

# High Plains Shooting Center Project ~ Parcel 060-010-016

## Biological Review



### Prepared for:

Patrick Jones  
1600 E. Cypress Avenue  
Redding, California

### Prepared by:

Wildland Resource Managers  
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January, 2016

**Introduction:**

This biological review has been prepared at the request of Mr. Patrick Jones of Redding California for his property located in Township 31 North, Range 3 West Section 36 of the Palo Cedro (1965) California U. S. Geological Survey 5.7 minute quadrangle, parcel 060-010-016. The focus of this review is to identify the biological resources of the project area and to suggest any necessary mitigation measures as required by the County of Shasta in their October 22, 2013 letter to the project engineer of Butler Engineering (pg. 2).

**Methodology:**

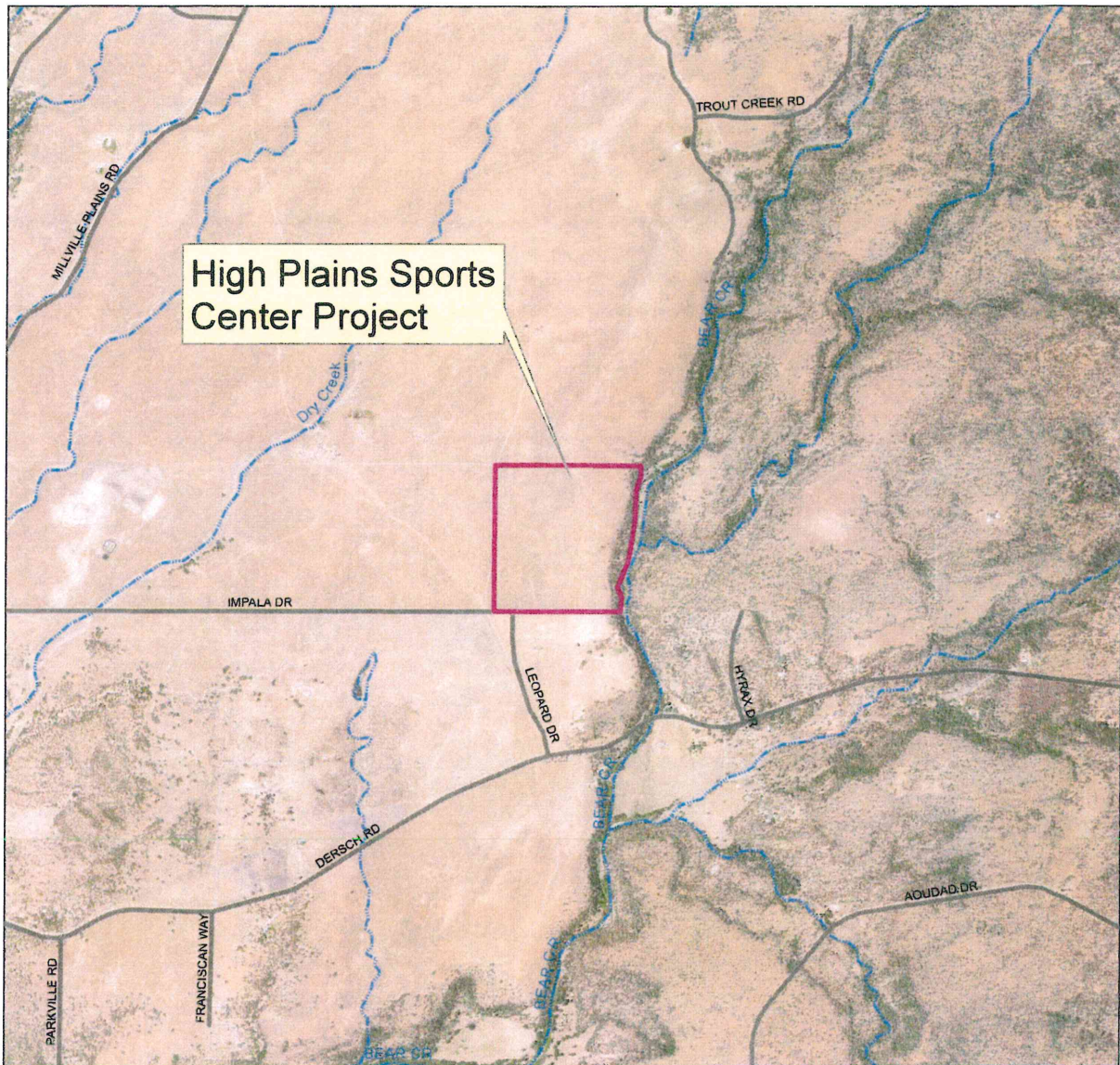
The site was visited on January 21<sup>st</sup> and February 18<sup>th</sup>, 2016 by WRM's principal biologist for the purpose of assessing the general physical features of the property, including the topography, wetland resources, vegetative composition and habitat types and quality. In addition to the field visit, a number of other resources were consulted, including the wetlands delineation done by the Western Shasta Resource Conservation District (September 2014), the Shasta County Soils Survey by the USDA Soil Conservation Service (August 1974), the California Natural Diversity Data Base (on-line resource) and the California Native Plant Society web site. Since the time of year this review was requested was not optimal for a field botany survey, a plant list for the project area was compiled from a list developed by WRM for the Millville Plains area just west of the project site and the vegetative data collected by the WSRCD while doing the wetlands delineation for the site. Wildlife data for annual grassland, vernal inclusions and oak woodlands was derived from USFWS, USFS and CDFW publications and field reconnaissance.

**Location and Environmental Setting:**

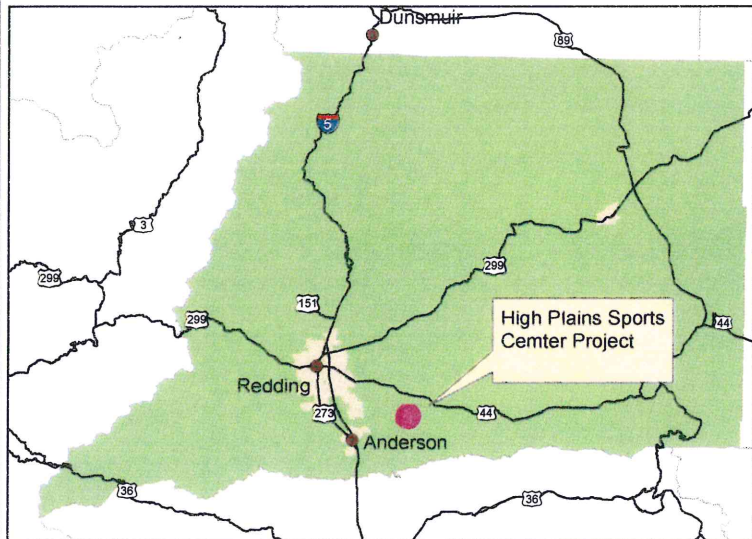
The project area consists of 159.6 acres that is located just to the west of the Bear Creek drainage basin along the eastern edge of the Millville Plains of Shasta County. The area is north of Dersch Road and south of State Highway 44 in Section 36 of Township 31 North, Range 3 West. See Figure 1. The only road to the property is Leopard Drive which leaves Dersch Road on the north side. There are no improvements on the property which is currently being used as livestock winter pasture. The area is located on the Tuscan Buttes, with the easternmost margin of the parcel being adjacent to Bear Creek. The western half of the parcel has a moderate slope of approximately 4% grade from west to east. The eastern half of the parcel is relatively flat. Elevation on the site ranges from 640 feet in the west to 550 feet in the lower flatlands.

Annual weather patterns are typical of eastern central Shasta County with summer daytime temperatures in the upper 90's to lower 100's. Winter temperatures average around the mid 60's. Rainfall varies annually and falls between late fall and early spring. Conveyance of rain runoff is through a series of ephemeral streams that generally flow from the northwest to southeast and ultimately empty into Bear Creek.

January 15, 2016 **High Plains Sports Center Vicinity Map** Figure 1



Projection: California State Plane, ZONE 1, NAD 83



Sources:  
Wildland Resource Managers

Image Date: 07/28/2014  
Data Type: ArcGIS Image Service  
Service Name: NAIP/California\_2014\_1m  
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1 inch = 2,000 feet

0 300 600 1,200 1,800 2,400 Feet  
0 0.075 0.15 0.3 0.45 0.6 Miles



**Wildland Resource Managers**  
Field Work and Project Management  
by Wildland Resource Managers  
Steven J. Kerns  
Principal and Certified Wildlife Biologist

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Figure 1

## **Soils:**

The Shasta County Soil Survey identifies five soil types associated with the project area. These include: Keefer's gravelly loam, 0-3 percent slopes (KdA), Keefer's gravelly loam, 3-8 slopes (KdB), Toomes very rocky loam, 0-50 percent slopes (TcE), Igo gravelly loam (IaB) and Rockland (RxF). See Figure 2.

**Keefer's gravelly loam, 0-3 percent slopes (KdA):** The Keefers Series consists of well-drained soils that formed in old alluvium from basic volcanic rock. In a representative profile, the surface layer is brown, medium acid gravelly loam and clay loam about 14 inches thick. The upper part of the subsoil is brown, medium acid clay loam about 7 inches thick. The next part is reddish brown, slightly acid very gravelly lightly clay. At a depth of about 26 inches, the subsoil becomes mixed pinkish gray, strong brown and black, slightly acid weakly cemented very gravelly clay.

**Keefer's gravelly loam, 3-8 percent slopes (KdB):** This soil has slow permeability. Surface runoff is slow to medium and the hazard of erosion is slight to moderate. Available water capacity is 4 to 7.5 inches. The weakly cemented substratum is at a depth of 24 to 42 inches and limits root penetration in places.

**Toomes very rocky loam, 0-50 percent slopes (TcE):** This soil is somewhat excessively drained and has moderate permeability. Runoff is medium to rapid and the hazard of erosion is moderate to high. Available water capacity is 0.5 to 1.5 inches. Bedrock is at a depth of 4 to 10 inches. Rock outcrops and stones cover 15 to 25 percent of the surface. In a representative profile, the surface layer is brown, slightly acid very stony and stony loam. Tuff breccias is at a depth of about 11 inches.

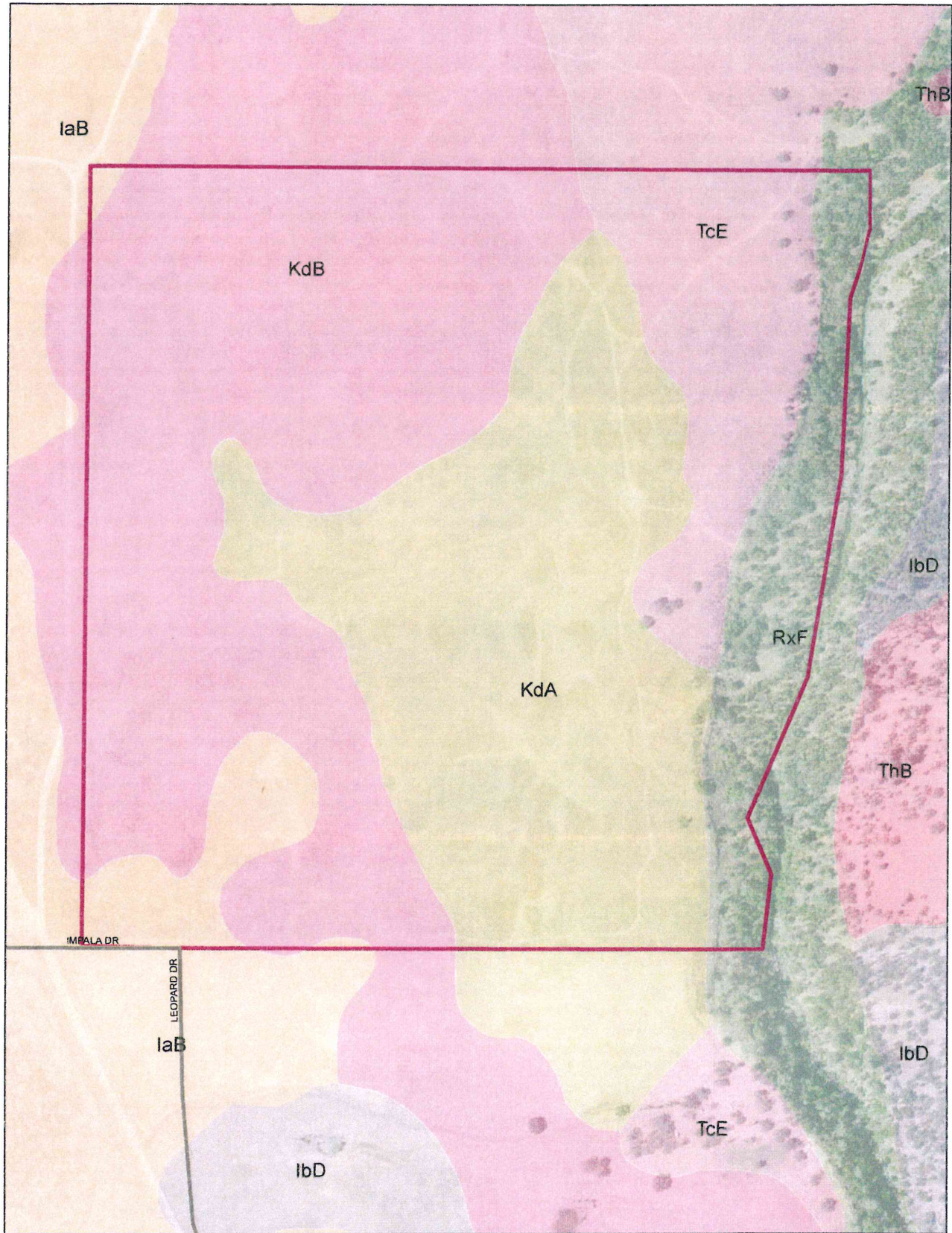
**Igo gravelly loam (IaB):** The Igo series consists of well-drained soils that have indurated hardpan. They are on hummocky high terraces of Swede Creek and Millville plains. Slopes range from 0-8 percent. In a representative profile, the surface layer is yellowish-red, strongly acid gravelly loam about 3 inches thick. The subsoil is yellowish-red slightly acid gravelly heavy loam about 4 inches thick. Below this layer is an indurated gravelly hardpan about 15 inches thick. Below the hardpan, to a depth of more than 60 inches is a substratum of stratified mixed alluvium of sand and clay in texture.

**Rockland (RxF):** Rockland is nearly level to very steep and is on uplands of elevation from 700 to 6,900 feet. Rock outcrops cover 25 to 90 percent of the surface. The appreciable amount of rock outcrop and the very shallow soil in the area are the dominant feature. The rock consists of shale, sandstone, conglomerate, limestone, greenstone quartz diorite, andesite, basalt, rhyolite schist, gneiss, serpentine or peridotite. Vegetation, where present, is similar to that of adjacent soils except that it is more sparse.

## **Vegetation:**

There are two vegetation associations found on the project area. These are the blue oak/gray pine woodlands that are found along the eastern edge of the property comprising 14.7 acres (10%) and the annual grassland with vernal inclusion that comprise 133 acres (90%). See Figure 3. The time of year when this report was requested to be done (January 2016) was not conducive for a comprehensive botany survey. To address this issue and to determine which botanical species are likely to be present

# High Plains Sports Center Soils Map



Field Work and Project Management  
by Wildland Resource Managers  
Steven J. Kerns  
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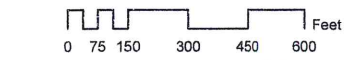
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Image Date: 07/26/2014  
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Projection: California State Plane, ZONE 1, NAD 83



1 inch = 300 feet



Sources:  
Wildland Resource Managers  
Soils: From ESRI SSURGO Downloader

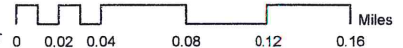


Figure 2

on-site, two sources were used. First was the botanical survey done by WRM for the Twin Bridges Mine site in 2006. This site is located on the Millville Plains just one mile west of the Jones' project area, in the same annual grassland vegetation type. Table 1 lists the plant species found at the Twin Bridges site that are representative of the annual grasslands found on the Millville Plains. The second source used was the wetland delineation done by the Western Shasta Resource Conservation District (WSRCD) for this project. In that report, upland and vernal associated species were recorded on the Army Corp of Engineers "Wetland Determination Data Form ~ Arid West Region" which is included in their report. Table 2 lists the plant species identified on-site by the WSRCD.

**Table 1**

**Plants Identified at the Twin Bridges Mine Area**

Compiled by WRM botanist Bud Adamson

Key: \* identify confirmed

# Observed but either flowers or fruit lack the development needed for positively confirming identification on this date.

<u>Family</u>	<u>Genus</u>	<u>Species</u>	<u>Common</u>	<u>Transect</u>		
				1	2	3
<i>Forbs:</i>						
<u>Apiaceae</u>	Anthriscus	cavcalis	Bur-chervil			#
	Lomatium	utriculatum	Foothill lomatium	*	*	*
	Sanicula	bipinnatifida	Purple sonicle	*	*	
<u>Asteraceae</u>	Ambrosia	psilostachya	Western ragweed	#	#	
	Ancistrocarpus	filagineus	Wooly fish hooks	#	#	*
	Centaurea	solstitialis	Yellow star thistle	*	*	
	Chamomilla	suaveolens	Pineapple weed		#	
	Lasthenia	californica	Gold fields	*	*	*
	Layia	fremontii	Fremont's tidy tips	*	*	*
	Microseris	elegans	--	#	#	*
	Taraxacum	officinale	Dandelion		#	*
<u>Boraginaceae</u>	Plagiobothrys	canescens	Popcorn flower genus	#	#	
	"	greenii	"	*	*	
	"	shastensis	"	*	*	*
	"	nothofulvus	Popcorn flower	*	*	*
<u>Brassicaceae</u>	Lepidium	nitidum	Shining pepper grass	*	*	*
	Raphanus	sativa	Wild radish	*	*	*
	Thysanocarpus	curvipes	Lace pod	*		*

<u>Caryophyllacea</u>	Cerastium	glomeratum	Mouse-ear chickweed	*		
	Minuartia	californica	Calif. Sand wort	*	*	*
	Scleranthus	annus	Knawel	*	*	
<u>Fabaceae</u>	Lotus	humistratus	Hill lotus	*	*	*
	Lupinus	bicolor	Miniature lupine	*	*	*
	Lupinus	nanus	Valley sky lupine	*	*	*
	Medicago	polymorpha	Calif. Bur clover	*		
	Trifolium	depauperatum	Balloon clover	*	*	*
	Trifolium	dubium	Shamrock	#	#	#
	Trifolium	hirtum	Rose clover	#	#	#
<u>Geraniaceae</u>	Erodium	botrys	Long billed filaree	*	*	*
	Erodium	cicutarium	Red stem filaree		*	
	Geranium	molle	Dove's foot geranium			*
<u>Hydrophyllaceae</u>						
	Nemophila	pedunculata	Meadow nemophia			#
<u>Hypericaceae</u>	Hypericum	perforatum	Klamath weed		#	#
<u>Liliaceae</u>	Allium	amplectens	Paper onion	*	*	*
	Dichelostoma	capitatum	Blue dicks	*	*	*
	Chloragalum	angustifolium	Wavy-leaf soap plant	#	#	#
	Zygadens	venosus	Death cammus	#	#	#
Onagraceae	Clarkia sp.			#		
Papaveraceae	Eschscholzia	lobbii	Frying pans	*	*	*
Polemonaceae	Gilia	tricolor	Birds eyes		*	
Portulacaceae	Calandrinia	ciliato	Red maids		*	
Primulaceae	Dodecatheon	hendersonii	Henderson's shooting star*		*	*
Rubiaceae	Galium aparine	Goose grass		#	#	
<u>Scrophutariaceae</u>						
	Triphysaria	eriantha	Butter and eggs	*	*	*
<u>Valerianaceae</u>	Plectritis	brachystemon				*

(Additional later maturing forbs are present on this site, but in their current immature stages lack the development of flowers and/or fruit necessary for identification)

*Grasses:*

Poaceae

Aira  
Brach  
Brom  
Brom  
Brom  
Lolium  
Poa a  
Setar  
Taeni  
Vulpia

(Other annual grass sp  
Additional species com  
grass (*Anthroxanthum*  
(*Hordeum murinum*),  
species found on the

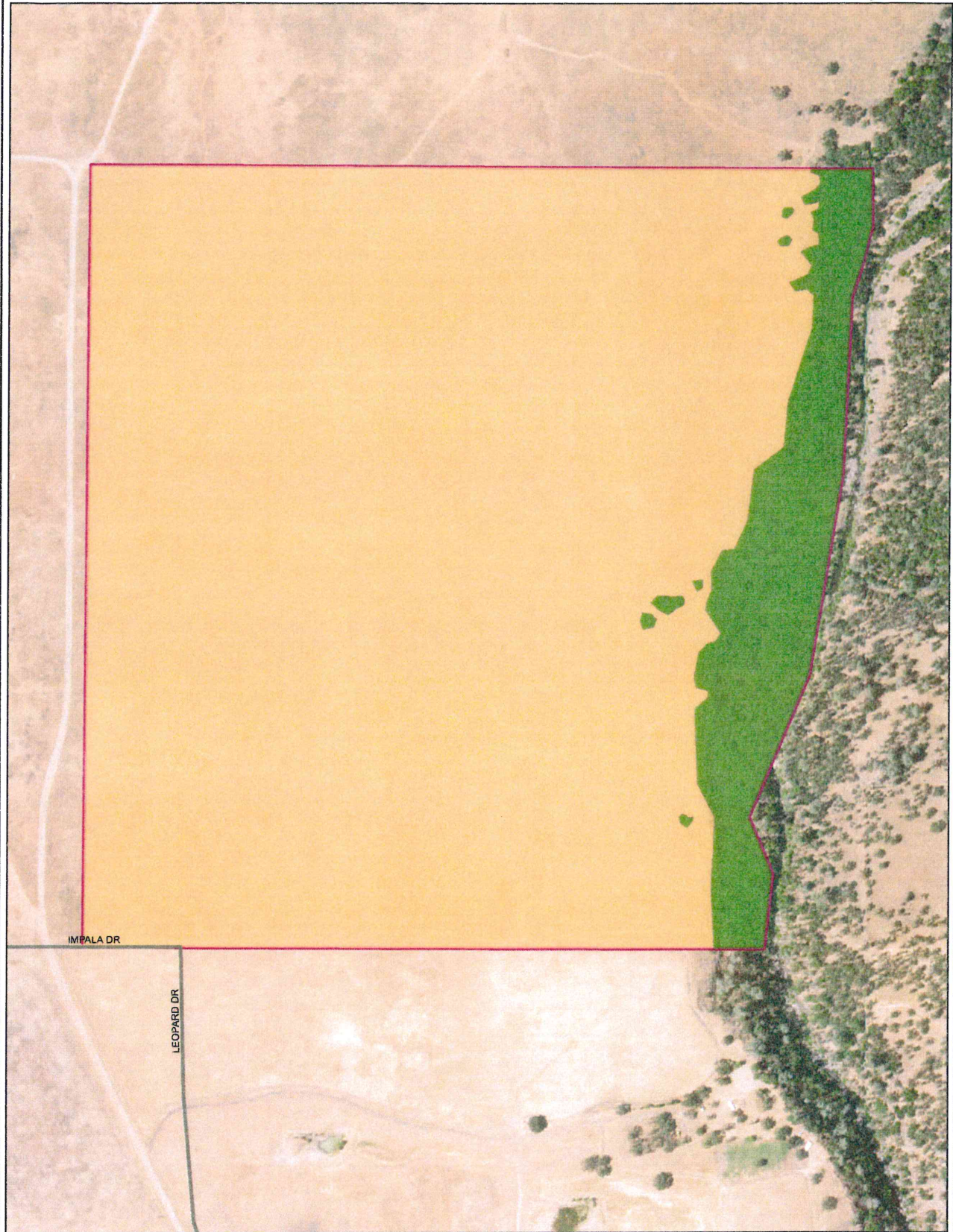
**Vegetative Sp**

The annual grassland  
Erodi  
Loma  
Plagic  
Lupin  
trifoli  
Taeni  
Brom  
Poa a  
Leont  
Poace

Within this grassland a  
vegetation. Species id

Horde  
Desch  
Eryngi  
Eleoch  
Lasthe  
Navar  
Pogog





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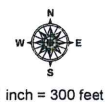
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**Legend**

- Road
- Project Boundary
- Annual Grassland with Vernal Inclusions (133.0577 Acres)
- BlueOak-GreyPine Woodlands (14.7074)

Projection: California State Plane, ZONE 1, NAD 83

Data Type: ArcGIS Image Service  
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Sources:  
Wildland Resource Managers

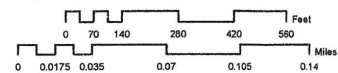


Figure 3

Looking at the lists compiled by WSRCD and WRM provides a relative good sample of the species composition of the on-site annual grasslands.

Blue oak – grey pine woodlands: The only woodlands on the property is a narrow belt along the eastern property line which composes the habitat on either side of Bear Creek. The overstory species here include blue oak (*Quercus douglasii*), interior live oak (*Quercus wislizenii*) and gray pine (*Pinus sabiniana*). Mid-story species consist of California buckeye (*Aesculus californica*), redbud (*Cercis occidentalis*) and thick stands of wedgeleaf ceanothus (*Ceanothus cuneatus*). Understory vegetation is comprised of poison oak (*Rhus diversiloba*) with annual grasses and forbs.

### **Habitats:**

The two vegetative types found on the property are comparative to two basic habitats classified by Mayer and Laudenslayer, JR (1988). These include a narrow strip of Blue Oak – Gray Pine woodland along the eastern property line and the Annual Grasslands complex which characterize the majority of the area. This annual grassland is interspersed with vernal pools and stream courses. As noted by the WSRCD wetlands delineation report, these wetland features have their own unique hydrophytic vegetation (Table 2) which in turn creates a third habitat. The presence of these habitats gives rise to the supporting elements for associated wildlife species.

There is no riparian habitat associated with the stream courses within the grassland complex and the riparian zone associated with Bear Creek is off the subject property.

The oak woodland areas along Bear Creek may well serve as travel corridors for a number of species as they find water, forage and thermal/escape cover there. There are numerous cavities in the mature oaks and rock crevices within this area. The creek provides a thermal cline both in the hot summer months and the cold winter months that will be attractive to wildlife. During the dry periods of summer, Bear Creek, being a perennial stream, is the primary source of water in the area. See the photo section of this report for representative pictures of the habitats and soil types found on the project area.

### **Wetlands:**

The Western Shasta Resource Conservation District conducted a wetland's delineation for the property in April of 2014. Their report, published in September of that year, identified 9.046 acres of vernal swales and 2.953 acres of intermittent streams. The report includes pictures of some of the stream course reaches and vernal pools as well as a map of the wetland features. The report notes that their results are subject to verification by the Army Corp of Engineers. As of this writing the Corp has not verified the report. WRM found the map to be consistent with the features on-site with the exception that the stream courses might be more accurately described as ephemeral rather than intermittent. However that could be a function of the rainfall amounts during any given year. Regardless of the classification, they are "waters of the U.S." as they have connectivity via Bear Creek to the Sacramento River which is a navigable waterway.

**Associated wildlife species:**

The annual grassland provides habitat for a number of common wildlife species including western fence lizard, common garter snake, western rattlesnake black-tailed jackrabbit, California ground squirrel, Botta's pocket gopher, western harvest mouse, California vole, coyote and Columbian black tailed deer. Bird species common to the area include western meadowlark, short-eared owl, turkey vulture, northern harrier, American kestrel, red-tailed hawk, and black shouldered kite. (Basey and Sinclear, 1980. White et al. 1980. Verner et al. 1980).

The blue oak ~ gray pine woodlands provide habitat for 29 species of amphibians and reptiles, 79 species of birds and 22 species of mammals assuming that other special habitat requirements are met (Verner in Mayer and Lauderslayer, Jr. 1988). Common species typical of the woodlands include Columbian black-tailed deer, raccoon, ringtail cat, opossum, gray fox, tree squirrel, several species of bats, robins, western blue bird, California quail, mourning dove, acorn woodpecker, Lewis' woodpecker, flicker, scrub jay and song sparrow.

A search of a California Natural Diversity Data Base for the nine quad area including the project site resulted in the listing of six plant communities, thirty-five animal species, and twenty-nine plant species. Within the nine quad query area there are numerous habitat types that support these different species. Within the project area there are only three habitat types, the blue oak/gray pine, the annual grassland and the vernal wetland areas. Table 3 lists the species from the CNDDDB and California Native Plant Society list that may be found in the habitats on-site.

**Table 3**

**Listed species possibly occurring on the project site**

<u>Specie</u>	<u>Habitat</u>	<u>Status</u>
Western spadefoot	vernal pools	species of concern
Vernal pool fairy shrimp	vernal pools	threatened
Vernal pool tadpole shrimp	vernal pools	endangered
California linderiella	vernal pools	none
Spotted bat	woodlands	species of concern
Western red bat	woodlands	species of concern
Hoary bat	mixed deciduous forests	none
Yuma myotis	woodlands	species of concern
Western pond turtle	stream	species of concern
Sanford's arrowhead	freshwater marsh	endangered
Big-scale balsamroot	valley grassland	endangered
Silky cryptantha	valley grassland	endangered
Legenere	vernal pools	endangered
Ahart's paronychia	vernal pools	endangered

Depauperate milk-vetch	valley grassland	rare
Red Bluff dwarf rush	vernal pools	rare
Bellinger's meadowfoam	wetlands	rare
Boggs Lake hedge-hyssop	vernal pools	rare
Herderson's bent grass	wetlands	rare
Slender orcutt grass	wetlands	rare
Baker's navarretia	wetlands	rare
Bidwell's knotweed	valley grasslands	rare

With the exception of the bats, the species listed are associated with either wetland or vernal features. The tadpole and fairy shrimp species have been found at other vernal locations on the Millville Plains (Vernal Pool Fairy Shrimp, 5 Year Review; US Fish and Wildlife Service 2007) and are expected to be present on the project area.

The bat species listed are in association with woodland habitats. The blue oak woodlands contain roosting opportunities for bats in the form of defoliating bark, cavities and rock crevices. Foraging opportunities for bats are probably limited due to the lack of water during the late spring to early fall months when bats are most active. Bats are insectivores and usually forage where there is available water. As the blue oak/gray pine woodland comprise only 10% of the vegetation on the eastern side of the property it is most likely that bats would be associated with this area.

#### **Summary and Management Recommendations:**

Two vegetation types and vernal inclusions comprise the habitat components of the project area. Sensitive and listed species are most closely associated with the vernal inclusions within the annual grassland complex. These ephemeral and vernal features are suitable habitat for listed species and in the case of the streams, are jurisdictional under the Clean Water Act as there is a significant nexus via Bear Creek to a navigable stream, the Sacramento River. Being jurisdictional, any impacts to these features will require permits from the Army Corp of Engineers, the California State Water Quality Control Board, the U.S. Fish and Wildlife Service and possibly the California Department of Fish and Wildlife. As the vernal pools and swales are suitable habitat for the fairy and tadpole shrimp it is recommended that these features be avoided by the project design. Failure to do so may result in a taking of a shrimp species due to modification of their habitat. The project build-out should also be designed in a manner so as not to impact normal hydrological functions of these vernal features. There are no sensitive species resources in the upland annual grassland features of the project area. However, build-out in these areas needs to be carefully designed to ensure that there are no impacts to the vernal features. This may include setbacks of varying distances from the edges of the vernal features. These setback buffers will be dependent on the percent slope of where the impacts would be. Generally speaking, the lesser the percent slope, the smaller the setback area would need to be. It is recommended that the project design be reviewed by a competent wildlife biologist and hydrologist to assist in the design phase to protect the vernal features. The mature oaks of the woodland areas contain a number of crevices and cavities suitable for mammal and bird nests and dens. These features should be retained if possible. Generally speaking, by placing the shooting features in the annual grassland uplands the sensitive biological features of the area may be avoided.

For questions regarding this report, please contact:  
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White, M., R. . Barrett, A.S. Boss, T.F. Newman, F.J. Rahn, and D.F. Williams. 1980. Mammals. Pages 321-424 in J. Verner and A. S. Boss, tech. cords. California wildlife and their habitats; western Sierra Nevada. U.S. Dep. Agric., For. Serv., (Berkeley, California) Cen. Tech. Rep. PSW-37.

## **Photo Section**

The following pages contain representative photos of the vegetative habitats and soil types found on the project area.



Photo 1. Looking south down main stream course. Keefer's gravelly loam 0-3 percent soil type



Photo 2. Example of vernal swale, looking southwest. Keefer's gravelly loam 3-8 percent slope soil type.





Photo 3 Toomes very rocky loam soil type of the northeast portion of the project area



Photo 4 Oak – gray pine habitat, east side of the project area. Note presence of live oaks and ceanothus brush in distance



Photo 5 Oak woodlands along east side of project area. Note blue oaks on left, live oaks on right and gray pine in distance. Rockland soil type.



Photo 6 East side oak woodlands dropping off toward Bear Creek. Rockland soil type.



Photo 7 Cavities like these occur within the oak woodland habitat along the east side of the property



Photo 8 Typical vernal pool habitat.