BIOLOGICAL RESOURCES ASSESSMENT FOR THE BAR X FARMS LLC CANNABIS CULTIVATION OPERATION AT 18655 & 20333 SOUTH STATE HIGHWAY 29, MIDDLETOWN, CALIFORNIA

Prepared March 16, 2021
Updated September 30, 2021

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1. INTRODUCTION

1.1. PROJECT LOCATION AND DESCRIPTION

Natural Investigations Company conducted a biological resources assessment for a cannabis cultivation operation on a 1600-acre property called Bar X Ranch in Middleton, California. The Bar X Ranch consists of 4 parcels:

- APN 014-250-05, 20103 South State Highway 29 (2.82 acres)
- APN 014-250-10, 18655 South State Highway 29 (511.00 acres)
- APN 014-250-07, 19395 South State Highway 29 (564.86 acres)
- APN 014-250-14, 20333 South State Highway 29 (515.93 acres)

Existing conditions at the Bar X Ranch consist of a number of unpaved ranch roads, fenced pastures, a surface water conveyance system, two groundwater wells, and a residential area with houses, barns, garages, shops, storage buildings, and septic systems. The residential area would not be utilized by the proposed project and would remain as is. The Ranch is accessed off of State Highway 29 via three (3) existing driveways (north, center, and south [see Exhibits). The center driveway will be used to access the proposed project.

Bar X Farms LLC is seeking discretionary approval from Lake County for a Major Use Permit, UP 20-92, for commercial cannabis operations at 18655 and 20333 South State Highway 29, Middletown (APNs 014-250-07 and 014-250-14, respectively). The project will be implemented in two phases. Phase 1 consists of development of outdoor cannabis gardens for cultivation of 62.1 acres of outdoor canopy at eight cultivation areas (or “gardens”). Phase 2 consists of converting one of the outdoor cultivation areas into permanent greenhouses for mixed-light cultivation and constructing a 60,000 sq. ft. commercial processing building. Details are summarized in the following tables.

At full buildout, the proposed cannabis operation would utilize approximately 80 acres (5%) of the 1600-acre Bar X Ranch. The remainder of the Bar X Ranch would be separated from cannabis cultivation activities, and would continue to operate as it has operated in the past, including rural residences, cattle ranching, and hay production.

Summary of Cannabis Cultivation Areas for Each Garden (Phase 1)

Site Plan Sheet #	APN	Name	Cultivation Type	Canopy Area (sq. ft.)	Cultivation Area (acres)
7	014-250-07	Center Garden	Outdoor	60,000	1.2
7	014-250-07	West Center Garden	Outdoor	110,000	3.4
8	014-250-07	Riverside Garden	Outdoor	835,000	20.1
9	014-250-07	Northwest Garden	Outdoor	85,000	2.9
11	014-250-07	East Center Garden	Outdoor	455,000	11.4
10	014-250-14	Pasture Garden	Outdoor	845,000	25.8
5	014-250-14	Southwest Garden #1	Outdoor	150,000	5.7
6	014-250-14	Southwest Garden #2	Outdoor	165,000	5.1
			Total	2,705,000	75.6

Summary of Cannabis Cultivation Areas for Each Garden (Phase 2)

Site Plan Sheet #	APN	Name	Cultivation Type	Canopy Area (sq. ft.)	Cultivation Area (acres)
7	014-250-07	Center Garden	Outdoor	60,000	1.2
7	014-250-07	West Center Garden	Outdoor	110,000	3.4
8	014-250-07	Riverside Garden	Outdoor	835,000	20.1
9	014-250-07	Northwest Garden	Outdoor	85,000	2.9
11	014-250-07	East Center Garden	Outdoor	455,000	11.4
10.1	014-250-14	Pasture Garden	Mixed-Light	621,600	25.8
5	014-250-14	Southwest Garden #1	Outdoor	150,000	5.7
6	014-250-14	Southwest Garden #2	Outdoor	165,000	5.1
10.1	014-250-14	Commercial Processing Building (East Garden)	N/A	N/A	N/A
			Total	2,481,600	75.6

Phase 1 Project Details

Sixty-Three A-Type 3 "Outdoor" licenses:
The applicant proposes 35.5 acres of commercial cannabis canopy area on APN 014-250-07 and 26.6 acres of commercial cannabis canopy area on APN 014-250-14, for a total of 62.1 acres of canopy within a cultivation area of approximately 75.6 acres. Outdoor cannabis cultivation would be employed without the use of light deprivation and/or artificial lighting. The proposed project would include retrofitting an existing 16,250 sq. ft. barn for drying and curing of cannabis grown onsite.

Outdoor cultivation would occur in full sun, with imported soil and amendments, in planter boxes or smart pots (grow bags) placed on top of the existing grade utilizing natural contours in open areas. During Phase 1, some vegetation clearing and minor grading (clearing and grubbing) is proposed for the outdoor cultivation activities to create level areas, on contour, for the planter boxes or smart pots, the cultivation employee parking area, and a flat for the water tanks near the Southwest Garden #2. No removal of living trees with a diameter greater than 5 inches is proposed.

Plants would be watered using an above ground, drip-irrigation system. Water for cultivation activities would be supplied from an existing groundwater well on APN 014-250-14. Water would be pumped from the well to approximately twenty-seven 5,000-gallon water tanks adjacent to Southwest Garden #2 on APN 014-250-14, where it would gravity feed through, new, above-ground irrigation lines to each of the proposed garden areas. Fertigation (addition of liquid fertilizers and other amendments to the irrigation water) at each garden would be done using a mobile mixing tank and injected directly into the drip-irrigation system.

A-Type 13 Self Distribution license:
An existing 16,250 sq. ft. pole barn would be retrofitted and used for storage, drying, and curing of cannabis; no cultivation would occur in this building. Employees would use the main parking area and the existing onsite access roads for parking and staging and accessing cultivation areas. Employees would have access to portable chemical toilets located at the main employee parking area and at each of the cultivation areas.

Phase 2 Project Details

Forty-Three A-Type 3 "Outdoor" licenses:
Outdoor Cannabis cultivation would be reduced from 63 outdoor licenses to 43 outdoor licenses by reducing the outdoor cultivation canopy area on APN 014-250-14 to 7.2 acres of commercial cannabis canopy, for a total of 42.7 acres of canopy within a cultivation area of approximately 49.8 acres.

Thirty-Four A-Type-3B "Mixed-Light" licenses:
During Phase 2, the Pasture Garden would be converted from outdoor cultivation to mixed-light cultivation to increase production to two harvests per year by installing approximately 296 greenhouses. Each greenhouse would have dimensions of 25 ft. x 100 ft. The greenhouse cultivation operation would be operated as "Mixed-Light Tier 1", either with the use of light deprivation and no artificial light, or with the use of artificial light at a rate of no more than six watts per square foot. The total canopy area would be approximately 14.3 acres within a cultivation area of approximately 25.8 acres. Cultivation in each greenhouse would be conducted with the use of low-wattage artificial light, fans for cooling, and small motors to open and close blackout fabric covers. Grading would be required to create greenhouse building pads.

Combining both outdoor and mixed-light license categories, the total canopy area would be approximately 57 acres within a cultivation area of approximately 75.6 acres. Phase 2 would continue to use the retrofitted 16,250 sq. ft. pole barn for drying and curing.

One Cannabis Processor License
Phase 2 also includes construction of a new 60,000 sq. ft. commercial processing building, with parking, located in the East Garden. The processing building would include ADA accessible restrooms. Wastewater would be treated via a new, onsite septic system. The commercial processing building parking area would have approximately 48 parking spaces and include ADA parking. No cultivation would occur at the East Garden. Grading would be required to create the processing building pad. The area is relatively flat, so grading would be minor.

Definition of Study Area

For this assessment, the Project Area was defined as all of the cultivation areas plus ancillary buildings, and this 80-acre area was the subject of the impact analysis. The entire 1,600-acre property was defined as the Study Area. The Study Area is defined to identify biological resources adjacent to the Project Area, and is the area subject to potential indirect effects from Project implementation.

1.2. PURPOSE AND SCOPE OF ASSESSMENT

This Biological Resources Assessment was prepared to assist in compliance with the California Environmental Quality Act and the state and federal Endangered Species Acts. This assessment also functions to fulfill requirements for obtaining enrollment (a Notice of Applicability) in the State Water Resources Control Board's Order WQ 2019-0001-DWQ General Waste Discharge Requirements for Discharges of Waste Associated with Cannabis Cultivation Activities (General Order).

This assessment provides information about the biological resources within the Study Area, the regulatory environment affecting such resources, any potential Project-related impacts upon these resources, and finally, to identify mitigation measures and other recommendations to reduce the significance of these impacts. The specific scope of services performed for this assessment consisted of the following tasks:

- Compile all readily-available historical biological resource information about the Study Area;
- Spatially query state and federal databases for any occurrences of special-status species or habitats within the Study Area and vicinity;
- Perform a reconnaissance-level field survey of the Study Area, including photographic documentation;
- Inventory all flora and fauna observed during the field survey;
- Characterize and map the habitat types present within the Study Area, including any potentially-jurisdictional water resources;
- Evaluate the likelihood for the occurrence of any special-status species;
- Assess the potential for the Project to adversely impact any sensitive biological resources;
- Recommend mitigation measures designed to avoid or minimize Project-related impacts; and
- Prepare and submit a report summarizing all of the above tasks.

The scope of services does not include other services that are not described in this Section, such as formal aquatic resource delineations or protocol-level surveys for special-status species.

1.3. REGULATORY SETTING

The following section summarizes some applicable regulations of biological resources on real property in California.

1.3.1. Special-status Species Regulations

The United States Fish and Wildlife Service (USFWS) and the National Marine Fisheries Service implement the Federal Endangered Species Act of 1973 (FESA) (16 USC §1531 et seq.). Threatened and endangered species on the federal list (50 CFR §17.11, 17.12) are protected from "take" (direct or indirect harm), unless a FESA Section 10 Permit is granted or a FESA Section 7 Biological Opinion with incidental take provisions is rendered. Pursuant to the requirements of FESA, an agency reviewing a proposed project within its jurisdiction must determine whether any federally listed species may be present in the project area and determine whether the proposed project will have a potentially significant impact upon such species. Under FESA, habitat loss is considered to be an impact to the species. In addition, the agency is required to determine whether the project is likely to jeopardize the continued existence of any species proposed to be listed under FESA or result in the destruction or adverse modification of critical habitat proposed to be designated for such species (16 USC §1536[3], [4]). Therefore, project-related impacts to these species or their habitats would be considered significant and would require mitigation. Species that are candidates for listing are not protected under FESA; however, USFWS advises that a candidate species could be elevated to listed status at any time, and therefore, applicants should regard these species with special consideration.

The California Endangered Species Act of 1970 (CESA) (California Fish and Game Code §2050 *et seq*., and CCR Title 14, §670.2, 670.51) prohibits "take" (defined as hunt, pursue, catch, capture, or kill) of species listed under CESA. A CESA permit must be obtained if a project will result in take of listed species, either during construction or over the life of the project. Section 2081 establishes an incidental take permit program for state-listed species. Under CESA, California Department of Fish and Wildlife (CDFW) has the responsibility for maintaining a list of threatened and endangered species designated under state law (CFG Code 2070). CDFW also maintains lists of species of special concern, which serve as "watch lists." Pursuant to requirements of CESA, an agency reviewing proposed projects within its jurisdiction must determine whether any state-listed species may be present in the Study Area and determine whether the proposed project will have a potentially significant impact upon such species. Project-related impacts to species on the CESA list would be considered significant and would require mitigation.

California Fish and Game Code Sections 4700, 5050, and 5515 designates certain mammal, amphibian, and reptile species "fully protected", making it unlawful to take, possess, or destroy these species except under issuance of a specific permit. The California Native Plant Protection Act of 1977 (CFG Code §1900 *et seq*.) requires CDFW to establish criteria for determining if a species or variety of native plant is endangered or rare. Section 19131 of the code requires that landowners notify CDFW at least 10 days prior to initiating activities that will destroy a listed plant to allow the salvage of plant material.

Many bird species, especially those that are breeding, migratory, or of limited distribution, are protected under federal and state regulations. Under the Migratory Bird Treaty Act of 1918 (16 USC §703-711), migratory bird species and their nests and eggs that are on the federal list (50 CFR §10.13) are protected from injury or death, and project-related disturbances must be reduced or eliminated during the nesting cycle. California Fish and Game Code (§3503, 3503.5, and 3800) prohibits the possession, incidental take, or needless destruction of any bird nests or eggs. Fish and Game Code §3511 designates certain bird species "fully protected", making it unlawful to take, possess, or destroy these species except under issuance of a specific permit. The Bald and Golden Eagle Protection Act (16 USC §668) specifically protects bald and golden eagles from harm or trade in parts of these species.

California Environmental Quality Act (CEQA) (Public Resources Code §15380) defines "rare" in a broader sense than the definitions of threatened, endangered, or fully protected. Under the CEQA definition, CDFW can request additional consideration of species not otherwise protected. CEQA requires that the impacts of a project upon environmental resources must be analyzed and assessed using criteria determined by the lead agency. Sensitive species that would qualify for listing but are not currently listed

may be afforded protection under CEQA. The CEQA Guidelines (§15065) require that a substantial reduction in numbers of a rare or endangered species be considered a significant effect. CEQA Guidelines (§15380) provide for assessment of unlisted species as rare or endangered under CEQA if the species can be shown to meet the criteria for listing. Plant species on the California Native Plant Society (CNPS) Lists 1A, 1B, or 2 are typically considered rare under CEQA. California "Species of Special Concern" is a category conferred by CDFW on those species that are indicators of regional habitat changes or are considered potential future protected species. While they do not have statutory protection, Species of Special Concern are typically considered rare under CEQA and thereby warrant specific protection measures.

1.3.2. Water Resource Protection

Real property that contains water resources are subject to various federal and state regulations and activities occurring in these water resources may require permits, licenses, variances, or similar authorization from federal, state and local agencies, as described next.

The Federal Water Pollution Control Act Amendments of 1972 (as amended), commonly known as the Clean Water Act (CWA), established the basic structure for regulating discharges of pollutants into "waters of the United States". Waters of the US includes essentially all surface waters, all interstate waters and their tributaries, all impoundments of these waters, and all wetlands adjacent to these waters. CWA Section 404 requires approval prior to dredging or discharging fill material into any waters of the US, especially wetlands. The permitting program is designed to minimize impacts to waters of the US, and when impacts cannot be avoided, requires compensatory mitigation. The US Army Corps of Engineers (USACE) is responsible for administering Section 404 regulations. Substantial impacts to jurisdictional wetlands may require an Individual Permit. Small-scale projects may require only a Nationwide Permit, which typically has an expedited process compared to the Individual Permit process. Mitigation of wetland impacts is required as a condition of the CWA Section 404 Permit and may include on-site preservation, restoration, or enhancement and/or off-site restoration or enhancement. The characteristics of the restored or enhanced wetlands must be equal to or better than those of the affected wetlands to achieve no net loss of wetlands.

Under CWA Section 401, every applicant for a federal permit or license for any activity which may result in a discharge to a water body must obtain State Water Quality Certification that the proposed activity will comply with State water quality standards. The California State Water Resources Control Board is responsible for administering CWA Section 401 regulations.

Section 10 of the Rivers and Harbors Act of 1899 requires approval from USACE prior to the commencement of any work in or over navigable Waters of the US, or which affects the course, location, condition or capacity of such waters. Navigable waters of the United States are defined as waters that have been used in the past, are now used, or are susceptible to use, as a means to transport interstate or foreign commerce up to the head of navigation. Rivers and Harbors Act Section 10 permits are required for construction activities in these waters.

California Fish and Game Code (§1601 - 1607) protects fishery resources by regulating "*any activity that may substantially divert or obstruct the natural flow or substantially change the bed, channel, or bank of any river, stream, or lake*." CDFW requires notification prior to commencement, and issuance of a Lake or Streambed Alteration Agreement, if a proposed project will result in the alteration or degradation of ''waters of the State". The limit of CDFW jurisdiction is subject to the judgment of the Department; currently, this jurisdiction is interpreted to be the "stream zone", defined as "*that portion of the stream channel that restricts lateral movement of water*" and delineated at "*the top of the bank or the outer edge of any riparian vegetation, whichever is more landward*". CDFW reviews the proposed actions and, if necessary, submits to the applicant a proposal for measures to protect affected fish and wildlife resources. The final proposal that is mutually agreed upon by the CDFW and the applicant is the

Streambed Alteration Agreement. Projects that require a Streambed Alteration Agreement may also require a CWA 404 Section Permit and/or CWA Section 401 Water Quality Certification.

For construction projects that disturb one or more acres of soil, the landowner or developer must obtain coverage under the General Permit for Discharges of Storm Water Associated with Construction Activity (Construction General Permit, 2009-0009-DWQ).

The State Water Resources Control Board's Order WQ 2019-0001-DWQ General Waste Discharge Requirements for Discharges of Waste Associated with Cannabis Cultivation Activities protects receiving water bodies from water-quality impacts associated with cannabis cultivation using a combination of Best Management Practices, buffer zones, sediment and erosion controls, site management plans, inspections and reporting, and regulatory oversight.

1.3.3. Tree Protection

At the State level, in areas inside timberland, any tree removal is subject to the conditions and requirements set forth in the Z'berg-Nejedly Forest Practice Act and the California Forest Practice Rules. If development of a project will result in the removal of commercial tree species, one of the following permits is needed: Less than 3 Acre Conversion Exemption; Christmas Tree; Dead, Dying or Diseased, Fuelwood, or Split Products Exemption; a Public Agency, Public and Private Utility Right of Way Exemption; a Notice of Exemption from Timberland Conversion Permit for Subdivision; or an Application for Timberland Conversion Permit.

Lake County does not have a specific ordinance protecting native trees. However, under the Cannabis Ordinance 3084, Section 4, Subsection iii) Prohibited Activities (a) Tree Removal, Lake County restricts tree removal as follows:

> *"The removal of any commercial tree species as defined by the California Code of Regulations section 895.1, Commercial Species for the Coast Forest District and Northern Forest District, and the removal of any true oak species (Quercus species) or Tan Oak (Notholithocarpus species) for the purpose of developing a cannabis cultivation site should be avoided and minimized. This shall not include the pruning of any such tree species for the health of the tree or the removal of such trees if necessary for safety or disease concerns."*

During the permitting process, Lake County requires mitigation for the removal of protected trees; typical mitigation is tree replacement at a ratio of 2:1 or 3:1.

2. ENVIRONMENTAL SETTING

The Study Area is located within the Inner North Coast Range geographic subregion, which is contained within the Northwestern California geographic subdivision of the larger California Floristic Province (Baldwin et al. 2012). This region has a Mediterranean-type climate, characterized by distinct seasons of hot, dry summers and wet, moderately-cold winters. The Study Area and vicinity is in climate Zone 14 "Northern California's Inland Areas with Some Ocean Influence", with maritime air moderating temperatures that would otherwise be hotter in summer and colder in the winter (Sunset, 2020). Much of the vegetation and trees were burned during the 2015 Valley Fire. There are various soil types within the Study Area, are they are derived from serpentine, basalt, sandstone, shale, and/or alluvium. The topography of the Study Area is rolling and consists of a terminal mountain slope that is ringed by a major river. The topography of each site ranges from flat valley floors and floodplains to the lower slopes of the surrounding hills. Steep slopes, wetlands, watercourses, and serpentine soils were factors in defining and limiting the boundaries of each garden site.

Bar X Ranch is an existing cattle ranch that has been actively used for over 100 years for cattle grazing and hay production. The Ranch is bounded by Putah Creek to the west and State Highway 29 to the east. The surrounding land uses are rural land, residential, and agriculture with existing ranches and vineyards to the north and west and an existing heavy industrial area adjacent to the Ranch to the northeast. The topography of the Ranch is rolling and consists of mountain ridges and valleys ranging from 1,000 feet to 1,500 feet above sea level. The Ranch is located within the Upper Putah Creek watershed (HUC-1802016203). Putah Creek, a Class I watercourse, bounds the western edge of the property and flows in the northerly direction and then turns east approximately 1.7 miles north of the Ranch. Crazy Creek, a Class II watercourse that is tributary to Putah Creek, flows east towards its confluence with Putah Creek located approximately 3.5 miles east of Bar X Ranch. Several Class III watercourses are located throughout Bar X Ranch, draining to Putah Creek or Crazy Creek.

3. METHODOLOGY

3.1. PRELIMINARY DATA GATHERING AND RESEARCH

Prior to conducting the field survey, the following information sources were reviewed:

- Any readily-available previous biological resource studies pertaining to the Study Area or vicinity
- Aerial photography of the Study Area (current and historical)
- United States Geologic Service 7.5 degree-minute topographic quadrangles of the Study Area and vicinity
- USFWS National Wetland Inventory
- USDA Natural Resources Conservation Service soil survey maps
- California Natural Diversity Database (CNDDB), electronically updated monthly by subscription
- USFWS species list (IPaC Trust Resources Report).

3.2. FIELD SURVEY

The following wildlife / special-status animal surveys have been conducted for the proposed project:

- June 25, 2020, Tim Nosal, MS. (senior biologist, Natural Investigations Co.) Consulting biologist
- August 21, 2020, Tim Nosal, MS.
- February 24, 2021, Dr. Geo Graening (principal, Natural Investigations Co.)
- September 7, 2021, Tim Nosal, MS.

The following CDFW-protocol botanical filed surveys have been conducted for the proposed project:

- June 25, 2020, Tim Nosal, MS.

- August 21, 2020, Tim Nosal, MS.
- April 1, 2021, Kevin Downing (Jepson Herbarium associate)
- September 7, 2021, Tim Nosal, MS.

Additionally, a formal wetland delineation was performed by Nosal and Graening on January 4, 2021.

Variable-intensity pedestrian surveys were performed, and modified to account for differences in terrain, vegetation density, and visibility. All visible fauna and flora observed were recorded in a field notebook, and identified to the lowest possible taxon. Survey efforts emphasized the search for any special-status species that had documented occurrences in the CNDDB within the vicinity of the Study Area and those species on the USFWS species list (Appendix 1).

When a specimen could not be identified in the field, a photograph or voucher specimen (depending upon permit requirements) was taken and identified in the laboratory using a dissecting scope where necessary. Dr. Graening holds the following scientific collection permits: CDFW Scientific Collecting Permit No. SC-006802; and CDFW Plant Voucher Specimen Permit 09004. Tim Nosal holds CDFW Plant Voucher Specimen Permit 2081(a)-16-102-V. Taxonomic determinations were facilitated by referencing museum specimens or by various texts, including the following: Powell and Hogue (1979); Pavlik (1991); (1993); Brenzel (2012); Stuart and Sawyer (2001); Lanner (2002); Sibley (2003); Baldwin et al. (2012); Calflora (2020); CDFW (2020b,c); NatureServe 2020; and University of California at Berkeley (2020a,b).

The locations of any special-status species sighted were marked on aerial photographs and/or georeferenced with a geographic positioning system (GPS) receiver. Habitat types occurring in the Study Area were mapped on aerial photographs, and information on habitat conditions and the suitability of the habitats to support special-status species was also recorded. The Study Area was also informally assessed for the presence of potentially-jurisdictional water features, including riparian zones, isolated wetlands and vernal pools, and other biologically-sensitive aquatic habitats.

3.3. MAPPING AND OTHER ANALYSES

Locations of species' occurrences and habitat boundaries within the Study Area were digitized to produce the final habitat maps. The boundaries of potentially jurisdictional water resources within the Study Area were identified and measured in the field, and similarly digitized to calculate acreage and to produce informal delineation maps. Geographic analyses were performed using geographical information system software (ArcGIS 10, ESRI, Inc.). Vegetation communities (assemblages of plant species growing in an area of similar biological and environmental factors), were classified by Vegetation Series (distinctive associations of plants, described by dominant species and particular environmental setting) using the CNPS Vegetation Classification system (Sawyer and Keeler-Wolf, 1995). Informal wetland delineation methods consisted of an abbreviated, visual assessment of the three requisite wetland parameters (hydrophytic vegetation, hydric soils, hydrologic regime) defined in the US Army Corps of Engineers Wetlands Delineation Manual (Environmental Laboratory, 1987). Wildlife habitats were classified according to the CDFW's California Wildlife Habitat Relationships System (CDFW, 2020c). Species' habitat requirements and life histories were identified using the following sources: Baldwin et al. (2012); CNPS (2020), Calflora (2020); CDFW (2020a,b,c); and University of California at Berkeley (2020a,b).

4. RESULTS

4.1. INVENTORY OF FLORA AND FAUNA FROM FIELD SURVEY

All plants detected during the field survey of the Study Area are listed in Appendix 2. The following animals were detected within the Study Area during the field survey:

northwestern fence lizard (*Sceloporus occidentalis occidentalis*); western sagebrush lizard (*Sceloporus graciosus gracilis*); black-tailed jackrabbit (*Lepus californicus*); Botta's pocket gopher (*Thomomys bottae*); California ground squirrel (*Otospermophilus beecheyi*); cattle (*Bos taurus*); Columbian black-tailed deer (*Odocoileus hemionus columbianus*); coyote (*Canis latrans*); gray fox (*Urocyon cinereoargenteus*); horse (*Equus caballus*); pig (*Sus scrofa*); acorn woodpecker (*Melanerpes formicivorus*); American crow (*Corvus brachyrhynchos*); American goldfinch (*Spinus tristis*); Anna's hummingbird (*Calypte anna*); barn swallow (*Hirundo rustica*); black phoebe (*Sayornis nigricans*); Brewer's blackbird (*Euphagus cyanocephalus*); bushtit (*Psaltriparus minimus*); California quail (*Callipepla californica*); California scrub jay (*Aphelocoma californica*); California towhee (*Melozone crissalis*); cliff swallow (*Petrochelidon pyrrhonota*); common raven (*Corvus corax*); Eurasian collared-dove (*Streptopelia decaocto*); great blue heron (*Ardea herodias*); mourning dove (*Zenaida macroura*); northern flicker (*Colaptes auratus*); Nuttall's woodpecker (*Picoides nuttallii*); oak titmouse (*Baeolophus inornatus*); osprey (*Pandion haliaetus*); red-tailed hawk (*Buteo jamaicensis*); turkey vulture (*Cathartes aura*); western kingbird (*Tyrannus verticalis*); western meadowlark (*Sturnella neglecta*); white-breasted nuthatch (*Sitta carolinensis*); wild turkey (*Meleagris gallopavo*); sparrow (Emberizidae); and other common songbirds.

4.2. VEGETATION COMMUNITIES AND WILDLIFE HABITAT TYPES

4.2.1. Terrestrial Vegetation Communities

The Study Area contains the following terrestrial vegetation communities: Ruderal, Annual Grassland, Chaparral, Oak Woodland, Riparian, and Freshwater marsh. These vegetation communities are discussed here and are delineated in the Exhibits.

Ruderal/Disturbed. These areas consist of disturbed or converted natural habitat that is now either in ruderal state, graded, or urbanized with gravel roads. Vegetation within this habitat type consists primarily of ornamental plantings or nonnative weedy species lacking a consistent community structure. This habitat type provides limited resources for wildlife and is utilized primarily by species tolerant of human activities. The disturbed and altered condition of these lands greatly reduces their habitat value and ability to sustain rare plants or diverse wildlife assemblages.

Annual Grassland: The valley floors within the Study Area are largely devoid of trees and are characterized by annual grassland habitat. This vegetation is comprised of both native and non-native grasses and herbs, with the composition varying across the Study Area. Some of the grasslands are used as pasture, and are periodically flood irrigated. Typical species within this habitat include slender wild oat (*Avena barbata*), ripgut brome (*Bromus diandrus*), soft chess (*Bromus hordeaceus*), Medusa-head (*Elymus caput-medusae*), blue wildrye (*Elymus glaucus*), creeping wildrye (*Elymus triticoides*), wand tarplant (*Holocarpha virgata*), hayfield tarplant (*Hemizonia congesta* ssp. *luzulifolia*), Great Valley gumplant (*Grindelia camporum*), tall sock destroyer (*Torilis arvensis*), yellow star-thistle (*Centaurea solstitialis*), English plantain (*Plantago lanceolata*), vetch (*Vicia* spp.) and yellow mignonette (*Reseda luteola*). This vegetation can be classified as the Holland Type "42.027.00 Wild Oats and Annual Brome Grasslands", or "42.042.02 Centaurea solstitialis Star thistle field", or "42.020.03 Elymus caput-medusae" (CDFW

2019).

Chaparral (Leather Oak/Chamise): Much of the Study Area was burned during the 2015 Valley Fire. The shrub-covered slopes and ridges were particularly impacted. However, many of these species are adapted to fire and are readily recolonizing areas that burned. Underlain by serpentine soils, the stands of chaparral within the Study Area are dominated by one of two species: leather oak and chamise. The dominant species in the chaparral found in the northern portion of the Study is leather oak (*Quercus durata*) with toyon (*Heteromeles arbutifolia*), yerba santa (*Eriodictyon californicum*), California bay (*Umbellularia californica*), poison-oak (*Toxicodendron diversilobum*), gray pine (*Pinus sabiniana*), white leaf manzanita (*Arctostaphylos viscida*) and mountain mahogany (*Cercocarpus betuloides*). The open canopy of the resprouting vegetation allows for the development of a robust understory comprised of wooly sunflower (*Eriophyllum lanatum*), lomatium (*Lomatium* sp.), coyote mint (*Monardella villosa*), iris (*Iris* sp.), California fescue (*Festuca californica*), soft chess and Pacific fescue (*Festuca microstachys*). This type of chaparral can be classified as the Holland Type "Mixed Serpentine Chaparral" or as "37.405.00 Leather Oak Chaparral" (CDFW 2019). Slopes in the southeastern portion of the Study Area are blanketed with re-sprouting chamise (*Adenostoma fasciculatum*) as the dominant shrub along with occasional California buckeye (*Aesculus californicus*) and wedgeleaf ceanothus (Ceanothus cuneatus). The understory within the chamise chaparral consists of grasses and annual herbs. This type of chaparral can be classified as the Holland Type "Chamise Chaparral" or as "37.101.00 Chamise Chaparral" (CDFW 2019).

Blue Oak Woodland: Oak-dominated habitats are found throughout the hills in the central and southern portion of the Study Area. Like the surrounding chaparral, this habitat was also impacted by the 2015 fire. Although dead and downed trees are evident throughout the site, most of the trees appeared to have survived the event. The savanna-like oak woodland consists of an open canopy of blue oak (*Quercus douglasii*) with occasional gray pine. The understory within the woodland is similar to the adjacent grassland, sharing species such as slender wild oat, soft chess, ripgut brome, Medusahead grass, wand tarplant, hayfield tarplant and yellow star thistle. This vegetation type can be classified as the Holland Type "71.020.00 Blue Oak Woodland" or as "71.080.00 Interior live oak woodland and forest" (CDFW 2019)

Riparian: Riparian habitat can be found along the edge of the active channel of Putah Creek, which is found along the western margin of the Study Area. Much of the riparian habitat and adjacent stands of valley oaks burned in the 2015 fire. The reestablishing riparian vegetation consists of a relatively narrow canopy of sandbar willow and arroyo willow. The riparian understory includes elmleaf blackberry (*Rubus ulmifolia*), common snowberry, goldenrod (*Euthamia* sp.), California mugwort (*Artemisia douglasiana*) and California grape (*Vitis californica*). The riparian forest can be classified as the Holland Type "Great Valley Willow Scrub" or as "61.209.00 Sandbar Willow Thickets" (CDFW 2019).

Freshwater Marsh: Numerous wetlands were observed within the Study Area. These wetlands can be described as freshwater marsh. Many of the wetlands are found in low-lying areas that remain moist most of the year, although some are the result of flood irrigation within the pastures. The composition of the vegetation varies between the various sites, but typical species include rush (*Juncus* sp.), sedge (*Carex spp.*), curly dock (*Rumex crispus*), Himalayan blackberry (*Rubus armeniacus*), bird's-foot trefoil (*Lotus corniculatus*), Douglas' mesamint (*Pogogyne douglasii*), Jepson's button celery (*Eryngium aristulatum*) and various grasses. Some of the species observed in the wetlands, including the mesamint and button celery, are typical of vernal pools. However, no vernal pools were observed within the Study Area. The wetland vegetation within the Study Area can generally be classified as the Holland Type "Coastal and Valley Freshwater Marsh" or as "45.100.00 *Carex* marsh and 45.500.00 *Juncus* marsh" (Sawyer et al. 2009)".

4.2.2. Wildlife Habitat Types

Wildlife habitat types were classified using CDFW's Wildlife Habitat Relationship System. The Study Area contains the following wildlife habitat types: Montane Hardwood-Conifer; Montane Hardwood; Montane Riparian; Montane Chaparral; Mixed Chaparral; Blue Oak Woodland; Annual Grassland; Fresh Emergent Wetland; Riverine; Lacustrine; Pasture; Urban; and Barren.

4.2.3. Critical Habitat and Special-status Habitat

No critical habitat for any federally-listed species occurs within the Project Area or the surrounding Study Area. The CNDDB reported no special-status habitats within the Project Area or surrounding Study Area. The CNDDB reported the following special-status habitats in a 10-mile radius outside of the Study Area: Central Valley Drainage Rainbow Trout/Cyprinid Stream; Clear Lake Drainage Resident Trout Stream; Serpentine Bunchgrass; Northern Vernal Pool; Northern Basalt Flow Vernal Pool; Northern Volcanic Ash Vernal Pool; Coastal and Valley Freshwater Marsh and Northern Interior Cypress Forest.

The CNDDB reported 2 special-status habitat occurrences on the property: Clear Lake Drainage Cyprinid/Catastomid Stream and Central Valley Drainage Rainbow Trout/Cyprinid Stream. These are associated with Putah Creek. Special-status habitats were detected within the Study Area during the field survey: Putah Creek and associated riparian habitat and riverine wetlands (in channel), intermittent and ephemeral channels, areas with serpentine soils, and various wetlands.

Areas within the Study Area that have the following soil type contain serpentine soils, which is suitable habitat for special-status plant species: Henneke-Montara-Rock outcrop complex which is described as "*residuum weathered from serpentinite*."

4.2.4. Habitat Plans and Wildlife Corridors

Wildlife movement corridors link remaining areas of functional wildlife habitat that are separated primarily by human disturbance, but natural barriers such as rugged terrain and abrupt changes in vegetation cover are also possible. Wilderness and open lands have been fragmented by urbanization, which can disrupt migratory species and separate interbreeding populations. Corridors allow migratory movements and act as links between these separated populations.

Although there are no designated wildlife corridors, the open space within the Study Area allows for unrestricted animal movement, and the Putah Creek river corridor functions as a wildlife movement corridor. Putah Creek also contains fishery resources. The Study Area is not located within any adopted Habitat Conservation Plan or Natural Community Conservation Plan.

4.3. LISTED SPECIES AND OTHER SPECIAL-STATUS SPECIES

For the purposes of this assessment, "special status" is defined to be species that are of management concern to state or federal natural resource agencies, and include those species that are:

- Listed as endangered, threatened, proposed, or candidate for listing under the Federal Endangered Species Act;
- Listed as endangered, threatened, rare, or proposed for listing, under the California Endangered Species Act of 1970;
- Designated as endangered or rare, pursuant to California Fish and Game Code (§1901);
- Designated as fully protected, pursuant to California Fish and Game Code (§3511, §4700, or §5050);
- Designated as a species of special concern by CDFW;
- Plants considered to be rare, threatened or endangered in California by the California Native Plant Society (CNPS); this consists of species on Lists 1A, 1B, and 2 of the CNPS Ranking System; or
- Plants listed as rare under the California Native Plant Protection Act.

4.3.1. Reported Occurrences of Listed Species and Other Special-status Species

A list of special-status plant and animal species that have occurred within the Study Area and vicinity was compiled based upon the following:

- Any previous and readily-available biological resource studies pertaining to the Study Area;
- Informal consultation with USFWS by generating an electronic Species List (Information for Planning and Conservation website at https://ecos.fws.gov/ipac/); and
- A spatial query of the CNDDB.

The CNDDB was queried and any reported occurrences of special-status species were plotted in relation to the Study Area boundary using GIS software (see exhibits). CNDDB reports that the following special-status species have been mapped within, or immediately adjacent to, the Study Area: Jepson's milk-vetch (*Astragalus rattanii* var. *jepsonianus*); green jewelflower (*Streptanthus hesperidis*); congested-headed hayfield tarplant (*Hemizonia congesta* ssp. *congesta*); Hall's harmonia (*Harmonia hallii*); Lake County western flax (*Hesperolinon didymocarpum*); bent-flowered fiddleneck (*Amsinckia lunaris*); Porter's navarretia (*Navarretia paradoxinota*); Baker's navarretia (*Navarretia leucocephala* ssp. *bakeri*) and two-carpellate western flax (*Hesperolinon bicarpellatum*). Within a 10-mile buffer of the Study Area boundary, the CNDDB reported several special-status species occurrences, summarized in the following table.

A USFWS species list was generated online using the USFWS' IPaC Trust Resource Report System (see Appendix 1). This list is generated using a regional and/or watershed approach and does not necessarily indicate that the Study Area provides suitable habitat. The following listed species were in the report:

- Northern Spotted Owl (*Strix occidentalis caurina*) Threatened
- California Red-legged Frog (*Rana draytonii*) Threatened
- Delta Smelt (*Hypomesus transpacificus*) Threatened
- Conservancy Fairy Shrimp (*Branchinecta conservation*) Endangered
- Burke's Goldfields (*Lasthenia burkei*) Endangered
- Lake County Stonecrop (*Parvisedum leiocarpum)* Endangered
- Many-flowered Navarretia (*Navarretia leucocephala ssp. plieantha)* Endangered
- Slender Orcutt Grass (*Orcuttia tenuis*) Threatened

Migratory birds should also be considered in the impact assessment.

Special-status Species Reported by CNDDB in the Vicinity of the Study Area

Common Name Scientific Name	Status*	General Habitat**	Microhabitat**
Red-bellied newt *Taricha rivularis*	CSSC	Found in coastal woodlands and redwood forests along the coast of Northern California	A stream or river dweller. Larvae retreat into vegetation and under stones during the day.
California giant salamander *Dicamptodon ensatus*	CSSC	Mendocino and Lake Counties south to Santa Cruz and Santa Clara Counties.	Wet coastal forests in or near clear, cold permanent and semi-permanent streams and seepages.
Foothill yellow-legged frog *Rana boylii*	CCT/CSSC	Partly-shaded, shallow streams & riffles with a rocky substrate in a variety of habitats.	Need at least some cobble-sized substrate for egg-laying. Need at least 15 weeks to attain metamorphosis.
Bald eagle *Haliaeetus leucocephalus*	FD/CE	Ocean shore, lake margins, & rivers for both nesting & wintering. Most nests within 1 mi of water.	Nests in large, old-growth, or dominant live tree w/open branches, especially ponderosa pine. Roosts communally in winter
Golden eagle *Aquila chrysaetos*	CFP/CWL	Rolling foothills, mountain areas, sage-juniper flats, & desert.	Cliff-walled canyons provide nesting habitat in most parts of range; also, large trees in open areas.
American peregrine falcon *Falco peregrinus anatum*	FD/CD/CFP	Near wetlands, lakes, rivers, or other water; on cliffs, banks, dunes, mounds; also, human-made structures.	Nest consists of a scrape or a depression or ledge in an open site.
Prairie falcon *Falco mexicanus*	CWL	Inhabits dry, open terrain, either level or hilly.	Breeding sites located on cliffs. Forages far afield, even to marshlands and ocean shores.
Western yellow-billed cuckoo *Coccyzus americanus occidentalis*	FT/CE	Riparian forest nester, along the broad, lower flood-bottoms of larger river systems.	Nests in riparian jungles of willow, often mixed with cottonwoods, w/ lower story of blackberry, nettles, or wild grape.
Purple martin *Progne subis*	CSSC	Inhabits woodlands, low elevation coniferous forest of Douglas-fir, ponderosa pine, & Monterey pine.	Nests in old woodpecker cavities mostly, also in human-made structures. Nest often located in tall, isolated tree/snag.
Tricolored blackbird *Agelaius tricolor*	CT/CSSC	Highly colonial species, most numerous in central valley & vicinity. Largely endemic to California.	Requires open water, protected nesting substrate, & foraging area with insect prey within a few km of the colony.
Steelhead - central California coast DPS *Oncorhynchus mykiss irideus*	FT	From Russian River, south to Soquel Cr & to, but not including Pajaro River. Also San Francisco & San Pablo Bay basins.	
Clear Lake hitch *Lavinia exilicauda chi*	CT	Found only in Clear Lake, Lake Co, and associated ponds. Spawns in streams flowing into Clear Lake.	Adults found in the limnetic zone. Juveniles found in the nearshore shallow-water habitat hiding in the vegetation.
Long-eared myotis *Myotis evotis*	CSSC	Found in all brush, woodland & forest habitats from sea level to about 9000 ft. Prefers coniferous woodlands & forests.	Nursery colonies in buildings, crevices, spaces under bark, & snags. Caves used primarily as night roosts.
Fringed myotis *Myotis thysanodes*	CSSC	In a wide variety of habitats, optimal habitats are pinyon-juniper, valley foothill hardwood & hardwood-conifer.	Uses caves, mines, buildings or crevices for maternity colonies and roosts.
Silver-haired bat *Lasionycteris noctivagans*	CSSC	Primarily a coastal & montane forest dweller feeding over streams, ponds & open brushy areas.	Roosts in hollow trees, beneath exfoliating bark, abandoned woodpecker holes & rarely under rocks. Needs drinking water.
Hoary bat *Lasiurus cinereus*	CSSC	Prefers open habitats or habitat mosaics, with access to trees for cover & open areas or habitat edges for feeding.	Roosts in dense foliage of medium to large trees. Feeds primarily on moths. Requires water.
Western red bat *Lasiurus blossevillii*	CSSC	Roosts primarily in trees, 2-40 ft above ground, from sea level up through mixed conifer forests.	Prefers habitat edges & mosaics with trees that are protected from above & open below with open areas for foraging.
Townsend's big-eared bat *Corynorhinus townsendii*	CSSC	Throughout California in a wide variety of habitats. Most common in mesic sites.	Roosts in the open, hanging from walls & ceilings. Roosting sites limiting. Extremely sensitive to human disturbance.
Pallid bat *Antrozous pallidus*	CSSC	Deserts, grasslands, shrublands, woodlands & forests. Most common in open, dry habitats with rocky areas for roosting.	Roosts must protect bats from high temperatures. Very sensitive to disturbance of roosting sites.
Fisher - West Coast DPS *Pekania pennanti*	CT/CSSC	Intermediate to large-tree stages of coniferous forests & deciduous-riparian areas with high percent canopy closure.	Uses cavities, snags, logs & rocky areas for cover & denning. Needs large areas of mature, dense forest.

Western pond turtle *Emys marmorata*	CSSC	A thoroughly aquatic turtle of ponds, marshes, rivers, streams & irrigation ditches, usually with aquatic vegetation, be	Need basking sites and suitable (sandy banks or grassy open fields) upland habitat up to 0.5 km from water for egg-laying
Ricksecker's water scavenger beetle *Hydrochara ricksecker*i	CSSC	Aquatic.	
Serpentine cypress wood-boring beetle *Trachykele hartmani*	CSSC	Larvae develop in Sargent cypress. Restricted to Napa, Colusa, and Lake counties.	
Wilbur Springs shorebug *Saldula usingeri*	CSSC	Requires springs/creeks with high concentrations of Na, Cl, & Li.	Found only on wet substrate of spring outflows.
Western bumble bee *Bombus occidentalis*	CSSC	Once common & widespread, species has declined precipitously from central Ca to southern B.C., perhaps from disease.	
Obscure bumble bee *Bombus caliginosus*	CSSC	Open grassy coastal prairies and Coast Range meadows. Nesting occurs underground as well as above ground in abandoned bird nests.	Food plants include Ceanothus, Cirsium, Clarkia, Keckiella, Lathyrus, Lotus, Lupinus, Rhododendron, Rubus, Trifolium, and Vaccinium.
Clear Lake pyrg *Pyrgulopsis ventricosa*	CSSC	Restricted to Seigler Creek drainage in the south end of the Clear Lake Basin.	Freshwater.
Toren's grimmia *Grimmia torenii*	1B.3	Cismontane woodland, lower montane coniferous forest, chaparral.	Openings, rocky, boulder and rock walls, carbonate, volcanic. 325-1160 m.
Elongate copper moss *Mielichhoferia elongata*	4.3	Cismontane woodland. Commonly called "copper mosses".	Moss growing on very acidic, metamorphic rock or substrate; usually in higher portions in fens.
Loch Lomond button-celery *Eryngium constancei*	FE/CE/1B.1	Vernal pools.	Volcanic ash flow vernal pools. 460-855 m.
Greene's narrow-leaved daisy *Erigeron greenei*	1B.2	Chaparral.	Serpentine and volcanic substrates, generally in shrubby vegetation. 80-1005 m.
Congested-headed hayfield tarplant *Hemizonia congesta ssp. congesta*	1B.2	Valley and foothill grassland.	Grassy valleys and hills, often in fallow fields; sometimes along roadsides. 20-560 m.
Burke's goldfields *Lasthenia burkei*	FE/CE/1B.1	Vernal pools, meadows and seeps.	Most often in vernal pools and swales. 15-600 m.
Colusa layia *Layia septentrionalis*	1B.2	Chaparral, cismontane woodland, valley and foothill grassland.	Scattered colonies in fields and grassy slopes in sandy or serpentine soil. 145-1095m.
Hall's harmonia *Harmonia hallii*	1B.2	Chaparral.	Serpentine hills and ridges. Open, rocky areas within chaparral. 500-900 m.
Bent-flowered fiddleneck *Amsinckia lunaris*	1B.2	Cismontane woodland, valley and foothill grassland.	50-500m.
Serpentine cryptantha *Cryptantha dissita*	1B.2	Chaparral.	Serpentine outcrops. 330-730m.
Calistoga popcornflower *Plagiobothrys strictus*	FE/CT/1B.1	Meadows and seeps, valley and foothill grassland, vernal pools.	Alkaline sites near thermal springs and on margins of vernal pools in heavy, dark, adobe-like clay. 90-160 m.
Freed's jewelflower *Streptanthus brachiatus ssp. hoffmanii*	1B.2	Chaparral, cismontane woodland.	Serpentine rock outcrops, primarily in geothermal development areas. 490-1220 m.
Socrates Mine jewelflower *Streptanthus brachiatus ssp. brachiatus*	1B.2	Chaparral, closed-cone coniferous forest.	Serpentine areas and serpentine chaparral. 545-1000 m.
Three Peaks jewelflower *Streptanthus morrisonii ssp. elatus*	1B.2	Chaparral.	Serpentine barrens, outcrops, and talus; 80-815 m.
Kruckeberg's jewelflower *Streptanthus morrisonii ssp. kruckebergii*	1B.2	Cismontane woodland.	Scattered serpentine outcrops near the lake/napa county line. 215-1035 m.
Early jewelflower *Streptanthus vernalis*	1B.2	Chaparral, closed-cone coniferous forest.	On serpentine. 610m.
Green jewelflower *Streptanthus hesperidis*	1B.2	Chaparral, cismontane woodland.	Openings in chaparral or woodland; serpentine, rocky sites. 130-760m.
Cascade downingia *Downingia willamettensis*	2B.2	Cismontane woodland, valley and foothill grasslands.	Lake margins and vernal pools.

Legenere *Legenere limosa*	1B.1	Vernal pools.	In beds of vernal pools. 1-880 m.
Mt. Saint Helena morning-glory *Calystegia collina ssp. oxyphylla*	4.2	Chaparral, lower montane coniferous forest, valley and foothill grassland.	On serpentine barrens, slopes, and hillsides. 280-1010 m.
Oval-leaved viburnum *Viburnum ellipticum*	2B.3	Chaparral, cismontane woodland, lower montane coniferous forest.	215-1400 m.
Lake County stonecrop *Sedella leiocarpa*	FE/CE/1B.1	Valley and foothill grassland, vernal pools, cismontane woodland.	Level areas that are seasonally wet and dry out in late spring; substrate usually of volcanic origin. 365-790 m.
Raiche's manzanita *Arctostaphylos stanfordiana ssp. raichei*	1B.1	Chaparral, lower montane coniferous forest.	Rocky, serpentine sites. Slopes and ridges. 450-1000 m.
Konocti manzanita *Arctostaphylos manzanita ssp. elegans*	1B.3	Chaparral, cismontane woodland, lower montane coniferous forest.	Volcanic soils. 395-1615 m.
Napa false indigo *Amorpha californica var. napensis*	1B.2	Broadleafed upland forest, chaparral, cismontane woodland.	Openings in forest or woodland or in chaparral. 120-2000 m
Jepson's milk-vetch *Astragalus rattanii var. jepsonianus*	1B.2	Cismontane woodland, valley and foothill grassland, chaparral.	Commonly on serpentine in grassland or openings in chaparral. 180-1000 m.
Cobb Mountain lupine *Lupinus sericatus*	1B.2	Chaparral, cismontane woodland, lower montane coniferous forest, broadleafed upland forest.	In stands of knobcone pine-oak woodland, on open wooded slopes in gravelly soils; sometimes on serpentine. 275-1525 m.
Saline clover *Trifolium hydrophilum*	1B.2	Marshes and swamps, valley and foothill grassland, vernal pools.	Mesic, alkaline sites. 0-300 m.
Northern California black walnut *Juglans hindsii*	CBR	Riparian forest, riparian woodland. Few extant native stands remain; widely naturalized.	Deep alluvial soil associated with a creek or stream. 0-440 m.
Napa bluecurls *Trichostema ruygtii*	1B.2	Cismontane woodland, chaparral, valley and foothill grassland, vernal pools, lower montane coniferous forest.	Often in open, sunny areas. Also has been found in vernal pools. 30-590m.
Woolly meadowfoam *Limnanthes floccosa ssp. floccosa*	4.2	Chapparal, cismontane woodland, valley and foothill grassland, vernal pools.	Vernally wet areas, ditches, and ponds. 60-1335 m.
Glandular western flax *Hesperolinon adenophyllum*	1B.2	Chaparral, cismontane woodland, valley and foothill grassland.	Serpentine soils; generally found in serpentine chaparral. 150-1315 m.
Two-carpellate western flax *Hesperolinon bicarpellatum*	1B.2	Serpentine chaparral.	Serpentine barrens at edge of chaparral. 60-1005 m.
Lake County western flax *Hesperolinon didymocarpum*	CE/1B.2	Chaparral, cismontane woodland, valley and foothill grassland.	Serpentine soil in open grassland and near chaparral. 330-365m.
Sharsmith's western flax *Hesperolinon sharsmithiae*	1B.2	Chaparral.	Serpentine substrates. 270-300 m.
Keck's checkerbloom *Sidalcea keckii*	FE/1B.1	Cismontane woodland, valley and foothill grassland	Grassy slopes in blue oak woodland. 75-650 m.
Marsh checkerbloom *Sidalcea oregana ssp. hydrophila*	1B.2	Meadows and seeps, riparian forest.	Wet soil of streambanks, meadows. 1100-2300 m.
Snow Mountain buckwheat *Eriogonum nervulosum*	1B.2	Chaparral.	Dry serpentine outcrops, balds, and barrens. 300-2100 m.
Brandegee's eriastrum *Eriastrum brandegeeae*	1B.1	Chaparral, cismontane woodland.	On barren volcanic soils; often in open areas. 425-840 m.
Jepson's leptosiphon *Leptosiphon jepsonii*	1B.2	Chaparral, cismontane woodland.	Open to partially shaded grassy slopes. On volcanics or the periphery of serpentine substrates. 100-500m.
Baker's navarretia *Navarretia leucocephala ssp. bakeri*	1B.1	Cismontane woodland, meadows and seeps, vernal pools, valley and foothill grassland, lower montane coniferous forest.	Vernal pools and swales; adobe or alkaline soils. 5-1740 m.
Few-flowered navarretia *Navarretia leucocephala ssp. pauciflora*	FE/CT/1B.1	Vernal pools.	Volcanic ash flow, and volcanic substrate vernal pools. 400-855 m.
Many-flowered navarretia	FE/CE/1B.2	Vernal pools.	Volcanic ash flow vernal pools. 30-950 m.

Navarretia leucocephala ssp. plieantha			
Small pincushion navarretia *Navarretia myersii ssp. deminuta*	1B.1	Vernal pools.	Known from only one site in lake county in vernal pool habitat on clay-loam soil; also in roadside depressions. 355 m.
Marin County navarretia *Navarretia rosulata*	1B.2	Closed-cone coniferous forest, chaparral.	Dry, open rocky places; can occur on serpentine. 200-635m.
Porter's navarretia *Navarretia paradoxinota*	1B.3	Meadows and seeps.	Serpentinite, openings, vernally mesic, often drainages.
Holly-leaved ceanothus *Ceanothus purpureus*	1B.2	Chaparral.	Rocky, volcanic slopes. 120-640m.
Rincon Ridge ceanothus *Ceanothus confusus*	1B.1	Closed-cone coniferous forest, chaparral, cismontane woodland.	Known from volcanic or serpentine soils, dry shrubby slopes. 75-1065 m.
Calistoga ceanothus *Ceanothus divergens*	1B.2	Chaparral.	Rocky, serpentine or volcanic sites. 170-950 m.
Sonoma ceanothus *Ceanothus sonomensis*	1B.2	Chaparral.	Sandy, serpentine or volcanic soils. 210-800 m.
Bolander's horkelia *Horkelia bolanderi*	1B.2	Lower montane coniferous forest, chaparral, meadows, valley and foothill grassland.	Grassy margins of vernal pools and meadows. 450-1100 m.
Pink creamsacs *Castilleja rubicundula var. rubicundula*	1B.2	Chaparral, meadows and seeps, valley and foothill grassland.	Openings in chaparral or grasslands. On serpentine. 20-900 m.
Boggs Lake hedge-hyssop *Gratiola heterosepala*	CE/1B.2	Marshes and swamps (freshwater), vernal pools.	Clay soils; usually in vernal pools, sometimes on lake margins. 10-2375 m.
Sonoma beardtongue *Penstemon newberryi var. sonomensis*	1B.3	Chaparral.	Crevices in rock outcrops and talus slopes. 700-1370 m.
Dimorphic snapdragon *Antirrhinum subcordatum*	4.3	Chaparral, lower montane coniferous forest.	Generally on serpentine or shale in foothill woodland or chaparral on s- and w-facing slopes. 185-800 m.
Northern meadow sedge *Carex praticola*	2B.2	Meadows and seeps.	Moist to wet meadows. 0-3200 m.
Santa Lucia dwarf rush *Juncus luciensis*	1B.2	Vernal pools, meadows, lower montane coniferous forest, chaparral, great basin scrub.	Vernal pools, ephemeral drainages, wet meadow habitats and streamsides. 300-2040m.
Narrow-anthered brodiaea *Brodiaea leptandra*	1B.2	Broadleafed upland forest, chaparral, cismontane woodland, lower montane coniferous forest, valley and foothill grassland	Volcanic substrates. 110-915 m.
Dwarf soaproot *Chlorogalum pomeridianum var. minus*	1B.2	Chaparral, valley and foothill grassland.	Serpentine. 240-970 m.
Adobe-lily *Fritillaria pluriflora*	1B.2	Chaparral, cismontane woodland, foothill grassland.	Usually on clay soils; sometimes serpentine. 60-705 m.
Geysers panicum *Panicum acuminatum var. thermale*	CE/1B.2	Closed-cone coniferous forest, riparian forest, valley and foothill grassland.	Usually around moist, warm soil in the vicinity of hot springs. 305-2470 m.
California satintail *Imperata brevifolia*	2B.1	Coastal scrub, chaparral, riparian scrub, Mojavean scrub, meadows and seeps (alkali), riparian scrub.	Mesic sites, alkali seeps, riparian areas. 0-1215 m.
Slender Orcutt grass *Orcuttia tenuis*	FT/CE/1B.1	Vernal pools.	Often in gravelly pools. 35-1760 m.
Slender-leaved pondweed *Stuckenia filiformis ssp. alpina*	2B.2	Marshes and swamps.	Shallow, clear water of lakes and drainage channels. 300-2150 m.
Eel-grass pondweed *Potamogeton zosteriformis*	2B.2	Marshes and swamps.	Ponds, lakes, streams. 0-1860 m.

*Definitions of Status Codes: FE = Federally listed as endangered; FT = Federally listed as threatened; FC = Candidate for Federal listing; CE = California State listed as endangered; CT = California State listed as threatened; CSSC = California species of special concern; CFP = California fully protected species; CNPS (California Native Plant Society) List 1A = Plants presumed extinct in California by CNPS; CNPS List 1B = CNPS designated rare or endangered plants in California and elsewhere; and CNPS List 2 = CNPS designated rare or endangered plants in California, but more common elsewhere.
**Copied verbatim from CNDDB, unless otherwise noted.

4.3.2. Listed Species or Special-status Species Observed During Field Survey

During the field survey, no special-status species were detected within the Project Area or the surrounding Study Area.

4.3.3. Potential for Listed Species or Special-status Species to Occur in the Study Area

Special-status animals are considered to be unlikely to moderately likely to occur project areas due to the constant disturbance of hay production and harvest. Special-status animals are moderately likely to highly likely to occur in other portions of the Study Area, especially near Putah Creek, and also smaller watercourses and wetlands.

CNDDB reports that the following special-status species have been mapped within, or immediately adjacent to, the Study Area: Jepson's milk-vetch (*Astragalus rattanii* var. *jepsonianus*); green jewelflower (*Streptanthus hesperidis*); congested-headed hayfield tarplant (*Hemizonia congesta* ssp. *congesta*); Hall's harmonia (*Harmonia hallii*); Lake County western flax (*Hesperolinon didymocarpum*); bent-flowered fiddleneck (*Amsinckia lunaris*); Porter's navarretia (*Navarretia paradoxinota*); Baker's navarretia (*Navarretia leucocephala* ssp. *bakeri*) and two-carpellate western flax (*Hesperolinon bicarpellatum*). Special-status plants have a moderate potential to occur in the Study Area in wetlands areas, and a moderate to high potential to occur in areas that have serpentine soils. Areas within the Study Area that have the following soil type contain serpentine soils, which is suitable habitat for special-status plant species: Henneke-Montara-Rock outcrop complex which is described as "*residuum weathered from serpentinite*." Botanical surveys should be focused on two rare plants in particular. Bent-flowered fiddleneck (*Amsinckia lunaris*) and congested-headed hayfield tarplant (*Hemizonia congesta congesta*) occur in grassland habitat and both have been observed on or adjacent to Bar X Ranch.

4.4. POTENTIALLY-JURISDICTIONAL WATER RESOURCES

The USFWS National Wetland Inventory reported no water features within the Project Areas, but the Inventory did report the channels and wetlands within the larger Study Area (see Exhibits). An informal assessment for the presence of potentially-jurisdictional water resources within the Study Area was also conducted during the field survey. For purposes of this biological site assessment, non-wetland waters (i.e., channels) were classified using the California Forest Practice Rules. The California Forest Practice Rules define a Class I watercourse as 1) a watercourse providing habitat for fish always or seasonally, and/or 2) providing a domestic water source; a Class II watercourse is 1) a watercourse capable of supporting non-fish aquatic species, or 2) a watercourse within 1000 feet of a watercourse that seasonally or always has fish present; a Class III watercourse is a watercourse with no aquatic life present and that shows evidence of being capable of transporting sediment to Class I and Class II waters during high water flow conditions.

Tim Nosal, MS. and Dr. Geo Graening conducted a formal wetland delineation on the central ranch property (primarily the "Pasture" cultivation area) on January 4, 2021. The field surveys determined that the Project Areas do not contain any channels or wetlands. This is because the Project Areas were designed to avoid all delineated channels and wetlands after these features were delineated. Outside of the Project Areas, various wetlands and channels were mapped. The following water features were detected within the larger Study Area during the field survey (see Exhibits):

- one perennial channel (Class I watercourse), Putah Creek
- riparian habitat and riverine wetlands associated with the Putah Creek channel / floodplain
- Crazy Creek, an intermittent channel (Class II watercourse)
- other unnamed intermittent channel segments
- unnamed ephemeral channels (Class III watercourses) that are tributary to Putah Creek or Crazy

Creek
- riverine wetlands associated with Class II or Class III watercourses
- isolated wetlands in poorly-drained, irrigated fields
- a large stockpond.

5. IMPACT ANALYSES AND MITIGATION MEASURES

This section establishes the impact criteria, then analyzes potential Project-related impacts upon the known biological resources within the Study Area, and then suggests mitigation measures to reduce these impacts to a less-than-significant level.

5.1. IMPACT SIGNIFICANCE CRITERIA

The significance of impacts to biological resources depends upon the proximity and quality of vegetation communities and wildlife habitats, the presence or absence of special-status species, and the effectiveness of measures implemented to protect these resources from Project-related impacts. As defined by CEQA, the Project would be considered to have a significant adverse impact on biological resources if it would:

- Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a special-status species in local or regional plans, policies, or regulations, or by USFWS or CDFW
- Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by USFWS or CDFW
- Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means
- Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites
- Conflict with any county or municipal policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance
- Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved governmental habitat conservation plan.

5.2. IMPACT ANALYSIS

The following discussion evaluates the potential for Project-related activities to adversely affect biological resources. The Project boundaries were digitized and then overlaid on the habitat map using GIS to quantify potential impacts. Historical aerial photos were also analyzed for changes in land use.

5.2.1. Potential Direct / Indirect Adverse Effects Upon Special-status Species

- ***Will the project have a substantial adverse effect, either directly or through habitat modifications, on any species identified as candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?***

Special-status Plants

No special-status plant species were detected in the Project Area during numerous botanical field surveys conducted over the entire blooming season over a span of 2 years (2020 and 2021). Thus, implementation of the proposed project will not directly impact any known special status plant population.

The project proponents and cultivators implemented mitigation by design. Mitigation has been employed in the design phase by inventorying sensitive habitats and water resources on the Property and then avoiding all sensitive habitats in selection of cultivation compound locations and sizes. The project proponents commissioned botanical field surveys, general biological assessment, and formal wetland delineations. The cultivation compounds were designed with 100-foot setbacks from all aquatic habitats (ponds, channels and wetlands). Areas identified by biologists as habitats likely to harbor rare plants (serpentine soils, riparian, and chaparral habitats) were also removed from consideration. The project design also includes vegetative buffers between cultivation compounds and sensitive habitats, and an erosion control plan and pollution prevention plan will be implemented. For these reasons, no additional mitigation measures are deemed necessary.

Special-status Animals
Numerous field surveys did not detect any special-status species, but special-status animals (amphibians, mammals, fish, and birds) have been reported to occur on, or near, the Study Area by CNDDB. Focal points are wetlands in pastures, the large stock pond, and the perennial channel of Putah Creek and the intermittent channel of Crazy Creek. These areas were avoided in the design of the cultivation areas by setbacks of at least 150 feet.. The buffers required by the Water Board's Cannabis General Order may be sufficient to avoid special-status animal species. However, special-status species could migrate into Project Areas between the time that the field surveys were completed and the start of construction. This is a potentially significant impact before mitigation.

Special-status bird species were reported in databases (CNDDB and USFWS) in the vicinity of the Project Area. The Project Area, and adjacent trees and utility poles, contain suitable nesting habitat for various bird species. However, no nests were observed during the field survey. If construction activities are conducted during the nesting season, nesting birds could be directly impacted by tree removal and indirectly impacted by noise, vibration, and other construction-related disturbance. Therefore, Project construction is considered a potentially significant adverse impact to nesting birds before mitigation.

Indirect / Cumulative
Indirect impacts could occur from the loss of suitable habitat for regionally-occurring special-status species. The Project Areas contain no high-quality habitats that are more likely to harbor rare plants (wetlands, serpentine soils, riparian, and chaparral habitats).The Project Area contains the following general habitat types: non-native annual grassland; mixed oak woodland; pasture or non-native annual grassland; and urbanized. Cattle grazing has degraded the habitat quality in the Project Area. Some regionally-occurring special-status species can utilize the habitat types in the Project Area. However, project implementation will have a less-than significant impact upon habitat loss for regionally-occurring special-status species for numerous reasons. Project implementation will not involve grading or mature tree removal but simply the placement of raised beds on existing contours, so natural habitats may be disturbed, but not totally eradicated. Furthermore, the ground disturbance will occur on only 20 percent of the Property (80 acres out of 1,600 acres), much of which is pasture; this leaves the vast majority of the natural habitats undisturbed on the Property. Cattle grazing has degraded the habitat quality in the Project Area, making it less suitable for special-status species. Finally, the majority of regionally-occurring special-status species require habitat types that will not be disturbed, such as riparian, wetland, chaparral, and serpentine soil. For these reasons, project implementation will have a less than significant indirect or cumulative impact upon special-status species.

Recommended Mitigation Measures

Because special-status animal species that occur in the vicinity could migrate onto the Study Area between the time that the field survey was completed and the start of construction, a pre-construction survey for special-status species should be performed by a qualified biologist to ensure that special-

status species are not present. If any listed species are detected, construction should be delayed, and the appropriate wildlife agency (CDFW and/or USFWS) should be consulted and project impacts and mitigation reassessed. An additional, pre-construction botanical survey could also be performed to ensure that no special-status plant species are present. With the implementation of this mitigation measure, adverse impacts upon special-status species would be reduced to a less-than-significant level.

If construction activities would occur during the nesting season (typically February through August), a pre-construction survey for the presence of special-status bird species or any nesting bird species should be conducted by a qualified biologist within 500 feet of proposed construction areas. If active nests are identified in these areas, CDFW and/or USFWS should be consulted to develop measures to avoid "take" of active nests prior to the initiation of any construction activities. Avoidance measures may include establishment of a buffer zone using construction fencing or the postponement of vegetation removal until after the nesting season, or until after a qualified biologist has determined the young have fledged and are independent of the nest site. With the implementation of this mitigation measure, adverse impacts upon special-status bird species and nesting birds would be reduced to a less-than-significant level.

5.2.2. Potential Direct / Indirect Adverse Effects Upon Special-status Habitats or Natural Communities or Corridors

- *Will the project have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?*

The Project Area and surrounding Study Area are not within any designated listed species' critical habitat. The Project Areas do not contain special-status habitats, because they were designed to avoid all special-status habitats. The surrounding Study Area does contain special-status habitat: Putah Creek and its riparian corridor, and smaller watercourses and wetlands. Setbacks of at least 150 feet were implemented in cultivation compound design to avoid these special-status habitats. There is no indication that project implementation will impact any special-status habitats.

Recommended Mitigation Measures

No mitigation is necessary.

5.2.3. Potential Direct / Indirect Adverse Effects on Jurisdictional Water Resources

- *Will the project have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?*

There are no water resources within the Project Area because they were designed to avoid all water resources with the setbacks used by the Water Board's Cannabis General Order. There are several water resources within the surrounding Study Area: Putah Creek, riverine wetlands, Class II and Class III watercourses, and wetlands. Potential direct impacts to water resources could occur during construction by modification or destruction of stream banks or riparian vegetation or the filling of wetlands or channels. However, the cultivation areas have been designed with 50 to 150-foot setbacks from watercourses and situated on the flattest areas possible. Because of these avoidance measures, no direct impacts to water resources are expected. It is recommended that a formal delineation of jurisdictional waters be performed before construction work, or ground disturbance, is performed within 50 feet of any watercourse.

Potential indirect impacts to water resources could occur during construction by increased erosion and sedimentation in receiving water bodies due to soil disturbance. Since, the project would disturb more than one acre in preparing the cultivation areas, constructing the parking areas, greenhouses, and processing building, the project would be subject to the requirements of the State Water Resources Control Board's General Permit for Discharges of Storm Water Associated with Construction Activity (Construction General Permit, 2009-0009-DWQ). As required, implementation of a stormwater pollution prevention plan, and erosion control plan, along with regular inspections, will ensure that construction activities do not pollute receiving waterbodies.

Potential adverse impacts to water resources could occur during operation of cultivation activities resources by discharge of sediment or other pollutants (fertilizers, pesticides, human waste, etc.) into receiving waterbodies. However, Bar X Farms LLC is enrolled with the State Water Resources Control Board for Tier 2, Low Risk coverage under Order No. WQ 2019-001-DWQ (Cannabis Cultivation General Order). The site was assigned WDID No. 5S17CC429135. Compliance with this Order will ensure that cultivation operations will not significantly impact water resources by using a combination of Best Management Practices (BMPs), buffer zones, sediment and erosion controls, site management plans, inspections and reporting, and regulatory oversight. The proposed project is also compliant with the setback requirements of Cannabis Cultivation Order WQ 2019-0001-DWQ.

Minimum Riparian Setbacks

Common Name	Watercourse Class	Distance
Perennial watercourses, waterbodies (e.g. lakes, ponds), or springs	I	150 ft.
Intermittent watercourses or wetlands	II	100 ft.
Ephemeral watercourses	III	50 ft.
Man-made irrigation canals, water supply reservoirs, or hydroelectric canals that support native aquatic species	IV	Established riparian zone vegetation

Recommended Mitigation Measures

No impacts were identified, and therefore no mitigation measures are proposed.

5.2.4. Potential Impacts to Wildlife Movement, Corridors, etc.

- *Will the project interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?*

Although there are no designated wildlife corridors, the open space within the Study Area allows for unrestricted animal movement, and the Putah Creek river corridor functions as a wildlife movement corridor. Putah Creek also contains fishery resources. Implementation of the Proposed Project would not have a significant impact on wildlife movement and fisheries because it would not completely block wildlife movement, Putah Creek would not be affected, and the majority of the open space in the Study Area would still be available. Implementation of the proposed project would necessitate erection of security fences around the cultivation compounds. These fences do not allow animal movement and may act as a local barrier to wildlife movement. However, the fenced cultivation areas are surrounded by open space, allowing wildlife to move around these fenced areas. Thus, implementation of the

proposed project is a less than significant impact upon wildlife movement. Implementation of the project will not interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites.

Recommended Mitigation Measures

No mitigation is necessary.

5.2.5. Potential Conflicts with Ordinances, Habitat Conservation Plans, etc.

- *Will the project conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?*
- *Will the project conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?*

As currently designed, construction of the project will not require the removal of trees protected by Lake County and CALFIRE. he project does not conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or another approved governmental habitat conservation plan. The Study Area is not within the coverage area of any adopted Habitat Conservation Plan or Natural Community Conservation Plan.

Recommended Mitigation Measures

If mature oak trees are removed, Lake County requires mitigation for the removal of commercial tree species and native oak species during the cultivation licensing process.

If development of the project will result in the removal of commercial tree species, one of the following permits is needed: Less than 3 Acre Conversion Exemption; Christmas Tree; Dead, Dying or Diseased, Fuelwood, or Split Products Exemption; a Public Agency, Public and Private Utility Right of Way Exemption; a Notice of Exemption from Timberland Conversion Permit for Subdivision; or an Application for Timberland Conversion Permit.

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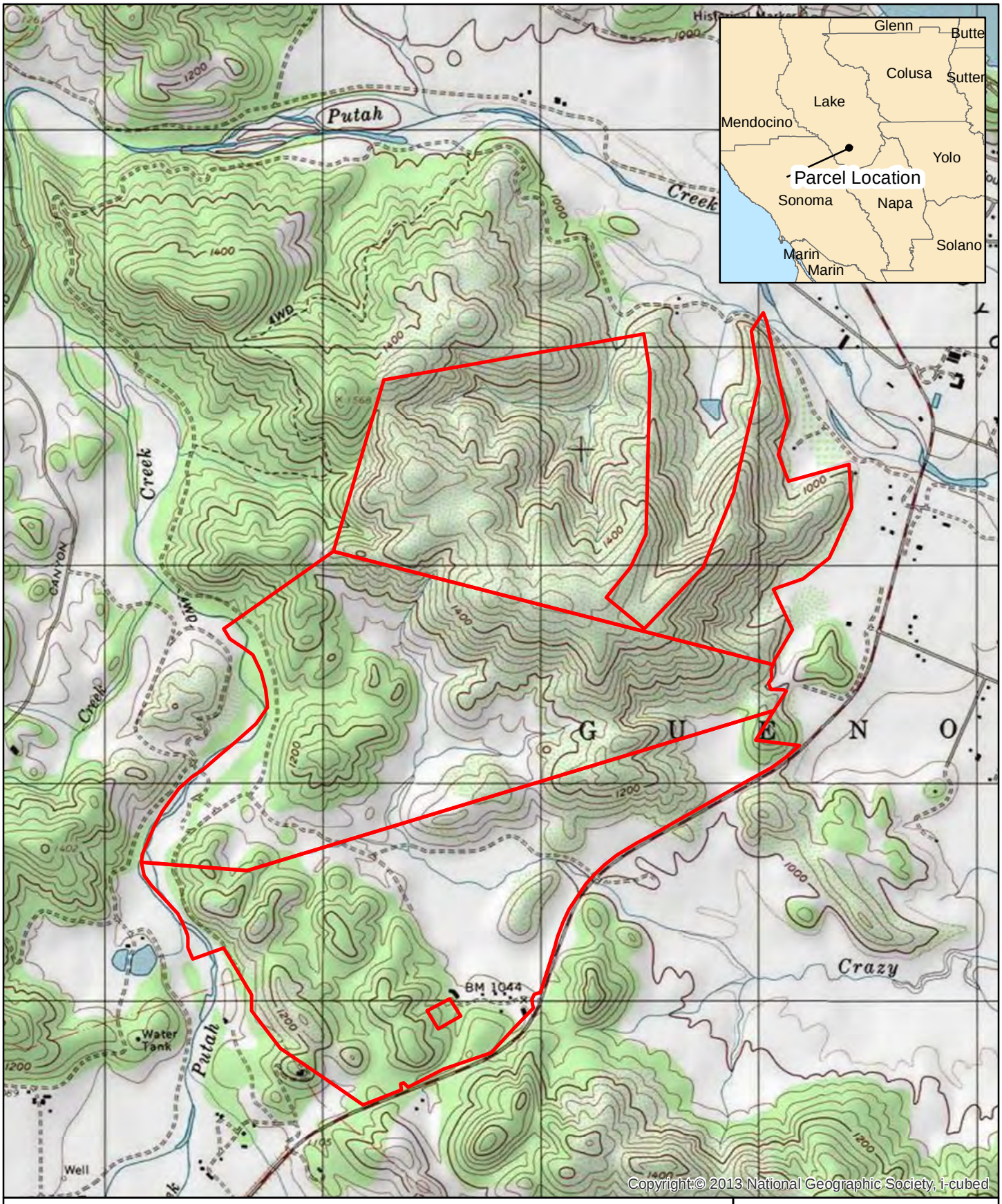
EXHIBITS



Parcel Location

0 0.5 1 Kilometers

0 0.5 1 Miles

1:24,000

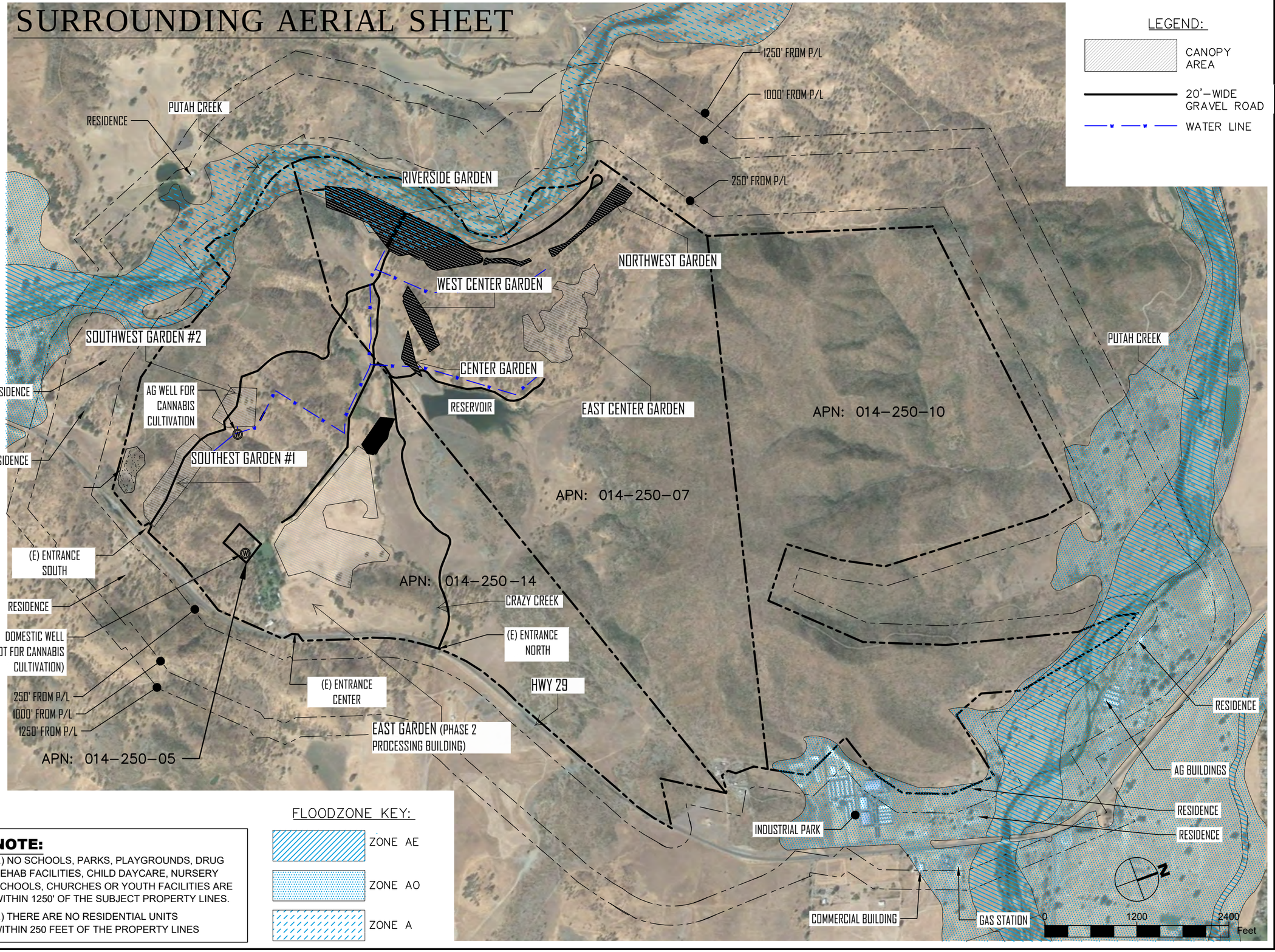
Bar X Ranch
Parcel Location Map

Natural Investigations Company

Map Date 6/17/2020

Middletown 1993 Quadrangle:Township 11N, Range 6W,7W, Unsectioned Guenoc

SURROUNDING AERIAL SHEET



NOTE:

1.) NO SCHOOLS, PARKS, PLAYGROUNDS, DRUG REHAB FACILITIES, CHILD DAYCARE, NURSERY SCHOOLS, CHURCHES OR YOUTH FACILITIES ARE WITHIN 1250' OF THE SUBJECT PROPERTY LINES.

2.) THERE ARE NO RESIDENTIAL UNITS WITHIN 250 FEET OF THE PROPERTY LINES

FLOODZONE KEY:

- ZONE AE
- ZONE AO
- ZONE A

SUBMITTED TO:

LAKE COUNTY
COMMUNITY DEVELOPMENT DEPT
COUNTY OF LAKE
LAKEPORT, CA

VanDerWall Engineering, Inc.
PO BOX 431
KELSEYVILLE, CA 95451
707–279–4887

SURROUNDING AERIAL SHEET

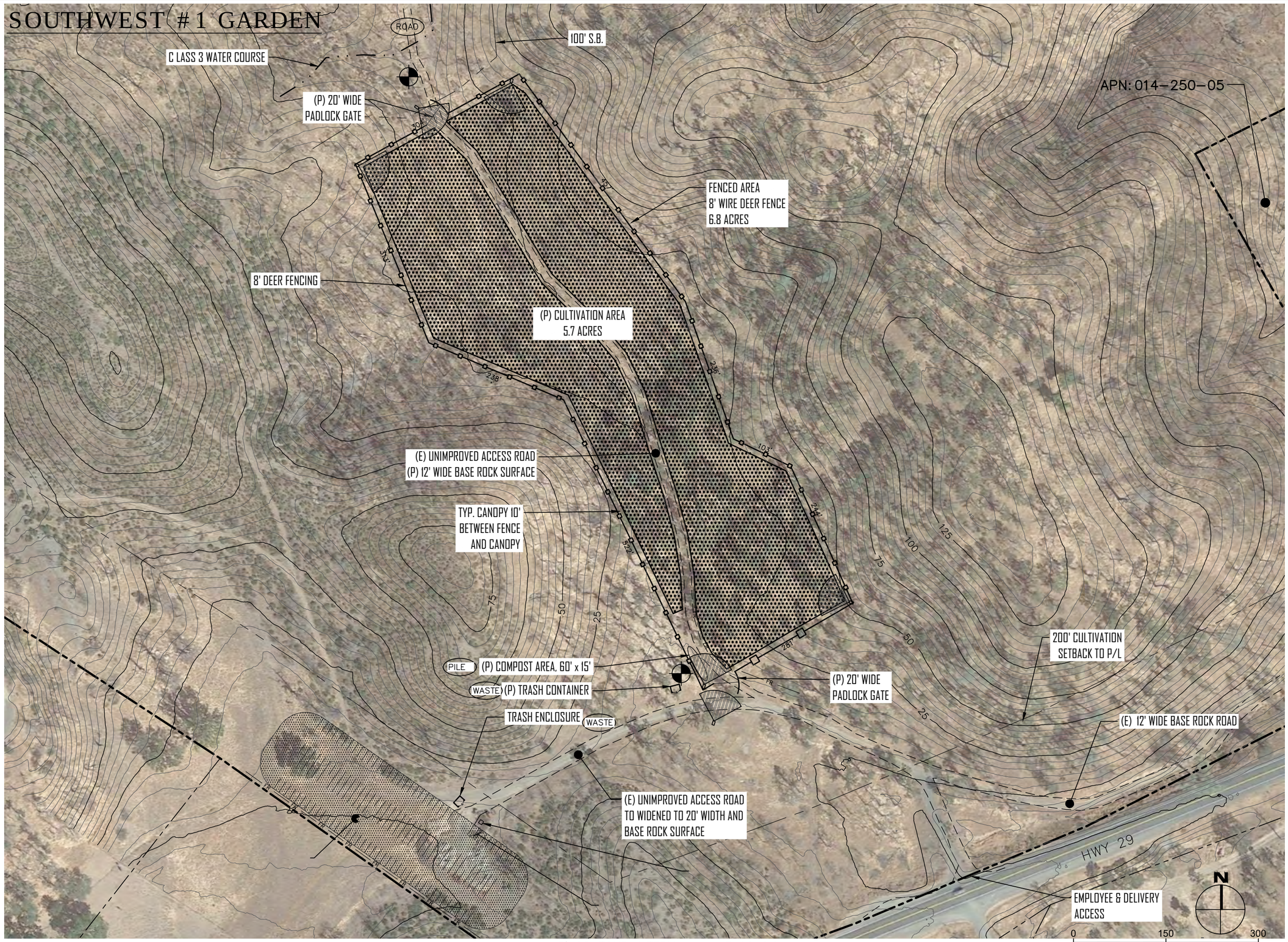
APN: 014-2550-(14,07,10,05)
BAR X RANCH CULTIVATION
MIDDLETOWN, CALIFORNIA

VERIFY SCALE

BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	APR 2021
PROJ	20–49
DWG	
SHEET	2

SOUTHWEST #1 GARDEN



5' CONTOUR INTERVAL LAKE CO GIS

SUBMITTED TO:

LAKE COUNTY
COMMUNITY DEVELOPMENT DEPT
COUNTY OF LAKE
LAKEPORT, CA

VanDerWall Engineering, Inc.
PO BOX 431
KELSEYVILLE, CA 95451
707-279-4887

SOUTHWEST CULTIVATION/ EMPLOYEE PARKING

BAR X RANCH CULTIVATION
MIDDLETOWN, CALIFORNIA

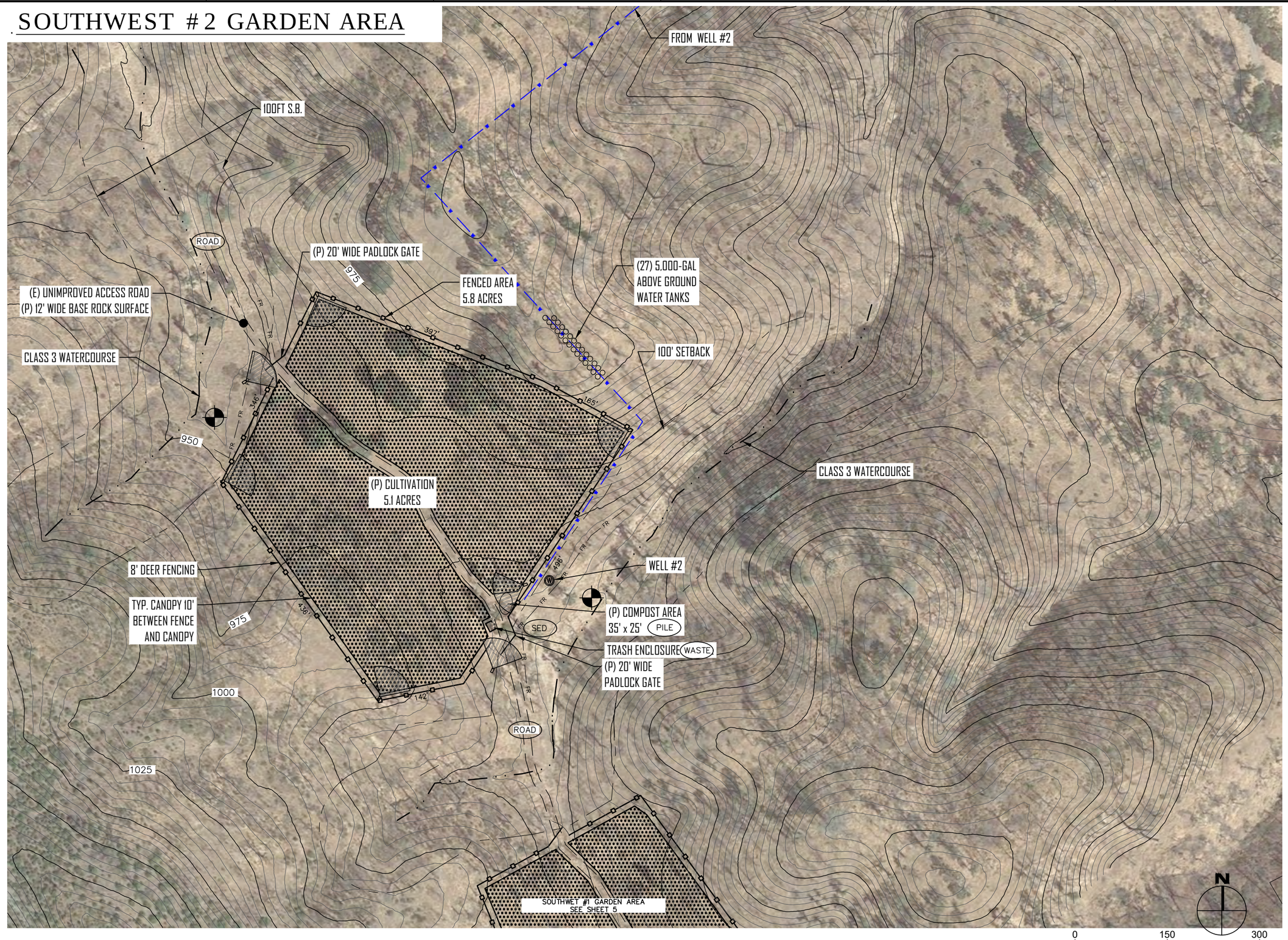
VanDerWall Engineering, Inc.

VERIFY SCALE

BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	APR 2021
PROJ	20-49
DWG	
SHEET	5

SOUTHWEST #2 GARDEN AREA



LAKE CO GIS CONTOUR DATA SHOWN

5' CONTOUR INTERVAL

0 150 300 Feet

SUBMITTED TO:

LAKE COUNTY
COMMUNITY DEVELOPMENT DEPT
COUNTY OF LAKE
LAKEPORT, CA

VanDerWall
Engineering, Inc.

PO BOX 431
KELSEYVILLE, CA 95451
707-279-4887

SOUTHWEST #2 CULTIVATION

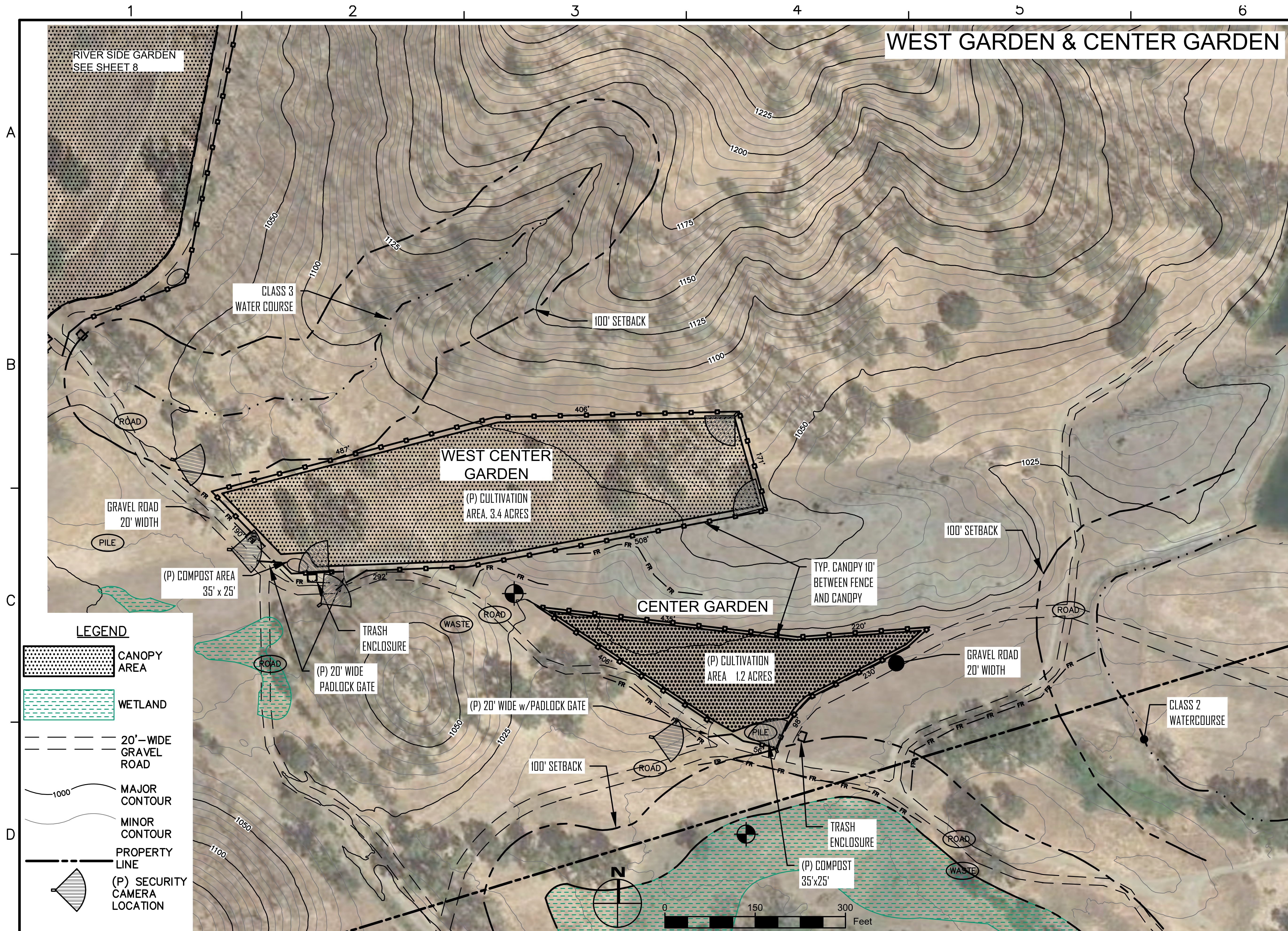
BAR X RANCH CULTIVATION
KELSEYVILLE, CALIFORNIA

VanDerWall
Engineering, Inc.

VERIFY SCALE

BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	APR 2021
PROJ	20-49
DWG	
SHEET	6


1
2
3
4
5
6
A
B
C
D
WEST GARDEN & CENTER GARDEN
RIVER SIDE GARDEN
SEE SHEET 8
CLASS 3
WATER COURSE
100' SETBACK
1225
1200
1175
1150
1125
1100
1050
1025
ROAD
GRAVEL ROAD
20' WIDTH
PILE
(P) COMPOST AREA
35' x 25'
WEST CENTER
GARDEN
(P) CULTIVATION
AREA, 3.4 ACRES
406'
487'
171'
190'
508'
292'
FR
TYP. CANOPY 10'
BETWEEN FENCE
AND CANOPY
TRASH
ENCLOSURE
WASTE
CENTER GARDEN
435'
220'
(P) CULTIVATION
AREA 1.2 ACRES
230
98'
56'
(P) 20' WIDE
PADLOCK GATE
(P) 20' WIDE w/PADLOCK GATE
100' SETBACK
GRAVEL ROAD
20' WIDTH
CLASS 2
WATERCOURSE
TRASH
ENCLOSURE
(P) COMPOST
35'x25'
N
0
150
300
Feet
LEGEND
CANOPY
AREA
WETLAND
20'-WIDE
GRAVEL
ROAD
1000
MAJOR
CONTOUR
MINOR
CONTOUR
PROPERTY
LINE
(P) SECURITY
CAMERA
LOCATION

LAKE CO GIS CONTOUR DATA SHOWN

5' CONTOUR INTERVAL

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LAKE COUNTY
COMMUNITY DEVELOPMENT DEPT
COUNTY OF LAKE
LAKEPORT, CA

PO BOX 431
KELSEYVILLE, CA 95451
707-279-4887

WEST CENTER GARDEN
& CENTER GARDEN

BAR X RANCH CULTIVATION
MIDDLETOWN, CALIFORNIA

VanDerWall
Engineering, Inc.

VanDerWall
Engineering, Inc.

VERIFY SCALE

BAR IS ONE INCH ON
ORIGINAL DRAWING.
0 1"

DATE	APR 2021
PROJ	20-49
DWG	
SHEET	7

RIVERSIDE GARDEN

LEGEND

- MAJOR CONTOUR (1000)
- MINOR CONTOUR
- PROPERTY LINE
- 20'–WIDE GRAVEL ROAD
- (P) SECURITY CAMERA LOCATION
- CANOPY AREA
- WETLAND
- FLOOD ZONE A

PUTAH CREEK

CLASS I WATERCOURSE

GRAVEL ROAD 20'-WIDTH

MIN. 150 FT FROM RIPARIAN EDGE

(P) 20' WIDE PADLOCK GATE

PILE

COMPOST

GRAVEL ROAD 20' WIDTH

(P) CULTIVATION AREA 20.1 ACRES

FENCED AREA 22.6 ACRES

(P) COMPOST AREA 60' x 15', 900 SF

100' SETBACK

TRASH ENCLOSURE (WASTE)

SED

6' WIRE DEER FENCING

CLASS 3 WATERCOURSE

GRAVEL ROAD 20' WIDTH

WEST CENTER GARDEN SEE SHEET 7

ROAD

0 200 400 Feet

LAKE CO GIS CONTOUR DATA SHOWN

5' CONTOUR INTERVAL

SUBMITTED TO:

LAKE COUNTY
COMMUNITY DEVELOPMENT DEPT
COUNTY OF LAKE
LAKEPORT, CA

VanDerWall Engineering, Inc.
PO BOX 431
KELSEYVILLE, CA 95451
707–279–4887

RIVERSIDE GARDEN

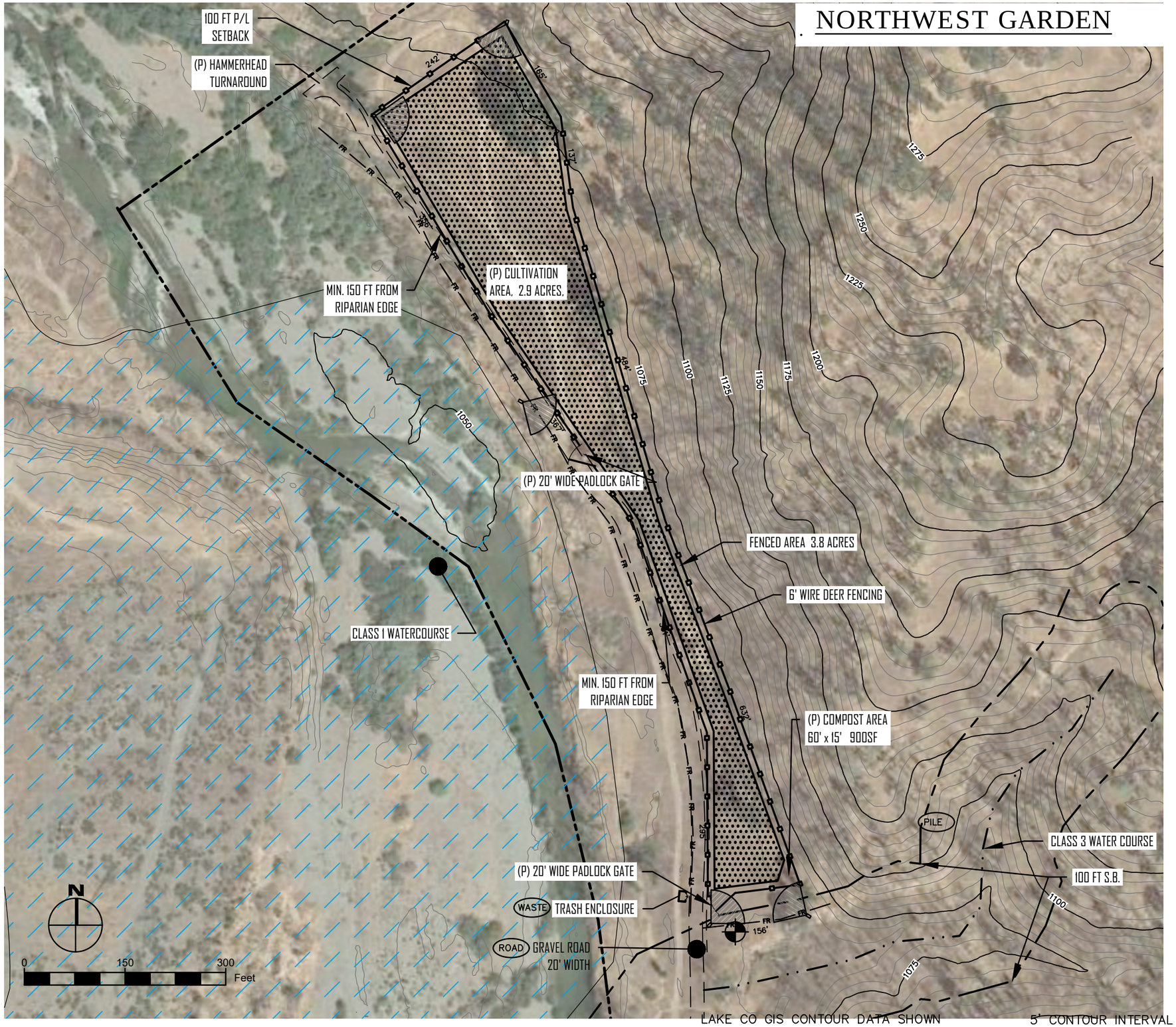
BAR X RANCH CULTIVATION
KELSEYVILLE, CALIFORNIA

VERIFY SCALE

BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	APR 2021
PROJ	20–49
DWG	
SHEET	8

NORTHWEST GARDEN



LEGEND

- CANOPY AREA
- FLOOD ZONE A
- WETLAND
- 20'–WIDE GRAVEL ROAD
- MAJOR CONTOUR
- MINOR CONTOUR
- PROPERTY LINE
- (P) SECURITY CAMERA LOCATION

SUBMITTED TO:

LAKE COUNTY
COMMUNITY DEVELOPMENT DEPT
COUNTY OF LAKE
LAKEPORT, CA

VanDerWall Engineering, Inc.
PO BOX 431
KELSEYVILLE, CA 95451
707–279–4887

NORTHWEST CULTIVATION

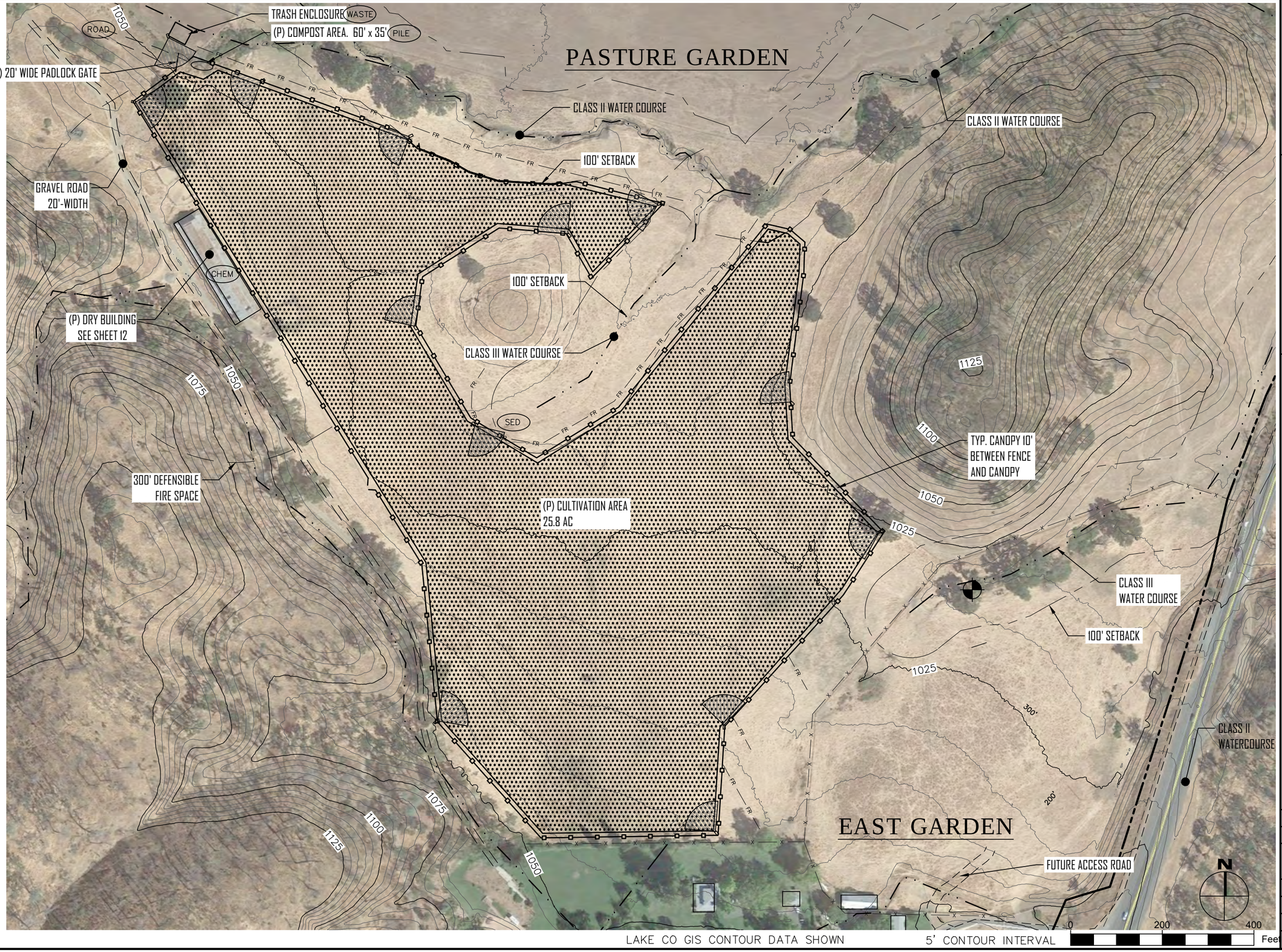
BAR X RANCH CULTIVATION
MIDDLETOWN, CALIFORNIA

VanDerWall Engineering, Inc.

VERIFY SCALE

BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	APR 2021
PROJ	20–49
DWG	
SHEET	9



SUBMITTED TO:

LAKE COUNTY
COMMUNITY DEVELOPMENT DEPT
COUNTY OF LAKE
LAKEPORT, CA

VanDerWall Engineering, Inc.
PO BOX 431
KELSEYVILLE, CA 95451
707-279-4887

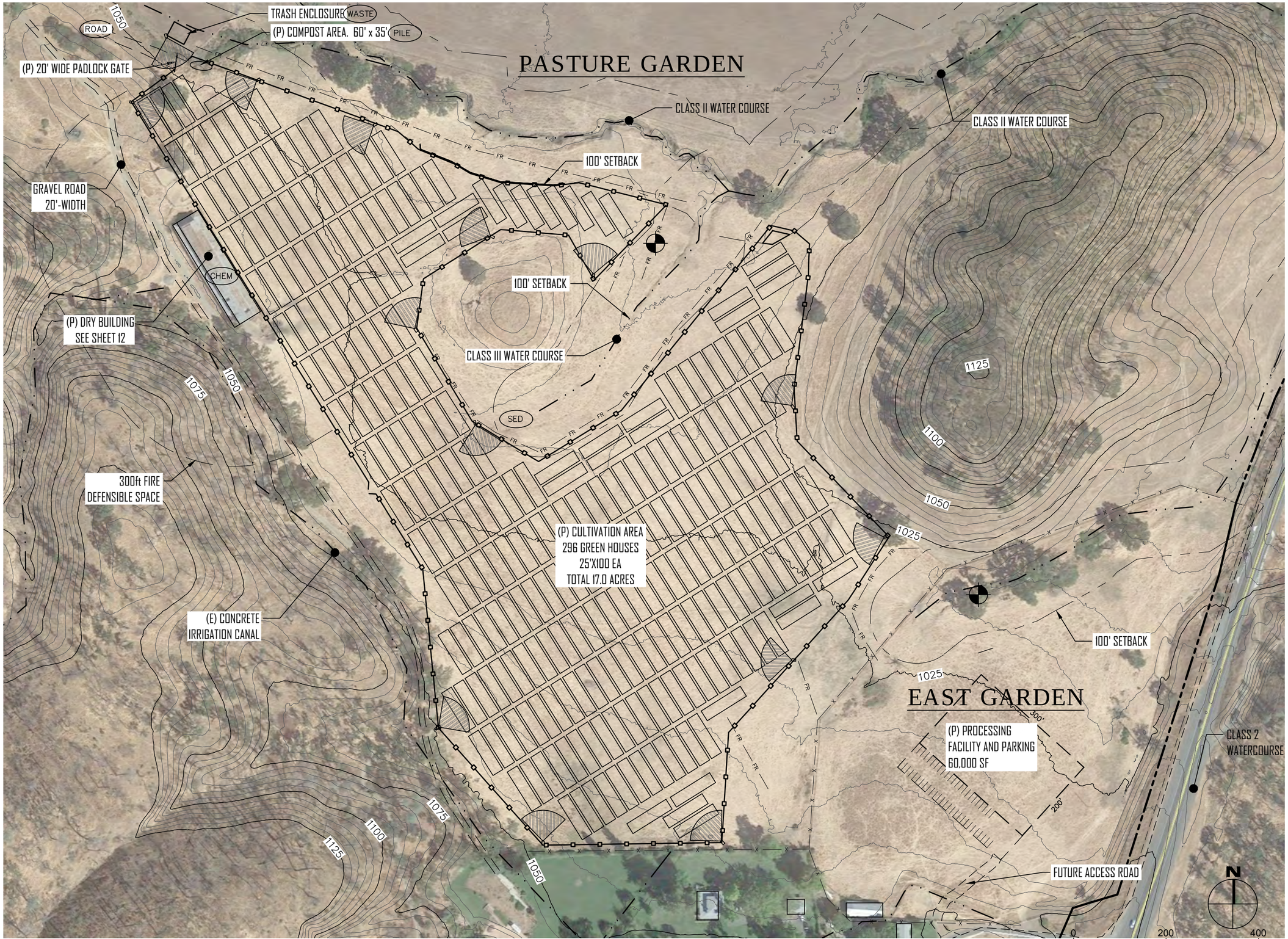
PASTURE GARDEN PHASE 1 & EAST GARDEN (FUTURE)

BAR X RANCH CULTIVATION
MIDDLETOWN, CALIFORNIA

VERIFY SCALE

BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	APR 2021
PROJ	20-49
DWG	
SHEET	10



SUBMITTED TO:

LAKE COUNTY
COMMUNITY DEVELOPMENT DEPT
COUNTY OF LAKE
LAKEPORT, CA

VanDerWall
Engineering, Inc.
PO BOX 431
KELSEYVILLE, CA 95451
707-279-4887

PASTURE GARDEN PHASE 2 & EAST GARDEN

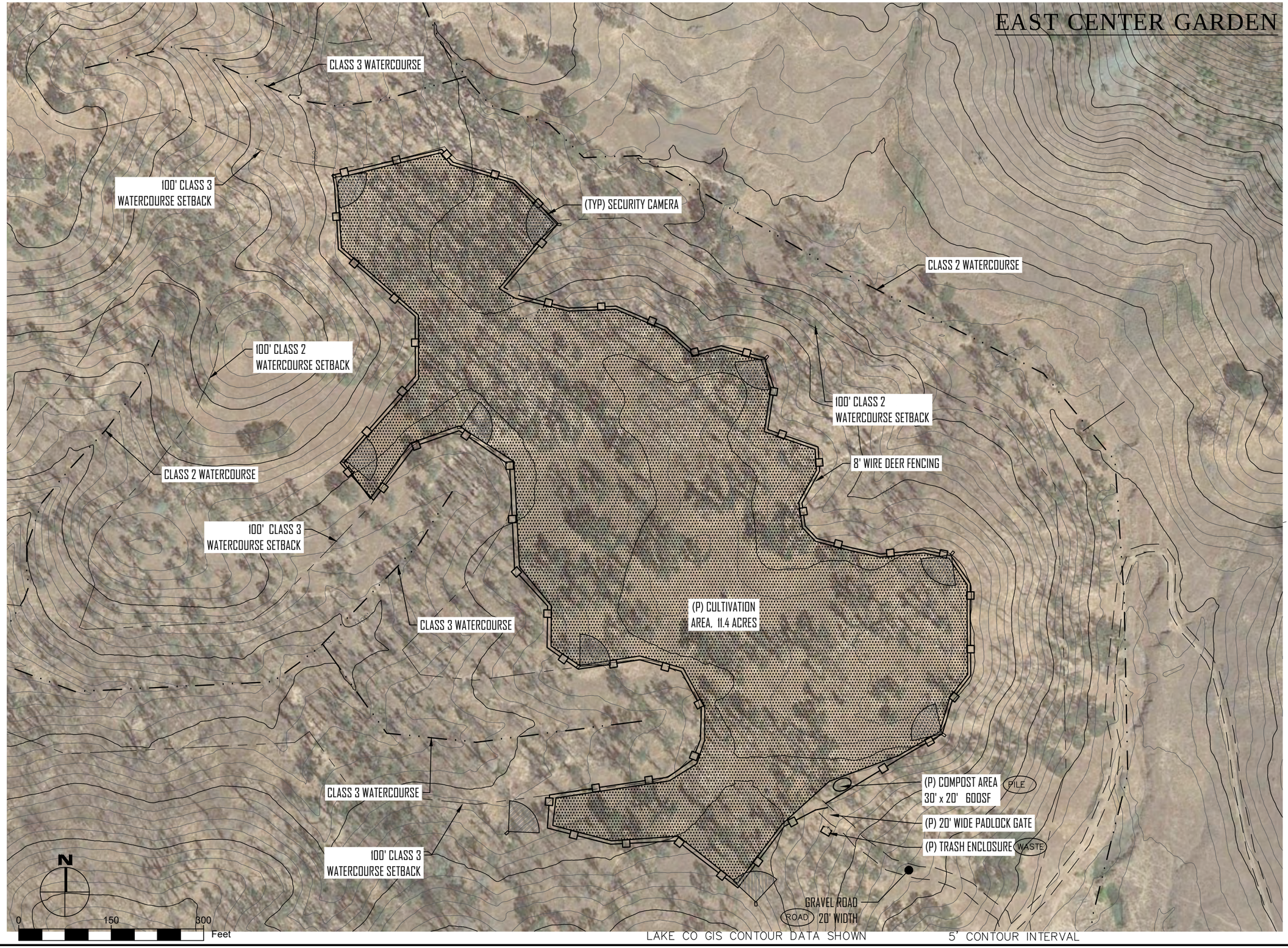
BAR X RANCH CULTIVATION
MIDDLETOWN, CALIFORNIA

VERIFY SCALE

BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	APR 2021
PROJ	20-49
DWG	
SHEET	10.1

EAST CENTER GARDEN



LAKE CO GIS CONTOUR DATA SHOWN 5' CONTOUR INTERVAL

SUBMITTED TO:

LAKE COUNTY
COMMUNITY DEVELOPMENT DEPT
COUNTY OF LAKE
LAKEPORT, CA

VanDerWall Engineering, Inc.
PO BOX 431
KELSEYVILLE, CA 95451
707-279-4887

EAST CENTER GARDEN

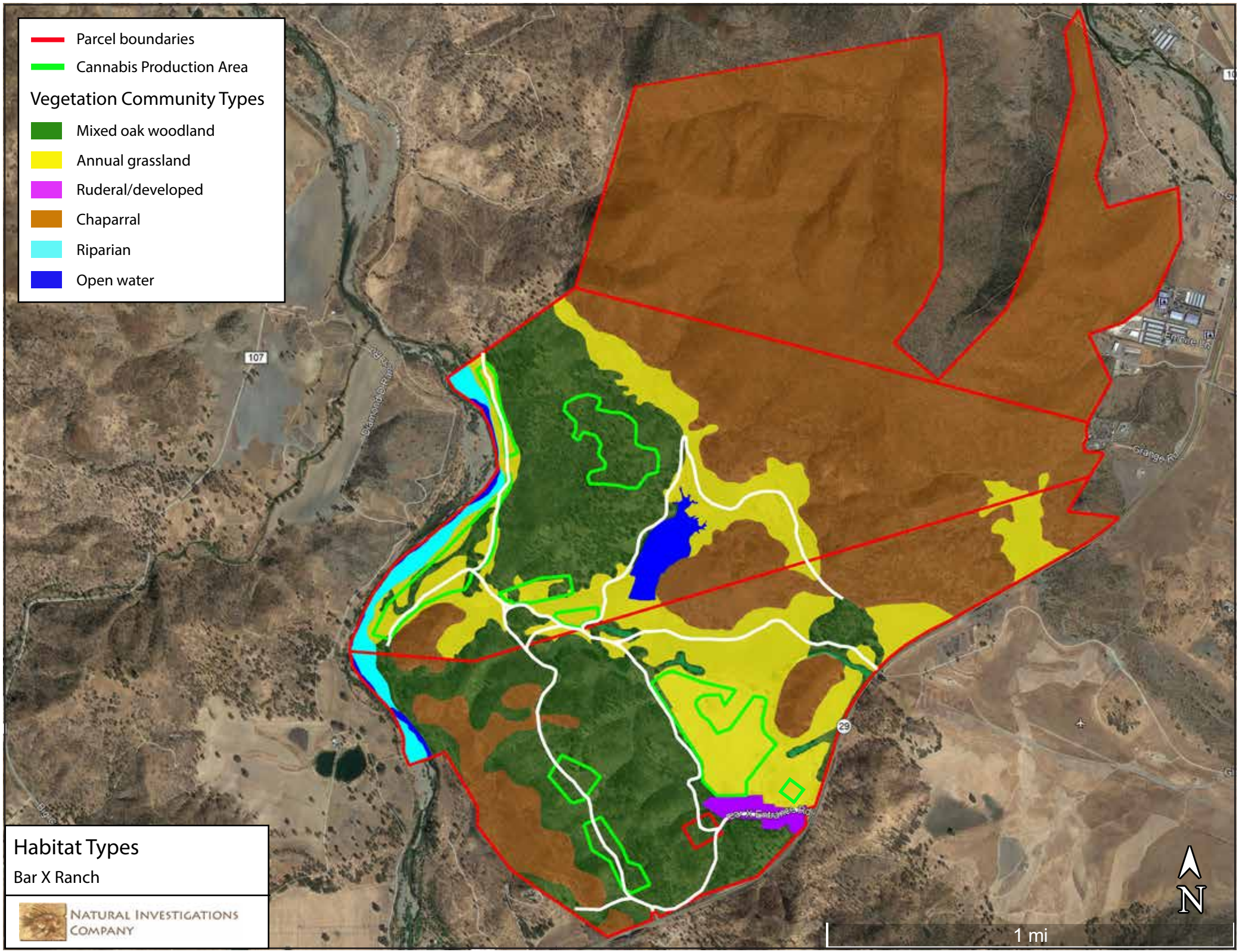
BAR X RANCH CULTIVATION
MIDDLETOWN, CALIFORNIA

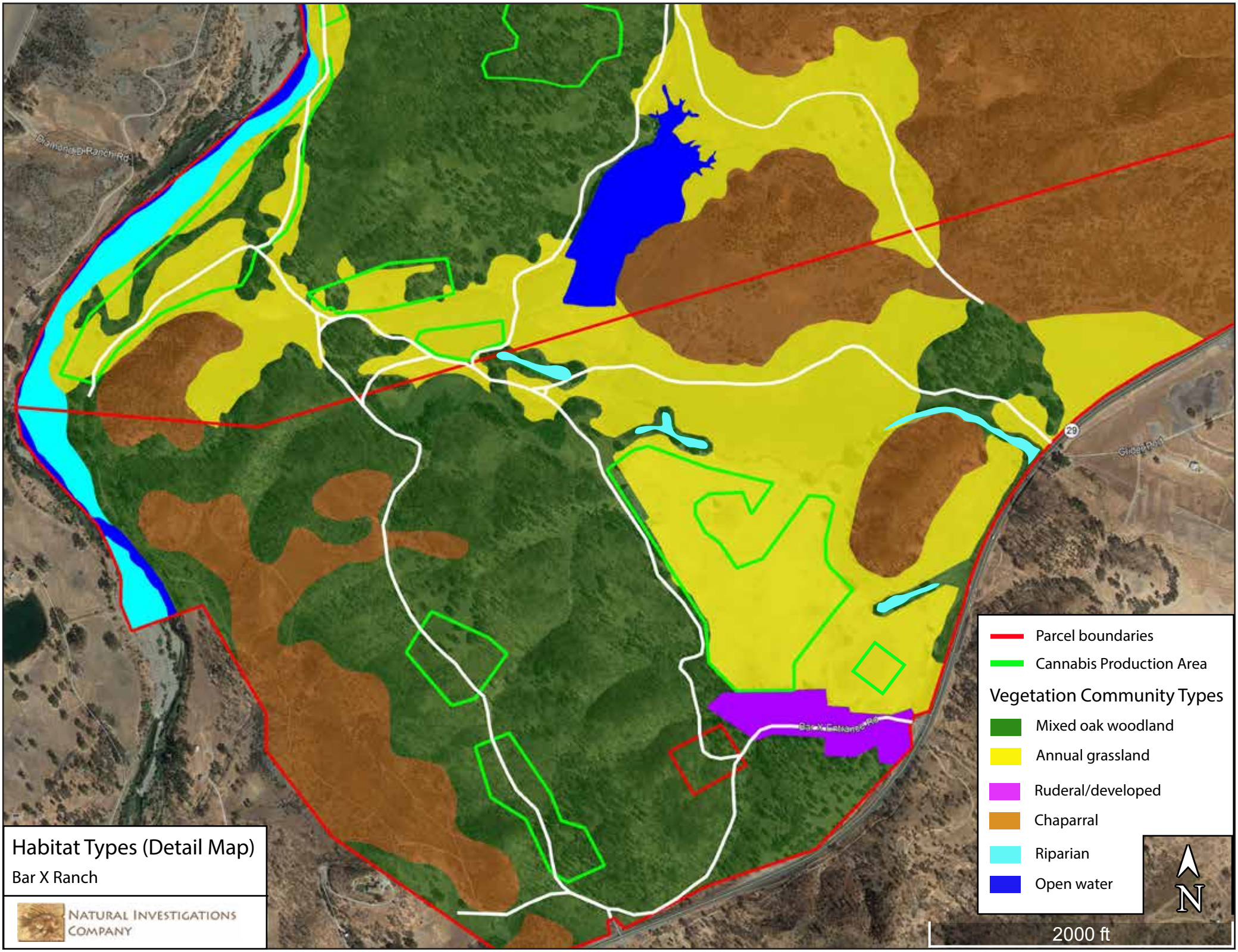
VanDerWall Engineering, Inc.

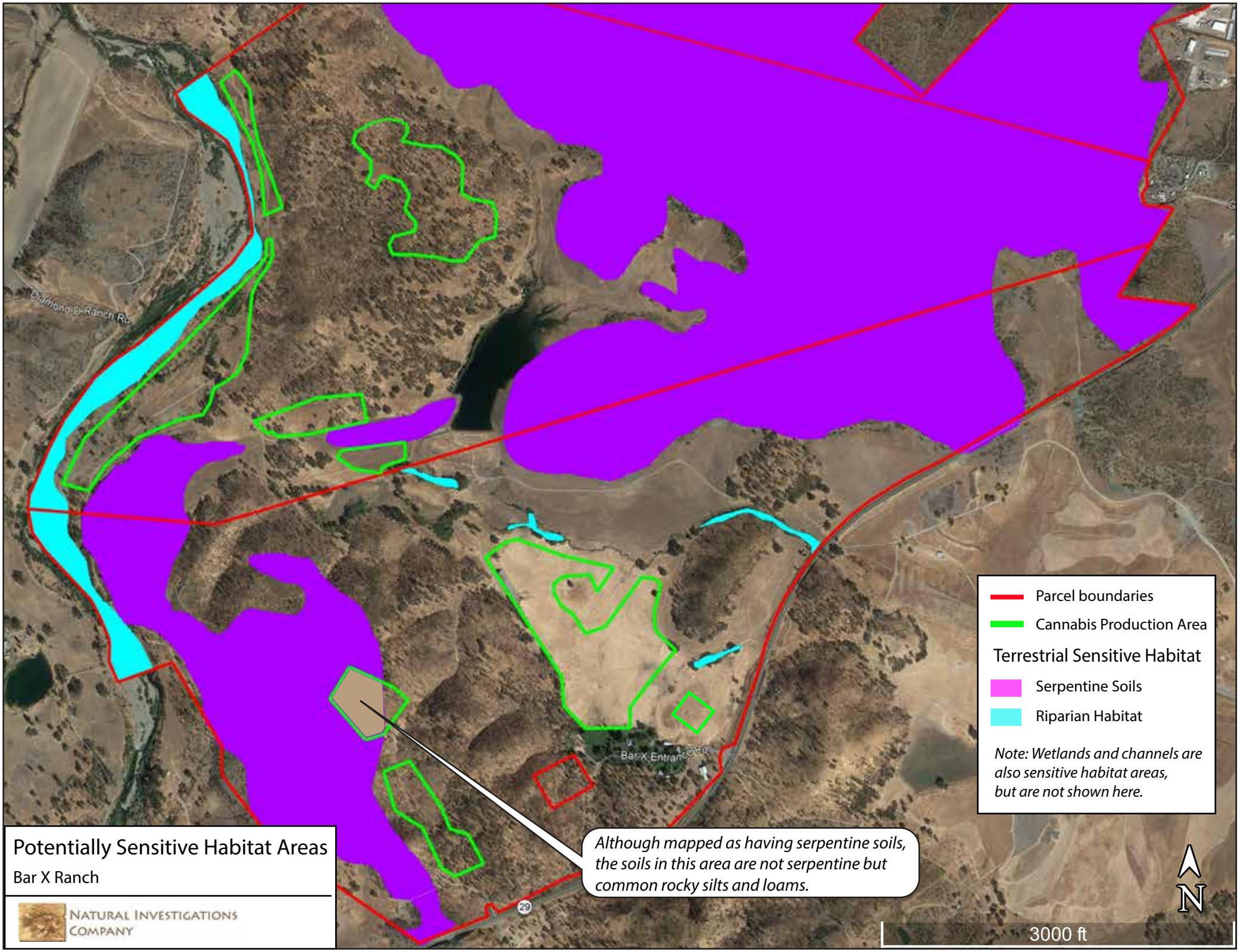
VERIFY SCALE

BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	APR 2021
PROJ	20-49
DWG	
SHEET	11


Parcel boundaries
Cannabis Production Area
Vegetation Community Types
Mixed oak woodland
Annual grassland
Ruderal/developed
Chaparral
Riparian
Open water
107
29
Habitat Types
Bar X Ranch
Natural Investigations Company
N
1 mi

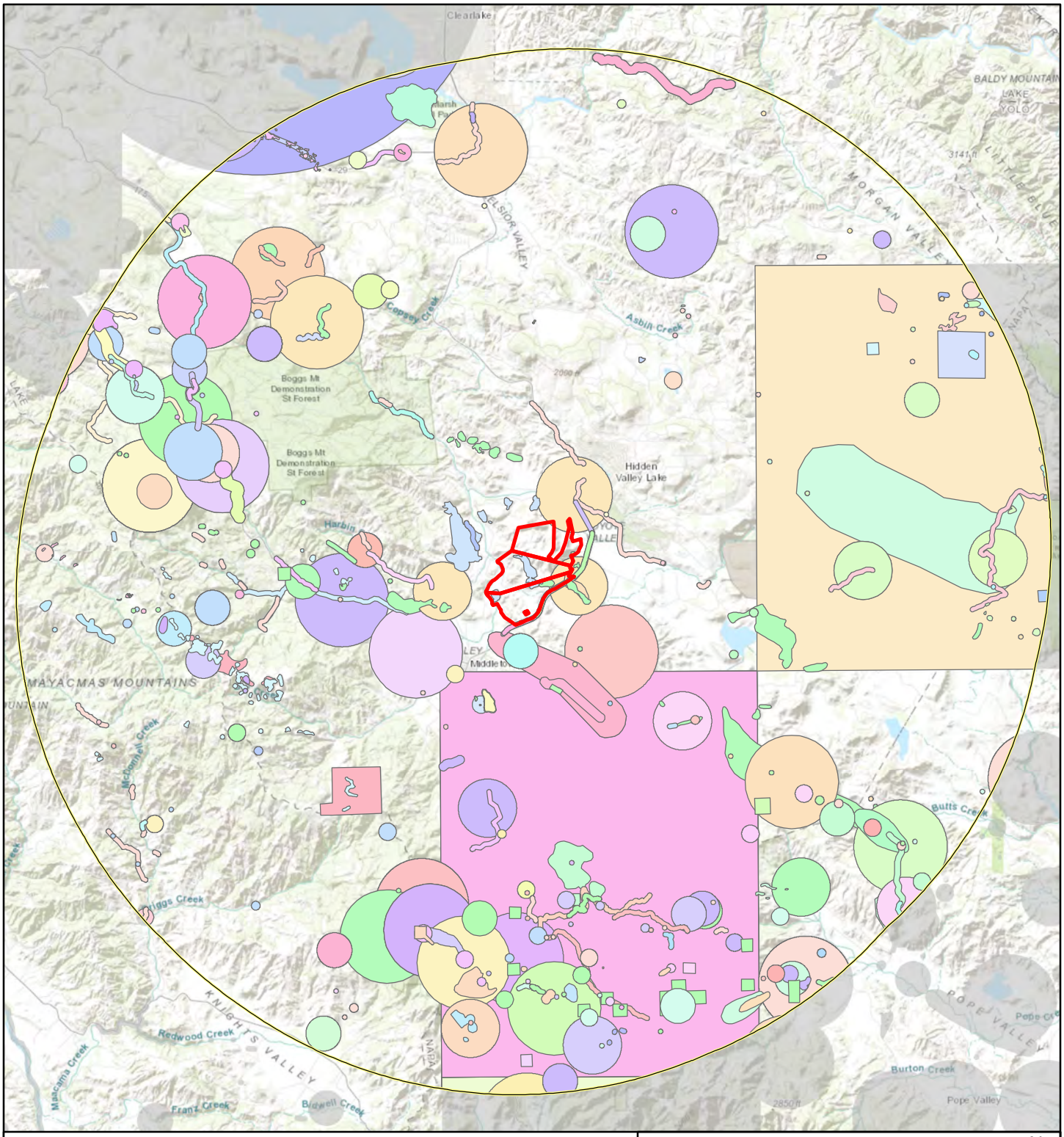

Parcel boundaries
Cannabis Production Area
Vegetation Community Types
Mixed oak woodland
Annual grassland
Ruderal/developed
Chaparral
Riparian
Open water
N
2000 ft
Habitat Types (Detail Map)
Bar X Ranch
Natural Investigations Company



Potentially Sensitive Habitat Areas

Bar X Ranch

Natural Investigations Company



Parcel Location 10 Mile Buffer

1:190,000 1 inch = 3 miles

0 3 6 Miles

N

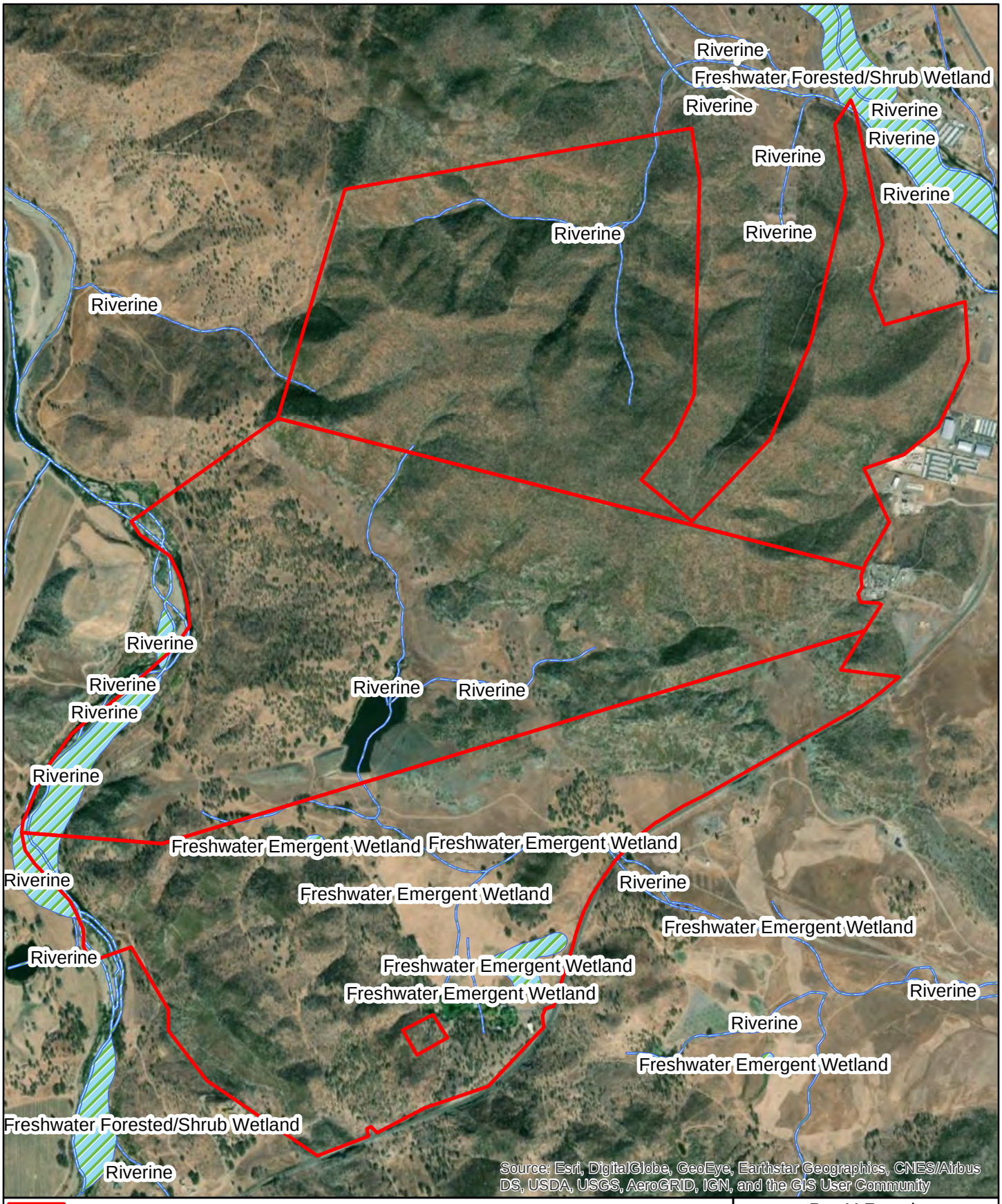
Notes:
1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist inshowing features discussed in an attached document. Natural Investigations Company can not guarantee the accuracy and content of electronic files.The master file is stored by Natural Investigations Company and will serve as the official record of this communication.
3. It is unlawful to copy or reproduce all or any part thereof, whether for personal use or resale, without permission.Data Sources: California Department of Fish and Wildlife. 2020. RareFind 5.x, California Natural Diversity Data Base. Biogeographic Data Branch, Sacramento, California. (updated monthly by subscription service)

Special-Status Species Occurrences Map

Bar X Ranch

Middletown 1993 Quadrangle:
Township 11N, Range 6W,7W, Unsectioned Guenoc

NATURAL INVESTIGATIONS CO.
WWW.NATURALINVESTIGATIONS.COM



Parcel Location

Wetlands and Channels

0 450 900 Meters

0 2,000 4,000 Feet

1:18,000

N

W E

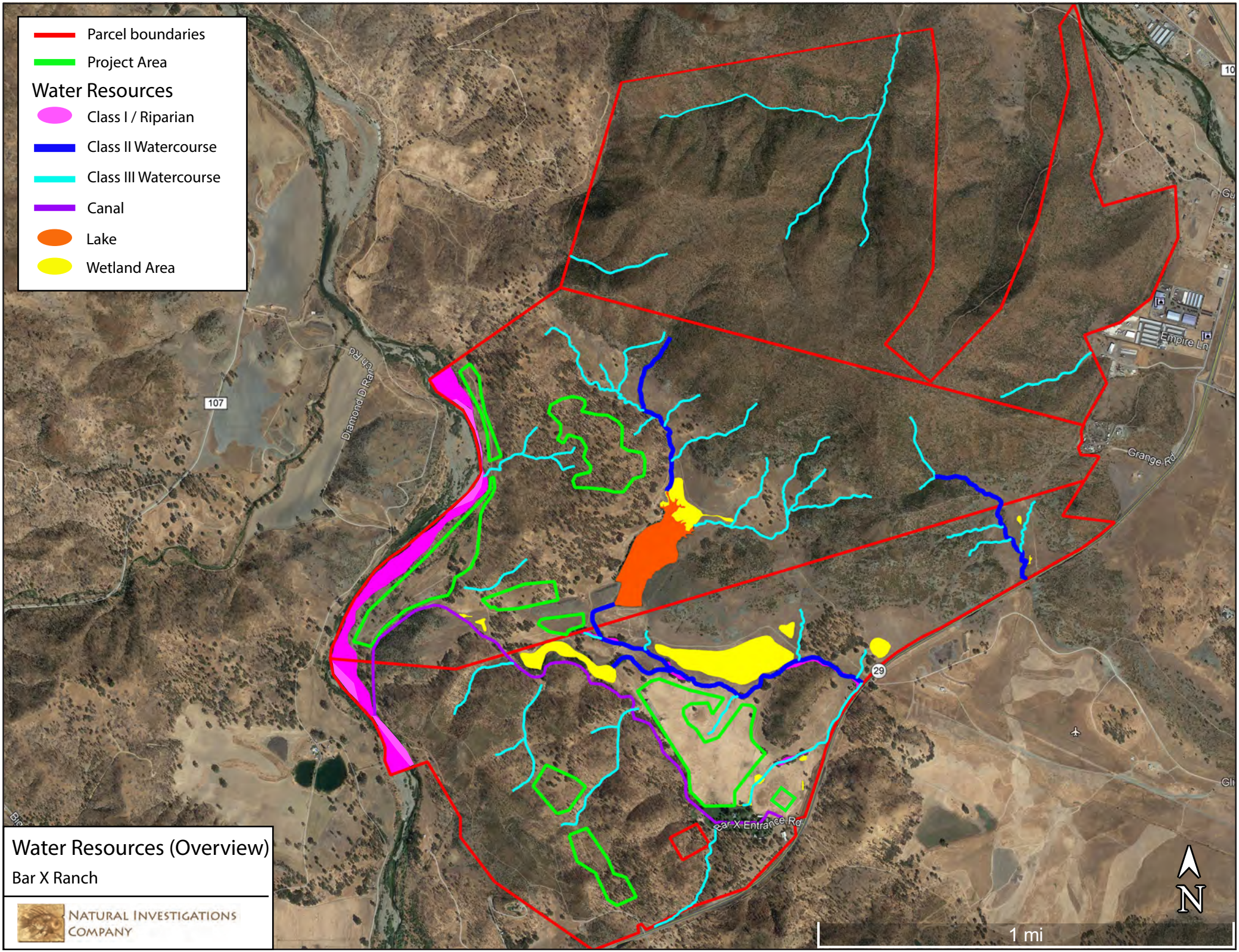
S

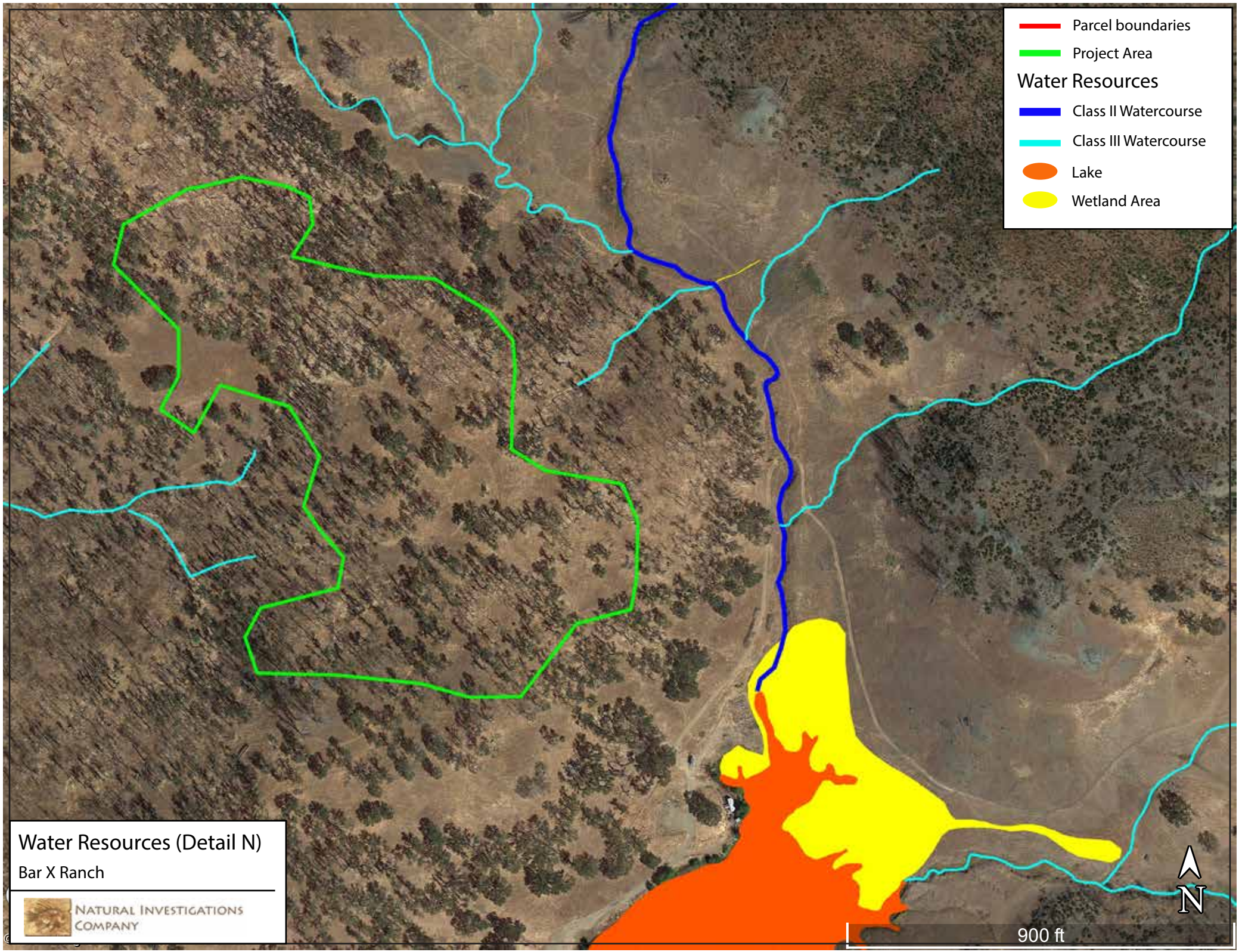
Bar X Ranch
National Wetlands Inventory
Features Map

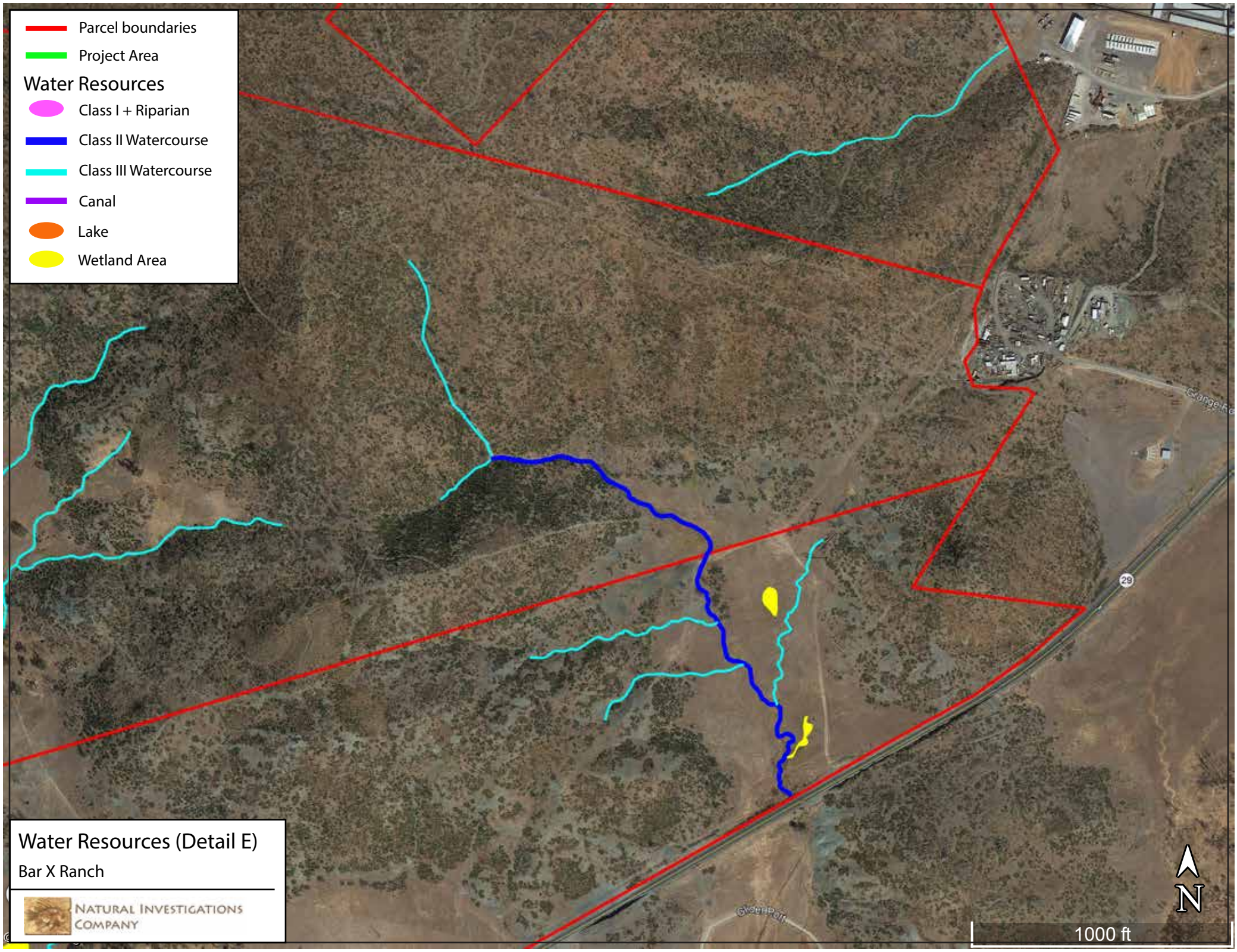
Natural Investigations Company

Map Date 6/17/2020

Middletown 1993 Quadrangle:Township 11N, Range 6W,7W, Unsectioned Guenoc


Parcel boundaries
Project Area
Water Resources
Class I / Riparian
Class II Watercourse
Class III Watercourse
Canal
Lake
Wetland Area
Diamond D Rd
107
Empire Ln
Grange Rd
29
Bar X Entrance Rd
N
1 mi
Water Resources (Overview)
Bar X Ranch
Natural Investigations Company

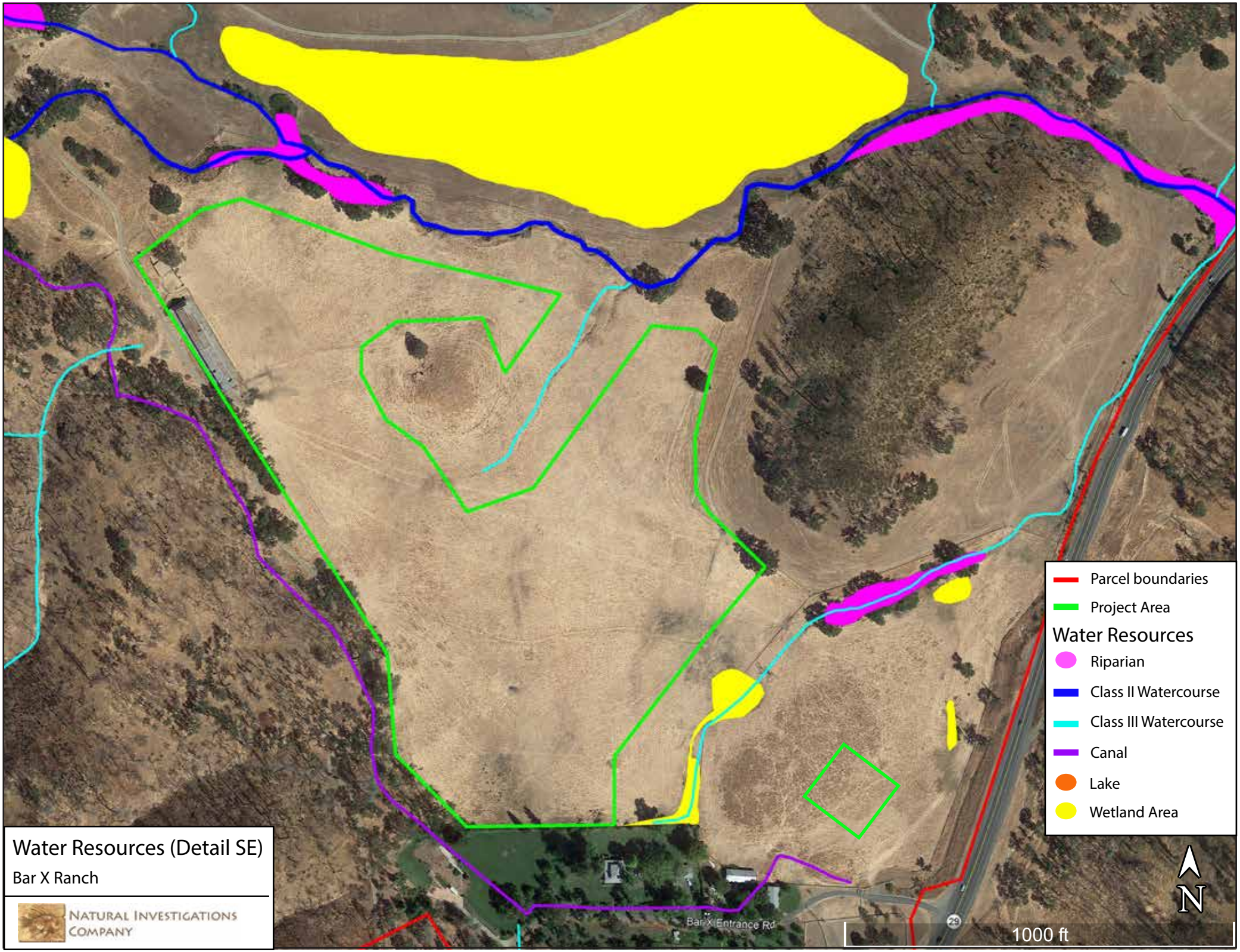

Parcel boundaries
Project Area
Water Resources
Class II Watercourse
Class III Watercourse
Lake
Wetland Area
Water Resources (Detail N)
Bar X Ranch
Natural Investigations Company
N
900 ft



Water Resources (Detail E)

Bar X Ranch

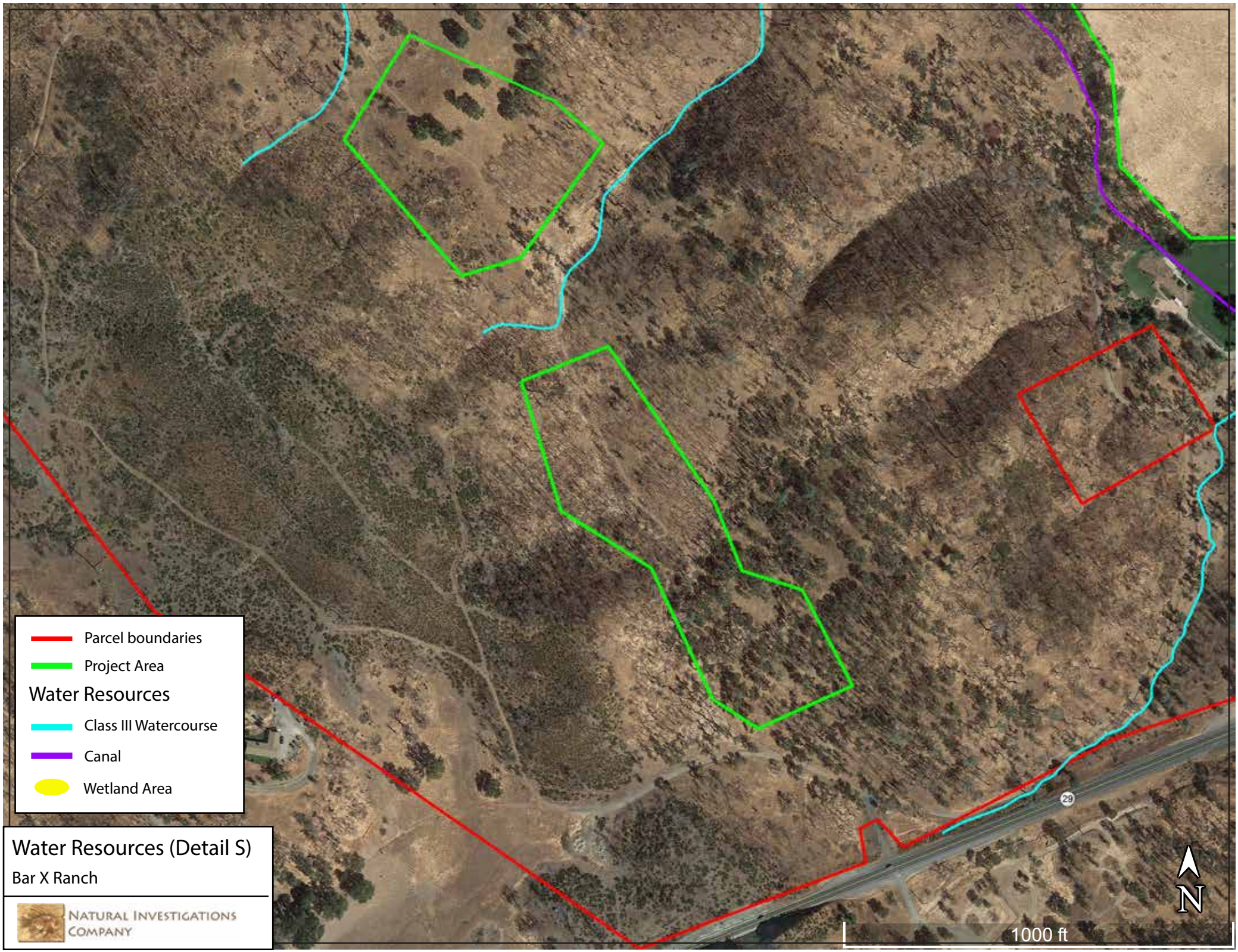
Natural Investigations Company



Water Resources (Detail SE)

Bar X Ranch

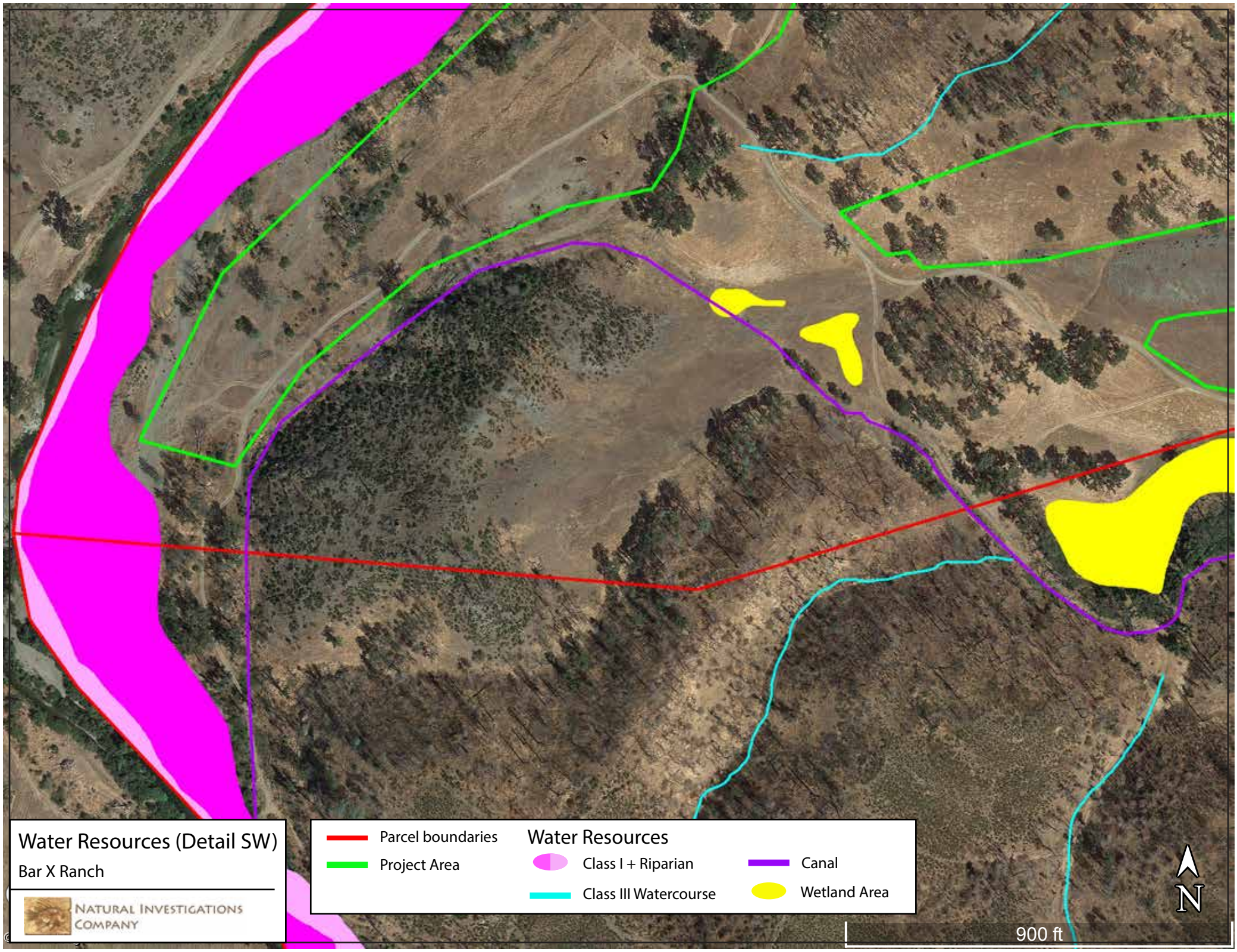
Natural Investigations Company

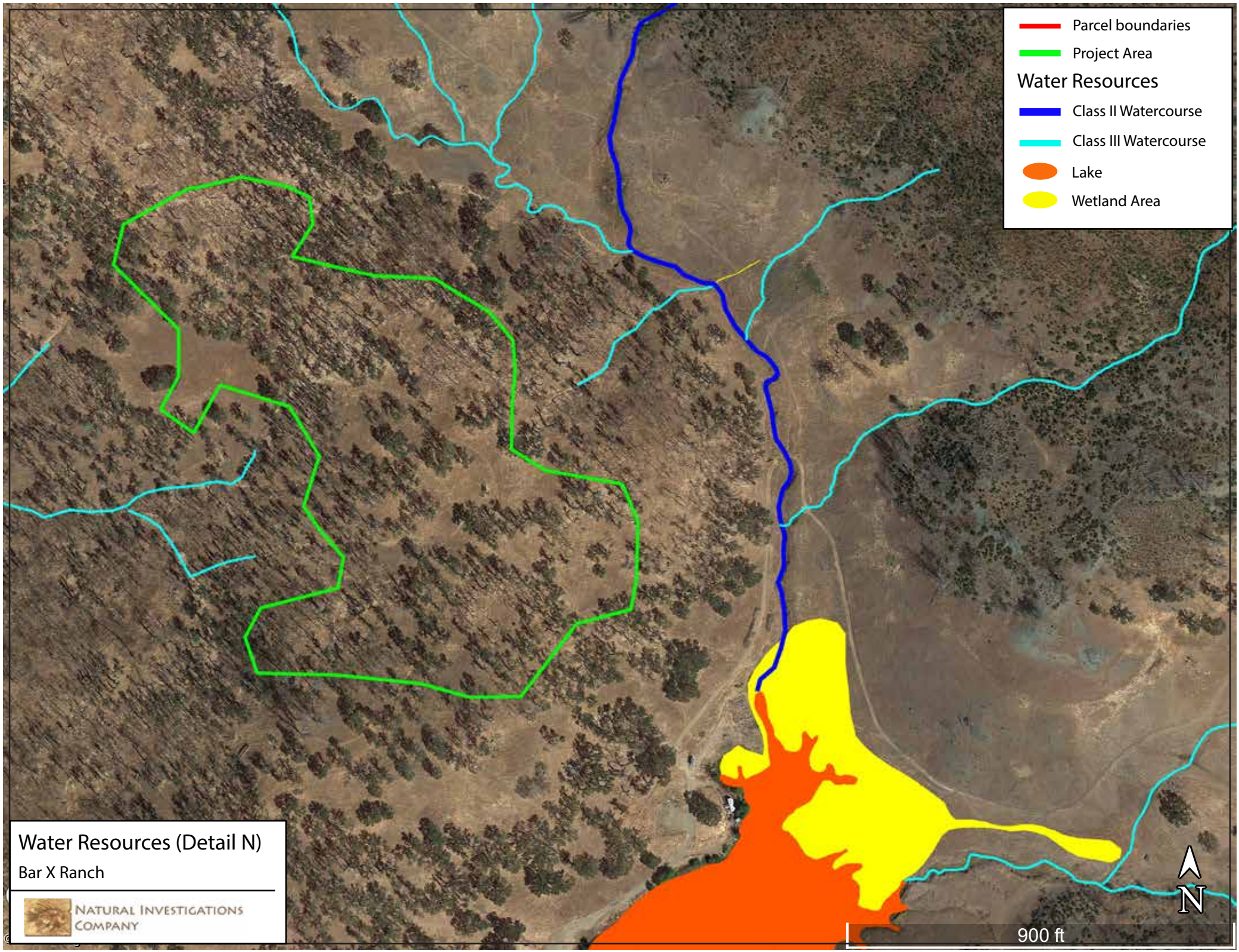


Water Resources (Detail S)

Bar X Ranch

Natural Investigations Company


Water Resources (Detail SW)
Bar X Ranch
Natural Investigations Company
Parcel boundaries
Project Area
Water Resources
Class I + Riparian
Class III Watercourse
Canal
Wetland Area
N
900 ft


Parcel boundaries
Project Area
Water Resources
Class II Watercourse
Class III Watercourse
Lake
Wetland Area
Water Resources (Detail N)
Bar X Ranch
Natural Investigations Company
N
900 ft

APPENDIX 1: USFWS SPECIES LIST

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Sacramento Fish And Wildlife Office
Federal Building
2800 Cottage Way, Room W-2605
Sacramento, CA 95825-1846
Phone: (916) 414-6600 Fax: (916) 414-6713

In Reply Refer To:
Consultation Code: 08ESMF00-2020-SLI-2200
Event Code: 08ESMF00-2020-E-06770
Project Name: Bar X Ranch

June 17, 2020

Subject: List of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, under the jurisdiction of the U.S. Fish and Wildlife Service (Service) that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the Service under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

Please follow the link below to see if your proposed project has the potential to affect other species or their habitats under the jurisdiction of the National Marine Fisheries Service:

http://www.nwr.noaa.gov/protected_species/species_list/species_lists.html

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 *et seq.*), and projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/eagle_guidance.html). Additionally, wind energy projects should follow the wind energy guidelines (http://www.fws.gov/windenergy/) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm; http://www.towerkill.com; and http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Sacramento Fish And Wildlife Office
Federal Building
2800 Cottage Way, Room W-2605
Sacramento, CA 95825-1846
(916) 414-6600

Project Summary

Consultation Code: 08ESMF00-2020-SLI-2200

Event Code: 08ESMF00-2020-E-06770

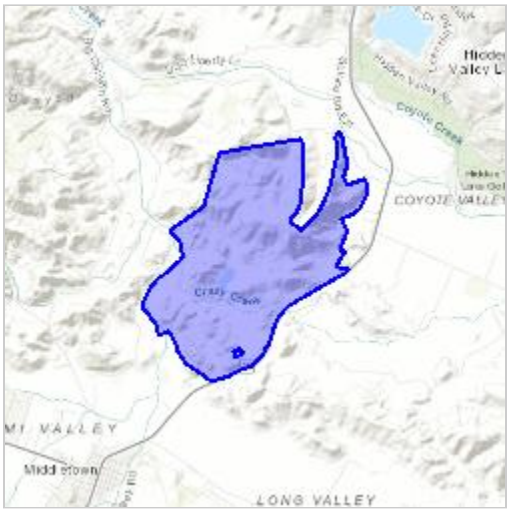
Project Name: Bar X Ranch

Project Type: ** OTHER **

Project Description: Bio Assessment

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/place/38.78078563943262N122.58772778335543W



Counties: Lake, CA

Endangered Species Act Species

There is a total of 8 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

---

1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Birds

NAME	STATUS
Northern Spotted Owl *Strix occidentalis caurina*	Threatened

There is **final** critical habitat for this species. Your location is outside the critical habitat.
Species profile: https://ecos.fws.gov/ecp/species/1123

Amphibians

NAME	STATUS
California Red-legged Frog *Rana draytonii*	Threatened

There is **final** critical habitat for this species. Your location is outside the critical habitat.
Species profile: https://ecos.fws.gov/ecp/species/2891
Species survey guidelines:
https://ecos.fws.gov/ipac/guideline/survey/population/205/office/11420.pdf

Fishes

NAME	STATUS
Delta Smelt *Hypomesus transpacificus*	Threatened

There is **final** critical habitat for this species. Your location is outside the critical habitat.
Species profile: https://ecos.fws.gov/ecp/species/321

Crustaceans

NAME	STATUS
Conservancy Fairy Shrimp *Branchinecta conservatio* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/8246	Endangered

Flowering Plants

NAME	STATUS
Burke's Goldfields *Lasthenia burkei* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/4338	Endangered
Lake County Stonecrop *Parvisedum leiocarpum* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/2263	Endangered
Many-flowered Navarretia *Navarretia leucocephala ssp. plieantha* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/2491	Endangered
Slender Orcutt Grass *Orcuttia tenuis* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/1063	Threatened

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

APPENDIX 2: CHECKLIST OF PLANTS DETECTED IN THE STUDY AREA

Combined Taxa List Observed at Bar X Ranch, Middletown on all survey dates

Common Name	**Scientific Name**
Yarrow	*Achillea millefolium*
Spanish lotus	*Acmispon americanus*
Short-podded lotus	*Acmispon brachycarpus*
Deer weed	*Acmispon glaber*
Chamise	*Adenostoma fasciculatum*
Goat grass	*Aegilops triuncialis*
California buckeye	*Aesculus californicus*
Mountain dandelion	*Agoseris sp.*
Colonial bentgrass	*Agrostis capillaris*
Bentgrass	*Agrostis sp.*
Tree of Heaven	*Ailanthus altissima*
Pigweed	*Amaranthus sp.*
Fiddleneck	*Amsinckia intermedia*
Fiddleneck	*Amsinckia sp.*
Western everlasting	*Anaphalis margaritacea*
Snapdragon	*Antirrhinum sp.*
Common manzanita	*Arctostaphylos manzanita ssp. manzanita*
White leaf manzanita	*Arctostaphylos viscida*
California mugwort	*Artemisia douglasiana*
Indian milkweed	*Asclepias eriocarpa*
Narrow leaf milkweed	*Asclepias fascicularis*
Showy milkweed	*Asclepias speciosa*
Wild oat	*Avena barbata*
Wild oat	*Avena fatua*
Common oat	*Avena sativa*
Coyote brush	*Baccharis pilularis*
American yellowrocket	*Barbarea orthoceras*
Mustard	*Brassica sp.*
California brickle bush	*Brickellia californica*
Rattlesnake grass	*Briza major*
Ripgut brome	*Bromus diandrus*
Soft chess	*Bromus hordeaceus*
Madrid brome	*Bromus madritensis*
Poverty brome	*Bromus sterilis*
Red maids	*Calandrinia ciliata*
Hillside morning glory	*Calystegia collina ssp. collina*
Morning glory	*Calystegia sp.*
Shepherds purse	*Capsella bursa-pastoris*
Italian thistle	*Carduus pycnocephalus*
Bifid sedge	*Carex serratodens*
Sedge	*Carex sp.*
Field owl's clover	*Castilleja campestris*
Wedge leaf ceanothus	*Ceanothus cuneatus*
Musk bush	*Ceanothus jepsonii*
Maltese star thistle	*Centaurea melitensis*
Yellow star thistle	*Centaurea solstitialis*
Western redbud	*Cercis occidentalis*
Birch leaf mountain mahogany	*Cercocarpus betuloides*
Wavy leaf soap plant	*Chlorogalum pomeridianum*
Chicory	*Cichorium intybus*

Common Name	Scientific Name
Peregrine thistle	*Cirsium cymosum*
Bull thistle	*Cirsium vulgare*
Clarkia	*Clarkia sp.*
Miner's lettuce	*Claytonia perfoliata*
Hillside collinsia	*Collinsia sparsiflora*
Poison hemlock	*Conium maculatum*
Field bind weed	*Convolvulus arvensis*
Brown dogwood	*Cornus glabrata*
Pigmyweed	*Crassula sp.*
Dove weed	*Croton setiger*
Dodder	*Cuscuta sp.*
Bermuda grass	*Cynodon dactylon*
Pacific houndstooth	*Cynoglossum grande*
Dogtail grass	*Cynosurus echinatus*
Tall flatsedge	*Cyperus eragrostis*
Queen Anne's lace	*Daucus carota*
Rattlesnake weed	*Daucus pusillus*
Annual hair grass	*Deschampsia danthonioides*
Blue dicks	*Dichelostemma capitatum (=Dipterostemon capitatus)*
Fuller's teasel	*Dipsacus fullonum*
Stinkwort	*Dittrichia graveolens*
Pale spikerush	*Eleocharis macrostachya*
Medusahead grass	*Elymus caput-medusae*
Squirreltail	*Elymus elymoides*
Blue wildrye	*Elymus glaucus*
Creeping wildrye	*Elymus triticoides*
Tall willowherb	*Epilobium brachycarpum*
Denseflower willowherb	*Epilobium densiflorum*
Canada horseweed	*Erigeron canadensis*
Horseweed	*Erigeron sp.*
Yerba santa	*Eriodictyon californicum*
Naked buckwheat	*Eriogonum nudum*
Wand buckwheat	*Eriogonum roseum*
Buckwheat	*Eriogonum sp.*
Wooly sunflower	*Eriophyllum lanatum*
Broad leaved filaree	*Erodium botrys*
Red-stemmed filaree	*Erodium cicutarium*
Filaree	*Erodium sp.*
Jepson's button celery	*Eryngium aristulatum*
Yellow monkeyflower	*Erythranthe guttata*
California poppy	*Eschscholzia californica*
Thyme-leaf spurge	*Euphorbia serpyllifolia*
Western goldenrod	*Euthamia occidentalis*
Tall fescue	*Festuca arundinacea*
Brome fescue	*Festuca bromoides*
California fescue	*Festuca californica*
Pacific fescue	*Festuca microstachys*
Rattail sixweeks grass	*Festuca myuros*
Italian ryegrass	*Festuca perennis*
Oregon ash	*Fraxinus latifolia*
Ash	*Fraxinus sp.*
Bedstraw	*Galium aparine*

Common Name	Scientific Name
Bedstraw	*Galium sp.*
Nit grass	*Gastridium phleoides*
Geranium	*Geranium sp.*
Bird's eye gilia	*Gilia tricolor*
Great Valley gumplant	*Grindelia camporum*
Sunflower	*Helianthus bolanderi*
Hayfield tarplant	*Hemizonia congesta ssp. luzulifolia*
California western flax	*Hesperolinon californicum*
Toyon	*Heteromeles arbutifolia*
Oregon false golden aster	*Heterotheca oregona*
Shortpod mustard	*Hirschfeldia incana*
Wand tarplant	*Holocarpha virgata*
Meadow barley	*Hordeum brachyantherum*
Mediterranean barley	*Hordeum marinum ssp. gussoneanum*
Wall barley	*Hordeum murinum*
Klamath weed	*Hypericum perforatum*
Iris	*Iris douglasii*
Iris	*Iris sp.*
Northern California black walnut	*Juglans hindsii*
Colorado rush	*Juncus confusus*
Common rush	*Juncus effusus*
Mexican rush	*Juncus mexicanus*
Rush	*Juncus sp.*
Iris-leaved rush	*Juncus xiphioides*
Lemmon's keckiella	*Keckiella lemmonii*
Sharp-leaved fluellin	*Kickxia elatine*
Prickly lettuce	*Lactuca serriola*
California goldfields	*Lasthenia californica*
Tidy tips	*Layia platyglossa*
Hawkbit	*Leontodon saxatilis*
Shining peppergrass	*Lepidium nitidum*
Whisker brush	*Leptosiphon ciliatus*
Variable linanthus	*Leptosiphon parviflorus*
White meadowfoam	*Limnanthes alba ssp. alba*
Lomatium	*Lomatium sp.*
Chaparral honeysuckle	*Lonicera interrupta*
Bird's-foot trefoil	*Lotus corniculatus*
Miniature lupine	*Lupinus bicolor*
Lupine	*Lupinus sp.*
Loosestrife	*Lythrum sp.*
Loosestrife	*Lythrum sp. #2*
Common madia	*Madia elegans*
Small tarweed	*Madia exigua*
Slender madia	*Madia gracilis*
Tarplant	*Madia sp.*
Cheeseweed	*Malva sp.*
Horehound	*Marrubium vulgare*
Burclover	*Medicago sp.*
California melic grass	*Melica californica*
Little California melica	*Melica imperfecta*
Pennyroyal	*Mentha pulegium*
Giant blazing star	*Mentzelia laevicaulis*

Common Name	Scientific Name
Slender cottonweed	*Micropus californicus*
Cismontane minuartia	*Minuartia cismontana*
Coyote mint	*Monardella villosa*
Green monardella	*Monardella viridis?*
Foothill needlegrass	*Nassella lepida*
Downy pincushion	*Navarretia pubescens*
Baby blue-eyes	*Nemophila menziesii*
Dallis grass	*Paspalum dilatatum*
Penstemon	*Penstemon sp.*
Harding grass	*Phalaris aquatica*
Timothy grass	*Phleum pratense*
Gray pine	*Pinus sabiniana*
Bracted popcorn flower	*Plagiobothrys bracteatus*
Rusty popcorn flower	*Plagiobothrys nothofulvus*
Popcorn flower	*Plagiobothrys sp.*
Dwarf plantain	*Plantago erecta*
English plantain	*Plantago lanceolata*
Seablush	*Plectritis sp.*
Bulbous bluegrass	*Poa bulbosa*
Kentucky bluegrass	*Poa pratensis*
Bamboo	Poaceae
Douglas' mesa mint	*Pogogyne douglasii*
Knot grass	*Polygonum arenastrum*
Ditch beard grass	*Polypogon interruptus*
Rabbit's-foot grass	*Polypogon monspeliensis*
Fremont cottonwood	*Populus fremontii*
Poplar	*Populus sp.*
Henderson's shooting star	*Primula hendersonii*
Plum	*Prunus sp.*
California scrub oak	*Quercus berberidifolia*
Blue oak	*Quercus douglasii*
Leather oak	*Quercus durata*
Valley oak	*Quercus lobata*
California buttercup	*Ranunculus californicus*
Jointed charlock	*Raphanus sativus*
Yellow mignonette	*Reseda lutea*
Holly leaf redberry	*Rhamnus ilicifolia*
Fragrant sumac	*Rhus aromatica*
Rose	*Rosa sp.*
Himalayan blackberry	*Rubus armeniacus*
Elmleaf blackberry	*Rubus ulmifolius*
Curly dock	*Rumex crispus*
Fiddleleaf dock	*Rumex pulcher*
Dock	*Rumex sp.*
Sandbar willow	*Salix exigua*
Red willow	*Salix laevigata*
Arroyo willow	*Salix lasiolepis*
Blue elderberry	*Sambucus nigra ssp. caerulea*
Purple sanicle	*Sanicula bipinnatifida*
Pacific sanicle	*Sanicula crassicaulis*
Sanicle	*Sanicula sp.*
Common tule	*Schoenoplectus acutus*

Common Name	Scientific Name
Checkermallow	*Sidalcea sp.*
Tumble mustard	*Sisymbrium altissimum*
Hedge mustard	*Sisymbrium officinale*
Blue-eyed grass	*Sisyrinchium bellum*
Buffalo berry	*Solanum rostratum*
Bugle hedgenettle	*Stachys ajugoides*
Whitestem hedgenettle	*Stachys albens*
Chickweed	*Stellaria media*
Western needlegrass	*Stipa occidentalis*
Purple needlegrass	*Stipa pulchra*
Common snowberry	*Symphoricarpos albus*
Dandelion	*Taraxacum officinalis*
Fringepod	*Thysanocarpus curvipes*
Tall sock-destroyer	*Torilis arvensis*
Poison-oak	*Toxicodendron diversilobum*
Death camas	*Toxicoscordion sp.*
Puncture vine	*Tribulus terrestris*
Vinegar weed	*Trichostema lanceolatum*
Turpentine weed	*Trichostema laxum*
Cowbag clover	*Trifolium depauperatum*
Strawberry clover	*Trifolium fragiferum*
Rose clover	*Trifolium hirtum*
Clover	*Trifolium variegatum*
Cow's clover	*Trifolium wormskioldii*
Trillium	*Trillium sp.*
Butter and eggs	*Triphysaria versicolor ssp. faucibarbata*
Marsh triteleia	*Triteleia peduncularis*
Broad leaf cattail	*Typha latifolia*
California bay	*Umbellularia californica*
Moth mullein	*Verbascum blattaria*
Common mullein	*Verbascum thapsus*
Bird's-eye speedwell	*Veronica persica*
Spring vetch	*Vicia sativa*
Vetch	*Vicia sp.*
Winter vetch	*Vicia villosa*
California wild grape	*Vitis californica*
Narrow leaf mule ears	*Wyethia angustifolia*
Smooth mule ears	*Wyethia glabra*
Gray mule ears	*Wyethia helenioides*
Woolly mule's ears	*Wyethia mollis*
Spiny cocklebur	*Xanthium spinosum*
Cocklebur	*Xanthium strumarium*
Davy's centaury	*Zeltnera davyi*

APPENDIX 3: SITE PHOTOS