JACOBSZOON & ASSOCIATES, INC.
natural resource planning & management

Rashed LSA

Supplemental Application Document

Applicant:
Alexander Rashed
1881 Linnet Lane
Petaluma, CA 94954

Site Address:
11540 Bachelor Valley Road
Witter Springs, CA 95493

Assessor's Parcel Numbers:
002-024-220

Ashley Manheim
Jacobszoon and Associates
117 Clara Avenue
Ukiah, CA 95482

05/29/2020

CONTINUED FROM LSA APPLICATION

Contents

6. Project Fees

	A. Project Name	B. Project Cost	C. Project Fee
1	Crossing 1 – Culvert Replacement	<$5,000	$609.25
2	Crossing 2 - Bridge Notification	<$5,000	$609.25
3	Crossing 3 - Culvert Removal, Proposed Rock Ford	<$5,000	$609.25
4	Crossing 4 - Proposed Rock Ford	<$5,000	$609.25
5	Crossing 5 - Proposed Crossing Decommission	<$5,000	$609.25
6	Crossing 6 - Proposed Crossing Decommission	<$5,000	$609.25
7	Crossing 7 - Proposed Rock Ford	<$5,000	$609.25
8	Crossing 8 - Proposed Rock Ford	<$5,000	$609.25
9	Crossing 9 - Proposed Rock Ford	<$5,000	$609.25
10	Crossing 10 - Proposed Rock Ford	<$5,000	$609.25
11	Crossing 11 – Proposed Rock Ford	<$5,000	$609.25
		D. Base Fee	
		E. TOTAL FEE	$6,701.75

10. Project Description

The project site spans 238.11 acres located at 11540 Bachelor Valley Road in Witter Springs, California *(Appendix D: Map 1. Vicinity)*. Site elevations range between 1,400’ and 1,680’ above mean sea level. Site topography varies from moderately steep slopes on the northern portion of the property (20 to 50 percent slopes) to relatively flat on the southern portion of the property. Stormwater runoff at the project site consists of sheetflow that drains into several unnamed ephemeral and intermittent watercourses, tributaries to Dayle Creek. Site vegetation generally consists of grassland and oak woodland. The property is used for residential use, agriculture, and livestock and is proposed for use for commercial cannabis cultivation (*Appendix D: Map 2. Aerial Imagery)*. Water for cannabis cultivation activities will be sourced from a groundwater well on-site (*Appendix A: Photo 38*).

There are 11 watercourse crossings at the project site (*Appendix A: Photos 1-37, Appendix D: Map 3. General Topography)*. 100-year flood flow values were determined using the USGS Magnitude and Frequency Method (M & F) for Crossings 1-2, 5-6, and 11 because the basin area at these locations are greater than 100 acres. The Rational Method was used to calculate the 100-year flood values for Crossings 3-4, and 7-10 because the basin area at these locations are less than 100 acres (*Table 1*). Culvert diameters were not calculated for crossings 4-11 because rock fords are present or proposed at these locations.

Table 1: 100-Year Flood Event Calculations and Culvert Sizing for 100-Year Flood Flow and Associated Woody Debris

Crossing	Basin Area (acres)	Basin Length (miles)	Basin Relief (feet)	Tc (min)	Mean annual rainfall (in)	100-year precipitation ("/hr) for Tc	Runoff Coefficient C	Culvert Inlet Type	Method	Q 100 (cfs)	Calculated Culvert Diameter .67 HW/D (in)
1	890	2.29	2080	15	45	2.468	0.35	Headwall	M & F	535.7	**132**
2	833.5	2.12	2080	15	45	2.468	0.35	Headwall	M & F	506.2	**132**
3	20	0.33	80	10	45	2.988	0.35	Headwall	Rational	20.9	**36**
4	16.7	0.3	80	10	45	2.988	0.35	N/A	Rational	17.5	**N/A**
5	575	1.71	2040	15	45	2.468	0.35	N/A	M & F	367	**N/A**
6	576	1.7	2040	15	45	2.468	0.35	N/A	M & F	367.5	**N/A**
7	38.6	0.32	380	10	45	2.988	0.35	N/A	Rational	40.4	**N/A**
8	2	0.06	120	10	45	2.988	0.35	N/A	Rational	2.1	**N/A**
9	0.96	0.03	80	10	45	2.988	0.35	N/A	Rational	1.0	**N/A**
10	0.85	0.025	80	10	45	2.988	0.35	N/A	Rational	0.9	**N/A**
11	146	1	1480	10	45	2.988	0.35	N/A	M & F	112	**N/A**

There are 11 projects associated with this Lake or Streambed Alteration Agreement:

10.1. **<u>Crossing 1:</u>** project 1 consists of a culvert replacement located at latitude and longitude 39.19597°, -122.97198° (*Appendix D: Map 3. General Topography)*. The existing watercourse crossing facility consists of two side-by-side 48" diameter corrugated metal culverts at an unnamed intermittent watercourse with an average active channel width of 12' *(Appendix A: Photos 1-5)*. According to calculations using the M &F Method the two existing culverts are undersized to accommodate the estimated 100-year flood flow and associated debris (Table 1). The two culverts shall be replaced with a 106.5" rise x 168.75" span concrete pipe arch, or by a single-span bridge designed by an engineer. Elliptical culvert size equivalency was determined using the table shown in *Appendix B: Attachment 1.*

10.2. **Crossing 2:** project 2 consists of the notification of an existing bridge located at latitude and longitude 39.19843°, -122.97232° at an unnamed intermittent watercourse with an average active channel width of 12' (*Appendix D: Map 3. General Topography)*. The bridge consists of a single-span timber bridge with concrete footings that is approximately 18' wide and 30' long with a 3' dam below the bridge *(Appendix A: Photos 6-11)*. Calculations completed using M & F Method for 100-year flood flow suggest that the crossing would receive 506.2 cfs during the anticipated 100-year flood event. A cross-sectional area of the channel was calculated by completing a transect of the unnamed intermittent watercourse at the crossing point *(Appendix B: Attachment 2)*. Calculations completed using Manning's equation suggest that the stream channel will accommodate 986 cfs before overtopping the banks and spilling onto the flood plain *(Appendix B: Attachment 3).* The existing bridge has been installed at the top of the channel banks and will not become overtopped during the anticipated 100-year flood event; no work is proposed at this time. The applicant proposes to continue operation of the bridge and to complete any required maintenance as necessary to ensure proper function of the structure.

10.3. **Crossing 3:** project 3 consists of the replacement of an undersized culvert located at latitude and longitude 39.19842°, -122.97515° (*Appendix D: Map 3. General Topography)*. The existing watercourse crossing facility consists of a 24" diameter and 20' long corrugated metal culvert at an unnamed ephemeral watercourse with an average active channel width of 2' *(Appendix A: Photos 12-15)*. According to calculations using the Rational Method, the culvert is undersized to accommodate the anticipated 100-year flood flow of 20.9 cfs and the associated debris (*Table 1)*. The culvert shall be replaced with a rock ford. Riprap diameter and thickness were calculated using the Simplified Nomograph provided in the CalFire document "Designing Watercourse Crossings for Passage of 100-Year Flood Flow, Wood, and Sediment" using a fill slope angle of 3:1 *(Appendix B: Attachment 4)*. The ford shall be constructed using 1.5' d50 rock with a 3' W, 14' L, and 2.5' D. The approaches shall be rocked 15' in each direction. The ford shall be installed according to the Rock Ford Standard Plan and construction details shown in Appendix C: Attachments 3-4

10.4. **Crossing 4:** project 4 consists of a proposed rock ford located at latitude and longitude 39.19859°, -122.97470° (*Appendix D: Map 3. General Topography)*. The road at Crossing 4 is a low volume seasonal road that provides access to agricultural and livestock grazing areas *(Appendix A: Photos 16-18).* The ephemeral watercourse has an approximate 2' wide active channel and anticipated 100-year flood flow of 17.5 cfs as calculated using

the Rational Method *(Table 1).* Riprap diameter and thickness of the proposed ford were calculated using the Simplified Nomograph provided in the CalFire document "Designing Watercourse for Crossings Passage of 100-Year Flood Flow, Wood, and Sediment" using a fill slope angle of 3:1 *(Appendix B: Attachment 4)*. The proposed rock ford shall be composed of 1.5' d50 rock with a 3' W, 14' L, and 2.5' D. The approaches shall be rocked 15' in each direction. The ford shall be installed according to the Rock Ford Standard Plan and construction details shown in Appendix C: Attachments 3-4.

10.5. **Crossing 5:** project 5 consists of decommissioning the crossing located latitude and longitude 39.20402°, -122.97473° at an unnamed intermittent watercourse *(Appendix A: Photos 19-20, Appendix D: Map 3. General Topography).* There is no existing crossing facility. The channel banks shall be excavated back to native grade and the banks and disturbed areas shall be stabilized by applying native seed and mulch. Cross-road drains shall be installed at undrained road pitches and cut bank seeps to segment and decommission the road. Steep pitches between cross-drains shall be roughened, seeded, and mulched. Any spoils generated from the proposed project shall be moved to an upland location outside of riparian setbacks and stabilized by the application of native seed and mulch.

10.6. **Crossing 6:** project 6 consists decommissioning the crossing located at latitude and longitude 39.20391°, -122.97465° at an unnamed intermittent watercourse *(Appendix A: Photo 21, Appendix D: Map 3. General Topography).* There is no existing crossing facility. The channel banks shall be excavated back to native grade and the banks and disturbed areas shall be stabilized by applying native seed and mulch. Cross-road drains shall be installed at undrained road pitches and cut bank seeps to segment and decommission the road. Steep pitches between cross-drains shall be roughened, seeded, and mulched. Any spoils generated from the proposed project shall be moved to an upland location outside of riparian setbacks and stabilized by the application of native seed and mulch.

10.7. **Crossing 7:** project 7 consists of the installation of a rock ford on a seasonal low-volume road at an unnamed ephemeral watercourse crossing located at latitude and longitude 39.20360°, -122.97225° (*Appendix D: Map 3. General Topography)*. There is no existing watercourse crossing facility *(Appendix A: Photos 22-23)*. The watercourse has an approximate 1.5' wide channel and anticipated 100-year flood flow of 40.4 cfs as calculated using the Rational Method (*Table 1*). Riprap diameter and thickness of the proposed ford were calculated using the Simplified Nomograph provided in the CalFire

document "Designing Watercourse Crossings for Passage of 100-Year Flood Flow, Wood, and Sediment" using a fill slope angle of 3:1 *(Appendix B: Attachment 3)*. The ford shall be constructed with 1.5' d50 rock with a 5' W, 14' L, and 3' D. The road approaches to the crossing shall be rocked 15' in each direction. Construction shall be completed in accordance with the Rock Ford Standard Plan and construction details shown in Appendix C: Attachments 3-4.

10.8. **Crossing 8:** project 8 consists of the installation of a rock ford on a seasonal low-volume road located at latitude and longitude 39.20482°, -122.97477° at an unnamed ephemeral watercourse (*Appendix D: Map 3. General Topography)*. There is no existing watercourse crossing facility *(Appendix A: Photos 24-26).* The watercourse has an approximate 1.5' wide channel and anticipated 100-year flood flow of 2.1 cfs as calculated using the Rational Method *(Table 1).* Riprap diameter and thickness and chute dimensions of the proposed ford were calculated using the Simplified Nomograph provided in the CalFire document "Designing Watercourse Crossings for Passage of 100-Year Flood Flow, Wood, and Sediment" using a fill slope angle of 3:1 *(Appendix B: Attachment 3)*. The proposed rock ford shall be constructed with 6" d50 rock with a 3' W, 14' L, and 1.5' D with a 3' W and 0.5' D trapezoidal chute that extends 10' to the toe of fill. The road approaches to the crossing shall be rocked 15' in each direction. The ford shall be installed according to the Rock Ford Standard Plan and construction details shown in Appendix C: Attachments 3-4.

10.9. **Crossing 9:** project 9 consists of the installation of a rock ford on a seasonal low-volume road located at latitude and longitude 39.20602°, -122.97553° at an unnamed ephemeral watercourse (*Appendix D: Map 3. General Topography)*. There is no existing watercourse crossing facility *(Appendix A: Photos 27-29).* The watercourse has an approximate 1.5' wide channel and anticipated 100-year flood flow of 0.96 cfs as calculated using the rational method *(Table 1).* Riprap diameter and thickness and chute dimensions were calculated using the Simplified Nomograph provided in the CalFire document "Designing Watercourse Crossings for Passage of 100-Year Flood Flow, Wood, and Sediment" using a fill slope angle of 3:1 *(Appendix B: Attachment 3)*. The proposed rock ford shall be constructed with 6" d50 rock and with a 3' W, 14' L, and 1.5' D with a 3' W and 0.5' D trapezoidal chute that extends 10' to the toe of fill. The approaches to the crossing shall be rocked 15' in each direction. The ford shall be installed according to the Rock Ford Standard Plan and construction details shown in Appendix C: Attachments 3-4.

10.10. **Crossing 10:** project 10 consists of the installation of a rock ford on a seasonal low-volume road located at latitude and longitude 39.20649°, -122.97550° at an unnamed ephemeral watercourse (*Appendix D: Map 3. General Topography)*. There is no existing watercourse crossing facility *(Appendix A: Photos 30-33).* The watercourse has an approximate 1.5' wide channel and anticipated 100-year flood flow of 0.85 cfs as calculated using the rational method *(Table 1)*. Riprap diameter and thickness and chute dimensions were calculated using the Simplified Nomograph provided in the CalFire document "Designing Watercourse Crossings for Passage of 100-Year Flood Flow, Wood, and Sediment" using a fill slope angle of 3:1 *(Appendix B: Attachment 3)*. The proposed rock ford shall be constructed with 6" d50 rock with a 3' W, 14' L, and 1.5' D with a 3' W and 0.5' D trapezoidal chute that extends 10' to the toe of fill. The approaches to the crossing shall be rocked 15' in each direction. The ford shall be installed according to the Rock Ford Standard Plan and construction details shown in Appendix C: Attachments 3-4.

10.11. **Crossing 11:** project 11 consists of a proposed rock ford on a seasonal low-volume road located at latitude and longitude 39.202256°, -122.969153° at an unnamed intermittent watercourse (*Appendix D: Map 3. General Topography)*. There is no existing watercourse crossing facility (*Appendix A: Photos 34-37).* The watercourse has an approximate 2' wide channel and anticipated 100-year flood flow 112 cfs as calculated using the M & F Method (Table 1). The proposed rock ford shall be constructed with 1.5' d50 rock with a 5' W, 10' L, and 2' D. The approaches to the crossing shall be rocked 20' in each direction. The ford shall be installed according to the Rock Ford Standard Plan and construction details shown in Appendix C: Attachments 3-4.

11. Project Impacts

11.1. **Impacts to Water Quality:** There will be a temporary increase in fine sediment transport to receiving waters during the wet season following construction activities associated with the culvert replacement at Crossing 1, proposed rock ford installations at Crossings 3-4 and 7-11, and decommissioning of Crossings 5 and 6.

11.2. **Impacts to Bed, Channel, or Bank and Direct Effects on Fish, Wildlife and Associated Habitat:** Direct impacts on organisms that rely on the riparian area may include temporary loss or decline of habitat, disturbance to amphibians, reptiles, aquatic invertebrates, mammals, birds and other aquatic and riparian species during construction activities.

11.3. **Impacts to Vegetation:** Vegetation loss resulting from the installation of rock fords proposed at Crossings 7-11 will consist of annual and perennial grasses. It is anticipated that the disturbed area in this location will revegetate quickly following seeding and mulching. It is not anticipated that the proposed work at Crossing 1, or 4-6 will result in vegetation removal. It is not anticipated that the proposed projects will result in damage to woody plant species.

11.4. **Impacts to Fish Wildlife and Plant Resources:** According CDFW Natural Diversity Database (CNDDB) existing fish or wildlife resources that the project could have a significant adverse effect upon include two special status plant species and six special status wildlife species. These species have a moderate or high potential to occur within the site. A comprehensive list of plant and animal resources are detailed in the Biological Resources Assessment (*Attachment 1*).

12. Measures to Protect Fish, Wildlife, & Plant Resources

12.1. **Wildlife Protection:** If water is present, pre-construction surveys shall be completed for all amphibians. Surveys shall be completed by a qualified biologist within seven days prior to initiation of work. CDFW shall be contacted immediately in the event that these species are identified within the construction zone.

12.2. **Stream Protection:** No debris, soil, silt, sand, bark, slash, sawdust, refuse, cement or concrete washing, oil or petroleum products, or other deleterious material from project activities shall be allowed to enter into or be placed where it may be transported by rainfall or runoff into waters of the state. All project materials and debris shall be removed from the project site and properly disposed of off-site upon project completion.

12.3. **Equipment Maintenance:** Refueling of machinery or heavy equipment, adding or draining of oil, lubricants, coolants or hydraulic fluids shall not take place within the stream bed, channel or bank. All such fluids and containers shall be disposed of properly off-site.

12.4. **Hazardous Spills:** Any material, which could be hazardous or toxic to aquatic life and enters a stream (i.e. a piece of equipment tipping-over in a stream and dumping oil, fuel or hydraulic fluid), the Applicant shall immediately notify the California Emergency Management Agency State Warning Center at 1-800-852-7550, and immediately initiate clean-up activities. CDFW shall be notified by the Permittee within 24 hours at 707-445-6493 and consulted regarding clean-up procedures.

12.5. **Work Period**: All work shall be confined to the period June 1 through October 15 of each year. Work within the active channel of a stream shall be restricted to periods of dry weather when water is not present in the channel. Precipitation forecasts and

potential increases in stream flow shall be considered when planning construction activities. Construction activities shall cease and all necessary erosion control measures shall be implemented prior to the onset of precipitation. A two-day (48 hour) forecast of rain shall be the trigger for temporary cessation of cleanup and erosion control activities. Following cessation, winterization/erosion protection measures at the work site may include, but are not limited to: jute blankets, straw wattles, seeding with native grass seed, and applying straw mulch.

Appendix A: Photos

Photo 1: Project 1

Description:
Upstream of Crossing 1

Location:
39.19597°, -122.97198°

Supplemental information:
Photo taken facing north and upstream of Crossing 1.

Date: February 21, 2020

Photo 2: Project 1

Description:
Crossing 1 Inlet

Location:
39.19597°, -122.97198°

Supplemental information:
Photo taken facing south towards Crossing 1 inlet.

Date: February 21, 2020

Photo 3: Project 1

Description:
Crossing 1 Outlet

Location:
39.19597°, -122.97198°

Supplemental information:
Photo taken facing north towards Crossing 1 outlet.

Date: February 21, 2020

Photo 4: Project 1

Description:
Downstream of Crossing 1

Location:
39.19597°, -122.97198°

Supplemental information:
Photo taken facing south and downstream of Crossing 1.

Date: February 21, 2020

Photo 5: Project 1

Description:
Road Approach to Crossing 1

Location:
39.19597°, -122.97198°

Supplemental information:
Photo taken facing west towards Bachelor Valley Rd.

Date: February 21, 2020

Photo 6: Project 2

Description:
Upstream of Crossing 2

Location:
39.19843°, -122.97232°

Supplemental information:
Photo taken facing north and upstream of Crossing 2.

Date: February 21, 2020

Photo 7: Project 2

Description:
Crossing 2

Location:
39.19843°, -122.97232°

Supplemental information:
Photo taken facing south and downstream towards Crossing 2.

Date: February 21, 2020

Photo 8: Project 2

Description:
Crossing 2

Location:
39.19843°, -122.97232°

Supplemental information:
Photo taken facing west towards residential structures and Bachelor Valley Rd.

Date: February 21, 2020

Photo 9: Project 2

Description:
Crossing 2

Location:
39.19843°, -122.97232°

Supplemental information:
Photo taken facing south and downstream towards Crossing 2.

Date: February 21, 2020

Photo 10: Project 2

Description:
Crossing 2

Location:
39.19843°, -122.97232°

Supplemental information:
Photo taken facing north and upstream towards Crossing 2.

Date: February 21, 2020

Photo 11: Project 2

Description:
Crossing 2

Location:
39.19843°, -122.97232°

Supplemental information:
Photo taken facing north and upstream towards Crossing 2.

Date: February 21, 2020

Photo 12: Project 3

Description:
Upstream of Crossing 3

Location:
39.19842°, -122.97515°

Supplemental information:
Photo taken facing east and upstream of Crossing 3.

Date: February 21, 2020

Photo 13: Project 3

Description:
Crossing 3 Inlet

Location:
39.19842°, -122.97515°

Supplemental information:
Photo taken facing west towards 24”-diameter corrugated metal culvert inlet proposed for replacement.

Date: February 21, 2020

Photo 14: Project 3

Description:
Crossing 3 Outlet

Location:
39.19842°, -122.97515°

Supplemental information:
24”-diameter corrugated metal culvert outlet.

Date: February 21, 2020

Photo 15: Project 3

Description:
Downstream of Crossing 3

Location:
39.19842°, -122.97515°

Supplemental information:
Photo taken facing southwest and downstream of Crossing 3.

Date: February 21, 2020

Photo 16: Project 4

Description:
Upstream of Crossing 4

Location:
39.19859°, -122.97470°

Supplemental information:
Photo taken facing north and upstream of Crossing 4.

Date: February 21, 2020

Photo 17: Project 4

Description:
Crossing 4

Location:
39.19859°, -122.97470°

Supplemental information:
Photo taken facing east towards Crossing 4.

Date: February 21, 2020

Photo 18: Project 4

Description:
Downstream of Crossing 4

Location:
39.19859°, -122.97470°

Supplemental information:
Photo taken facing southwest and downstream of Crossing 4 towards Crossing 3.

Date: February 21, 2020

Photo 19: Project 5

Description:
Crossing 5

Location:
39.20402°, -122.97473°

Supplemental information:
Photo taken facing northwest and upstream towards Crossing 5.

Date: February 21, 2020

Photo 20: Project 5

Description:
Crossing 5

Location:
39.20402°, -122.97473°

Supplemental information:
Photo taken facing east towards Crossing 5.

Date: February 21, 2020

Photo 21: Project 6

Description:
Crossing 6

Location:
39.20391°, -122.97465°

Supplemental information:
Photo taken facing southeast towards Crossing 6.

Date: February 21, 2020

Photo 22: Project 7

Description:
Crossing 7

Location:
39.20360°, -122.97225°

Supplemental information:
Photo taken facing east towards Crossing 7.

Date: February 21, 2020

Photo 23: Project 7

Description:
Crossing 7

Location:
39.20360°, -122.97225°

Supplemental information:
Photo taken facing south towards Crossing 7 and downstream of crossing 7.

Date: February 21, 2020

Photo 24: Project 8

Description:
Crossing 8

Location:
39.20482°, -122.97477°

Supplemental information:
Photo taken facing northeast towards Crossing 8.

Date: February 21, 2020

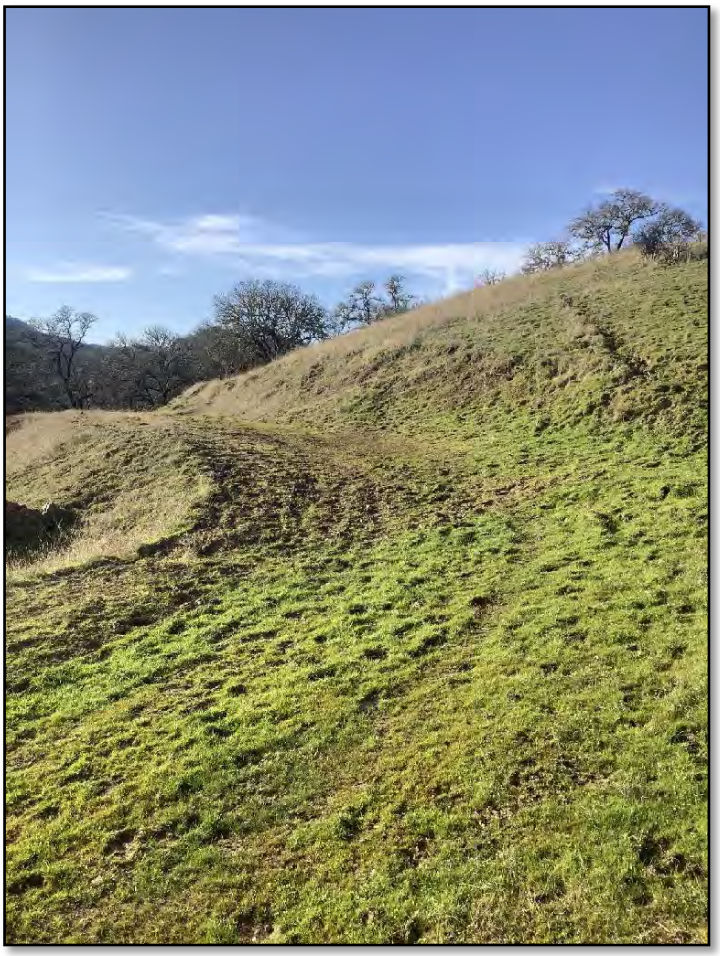


Photo 25: Project 8

Description:
Road Approach to Crossing 8

Location:
39.20482°, -122.97477°

Supplemental information:
Photo taken facing north towards Crossing 8.

Date: February 21, 2020

Photo 26: Project 8

Description:
Downstream of Crossing 8

Location:
39.20482°, -122.97477°

Supplemental information:
Photo taken facing southwest and downstream of Crossing 8.

Date: February 21, 2020

Photo 27: Project 9

Description:
Upstream of Crossing 9

Location:
39.20602°, -122.97553°

Supplemental information:
Photo taken facing east and upstream of Crossing 9.

Date: February 21, 2020

Photo 28: Project 9

Description:
Road Approach to Crossing 9

Location:
39.20602°, -122.97553°

Supplemental information:
Photo taken facing north towards Crossing 9.

Date: February 21, 2020

Photo 29: Project 9

Description:
Downstream of Crossing 9

Location:
39.20602°, -122.97553°

Supplemental information:
Photo taken facing west and downstream of Crossing 9.

Date: February 21, 2020

Photo 30: Project 10

Description:
Upstream of Crossing 10

Location:
39.20649°, -122.97550°

Supplemental information:
Photo taken facing east and upstream of Crossing 10.

Date: February 21, 2020

Photo 31: Project 10

Description:
Road Approach to Crossing 10

Location:
39.20649°, -122.97550°

Supplemental information:
Photo taken facing north towards Crossing 10.

Date: February 21, 2020

Photo 32: Project 10

Description:
Downstream of Crossing 10

Location:
39.20649°, -122.97550°

Supplemental information:
Photo taken facing west and downstream of Crossing 10.

Date: February 21, 2020

Photo 33: Project 10

Description:
Downstream of Crossing 10

Location:
39.20649°, -122.97550°

Supplemental information:
Photo taken facing west and downstream of Crossing 10.

Date: February 21, 2020

Photo 34: Project 11

Description:
Road Approaches to Crossing 11

Location:
39.202256°, -122.969153°

Supplemental information:
Photo taken facing north towards Crossing 11.

Date: February 21, 2020

Photo 35: Project 11

Description:
Road Approaches to Crossing 11

Location:
39.202256°, -122.969153°

Supplemental information:
Photo taken facing south towards Crossing 11.

Date: February 21, 2020

Photo 36: Project 11

Description:
Upstream of Crossing 11

Location:
39.202256°, -122.969153°

Supplemental information:
Photo taken facing east and upstream of Crossing 11.

Date: February 21, 2020

Photo 37: Project 11

Description:
Downstream of Crossing 11

Location:
39.202256°, -122.969153°

Supplemental information:
Photo taken facing west and downstream of Crossing 11.

Date: February 21, 2020

Photo 38: Wellhead

Description:
Groundwater Wellhead

Location:
39.19603°, -122.97165°

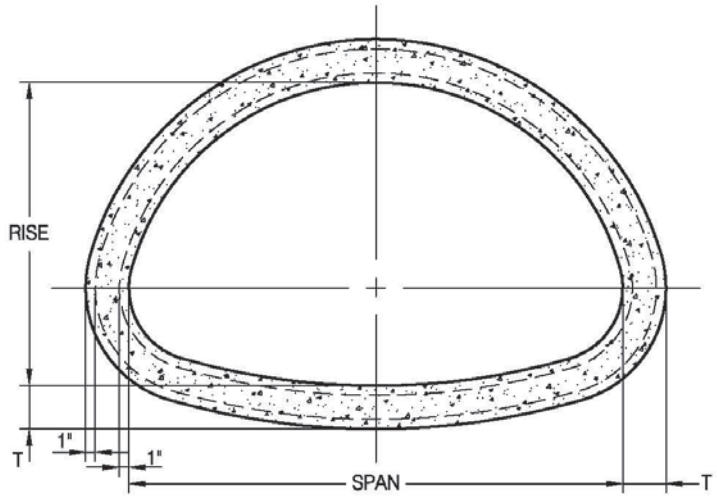
Supplemental information:
Groundwater well that will be used as the water source for cannabis irrigation.

Date: February 21, 2020

Appendix B: Calculations

1. Concrete Pipe Arch Sizing Equivalence

CONCRETE ARCH PIPE DESIGN



TYPICAL CROSS SECTION

EQUIVALENT SIZE	RISE	SPAN	WATER AREA	WALL T	WT./FT.
INCHES	INCHES	INCHES	SQ. FT.	INCHES	LBS.
18	13 1/2	22	1.6	2 1/2	170
24	18	28 1/2	2.8	3 1/2	315
30	22 1/2	36 1/4	4.4	4	445
36	26 5/8	43 3/4	6.4	4 1/2	600
42	31 5/16	51 1/8	8.8	4 1/2	690
48	36	58 1/2	11.4	5	875
54	40	65	14.3	5 1/2	1065
60	45	73	17.7	6	1305
72	54	88	25.6	7	1830
84	62	102	34.6	8	2415
96	77 1/2	122	51.7	9	3510
108	87 1/8	138	66.0	10	4400
120	96 7/8	154	81.8	11	5400
132	106 1/2	168 3/4	99.1	10	5390

Arch pipe is manufactured with a tongue and groove joint to standard or special strengths in accordance with ASTM Specifications C506. Flexible compounds may be used for joint sealant.

2. Bridge Cross Section

① $A_1 = 6', B_1 = 3.67'$

$\text{Area} = \frac{6' \times 3.67'}{2} = 11.01\ ft^2$

② $A_2 = 13', B_2 = 3.67'$

$\text{Area} = 47.71\ ft^2$

③ $A_3 = 7', B_3 = 3.67$

$\text{Area} = \frac{7' \times 3.67'}{2} = 12.85\ ft^2$

$C_1^2 = A_1^2 + B_1^2$

$C_1 = \sqrt{6^2 + 3.67^2}$

$C_1 = 7.03'$

$C_3^2 = A_3^2 + B_3^2$

$C_3 = \sqrt{7^2 + 3.67^2}$

$C_3 = 7.9$

Total area under bridge $= 1 + 2 + 3$

$= 11.01' + 47.71' + 12.85'$

$= \boxed{71.57\ ft^2}$

wetted perimeter $= C_1 + A_2 + C_3$

$= 7.03' + 13' + 7.9'$

$= \boxed{27.93'}$

3. Manning's Equation

Manning Equation Calculator | Open channel flow software

Click to Calculate | k = 1.49

Solve for: Velocity and Discharge

Select units: Use feet and seconds units

Area, A (ft²):	71.57
Wetted Perimeter, P (ft):	27.93
Channel Slope, S (ft/ft):	0.0118
Manning n:	0.022
Velocity, V (ft/s):	13.776682
Discharge, Q (ft³/s):	985.99716

Units in Manning calculator: ft=foot, m=meter, s=second.

Manning Equation:

$$Q = VA \qquad V = \frac{k}{n}\left(\frac{A}{P}\right)^{2/3} S^{1/2}$$

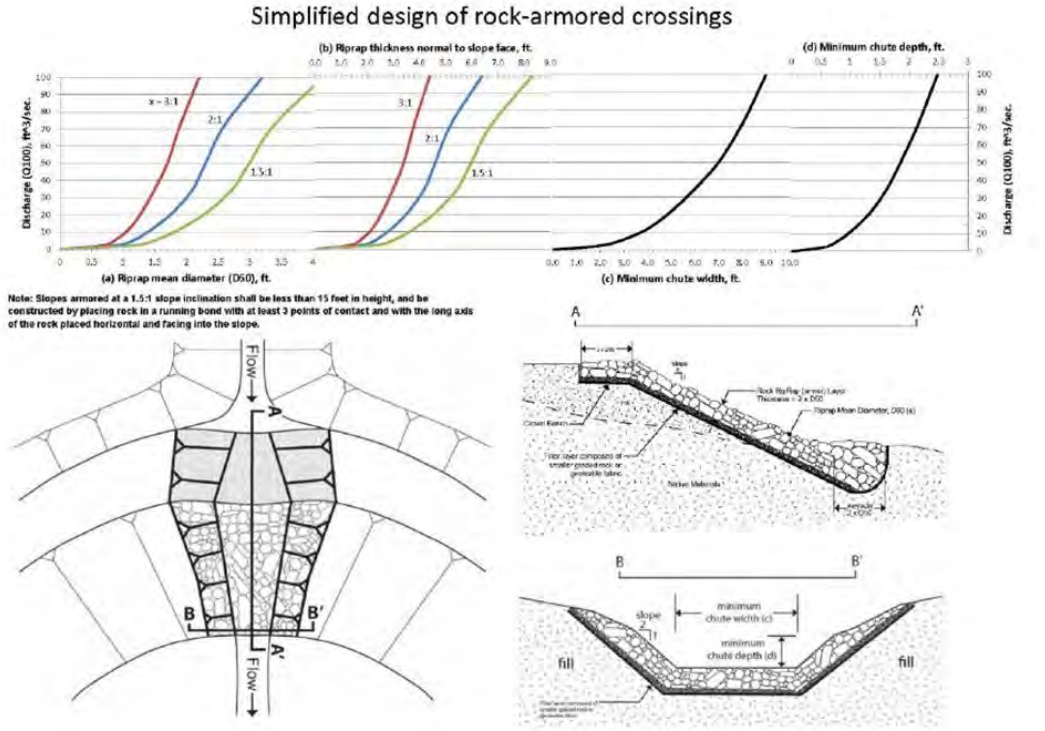
k is a unit conversion factor: k=1.49 for English units (feet and seconds). k=1.0 for SI units (meters and seconds).
A=Flow area of the pipe, culvert, or channel.
P=Wetted perimeter which is the portion of the circumference that is in contact with water.
Q=Discharge (flow rate).
S=Downward (longitudinal) slope of the culvert.
V=Average velocity in the pipe, culvert, or channel.

Manning n varies with the roughness of the pipe, culvert, or channel. The higher the n, the rougher the material. Table of Manning n values.

The Manning Equation is the most commonly used equation to analyze open channel flows. It is a semi-empirical equation for simulating water flows in channels and culverts where the water is open to the atmosphere, i.e. not flowing under pressure, and was first presented in 1889 by Robert Manning. The channel can be any shape - circular, rectangular, triangular, etc. The units in the Manning equation appear to be inconsistent; however, the value k has hidden units in it to make the equation consistent. The Manning Equation was developed for uniform steady state flow (see Discussion and References for Open Channel Flow). S is the slope of the energy grade line and $S=h_f/L$ where h_f is energy (head) loss and L is the length of the channel or reach. For uniform steady flows, the energy grade line = the slope of the water surface = the slope of the bottom of the channel.

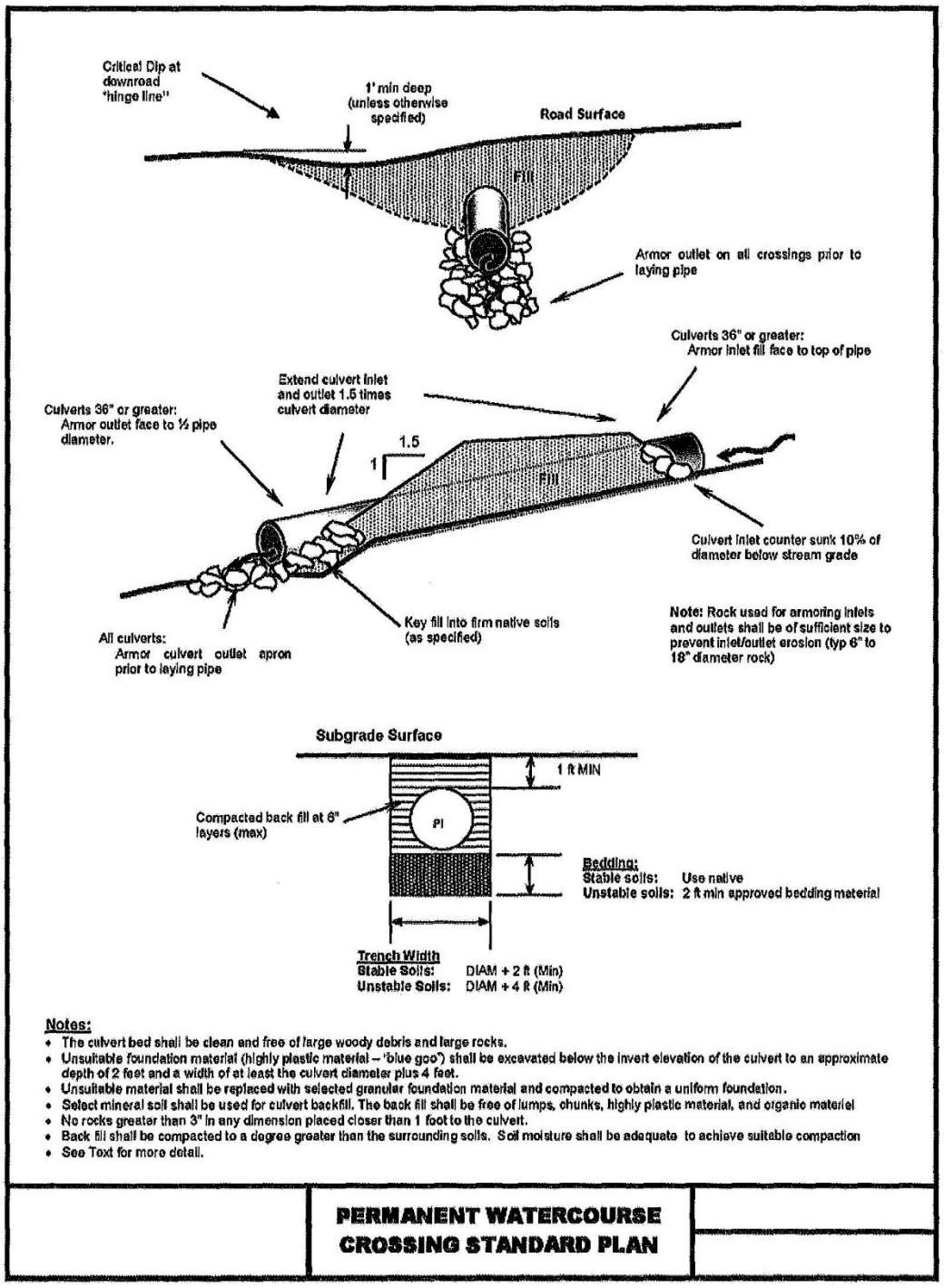
The product A/P is also known as the hydraulic radius, R_h.

4. Simplified Nomograph



Appendix C: Construction Details

1. Watercourse Crossing Standard Plan



Notes:

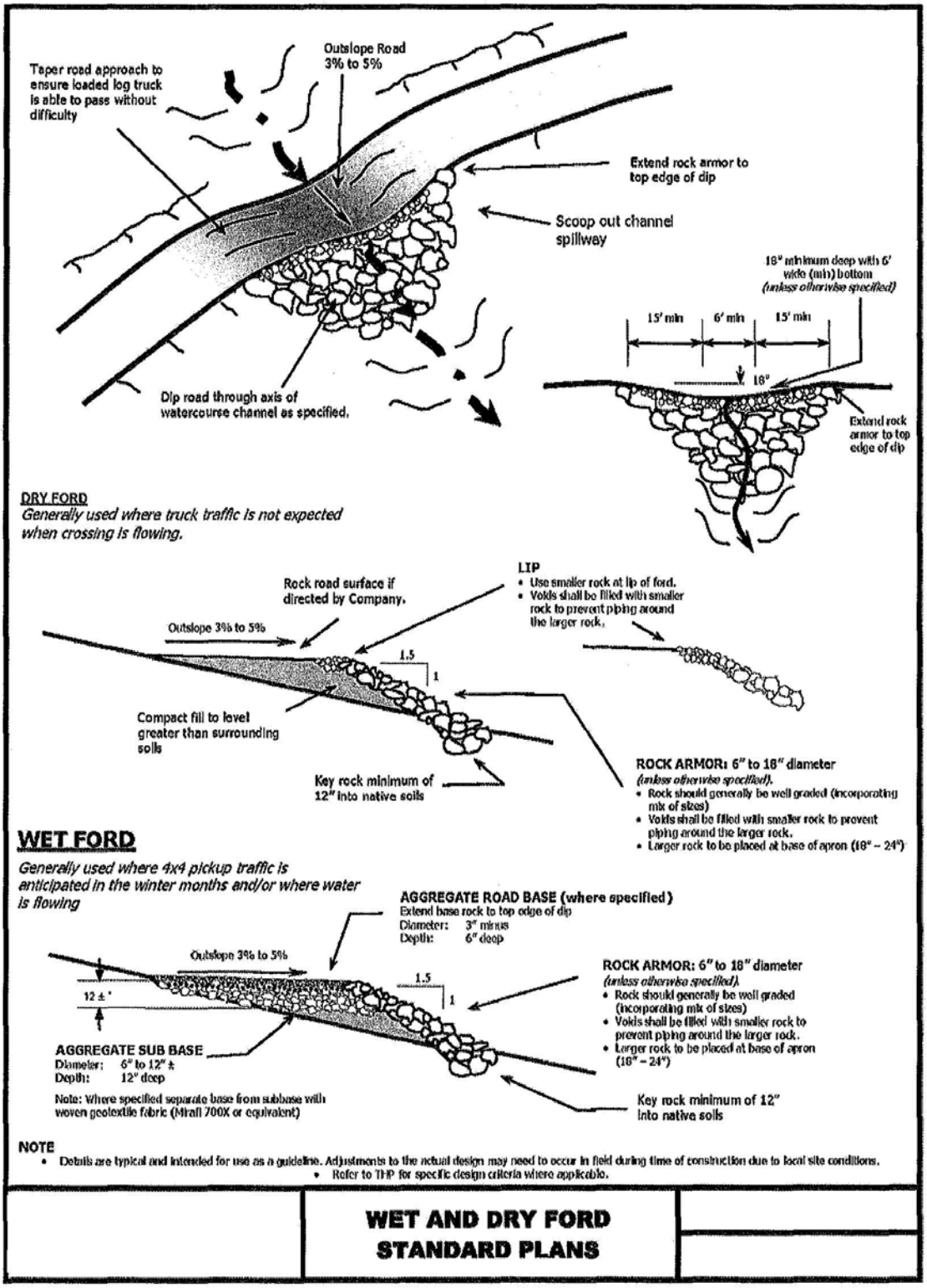
- The culvert bed shall be clean and free of large woody debris and large rocks.
- Unsuitable foundation material (highly plastic material – "blue goo") shall be excavated below the invert elevation of the culvert to an approximate depth of 2 feet and a width of at least the culvert diameter plus 4 feet.
- Unsuitable material shall be replaced with selected granular foundation material and compacted to obtain a uniform foundation.
- Select mineral soil shall be used for culvert backfill. The back fill shall be free of lumps, chunks, highly plastic material, and organic material
- No rocks greater than 3" in any dimension placed closer than 1 foot to the culvert.
- Back fill shall be compacted to a degree greater than the surrounding soils. Soil moisture shall be adequate to achieve suitable compaction
- See Text for more detail.

PERMANENT WATERCOURSE CROSSING STANDARD PLAN

2. Culvert Construction Details

- Proposed culvert replacements shall be completed only in the absence of a wetted channel;
- The equipment operator shall prepare the site by removing rock surfacing, brush and debris located along the centerline of the proposed culvert;
- The equipment operator shall excavate the minimum amount of fill required to accommodate the proposed culvert and allow adequate machinery access during installation;
- The equipment operator shall excavate a trench down to the existing culvert and remove the old structure;
- The old pipe may be crushed to fit into available transport vehicles and properly disposed of off-site;
- The trench shall be excavated to accommodate the proposed culvert dimensions;
- The new culvert shall be placed in the trench, aligned with the natural stream channel and extend beyond the toe of fill;
- Any necessary couplings shall be installed in conformance with manufacturer recommendations;
- The culvert shall be underlain with rock-free bedding that provides even distribution of the anticipated load;
- Fill free of rocks and organic material will be placed across the culvert in six-inch compacted lifts using a mechanical compactor;
- Minimum fill cover shall be in conformance with manufacturer specifications;
- The culvert inlet shall be rock armored to facilitate energy dissipation associated with high velocity flows and to prevent scour at the headwall; and
- The final road grade shall include a critical dip at the downward hinge line.

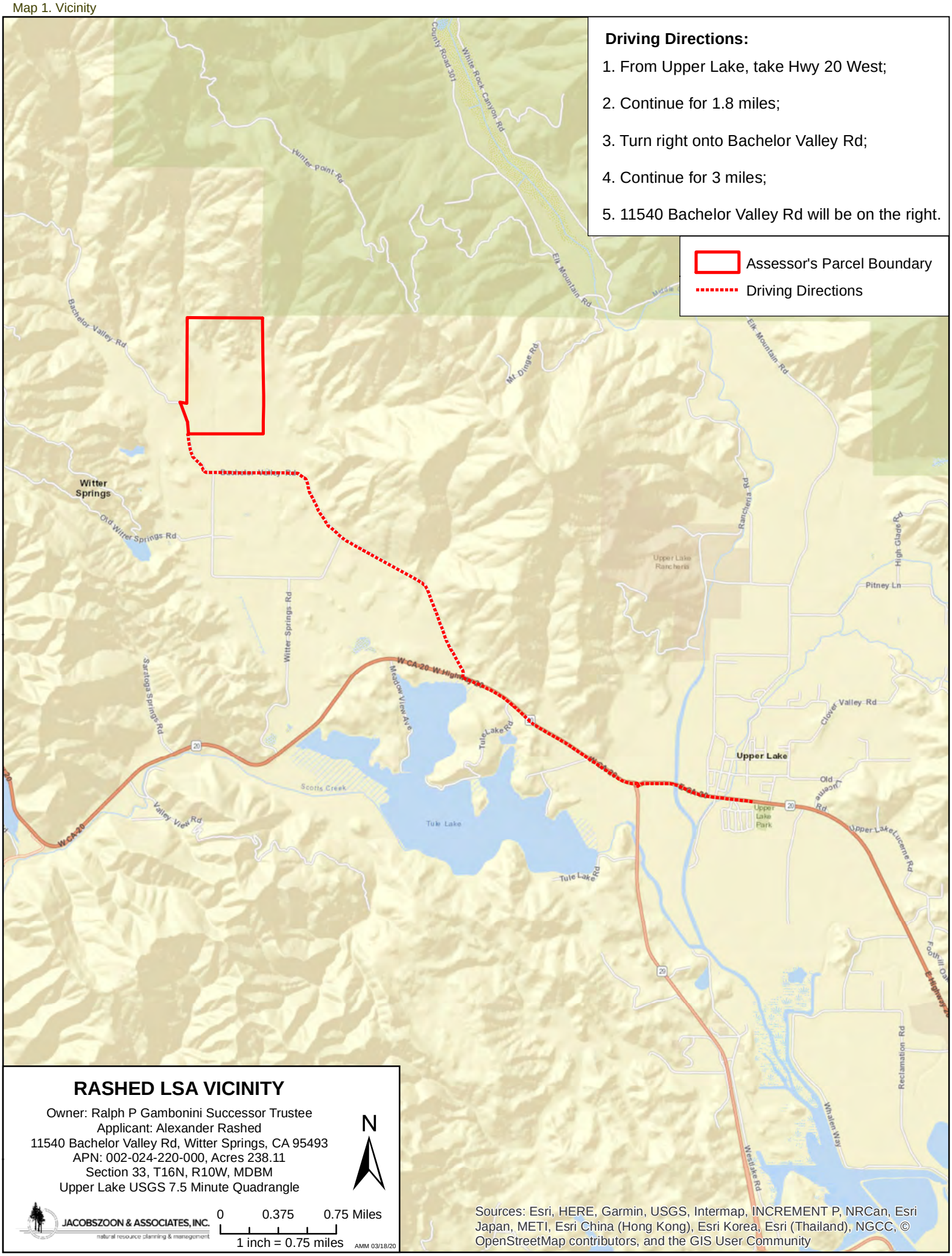
3. Rock Ford Standard Plan



4. Rock Ford Construction Details

- The proposed crossing shall be cleared of large rock and organic materials from within the limits of the proposed road crossing, including cut and fill slopes;
- The slope shall be prepared to receive rock armoring by constructing a keyway at the base of the fill slope with subsequent benches installed as the fill slope progresses uphill;
- A broad dip shall be installed on the road surface that is aligned with the natural channel, creating an active channel that is approximately three feet wide and dips approximately 6-inches below the road approaches;
- The outside fill slope shall be over-excavated approximately 20-inches deep and a 20-inch deep keyway shall be installed at the base of fill that extends into firm and unyielding soil material;
- Rock placed to create the chute will be underlain by a filter bed formed from a layer of smaller rock or on a layer of geosynthetic filter fabric, rock armoring shall be placed immediately after placement of the filter layer;
- Rock shall be placed in the over-excavated fill slope starting with large rocks in the keyway and extending upslope;
- The rock riprap fill face shall be constructed in a trapezoidal shape as to naturally concentrate flows within the chute;
- The upper crown bench shall be constructed, and rock shall be placed to ensure that the rock surface matches the adjacent road grade; and
- A layer of smaller rock or crushed aggregate shall be placed across the running surface of the road dip to reduce the generation of suspended sediment across the road surface and to provide a stable surface for vehicle traffic.

Appendix D: Maps



RASHED LSA VICINITY

Owner: Ralph P Gambonini Successor Trustee
Applicant: Alexander Rashed
11540 Bachelor Valley Rd, Witter Springs, CA 95493
APN: 002-024-220-000, Acres 238.11
Section 33, T16N, R10W, MDBM
Upper Lake USGS 7.5 Minute Quadrangle

N

JACOBSZOON & ASSOCIATES, INC.
natural resource planning & management

0 0.375 0.75 Miles
1 inch = 0.75 miles

AMM 03/18/20

Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, © OpenStreetMap contributors, and the GIS User Community

RASHED LSA AERIAL IMAGERY

Owner: Ralph P Gambonini Successor Trustee
Applicant: Alexander Rashed
11540 Bachelor Valley Rd, Witter Springs, CA 95493
APN: 002-024-220-000, Acres 238.11
Section 33, T16N, R10W, MDBM
Upper Lake USGS 7.5 Minute Quadrangle

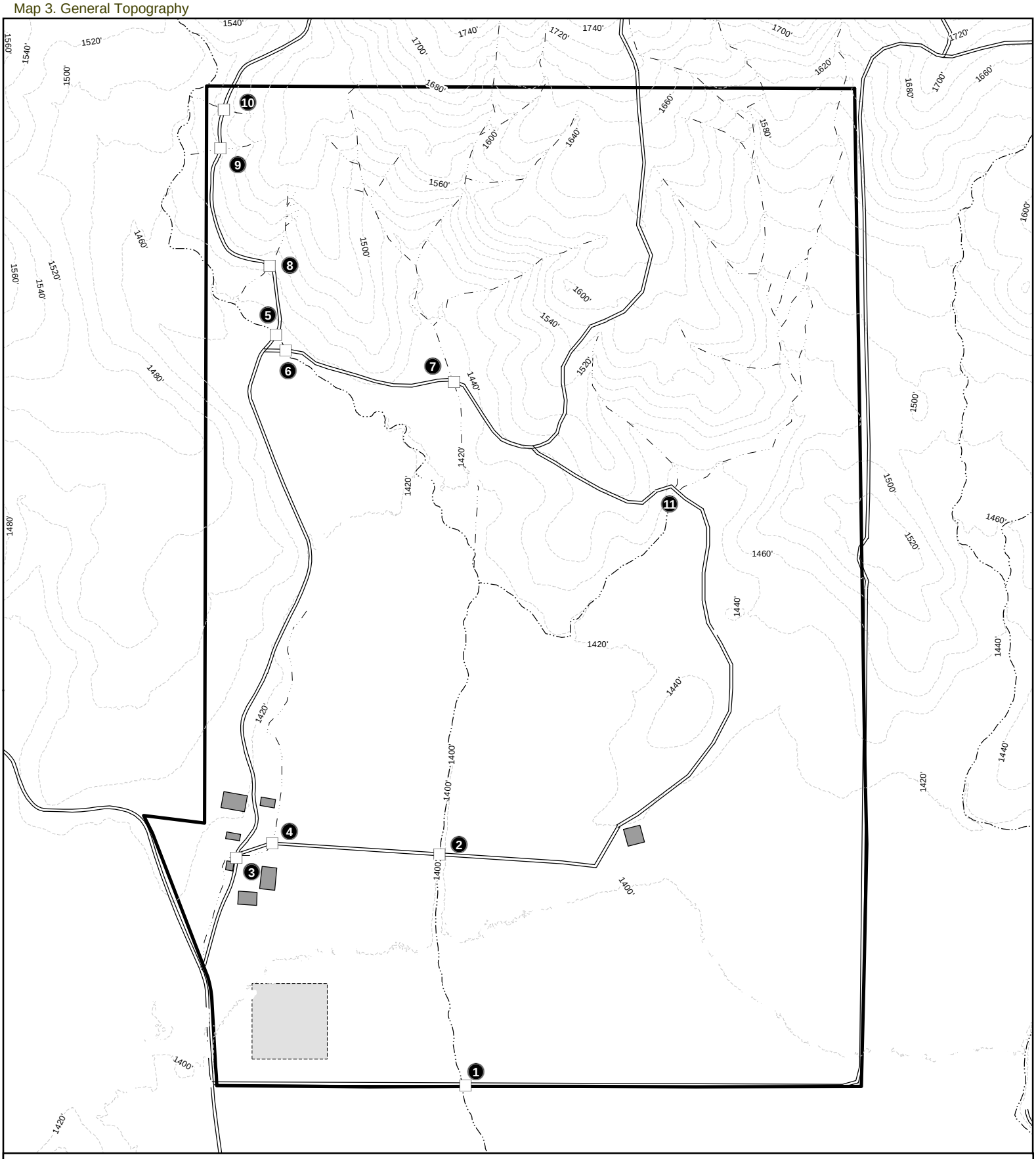
N

JACOBSZOON & ASSOCIATES, INC.
natural resource planning & management

0 250 500 feet
1 inch = 500 feet

AMM 03/18/20

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



RASHED LSA GENERAL TOPOGRAPHY

Owner: Ralph P Gambonini Successor Trustee
Applicant: Alexander Rashed
11540 Bachelor Valley Rd, Witter Springs, CA 95493
APN: 002-024-220-000, Acres 238.11
Section 33, T16N, R10W, MDBM
Upper Lake USGS 7.5 Minute Quadrangle

JACOBSZOON & ASSOCIATES, INC.
natural resource planning & management

N

0 250 500 feet
1 inch = 500 feet

- Assessor's Parcel Boundary
- Proposed Cultivation Area
- Structure
- Watercourse Crossing
- LSA Project
- Road
- Class I Watercourse
- Class II Watercourse
- Class III Watercourse

AMM 05/28/20

Attachment 1: Biological Resources Assessment

JACOBSZOON & ASSOCIATES, INC.

natural resource planning & management

BIOLOGICAL RESOURCES ASSESSMENT

Prepared For:

Alex Rasheed
11540 Bachelor Valley Road, Wittier Springs, CA 95493
APN: 002-024-220-000

Prepared by Jacobszoon & Associates, Inc.

Alicia Ives Ringstad
Senior Biologist
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Aaron Unroe
Environmental Analyst
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Date: January 21, 2020

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707-485-5544 www.jaforestry.com fax: 707-485-5577

Table of Contents

Section 1.0: Introduction

This report is intended to summarize the background, methods of survey, and results of a biological site assessment conducted on 11540 Bachelor Valley Road, Wittier Springs, CA 95493 (Appendix D: Figures 1-4) for the purpose of obtaining a Lake County commercial cannabis permit and CalCannabis State cultivation licensing. This report includes the following:

- Regulations and Project Description (Section 2)
- Study Area Setting (Section 3)
- Field Survey Methodology (Section 4)
- Field Survey Results (Section 5)
- Assessment Summary and Recommendations (Section 6)
- Tables of Special-Status Plants and Wildlife within CNDDB Five-Mile Survey Radius (Appendix A)
- List of Species Observed (Appendix B)
- Representative Photographs of Project Area and Project Buffer (Appendix C)
- Supporting Figures (Maps) (Appendix D)

Section 2.0: Regulations and Project Description

2.1 Regulatory Setting

In addition to the requirements of Lake County's Ordinance, the proposed project shall comply with Federal, State, and local regulations designed to protect sensitive natural resources. The following natural resources are protected under one or more of several Federal and/or State regulations and should be considered when designing and/or implementing the Proposed Project within the Study Area:

Essential Fish Habitat: protected through changes to the Magnuson-Stevens Fishery Conservation and Management Act to maintain sustainable fisheries in the United States, administered by National Marine Fisheries Service (NMFS):

- Includes habitats (rivers, creeks, estuaries) that may support anadromous fish (fish migrating from ocean habitat into freshwater river habitat), as well as commercially and/or ecologically valuable fishes

Local Regulations: The Lake County Regulations for the Cultivation of Medical Marijuana (Article 72 Sec. 21-72) stipulates and outlines rules set forth by the Lake County Board of Supervisors for the purpose of cultivation of medical cannabis. The intent is to limit harmful environmental impacts that are often associated with (illegal) cannabis cultivation and has established standards for such activities.

- Lake County Code Ordinance No. 3073, Amending Chapter 21, Article 27 of the Lake County Code Pertaining to Cannabis Cultivation provides parameters for medical and commercial cannabis cultivation within the County and definitions for adult personal use, qualified patient, and primary caregiver cannabis cultivation. Additionally, the Ordinance describes subcategories including, but not limited to, Enforcement, Development Standards and Restrictions, Permits Required, and Development Standards for the cultivation of medical and commercial cannabis within the County.

Sensitive Natural Communities: protected under the California Fish and Game Code (CFGC), administered by California Department of Fish and Wildlife (CDFW):

- Includes terrestrial vegetation or plant communities that are ranked by NatureServe and considered "threatened" or "endangered" by CDFW, lists of such are included in *List of Vegetation Alliances and Associations* (CDFW 2010)

Special-status Plant and Wildlife Species including Critical Habitat: protected under one or more of the Federal Endangered Species Act (ESA), California Endangered Species Act (CESA), California Environmental Quality Act (CEQA), administered by the U.S. Fish and Wildlife Service (USFWS), and/or CDFW:

- Includes plants listed under the ESA and/or CESA, or those plants ranked by the California Native Plant Society (CNPS) as Rank 1, 2, 3 and 4.
- Includes wildlife listed under the ESA and/or CESA, and wildlife listed by CDFW as Species of Special Concern, Fully Protected Species, and/or Special-status including Invertebrates, Birds of Conservation Concern listed by USFWS, Species of Concern listed by National Marine Fisheries Service (NMFS), Western Bat Working Group (WBWG).

Streams, Lakes, and Riparian Habitat: protected under the California Fish and Game Code (CFGC), administered by the California Department of Fish and Wildlife (CDFW):

- Includes creeks and rivers (bodies where water flows at least periodically or intermittently through a bed or channel having banks and supports fish or other aquatic life), and vegetation adjacent to and associated with (riparian habitat)

Waters of the State: protected under the Porter-Cologne Act, administered by the State Water Resources Control Board (SWRCB)

Waters of the U.S.: protected under the Clean Water Act (CWA), administered by the Environmental Protection Agency (EPA) and U.S. Army Corps of Engineers (Corps):

- Includes wetlands, streams, rivers, and other aquatic habitats meeting the guidance issued by the Corps.

2.2 Project Description

It is Jacobszoon and Associates, Inc. understanding that the project includes the development of annual grassland habitat (Study Area), for the purpose of commercial cannabis cultivation (Appendix D: Figures 1, 2). The annual grassland habitat has been historically used for cattle grazing and the existing vegetation within this area is comprised of grasses, forbs and herbs that are often found in disturbed areas (*Centaurea solstitialis, Lysimachia arvensis*). One (1) Class II[1] watercourse and associated riparian corridor traverses the parcel providing a unique aquatic and terrestrial habitat on the parcel. Vegetation within the riparian corridor includes dense California wild rose (*Rosa californica*) and Himalayan blackberry (*Rubus armeniacus*) shrubs, blue oak (*Quercus douglasii*) and California bay (*Umbellularia californica*) trees. Please refer to Appendix B for a full list of species observed during the biological assessment. During the biological assessment on January 13, 2020 there was no development, including grading or vegetation removal within the Study Area for the proposed cannabis cultivation. Such projects must conform to the requirements of the California Department of Fish and Wildlife (CDFW) Lake or Streambed Alteration Agreement per the California Department of Food and Agriculture (CDFA) CalCannabis Program (BPC26060.1(b)(3)).

Section 3.0: Study Area Setting

The following subsections summarize the physical and biological settings of the Study Area.

3.1 Topography and Soils

The parcel and Study Area is approximately 5 miles northwest of Upper Lake, CA, located within Section 33, Township 16N, Range 10W, Mount Diablo Base and Meridian, in the Upper Lake USGS 7.5minute quadrangle. The parcel is located within the Lower Scotts Creek (HUC-12 180201160104) watershed, located at a range of 1400 feet (427 meters) to 1600 feet (488 meters) elevation.

According to the United States Department of Agriculture, Natural Resources Conservation Service's *Web Soil Survey,* the parcel is underlain by three (3) soil mapping units (Map Unit Symbols: 214, 215, 233); however, the Study Area is underlain by only one (1) soil mapping unit (Map Unit Symbol: 233). The three (3) Map Units that fall within the parcel are Sleeper variant-Sleeper loams, 15 to 30 percent slopes, Sleeper variant-Sleeper loams, 30 to 50 percent slopes, and Still loam, stratified substratum. Descriptions of the soil series are as follows (reference Appendix D: Figure 4):

[1] Class I: Fish always or seasonally present onsite, includes habitat to sustain fish migration and spawning. Class II: Aquatic habitat for nonfish aquatic species, excluding Class III waters that are tributary to Class I waters. Class III: No aquatic life present, watercourse showing evidence of being capable of sediment transport to Class I and II waters under normal high water flow conditions (https://www.hrcllc.com/archives/watercourse-classification).

Sleeper variant-Sleeper loams, 15 to 30 percent (Map Unit Symbol: 214): This series is comprised of an intricately intermingled Sleeper Variant loam (approximately 50%) and Sleeper loam (approximately 35%). Included are small areas of Millsholm soils and Rock outcrop and stones. Also included are small areas of soils that are similar to the Sleeper soil but are 10 to 20 inches deep to bedrock. Included areas make up approximately 15 percent of the total acreage. The native vegetation is mainly annual grasses and oaks. Elevation is 1,350 to 2,000 feet.

Sleeper variant-Sleeper loams, 30 to 50 percent (Map Unit Symbol: 215): This series is comprised of an intricately intermingled Sleeper Variant loam (approximately 45%) and Sleeper loam (approximately 35%). Included are small areas of Millsholm and Skyhigh soils, Rock outcrop and stones. Also included are small areas of soils that have slopes of less than 30 percent; soils that are darker colored and havea lay loam over gravelly clay profile that is more than 40 inches deep to weathered basalt or metasedimentary rock; and soils that are similar to the Sleeper soil but are 10 to 20 inches deep to bedrock. Included areas make up about 20 percent of the total acreage. The native vegetation is mainly annual grasses and oaks. Elevation is 1,350 to 2,000 feet.

Still loam, stratified substratum (Map Unit Symbol: 233): This series is formed in alluvium derived from mixed rock sources, dominantly sandstone and shale. Included are small areas of Cole, Cole Variant, Kelsey, Lupoyoma, and Talmage soils and Xerofluvents. Also included are small areas of soils that are similar to this Still soil but have a seasonal high water table at a depth of 2 to 4 feet, soils that have a surface layer that has been compacted by livestock, soils that do not have a gravelly substratum, and soils that are similar to this Still soil but are at elevations of as much as 2,300 feet. Included areas make up about 20 percent of the total acreage. The native vegetation in areas not cultivated is mainly annual grasses and forbes with scattered oaks. Elevation is 1,000 to 2,000 feet.

The Study Area falls inside Map Unit Symbol 233. A typical pedon for this soil is as follows:

Still:

Ap--O to 8 inches; dark grayish brown (10YR 4/2) clay loam, very dark gray (10YR 3/1) moist

A12--8 to 25 inches; dark grayish brown (10YR 4/2) clay loam, very dark gray (10YR 3/1) moist

C1--25 to 34 inches; grayish brown (10YR 5/2) clay loam, very dark grayish brown (10YR 3/2) moist

IIAb--34 to 53 inches; dark grayish brown (10YR 4/2) clay loam; very dark gray (10YR 3/1) moist

IIC2--53 to 60 inches; brown (10YR 5/3) clay loam, dark brown (10YR 3/3) moist

3.2 Biota and Land Use

The dominant vegetation on the parcel was typical of historic grazing, including a homogenous herb and forb layer dominated by yellow starthistle (*Centaurea solstitialis*) and harding grass (*Phalaris aquatica*). For classification, the agricultural/pasture grassland within the Study Area is considered valley and foothill grassland habitat (Holland 1986). One (1) watercourse and associated riparian corridor (Appendix D: Figures 1, 2), traverses the parcel, and provides an increase in floral biodiversity. Vegetation within the riparian corridor includes dogtail grass (*Cynosurus echinatus*), dense California wild rose (*Rosa californica*) and Himalayan blackberry (*Rubus armeniacus*) shrubs, blue oak (*Quercus douglasii*) and California bay (*Umbellularia californica*) trees. The watercourse substrate is comprised of fine silt particles and cobble.

For a complete list of all plant and wildlife species observed during the biological assessment see Appendix B: List of Species Observed. Section 5 provides a detailed account of the biological communities found on-site, including sensitive and non-sensitive biological communities and additionally the special-status flora and fauna with potential to occur within the Study Area.

Section 4.0: Field Survey Methodology

4.1 Assessment Methods

The biological resource assessment is designed to assess the potential for the presence of sensitive wildlife species and to determine whether habitat for sensitive plant species and plant communities may or may not be present. The purpose of this analysis is to assess the potential for cumulative impacts to biological resources that may occur as a result of the proposed project (development of agricultural/pasture grasslands for commercial cannabis cultivation). The basis of the biological assessment analysis is a comparison of existing habitat conditions within the Study Area to the geographic range and habitat requirements of sensitive plant and wildlife species.

4.2 Database Resource Descriptions

The potential for occurrences of rare, threatened, endangered or plant and animal species of concern within or near the Study Area was evaluated by reviewing topographic maps, aerial photography, the California Native Plant Society's Rare Plant Rank (CRPR) electronic inventory (online edition, v8-03 0.45), the California Department of Fish and Wildlife California Natural Diversity Database (CNDDB) Spotted Owl Data Viewer, RareFind and Quick Viewer (online edition, v5.85.14). Lake County also maintains a mapped database of biological resources including special features such as wetland, vernal pool, aquatic, and riparian communities.

The CRPR database produces a list of sensitive plants potentially occurring at a site based on various site characteristics: location of the Study Area with regard to the geographic range of sensitive plant species, location(s) of known populations of sensitive plant species as mapped in the CNDDB, soils of the Study Area, elevation, presence/absence of special habitat features (vernal pools, serpentine/volcanic soils, etc.) and plant communities existing within the Study Area.

While use of the CRPR inventory does not eliminate the need for an in-season botanical survey, it can, when used in conjunction with other information, provide a very good indication of the suitability of a site as habitat for sensitive plant species. The CNDDB database consists of mapped overlays of all known populations of sensitive plants and wildlife. The database is continually updated with new sensitive species population data.

Rare, threatened, and endangered plants are not necessarily limited to those species which have been "listed" by state and federal agencies but should include any species that, based on all available data, is rare, threatened, and/or endangered under the following definitions:

> A species, subspecies, or variety of plant is **"endangered"** when the prospects of its survival and reproduction are in immediate jeopardy from one or more causes, including loss of habitat, change in habitat, over-exploitation, predation, competition, or disease. A plant is **"threatened"** when it is likely to become endangered in the foreseeable future in the absence of protection measures. A plant is **"rare"** when, although not presently threatened with extinction, the species, subspecies, or variety is found in such small numbers throughout its range that it may be endangered if its habitat continues to deteriorate.

Rare natural communities are those communities that are of highly limited distribution. These communities may or may not contain rare, threatened, or endangered species. The most current version of the California Natural Diversity Database's List of California Terrestrial Natural Communities was used as a guide to the names and status of communities.

The rare plants (native, vascular and non-vascular) and animals assessed are of limited abundance in California, with known occurrence or distribution in Lake County, and were derived from the following lists:

- Federal listed or threatened or endangered plants or species of concern (FT, FE, FSC)
- California State listed or rare, threatened or endangered plants or species of concern (SR, ST, SE, SP, SSC)
- Board of Forestry Sensitive (BFS)
- California Department of Fish and Wildlife (CDFW) Status animals: Fully Protected, Species of Special Concern and Watch List (FP, SSC, WL)
- California Native Plant Society Rare Plant Rank (CRPR) list 1A species (plants presumed extirpated in California, and either rare or extinct elsewhere)
- California Native Plant Society Rare Plant Rank (CRPR) list 1B species (plants rare, threatened or endangered in California and elsewhere)
- California Native Plant Society Rare Plant Rank (CRPR) list 2A species (plants presumed extirpated in California but more common elsewhere)
- California Native Plant Society Rare Plant Rank (CRPR) list 2B species (plants rare, threatened, or endangered in California but more common elsewhere)

- California Native Plant Society Rare Plant Rank (CRPR) list 3 (plants which more information is needed- a review list)
- California Native Plant Society Rare Plant Rank (CRPR) list 4 (plants of limited distribution – a watch list)

4.3 Database Assessment Results

For the identification of species and habitats, a scoping was performed that extend to the nine (9) quads surrounding and include the Upper Lake 7.5-minute USGS Quadrangle. The distance is chosen to account for the possible distribution of animal and plant species and habitats. In addition, a 1.3-mile radius scoping area was completed for the identification of northern spotted owl (*Strix occidentalis caurina*) Activity Centers. No spotted owl territories (Activity Centers) are located within the 1.3-mile buffer.

Biological communities present within the Study Area were classified based on existing plant community descriptions described by Preliminary Descriptions of the Terrestrial Natural Communities of California (Holland 1986) or the Manual of California Vegetation, Online Edition (MCV2 Alliances, CNPS 2019b). In some cases, it may be necessary to identify variants of community types or to describe non-vegetated areas that are not described in the literature. Biological communities were classified as sensitive or non-sensitive as defined by CEQA and other applicable laws and regulations.

The currently accepted vegetation classification system for the state that is standardly used by CDFW, CNPS, and other state and federal agencies, organizations, and consultants for survey and planning purposes is the *Manual of California Vegetation* (MCV; Sawyer, Keeler-Wolf, and Evens 2009). Unlike Holland, this vegetation classification system is based on the standard National Vegetation Classification System (NVCS) and includes alliances (a floristically defined vegetation unit identified by its dominant and/or characteristic species) and associations (the finer level of classification beneath alliance).

Although the CNDDB still maintains records of some of the old Holland vegetation types, these types are no longer the accepted standard, and the CDFW Vegetation Classification and Mapping Program (VegCAMP) has published more recent vegetation lists for the state (October 2018) based on a standardized vegetation classification system that is currently being developed for California (and which is consistent with the MCV classification system). Global and state rarity rankings have been assigned for various types on the recent VegCAMP lists.

To characterize existing biological conditions and identify potential impacts to sensitive habitats resulting from implementation of the proposed cannabis expansion project, Jacobszoon & Associates Inc. biologist Aaron Unroe conducted a biological assessment of the Study Area on January 13, 2020, consisting of approximately two (2) hours. The Study Area was assessed to document: (1) the on-site plant communities, (2) existing conditions and their ability to provide suitable habitat for any special-status plant or wildlife species, and (3) if sensitive biological communities (e.g. wetlands, vernal pools) are present. Plant species observed during the site assessment were recorded and are listed in Appendix B.

Plants listed in Appendix B were identified using *The Jepson Manual: Vascular Plants of California 2nd Edition* (Baldwin et al. 2012) to the taxonomic level necessary to determine rarity. The names provided in this biological assessment report follow *The Jepson Flora Project* (JFP 2019).

4.4 Biological Communities

4.4.1 Non-sensitive Biological Communities

Non-sensitive biological communities are those communities that are not afforded special protection under CEQA, and other Federal, State, and local laws, regulations, and ordinances. These communities may, however, provide suitable habitat for some special-status plant or wildlife species, and are described in Section 5.1 below.

4.4.2 Sensitive Biological Communities

Sensitive biological communities are defined as those communities that may be afforded special consideration under CEQA and other applicable Federal, State, and local laws, regulations and ordinances. Applicable laws and ordinances are discussed above in Section 2.0. Special methods used to identify sensitive biological communities are discussed below.

Sensitive Natural Communities

In addition to surveying for the presence of sensitive aquatic resources (e.g. watercourses, vernal pools, etc.), Jacobszoon & Associates, Inc. biologist evaluated the Study Area for presence of sensitive terrestrial natural communities (e.g. coastal and valley freshwater marsh). Sources for assessing sensitive terrestrial or aquatic natural communities include *Preliminary Descriptions of the Terrestrial Natural Communities of California* (Holland 1986), *List of Vegetation Alliances* (CDFW 2010), and *A Manual of California Vegetation* (CNPS 2019b).

4.5 Special-status Species

Prior to the site visit, databases (listed above) were accessed to determine whether special-status species (CNDDB) were documented within five (5) miles of the Study Area. During the site visit, existing habitat conditions were evaluated and used to assess the potential for presence of special-status species. The potential for each special-status species to occur in the Study Area was then evaluated according to the following criteria:

- No Potential. Habitat on and adjacent to the Study Area is clearly unsuitable for the species requirements (foraging, breeding, cover, substrate, elevation, hydrology, plant community, site history, disturbance regime).
- Unlikely. Few of the habitat components meeting the species requirements are present, and/or the majority of habitat on and adjacent to the Study Area is unsuitable or very poor quality. The species is not likely to be found on-site.
- Moderate Potential. Some of the habitat components meeting the species requirements are present, and/or only some of the habitat on or adjacent to the Study Area is unsuitable. The species has a moderate probability of being found on-site.
- High Potential. All of the habitat components meeting the species requirements are present and/or most of the habitat on or adjacent to the Study Area is highly suitable. The species has a high probability of being found on-site.
- Present. Species is observed on the site or has been recorded (i.e. CNDDB) on-site recently.

The site assessment is intended to identify the presence or absence of suitable habitat for special-status species known to occur within the Study Area. The site visit does not constitute a full season protocol-level survey and is not intended to determine the actual presence or absence of a species. If a special-status species is observed during the site visit, its presence will be recorded and discussed. All plant and wildlife species observed were recorded and are included in Appendix B.

Critical habitat is a term defined by the ESA as a specific geographic area that contains features essential for the conservation of a threatened or endangered species and that may require special management and protection. The ESA requires federal agencies to consult with the USFWS to conserve listed species on their lands and to ensure that any activities or projects they fund, authorize, or carry out will not jeopardize the survival of a threatened or endangered species. Federal agencies must also ensure that their activities or projects do not adversely modify critical habitat to the point that it will no longer aid in the species' recovery. In many cases, this level of protection is similar to that already provided to species by the ESA jeopardy standard. However, areas that are currently unoccupied by the species, but which are needed for the species' recovery, are protected by the prohibition against adverse modification of critical habitat.

Section 5.0: Field Survey Results

5.1 Biological Communities

Biological communities within the Study Area are primarily impacted agricultural/pasture grasslands with the dominant vegetation being part of the Harding grass – Reed Canary grass swards (*Phalaris aquatica - Phalaris arundinacea* – MCV2 Alliance). For classification purposes, the Harding grass – Reed Canary grass swards (MCV2 Alliance) is considered part of the Valley and foothill grasslands (Holland 1986) classification. Additionally, one (1) Class II watercourse and associated riparian corridor traverses the parcel and provides unique aquatic/terrestrial habitat. The dominant overstory canopy within the riparian corridor is primarily comprised of blue oak (*Quercus douglasii*) and California bay (*Umbellularia californica*).

5.1.1 Non-sensitive Biological Communities

Harding grass – Reed Canary grass swards (*Phalaris aquatica – Phalaris arundinacea* herbaceous semi-natural – MCV2 Alliance), Non-native grassland (Holland), Non-native/ornamental grass (CalVeg), Valley grassland (Munz)

Phalaris aquatica or Phalaris arundinacea is strongly dominant in the herbaceous layer. Scattered emergent shrubs may be present at low cover, including *Baccharis pilularis, Baccharis salicifolia, Ceanothus cuneatus* or *Salix* spp. Herbs < 1.5 m; cover is intermittent to continuous. Many topographic settings, including seasonally wet and alkaline sites. The USFWS/US Army Corps Wetland Inventory (2016 national list) recognizes *Phalaris aquatica* as a FACU plant and *Phalaris arundinacea* as a FACW plant. Membership rules: *Phalaris aquatica* > 15% absolute cover and > 75% relative cover when compared to native species in the herbaceous layer (Evens and San 2004). *Phalaris aquatica* > 20% absolute cover as the dominant grass in grasslands (Jimmerson et al. 2000). *Phalaris aquatica* > 50% absolute cover. Other herbs and shrubs occur at low cover including *Carex* spp., *Baccharis salicifolia,* and *Salix* spp. (Buck-Diaz et al. 2012). *Phalaris aquatica* > 50% absolute cover. Other herbs occur at lower cover including *Bromus* spp. (Buck-Diaz et al. 2012).

5.1.2 Sensitive Biological Communities

Himalayan blackberry – rattlebox – edible fig riparian scrub (*Rubus armeniacus – Sesbania punicea – Ficus carica* shrubland semi-natural – MCV2 Alliance), Great Valley riparian scrub (Holland), riparian mixed shrub (CalVeg), Valley foothill riparian (WHR)

Ficus carica, Rubus armeniacus or *Sesbania punicea* is dominant or co-dominant in the shrub canopy. Emergent trees may be present at low cover, including *Alnus rhombifolia, Populus fremontii, Quercus agrifolia, Quercus lobata, Quercus wislizeni* or *Salix laevigata.* Shrubs to small trees < 10m; canopy is intermittent to continuous. Herbaceous layer is open to intermittent. Pastures, forest plantations, roadsides, streamsides, river flats, floodplains, fence lines, mesic disturbed areas, and right-of-way corridors. The USFWS Wetland Inventory (2016 national list) recognizes *Rubus armeniacus* as a FAC+ plant, *Sesbania punicea* as a FAC plant, and *Ficus carica* as a FACU plant. Membership rules: *Rubus armeniacus* > 60% relative cover in the shrub layer (Keeler-Wolf and Vaghti 2000, Hickson and Keeler-Wolf 2007, Klein et al. 2007). *Ficus carica* > 60% relative cover in the shrub layer (Evens et al. 2014). *Rubus armeniacus* > 80% relative cover in the shrub layer (Buck-Diaz et al. 2012, Klein et al. 2015).

Water is a limited resource in Lake County due to the Mediterranean climate and prolific usage, particularly in the summer months. As a result, creeks and streams which flow for more than a few months due to seasonal rains support riparian vegetation, and thereby contribute a unique habitat on the landscape. One (1) Class II watercourse and associated riparian corridor traverses the parcel and provides a unique aquatic/terrestrial habitat within the landscape. The aforementioned watercourse and riparian corridor is considered a sensitive biological community which provides unique aquatic habitat within the landscape and shall be protected from development as per CalCannabis and State Water Resource Control Board regulations. It is the understanding of Jacobszoon and Associates, Inc. that work is not proposed within or adjacent to the watercourse and that there is no potential to impact the watercourse as the proposed cannabis cultivation shall be located outside of the mandatory watercourse setback (100ft.), set forth by the State Water Resources Control Board.

5.2 Special-status Species

5.2.1 Special-status Plant Species

Upon review of the resource databases listed in Section 4.2, fifty-two (52) special-status plant species have been documented within the vicinity of the Study Area. Additionally, five (5) terrestrial and aquatic communities have been recorded within the vicinity of the Study Area. Please refer to Appendix A for a table of all special-status plant species and communities which occur within a nine-quad search surrounding the Study Area, as well as additional discussion of the potential for each species or community to occur within the Study Area. Special-status species (CNDDB) documented within five (5) miles of the Study Area are depicted (Appendix D: Figure 4 CNDDB Map). Of the fifty-two (52) special-status plant species within the vicinity, two (2) special-status plant species have a moderate to high potential to occur within the Study Area based on the habitat present. Of the five (5) terrestrial and aquatic communities, none exist within the Study Area based on the habitat present. The remaining fifty (50) special-status plant species documented within the vicinity of the Study Area do not have the potential to occur due to one or more of the following reasons:

- Hydrologic conditions (e.g., vernal pools, riverine) necessary to support the special-status plant species are not present within the Study Area;
- Edaphic conditions (soils, e.g., rocky outcrops, serpentinite) necessary to support the special-status plant species are not present within the Study Area;
- Topographic conditions (e.g., montane) necessary to support the special-status plant species are not present within the Study Area;
- Unique pH conditions (e.g., alkali scalds, acidic bogs) necessary to support the special-status plant species are not present within the Study Area;
- Associated vegetation communities (e.g., interior chaparral, tidal marsh) necessary to support the special-status plant species are not present within the Study Area;
- The Study Area is geographically isolated (e.g., outside of required elevations, coastal environment) from the documented range of the special-status plant species;
- Ecological conditions (last recorded observations, human-made or natural disturbance) have encroached on species to a point to cause presumed extinction.

The two (2) special-status plant species with potential to occur within the Study Area are described below.

bent-flowered fiddleneck (*Amsinckia lunaris*). Rare Plant Species Rank 1B.2. Cismontane woodland, valley and foothill grassland, coastal bluff scrub. Elevation ranges from 10 to 2609 feet (3 to 795 meters). An annual herb, the blooming period is from Mar-Jun.

Brewer's milk-vetch (*Astragalus breweri*). Rare Plant Species Rank 4.2. Chaparral, cismontane woodland, meadows and seeps, valley and foothill grassland. Often in grassy flats, meadows moist in spring, and open slopes in chaparral. Commonly on or near volcanic or serpentine sites. *A. breweri* has a minor serpentine affinity (3.2, strong indicator). Elevation ranges from 296 to 2395 feet (90 to 730 meters). An annual herb, the blooming period is from Apr-Jun.

5.2.2 Special-status Animal Species

Upon review of the resource databases listed in Section 4.2, fifty-one (51) special-status wildlife species have been documented within the vicinity of the Study Area. Please refer to Appendix A for a table of all special-status wildlife species which occur within the vicinity of the Study Area and discussion of the potential for each species to occur within the Study Area. Special-status species documented within the vicinity are depicted (Appendix D: Figure 4 CNDDB Map). Of the fifty-one (51) special-status wildlife species within the vicinity of the Study Area, six (6) special-status wildlife species recorded have a moderate to high potential to occur within the Study Area based on habitat present. The remaining forty-five (45) special-status wildlife species documented within the vicinity of the Study Area do not have the potential to occur due to one or more of the following reasons:

- Aquatic Habitats (e.g., streams, rivers, vernal pools) necessary to support special-status wildlife species are not present within the Study Area;
- Vegetation Habitats (e.g., forested area, riparian, grassland) that provide nesting and/or foraging resources necessary to support special-status wildlife species are not present within the Study Area;
- Physical Structures and Vegetation (e.g., caves, old-growth trees) that provide nesting, cover, and/or foraging habitat necessary to support special-status wildlife species are not present within the Study Area;
- Host Plants (e.g., *Cirsium sp.*) that provide larval and nectar resources necessary to support special-status wildlife species are not present within the Study Area;
- Historic and Contemporary Disturbance (e.g., cattle grazing, agriculture) deter the presence of the special-status wildlife species from occupying the Study Area;
- The Study Area is outside the documented nesting range of special-status wildlife species.

The six (6) special-status wildlife species with potential to occur within the Study Area are described below.

tricolored blackbird (*Agelaius tricolor*). State Candidate Endangered, BLM Sensitive, CDFW Species of Special Concern, IUCN Endangered, NABCI Red Watch List, USFWS Bird of Conservation Concern. *A. tricolor* breed and forage in a variety of habitats including salt marshes, moist grasslands, freshwater marshes, bay-shore habitats, riparian forests and oak savannahs. *A. tricolor* use dense riparian vegetation such as Himalayan blackberry (*Rubus armeniacus*) for nesting and forage in cultivated fields, wetlands, and feedlots associated with dairy farms.

golden eagle (*Aquila chrysaetos*). BLM Sensitive, CDF Sensitive, CDFW Fully Protected, Watch List, IUCN Least Concern, USFWS Bird of Conservation Concern. *A. chrysaetos* inhabit rolling foothills, mountain areas, sage-juniper flats and desert. This species frequently nests in cliff-walled canyons and large trees in open areas. A carnivore that feeds primarily on small mammals (rabbits, ground squirrels etc.) sometimes includes snakes, juvenile ungulates and carrion.

yellow-breasted chat (*Icteria virens*). CDFW Sensitive, IUCN Least Concern. *I. virens* inhabit riparian thickets of willow and other brushy tangles near watercourses. Required habitat for this species is riparian forest, woodland, or scrub. Nests in low, dense riparian habitat often consisting of willow, blackberry, and wild grape within 10ft. of the ground. *I. virens* is a frugivore and insectivore, eating mostly insects gleaned from foliage.

western bumble bee (*Bombus occidentalis*). State Candidate Endangered, USFS Sensitive, Xerces Imperiled. *B. occidentalis* are formerly common throughout much of western North America; however, populations from southern British Columbia to central California have nearly disappeared (Xerces 2017). This species occurs in a wide variety of habitat types and are considered a generalist pollinator. This genus is most commonly encountered along stream banks, in meadows, recently burned or logged areas, or on flowers by roadsides.

pallid bat (*Antrozous pallidus*). BLM Sensitive, CDFW Species of Special Concern, IUCN Least Concern, USFS Sensitive, WBWG High Priority. *A. pallidus* are found in deserts, grasslands, shrublands, woodlands, and forests. Most common in open, forages along river channels. Roosting sites include crevices in rocky outcrops and cliffs, caves, mines, trees and various human structures such as bridges, barns, and buildings (including occupied buildings). Roosts must protect bats from high temperatures. Very sensitive to disturbance of roosting sites.

American badger (*Taxidea taxus*). CDFW Species of Special Concern, IUCN Least Concern. *T. taxus* are most abundant in drier open stages of most shrub, forest and herbaceous habitats, with friable soils (Zeiner et al. 1990b). *T. taxus* dig burrows in the friable soils and frequently reuse old burrows. They prey on burrowing rodents, especially ground squirrels and pocket gophers, also on birds, insects, reptiles and carrion. Their diet shifts seasonally depending on the availability of prey. *T. taxus* are non-migratory and are found throughout most of California, except the northern North Coast area.

Section 6.0: Assessment Summary and Recommendations

Two (2) special-status plant species and six (6) special-status wildlife species have the potential to occur within the Study Area based on present habitat. The Study Area is located within historic agricultural/pasture grassland. For classification purposes, this agricultural/pasture grassland is considered part of the valley and foothill grassland (Holland 1986). As of January 13, 2020, there were no developed cannabis cultivation sites within the parcel. The dominant vegetation within the Study Area is comprised of Harding grass – Reed Canary grass swards (*Phalaris aquatica - Phalaris arundinacea* – MCV2 Alliance) which has been continually grazed and is considered a non-sensitive biological community.

6.1 Biological Communities

Biological communities within the Study Area includes primarily Harding grass – Reed Canary grass swards (*Phalaris aquatica - Phalaris arundinacea* – MCV2 Alliance) within the agricultural/pasture grassland habitat. Additionally, one (1) Class II watercourse and associated riparian corridor comprised of Himalayan blackberry – rattlebox – edible fig riparian scrub (*Rubus armeniacus – Sesbania punicea – Ficus carica* d– MCV2 Alliance) traverses the parcel and provides unique aquatic/terrestrial habitat. The dominant overstory canopy within the riparian corridor is comprised of blue oak (*Quercus douglasii*) and California bay (*Umbellularia californica*). The understory is comprised of Himalayan blackberry (*Rubus armeniacus*) and California wild rose (*Rosa californica*). This riparian corridor does provide suitable nesting habitat for avian and some mammalian species of special concern; however, none were observed within this habitat during the biological assessment.

6.2 Special-status Species

Two (2) special-status plant species and six (6) special-status wildlife species have a moderate or high potential to occur within the Study Area.

6.2.1 Special-status Plant Species

Two (2) special-status plant species have a moderate or high potential to occur within the Study Area and includes: bent-flowered fiddleneck (*Amsinckia lunaris*), Brewer's milk-vetch (*Astragalus breweri*). While these special-status species have the moderate potential to occur within the Study Area based on available habitat, none were observed during the biological assessment. The biological assessment was conducted outside of the blooming period for both special-status plant species. It is recommended that a botanical survey is completed during the blooming period for these species prior to vegetation removal (Apr-Jun).

6.2.2 Special-status Wildlife Species

Six (6) special-status wildlife species have a moderate or high potential to occur within the Study Area and includes: tricolored blackbird (*Agelaius tricolor*), golden eagle (*Aquila chrysaetos*), yellow-breasted chat (*Icteria virens*), western bumble bee (*Bombus occidentalis*), pallid bat (*Antrozous pallidus*), and American badger (*Taxidea taxus*). While these special-status species have the potential to occur within the Study Area, none were observed during the biological site assessment.

Amphibians

The Class II watercourse may provide suitable amphibian habitat; however, no amphibian species were observed (tadpoles/metamorphs/adults) within the watercourse during the biological assessment. If development or alteration of the watercourse is proposed, it is recommended that development be conducted when the channel is dry. If this is not an option, then it is recommended that a coffer dam is installed to allow water to be pumped out of the active channel where construction is to take place and returned downstream outside of the work area. Additionally, any development within the watercourse shall be conducted following CDFW Lake and Streambed Alteration protocols, including having a qualified biologist knowledgeable with all life stages of amphibian species conduct a visual encounter survey prior to construction. There are no further recommendations.

Development within or adjacent to the Class II watercourse has the potential to significantly impact amphibian species that may rely on the aquatic habitat while water is present. All development within or adjacent to the watercourse shall adhere to mandatory watercourse setbacks set forth by the State Water Resources Control Board. Any work within or with the ability to impact any water body shall be conducted in compliance with CDFW's Lake and Streambed Alteration Agreement. If development is proposed, it is recommended that pre-construction surveys be conducted according to CDFW protocol to prevent incidental take[2] of any amphibian species of special concern. If no work is proposed within or adjacent to the watercourse, there are no further recommendations.

Avifauna

The agricultural/pasture grassland within the Study Area does not provide suitable nesting avian habitat due to the grazing and does not offer suitable avian nest sites; however, riparian habitat (*Rubus armeniacus, Rosa californica, Quercus douglasi* and *Umbellularia californica*) surrounding the Class II watercourse provides suitable nesting avian habitat.

[2] "Take" includes all activities listed in Section 86 of the Fish and Game Code, as well as collecting, handling, marking, manipulating or conducting other procedures on wildlife, whether wildlife are released, or retained in possession (https://www.wildlife.ca.gov/Licensing/Scientific-Collecting).

Development within the Study Area (riparian corridor) does have the potential to significantly impact avian wildlife species if present. An impact could also be indirect via the form of visual or acoustic disturbance and have the potential to result in incidental take of avian species of special concern, if present. If vegetation removal within the riparian corridor is proposed during typical nesting bird season (March 1 – August 31) it is recommended that pre-development nesting bird surveys are conducted in the proposed development area to reduce incidental take of any active avian nests.

Mammals

The *Phalaris aquatica – Phalaris arundinacea* – MCV2 Alliance grassland habitat has friable soils (evident from fresh ground squirrel burrows) that may provide suitable habitat for American badgers (*T. taxus*); however, no evidence of badger dens was observed during the biological assessment. If grading or excavation of any kind is proposed within the grassland habitat, it is recommended that surveys for *T. taxus* den sites are completed prior to disturbance of the grassland habitat according to CDFW protocol standards. As mentioned for avifauna, an impact could also be indirect via the form of visual or acoustic disturbance and have the potential to result in incidental take of mammalian species of special concern, if present. Prior to any groundbreaking activities within the Study Area or if trees are proposed for removal, it is recommended that surveys for special-status mammalian species be conducted prior to construction following CDFW survey protocols.

CDFW American badger (*Taxidea Taxus*) Survey Protocol: No less than 14 days and no more than 30 days prior to the beginning of ground disturbance and/or construction activities, CDFW will conduct a survey to determine if American badger den sites are present at the site. If dens are found, they will be monitored for badger activity. If CDFW determines that dens may be active, the entrances of the dens will be blocked with soil, sticks, and debris for three to five days to discourage the use of these dens prior to project disturbance activities. The den entrances will be blocked to an incrementally greater degree over the 3 to 5-day period. After a CDFW-qualified biologist determines the den sites are no longer active, the dens will be hand-excavated with a shovel to prevent re-use during construction. No disturbance of active dens will take place when cubs may be present and dependent on parental care, as determined by a CDFW-qualified biologist. (CDFW's Conservation Measures for Biological Resources That May Be Affected by Program-level Actions – Appendix I).

Reptiles

Development within the Study Area does not have the potential to significantly impact reptilian wildlife species.

CWHR

CWHR Predicted Habitat Suitability is a dataset accessed through CNDDB BIOS Commercial/Spotted Owl Viewer that represents areas of suitable habitat within the species ranges based on California Wildlife Habitat Relationships (CWHR). Habitat suitability ranks of Low (less than 0.34), Medium (0.34-0.66) and High (greater than 0.66) suitability are based on the mean expert opinion suitability value for each habitat type for breeding, foraging, and cover (CDFW 2019).

Examination of the CWHR dataset was applied when: 1) the data is available for the species of concern, and 2) when there is a moderate to high potential for an animal to occur on or within 100 feet of the Study Area. As with all models, these maps are not perfect and do not predict the occurrence of an organism. CWHR examines whether the areas being examined in the biological assessment is habitat which *may* support a species of special concern. This information not only informs the landowner of what may occur on their property, but also assists the biologist when conducting a survey.

6.3 Wildlife Corridors

No change to foraging or wintering habitat for migratory birds is expected as a result of the existing or proposed cannabis cultivation sites. Additionally, no significant impacts to migratory corridors for amphibian, aquatic, avian, mammalian, or reptilian species is expected as a result of the existing or proposed cannabis cultivation sites.

6.4 Critical Habitat

The Study Area does not contain any critical habitat for Federal or State-listed species.

Section 7.0: References

Baicich, P. J., Harrison, J. O. 2005. Nests, Eggs, and Nestlings of North American Birds (2nd Edition). Princeton University Press.

Baldwin, B.G., D.H. Goldman, D.J. Keil, R. Patterson, T.J. Rosatti, and D.H. Wilken (eds.). 2012. The Jepson Manual: Vascular Plants of California, 2nd Edition. University of California Press, Berkeley, CA.

Best, T. L., Kiser, W. M., Freeman, P. W. 1996. *Eumops perotis.* American Society of Mammalogists. Mammalian Species 534:1-8.

Bjornn, T. C., Reiser, D. 1991. *Habitat Requirements of Salmonids in Streams.* American Fisheries Society Special Publication. 19.

Bourque, R. 2018. Lecture: Spatial Ecology: Movement. Presented at Foothill Yellow-legged Frog: Ecology, Management, and Regulation Workshop. Presented by The Wildlife Society. Humboldt State University, Arcata, CA.

California Department of Fish and Wildlife. 2019. *California Natural Diversity Database (CNDDB) Quick Viewer* (online edition, v5.85.14). Sacramento, CA. Accessed on January 12, 2020 from: https://www.wildlife.ca.gov/Data/CNDDB/Maps-and-Data#43018410-cnddb-quickview-tool

California Department of Fish and Wildlife. 2019. *California Natural Diversity Database (CNDDB) BIOS Commercial/Spotted Owl Viewer* (online edition, v5.85.14). Sacramento, CA. Accessed on January 12, 2020 from: https://www.wildlife.ca.gov/Data/CNDDB/Maps-and-Data#43018408-cnddb-in-bios

California Department of Fish and Wildlife. 2019. *California Natural Diversity Database (CNDDB) BIOS Commercial/Spotted Owl Viewer* (online edition, v5.85.14) *California Wildlife Habitat Relationships (CWHR) 2016.* Accessed on January 12, 2020 from: https://www.wildlife.ca.gov/Data/CNDDB/Maps-and-Data#43018408-cnddb-in-bios

California Department of Fish and Wildlife. 2018. *List of Vegetative Alliances and Associations.* Accessed on January 12, 2020 from: https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=153398&inline

California Department of Fish and Wildlife. 2018. *Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities.* Accessed on January 12, 2020 from: http://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=18959.

California Department of Fish and Wildlife. 2009. *Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities.*

California Department of Fish and Wildlife. September 2003. *List of California Terrestrial Natural Communities Recognized by the California Natural Diversity Database*. Biogeographic Data Branch, Vegetation Classification and Mapping Program. Sacramento, CA.

California Department of Fish and Wildlife. 2000. *Guidelines for Assessing the Effects of Proposed Developments on Rare, Threatened and Endangered Plants and Plant Communities.* The Resources Agency, California Department of Fish and Game. Sacramento, CA.

California Native Plant Society (CNPS). 2019a. *Inventory of Rare and Endangered Plants* (online edition, v8-03 0.45). California Native Plant Society. Sacramento, CA. Accessed on January 12, 2020 from: http://www.cnps.org/inventory.

California Native Plant Society (CNPS). 2019b. *A Manual of California Vegetation* (online edition). California Native Plant Society. Sacramento, CA. Accessed on January 12, 2020 from: http://vegetation.cnps.org/

California Native Plant Society (CNPS). 2001. *Botanical Survey Guidelines.* California Native Plant Society. Sacramento, CA.

California Native Plant Society (CNPS). 1998. *Policy on Mitigation Guidelines Regarding Impacts to Rare, Threatened and Endangered Plants.* California Native Plant Society. Sacramento, CA.

Calflora Database at www.calflora.org/, for photos, descriptions, blooming periods, habitat ranges of common, rare, threatened or endangered plants.

CalPhoto Database at http://elib.cs.berkeley.edu/photos/flora/, for photos, descriptions, and habitat ranges of rare, threatened or endangered plants found on CNPS and CNDDB queries.

Cogswell, H. L. 1977. Water birds of California. University of California Press, Berkeley. 399pp.

Holland, R. F. 1986. *Preliminary Descriptions of the Terrestrial Natural Communities of California*. Nongame- Heritage Program, California Department of Fish and Game. Sacramento, CA. 156 pp.

Jepson Flora Project (JFP) (eds.). Last updated January 17, 2020. Jepson eFlora. Accessed on January 18, 2020 from: http://ucjeps.berkeley.edu/eflora/

Johnson, N. K., Marten, J. A. 1992. *Macrogeographic patterns of morphometric and genetic variation in the sage sparrow complex.* Condor 94: 1-19.

Leong, J. M. 1994. Pollination of a patchily-distributed plant, *Blennosperma nanum*, in natural and artificially created vernal pool habitats. Ph.D. dissertation, University of California, Davis.

Leong, J. M., Randolph, R.P., and Thorp, R. W. 1995. Observations of the foraging patterns of *Andrena (Diandrena) blennospermatis* Thorp (Hymenoptera: Andrenidae). Pan-Pacific Entomologist 71(1): 68-71.

Moyle, P. B., J. E. Williams, and E. D. Wirkamanayake. 1989. *Fish species of special concern of California.* Final report submitted to California Dept. of Fish and Game, Inland Fisheries Division, Rancho Cordova. 222 pp.

National Marine Fisheries Service (NMFS). 1996. Proposed endangered status for five ESUs of Steelhead and proposed threatened status for five ESUs of steelhead in Washington, Oregon, Idaho, and California. Federal Register 61(155):41541-61.

NatureServe. 2019. NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.1. NatureServe, Arlington, Virginia. Accessed on January 12, 2020 from: http://explorer.natureserve.org

Pierson, E. D., Rainey, W. E. 1998. *Western mastiff bat, Eumops perotis.* Terrestrial Mammal Species of Special Concern in California, Bolster, B. C., Ed., 1998.

Squires, J. R., Reynolds, R. T. 1997. Northern Goshawk (*Acipiter gentilis*), version 2.0. The Birds of North America (A. F. Poole and F. B. Gill, Editors). Cornell Lab of Ornithology, Ithaca, NY, USA. Accessed on January 12, 2020 from: https://doi.org/10.2173/bna.298

U.S. Fish and Wildlife Service (USFWS). 2004. Twelve month finding for a Petition to List the West Coast Distinct Population Segment of the Fisher (Martes pennant); proposed rule. Federal Register 69(68): 18769-18792.

U. S. Fish and Wildlife Service (USFWS). 1991. Guidelines for Surveying Proposed Management Activities that may Impact Northern Spotted Owls.

Waian, L. B., Stendell, R. C. 1970. The white-tailed kite in California with observations of the Santa Barbara population. California Fish and Game 56: 188-198.

Western Bat Working Group (WBWG). 2017. Species Accounts. Accessed on January 12, 2020 from: http://wbwg.org/western-bat-species/

The Xerces Society for Invertebrate Conservation. 2019. Species Accounts. Accessed on January 12, 2020 from: https://xerces.org/

Zeiner, D. C., W. F. Laudenslayer Jr., and K. E. Mayer. 1988. California's Wildlife Volume I – Amphibians and Reptiles. State of California Department of Fish and Game. 272pp.

Zeiner, D. C., W. F. Laudenslayer Jr., K. E. Mayer, and M. White. 1990a. California's Wildlife Volume II – Birds. State of California Department of Fish and Game. 732pp.

Zeiner, D. C., W. F. Laudenslayer Jr., K. E. Mayer, and M. White. 1990b. California's Wildlife Volume III – Mammals. State of California Department of Fish and Game. 407pp

Appendix A: Table of Potential for Special-Status Plants and Wildlife within the Study Area

SPECIES	STATUS*	HABITAT REQUIREMENTS	POTENTIAL TO OCCUR IN THE STUDY AREA	RECOMMENDATIONS
Amphibians				
foothill yellow-legged frog *Rana boylii*	SCT BLM: S CDFW: SSC IUCN: NT USFS: S	*R. boylii* occupy a diverse range of ephemeral and permanent streams, rivers, and adjacent moist terrestrial habitats. Occupied streams are often partly shaded, low gradient, and dominated by coarse, unconsolidated rocky substrates. Adults breed and tadpoles develop in slow water velocity habitats. Dispersing juvenile and adult frogs will seek refugia in Class II streams pre-and-post breeding, opposite of salmonids.	**Unlikely.** According to CWHR Predicted Habitat Suitability[3], the Study Area falls within Low (0.33) habitat suitability for this species. While one (1) watercourse traverses the property that this species could utilize, the habitat surrounding the watercourse and riparian corridor has been heavily impacted by historic grazing. It is considered unlikely that *R. boylii* would be able to utilize habitat within the Study Area.	**Not Present.** If construction is proposed within any tributary watercourse (replacement of crossings, excavation, etc.), it is recommended that pre-development amphibian surveys are conducted. There are no further recommendations for this species.
California red-legged frog *Rana draytonii*	FT CDFW: SSC IUCN: VU	California red-legged frogs (CRLF) primarily inhabit permanent or nearly permanent water sources (quiet streams, marshes, and ponds) containing shorelines with extensive vegetation. Breeding tends to occur primarily in ponds, less likely in streams, and happens from November to April. This ranid frog will also use upland habitats outside of the breeding season and may be discovered under logs, rocks, and other debris during wet conditions.	**No Potential.** According to CWHR Predicted Habitat Suitability, the Study Area is not mapped, indicating suitable habitat for this species does not exist within the Study Area. The watercourse that traverses the property is not suitable for this species to utilize.	**Not Present.** There are no further recommendations for this species.

[3] CWHR Predicted Habitat Suitability is a dataset that represents areas of suitable habitat within the species ranges based on California Wildlife Habitat Relationships (CWHR 2016). Habitat suitability ranks of Low (less than 0.34), Medium (0.34-0.66) and High (greater than 0.66) suitability are based on the mean expert opinion suitability value for each habitat type for breeding, foraging, and cover. (Data obtained through CNDDB in BIOS)

SPECIES	STATUS*	HABITAT REQUIREMENTS	POTENTIAL TO OCCUR IN THE STUDY AREA	RECOMMENDATIONS
red-bellied newt *Taricha rivularis*	CDFW: SSC IUCN: LC	*T. rivularis* inhabits coastal forests, typically in redwood (*Sequoia sempervirens*) forest habitat although also found in other forest types (hardwood etc.). Adults are terrestrial and fossorial. Transformed juveniles leave aquatic environments and go into hiding in underground shelters, often until ready to reproduce. Breeding occurs in streams often with relatively strong flows.	**No Potential.** According to CWHR Predicted Habitat Suitability, the Study Area is not mapped, indicating suitable habitat for this species does not exist within the Study Area. The terrestrial surrounding habitat and watercourse that traverses the property are not suitable for this species to utilize.	**Not Present.** There are no further recommendations for this species.
Avifauna				
northern goshawk *Accipiter gentilis*	BLM: S CDF: S CDFW: SSC IUCN: LC USFS: S	*A. gentilis* are often found in dense, mature and old-growth stands of conifer and deciduous habitats. Younger seral stands that include larger residual or defective trees are also used. Nest often on cooler (northerly or easterly) moderate slopes in dense vegetation or within riparian zones, but close to openings (Squires, Reynolds 1997). Nest sites are often located next to water, which may provide a break in canopy for easy access to the nest stand or may influence microclimate or prey distribution.	**No Potential.** According to CWHR Predicted Habitat Suitability, the Study Area is not mapped, indicating suitable habitat for this species does not exist within the Study Area. The surrounding terrestrial habitat does not offer stands of dense, mature, old-growth conifer or deciduous trees that this species could utilize.	**Not Present.** There are no further recommendations for this species.

SPECIES	STATUS*	HABITAT REQUIREMENTS	POTENTIAL TO OCCUR IN THE STUDY AREA	RECOMMENDATIONS
tricolored blackbird *Agelaius tricolor*	SCE BLM: S CDFW: SSC IUCN: EN NABCI: RWL USFWS: BCC	*A. tricolor* breed and forage in a variety of habitats including salt marshes, moist grasslands, freshwater marshes, bay-shore habitats, riparian forests and oak savannahs. *A. tricolor* use dense riparian vegetation such as Himalayan blackberry (*Rubus armeniacus*) for nesting and forage in cultivated fields, wetlands, and feedlots associated with dairy farms.	**Moderate Potential.** According to CWHR Predicted Habitat Suitability, portions of the Study Area falls within Low (0.33) habitat suitability for this species. Riparian vegetation, including dense Himalayan blackberry (*R. armeniacus*) along the Class II watercourse provides adequate nesting habitat for this species within the Study Area.	**Not Observed.** If Himalayan blackberry (*R. armeniacus*) shrubs adjacent to the watercourse are proposed for removal during nesting bird season (March 1 – August 31), it is recommended that pre-construction nesting surveys are conducted. If no work is proposed that would impact this vegetation, there are no further recommendations for this species.
grasshopper sparrow *Ammodramus savannarum*	CDFW: SSC IUCN: LC	*A. savannarum* are an uncommon and local, summer resident in foothills and lowlands west of the Cascade- Sierra Nevada crest from Mendocino and Trinity Counties south to San Diego County. *A. savannarum* nests on the ground in grasslands, prairie, cultivated fields, and grassy clearings in forests (Baicich and Harrison 2005); particularly in areas with a variety of grasses and tall forbs and scattered shrubs for singing perches. Nests are typically found at the base of a small clump of overhanging grass or other vegetation, perhaps in close proximity to other breeding grasshopper sparrows, and this species may double or triple clutch (Baicich and Harrison 2005).	**Unlikely.** According to CWHR Predicted Habitat Suitability, the Study Area is not mapped, indicating suitable habitat for this species does not exist within the Study Area; however, adjacent parcels within the grassland are mapped as Low (0.33) and the hills to the north falls within High (0.74) habitat suitability for this species.	**Not Present.** There are no further recommendations for this species.

SPECIES	STATUS*	HABITAT REQUIREMENTS	POTENTIAL TO OCCUR IN THE STUDY AREA	RECOMMENDATIONS
golden eagle *Aquila chrysaetos*	BLM: S CDF: S CDFW: FP, WL IUCN: LC USFWS: BCC	*A. chrysaetos* inhabit rolling foothills, mountain areas, sage-juniper flats and desert. This species frequently nests in cliff-walled canyons and large trees in open areas. A carnivore that feeds primarily on small mammals (rabbits, ground squirrels etc.) sometimes includes snakes, juvenile ungulates and carrion.	**Moderate Potential.** According to CWHR Predicted Habitat Suitability, the Study Area falls within Medium (0.55) to High (0.88) habitat suitability for this species. While foraging habitat exists in the Study Area, nesting/roosting habitat does not exist within the Study Area that this species could utilize.	**Not Observed.** As no nesting/roosting habitat exists within the Study Area there are no further recommendations for this species.
great egret *Ardea alba*	CDF: S IUCN: LC	*A. alba* requires groves of trees suitable for nesting and roosting, relatively isolated from human activities, near aquatic foraging areas. Prey on small fish, aquatic insects, crabs, frogs, etc. Prefer to forage in shallow, relatively still waters of estuaries, lakes, slow moving watercourses, salt ponds, or mud flats. Colonial nesters that build groups of platform nests in large trees or snags, usually near a feeding area. Great egrets are highly dependent upon wetland habitats and riparian areas. The great egret requires forested areas for nesting and roosting and aquatic habitat for foraging. Night roosting and nesting occurs in trees; day roosting occurs in feeding habitat. Typical feeding habitats include fresh and saline emergent wetlands, the edges of estuaries, lakes and slow-moving rivers, mudflats and salt ponds and irrigated croplands and pastures. The method of hunting is similar to the great blue heron--standing motionless or stalking slowing then rapidly striking their prey is customary.	**No Potential.** According to CWHR Predicted Habitat Suitability, the Study Area is not mapped, indicating suitable habitat for this species does not exist within the Study Area. The surrounding terrestrial habitat does not offer stands trees near fish bearing bodies of water that this species could utilize.	**Not Present.** There are no further recommendations for this species.

SPECIES	STATUS*	HABITAT REQUIREMENTS	POTENTIAL TO OCCUR IN THE STUDY AREA	RECOMMENDATIONS
great blue heron *Ardea herodias*	CDF: S IUCN: LC	*A. herodias* are commonly found in shallow estuaries and fresh and saline emergent wetlands. Foraging areas include river and creek banks, ponds, lakes, and watercourses in mountainous areas. Diet consists primarily of aquatic invertebrates, frogs, snakes and fish (Cogswell 1977). This species often nests in colonies within a rookery tree.	**Unlikely.** According to CWHR Predicted Habitat Suitability, the Study Area is not mapped, indicating suitable habitat for this species does not exist within the Study Area; however, adjacent parcels within the grassland and vineyards are mapped as Medium (0.47) habitat suitability for this species.	**Not Present.** There are no further recommendations for this species.
oak titmouse *Baeolophus inornatus*	IUCN: LC NABCI: YWL USFWS: BCC	*B. inornatus* are cavity-nesters found within oak or oak-pine woodlands, and many will use scrub oaks or other brush with woodlands nearby. This species occurs within montane hardwood-conifer, montane hardwood, oak woodlands (*Quercus agrifolia, Q. douglasii, Q. lobata*). *B. inornatus* typically eats seeds, various plant materials, insects and other invertebrates, foraging from the ground floor up to approximately 30 ft off the ground.	**Unlikely.** According to CWHR Predicted Habitat Suitability, the Study Area is not mapped, indicating suitable habitat for this species does not exist within the Study Area; however, adjacent parcels within the blue oak woodlands fall within a range of Medium (0.43) to High (1.0) habitat suitability for this species.	**Not Present.** As there is no nesting habitat within the Study Area there are no further recommendations for this species.
cackling goose *Branta hutchinsii leucopareia*	CDFW: SSC	*B. hutchinsii leucopareia* winters on lakes and inland prairies. Foraging occurs on natural pasture or that cultivated to grain; loafs on lakes, reservoirs and ponds. This species is found within natural/artificial standing waters and valley and foothill grasslands.	**No Potential.** According to CWHR Predicted Habitat Suitability, the Study Area is not mapped indicating suitable habitat for this species does not exist within the Study Area.	**Not Present.** No further recommendations for this species.

SPECIES	STATUS*	HABITAT REQUIREMENTS	POTENTIAL TO OCCUR IN THE STUDY AREA	RECOMMENDATIONS
northern harrier *Circus hudsonius*	CDFW: SSC IUCN: LC	*C. hudsonius* are year-long residents of Mendocino and Lake County. They frequent meadows, alpine meadows, grasslands, open rangelands, desert sinks, fresh and saltwater emergent wetlands and are seldom found in wooded areas. Usually hunts by flying low over fields, scanning the ground for small prey including mammals (voles, rats, other rodents), bird species ranging from songbirds to small ducks and large insects. Breeding occurs on meadows and marshland, both salt and freshwater. Nests on ground in shrubby vegetation, usually at marsh edge; nest built of a large mound of sticks in wet areas.	**Unlikely.** According to CWHR Predicted Habitat Suitability, the Study Area is not mapped, indicating suitable habitat for this species does not exist within the Study Area; however, adjacent parcels within the blue oak woodlands and vineyards fall within a range of Medium (0.55) to High (0.94) habitat suitability for this species.	**Not Present.** As there is no nesting habitat within the Study Area there are no further recommendations for this species.
snowy egret *Egretta thula*	CDFW: SSC IUCN: LC	The snowy egret is widespread in California along shores of coastal estuaries, fresh and saline emergent wetlands, ponds, slow-moving rivers, irrigation ditches, and wet fields. *E. thula* nest in colonies on thick vegetation in isolate places – such as barrier islands, dredge-spoil islands, salt marsh islands, swamps, and marshes. They often change location from year to year. During the breeding season they feed in estuaries, salt marshes, tidal channels, shallow bays, and mangroves. They roost in dense, emergent vegetation and in trees near water. They winter in mangroves, saltwater lagoons, freshwater swamps, grassy ponds, and temporary pools. Snowy egrets forage on beaches, shallow reefs and wet fields.	**Unlikely.** According to CWHR Predicted Habitat Suitability, the Study Area is not mapped, indicating suitable habitat for this species does not exist within the Study Area; however, adjacent parcels within the grassland and vineyards are mapped as Medium (0.35) habitat suitability for this species.	**Not Present.** There are no further recommendations for this species.

SPECIES	STATUS*	HABITAT REQUIREMENTS	POTENTIAL TO OCCUR IN THE STUDY AREA	RECOMMENDATIONS
white-tailed kite *Elanus leucurus*	BLM: S CDFW: FP IUCN: LC	Often found in coastal, valley lowlands and agricultural areas, *E. leucurus* inhabit herbaceous and open stages of most habitats especially in cismontane California. This species' primary diet consists of small mammals (voles and other rodents), found in undisturbed, open grasslands, meadows, farmlands, and emergent wetlands (Waian et. al. 1970). Nests are often found in isolated, dense-topped trees.	**Unlikely.** According to CWHR Predicted Habitat Suitability, the Study Area is not mapped, indicating suitable habitat for this species does not exist within the Study Area; however, adjacent parcels within the blue oak woodlands and vineyards fall within a range of Medium (0.34) to High (0.88) habitat suitability for this species.	**Not Present.** As there is no nesting habitat within the Study Area there are no further recommendations for this species.
prairie falcon *Falco mexicanus*	CDFW: SSC IUCN: LC USFWS: BCC	Prairie falcons breed in open country wherever they find bluffs and cliffs to nest on, including alpine habitat to about 11,000 feet. Breeding habitats include grasslands, shrubsteppe desert, areas of mixed shrubs and grasslands, or alpine tundra that supports abundant ground squirrel or pika (*Ochotona princeps*) populations. Winter habitat includes grasslands, sage scrub, dry-farmed wheat fields, irrigated cropland, and cattle feedlots. Their diet primarily consists of small mammals (ground squirrel, pika), mourning doves, horned larks, western meadowlarks, and European starlings.	**Unlikely.** According to CWHR Predicted Habitat Suitability, the Study Area is not mapped, indicating suitable habitat for this species does not exist within the Study Area; however, adjacent parcels within the blue oak woodlands and vineyards fall within a range of Medium (0.35) to High (0.77) habitat suitability for this species.	**Not Present.** As there is no nesting habitat within the Study Area there are no further recommendations for this species.

SPECIES	STATUS*	HABITAT REQUIREMENTS	POTENTIAL TO OCCUR IN THE STUDY AREA	RECOMMENDATIONS
bald eagle *Haliaeetus leucocephalus*	BLM: S CDF: S CDFW: FP IUCN: LC USFS: S USFWS: BCC	*H. leucocephalus* require large bodies of water or free-flowing rivers with abundant fish and adjacent snags, cliffs, or perches (Zeiner et al. 1990a). Perches are often high in large-limbed trees on snags, broken-topped trees, or on rocks near water. Nests are found in large, old-growth, or dominant live trees with open branches (Call 1978). Nest stands frequently have less than 40% canopy, with some foliage shading the nest, and are within a mile of a permanent water source. In the winter, they roost communally in dense, sheltered, remote conifer stands often within 10 to 12 miles from feeding areas. Although bald eagle populations are recovering in the western U.S., nesting bald eagles are still very rare in this region. Bald eagles are tolerant of human activity when feeding, and may congregate around fish processing plants, dumps, and below dams where fish concentrate. In winter, bald eagles can also be seen in dry, open uplands if there is access to open water for fishing.	**Unlikely.** According to CWHR Predicted Habitat Suitability, the majority of the Study Area is not mapped, indicating suitable habitat for this species does not exist within the Study Area; however, adjacent parcels within the grassland habitat are mapped as Low (0.33) habitat suitability for this species.	**Not Present.** As there is no nesting or foraging habitat within the Study Area, there are no further recommendations for this species.

SPECIES	STATUS*	HABITAT REQUIREMENTS	POTENTIAL TO OCCUR IN THE STUDY AREA	RECOMMENDATIONS
yellow-breasted chat *Icteria virens*	CDFW: SSC IUCN: LC	*I. virens* inhabit riparian thickets of willow and other brushy tangles near watercourses. Required habitat for this species is riparian forest, woodland, or scrub. Nests in low, dense riparian habitat often consisting of willow, blackberry, and wild grape within 10ft. of the ground. *I. virens* is a frugivore and insectivore, eating mostly insects gleaned from foliage.	**Moderate Potential.** According to CWHR Predicted Habitat Suitability, the Study Area is not mapped, indicating suitable habitat for this species does not exist within the Study Area; however, riparian vegetation, including dense Himalayan blackberry (*R. armeniacus*) along the Class II watercourse provides adequate nesting habitat for this species.	**Not Observed.** If Himalayan blackberry (*R. armeniacus*) shrubs adjacent to the watercourse are proposed for removal during nesting bird season (March 1 – August 31), it is recommended that pre-construction nesting surveys are conducted. If no work is proposed that would impact this vegetation, there are no further recommendations for this species.
black-crowned night heron *Nycticorax nycticorax*	CDFW: SSC IUCN: LC	*N. nycticorax* are common in wetlands across North America, including saltmarshes, freshwater marshes, swamps, streams, rivers, lakes, ponds, lagoons, tidal mudflats, canals, reservoirs, and wet agricultural fields. They require aquatic habitat for foraging and terrestrial vegetation for cover. They nest and roost in dense-foliaged trees and dense emergent wetlands. They are very common in large nesting colonies and feed along the margins of lacustrine, large riverine, and fresh and saline emergent habitats. They spend the winter in southern and coastal portions of their breeding range as well as across Mexico and Central America, where they use mangroves, marshes, swamps, lagoons, and flooded rice fields.	**Unlikely.** According to CWHR Predicted Habitat Suitability, the Study Area is not mapped, indicating suitable habitat for this species does not exist within the Study Area; however, adjacent parcels within the grassland and vineyards are mapped as Low (0.28) habitat suitability for this species.	**Not Present.** There are no further recommendations for this species.

SPECIES	STATUS*	HABITAT REQUIREMENTS	POTENTIAL TO OCCUR IN THE STUDY AREA	RECOMMENDATIONS
osprey *Pandion haliaetus*	CDF: S CDFW: WL IUCN: LC	*P. haliaetus* are strictly associated with large, fish-bearing waters, primarily in ponderosa pine and mixed conifer stands. Foraging habitat consists of open, clear waters, rivers, lakes, reservoirs, estuaries, lagoons, swamps, marshes, and bays. Diet consists almost exclusively live fish. Large trees, snags, and blown-out treetops are used for cover and nesting. Nests are located on or near the tops of trees, snags, cliffs, or human-made structures.	**Unlikely.** According to CWHR Predicted Habitat Suitability, the Study Area is not mapped, indicating suitable habitat for this species does not exist within the Study Area; however, adjacent parcels within the grasslands, blue oak woodlands, and vineyards fall within a range of Low (0.11) to Medium (0.44) habitat suitability for this species.	**Not Present.** As there is no foraging or nesting habitat within the Study Area there are no further recommendations for this species.
double-crested cormorant *Phalacrocorax auritus*	CDFW: WL IUCN: LC	*P. auritus* are year-long resident along the entire coast of California and on inland lakes, in fresh, salt, and estuarine waters. They rest in the daytime and roost overnight beside water on offshore rocks, islands, steep cliffs, dead branches of trees, wharfs, jetties, or even transmission lines. Their perching sites must be barren of vegetation. They require a considerable length of water, or elevated perch, for a labored take-off. The cormorant's diet is nearly exclusively fish, supplemented with insects, crustaceans, or amphibians. Nests are mostly made of finger-size sticks, often with seaweed and flotsam, lined with grass.	**Unlikely.** According to CWHR Predicted Habitat Suitability, the Study Area is not mapped, indicating suitable habitat for this species does not exist within the Study Area; however, adjacent parcels within the grasslands and vineyards fall within Low (0.22) habitat suitability for this species.	**Not Present.** As there is no foraging or nesting habitat within the Study Area there are no further recommendations for this species.

SPECIES	STATUS*	HABITAT REQUIREMENTS	POTENTIAL TO OCCUR IN THE STUDY AREA	RECOMMENDATIONS
purple martin *Progne subis*	CDFW: SSC IUCN: LC	*P. subis* often inhabit tall old-growth trees or snags in coniferous forests with multilayered canopy and are second-cavity nesters using old woodpecker cavities, crevices in rocks, trees and cactus (Baicich et. al. 2005). Typically, *P. subis* forage in open areas near water, and their diet consists primarily of invertebrates (dragonflies, beetles, flies etc.).	**Unlikely.** According to CWHR Predicted Habitat Suitability, the Study Area is not mapped, indicating suitable habitat for this species does not exist within the Study Area; however, adjacent parcels within the blue oak woodland, grasslands and vineyards fall within Low (0.33) habitat suitability for this species.	**Not Present.** As there is no foraging or nesting habitat within the Study Area there are no further recommendations for this species.
yellow warbler *Setophaga petechia*	CDFW: SSC USFWS: BCC	*S. petechia* often inhabits riparian deciduous habitats of willows, alders, cottonwoods, and sometimes brushy mixed conifer habitats. Diet consists mostly of invertebrates, including midges, caterpillars, beetles, leafhoppers and wasps. *S. petechia* has strong associations with water and riparian habitat.	**Unlikely.** According to CWHR Predicted Habitat Suitability, the Study Area is not mapped, indicating suitable habitat for this species does not exist within the Study Area; however, adjacent parcels within the blue oak woodland, grasslands and vineyards fall within Low (0.33) habitat suitability for this species.	**Not Present.** If work within or adjacent to the watercourse is proposed that includes excavation or tree removal during nesting bird season (March 1 – August 31), it is recommended that pre-construction nesting surveys are conducted. If no work is proposed that would impact this vegetation, there are no further recommendations for this species.
northern spotted owl *Strix occidentalis caurina*	FT, ST CDF: S IUCN: NT NABCI: YWL	*S. occidentalis caurina* are year-round residents in dense, structurally complex forests, primarily with old-growth conifers. Nests on snags and within tree cavities, and often is associated with existing structures (old raptor nests, squirrel nests and *A. pomo* nests).	**No Potential.** Required dense, structurally complex forests with old-growth coniferous habitat does not occur within the Study Area.	**Not Present.** No further recommendations for this species.

SPECIES	STATUS*	HABITAT REQUIREMENTS	POTENTIAL TO OCCUR IN THE STUDY AREA	RECOMMENDATIONS
Fish				
Sacramento perch *Archoplites interruptus*	CDFW: SSC AFS: TH	*A. interruptus* prefer sloughs and slow-flowing streams, existing in Clear Lake and Alameda Creek/Calaveras Reservoir and Sonoma Reservoir in the Russian River watershed. Sacramento perch are most often found in warm reservoirs and ponds where summer temperature range from 18-28°C. Juvenile perch in Clear Lake were found to feed mostly on copepods and later cladocerans. Aquatic insect larvae and pupae become increasingly important as the fish grow.	**No Potential.** Habitat for this species (fish-bearing streams) do not exist within the Study Area.	**Not Present.** No further recommendations for this species.
Clear Lake tule perch *Hysterocarpus traskii lagunae*	CDFW: SSC	*H. traskii lagunae* are endemic to three (3) highly altered lakes (Clear Laek, Lower Blue Lake, and Upper Blue Lake); however, it is expected that they are only commonly found in Upper Blue Lake as the other lakes have already lost a majority of their native fishes. Clear Lake and Lower Blue Lake are typically warm (summer temperatures 25-28°C) and shallow, with primarily sandy or soft bottom substrates. Upper Blue Lake is similar but is also clearer and colder. Tule perch are very tolerant of environmental variables; however, low water quality limits their distribution in their historic ranges. A key habitat requirement of *H. traskii lagunae* is cover, especially for pregnant females and small juveniles. This species is typically found in small shoals in deep (3+ m) tule beds, among rocks (especially along steep rocky shores), or among the branches of fallen trees. Piers may also provide some cover, but in Clear Lake, such cover is usually occupied by alien sunfishes.	**No Potential.** Habitat for this species (fish-bearing streams) do not exist within the Study Area.	**Not Present.** No further recommendations for this species.

SPECIES	STATUS*	HABITAT REQUIREMENTS	POTENTIAL TO OCCUR IN THE STUDY AREA	RECOMMENDATIONS
Russian River tule perch *Hysterocarpus traskii pomo*	AFS: VU CDFW: SSC	*H. traskii pomo* inhabits clear, flowing streams and rivers, and occupy deep pools that have complex cover in the form of aquatic and overhanging vegetation. This species is endemic to the Russian River and the lower parts of its tributaries. They feed on invertebrates, plants, and zooplankton. Mating occurs in July-Sept. In May-June the female bears 10-60 live fish.	**No Potential.** Habitat for this species (fish-bearing streams) do not exist within the Study Area.	**Not Present.** No further recommendations for this species.
Clear Lake hitch *Lavinia exilicauda chi*	ST AFS: VU USFS: S	*L. exilicauda chi* are found exclusively in Clear Lake, Lake County, and associated ponds. This species spawns in tributary streams flowing into Clear Lake. Individuals over 80 days old (4-5 cm SL) are often found in the limnetic zone of Clear Lake; juveniles occupy near-shore shallow waters with protective aquatic vegetation (Moyle et al. 1989). *L. exilicauda chi* requires clean, fine-to-medium gravel substrate for spawing and egg-laying, in lower reaches of intermittent tributary streams, mostly in sections that dry up in summer (Moyle et al. 1989).	**No Potential.** Habitat for this species (fish-bearing streams) do not exist within the Study Area.	**Not Present.** No further recommendations for this species.

SPECIES	STATUS*	HABITAT REQUIREMENTS	POTENTIAL TO OCCUR IN THE STUDY AREA	RECOMMENDATIONS
Clear Lake – Russian River roach *Lavinia symmetricus ssp. 4*	CDFW: SSC	*L. symmetricus* are generally found in small, warm intermittent streams, and dense populations are frequently found in isolated pools (Moyle 1976, Moyle and Daniels 1982). Roach are tolerant of relatively high temperatures (30-35 C) and low oxygen levels (1-2 ppm) (Taylor et al. 1982). However, they are habitat generalists, also being found in cold, well-aerated clear "trout" streams (Taylor et al. 1982), in human-modified habitats (Moyle 1976, Moyle and Daniels 1982) and in the main channels of rivers. Clear Lake roach are restricted today to the tributaries of Clear Lake, where they are widely distributed in the basin's seven major drainages. There are no recent collections from Clear Lake itself; roach are now unable to occupy the lake because of their vulnerability to alien predators (Moyle 2002). Roach are subject to barriers to their upstream dispersal (waterfalls and other high gradient stream sections).	**No Potential.** Habitat for this species (fish-bearing streams) do not exist within the Study Area.	**Not Present.** No further recommendations for this species.
steelhead - central California coast DPS *Oncorhynchus mykiss irideus pop. 8*	FT AFS: TH	*O. mykiss irideus* are anadromous coastal rainbow trout. As adults, this species requires high flows, with depths of at least 18cm for passage (Bjornn and Reiser 1991). Clean well-aerated gravel beds, typically in steep, rocky reaches of upper tributaries are needed for spawning. The central California coast DPS are found from the Russian River south to Soquel Creek and to, but not including, Pajaro River. Also San Francisco and San Pablo Bay basins. This DPS does not include summer-run steelhead.	**No Potential.** Habitat for this species (fish-bearing streams) do not exist within the Study Area.	**Not Present.** No further recommendations for this species.

SPECIES	STATUS*	HABITAT REQUIREMENTS	POTENTIAL TO OCCUR IN THE STUDY AREA	RECOMMENDATIONS
steelhead – northern California DPS *Oncorhynchus mykiss irideus pop. 16*	FT AFS: TH	*O. mykiss irideus* are anadromous coastal rainbow trout. As adults, this species requires high flows, with depths of at least 18cm for passage (Bjornn and Reiser 1991). Clean well-aerated gravel beds, typically in steep, rocky reaches of upper tributaries are needed for spawning. The central California coast DPS are found from the Russian River south to Soquel Creek and to, but not including, Pajaro River. Also San Francisco and San Pablo Bay basins. This DPS does not include summer-run steelhead.	**No Potential.** Habitat for this species (fish-bearing streams) do not exist within the Study Area.	**Not Present.** No further recommendations for this species.
chinook salmon – California coastal ESU *Oncorhynchus tshawytscha pop. 17*	FT AFS: TH	The California coastal ESU includes all naturally spawned populations of Chinook salmon from the Klamath River (exclusive) to the Russian River (inclusive). Adult numbers depend on pool depth and volume, amount of cover, and proximity to gravel. Water temperatures greater than 27°C are lethal.	**No Potential.** Habitat for this species (fish-bearing streams) do not exist within the Study Area.	**Not Present.** No further recommendations for this species.
Insects				
Blennosperma vernal pool andrenid bee *Andrena blennospermatis*	CDFW: SSC	*A. blennospermatis* are associated with the early spring bloom of Common stickyseed (*Blennosperma nanum*) and Baker's stickyseed (*Blennosperma bakeri*). The blooming period for Common stickyseed is commonly from Feb-Apr, whereas the blooming period for Baker's stickyseed is from Mar-May. *A. blennospermatis* is a solitary, ground-nesting bee. *A. blennospermatis* spatially restricts its foraging activities to near-neighbor flowers. Thus, bees may have difficulty colonizing areas around artificially constructed vernal pools, because of their limited flight ability and low dispersal tendencies (Leong 1994, Thorp and Leong 1995, Leong, Randolph, and Thorp 1995).	**Unlikely.** Suitable habitat for this species does not exist within the Study Area.	**Not Present.** Neither stickyseed species (*B. nanum, B. bakeri*) was observed and no vernal pools exist within the Study Area. No further recommendations for this species.

SPECIES	STATUS*	HABITAT REQUIREMENTS	POTENTIAL TO OCCUR IN THE STUDY AREA	RECOMMENDATIONS
obscure bumble bee *Bombus caliginosus*	CDFW: SSC IUCN: VU	*B. caliginosus* are often found in coastal areas from Santa Barbara county north to Washington state. Food plant genera includes *Baccharis*, *Crisum, Lupinus, Lotus, Grindelia,* and *Phacelia*.	**Unlikely.** The Study Area provides marginal nesting habitat for this species, as they exist within open grassland surrounded by mixed oak stands; however, minimal herbaceous flowering plants exist within the Study Area due to heavy grazing use.	**Not Present.** No bumblebees or bee nests were observed and impact on this species from cannabis cultivation is likely to be minimal due to minimal foraging habitat existing within the Study Area. No further recommendations for this species.
western bumble bee *Bombus occidentalis*	State: CE USFS: S Xerces: IM	*B. occidentalis* are formerly common throughout much of western North America; however, populations from southern British Columbia to central California have nearly disappeared (Xerces 2017). This species occurs in a wide variety of habitat types and are considered a generalist pollinator. This genus is most commonly encountered along stream banks, in meadows, recently burned or logged areas, or on flowers by roadsides.	**Moderate Potential.** The Study Area provides marginal nesting and foraging habitat for this species, as they exist within open grassland surrounded by mixed oak stands. Due to heavy grazing of the Study Area, foraging habitat is considered sub-optimal.	**Not Observed.** No bumblebees or bee nests were observed and impact on this species from cannabis cultivation is likely to be minimal due to minimal foraging habitat existing within the Study Area. No further recommendations for this species.
brownish dubiraphian riffle beetle *Dubiraphia brunnescens*	CDFW: SSC	Found within the Upper Cache watershed (HUC 18020116+) within Lake county, CA, the brownish dubiraphian riffle beetle occurs in shallow water among submerged roots of various species of aquatic plant life (including *Salex sp.*) and on rocky shores.	**Unlikely.** One (1) watercourse flows through the property that may provide suitable habitat for this species; however, the Study Area is within the Lower Scotts Creek watershed (HUC-12: 180201160104) and this species is known to occur only in the Upper Cache watershed.	**Not Present.** No work is proposed within 100ft of the Class II watercourse within the Study Area and this species is not known within this watershed. There are no further recommendations for this species.

SPECIES	STATUS*	HABITAT REQUIREMENTS	POTENTIAL TO OCCUR IN THE STUDY AREA	RECOMMENDATIONS
Mammals				
pallid bat *Antrozous pallidus*	BLM: S CDFW: SSC IUCN: LC USFS: S WBWG: H	*A. pallidus* are found in deserts, grasslands, shrublands, woodlands, and forests. Most common in open, forages along river channels. Roosting sites include crevices in rocky outcrops and cliffs, caves, mines, basal hollows in large conifers and various human structures such as bridges, barns, and buildings (including occupied buildings). Roosts must protect bats from high temperatures. Very sensitive to disturbance of roosting sites.	**Moderate Potential.** According to CWHR Predicted Habitat Suitability, the Study Area falls within Low (0.33) habitat suitability for this species; however, adjacent oak woodlands (north of the Study Area) falls within a range of Low (0.33) to High (0.77) habitat suitability, indicating that suitable habitat does exist within the region.	**Not Observed.** The CWHR Predicted Habitat Suitability is Low within the Study Area. No signs of bat presence were observed within the Study Area during the biological assessment. It is expected that development within the grassland habitat for cannabis cultivation will not have a significant impact on this species. There are no further recommendations for this species.
Sonoma tree vole *Arborimus pomo*	CDFW: SSC IUCN: NT	*A. pomo* lives in humid coastal forests consisting of Douglas-fir, grand fir, western hemlock, and/or Sitka spruce. This species requires Douglas-fir and grand fir needles as a food source and nesting materials. Nests are frequently found in trees along the bole, in branch crotches, or in the top of snags. Nests are most often found along roads, skid trails, or forest edges; however, they could exist further in the forest with dense canopies making nest identification difficult. This species is distributed along the North Coast from Sonoma County north to the Oregon border, being practically restricted to the fog belt.	**No Potential.** According to CWHR Predicted Habitat Suitability, the Study Area is not mapped, indicating suitable habitat for this species does not exist within the region. No conifer habitat (including Douglas-fir and grand fir) exist within the region that would provide this species with suitable foraging and nesting habitat.	**Not Present.** The CWHR Predicted Habitat Suitability indicates that the Study Area does not provide suitable habitat for this species. It is expected that development within the grassland habitat for cannabis cultivation will not have a significant impact on this species. There are no further recommendations for this species.

SPECIES	STATUS*	HABITAT REQUIREMENTS	POTENTIAL TO OCCUR IN THE STUDY AREA	RECOMMENDATIONS
Townsend's big-eared bat *Corynorhinus townsendii*	BLM: S CDFW: SSC IUCN: LC USFS: S WBWG: H	*C. townsendii* is associated with a wide variety of habitats from deserts to mid-elevation mixed coniferous-deciduous forest, basal hollows in large conifers. Females form maternity colonies in buildings, caves and mines and males roost singly or in small groups. Foraging occurs in open forest habitats where they glean moths from vegetation.	**Unlikely.** According to CWHR Predicted Habitat Suitability, the Study Area falls within Low (0.33) habitat suitability for this species. Suitable foraging and roosting habitat do not exist within the Study Area.	**Not Present.** The CWHR Predicted Habitat Suitability is Low within the Study Area. No signs of bat presence were observed within the Study Area during the biological assessment. It is expected that development within the grassland habitat for cannabis cultivation will not have a significant impact on this species. There are no further recommendations for this species.
North American porcupine *Erethizon dorsatum*	CDFW: SSC IUCN: LC	*E. dorsatum* are commonly found in coniferous and mixed forested areas, and can also inhabit shrublands, tundra and deserts, albeit less frequently as this species tends to spend much of its time in trees. This herbivore eats leaves, twigs, and green plants like Skunk cabbage (*Symplocarpus foetidus*) and clovers (*Trifolium spp.*). This species makes its dens in hollow trees, decaying logs and caves in rocky areas. Recognized as primarily solitary and nocturnal, *E. dorsatum* may be seen foraging during daytime.	**No Potential.** According to CWHR Predicted Habitat Suitability, the Study Area is not mapped, indicating suitable habitat for this species does not exist within the region. Preferred mixed coniferous-deciduous forest does not exist within the Study Area.	**Not Present. Not Present.** The CWHR Predicted Habitat Suitability indicates that the Study Area does not provide suitable habitat for this species. No *E. dorsatum* or den sites were observed during the biological assessment. It is expected that development within the grassland habitat for cannabis cultivation will not have a significant impact on this species. There are no further recommendations for this species.

SPECIES	STATUS*	HABITAT REQUIREMENTS	POTENTIAL TO OCCUR IN THE STUDY AREA	RECOMMENDATIONS
silver-haired bat *Lasionycteris noctivagans*	CDFW: SSC IUCN: LC WBWG: M	*L. noctivagans* is primarily a coastal and montane forest dweller, feeding over streams, ponds, and open brushy areas. This species roosts in hollow trees, beneath exfoliating bark, abandoned woodpecker holes and rarely under rocks. Additionally, *L. noctivagans* requires a water sources for drinking.	**No Potential.** According to CWHR Predicted Habitat Suitability, the Study Area is not mapped, indicating suitable habitat for this species does not exist within the region.	**Not Present.** The CWHR Predicted Habitat Suitability indicates that the Study Area does not provide suitable habitat for this species. It is expected that development within the grassland habitat for cannabis cultivation will not have a significant impact on this species. There are no further recommendations for this species.
Humboldt marten *Martes caurina humboldtensis*	SE CDFW: SSC USFS: S	*M. caurina humboldtensis* favors old-growth, conifer-dominated forests with dense shrub cover in large, contiguous patches. This species occurs only in the coastal redwood zone from the Oregon border south to Sonoma County, CA. This species uses hollow trees and fallen logs for resting and protection.	**No Potential.** According to CWHR Predicted Habitat Suitability, the Study Area is not mapped, indicating suitable habitat for this species does not exist within the region. The Study Area is not located within the coastal redwood zone and do not contain preferred old-growth.	**Not Present.** The CWHR Predicted Habitat Suitability indicates that the Study Area does not provide suitable habitat for this species. Development within the grassland habitat for cannabis cultivation will not have a significant impact on this species. There are no further recommendations for this species.

SPECIES	STATUS*	HABITAT REQUIREMENTS	POTENTIAL TO OCCUR IN THE STUDY AREA	RECOMMENDATIONS
little brown bat *Myotis lucifugus*	CDFW: SSC IUCN: LC WBWG: M	*M. lucifugus* is found in most of the United States and Canada, except for the south central and southeastern United States and northern Alaska and Canada. *M. lucifugus* typically lives and feeds in forested areas near or over water, mainly on aquatic insects such as caddisflies, mayflies, moths, wasps, beetles, and midges. Stable, ambient temperatures greatly influence site selection. Human-made structures are often selected, however both day and night roosts may be found in trees, under rocks, and in piles of wood. Day roosts provide excellent shelter, limited to no light, and typically have southwestern exposure. Night roosts are larger areas these bats can use when outside temperatures necessitate communal congregation for warmth. Hibernaculum habitats tend to include mines and caves and are typically warmer and more humid.	**Unlikely.** According to CWHR Predicted Habitat Suitability, the Study Area falls within Low (0.11) habitat suitability for this species. Suitable foraging and roosting habitat do not exist within the Study Area.	**Not Present.** The CWHR Predicted Habitat Suitability is Low within the Study Area. No signs of bat presence were observed within the Study Area during the biological assessment. It is expected that development within the grassland habitat for cannabis cultivation will not have a significant impact on this species. There are no further recommendations for this species.
fringed myotis *Myotis thysanodes*	BLM: S CDFW: SSC IUCN: LC USFS: S WBWG: H	*M. thysanodes* are widespread in California, occurring in a wide variety of habitats including pinyon-juniper, valley foothill hardwood and hardwood-conifer, generally found at 1300-2200m elevations (4000-7000ft) (Harris). They forage around streams, lakes, and ponds and their prey consists mainly of beetles and other insects. Typical roosting habitat includes caves, mine tunnels, rock crevices and old buildings.	**Unlikely.** According to CWHR Predicted Habitat Suitability, the Study Area falls within Low (0.11) habitat suitability for this species. Marginal foraging habitat may exist adjacent to the Class II watercourse that traverses the property; however, the surrounding area is comprised of agricultural grasslands that do not provide suitable roosting habitat for this species. Additionally, the Study Area does not fall within the typical elevation range for this species.	**Not Present.** The CWHR Predicted Habitat Suitability is Low within the Study Area. No signs of bat presence were observed within the Study Area during the biological assessment. It is expected that development within the grassland habitat for cannabis cultivation will not have a significant impact on this species. There are no further recommendations for this species.

SPECIES	STATUS*	HABITAT REQUIREMENTS	POTENTIAL TO OCCUR IN THE STUDY AREA	RECOMMENDATIONS
Yuma myotis *Myotis yumanensis*	CDFW: SSC BLM: S IUCN: LC WBWG: LM	*M. yumanensis* commonly inhabits open forests and woodlands from British Columbia across the western U.S. and south into Baja and southern Mexico. This species will use a variety of lowland habitats from scrub to coniferous forest, always near slow-moving or standing water habitats. Foraging occurs almost exclusively over water, with distribution being closely tied to bodies of water. Typical roosting habitat are caves, mines, buildings, under bridges and in cliff and tree crevices. Maternity colonies are often in caves, mines, buildings and crevices.	**Unlikely.** According to CWHR Predicted Habitat Suitability, the Study Area falls within Low (0.22) habitat suitability for this species. Marginal foraging habitat may exist adjacent to the Class II watercourse that traverses the property; however, the surrounding area is comprised of agricultural grasslands that do not provide suitable roosting habitat for this species.	**Not Present.** The CWHR Predicted Habitat Suitability is Low within the Study Area. No signs of bat presence were observed within the Study Area during the biological assessment. It is expected that development within the grassland habitat for cannabis cultivation will not have a significant impact on this species. There are no further recommendations for this species.
fisher [West Coast DPS] *Pekania pennanti*	ST CDFW: SSC USFS: S	*P. pennanti* are primarily solitary, except during breeding season (February – April and they inhabit forest stands with late-successional characteristics including intermediate-to-large tree stages of coniferous forest and deciduous-riparian areas with high percent canopy closure. Den site and prey availability are often associated with these characteristics. *P. pennanti* use cavities, snags, logs and rocky areas for cover and denning and require large areas of mature, dense forest (CDFW 2019).	**No Potential.** According to CWHR Predicted Habitat Suitability, the Study Area is not mapped, indicating suitable habitat for this species does not exist within the region. The required late-successional characteristics and riparian areas with high canopy percent canopy closure do not exist within the Study Area.	**Not Present.** The Study Area does not provide the required old-growth or late-successional characteristics that this species requires. No signs of *P. pennanti* were observed during the biological assessment. There are no further recommendations for this species.

SPECIES	STATUS*	HABITAT REQUIREMENTS	POTENTIAL TO OCCUR IN THE STUDY AREA	RECOMMENDATIONS
American badger *Taxidea taxus*	CDFW: SSC IUCN: LC	*T. taxus* are most abundant in drier open stages of most shrub, forest and herbaceous habitats, with friable soils (Zeiner et al. 1990b). *T. taxus* dig burrows in the friable soils and frequently reuse old burrows. They prey on burrowing rodents, especially ground squirrels and pocket gophers, also on birds, insects, reptiles and carrion. Their diet shifts seasonally depending on the availability of prey. *T. taxus* are non-migratory and are found throughout most of California, except the northern North Coast area.	**Moderate Potential.** According to CWHR Predicted Habitat Suitability, the Study Area falls within Medium (0.66) habitat suitability for this species. Grassland habitat exists within the Study Area and may be composed of friable soils that this species may utilize.	**Not Observed.** No *T. taxus* burrows were observed within the Study Area; however, small ground squirrel burrows were observed within the Study Area which indicates suitable prey species exists in the area. It is recommended that surveys for *T. taxus* be conducted following CDFW's survey protocol prior to groundbreaking development within the Study Area (reference Section *6.2.2 Special-status Wildlife Species* "Mammals" for CDFW survey protocols).
Mollusks				
Oregon floater *Anodonta oregonensis*	CDFW: SSC	*A. oregonensis* is distributed across western North America, including Oregon, Washington, California, Nevada and British Columbia. This species prefers low-gradient and low-elevation rivers, lakes and reservoirs and often overlaps with *A. californiensis* in habitat. Coho salmon (*Oncorhynchus kisutch*) are considered host species for *A. oregonensis.*	**No Potential.** Habitat for this species (fish-bearing streams) do not exist within the Study Area.	**Not Present.** No further recommendations for this species.

SPECIES	STATUS*	HABITAT REQUIREMENTS	POTENTIAL TO OCCUR IN THE STUDY AREA	RECOMMENDATIONS
western ridged mussel *Gonidea angulata*	CDFW: SSC	*G. angulata* inhabits cold creeks and streams from low-to-mid elevations that are seasonally and not continuously turbid. *G. angulata* requires a host species to reproduce and disperse and can be found in diverse substrates from firm mud to coarse particles. Documented fish hosts for this species include hardhead (*Mylopharodon conocephalus*), pit sculpin (*Cottus pitensis*), and Tule perch (*Hysterocarpus traski*).	**No Potential.** Habitat for this species (fish-bearing streams) do not exist within the Study Area.	**Not Present.** No further recommendations for this species.
scale lanx *Lanx klamathensis*	CDFW: SSC	*L. klamathensis* are an aquatic species restricted to large, spring-fed lakes, streams and limnocrene springs, typically in areas of unpolluted, cold, clear, well-oxygenated flowing waters, especially streams and areas with considerable spring influence (Frest and Johannes 1995, Klamath 2003). Populations in lakes are limited to the vicinity of the perennial spring input. *L. klamathensis* is a perilithon grazer and lithophile, occurring on cobbles and boulders, generally in areas with current. This species is found in Upper Klamath Lake, Tule Lake and the Lower Klamath Lake system.	**No Potential.** Habitat for this species (fish-bearing streams) do not exist within the Study Area.	**Not Present.** No further recommendations for this species.
western pearlshell *Margaritifera falcata*	CDFW: SSC	*M. falcata* populations occur in cold, clear streams and rivers, often in reaches having fast currents and coarse substrate. This species is intolerant of heavy nutrient loads, siltation, and water pollution. This mollusk requires a fish host for its larval stage.	**No Potential.** Habitat for this species (fish-bearing streams) do not exist within the Study Area.	**Not Present.** No further recommendations for this species.

SPECIES	STATUS*	HABITAT REQUIREMENTS	POTENTIAL TO OCCUR IN THE STUDY AREA	RECOMMENDATIONS
Reptiles				
western pond turtle *Emys marmorata*	BLM: S CDFW: SSC IUCN: VU USFS: S	*E. marmorata* are associated with permanent ponds, lakes, streams, stock ponds, marshes, seasonal wetlands, artificial areas including reservoirs or irrigation ditches, or permanent pools along intermittent streams in a wide variety of habitats. This species requires basking sites in the aquatic environment or upland, grassy openings with loose soil for nesting and overwintering. Nest sites can be found from 100-500 meters from aquatic habitat.	**Unlikely.** According to CWHR Predicted Habitat Suitability, the Study Area falls within Low (0.11) habitat suitability for this species. The habitat surrounding the Study Area does not provide suitable aquatic habitat for this species.	**Not Present.** The CWHR Predicted Habitat Suitability is Low within the Study Area. The development within the grassland habitat for cannabis cultivation will not have a significant impact on this species. There are no further recommendations for this species.
Plants				
bent-flowered fiddleneck *Amsinckia lunaris*	Rank 1B.2	Cismontane woodland, valley and foothill grassland, coastal bluff scrub. Elevation ranges from 10 to 2609 feet (3 to 795 meters). An annual herb, the blooming period is from Mar-Jun.	**Moderate Potential.** Study Area provides marginal habitat for this species (valley and foothill grassland); however, no cismontane woodland habitat exists for this species.	**Not Observed.** This species was not observed within the Study Area; however, the biological assessment was conducted outside of the blooming period for this species. It is recommended that prior to any groundbreaking activities, a botanical survey of the development area is conducted during the blooming period for this species (Mar-Jun).
scabrid alpine tarplant *Anisocarpus scabridus*	Rank 1B.3	Upper montane coniferous forest, on stony ridges, metamorphic scree, slopes of mountain peaks and cliffs in or near red fir forest. Elevation ranges from 5086 to 7710 feet (1550 to 2350 meters). A perennial herb, the blooming period is from Jul-Aug.	**No Potential.** Study Area does not provide suitable habitat (upper montane coniferous forest, stony ridges, red fir forest) for this species.	**Not Present.** No further recommendations for this species.

SPECIES	STATUS*	HABITAT REQUIREMENTS	POTENTIAL TO OCCUR IN THE STUDY AREA	RECOMMENDATIONS
twig-like snapdragon *Antirrhinum virga*	Rank 4.3	Chaparral, lower montane coniferous forest, rocky openings, often on serpentine. *A. virga* has a minor serpentine affinity (2.8, strong indicator). Elevation ranges from 328 to 6611 feet (100 to 2015 meters). A perennial herb, the blooming period is from Jun-Jul.	**No Potential.** Study Area does not provide suitable habitat (chaparral, lower montane coniferous forest serpentine soils) for this species.	**Not Present.** No further recommendations for this species.
Konocti manzanita *Arctostaphylos stanfordiana ssp. elegans*	Rank 1B.3	Chaparral, cismontane woodland, lower montane coniferous forest, often on volcanic soils. Elevation ranges from 738 to 6004 feet (225 to 1830 meters). A shrub, the blooming period is from Mar-May.	**No Potential.** Study Area does not provide suitable habitat (chaparral, cismontane woodland, lower montane coniferous forest volcanic soils) for this species.	**Not Present.** There are no *Arctostaphylos* sp. located within the Study Area. No further recommendations for this species.
Raiche's manzanita *Arctostaphylos stanfordiana ssp. raichei*	Rank 1B.1	Chaparral, lower montane coniferous forest (openings), rocky, serpentine sites, often on slopes and ridges. *A. stanfordiana ssp. raichei* has a minor serpentine affinity (2.6, strong indicator). Elevation ranges from 1591 to 3511 feet (485 to 1070 meters). A perennial evergreen shrub, the blooming period is from Feb-Apr.	**No Potential.** Study Area does not provide suitable habitat (chaparral, lower montane coniferous forest, rocky and serpentine soils) for this species.	**Not Present.** There are no *Arctostaphylos* sp. located within the Study Area. No further recommendations for this species.
serpentine milkweed *Asclepias solanoana*	Rank 4.2	Chaparral, cismontane woodland, lower montane coniferous forest, typically growing on serpentine soils and confined to clearings and gentle slopes with southern exposure. *A. solanoana* has a strong serpentine affinity (6.0, strict endemic). Elevation ranges from 755 to 6103 feet (230 to 1860 meters). A perennial herb, the blooming period is from May-Jul.	**No Potential.** Study Area does not provide suitable habitat (chaparral, cismontane woodland, lower montane coniferous forest, serpentine soils) for this species.	**Not Present.** No further recommendations for this species.

SPECIES	STATUS*	HABITAT REQUIREMENTS	POTENTIAL TO OCCUR IN THE STUDY AREA	RECOMMENDATIONS
Brewer's milk-vetch *Astragalus breweri*	Rank 4.2	Chaparral, cismontane woodland, meadows and seeps, valley and foothill grassland. Often in grassy flats, meadows moist in spring, and open slopes in chaparral. Commonly on or near volcanic or serpentine sites. *A. breweri* has a minor serpentine affinity (3.2, strong indicator). Elevation ranges from 296 to 2395 feet (90 to 730 meters). An annual herb, the blooming period is from Apr-Jun.	**Moderate Potential.** Study Area does provide marginal habitat for this species (valley and foothill grassland); however, *A. breweri* has a serpentine affinity and are often found in chaparral on volcanic or serpentine soils which are not present within the Study Area.	**Not Observed.** This species was not observed within the Study Area; however, the biological assessment was conducted outside of the blooming period for this species. It is recommended that prior to any groundbreaking activities, a botanical survey of the development area is conducted during the blooming period for this species (Apr-Jun).
Cleveland's milk-vetch *Astragalus clevelandii*	Rank 4.3	Chaparral, cismontane woodland, riparian forest, ultramafic seeps and creeks; sandy stream banks, gravel bars moist in spring, hillside seeps on slopes. *A. clevelandii* has a strong serpentine affinity (6.1, strict endemic). Elevation ranges from 656 to 4922 feet (200 to 1500 meters). A perennial herb, the blooming period is from Jun-Sep.	**No Potential.** Study Area does not provide suitable habitat (chaparral, cismontane woodland, riparian forest) for this species.	**Not Present.** No further recommendations for this species.
Snow Mountain rockcress *Boechera ultraalsa*	Rank 1B.1	Upper montane coniferous forest, often on rocky sites. Elevation ranges from 5906 to 5939 feet (1800 to 1810 meters). A perennial herb, the blooming period is from Jun-Jul.	**No Potential.** Study Area does not provide suitable habitat (upper montane coniferous forest, rocky sites) for this species. Additionally, the elevation range that this species is typically found at exceeds that of the Study Area.	**Not Present.** No further recommendations for this species.

SPECIES	STATUS*	HABITAT REQUIREMENTS	POTENTIAL TO OCCUR IN THE STUDY AREA	RECOMMENDATIONS
scalloped moonwort *Botrychium crenulatum*	Rank 2B.2	Bogs and fens, meadows and seeps, upper montane coniferous forest, lower montane coniferous forest, marshes and swamps, often in moist meadows, wetlands, freshwater marsh and along creeks. Elevation ranges from 3888 to 10204 feet (1185 to 3110 meters). A fern (rhizomatous), the blooming period is from Jun-Sep.	**No Potential.** Study Area does not provide suitable habitat (bogs and fens, lower montane coniferous forest, upper montane coniferous forest, marshes and swamps) for this species. Additionally, the elevation range that this species is typically found at exceeds that of the Study Area.	**Not Present.** No further recommendations for this species.
watershield *Brasenia schreberi*	Rank 2B.3	Freshwater marshes and swamps. Aquatic, known from water bodies both natural and artificial. Elevation ranges from 3 to 7152 feet (1 to 2180 meters). A perennial rhizomatous herb (aquatic), the blooming period is from Jun-Sep.	**No Potential.** Study Area does not provide suitable habitat (marshes and swamps) for this species.	**Not Present.** No further recommendations for this species.
small-flowered calycadenia *Calycadenia micrantha*	Rank 1B.2	Chaparral, valley and foothill grassland, meadows and seeps. Rocky talus or scree; sparsely vegetated areas, occasionally on roadsides, sometimes serpentine. Elevation ranges from 1427 to 4610 feet (435 to 1405 meters). An annual herb, the blooming period is from Jun-Sep.	**Unlikely.** Study Areas does provide marginal habitat for this species (valley and foothill grassland); however, chaparral, rocky talus or scree, or serpentine soils do not exist within the Study Area.	**Not Present.** No further recommendations for this species.
bristly sedge *Carex comosa*	Rank 2B.1	Marshes and swamps, coastal prairie, valley and foothill grasslands, lake margins, wetlands. Elevation ranges from 17 to 3314 feet (5 to 1010 meters). A perennial rhizomatous herb, the blooming period is from May-Sep.	**Unlikely.** Study Areas does provide marginal habitat for this species (valley and foothill grassland); however, marshes and swamps, coastal prairie, lake margins and wetlands do not exist within the Study Area.	**Not Present.** No further recommendations for this species.

SPECIES	STATUS*	HABITAT REQUIREMENTS	POTENTIAL TO OCCUR IN THE STUDY AREA	RECOMMENDATIONS
Rincon Ridge ceanothus *Ceanothus confusus*	Rank 1B.1	Closed-cone coniferous forest, chaparral, cismontane woodland, known from volcanic or serpentine soils, dry shrubby slopes. *C. confusus* has a minor serpentine affinity (1.3, weak indicator/indifferent). Elevation ranges from 492 to 4200 feet (150 to 1280 meters). A shrub, the blooming period is from Feb-Jun.	**No Potential.** Study Area does not provide suitable habitat (closed-cone coniferous forest, chaparral, cismontane woodland, volcanic and serpentine soils) for this species.	**Not Present.** No further recommendations for this species.
Tracy's clarkia *Clarkia gracilis ssp. tracyi*	Rank 4.2	Chaparral, openings, usually on serpentine (5, broad endemic). Elevation ranges from 214 to 2133 feet (65 to 650 meters). An annual herb, the blooming period is from Apr-Jul.	**No Potential.** Study Area does not provide suitable habitat (chaparral, serpentine soils) for this species.	**Not Present.** No further recommendations for this species.
serpentine collomia *Collomia diversifolia*	Rank 4.3	Chaparral, cismontane woodland, often on rocky or gravelly sites (ultramafic). *C. diversifolia* has a strong serpentine affinity (5.6, strict endemic). Elevation ranges from 985 to 1969 feet (300 to 600 meters). An annual herb, the blooming period is from May-Jun.	**No Potential.** Study Area does not provide suitable habitat (chaparral, cismontane woodland, rocky or gravelly sites and serpentine soils) for this species.	**Not Present.** No further recommendations for this species.
serpentine cryptantha *Cryptantha dissita*	Rank 1B.2	Chaparral, serpentine outcrops (ultramafic). Elevation ranges from 443 to 2412 feet (135 to 735 meters). An annual herb, the blooming period is from Apr-Jun.	**No Potential.** Study Area does not provide suitable habitat (chaparral, serpentine soils) for this species.	**Not Present.** No further recommendations for this species.
Jepson's dodder *Cuscuta jepsonii*	Rank 1B.2	Upper montane coniferous forest, lower montane coniferous forest, broadleaved upland forest, on primary host species (*Ceanothus diversifolius* and *Ceanothus prostratus*). Elevation ranges from 3937 to 9006 feet (1200 to 2745 meters). An annual herb or vine, the blooming period is from Jul-Sep.	**No Potential.** Study Area does not provide suitable habitat (upper montane coniferous forest, lower montane coniferous forest, broadleaved upland forest) for this species.	**Not Present.** No *Ceanothus* sp. exist within the Study Area. No further recommendations for this species.

SPECIES	STATUS*	HABITAT REQUIREMENTS	POTENTIAL TO OCCUR IN THE STUDY AREA	RECOMMENDATIONS
Cascade downingia *Downingia willamettensis*	Rank 2B.2	Cismontane woodland, valley and foothill grasslands, vernal pools, lake margins. Elevation ranges from 49 to 3642 feet (15 to 1110 meters). An annual herb, the blooming period is from Jun-Jul.	**Unlikely.** Study Areas does provide marginal habitat for this species (valley and foothill grassland); however, cismontane woodland, vernal pools and lake margins do not exist within the Study Area.	**Not Present.** No further recommendations for this species.
Koch's cord moss *Entosthodon kochii*	Rank 1B.3	Cismontane woodland, often growing on soil over riverbanks. Elevation ranges from 607 to 1198 feet (185 to 365 meters). A moss, there is no distinct blooming period.	**No Potential.** Study Area does not provide suitable habitat (cismontane woodland) for this species.	**Not Present.** No further recommendations for this species.
Snow Mountain willowherb *Epilobium nivium*	Rank 1B.2	Upper montane coniferous forest, chaparral, often found in crevices of volcanic and metavolcanics rock outcrops and associated talus. Elevation ranges from 4593 to 7218 feet (1400 to 2200 meters). A perennial herb, the blooming period is from Jun-Oct.	**No Potential.** Study Area does not provide suitable habitat (upper montane coniferous forest, chaparral, volcanic rock outcrops) for this species.	**Not Present.** No further recommendations for this species.
bare monkeyflower *Erythranthe nudata*	Rank 4.3	Chaparral, cismontane woodland, moist areas, often along drainages and roadsides in serpentine seeps. Elevation ranges from 820 to 2297 feet (250 to 700 meters). An annual herb, the blooming period is from May-Jun.	**No Potential.** Study Area does not provide suitable habitat (chaparral, cismontane woodland, serpentine soils) for this species.	**Not Present.** No further recommendations for this species.
Siskiyou fritillaria *Fritillaria glauca*	Rank 4.2	Upper montane coniferous forest, alpine boulder and rock field, subalpine coniferous forest, often found on serpentine, talus slopes. Elevation ranges from 5693 to 8005 feet (1735 to 2440 meters). A perennial herb, the blooming period is from Jun-Jul.	**No Potential.** Study Area does not provide suitable habitat (upper montane coniferous forest, alpine boulder and rock fields, subalpine coniferous forest, serpentine) for this species.	**Not Present.** No further recommendations for this species.

SPECIES	STATUS*	HABITAT REQUIREMENTS	POTENTIAL TO OCCUR IN THE STUDY AREA	RECOMMENDATIONS
Purdy's fritillary *Fritillaria purdyi*	Rank 4.3	Chaparral, cismontane woodland, lower montane coniferous forest, usually on serpentine. *F. fritillary* has a moderate serpentine affinity (4.5, broad endemic). Elevation ranges from 574 to 7399 feet (175 to 2255 meters). A perennial bulbiferous herb, the blooming period is from Mar-Jun.	**No Potential.** Study Area does not provide suitable habitat (chaparral, cismontane woodland, lower montane coniferous forest, serpentine soils) for this species.	**Not Present.** No further recommendations for this species.
Boggs Lake hedge-hyssop *Gratiola heterosepala*	Rank 1B.2	Marshes and swamps (freshwater), vernal pools, often found in clay soils, usually in vernal pools or sometimes lake margins. Elevation ranges from 13 to 7907 feet (4 to 2410 meters). An annual herb, the blooming period is from Apr-Aug.	**No Potential.** Study Area does not provide suitable habitat (marshes and swamps, vernal pools, lake margins) for this species.	**Not Present.** No further recommendations for this species.
Toren's grimmia *Grimmia torenii*	Rank 1B.3	Cismontane woodland, lower montane coniferous forest, chaparral, often found in openings, rocky, boulder and rock walls, carbonate, volcanic. Elevation ranges from 1067 to 3806 feet (325 to 1160 meters). A moss, no distinct blooming period.	**No Potential.** Study Area does not provide suitable habitat (chaparral, cismontane woodland, lower montane coniferous forest, volcanic soils) for this species.	**Not Present.** No further recommendations for this species.
amethyst stickseed *Hackelia amethystina*	Rank 4.3	Lower montane coniferous forest, upper montane coniferous forest, meadows and seeps, often found in forest clearings or along streambanks and roadsides, often in deep soil. Elevation ranges from 4922 to 7595 feet (1500 to 2315 meters). A perennial herb, the blooming period is from Jun-Jul.	**No Potential.** Study Area does not provide suitable habitat (upper montane coniferous forest, lower montane coniferous forest) for this species. Additionally, the elevation range that this species is typically found at exceeds that of the Study Area.	**Not Present.** No further recommendations for this species.
serpentine sunflower *Helianthus exilis*	Rank 4.2	Chaparral, cismontane woodland, often in serpentine seeps (ultramafic). *H. exilis* has a strong serpentine affinity (5.7, strict endemic). Elevation ranges from 492 to 5004 feet (150 to 1525 meters). An annual herb, the blooming period is from Jun-Nov.	**No Potential.** Study Area does not provide suitable habitat (chaparral, cismontane woodland, serpentine soils) for this species.	**Not Present.** No further recommendations for this species.

SPECIES	STATUS*	HABITAT REQUIREMENTS	POTENTIAL TO OCCUR IN THE STUDY AREA	RECOMMENDATIONS
Mendocino tarplant *Hemizonia congesta ssp. calyculata*	Rank 4.3	Cismontane woodland, valley and foothill grassland, open woods and forests, sometimes on serpentine. *H. congesta ssp. calyculata* has a serpentine affinity (1.5, weak indicator). Elevation ranges from 738 to 4593 feet (225 to 1400 meters). An annual herb, the blooming period is from Jul-Nov.	**Unlikely.** Study Area provides marginal habitat for this species (valley and foothill grassland); however, no *Hemizonia* spp, were observed within the Study Area during the biological assessment.	**Not Present.** No further recommendations for this species.
glandular western flax *Hesperolinon adenophyllum*	Rank 1B.2	Chaparral, cismontane woodland, valley and foothill grassland, serpentine soils, generally found in serpentine chaparral. *H. adenophyllum* has a serpentine affinity (5.7, strict endemic). Elevation ranges from 1395 to 4413 feet (425 to 1345 meters). An annual herb, the blooming period is from May-Aug.	**Unlikely.** Study Area provides marginal habitat for this species (valley and foothill grassland); however, there is no chaparral, cismontane woodland habitat or serpentine soils within the Study Area.	**Not Present.** No further recommendations for this species.
two-carpellate western flax *Hesperolinon bicarpellatum*	Rank 1B.2	Serpentine barrens at edges of chaparral. *H. bicarpellatum* has a serpentine affinity (6.2, strict endemic). Elevation ranges from 574 to 2707 feet (175 to 825 meters). An annual herb, the blooming period is from May-Jul.	**No Potential.** Study Area does not provide suitable habitat (serpentine barrens, chaparral) for this species.	**Not Present.** No further recommendations for this species.
drymaria-like western flax *Hesperolinon drymarioides*	Rank 1B.2	Closed-cone coniferous forest, chaparral, cismontane woodland, valley and foothill grassland, often on serpentine soils, mostly within chaparral (ultramafic). *H. drymarioides* has a serpentine affinity (6.1, strict endemic). Elevation ranges from 1313 to 3609 feet (400 to 1100 meters). An annual herb, the blooming period is from May-Aug.	**Unlikely.** Study Area provides marginal habitat for this species (valley and foothill grassland); however, there is no chaparral, cismontane woodland habitat or serpentine soils within the Study Area.	**Not Present.** No further recommendations for this species.
Bolander's horkelia *Horkelia bolanderi*	Rank 1B.2	Lower montane coniferous forest, chaparral, meadows and seeps, valley and foothill grassland, often found in grassy margins of vernal pools and meadows. Elevation ranges from 1493 to 2805 feet (455 to 855 meters). A perennial herb, the blooming period is from Jun-Aug.	**Unlikely.** Study Area provides marginal habitat for this species (valley and foothill grassland); however, there is no chaparral, lower montane coniferous forest, meadow or seeps, or vernal pools within the Study Area.	**Not Present.** No further recommendations for this species.

SPECIES	STATUS*	HABITAT REQUIREMENTS	POTENTIAL TO OCCUR IN THE STUDY AREA	RECOMMENDATIONS
small groundcone *Kopsiopsis hookeri*	Rank 2B.3	North coast coniferous forest, open woods, shrubby places, generally on Gaultheria shallon. Elevation ranges from 394 to 4708 feet (120 to 1435 meters). A perennial herb, the blooming period is from Apr-Aug.	**No Potential.** Study Area does not provide suitable habitat (north coast coniferous forest, open woods, shrubby places) for this species.	**Not Present.** No further recommendations for this species.
Colusa layia *Layia septentrionalis*	Rank 1B.2	Chaparral, cismontane woodland, valley and foothill grassland, scattered colonies in fields and grassy slopes in sandy or serpentine soil. Elevation ranges from 49 to 3609 feet (15 to 1100 meters). An annual herb, the blooming period is from Apr-May.	**Unlikely.** Study Area provides marginal habitat for this species (valley and foothill grassland); however, there is no chaparral, cismontane woodland habitat or serpentine soils within the Study Area.	**Not Present.** No further recommendations for this species.
bristly leptosiphon *Leptosiphon acicularis*	Rank 4.2	Chaparral, cismontane woodland, coastal prairie, valley and foothill grassland. Elevation ranges from 181 to 4922 feet (55 to 1500 meters). An annual herb, the blooming period is from Apr-Jul.	**Unlikely.** Study Area provides marginal habitat for this species (valley and foothill grassland); however, there is no chaparral, cismontane woodland, or coastal prairie habitat within the Study Area.	**Not Present.** No further recommendations for this species.
broad-lobed leptosiphon *Leptosiphon latisectus*	Rank 4.3	Broadleaved upland forest, cismontane woodland. *L. latisectus* has a serpentine affinity (2.0, weak indicator). Elevation ranges from 558 to 4922 feet (170 to 1500 meters). An annual herb, the blooming period is from Apr-Jun.	**No Potential.** Study Area does not provide suitable habitat (broadleaved upland forest or cismontane woodland habitat) for this species.	**Not Present.** No further recommendations for this species.

SPECIES	STATUS*	HABITAT REQUIREMENTS	POTENTIAL TO OCCUR IN THE STUDY AREA	RECOMMENDATIONS
Rattan's leptosiphon *Leptosiphon rattanii*	Rank 4.3	Cismontane woodland, lower montane coniferous forest, often on rocky or gravelly soils. Elevation ranges from 5578 to 6562 feet (1700 to 2000 meters). An annual herb, the blooming period is from May-Jul.	**No Potential.** Study Area does not provide suitable habitat (lower montane coniferous forest or cismontane woodland habitat) for this species. Additionally, the elevation range that this species is typically found at exceeds that of the Study Area.	**Not Present.** No further recommendations for this species.
redwood lily *Lilium rubescens*	Rank 4.2	Chaparral, lower montane coniferous forest, broadleaved upland forest, upper montane coniferous forest, north coast coniferous forest, sometimes on serpentine. *L. rubescens* has a minor serpentine affinity (2, weak indicator). Elevation ranges from 99 to 6267 feet (30 to 1910 meters). A perennial herb (bulb), the blooming period is from Apr-Aug.	**No Potential.** Study Area does not provide suitable habitat (chaparral, lower montane coniferous forest, broadleaved upland forest, upper montane coniferous forest, north coast coniferous forest, serpentine soils) for this species.	**Not Present.** No further recommendations for this species.
Anthony Peak lupine *Lupinus antoninus*	Rank 1B.2	Upper montane coniferous forest, lower montane coniferous forest, often in open areas with surrounding forest; rocky sites. Elevation ranges from 3986 to 7399 feet (1215 to 2255 meters). A perennial herb, the blooming period is from May-Jul.	**No Potential.** Study Area does not provide suitable habitat (lower montane coniferous forest, upper montane coniferous forest, rocky sites) for this species. Additionally, the elevation range that this species is typically found at exceeds that of the Study Area.	**Not Present.** No further recommendations for this species.

SPECIES	STATUS*	HABITAT REQUIREMENTS	POTENTIAL TO OCCUR IN THE STUDY AREA	RECOMMENDATIONS
Mt. Diablo cottonweed *Micropus amphibolus*	Rank 3.2	Valley and foothill grassland, cismontane woodland, chaparral, broadleaved upland forest, often on bare, grassy, or rocky slopes. Elevation ranges from 148 to 2707 feet (45 to 825 meters). An annual herb, the blooming period is from Mar-May.	**Unlikely.** Study Area provides marginal habitat for this species (valley and foothill grassland); however, there is no chaparral, cismontane woodland, or broadleaved upland forest habitat within the Study Area.	**Not Present.** No further recommendations for this species.
green monardella *Monardella viridis*	Rank 4.3	Broadleaved upland forest, chaparral, cismontane woodland. Elevation ranges from 328 to 3314 feet (100 to 1010 meters). A perennial herb, the blooming period is from Jun-Sep.	**No Potential.** Study Area does not provide suitable habitat (chaparral, broadleaved upland forest, cismontane woodland) for this species.	**Not Present.** No further recommendations for this species.
California Gairdner's yampah *Perideridia gairdneri* ssp. *gairdneri*	Rank 4.2	Broadleaved upland forest, chaparral, coastal prairie, valley and foothill grassland, vernal pools. Often found on adobe flats or grasslands, wet meadows and vernal pools, under *Pinus radiata* along the coast; mesic sites. Elevation ranges from 0 to 2002 feet (0 to 610 meters). A perennial herb, the blooming period is from Jun-Oct.	**Unlikely.** Study Area provides marginal habitat for this species (valley and foothill grassland); however, there is no broadleaved upland forest, chaparral, coastal prairie, or vernal pool habitat within the Study Area.	**Not Present.** No further recommendations for this species.
Mayacamas popcornflower *Plagiobothrys lithocaryus*	Rank 1A	Chaparral, cismontane woodland, valley and foothill grassland, moist sites. Elevation ranges from 985 to 1477 feet (300 to 450 meters). An annual herb, the blooming period is from Apr-May.	**Unlikely.** Study Area provides marginal habitat for this species (valley and foothill grassland); however, there is no chaparral or cismontane woodland habitat within the Study Area.	**Not Present.** No further recommendations for this species.
eel-grass pondweed *Potamogeton zosteriformis*	Rank 2B.2	Marshes, swamps, wetlands, ponds, lakes and streams. Elevation ranges from 296 to 7005 feet (90 to 2135 meters). An annual herb (aquatic), the blooming period is from Jun-Jul.	**No Potential.** Study Area does not provide suitable habitat (marshes, swamps, wetlands, ponds or lakes) for this species.	**Not Present.** No further recommendations for this species.

SPECIES	STATUS*	HABITAT REQUIREMENTS	POTENTIAL TO OCCUR IN THE STUDY AREA	RECOMMENDATIONS
Lobb's aquatic buttercup *Ranunculus lobbii*	Rank 4.2	Cismontane woodland, valley and foothill grassland, vernal pools, north coast coniferous forest (mesic sites). Elevation ranges from 50 to 1542 feet (15 to 470 meters). An annual herb (aquatic), the blooming period is from Feb-May.	**Unlikely.** Study Area provides marginal habitat for this species (valley and foothill grassland); however, there is no cismontane woodland, north coast coniferous forest habitat or vernal pools within the Study Area.	**Not Present.** No further recommendations for this species.
marsh checkerbloom *Sidalcea oregana ssp. hydrophila*	Rank 1B.2	Meadows and seeps, riparian forest, wet soils along streambanks. Elevation ranges from 1493 to 6660 feet (455 to 2030 meters). A perennial herb, the blooming period is from Jul-Aug.	**No Potential.** Study Area does not provide suitable habitat (meadows and seeps or riparian forest) for this species.	**Not Present.** No further recommendations for this species.
pubescent needle grass *Stipa lemmonii* var. *pubescens*	Rank 3.2	Chaparral, lower montane coniferous forest, mostly found in serpentine chaparral (ultramafic); however, at upper elevations can be found in ponderosa pine (*Pinus ponderosa*) forest. Elevation ranges from 3380 to 4315 feet (1030 to 1315 meters). A perennial grass, the blooming period is from May-Jul.	**No Potential.** Study Area does not provide suitable habitat (chaparral, lower montane coniferous forest or serpentine soils) for this species.	**Not Present.** No further recommendations for this species.
Hoffman's bristly jewelflower *Streptanthus glandulosus* ssp. *hoffmanii*	Rank 1B.3	Chaparral, cismontane woodland, valley and foothill grassland, moist, steep rocky banks in serpentine and non-serpentine soils. Elevation ranges from 197 to 2510 feet (60 to 765 meters). An annual herb, the blooming period is from Mar-Jul.	**Unlikely.** Study Area provides marginal habitat for this species (valley and foothill grassland); however, there is no chaparral, cismontane woodland, or serpentine soils within the Study Area.	**Not Present.** No further recommendations for this species.
green jewelflower *Streptanthus hesperidis*	Rank 1B.2	Chaparral, cismontane woodland, openings in chaparral or woodlands, serpentine, rocky sites (ultramafic). Elevation ranges from 788 to 2510 feet (240 to 765 meters). An annual herb, the blooming period is from May-Jul.	**No Potential.** Study Area does not provide suitable habitat (chaparral, cismontane woodland or serpentine soils) for this species.	**Not Present.** No further recommendations for this species.

SPECIES	STATUS*	HABITAT REQUIREMENTS	POTENTIAL TO OCCUR IN THE STUDY AREA	RECOMMENDATIONS
beaked tracyina *Tracyina rostrata*	Rank 1B.2	Cismontane woodland, valley and foothill grassland, chaparral, often observed in open grassy meadows commonly within oak woodland and grassland habitats. Elevation ranges from 492 to 2609 feet (150 to 795 meters). An annual herb, the blooming period is from May-Jun.	**Moderate Potential.** Study Area provides marginal habitat for this species (valley and foothill grassland); however, no cismontane woodland or chaparral habitat exists.	**Not Observed.** This species was not observed within the Study Area; however, the biological assessment was conducted outside of the blooming period for this species. It is recommended that prior to any groundbreaking activities, a botanical survey of the development area is conducted during the blooming period (May-Jun).
oval-leaved viburnum *Viburnum ellipticum*	Rank 2B.3	Chaparral, cismontane woodland, lower montane coniferous forest. Elevation ranges from 706 to 4593 feet (215 to 1400 meters). A shrub, the blooming period is from May-Jun.	**No Potential.** Study Area does not provide suitable habitat (chaparral, cismontane woodland or lower montane coniferous forest) for this species.	**Not Present.** No further recommendations for this species.

TERRESTRIAL OR AQUATIC COMMUNITY	HABITAT REQUIREMENTS	POTENTIAL TO OCCUR IN THE STUDY AREA AND RECOMMENDATIONS
Coastal and Valley Freshwater Marsh	Coastal and Valley Freshwater Marsh (Terrestrial plant community). Coastal and Valley Freshwater Marsh can be categorized into twenty-two (22) distinct MCV2 Alliances that have the potential to occur within the region; however, this terrestrial plant community does not exist within the Study Area. The nearest Coastal and Valley Freshwater Marsh is approximately 4.85 miles southwest of the Study Area, adjacent to Clear Lake.	**No Potential.** Coastal and Valley Freshwater Marsh habitat does not exist within the Study Area. **Not Present.** No further recommendations.
Northern Interior Cypress Forest	Northern Interior Cypress Forest (Terrestrial plant community). Northern Interior Cypress Forest can be categorized into two (2) distinct MCV2 Alliances that have the potential to occur within the region; however, this terrestrial plant community does not exist within the Study Area. The MCV2 Alliances are as follows: • *Hesperocyparis macnabiana* Woodland (MCV2 Alliance), McNab cypress woodland. *Hesperocyparis macnabiana* is dominant in the tree canopy with *Hesperocyparis sargentii, Pinus attenuate* and *Pinus sabiniana*. Shrubs may include *Arctostaphylos viscida.* Trees < 10m; canopy is intermittent to continuous. Shrub layer is sparse to intermittent. Herbaceous layer is variable. Membership rules: *Hesperocyparis macnabiana* > 50% cover in the tree or shrub layer (C. Malleck pers. Comm. 2009, Wolf 1948). *Hesperocyparis sargentii* Woodland (MCV2 Alliance), Sargent cypress woodland. *Hesperocyparis sargentii* is dominant in the tree canopy with *Hesperocyparis macnabiana, Pinus attenuata, Pinus sabiniana, Pseudotsuga menziesii, Quercus wislizendi,* and *Umbellularia californica*. Trees < 15m; canopy is open to intermittent. Shrub layer is sparse to intermittent. Herbaceous layer is sparse. Membership rules: *Hesperocyparis sargentii* > 50% relative cover in the tree canopy (Evens and Kentner 2006). Stream benches and terraces, open slopes and ridges. Soils are usually sterile serpentine or other ultramafic substrates.	**No Potential.** Northern Interior Cypress Forest does not exist within the Study Area. **Not Present.** No further recommendations.

TERRESTRIAL OR AQUATIC COMMUNITY	HABITAT REQUIREMENTS	POTENTIAL TO OCCUR IN THE STUDY AREA AND RECOMMENDATIONS
Serpentine Bunchgrass	Serpentine Bunchgrass (Terrestrial Community): Serpentine Bunchgrass can be categorized into three (3) distinct MCV2 Alliances that have the potential to occur within the region; however, this terrestrial plant community does not exist within the Study Area. The MCV2 Alliances are as follows: • *Elymus* (*elymoides, multisetus*) (MCV2 Alliance), Squirreltail patches. *Elymus elymoides* and/or *Elymus multisetus* is dominant or co-dominant in the herbaceous layer with *Achillea millefolium, Bromus rubens, Chlorogalum pomeridianum,Cryptantha flaccida, Dichelostemma capitatum, Eschscholzia californica, Lasthernia californica, Lolium perenne, Lotus humistratus, Melica torreyana, Minuartia douglasii, Nassella pulchra* and *Plantago erecta.* Herbs < 1m; cover is open to intermittent. Ridges and upper slopes on all aspects of rocky serpentine substrates. Soils are clayey. • *Festuca idahoensis* (MCV2 Alliance), Idaho fescue grassland. *Festuca idahoensis* is dominant or co-dominant in the herbaceous layer with *Achillea millefolium, Anthoxanthum odoratum, Arrhenatherum elatius, Bromus carinatus, Carex tumulicola, Danthonia californica, Festuca rubra, Holcus lanatus, Melica californica, Nassella pulchra, Poa Secunda* and *Pteridium aquilinum.* Emergent trees and shrubs may be present at low cover. Herbs < 1m; cover is intermittent to continuous. Many landforms, aspects and soil types. The USFWS Wetland Inventory (1996 national list) recognizes *F. idahoensis* as a UPL plant. Membership rules: o *Festuca idahoensis* is characteristically present and usually > 30% relative cover with other perennial grasses in the herbaceous layer (Evens and Kentner 2006). • **Third MCV2 Alliance (*Nassella* spp. – *Melica* ssp.) on next page.**	**No Potential.** Serpentine Bunchgrass terrestrial community does not exist within the Study Area. **Not Present.** No further recommendations.

TERRESTRIAL OR AQUATIC COMMUNITY	HABITAT REQUIREMENTS	POTENTIAL TO OCCUR IN THE STUDY AREA AND RECOMMENDATIONS
Serpentine Bunchgrass (continued)	• *Nassella* spp. – *Melica* spp. (MCV2 Alliance), Needle grass – melic grass grassland. *Melica californica, Melica torreyana, Nassella cernua, Nassella lepida* and/or *Nassella pulchra* is dominant or characteristically present in the herbaceous layer with other perennial grasses and herbs including *Aristida ternipes, Astragalus* spp., *Avena* spp., *Bromus* spp., *Calamagrostis koelerioides, Calochortus* spp., *Calystegia* spp., *Chlorogalum pomeridianum, Clarkia* spp., *Corethrogyne filaginifolia, Croton setigerus, Cryptantha* spp., *Daucus pusillus, Dichelostemma capitatum, Elymus glaucus, Eriogonum* spp., *Erodium* spp., *Eschscholzia californica, Festuca Californica, Hirschfeldia incana, Holocarpha virgate, Hordeum brachyantherum, Koeleria macrantha, Lasthenia* spp., *Plantago* spp., *Poa secunda, Sanicula* spp., *Sisyrinchium bellum, Trifolium* spp., and/or *Vulpia* spp. Emergent trees and shrubs may be present at low cover. Herbs < 1m; cover is open to continuous. All topographic locations. Soils may be deep with high clay content, loamy, sandy, or silty derived from mudstone, sandstone or serpentine substrates. Membership rules: o *Nassella pulchra* > 5% absolute cover as a characteristic to dominant species in the herbaceous layer (Klein et al. 2007). o *Nassella pulchra* usually > 10% relative cover of the herbaceous layer (Evens and San 2005, Klein and Evens 2005, Keeler-Wolf and Evens 2006). o *Nassella pulchra* or *Nassella cernua* is characteristically present in the herbaceous layer with at least 2% absolute cover (Buck-Diaz and Evens 2011b, Buck-Diaz et al. 2012, Buck-Diaz et al. 2013). o *Nassella pulchra* or other *Nassella* sp. has a clear presence in the stand with > 5% absolute cover in the herbaceous layer (Rodriguez et al. 2017). o *Nassella cernua* > 30% relative cover in the herbaceous layer as a characteristic grass (Buck-Diaz et al. 2012, Buck-Diaz et al. 2013). o *Melica californica* and/or *Nassella pulchra* > 30% relative cover in the herbaceous layer. Other species including *Achnatherum lemmonii, Avena* spp., *Bromus* spp., *Hemizonia congesta, Lolium perenne, Plantago erecta,* and/or *P. lanceolata* may intermix as dominant, co-dominant or characteristic taxa in associations of this alliance (Klein et al. 2015). o *Melica torreyana* > 30% relative cover in the herbaceous layer and is commonly associated with serpentinite soils (Buck and Evens 2010).	**No Potential.** Serpentine Bunchgrass terrestrial community does not exist within the Study Area. **Not Present.** No further recommendations.

TERRESTRIAL OR AQUATIC COMMUNITY	HABITAT REQUIREMENTS	POTENTIAL TO OCCUR IN THE STUDY AREA AND RECOMMENDATIONS
Clear Lake Drainage Cyprinid/Catostomid Stream	This aquatic community does not occur within the parcel. The closest recorded location of this aquatic community is greater than five (5) miles from the property.	**No Potential.** Clear Lake Drainage Cyprinid/Catostomid Stream aquatic community does not exist within the Study Area. **Not Present.** No further recommendations.
Clear Lake Drainage Seasonal Lakefish Spawning Stream	This aquatic community does not occur within the parcel. The closest recorded location of this aquatic community greater than five (5) miles from the property.	**No Potential.** Clear Lake Drainage Seasonal Lakefish Spawning Stream aquatic community does not exist within the Study Area. **Not Present.** No further recommendations.

Abbreviation	Organization
FC	Federal Candidate
FE	Federal Endangered
FT	Federal Threatened
FPE	Federally Proposed for listing as Endangered
FPT	Federally Proposed for listing as Threatened
FPD	Federally Proposed for delisting
SC	State Candidate
SE	State Endangered
ST	State Threatened
SCE	State Candidate for listing as Endangered
SCT	State Candidate for listing as Threatened
SCD	State Candidate for delisting
Rank 1A	CRPR Rank 1A: Presumed extirpated in California and either rare or extinct elsewhere
Rank 1B	CRPR Rank 1B: Plants rare, threatened or endangered in California and elsewhere
Rank 2B	CRPR Rank 2B: Plants rare, threatened, or endangered in California, but more common elsewhere
Rank 3	CRPR Rank 3: Plants about which CNPS needs more information (a review list)

Potential to Occur:
No Potential. Habitat on and within 100 feet adjacent to the site is clearly unsuitable for the species requirements (cover, substrate, elevation, hydrology, plant community, site history, disturbance regime).
Unlikely. Few of the habitat components meeting the species requirements are present, and/or the majority of habitat on and within 100 feet adjacent to the site is unsuitable or of very poor quality. The species is not likely to be found on the site.
Moderate Potential. Some of the habitat components meeting the species requirements are present, and/or only some of the habitat on or within 100 feet adjacent to the site is unsuitable. The species has a moderate probability of being found on the site.
High Potential. All of the habitat components meeting the species requirements are present and/or most of the habitat on or within 100 feet adjacent to the site is highly suitable. The species has a high probability of being found on the site.

Results and Recommendations:
Present. Species was observed on the site or has been recorded (i.e. CNDDB, other reports) on the site recently.
Not Present. Species is assumed to not be present due to a lack of key habitat components.
Not Observed. Species was not observed during surveys.

Abbreviation	Organization
AFS_EN	American Fisheries Society - Endangered
AFS_TH	American Fisheries Society - Threatened
AFS_VU	American Fisheries Society – Vulnerable
BLM_S	Bureau of Land Management – Sensitive
BCC	USFWS Birds of Conservation Concern
CDF_S	Calif. Dept. of Forestry & Fire Protection – Sensitive
CDFW_SSC	Calif. Dept. of Fish & Wildlife – Species of Special Concern
CDFW_FP	Calif. Dept. of Fish & Wildlife – Fully Protected
CDFW_WL	Calif. Dept. of Fish & Wildlife – Watch List
IUCN_CR	IUCN – Critically Endangered
IUCN_EN	IUCN – Endangered
IUCN_NT	IUCN – Near Threatened
IUCN_VU	IUCN – Vulnerable
IUCN_LC	IUCN – Least Concern
IUCN_DD	IUCN – Data Deficient
IUCN_CD	IUCN – Conservation Dependent
NABCI_RWL	North American Bird Conservation Initiative – Red Watch List
NABCI_YWL	North American Bird Conservation Initiative – Yellow Watch List
NMFS_SC	National Marine Fisheries Service – Species of Concern
USFS_S	U. S. Forest Service - Sensitive
USFWS_BCC	U. S. Fish & Wildlife Service Birds of Conservation Concern
WBWG_H	Western Bat Working Group – High Priority
WBWG_MH	Western Bat Working Group – Medium-High Priority
WBWG_M	Western Bat Working Group – Medium Priority
WBWG_LM	Western Bat Working Group – Low-Medium Priority
Xerces: CI	Xerces Society – Critically Imperiled
Xerces: IM	Xerces Society – Imperiled
Xerces: VU	Xerces Society – Vulnerable
Xerces: DD	Xerces Society – Data Deficient

Appendix B: List of Species Observed within the Study Area

SCIENTIFIC NAME	COMMON NAME
Plants	
Centaurea solstitialis	yellow starthistle
Cynosurus echinatus	dogtail grass
Juncus patens	rush
Lysimachia arvensis	scarlet pimpernel
Phalaris aquatica	Harding grass
Plantago lanceolata	ribwort
Quercus douglasii	blue oak
Rosa californica	California wild rose
Rubus armeniacus	Himalayan blackberry
Rumex crispus	curly dock
Umbellularia californica	California bay

SCIENTIFIC NAME	COMMON NAME
Wildlife	
Amphibians	
N/A	-
Avifauna	
Buteo jamaicensis	red-tailed hawk
Callipepla californica	California quail
Corvus brachyrhynchos	American crow
Junco hyemalis	dark-eyed junco
Melanerpes formicivorus	acorn woodpecker
Fish	
N/A	-
Insects	
N/A	-
Mammals	
N/A	-
Mollusks	
N/A	-
Reptiles	
N/A	-

Appendix C: Representative Photographs of the Study Area

Photo 1: Representative photograph of the Study Area (agricultural/pasture grassland habitat). Grassland has been heavily grazed by cattle, resulting in reduced biodiversity and an increase in non-native species. Dominant vegetation in the Study Area is comprised of yellow starthistle (*Centaurea solstitialis*), Harding grass (*Phalaris aquatica*), and scarlet pimpernel (*Lysimachia arvensis*).

Date: January 13, 2020

Photo 2: Representative photograph of the Study Area (agricultural/pasture grassland habitat). One (1) Class II watercourse flows through the property with an associated riparian corridor (red line) providing unique aquatic/terrestrial habitat on the parcel. Vegetation within the riparian corridor is comprised of dogtail grass (*Cynosurus echinatus*), rush (*Juncus patens*), blue oak (*Quercus douglasii*), California wild rose (*Rosa californica*), Himalayan blackberry (*Rubus armeniacus*), curly dock (*Rumex crispus*) and California bay (*Umbellularia californica*).

Date: January 13, 2020

Photo 3: Representative photograph of the watercourse crossing at the northwest portion of the Study Area (photo perspective facing upstream, blue line). The Class II watercourse flows through the property with an associated riparian corridor providing unique aquatic/terrestrial habitat on the parcel. Substrate of the watercourse varies between fine silt and small rock/cobble. Vegetation within the riparian corridor is comprised of dogtail grass (*Cynosurus echinatus*), rush (*Juncus patens*), blue oak (*Quercus douglasii*), California wild rose (*Rosa californica*), Himalayan blackberry (*Rubus armeniacus*), curly dock (*Rumex crispus*) and California bay (*Umbellularia californica*).

Date: January 13, 2020

Photo 4: Representative photograph of the Study Area (agricultural/pasture grassland habitat). One (1) Class II watercourse (photo perspective facing downstream, blue line) flows through the property with an associated riparian corridor providing unique aquatic/terrestrial habitat on the parcel. Substrate of the watercourse varies between fine silt and small rock/cobble. Vegetation within the riparian corridor is comprised of dogtail grass (*Cynosurus echinatus*), rush (*Juncus patens*), blue oak (*Quercus douglasii*), California wild rose (*Rosa californica*), Himalayan blackberry (*Rubus armeniacus*), curly dock (*Rumex crispus*) and California bay (*Umbellularia californica*).

Date: January 13, 2020

Photo 5: Representative photograph of the watercourse crossing at the southwest portion of the Study Area (photo perspective facing upstream, blue line). The Class II watercourse flows through the property with an associated riparian corridor providing unique aquatic/terrestrial habitat on the parcel. Substrate of the watercourse varies between fine silt and small rock/cobble. Vegetation within the riparian corridor is comprised of dogtail grass (*Cynosurus echinatus*), rush (*Juncus patens*), blue oak (*Quercus douglasii*), California wild rose (*Rosa californica*), Himalayan blackberry (*Rubus armeniacus*), curly dock (*Rumex crispus*) and California bay (*Umbellularia californica*).

Date: January 13, 2020

Photo 6: Representative photograph of the watercourse crossing at the southwest portion of the Study Area (photo perspective facing downstream, blue line). The Class II watercourse flows through the property with an associated riparian corridor providing unique aquatic/terrestrial habitat on the parcel. Substrate of the watercourse varies between fine silt and small rock/cobble. Vegetation within the riparian corridor is comprised of dogtail grass (*Cynosurus echinatus*), rush (*Juncus patens*), blue oak (*Quercus douglasii*), California wild rose (*Rosa californica*), Himalayan blackberry (*Rubus armeniacus*), curly dock (*Rumex crispus*) and California bay (*Umbellularia californica*).

Date: January 13, 2020

Photo 7: Representative photograph of the Study Area (agricultural/pasture grassland habitat). Grassland has been heavily grazed by cattle, resulting in reduced biodiversity and an increase in non-native floral species. Signs of recent ground squirrel use within the parcel (represented) indicate friable soils in the region which may indicate suitable habitat for mammalian species of special concern (*T. taxus*). Dominant vegetation in the Study Area is comprised of yellow starthistle (*Centaurea solstitialis*), Harding grass (*Phalaris aquatica*), and scarlet pimpernel (*Lysimachia arvensis*).

Date: January 13, 2020

Appendix D: Supporting Figures (Maps)

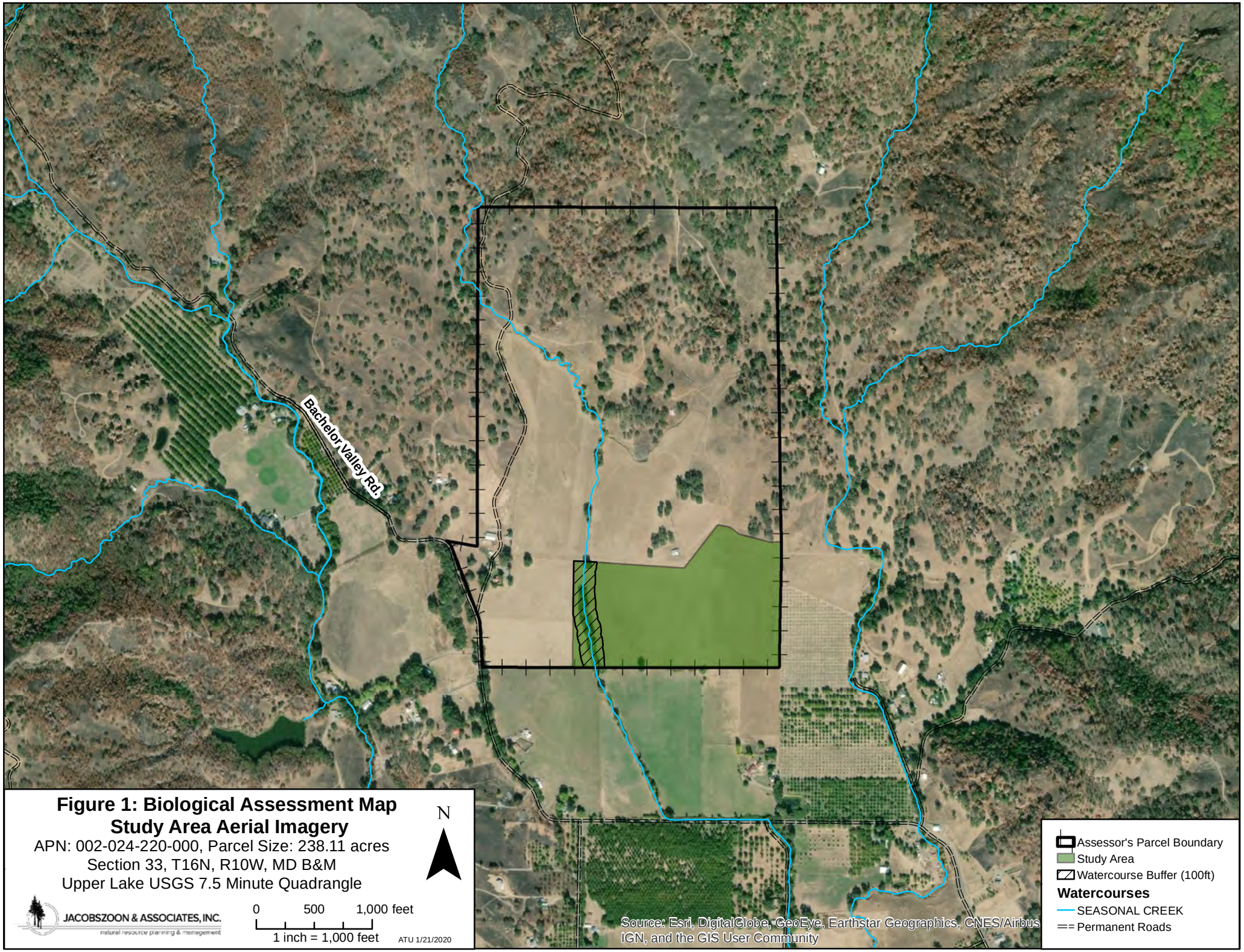

Figure 1: Biological Assessment Map
Study Area Aerial Imagery

APN: 002-024-220-000, Parcel Size: 238.11 acres
Section 33, T16N, R10W, MD B&M
Upper Lake USGS 7.5 Minute Quadrangle

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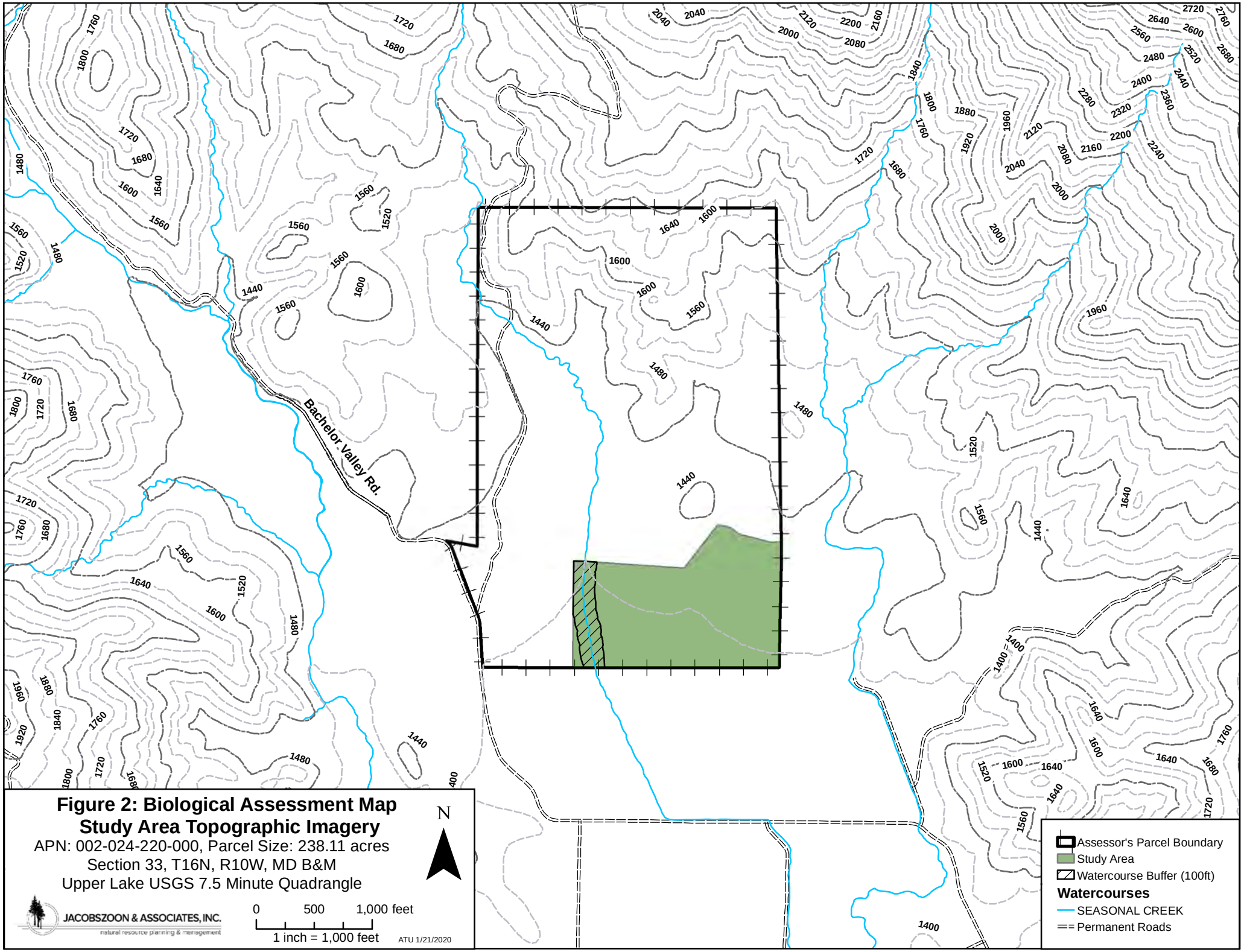

Figure 2: Biological Assessment Map
Study Area Topographic Imagery
APN: 002-024-220-000, Parcel Size: 238.11 acres
Section 33, T16N, R10W, MD B&M
Upper Lake USGS 7.5 Minute Quadrangle

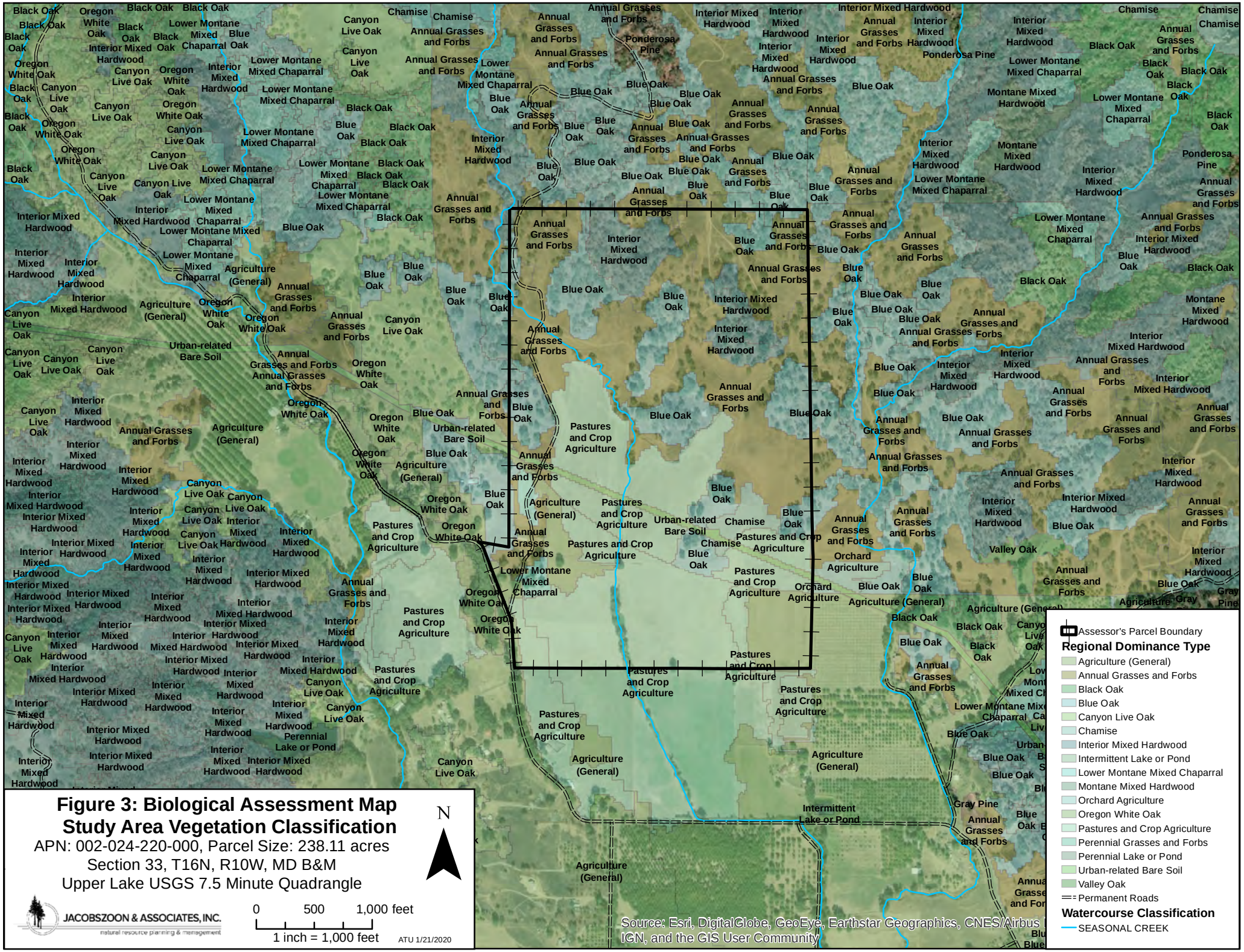

Figure 3: Biological Assessment Map
Study Area Vegetation Classification

APN: 002-024-220-000, Parcel Size: 238.11 acres
Section 33, T16N, R10W, MD B&M
Upper Lake USGS 7.5 Minute Quadrangle

JACOBSZOON & ASSOCIATES, INC.
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ATU 1/21/2020

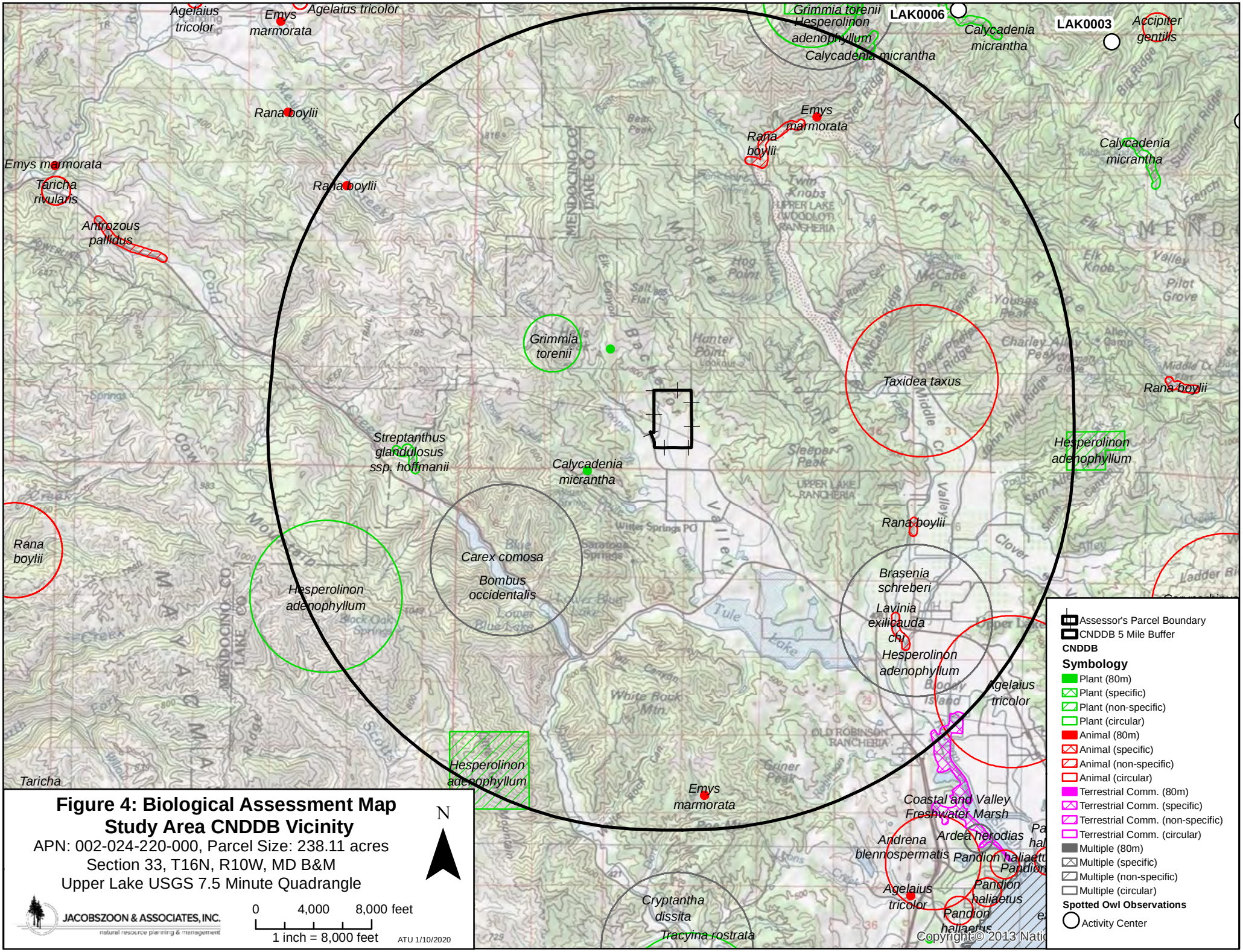
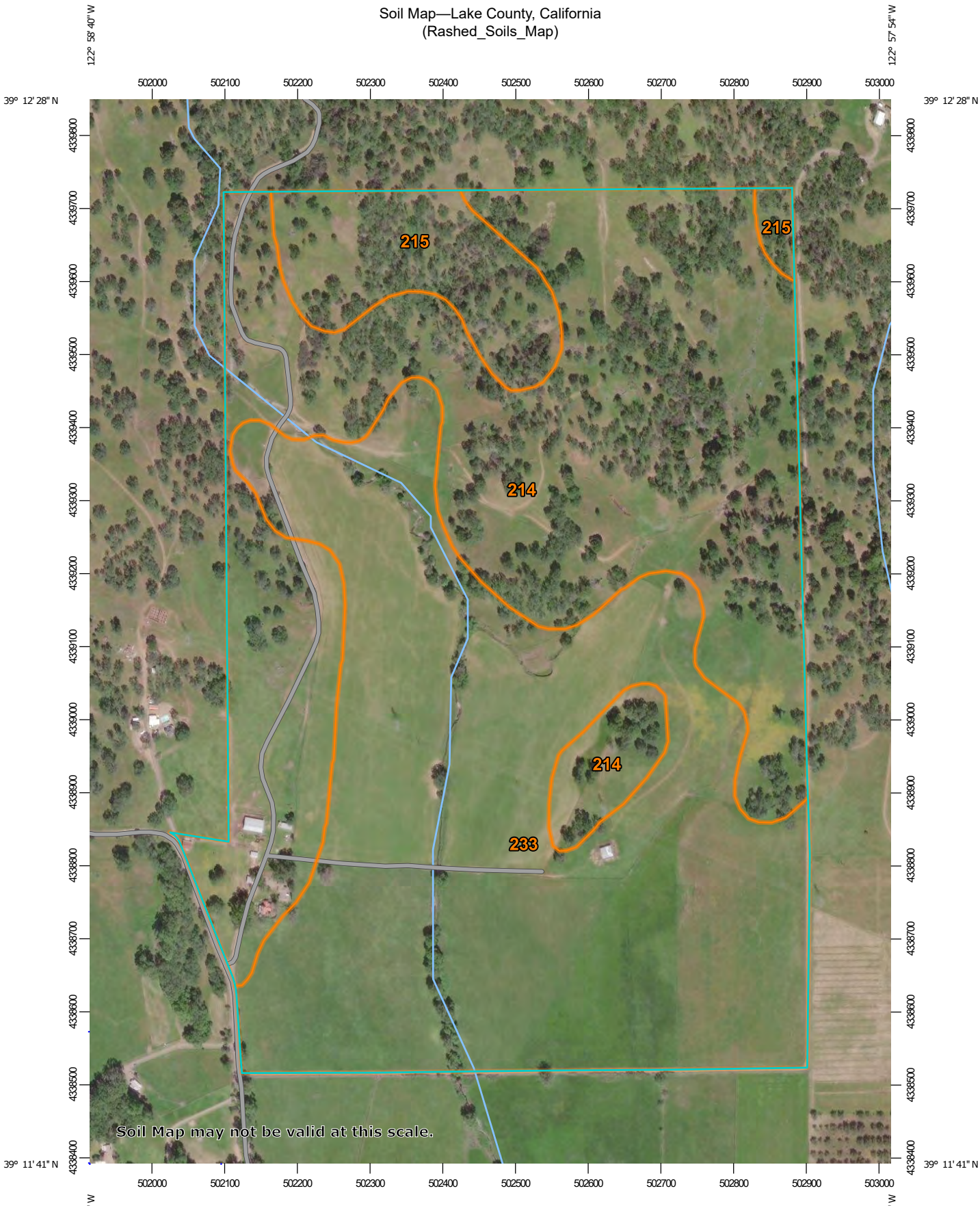


Figure 4: Biological Assessment Map
Study Area CNDDB Vicinity

APN: 002-024-220-000, Parcel Size: 238.11 acres
Section 33, T16N, R10W, MD B&M
Upper Lake USGS 7.5 Minute Quadrangle

Soil Map—Lake County, California
(Rashed_Soils_Map)



Map Scale: 1:7,100 if printed on A portrait (8.5" x 11") sheet.

N

Meters
0 100 200 400 600

Feet
0 300 600 1200 1800

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 10N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Lake County, California
Survey Area Data: Version 16, Sep 16, 2019

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Sep 18, 2016—Nov 4, 2017

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
214	Sleeper variant-Sleeper loams, 15 to 30 percent slopes	109.3	45.9%
215	Sleeper variant-Sleeper loams, 30 to 50 percent slopes	17.2	7.2%
233	Still loam, stratified substratum	111.7	46.9%
Totals for Area of Interest		**238.2**	**100.0%**