.edu)

UC Cooperative Extension Placer and Nevada Counties - <https://ceplacer.ucanr.edu/>

Phone: (530) 273-4563, Email: [cenevada@ucdavis.edu](mailto:cenevada@ucdavis.edu)

Tuesday and Thursday, 8am-12pm and 12:30pm-4:30pm

255 South Auburn Street (Veterans Memorial Hall), Grass Valley, CA 95945

### *Toolkit*

Sierra Streams Institute (SSI) is currently working up a Jones Bar Area Toolkit binder and link on their website for private landowners, which includes forest health information, factsheets, contractors, and grant information (listed below). If you do not receive this from SSI, please reach out to them to access it at [info@sierrastreamsinstitute.org](mailto:info@sierrastreamsinstitute.org).

### *Yuba Bear Burn Cooperative*

Working with Nevada County's Prescribed Burn Association, Yuba Bear Burn Cooperative (YBBC) is a great resource to learn about prescribed fire and to gather volunteers to apply fire. To sign up on their listserv, go to <https://calpba.org/yuba-bear-burn-cooperative>. YBBC planning resources are also available: <https://calpba.org/rx-burn-planning>

# Professional Assistance

## Grants

The following grants may be available and are worth exploring for implementation:

### 1. Environmental Quality Incentives Program (EQIP)

This USDA-run program applies to landowners (or renters) who manage land for agriculture or non-industrial private forest land.

- Minimum acreage: no
- Cost share: yes\*
- Prescribed burning covered: yes

*Factsheet:* <https://www.nrcs.usda.gov/sites/default/files/2022-06/EQIP-Factsheet%20%282%29.pdf>

*Local NRCS contacts:* Evan Smith, Forester at [Evan.t.smith@usda.gov](mailto:Evan.t.smith@usda.gov)

Valerie Bullard, Soil Conservationist at [valerie.bullard@usda.gov](mailto:valerie.bullard@usda.gov).

\*Landowners must often pay up front, then will get reimbursed after the work is done. To apply, reach out to the local NRCS office and let them know you are interested. You will work with them to determine your eligibility.

### 2. California Forest Improvement Program (CFIP)

This program aims to improve forest resources, including animal habitat, and soil and water quality. Cost share is to hire a Registered Professional Forester to write a Forest Management Plan, and to oversee reforestation, stand improvement, and conservation practices/habitat improvement.

- Minimum acreage: 20 to 5,000 acres
- Cost share: yes\*
- Prescribed burning covered: no

*CFIP user guide:* <https://34c031f8-c9fd-4018-8c5a-4159cdf6b0d-cdn-endpoint.azureedge.net/-/media/calfire-website/what-we-do/grants/california-forest-improvement-program/cfip-user-s-guide-october-2022.pdf?rev=e1f107c9d70040c280c629450dd343d9&hash=23010DAD8EBC63E950BD962FA9160063>

*Local contact:* David Ahmadi, Forestry Assistance Specialist at [David.Ahmadi@fire.ca.gov](mailto:David.Ahmadi@fire.ca.gov).

Located at 143 B Spring Street, Grass Valley, CA 95945

\*Funds get reimbursed after the work is completed. CFIP provides reimbursement at 75% or 90% cost share rates. Before filling out an application, consult with the Forestry Assistant Specialist, currently David Ahmadi (above).

### 3. Community Wildfire Defense Grant

This USDA Forest Service grant helps at-risk local communities and Tribes plan and reduce the risk against wildfire. Prioritizes at-risk communities in an area identified as having high or very high wildfire hazard potential, are low-income, and/or have been impacted by a severe disaster. *For more information:* <https://www.fs.usda.gov/managing-land/fire/grants>.



# Professional Assistance

## 4. Partners for Fish and Wildlife Program

This U.S. Fish and Wildlife Service program aims to restore habitats on working landscapes (e.g. forests, farms, ranches). This could involve improving water resources, planting native species, or oak woodland restoration. Their conservation priorities are wet meadows, streams and riparian habitats.

- Minimum acreage: No
- Cost share: 1:1 match, either cash and/or in-kind services
- Prescribed burning covered: In some instances; check with contact

Website: <https://www.fws.gov/program/partners-fish-and-wildlife>

Local contact: Matt Hamman at [matt\\_hamman@fws.gov](mailto:matt_hamman@fws.gov). (530) 889-2301.

Located at 11641 Blocker Drive, Suite 110, Auburn, CA 95603

## 5. California Vegetation Management Program (VMP)

This CAL FIRE program aims to reduce fuel loading to prevent catastrophic wildfire in California, with prescribed fire as a focus. The project area must be on State Responsibility Lands: [SRA viewer](#).

- Cost share: yes

*Note that as of early 2023, this funding is not being offered. However, check their website for future opportunities. Search "Cal Vegetation Management Program".*

## 6. Emergency Forest Restoration Program (EFRP)

This USDA-run program helps landowners of private forestland restore forest health that has been damaged by natural disasters. Drought or insect infestation do not apply. Debris removal, planting, fire lanes, fencing, wildlife enhancement are examples of work scopes.

- Minimum acreage: no
- Cost share: yes, up to 75% of the cost to implement practices can be provided.
- Prescribed burning covered: check with contact

Local contact: NRCS Grass Valley at (530) 798-5527. Grass Valley Service Center

Located at 113 Presley Way Ste 1, Grass Valley, CA 95945.

Factsheet: [https://www.fsa.usda.gov/Assets/USDA-FSA-Public/usdafiles/FactSheets/emergency\\_forest\\_restoration\\_program-fact\\_sheet.pdf](https://www.fsa.usda.gov/Assets/USDA-FSA-Public/usdafiles/FactSheets/emergency_forest_restoration_program-fact_sheet.pdf)

## 7. California Fire Safe Council Grants

This grant program emphasizes fire risk reduction activities by landowners and residents in at-risk communities to restore and maintain resilient landscapes and create fire-adapted communities. Individual landowners cannot apply—must have a legal fiscal sponsor. Check the website for current grant opportunities.

- Minimum acreage: may vary
- Cost share: 50/50 match required; cash, good, or in-kind services.
- Prescribed burning covered: yes

# Professional Assistance

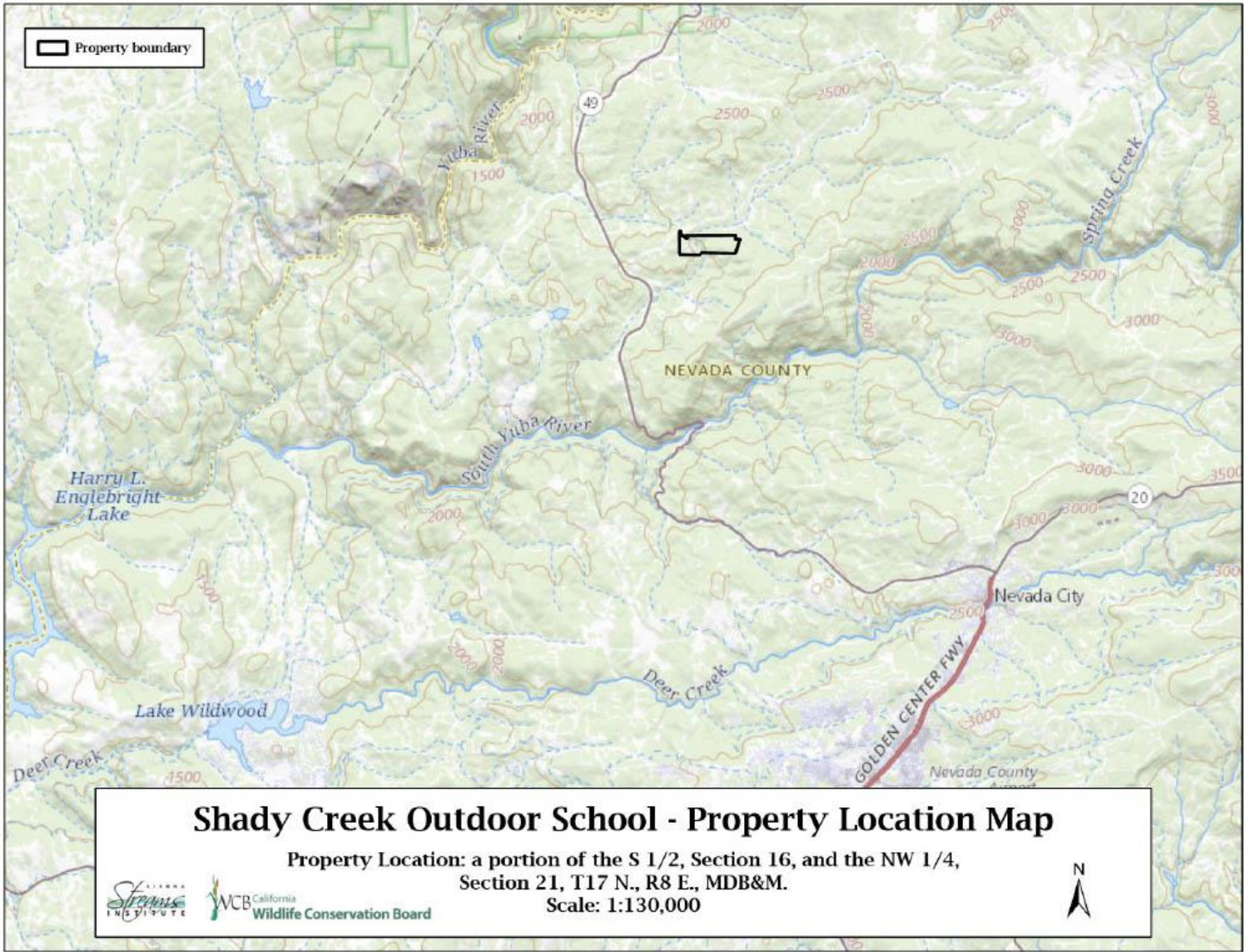
*Website:* <https://cafiresafecouncil.org/grants-and-funding/apply-for-a-grant/>.

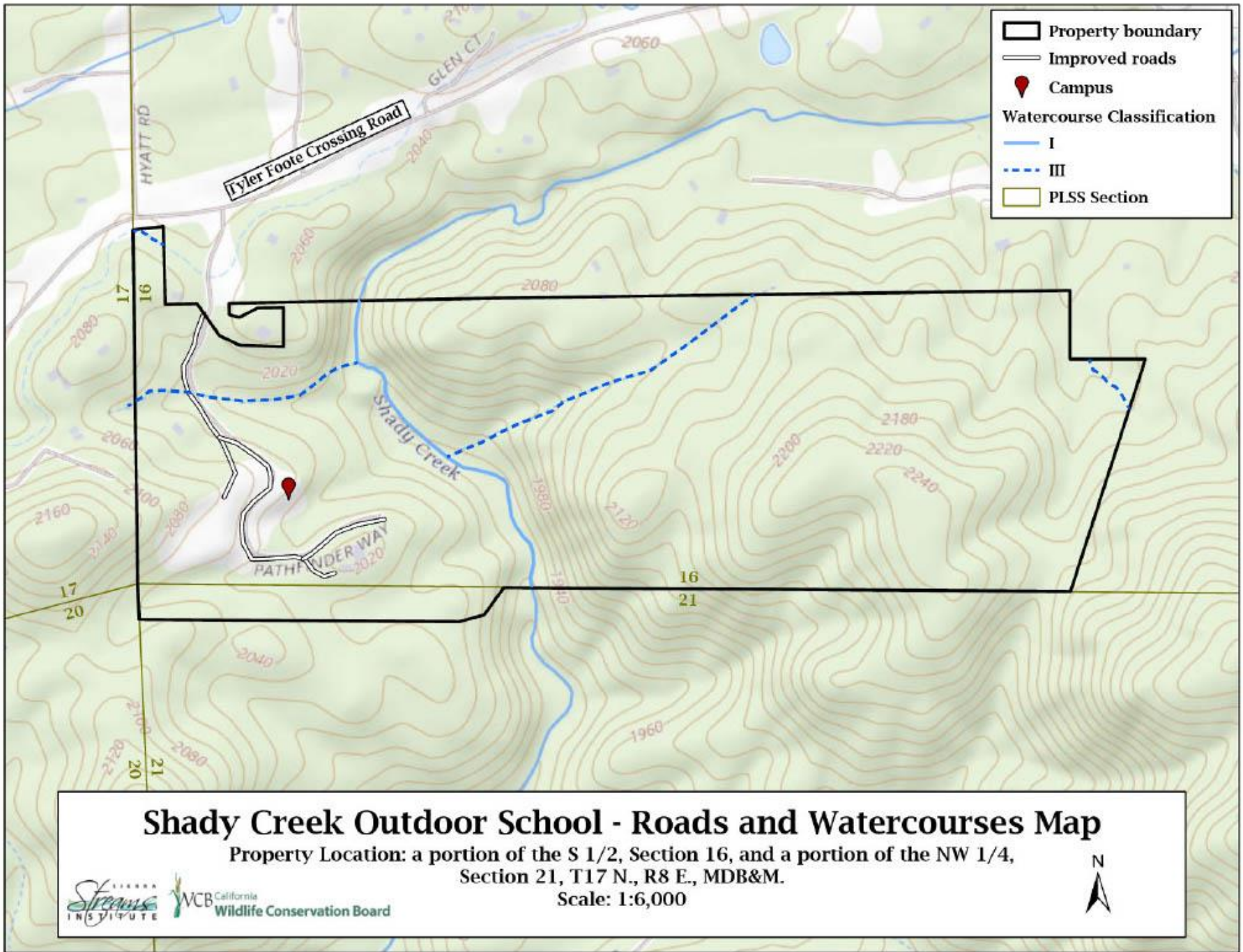
*Contact:* <https://cafiresafecouncil.org/contact/>

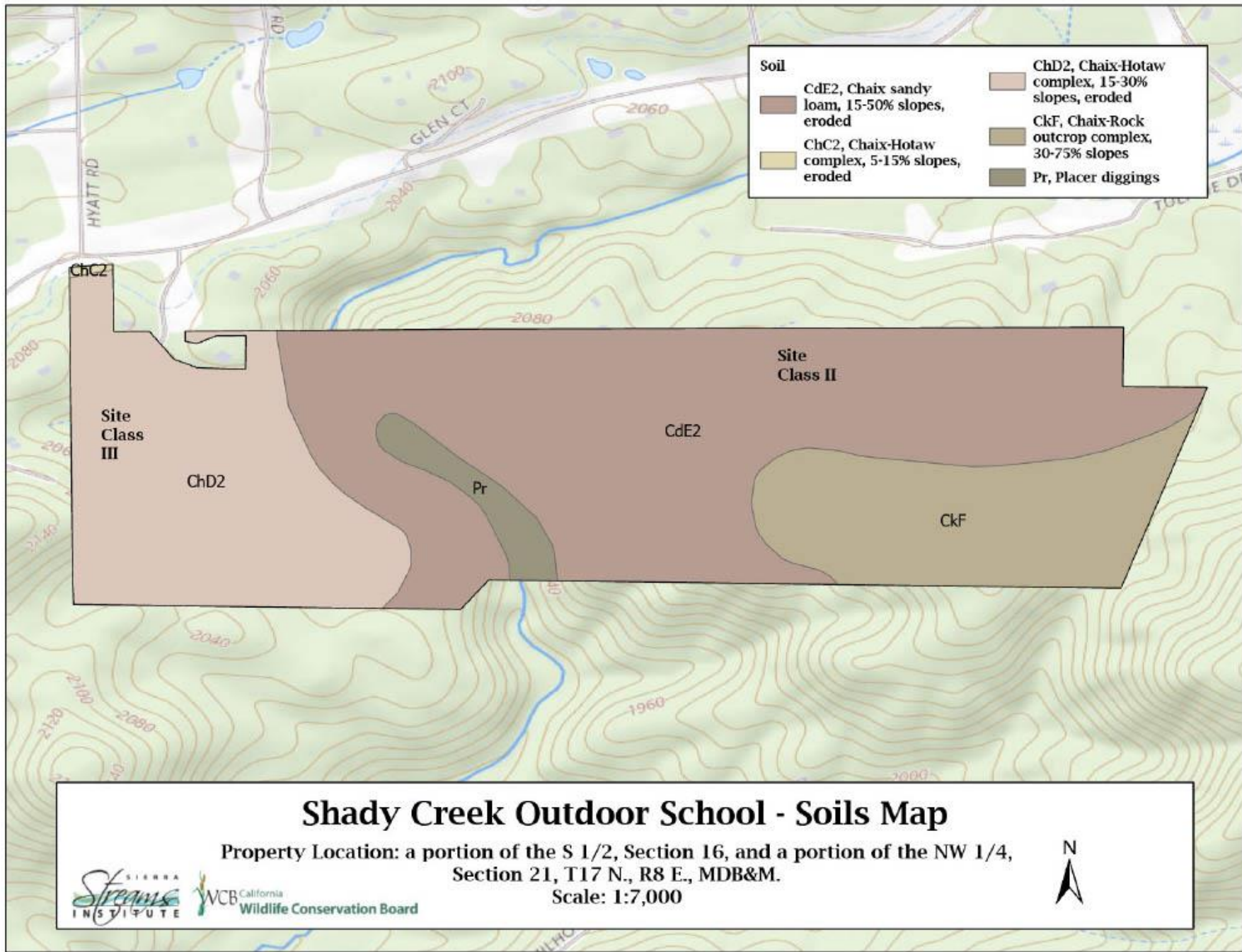
## **Other Potential Grant Source**

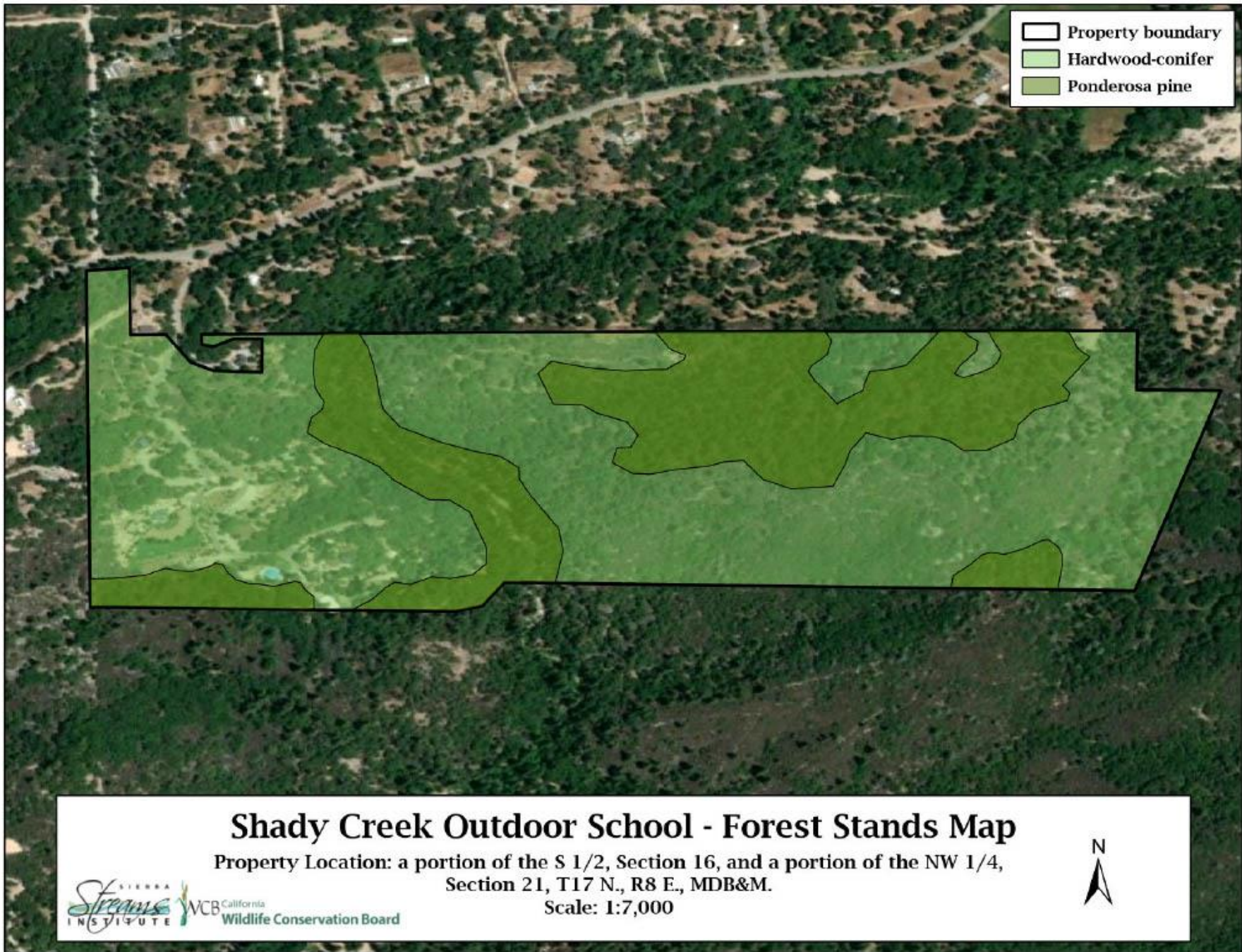
Nevada County Office of Emergency Services may offer FireWise Community grants on occasion. Check their website for information: <https://nevadacountyca.gov/3595/Firewise-Community-Grants>.

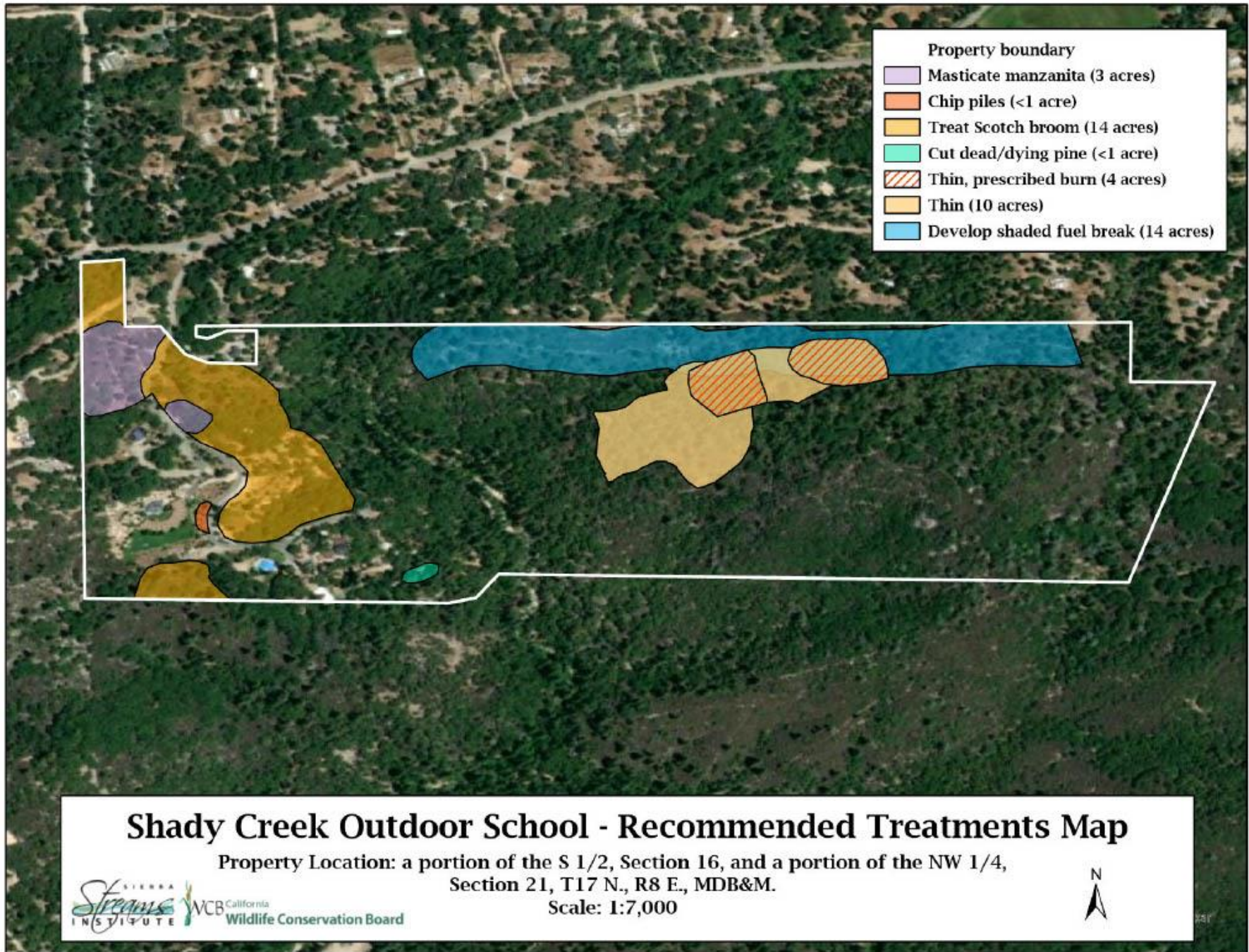
# Maps













# Appendix 1: Standards and Specifications

NRCS Standards are in the NRCS Field Office Technical Guide (FOTG) at:

<https://efotg.sc.egov.usda.gov/#/>

CFIP Standards are in the CFIP User's Guide, posted on the right-hand side of the CAL FIRE CFIP webpage at: <https://www.fire.ca.gov/grants/california-forest-improvement-program-cfip/>

# Appendix 2: Taxes and Land Use

## Property Tax

The property does not fall under any specific property tax program.

## Income Tax

Timber harvest and other revenue generating activities generally produce a federal and state income tax liability. Tax credits may be available for some management activities.

## Estate Tax

Good estate planning can help to lessen tax liability when passing land to heirs. Landowners should seek good planning and tax advice.

## Record Keeping

Good record keeping can help landowners manage their assets, increase their revenues, and minimize their tax liability. The landowner is responsible for maintaining a copy of this Management Plan.

## Land Use

The zoning and land use classifications from the County land use plan is not applicable for this property.

## Appendix 3 – Past Plans and Updates

No previous Forest Management Plan exists for the property.

## Appendix 4 – Supporting Data

*Stand 1 inventory results for 2022*

<b>Species</b>	<b>Stems/acre</b>	<b>BA ft<sup>2</sup>/acre</b>	<b>Bf/acre</b>	<b>QMD (in.)</b>
CY	4720.1	55.3	898.4	1.5
BO	7630.1	55.8	2875.0	
PP	138.4	15.6	2992.6	
IC	2100.5	3.4	370.5	
DF	0.3	1.1	345.1	
IO	787.9	11.5	124.3	
MA	3.5	3.3	291.7	
<b>Total</b>	<b>12443.4</b>	<b>143.8</b>	<b>7656.8</b>	
Std Dev.			7152.9	
95% CL			4098.9 – 11214.7	

*Ponderosa pine stand results for 2022*

<b>Species</b>	<b>Stems/acre</b>	<b>BA ft<sup>2</sup>/acre</b>	<b>Bf/acre</b>	<b>QMD (in.)</b>
PP	108.7	92.0	11484.4	3.3
BO	911.5	35.6	1838.0	
CY	900.0	7.6	0.0	
IO	300.0	0.0	0.0	
<b>Total</b>	<b>2220.2</b>	<b>135.2</b>	<b>13322.3</b>	
Std Dev.			6649.7	
95% CL			5062.8-21582.0	

*IC= incense-cedar, PP= ponderosa pine, IO= interior live oak, CY= canyon live oak, DF= Douglas-fir, MA= madrone, BO= black oak. QMD= quadratic mean diameter, a measure of central tendency for stand diameter.*

# Appendix 5 – Archaeology Statement

The purpose of the Cultural Resources section is the identification and, to the extent possible, preservation of archaeological and historical resources on the Property.

An archaeological records check **MUST BE** conducted by Northeast Information Center (NEIC) prior to any on-site activities utilizing public funding.

Archaeology is confidential. A confidential archaeological records search was conducted for the entire property. The report is on file with the landowner (Northeast Center of California Historical Resources Information System (I.C. File # NEV-23-12)).

## Appendix 6 – References

- Brittingham, M. (2016). Management practices for enhancing wildlife habitat. PennState Extension. <https://extension.psu.edu/management-practices-for-enhancing-wildlife-habitat>
- California Department of Fish and Wildlife (2023). The California Natural Diversity Database. <https://wildlife.ca.gov/Data/CNDDDB/About>
- Californiaherps.com. (2023). Foothill yellow-legged frog-*Rana boylei*. <https://californiaherps.com/frogs/pages/r.boylei.html>
- California Native Plant Society (n.d.). Calscape: Deergrass (*Muhlenbergia rigens*). [https://calscape.org/Muhlenbergia-rigens-\(Deergrass\)](https://calscape.org/Muhlenbergia-rigens-(Deergrass))
- DiTomaso, J.M., G.B. Kyser et al. (2013). *Weed Control in Natural Areas in the Western United States*. Weed Research and Information Center, University of California. 544 pp.
- Dunning, Duncan (1942). A site classification for the mixed-conifer selection forests of the Sierra Nevada. Res. Note PSW-RN-028. Berkeley, CA: U.S. Department of Agriculture, Forest Service, Pacific Southwest Forest and Range Experiment Station. 19 p
- Fryer, Janet L (2007). *Quercus kelloggii*. In: Fire Effects Information System. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory. <https://www.fs.usda.gov/database/feis/plants/tree/quekel/all.html>.
- Howard, C., Dymond, C.C., Griess, V.C., Tolkien-Spurr, D., van Kooten, G. C. (2021). Wood product carbon substitution benefits: a critical review of assumptions. *Carbon Balance Management* 16(9), 1-11. <https://doi.org/10.1186/s13021-021-00171-w>
- Hurteau, M. D., Stoddard, M. T., Fule, P. Z. (2011). The carbon costs of mitigating high-severity wildfire in southwestern ponderosa pine. *Global Change Biology*, 17(1), 1516-1521. doi:10.1002/eco.197810.1002/eco.1978
- Hurteau, M. D., North, M. (2010). Carbon recovery rates following different wildfire risk mitigation treatments. *Forest Ecology and Management*, 260(5), 930-937.
- Janowiak, M.; Swanston, C.; Ontl, T. (2017). Importance of Forest Cover. (2017). U.S. Department of Agriculture, Forest Service, Climate Change Resource Center. <https://www.fs.usda.gov/ccrc/topics/forest-mgmt-carbon-benefits/forest-cover>
- Larson, A. J., & Churchill, D. (2012). Tree spatial patterns in fire-frequent forests of western North America, including mechanisms of pattern formation and implications for designing fuel reduction and restoration treatments. *Forest Ecology and Management*, 267, 74–92.
- McLaughlin, B. C., Ackerly, D. D., Klos, P. Z., Natali, J., Dawson, T. E., & Thompson, S. E. (2017). Hydrologic refugia, plants, and climate change. *Global Change Biology*, 23(8), 2941–2961. <https://doi.org/10.1111/gcb.13629>

## Appendix 6 – References

- Natural Resources Conservation Service (1975). Soil Survey of Nevada County Area, California. <https://archive.org/details/usda-general-soil-map-soil-survey-of-nevada-county-area-california/page/38/mode/1up>
- Natural Resource Conservation Service (2017). Web Soil Survey. U.S. Department of Agriculture, Natural Resource Conservation Service. <http://soils.usda.gov/>
- North, M. P., Stevens, J. T., Greene, D. F., Coppoletta, M., Knapp, E. E., Latimer, A. M., Restaino, C. M., Tompkins, R. E., Welch, K. R., York, R. A., Young, D. J. N., Axelson, J. N., Buckley, T. N., Estes, B. L., Hager, R. N., Long, J. W., Meyer, M. D., Ostoja, S. M., Safford, H. D., ... Wyrsh, P. (2019). Tamm Review: Reforestation for resilience in dry western U.S. forests. *Forest Ecology and Management*, 432, 209–224. <https://doi.org/10.1016/j.foreco.2018.09.007>
- Stuart, J.D. and Sawyer, J.O. (2001). *Trees and Shrubs of California*. California Natural History Guides. University of California Press, USA. 482 p.
- University of California Agriculture and Natural Resources (2022). State Integrated Pest Management Program (UCIPM). Pests in gardens and landscapes: wild blackberries. <https://ipm.ucanr.edu/PMG/PESTNOTES/pn7434.html>
- University of California Agriculture and Natural Resources (n.d.). State Integrated Pest Management Program (UCIPM). Weed cut: weed control user tool, biological control. <https://weedcut.ipm.ucanr.edu/biological-control/#gsc.tab=0>
- U.S. Fish and Wildlife Service (n.d.). Foothill yellow-legged frog. <https://fws.gov/species/foothill-yellow-legged-frog-rana-boylii>
- U.S. Department of Agriculture Natural Resources Conservation Service. (n.d.). OSD view by name. <https://soilseries.sc.egov.usda.gov/osdname.aspx>
- U.S. Forest Service (n.d.). Prescribed Fire. <https://www.fs.usda.gov/managing-land/prescribed-fire>
- U.S. Forest Service (2002). Soil Survey Tahoe National Forest Area California. <https://archive.org/details/usda-soil-survey-of-tahoe-national-forest-area-california-2002/page/19/mode/1up>
- U.S. Forest Service (2015). California Forest Insect and Disease Training Manual. [https://www.fs.usda.gov/Internet/FSE\\_DOCUMENTS/fsbdev3\\_046410.pdf](https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/fsbdev3_046410.pdf)
- U.S. Forest Service (2023). Forest Vegetation Simulator software. <https://www.fs.usda.gov/fvs/>
- Young, D. J. N., Meyer, M., Estes, B., Gross, S., Wuenschel, A., Restaino, C., & Safford, H. D. (2020). Forest recovery following extreme drought in California, USA: Natural patterns and effects of pre-drought management. *Ecological Applications*, 30(1). <https://doi.org/10.1002/eap.2002>