

5.7 BIOLOGICAL RESOURCES

5.7.1 INTRODUCTION

Purpose

The County of Los Angeles Department of Regional Planning Environmental Checklist Form, which has been prepared pursuant to the California Environmental Quality Act (CEQA), requires that biological resources issues be evaluated as part of the environmental documentation process. The impacts of the proposed development on the Project site are analyzed at a project-level of detail; direct and indirect impacts are addressed for each threshold criterion for both the on-site and off-site Project features. Growth-inducing impacts and cumulative impacts are described in Sections 6.0 and 7.0, respectively.

Summary

Development and implementation of the Project would result in significant direct and indirect impacts to special status plants; special status wildlife; nesting birds; native grasslands, wildflower fields and other special status vegetation types; jurisdictional drainages, wetlands, and riparian vegetation; wildlife movement and wildlife habitat; and regulated oak trees. Some, but not all, of these impacts would be reduced to less than significant levels with implementation of the Project's mitigation measures (MMs) and Mitigation Monitoring and Reporting Program (MMRP).

Significant impacts to special status plants, special status wildlife, and nesting birds that would result from implementing the Project would be reduced to a level considered less than significant through implementation of MMs 7-1 through 7-9.

Significant impacts to native grasslands and wildflower fields and other special status vegetation types that would result from implementing the Project would be reduced to less than significant levels with implementation of MMs 7-10 and 7-11.

Significant impacts to jurisdictional drainages, wetlands, and riparian vegetation that would result from implementing the Project would be reduced to less than significant levels with implementation of MM 7-12, which states that all lost functional values shall be replaced; appropriate regulatory agency permits and/or agreements shall be obtained; and the mitigation measures stipulated in those permits/agreements shall be implemented.

Significant impacts to wildlife movement and general wildlife habitat that would result from implementing the Project would be reduced to less than significant levels with implementation of MM 7-14 through MM 7-18.

Significant impacts to oak tree resources that would result from implementing the Project would be reduced to less than significant levels with implementation of MM 7-11 and MMs 7-18 through 7-20 in accordance with the County of Los Angeles Oak Tree Ordinance and in compliance with the Los Angeles County Oak Woodlands Conservation Management Plan. For the impacts to oak woodlands, mitigation is proposed in accordance with these

County documents and California State law by creating, enhancing, and/or restoring oak habitats and by preserving existing oak woodlands.

There would be no development within (including roads and fuel modification zones), and therefore, no direct impacts on Significant Ecological Areas (SEAs), or on any lands for which a habitat conservation plan (HCP) or a natural community conservation plan (NCCP) has been adopted as there are no HCPs or NCCPs on the Project site or off-site impact areas. To further ensure SEA impact avoidance, MM 7-21 is included, which prohibits fuel modification zones from encroaching on the adjacent SEA. The Project's designation of open space in the northwest portion of the site is consistent with the Tehachapi Upland Multiple Species Habitat Conservation Plan (TU MSHCP) located immediately adjacent to the north.

Section Format

As described in Section 5.0, Environmental Setting, Impacts, and Mitigation, and in accordance with State CEQA Guidelines Article 9 (Contents of Environmental Impact Reports), each topical environmental analysis includes a description of the existing setting; identification of thresholds of significance; analysis of potential Project effects and identification of significant impacts; identification of a mitigation program, if required, to reduce the impacts; and level of significance after mitigation. This information is presented in the following format:

1. Introduction
 - Purpose
 - Summary
 - Section Format
 - References
2. Relevant Plans, Policies, and Regulations
3. Environmental Setting
4. Project Design Features and Standard Conditions of Approval
5. Threshold Criteria
6. Environmental Impacts—A separate analysis is provided for each of the following two categories of potential impacts:
 - On-Site Impacts
 - Off-Site Impacts
7. Mitigation Measures
8. Level of Significance After Mitigation
9. References

References

Plant and wildlife compendia for the Project site, including the off-site component and a glossary of all plant and wildlife names used in the document are included in Appendix 5.7-A. Although all references cited for preparation of this analysis are listed in Section 5.7.9, the primary technical references are listed below:

1. Natural Resource Consultants (NRC). 2007 (March). *2006 Field Studies, Statistical Analyses and Modeling of Native Perennial Bunchgrass Distribution and Quality on the Approximately 11,680-Acre Centennial Specific Plan Site, Los Angeles County, California*. Laguna Beach, CA: NRC (see Appendix 5.7-B, No. Plant-6).
2. Natural Resource Consultants (NRC). 2007 (June). *2007 Grassland and Wildflower Community Composition and Distribution in the South Tehachapi Study Area*. Laguna Beach, CA: NRC (see Appendix 5.7-B, No. Plant-5).
3. Tree Life Concern. 2003 (December). *Oak Tree Report: "Centennial"*. Canoga Park, CA: Tree Life Concern (see Appendix 5.7-B, No. Plant-1).
4. Tree Life Concern. 2008 (July). *(Addendum 1) Oak Tree Report – Centennial Specific Plan*. Canoga Park, CA: Tree Life Concern (see Appendix 5.7-B, No. Plant-10).
5. BonTerra Consulting. 2009. *Oak Tree Supplemental Report: Centennial Specific Plan*. (see Appendix 5.7-B, No. Plant-11).

For expanded discussions, detailed methodologies, and the biological surveys conducted within the Project site and off-site component, refer to these reports contained in Appendix 5.7-B. The Mitigation Preserve Review is presented in Appendix 5.7-C.

5.7.2 RELEVANT PLANS, POLICIES AND REGULATIONS

Federal

Endangered Species Act

The Federal Endangered Species Act of 1973 (FESA) protects plants and animals that the government has listed as “Endangered” or “Threatened”. The FESA is implemented by enforcing Sections 7 and 9 of the Act. A federally listed species is protected from unauthorized “take” pursuant to Section 9 of the FESA. “Take”, as defined by the FESA, means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or to attempt to engage in any such conduct. All persons are presently prohibited from taking a federally listed species unless and until (1) the appropriate Section 10(a) permit has been issued by the U.S. Fish and Wildlife Service (USFWS) or (2) an Incidental Take Statement is obtained as a result of formal consultation between a federal agency and the USFWS pursuant to Section 7 of the FESA and the implementing regulations that pertain to it (50 *Code of Federal Regulations* [CFR] 402). “Person” is defined in the FESA as an individual, corporation, partnership, trust, association, or any private entity; any officer, employee, agent, department or instrument of the federal government; any State, Municipality, or political subdivision of the State; or any other entity subject to the jurisdiction of the United States. The Project Applicant is a “person” for purposes of the FESA.

Section 401 and 404 of the Clean Water Act of 1972 (33 United States Code 1251 et seq.)

Section 404 of the Clean Water Act (CWA) regulates the discharge of dredge and fill material into “Waters of the U.S.” including wetlands. Dredge and fill activities are typically associated with development projects; water-resource related projects; infrastructure development

and wetland conversion to farming; forestry; and urban development. The U.S. Army Corps of Engineers (USACE) is the designated regulatory agency responsible for administering the 404 permit program and for making jurisdictional determinations.

Under Section 401 of the CWA, an activity requiring a USACE Section 404 permit must obtain a State Water Quality Certification (or waiver thereof) to ensure that the activity will not violate established State water quality standards. The State Water Resources Control Board (SWRCB), in conjunction with the nine California Regional Water Quality Control Boards (RWQCBs), is responsible for administering the Section 401 water quality certification program.

Under Section 401 of the federal CWA, an activity involving discharge into a water body must obtain a federal permit and a State Water Quality Certification to ensure that the activity will not violate established water quality standards. The U.S. Environmental Protection Agency (USEPA) is the federal regulatory agency responsible for implementing the CWA. However, it is the SWRCB in conjunction with the nine RWQCBs who essentially have been delegated the responsibility for administering the water quality certification (401) program.

The U.S. Supreme Court has issued three decisions that provide context and guidance in determining the appropriate scope of “waters of the U.S.” In *United States v. Riverside Bayview Homes*, the Court upheld the inclusion of adjacent wetlands in the regulatory definition of “waters of the U.S.”. In *Solid Waste Agency of Northern Cook County v. U.S. Army Corps of Engineers* (SWANCC), the Court held that the use of “isolated” non-navigable intrastate ponds by migratory birds was not, by itself, sufficient basis for the exercise of federal regulatory authority under the CWA. In *Rapanos v. United States* (Rapanos),¹ a majority of the U.S. Supreme Court overturned two Sixth Circuit Court of Appeals decisions, finding that certain wetlands constituted “waters of the U.S.” under the CWA. In his plurality opinion, Justice Scalia argued that “waters of the U.S.” should not include channels through which water flows intermittently or ephemerally or channels that periodically provide drainage for rainfall. He also stated that a wetland may not be considered “adjacent to” remote “waters of the U.S.” based on a mere hydrologic connection. Justice Kennedy authored a separate concurring opinion concluding that wetlands are “waters of the U.S.” if they, either alone or in combination with similarly situated lands in the region, significantly affect the chemical, physical, and biological integrity of other covered waters more readily understood as “navigable”. Lacking a majority opinion, regulatory jurisdiction under the CWA exists over a water body if either the plurality’s or Justice Kennedy’s “significant nexus” standard is satisfied.

In May 2015, in response to these Supreme Court decisions, the USACE and the U.S. Environmental Protection Agency (USEPA) published a Final Clean Water Rule (Water Rule) clarifying the scope of “waters of the U.S.” protected under the CWA (USACE and USEPA 2015). They define “waters of the U.S.” to include eight categories of jurisdictional waters. The first four types of waters are considered jurisdictional by rule in all cases: (1) Traditional Navigable Waters (TNWs); (2) interstate waters, (3) territorial seas, and (4) impoundments of jurisdictional waters. The next two types of waters are jurisdictional by rule, as defined,

¹ Consolidated cases: *Rapanos v. United States* and *Carabell v. United States* refer to the U.S. Supreme Court’s decision concerning USACE jurisdiction over “waters of the U.S.” under the CWA.

because the science confirms that they have a significant nexus to TNWs, interstate waters, or territorial seas: (5) tributaries and (6) adjacent waters. The final two types of jurisdictional waters require a case-specific analysis to determine if they have a significant nexus to TNWs, interstate waters, or territorial seas: (7) five subcategories of waters considered to be “similarly situated”—Prairie potholes, Carolina and Delmarva bays, pocosins, western vernal pools in California, and Texas coastal prairie wetlands—that must be analyzed “in combination” when making a significant nexus analysis and (8) waters within the 100-year floodplain of a TNW, interstate water, or territorial sea and waters within 4,000 feet from the high tide line or the Ordinary High Water Mark (OHWM) of a TNW, interstate water, territorial sea, impoundment, or covered tributary.

Based on the Final Clean Water Rule, the USACE and the USEPA will apply the significant standard as follows:

1. Waters are “waters of the U.S.” if they, either alone or in combination with similarly situated waters in the region, significantly affect the chemical, physical, or biological integrity of TNWs, interstate waters, or the territorial seas.
2. Waters are considered “similarly situated” where they function alike and are sufficiently close to function together in affecting the nearest TNW, interstate water, or territorial sea.
3. The “region” is considered to be the single point of entry watershed (i.e., the drainage basin within whose boundaries all precipitation ultimately flows to the nearest single TNW), interstate water, or territorial sea.
4. The functions of a water that affect the chemical, physical, or biological integrity of a TNW, interstate water, or territorial seas must be “significant” and more than “speculative or insubstantial”. To determine whether there is a significant nexus, the following functions should be considered: sediment trapping; nutrient recycling; pollutant trapping, transformation, filtering, and transport; retention and attenuation of floodwaters; runoff storage; contribution of flow; export of organic matter; export of food resources; and provision of life-cycle dependent aquatic habitat for species.

On August 27, 2015, the United States District Court for the District of North Dakota enjoined the USEPA from implementing the Final Clean Water Rule, the result of lawsuit filed by several states that challenged the statutory authority of the USEPA and USACE to issue these new regulations. Therefore, currently the USACE is not implementing the definitions in the Final Clean Water Rule.

State

California Endangered Species Act

Pursuant to the California Endangered Species Act (CESA) and Section 2081 of the *California Fish and Game Code*, an incidental take permit from the California Department of Fish and Wildlife (CDFW) is required for projects that could result in the take of a State-listed Threatened or Endangered species. Under the CESA, “take” is defined as an activity that would directly or indirectly kill an individual of a species, but the definition does not include

“harm” or “harass”, as the federal act does. As a result, the threshold for a take under the CESA is higher than that under the FESA. A CDFW-authorized Incidental Take Permit under Section 2081(b) is required when a project could result in the take of a State-listed Threatened or Endangered Species. The application for an Incidental Take Permit under Section 2081(b) has a number of requirements, including the preparation of a conservation plan, generally referred to as a Habitat Conservation Plan.

California Fish and Game Code

Section 1602

State law confers upon the CDFW the trustee responsibility and authority for the public trust resource of wildlife in California. The CDFW may play various roles under the CEQA process. By State law, the CDFW has jurisdiction over the conservation, protection, and management of the wildlife, native plants, and habitat necessary to maintain biologically sustainable populations. The CDFW shall consult with lead and responsible agencies and shall provide the requisite biological expertise to review and comment upon environmental documents and impacts arising from project activities.

As a trustee agency, the CDFW has jurisdiction over certain resources held in trust for the people of California. Trustee agencies are generally required to be notified of CEQA documents relevant to their jurisdiction, whether or not these agencies have actual permitting authority or approval power over aspects of the underlying project (14 *California Code of Regulations* [CCR] Section 15386). The CDFW, as a trustee agency, must be notified of CEQA documents regarding projects involving fish and wildlife of the state as well as Rare and Endangered native plants, wildlife areas, and ecological reserves. Although, the CDFW cannot approve or disapprove a project since it is a trustee agency, lead and responsible agencies are required to consult with them. The CDFW, as the trustee agency for fish and wildlife resources, shall provide the requisite biological expertise to review and comment upon environmental documents and impacts arising from project activities and shall make recommendations regarding those resources held in trust for the people of California (*California Fish and Game Code*, Section 1602).

Sections 1600–1616

All diversions, obstructions, or changes to the natural flow or bed, channel, or bank of any river, stream, or lake in California that support wildlife resources and/or riparian vegetation are subject to CDFW regulations, pursuant to Section 1600 through Section 1603 of the *California Fish and Game Code*. Under Section 1602, it is unlawful for any person to substantially divert or obstruct the natural flow or substantially change the bed, channel or bank of any river, stream, or lake designated by CDFW as waters within their jurisdiction, nor can a person use any material from streambeds without first notifying the CDFW of such activity. For a project that may affect stream channels and/or riparian vegetation regulated under Sections 1600 through 1603, CDFW authorization is required in the form of a Streambed Alteration Agreement.

California Porter-Cologne Water Quality Control Act

Pursuant to the California Porter-Cologne Water Quality Control Act, the SWRCB and the nine RWQCBs may require permits (known as waste discharge requirements or WDRs) for the fill or alteration of “waters of the State”. The term “waters of the State” is defined as “any surface water or groundwater, including saline waters, within the boundaries of the state” (*California Water Code*, Section 13050[e]). The State and Regional Boards have interpreted their authority to require WDRs to extend to any proposal to fill or alter “waters of the State”, even if those same waters are not under USACE jurisdiction. Pursuant to this authority, the State and Regional Boards may require the submission of a “report of waste discharge” under Section 13260, which is treated as an application for WDRs.

Oak Woodland Conservation Act (2001) and California Public Resources Code (Section 21083.4)

The Oak Woodland Conservation Act (*California Fish and Game Code*, Sections 1360 et seq.), passed by the California Legislature in 2001, established an Oak Woodland Conservation Fund administered by the Wildlife Conservation Board (WCB) to help and encourage local governments, park and open space districts, resource conservation districts, nonprofit organizations and private property owners to protect and enhance oak woodlands. “It offers landowners, conservation organizations, and cities and counties an opportunity to obtain funding for projects designed to conserve and restore California’s oak woodlands. It authorizes the Wildlife Conservation Board (WCB) to purchase oak woodland conservation easements and provide grants for land improvements and oak restoration efforts” (McCreary 2004). The Act defines oak woodlands as “an oak stand with a greater than 10 percent canopy cover or that may have historically supported greater than 10 percent canopy cover” (*California Fish and Game Code*, Section 1361[h]).

Section 21083.4 of the *California Public Resources Code* (PRC) (Senate Bill [SB] 1334), which references the Oak Woodland Conservation Act, provides an additional layer of protection for oak woodlands. Section 21083.4 requires that Counties determine if a project may result in a conversion of oak woodlands that will have a significant impact on the environment. If it is determined that it would, the County must require one or more of the following to mitigate the significant effect of the conversion of oak woodlands:

1. Conserve oak woodlands, through the use of conservation easements;
2. (A) Plant an appropriate number of trees, including maintaining plantings and replacing dead or diseased trees
 - (B) The requirement to maintain trees pursuant to this paragraph terminates seven years after trees are planted.
 - (C) Mitigation pursuant to this paragraph shall not fulfill more than one-half of the mitigation requirement for the project.
 - (D) The requirements imposed pursuant to this paragraph also may be used to restore former oak woodlands.
3. Contribute funds to the Oak Woodlands Conservation Fund. A project applicant that contributes funds under this paragraph shall not receive a

grant from the Oak Woodlands Conservation Fund as part of the mitigation for the project; and

4. Other mitigation measures developed by the County.

County

County of Los Angeles Oak Tree Ordinance (CLAOTO)

In unincorporated areas of Los Angeles County, the County of Los Angeles Oak Tree Ordinance (No. 88-0157) protects any tree of the oak genus which is 25 inches or more in circumference (8 inches in diameter) as measured 4.5 feet above mean natural grade; in the case of oaks with more than 1 trunk, the ordinance protects those trees with a combined circumference of any 2 trunks of at least 38 inches (12 inches in diameter), as measured 4.5 feet above mean natural grade. All potential impacts to oak trees regulated by this ordinance must be preceded by an application to the County that includes a detailed Oak Tree Report. Mitigation for impacts to oak trees is usually required as a condition of an Oak Tree Permit.

Significant Ecological Area (SEA) Program

The *County of Los Angeles General Plan* of 1976 originally characterized Significant Ecological Areas (SEAs) as areas that contain unique, dwindling, or other rare plant and animal resources that need to be more specifically studied for the purpose of public education, research, and other non-disruptive outdoor uses (England and Nelson Environmental Consultants 1976). The SEA boundary maps are general in nature and broadly outline the biological resources included in each area.

In 2015, the County Department of Regional Planning adopted updates to the SEA Program that retains a number of existing SEAs, but also incorporates many smaller, existing SEAs into several major SEAs that cover much larger areas. The revised SEAs for the Antelope Valley Area have been approved and adopted into the *County of Los Angeles General Plan* and the *Antelope Valley Area Plan*. The newly adopted San Andreas Rift Zone SEA (SEA No. 17) largely incorporates the areas of former SEA Nos. 58 and 59, located in the Project region, making it the second largest SEA in Los Angeles County (see Exhibit 5.7-15, Significant Ecological Areas). The range of SEA 17 encompasses a small portion of the western Tehachapi foothills, then stretches in a southeasterly direction to include Quail Lake; the northern foothills of Liebre and Sawmill Mountains; large portions of Portal Ridge; Leona Valley; Ritter Ridge; Fairmont and Antelope Buttes; Anaverde Valley; and Lake Palmdale. It terminates at Barrel Springs near the City of Palmdale.

The primary resources in SEA 17 are wildlife movement and the mosaic of habitats along the San Andreas Fault Zone. The area encompasses an important linkage between the San Gabriel Mountains and the Tehachapi Mountains, representing the only mountain linkage from the Transverse Ranges or the Pacific Coast Range to the Sierra Nevada Range (PCR et al. 2000). SEA 17 is identified as significant as a region where multiple diverse biomes (a community of plants and animals) and wildlife corridors come together. It contains a unique mosaic of vegetation types that represent a transitional area between the Mojave Desert, the Coast Ranges, and the Tehachapi Mountains.

County of Los Angeles General Plan and Antelope Valley Area Plan

The *County of Los Angeles General Plan* and *Antelope Valley Area Plan* address biological resources issues that affect the County. Relevant goals and policies in the *Antelope Valley Area Plan* include the following:

Biological Resources

Goal COS 4: Sensitive habitats and species are protected to promote biodiversity

Policy COS 4.1: Direct the majority of the unincorporated Antelope Valley's future growth to rural town centers and economic opportunity areas, minimizing the potential for habitat loss and negative impacts in Significant Ecological Areas.

Policy COS 4.2: Limit the amount of potential development in Significant Ecological Areas, including the Joshua Tree Woodlands, wildlife corridors, and other sensitive habitat areas, through appropriate land use designations with very low residential densities, as indicated in the Land Use Policy Map (Map 2.1) of this Area Plan.

Policy COS 4.5: Subject to local, state or federal laws, require new development to provide adequate buffers from preserves, sanctuaries, habitat areas, wildlife corridors, State Parks, and National Forest lands, except within Economic Opportunity Areas.

Policy COS 4.6: Encourage connections between natural open space areas to allow for wildlife movement.

Policy COS 4.7: Restrict fencing in wildlife corridors. Where fencing is necessary for privacy or safety, require appropriate development standards that maximize opportunities for wildlife movement.

Policy COS 4.8: Ensure ongoing habitat preservation by coordinating with the California Department of Fish and Game to obtain the latest information regarding threatened and endangered species.

Goal COS 16: Native vegetation thrives throughout the Antelope Valley, reducing erosion, flooding, and wind-borne dust and sand.

Policy COS 16.1: Except within Economic Opportunity Areas, require new development to minimize removal of native vegetation. Discourage the clear-scraping of land and ensure that a large percentage of land is left in its natural state.

Policy COS 16.2: Maximize the use of native vegetation in landscaped areas, provided that vegetation meets all applicable requirements of the Fire Department and the Department of Public Works.

A consistency analysis of the Project's specific goals and policies with the County's relevant plans, policies, and regulations is provided in the Land Use, Entitlements, and Planning Section (Section 5.8) in this document.

Los Angeles County Oak Woodlands Conservation Management Plan

The final *County of Los Angeles Oak Woodlands Conservation Management Plan* (OWCMP) is dated May 2011. The primary purpose of the OWCMP is to develop a consistent policy for oak woodland management that can be incorporated into the County's General Plan and other relevant planning documents. A secondary purpose of the OWCMP is to meet eligibility requirements for funding under the Oak Woodland Conservation Act. The OWCMP is divided into two parts. Part I contains a voluntary oak woodland conservation strategy that could be adopted by resolution by the Board of Supervisors to make the County eligible for Oak Woodland Conservation Fund grants. Part II contains planning and implementation recommendations designed to assist the County in formulating policies for eventual incorporation into County codes. Several recommendations contained in OWCMP Part II are relevant to CEQA analysis, including but not limited to Section V.2 (addressing CEQA evaluation of oak woodland conversion and providing recommendations regarding thresholds of significance and impact magnitude evaluation); Section V.3 (providing recommendations regarding cumulative impact evaluation); Section V.7 (providing recommendations for restoration mitigation); and Section V.8 (providing recommendations for successful mitigation monitoring strategies) (LACDRP 2011).

5.7.3 ENVIRONMENTAL SETTING

Characteristics of the Site

The Project site is located south of the Tehachapi Mountains and north of Liebre Mountain and the Angeles National Forest at the northwestern end of the Antelope Valley. Ranching, cattle grazing, and hunting are the current primary land uses in the Project area. Existing development is limited to a few paved access roads to the California Aqueduct and through the site to the National Cement Plant, which is located approximately one mile north of the Project site. There are also unpaved ranch roads, fencing, stock ponds, and a few electrical transmission lines. Vegetation on the site consists predominately of grasslands, with oak woodlands at higher elevations and scattered patches of riparian habitat along larger drainages, as further described below.

In the far eastern portion of the Project site, adjacent to 300th Street West, approximately 602 acres are actively farmed and irrigated. It is noted that the acreage provided for farmed acres is based on field mapping and, therefore, differs from the designated number of farming acres based on State mapping of agricultural lands used in the remainder of this Draft EIR. Also, while not a part of the actual Project site, the West Branch of the California Aqueduct runs in a narrow corridor through the Project site. The southern portion of the site is crossed by State Route (SR) 138 in an east-west alignment. The northern edge of the eastern portion of the site parallels the off-site East Branch of the California Aqueduct. Part of the northern boundary of the site follows the Los Angeles County/Kern County line.

Vegetation

There are many different vegetation types (38 types were identified, see "Vegetation Types" section below for more information) in the Project's on-site and off-site study areas with the vast majority of the acreage consisting of grasslands. There is considerable variation in

species composition within the grasslands based on soil type, grazing pressure, slope and aspect, available groundwater, and disturbance history. As is typical in California, both native and non-native species occur within the mosaic of grassland types. Wildflower fields are a component within portions of the grasslands and occur throughout most of the Project's on-site and off-site study areas.

Riparian and wetland vegetation types occur in association with the drainages, springs, and seeps located on the Project site. Oak woodland vegetation types are dominant in the western portion of the Project site and in the southern portion of the Project site mainly in the areas south of SR-138. These consist of dense stands of both deciduous and evergreen oak species, such as blue oak (*Quercus douglasii*) and Tucker's oak (*Quercus john-tuckeri*). Scrub vegetation types (primarily chaparral) are generally found in the western portion of the Project site on somewhat eroded, steep slopes. Rabbitbrush scrub is present on the lower elevations of the Project site. Vegetation types are described further below, and a list of dominant species in each vegetation type is also included in Appendix 5.7-A.

Geology and Topography

The topography of the Project site ranges from steep to flat but, in general, the site is characterized by gently rolling hills. Steeper hillsides that gradually decrease to more moderate slopes occur to the west, while flat topography occurs on the easternmost portion of the site. Elevations range from approximately 3,635 feet above mean sea level (msl) along a ridge overlooking Quail Lake to approximately 2,975 feet above msl in the alluvial drainage area in the east portion of the site.

Erosion is a major element of many land features and is seen throughout the site, particularly on steeper slopes where vegetation is lacking and deep eroded gullies have formed. Meandering watercourses have also created numerous gullies ranging in depth from a few inches to over ten feet.

Several major topographic and other physical features are located on the Project site. Two primary drainages are located on site. Tentrock Creek is an east-west trending drainage that parallels SR-138. The other is Oso Creek, which enters the site from the northwest and meanders southeast and east in the northern portion of the site.

A series of high ridges in the Project site separate a number of intermittent or ephemeral streams that have high flows following winter storm events.

The California Aqueduct splits into the West and East Branches just north of the Project site. The Aqueduct's East Branch is located just north of and adjacent to the northeastern segment of the Centennial boundary. The West Branch bisects the Project site into an eastern portion and a western portion. The West Branch leads to Quail Lake, which is a former natural pond on the San Andreas Fault that has been reconfigured into a reservoir as part of the Aqueduct system. Quail Lake is situated adjacent to the southwest portion of the Project site. Although several streams cross under the Aqueduct via culverts, the Aqueduct itself does not connect to any on-site drainages.

Tentrock Canyon Creek, a nearly perennial stream that flows in a northerly direction, crosses SR-138 near the southeastern corner of the Project site and flows into the lower portion of

the drainage that is parallel to SR-138. In addition, eight ephemeral to intermittent creeks located on site west of Tentrock Canyon drain from Liebre Mountain (of the San Gabriel Mountain Range) northward, crossing under SR-138 via culverts.

The National Cement Plant Road provides access from SR-138 to the National Cement Plant, which is located just north of the Project site in Kern County. This paved road includes a bridge that crosses the West Branch of the California Aqueduct near the southern end of the site, and the road parallels the Aqueduct's West Branch across the remainder of the site.

Numerous unpaved ranch roads and fence lines cross the Project site. One single-family residence is located adjacent to the West Branch's eastern side along the northern boundary of the Project site.

Soil Series and Characteristics

Soils in the Project site, as mapped by the U.S. Department of Agriculture, Natural Resource Conservation Service (2008 data available in Geographic Information System [GIS] format), are primarily sand or sandy loam. These soils are relatively deep and generally do not retain water in the upper layers. Table 5.7-1, Soil Types and their Hydrological Characteristics, describes the major on-site soil types in more detail.

**TABLE 5.7-1
SOIL TYPES AND THEIR HYDROLOGICAL CHARACTERISTICS**

Soil Type (soil classification)	Soil Characteristics^a	Hydric (NRCS)^b	Inclusions of Soils Possible	Associated Vegetation On The Site
Chino loam (Co)	<ul style="list-style-type: none"> • Somewhat poorly drained soils formed in mixed alluvium that is dominantly granitic. • Runoff is very slow and likely to pond in places. • Erosion potential is from none to slight. • Moderately slow permeability. 	Non-hydric (but the matrix color meets the USACE hydric soil criteria)	Hanford loam, Mocho loam, and Sorrento loam	Rushes (<i>Juncus</i> spp.), giant wild-rye (<i>Elymus condensatus</i>), and other hydrophytic herbaceous species
Gaviota rocky sandy loam (GaE2)	<ul style="list-style-type: none"> • Well-drained soils to somewhat excessively well-drained soils formed in weathered hard sandstone. • Runoff is medium. • Erosion potential is moderate. • Moderately rapid permeability. 	Non-hydric	Millsholm rocky loam	Oak woodlands and grasslands
Millsholm rocky loam (MhE2, MhF2)	<ul style="list-style-type: none"> • Well-drained soils formed from weathered hard shale and fine sandstone. Ranges from a heavy sandy loam to a heavy coarse sandy loam and light loam. • Runoff is rapid, depending on topography. • Erosion potential is high. • Moderate permeability. 	Non-hydric	Gaviota rocky sandy loam	Oak woodland

**TABLE 5.7-1
SOIL TYPES AND THEIR HYDROLOGICAL CHARACTERISTICS**

Soil Type (soil classification)	Soil Characteristics^a	Hydric (NRCS)^b	Inclusions of Soils Possible	Associated Vegetation On The Site
Oakdale sandy loam (OaC)	<ul style="list-style-type: none"> Well-drained soils formed in granitic alluvium. Runoff is slow to medium, depending on topography. Erosion potential is from slight to moderate. Moderate permeability. 	Non-hydric	Greenfield sandy loam and Ramona coarse sandy loam	Grasslands
Oak Glen loam (OdA, OdC)	<ul style="list-style-type: none"> Well-drained soils formed in granitic alluvial fans. Ranges from a heavy sandy loam to a heavy coarse sandy loam and light loam. Runoff is slow to moderate, depending on topography. Erosion potential is from none to moderate. Moderately rapid permeability. 	Non-hydric	Oak Glen (sandy loam) and Hanford	Riparian and grasslands
Ramona coarse sandy loam and gravelly sandy loam (RdE2, ReC)	<ul style="list-style-type: none"> Well-drained soils formed in granitic alluvial fans. Ranges from a heavy sandy loam to a heavy coarse sandy loam and light loam. Runoff is medium to rapid. Erosion potential is from moderate to high. Moderately slow permeability. 	Non-hydric	Greenfield sandy loam, Hanford coarse sandy loam, and Terrace escarpments	Grasslands
Soboba cobbly loamy sand (SoB)	<ul style="list-style-type: none"> Excessively drained soils in granitic alluvium. Runoff is very slow. Erosion potential is slight. Permeability is very rapid. 	Non-hydric	Riverwash	Grasslands
Terrace Escarpment (TsF)	<ul style="list-style-type: none"> Runoff is medium to rapid. Erosion potential is moderate to high. Moderately slow permeability. 	Non-hydric	No Inclusions	Grasslands
Vernalis loam (VbA)	<ul style="list-style-type: none"> Well-drained soils formed in granitic alluvial fans. Runoff is very slow. Erosion potential is none to slight. Permeability is moderate. 	Non-hydric	Oak Glen (sandy loam) and Rosamond	Grasslands

USACE: U.S. Army Corps of Engineers

^a Descriptive terms are defined as standard terms in Soil Conservation Service soil surveys.

^b Natural Resources Conservation Service (NRCS).

Source: U.S. Department of Agriculture, Natural Resource Conservation Service (2008 data available in Geographic Information System [GIS] format).

Drainage Patterns

Most of the watersheds in the Project vicinity generally begin in the western portion of the site, flow east toward Antelope Valley, and historically dissipated into the ground. However, with the construction of the California Aqueduct and its connection to Quail Lake, five short streams in the northwest of the Project site are now tributaries to Quail Lake. East of the Aqueduct, these old drainages dissipate into the ground near 300th Street West or continue off site to the northeast. The drainages on the Project site are discussed in more detail in Jurisdictional Resources section below.

Fire

Evidence of historical fire events is found throughout the Project site. The most obvious and common sign of past fire damage is the presence of charred tree trunk cavities at the point where the trunk meets the ground. When fires pass under and around an established oak tree, the bark and living tissue beneath the canopy are burned. This wound becomes an opening for primary and secondary wood decay organisms, thus creating a cavity at the base of the trunk. These wounds were only found on larger, older trees (typically 24 inches diameter at breast height [dbh] or larger). There is little evidence of fire damage to lower scaffold branch structures due to the general absence of understory shrubs that could carry fire into the canopies (Tree Life Concern 2003).

Characteristics of Surrounding Areas

The Project site is located in a region that is at the confluence of several major geographic features and associated biomes, including the Tehachapi Mountains, Coast Ranges, Transverse Ranges (San Gabriel Mountains and Liebre Mountain), Antelope Valley of the Mojave Desert, Central Valley, and the San Andreas Fault Zone. Lands immediately surrounding the Project site are used primarily for cattle grazing, agriculture and ranching, with scattered rural residences. Quail Lake is located just outside the southern edge of the Project site, and an off-site electrical substation is located near the southwestern corner of the Project site. The California Department of Water Resources (DWR) operates an approximate 70-acre afterbay (a short stretch of stream, conduit, pond, or reservoir) just north of the Project site, and the National Cement Plant, an aggregate mining and processing facility, is also located approximately one mile north of the Project site. The Project site is approximately five miles east of the communities of Gorman and Frazier Park and three miles west of the community of Neenach.

Regional Land Uses

Lands immediately to the north and west of the Project site are privately owned and are part of the Tejon Ranch, which is largely open space and includes some grazing at lower elevations. The National Cement Plant is located approximately one mile north of the site's northern boundary in Kern County and is leased as a gravel and lime quarry. Irrigated agricultural fields owned by Tejon Ranch and other, arid, lands exist east of the site in the Antelope Valley. To the south of the site are a hunting club (leased from Tejon Ranch) and privately held lands that contain a variety of rural residential development, orchards, cattle

and sheep grazing areas, and open spaces. Forested lands in the Angeles National Forest are located further to the south, and the Los Padres National Forest is located to the west.

Interstate (I) 5 is located approximately one mile to the west of the Project site's westernmost boundary; SR-138 runs in an east-west direction and passes through the southern portion of the site. The West Branch of the California Aqueduct traverses the site from north to south near its center. The Aqueduct also widens toward the southwestern portion of the Project site and fills Quail Lake, which is located just off site to the south. The East Branch of the Aqueduct passes just north of the site and continues eastward.

Regional Vegetation

Vegetation types found in the Project's on- and off-site study areas occur to varying degrees within the Project region. The bordering region has oak woodlands to the west, north, and south; sagebrush and rubber rabbitbrush scrub to the southwest; and annual and perennial grasslands, along with a few irrigated agricultural lands, to the east. All these vegetation types are represented within the Project site.

Regional Open Space Areas

Large areas of open space occur adjacent to the Project site. Several of these areas are dedicated as permanent open space, including the Los Padres National Forest to the west and the Angeles National Forest to the south and southeast.

The Hungry Valley State Vehicular Recreation Area is located just to the southwest of the Project site; this open space area is highly disturbed by off-road vehicles. Extensive open spaces are also located north of the site in the Tehachapi Mountains, with a large portion of them occurring on the Tejon Ranch property.

The Tehachapi Mountains to the north of the site are characterized by mosaics of oak woodlands, savannas, scrub/shrub lands, perennial/annual grasslands, and some developed areas. On the south are privately owned lands, which consist of forest and grassland open spaces as well as some rural residential development. The Angeles National Forest encompasses much of the land further to the south.

Approximately 10 miles northwest of the site, portions of the Tehachapi area and the San Joaquin Valley floor are in the Wind Wolves Preserve, which conserves more than 97,000 acres of open space.

As previously stated, a portion of the California Aqueduct's West Branch bisects the Project site and continues off the site and downstream to the southwest. The Aqueduct's East Branch splits from a channel just north of the Project site and flows east into Antelope Valley. Where the Aqueduct bisects the Project site, the State maintains a wide easement that is fenced with no public access. As previously mentioned, the DWR operates an afterbay on approximately 70 acres just north of the Project site.

Quail Lake (adjacent to and just south of the Project site) is part of the Aqueduct system and is available for public uses, including shore fishing and hiking. A public rest area and parking lot are located adjacent to the southwestern side of Quail Lake, and a private airstrip is

located southeast of the lake (known as Quail Lake Sky Park). The entire perimeter of Quail Lake is fenced. Although this area is off site, an assessment of the resources associated with Quail Lake is included as part of this analysis due to its immediate proximity.

Regional Conservation Plans

Tejon Ranch Conservation and Land Use Agreement (TRCRWA)

As discussed in greater detail in the Project Description (Section 4.5.7), on June 17, 2008, the Tejon Ranch Company (TRC) entered into a Conservation and Land Use Agreement (Conservation Agreement) with Audubon California, the Endangered Habitats League, the Natural Resources Defense Council, the Planning and Conservation League, the Sierra Club (Resource Groups), and the then newly formed, independent non-profit Tejon Ranch Conservancy (Conservancy). The Conservation Agreement covers the Centennial Project site and the remainder of Tejon Ranch. The Conservation Agreement allows TRC and its development partners to pursue approvals from permitting agencies to develop portions of the Tejon Ranch (Ranch), including the Project site, while providing for the designation and permanent protection of approximately 145,000 acres of contiguous open space areas immediately north of the Project site to protect the biological resources and wildlife connectivity of the 270,000-acre Tejon Ranch. The Conservation Agreement also established options for the dedication or sale of approximately 62,000 acres in 5 additional areas of the Ranch for further open space preservation. In addition, 33,000 acres of designated open space within the development areas have been preserved. Collectively, these open space dedication and acquisition areas comprise approximately 240,000 acres, or approximately 90 percent, of the 270,000-acre Ranch. The open space preservation and development constraints in the Conservation Agreement have been recorded on title, and comprise the reasonable foreseeable land uses on Tejon Ranch. No public agency is a party to the Conservation Agreement, although the federal and State agencies responsible for administering biological protection laws and regulations confirmed that lands under the Conservation Agreement continue to be eligible mitigation lands. Agency review and approval of mitigation lands as compensatory mitigation for project impacts is part of the responsible agency permit process. The Centennial Project site is not within a dedication or acquisition area; all proposed mitigation areas for the project are within acquisition areas. The Conservancy will oversee managed public access to conserved lands and will provide interpretive and environmental education programs for local communities, focusing in particular on underserved populations. Conservancy activities are subject to all applicable federal, State and local laws and regulations.

Tehachapi Upland Multiple Species Habitat Conservation Plan

The Tehachapi Upland Multiple Species Habitat Conservation Plan (TU MSHCP or MSHCP), developed by TRC (the legal entity that owns Tejon Ranch), was finalized in April 2013. The TU MSHCP meets the requirements for a U.S. Fish and Wildlife Service (USFWS) permit pursuant to Section 10(a)(1)(B) of the FESA, as amended (16 *United States Code* [USC] Sections 1531–1544), for incidental take of the 25 Covered Species. The requested term of the Incidental Take Permit (ITP) is 50 years. The MSHCP's Covered Lands encompass 141,886 acres (222 square miles) of the 270,365-acre (422 square miles) Ranch. Los Angeles County lands, including the Centennial Project site, are located adjacent to and immediately

south of the Covered Lands. The MSHCP requires the permanent dedication of conservation easements over 91 percent of the Covered Lands to protect biological resources including wildlife connectivity.

Covered species for the MSHCP include the following:

1. round-leaved filaree (*California macrophyllum*)
2. Kusche's sandwort (*Eremogone macradenia* var. *arcuifolia*)
3. Tehachapi buckwheat (*Eriogonum callistum*)
4. Fort Tejon woolly sunflower (*Eriophyllum lanatum* var. *hallii*)
5. striped adobe lily (*Fritillaria striata*)
6. Tejon poppy (*Eschscholzia lemmonii* ssp. *kernensis*)
7. Tehachapi slender salamander (*Batrachoseps stebbinsi*)
8. Yellow-blotched ensatina (*Ensatina eschscholtzii croceator*)
9. western spadefoot (*Spea hammondi*)
10. coast horned lizard (*Phrynosoma blainvillii*)
11. two-striped garter snake (*Thamnophis hammondi*)
12. tricolored blackbird (*Agelaius tricolor*)
13. burrowing owl (*Athene cunicularia*)
14. golden eagle (*Aquila chrysaetos*)
15. western yellow-billed cuckoo (*Coccyzus americanus occidentalis*)
16. white-tailed kite (*Elanus leucurus*)
17. little willow flycatcher (*Empidonax traillii brewsteri*)
18. southwestern willow flycatcher (*Empidonax traillii extimus*)
19. American peregrine falcon (*Falco peregrinus anatum*)
20. California condor (*Gymnogyps californianus*)
21. bald eagle (*Haliaeetus leucocephalus*)
22. purple martin (*Progne subis*)
23. yellow warbler (*Setophaga petechia*)
24. least Bell's vireo (*Vireo bellii pusillus*)
25. Tehachapi pocket mouse (*Perognathus alticolus inexpectatus*)

Activities covered by the MSHCP generally include ongoing Ranch operations (but exclude hunting) and potential future development of designated areas on and adjacent to I-5, including Tejon Mountain Village. Tejon Ranch and the Covered Lands are situated between existing public lands (both west and east). Addressing the needs of Covered Species in the Tehachapi Mountains uplands through the MSHCP benefits biological resources both within the Covered Lands and also nearby and adjacent public lands. The MSHCP includes measures to minimize and mitigate remaining impacts on Covered Species and measures that contribute to conservation and recovery.

The MSHCP protects current opportunities for wildlife movement beyond the Ranch by preserving existing landscape linkages as a federal permit condition that is independent of the Conservation Agreement described above.

Methodology to Document Biological Resources

Literature Review

In order to evaluate the natural resources potentially found in the Project's on-site and off-site study area and to inform the scope of site-specific field studies, literature searches and database reviews were conducted. Available literature describing the biology, geology, soils, and hydrological resources in the region was examined prior to field surveys. The literature examined included the following:

1. *National List of Plant Species that Occur in Wetlands: California, Region 0* (USFWS 1988).
2. The CDFW's California Natural Diversity Database (CNDDDB) Rarefind report (CDFW 2015a) for the following U.S. Geological Survey (USGS) 7.5-minute topographic quadrangles: Grapevine, Pastoria Creek, Winters Ridge, Liebre Twins, Frazier Mountain, Lebec, La Liebre Ranch, Neenach School, Alamo Mountain, Black Mountain, Liebre Mountain, and Burnt Peak.
3. The California Native Plant Society's (CNPS') Locational Inventory of Rare and Endangered Vascular Plants of California (2015) for the following USGS 7.5-minute topographic quadrangles: Grapevine, Pastoria Creek, Winters Ridge, Liebre Twins, Frazier Mountain, Lebec, La Liebre Ranch, Neenach School, Alamo Mountain, Black Mountain, Liebre Mountain, and Burnt Peak.
4. The CDFW's list of special status plants (CDFW 2017).
5. U.S. Department of Agriculture, Natural Resources Conservation Service (2008) Antelope Valley Area, California soil surveys.
6. County of Los Angeles Significant Ecological Area Study, prepared for the County of Los Angeles, Department of Regional Planning and Environmental Systems Research Institute (England and Nelson Environmental Consultants 1976).
7. Los Angeles County General Plan and Antelope Valley Area Plan (LACDRP 2015a, 2015b).
8. Various literature specific to descriptions of the habitat, vegetation types, and special status species occurring in the County of Los Angeles (see Section 5.7.9, References).
9. Aerial photographs from 1999, 2001, 2004, 2005, and 2006 (Aerials Express).
10. The USGS 7.5-minute topographic quadrangle maps: La Liebre Ranch and Lebec.

Field Surveys

Biological field surveys of the Project's on-site and off-site components or portions of them have been conducted by biological resource experts including BonTerra Consulting (doing

business as BonTerra Psomas),² Bruyeya Biological Consulting, Dave Crawford, Ecological Sciences, Glenn Lukos Associates, Impact Sciences, Natural Resource Consultants, Vollmar Consulting, Paul Beier, Paul Pruett & Associates, and Tree Life Concern. As recently as 2015, BonTerra Psomas Biologists conducted vegetation mapping surveys and focused surveys for the Swainson's hawk (*Buteo swainsoni*), tricolored blackbird, and special status plants on the Project Site. Additionally, an update to the 2009 California Condor Assessment was conducted by BonTerra Psomas in 2015. Summaries of survey dates, surveyors, and methods are provided in Table 5.7-2, Biological Surveys Conducted on the Project Site (1999–2015). Field survey data were collected by qualified biologists, typically working in teams. Habitat and species observations were noted on data sheets, aerial photographs, and maps. Specific information concerning special status species observations was recorded on maps and appropriate data sheets. Reports resulting from the site-specific studies listed in Table 5.7-2 are provided as Appendix 5.7-B.

**TABLE 5.7-2
BIOLOGICAL SURVEYS CONDUCTED
ON THE PROJECT SITE (1999–2015)**

Taxonomic Group	Surveyor	Survey Dates/ Season	Methods
Plants	BonTerra Psomas	March 23–April 5; May 25–June 5, 2015	Focused special status plant surveys throughout the impact area during the spring and summer (BonTerra Psomas 2015b).
		August 4, 2015	Vegetation mapping of the newly incorporated portion of the Project site (east of 300 th St W).
	BonTerra Consulting	January–March 2009	Supplemental oak tree surveys south of SR-138 (BonTerra Consulting 2009a).
		March 2007	Vegetation mapping of the off-site impact areas (results provided in this document).
		August–September 2005	Vegetation mapping of areas west of the Aqueduct and the 262-acre portion south of SR-138 (results provided in this document).
	Natural Resource Consultants	April–August 2008	Special status plant surveys in the Project site and off-site mitigation areas (NRC 2008a).
		spring 2008	Grassland composition studies on the Project site and in off-site mitigation areas (NRC 2008b).
		spring 2007	Second year of grassland sampling of Project site (NRC 2007c).
		spring 2007	Regional grassland distribution assessment (NRC 2007a).
		April–June 2006	Grassland sampling study on the Project site (NRC 2006a, 2007b).
		April–June 2006	Special status plant survey of previously mapped populations (NRC 2006b).

² Surveys conducted prior to January 1, 2014 were performed as BonTerra Consulting; all activities after this date performed as BonTerra Psomas.

**TABLE 5.7-2
BIOLOGICAL SURVEYS CONDUCTED
ON THE PROJECT SITE (1999-2015)**

Taxonomic Group	Surveyor	Survey Dates/ Season	Methods
	Tree Life Concern	June 2006–February 2007	Oak tree survey updated based on new impact area (Tree Life Concern 2008).
		July 2001–November 2001	Survey of all oak trees measuring 8 inches or greater in dbh, inside of or within 200 feet of identified Project grading boundary (Tree Life Concern 2003).
	Vollmar Consulting	April 1–11, June 23–27, 2003; April 15–24, June 10–13, 2004	Focused plant surveys throughout the site for special status species during the spring and summer (Vollmar Consulting 2004, revised 2006).
	Impact Sciences	March 2001–September 2001	Surveys for common and special status plant species concurrently with wildlife surveys and during the wetland and streambed delineation throughout many portions of the site (Impact Sciences 2002a, 2003).
	Paul Pruett & Associates	March 23, 27, April 3, June 15, 1999; April 25, 29, May 18, 2000	Focused plant surveys for special status species throughout the site (Impact Sciences 2003).
<i>Jurisdictional Waters and Wetlands</i>	BonTerra Psomas	June 2015	Updated jurisdictional delineation and functional assessment/CRAM including new areas (BonTerra Psomas 2015a)
	Glenn Lukos Associates	2008	Updated functional assessment of jurisdictional features (GLA 2009a).
		2008	Updated jurisdictional delineation assessment and report (GLA 2009b).
		May 2006–July 2006	Jurisdictional delineation of Phase One unimpacted areas and Future Phase areas; functional assessment of jurisdictional features (GLA 2006c).
		October 2005–November 2005	Jurisdictional delineation of Phase One areas (GLA 2005c).
	Impact Sciences	April 2001–August 2001	Preliminary jurisdictional delineation of Project site using USACE/CDFG delineation protocols (Impact Sciences 2002b).
<i>Invertebrates</i>	Glenn Lukos Associates	September 2006–January 2007	Dry-season protocol surveys for listed fairy shrimp species in 8 seasonal depressions (GLA 2007).
		October 2005–April 2006	Wet- and dry-season protocol surveys for listed fairy shrimp species in potentially suitable locations in the impact area west of the Aqueduct and the 262-acre portion south of SR-138 (GLA 2006a, 2006d).

**TABLE 5.7-2
BIOLOGICAL SURVEYS CONDUCTED
ON THE PROJECT SITE (1999–2015)**

Taxonomic Group	Surveyor	Survey Dates/ Season	Methods
		October 2005	Habitat assessment surveys for listed fairy shrimp species throughout the proposed impact area west of the Aqueduct and the 262-acre portion south of SR-138 (GLA 2005b).
		2004/2005 Wet Season	Wet-season protocol surveys for listed fairy shrimp species at 2 locations (GLA 2005a).
	Guy Bruyea	May 2004– September 2004	Same goals and emphasis as the 2001 surveys (see below), but a larger geographic area was surveyed (Bruyea Biological Consulting 2004).
		May 2003–August 2003 (5 days)	Same goals and emphasis as the 2001 surveys (see below), but a larger geographic area was surveyed (Bruyea Biological Consulting 2003).
		May 2001–August 2001 (5 days)	Surveys within potentially suitable areas of the site for special status butterfly species and adult and larval host plants potentially occurring on or near the site (Bruyea Biological Consulting 2001).
	Impact Sciences	March 2001	Non-protocol surveys for fairy shrimp at select locations. Under a USFWS permit, sampled several areas of potentially suitable habitat (i.e., vernal or seasonal pools and cattle ponds). Collected specimens with hand nets and identified them using a hand lens. Specimens were sent to Mr. Brent Helm, a fairy shrimp expert, for species confirmation (Impact Sciences 2001c).
<i>Herpetofauna</i>	BonTerra Consulting	February 2006 – June 2006	Focused protocol surveys for arroyo toad, red-legged frog, and Tehachapi slender salamander in areas west of the Aqueduct and the 262-acre portion south of SR-138 (results provided in this document).
		Spring and Summer 2005	Focused surveys for western spadefoot in potentially suitable areas west of the Aqueduct and the 262-acre portion south of SR-138 (BonTerra Consulting 2005).
	Impact Sciences	June 2004	Surveys for western spadefoot in potentially suitable areas of the site (Impact Sciences 2004b).
		June 2–6, June 30– July 3, July 7–12, 2003	Surveys and specific searches for special status amphibian and reptile species in potentially suitable areas of the site (Impact Sciences 2003).
		March 23, April 12, 23, 30, May 12, August 2001	Surveys and specific searches for special status amphibian and reptile species. USFWS protocol-level surveys for California red-legged frog.

**TABLE 5.7-2
BIOLOGICAL SURVEYS CONDUCTED
ON THE PROJECT SITE (1999-2015)**

Taxonomic Group	Surveyor	Survey Dates/ Season	Methods
			Surveys for two-striped garter snake and western pond turtle were conducted concurrent with frog surveys in potentially suitable areas of the site (Impact Sciences 2001a).
		May 27, 2000	General biological surveys for amphibians and reptiles conducted simultaneously with more focused survey efforts in potentially suitable areas of the site (Impact Sciences 2003).
	Paul Pruett & Associates	March 23, 27, April 3, 15, 20, 1999; April 21-29, May 1, 3, 13 2000	General biological surveys that included amphibian and reptile surveys in potentially suitable areas of the site (Impact Sciences 2003).
Birds and Mammals	BonTerra Psomas	July 2015	Update to the 2009 California condor assessment (BonTerra Psomas 2015d)
		March-July 2015	Focused surveys for tricolored blackbird (BonTerra Psomas 2015c)
		March - July 2013	Focused surveys for Swainson's hawk (BonTerra Psomas 2013)
	BonTerra Consulting	February-April 2010	Focused surveys for mountain plover (BonTerra Consulting 2010).
		April 2008-July 2008	Focused protocol surveys for least Bell's vireo and southwestern willow flycatcher (BonTerra Consulting 2008).
		April 2006-July 2006	Focused protocol surveys for least Bell's vireo and southwestern willow flycatcher (BonTerra Consulting 2006b).
		March 2006-July 2006	Focused protocol surveys for California spotted owl (BonTerra Consulting 2006a).
	Peter Bloom	spring-summer 2007	California condor records review, habitat assessment, and impact assessment (Peter Bloom 2009).
	Natural Resource Consultants	April 2006	Burrowing owl surveys in select areas of the Project site and mitigation lands (NRC 2006c).
	Ecological Sciences	May 2006-July 2006	Focused surveys for Tehachapi pocket mouse in the Phase One areas (Ecological Sciences 2006).
		2005	Small mammal trapping survey conducted at the Centennial site (Ecological Sciences 2005).
	Impact Sciences	June 2-6, June 30-July 3, July 7-12, 2003	Surveys for special status bird species; focused burrowing owl surveys conducted in potentially suitable areas of the site (Impact Sciences 2003).
		October 2-5 and 9-12, 2001	Small mammal species were trapped with Sherman live traps in potentially suitable

**TABLE 5.7-2
BIOLOGICAL SURVEYS CONDUCTED
ON THE PROJECT SITE (1999-2015)**

Taxonomic Group	Surveyor	Survey Dates/ Season	Methods
			sample areas representative of all habitat types on the site (Impact Sciences 2003).
		March 2001– October 2001	Special status bird and mammal species were noted during general reconnaissance and focused surveys for plants, amphibians, and reptiles (Impact Sciences 2003).
	Dave Crawford	June 3–7, 2003	Small mammal species were trapped with Sherman live traps in sample habitat areas primarily located east of the Aqueduct (Crawford 2003).
	Paul Pruett & Associates	March 23, 27, April 3, June 15, 1999; April 25, 29, May 18, 2000	Wildlife surveys conducted concurrent with plant surveys in potentially suitable areas of the site (Impact Sciences 2003).
Wildlife Movement	BonTerra Consulting	Spring 2007	Wildlife movement assessment of on-site areas to update baseline data and expected movement areas (results provided in this document).
		2005	Review of previous studies and analysis of topographic maps and aerial photographs of the vicinity (results provided in this document).
	Trust for Public Lands	2004–2005	Review of Tejon Ranch lands to develop a proposed 100,000 acre preserve (TPL 2004).
	Pioneer Environmental Services	2004	Wildlife movement study of Tejon Ranch lands including the Project site (Pioneer Environmental Services 2004).
	Dr. Paul Beier	2002	Tejon Ranch landscape connectivity study, including the Project site (Beier 2003).
	Impact Sciences	September and October 2001	Regional habitat connectivity assessment conducted with use of aerial photographs, topographic maps, and field reconnaissance. Track surveys in riparian zones (Impact Sciences 2001b).
SR: State Route; dbh: diameter at breast height; CRAM: California Rapid Assessment Method; USACE: U.S. Army Corps of Engineers; USFWS: U.S. Fish and Wildlife Service			
Sources: The survey reports listed in this table are included in Appendix 5.7-B.			

As identified in the table above, several biological surveys/assessments were updated in 2015, including California condor assessment, special status plant survey, jurisdictional delineation with functional assessment/California Rapid Assessment Method (CRAM) analysis, and tricolored blackbird surveys and analysis. Resources surveys were not updated where previous data remains accurate due to one or more of the following reasons: new Project areas are not expected to contain the resource; lack of measurable change in site conditions; past surveys were conducted within acceptable timeframe typical for that

resource; surveys have been repeated in the past with identical results; regulatory status/survey requirements have not changed in a manner that would require a survey update; and/or drought conditions have contributed to general consistency of site conditions over the past 5 to 6 years.

Vegetation Mapping

With the exception of an agricultural area, paved roads, mixed oak woodland polygons, and the 262-acre area (in a 0.5 x 1.0 mile configuration) (see Exhibit 5.7-1) in the southwestern corner of the Project site, vegetation mapping for areas east of the West Branch of the Aqueduct and south of SR-138 is mainly based on general field surveys conducted in 2001 by Impact Sciences (Impact Sciences 2003). BonTerra mapped the circular agricultural field (located west of 300th Street West) as an agricultural area and paved roads as developed based on aerial photographs taken in April 2005, and also reclassified some areas located south of SR-138 (mapped originally by Impact Sciences as scrub oak chaparral) as mixed oak woodland during an October 2008 field survey. Descriptions for vegetation types mapped in these areas are taken from Impact Sciences (2003) and Vollmar Consulting (2004). Although areas of wildflower fields have been observed and are known to occur, this component of the grassland vegetation type was not mapped due to its ephemeral nature and high variability between years depending on weather patterns. Based on field observations and data collected during grassland studies, in general, varying densities of wildflower fields occur amidst the grassland vegetation throughout the site.

The portion of the Project site located east of 300th Street West was mapped on August 4, 2015, by BonTerra Psomas Biologist Sarah Thomas. This area consists of agriculture fields; dirt access roads; small disturbed/developed areas associated with agricultural operations; and grassland vegetation. Descriptions for these vegetation types are taken from Impact Sciences (2003) and Vollmar Consulting (2004).

BonTerra mapped vegetation types within areas west of the West Branch of the Aqueduct, including the 262 acres south of SR-138, by utilizing aerial photographs printed at a scale of 1 inch equals 200 feet with an overlay of topographic lines. All accessible dirt roads were driven, and biologists also hiked to inaccessible areas and vantage points located throughout the area. Vegetation mapping was directed by BonTerra Senior Botanist Pam De Vries, who was assisted by BonTerra Biologists Andrea Warniment, David Hughes, and Jeff Wheeler, and Consulting Biologists Scott White and Travis Cooper. Vegetation mapping of these areas was conducted in the field on August 25, 26, and 31 and September 1, 6, 7, 8, 9, 12, and 13, 2005.

Nomenclature for vegetation types in the areas described in the paragraph above generally follows that of The Vegetation Classification and Mapping Program: *List of California Terrestrial Natural Communities Recognized by the California Natural Diversity Database* (CDFG 2010). The CNDDDB classification system is based on *A Manual of California Vegetation* (Sawyer and Keeler-Wolf 1995) and is structured to be compatible with *Preliminary Descriptions of the Terrestrial Natural Communities of California* (Holland 1986). The CNDDDB numeric code most closely associated with each vegetation type is also provided; where a specific numeric code for a described vegetation type is not designated in the CNDDDB classification system, the most appropriate general code is shown. Because of the Project

site's proximity to Kern County, references to the most similar vegetation types described in *A Flora of Kern County, California* (Twisselman and Moe 1995) are also provided.

Prior to field mapping, rules for defining vegetation types based on structure were established. The minimum mapping unit was set at approximately one acre, and patches of vegetation smaller than this were generally not mapped except for observed seeps and ephemeral ponds.

Delineation of Grasslands

Grasslands were delineated using a standard practice mapping protocol (consistent with the needs of a CEQA-level analyses) during the vegetation mapping field surveys. These grassland areas range widely from areas nearly completely dominated by non-native annual grassland species to areas with relatively high concentrations of both native perennial bunchgrasses and native forbs. Preliminary work was conducted in 2003 to identify the types of grasslands present and their composition on the Project site (Vollmar Consulting 2004). This work suggests that native perennial grass species do occur in various portions of the site, especially on ridge tops with well-drained soils; however, in most areas where they occur, native perennial grass species exist in a mosaic with annual grassland species and native and non-native forbs.

There is no official operational definition of "native perennial grassland" that has been published by the CDFW, CNPS, or California Native Grass Association (CNGA). Since all California's native grasslands were invaded by non-native plants prior to any full botanical description, it is difficult to define "native grassland". In fact, native grassland composed of 100 percent native species no longer applies to grasslands in California. Some definitions of native grasslands often rely on the presence or dominance of one of the species of needlegrass (*Stipa* spp.) or other native bunchgrasses typical for a region. A commonly accepted standard is to identify native grasslands as those where native grasses comprise between 10 to 20 percent of the cover in areas of very few shrubs or trees. However, because of the scientific uncertainty regarding the historical composition and distribution of native grasslands, especially in Southern California (Hamilton 1997), and because of the varying range of definitions of "native grassland" in use in California today, a definition that incorporates regional and site-specific information for the Project site has been used in this analysis.

The initial 2003 study conducted by Vollmar Consulting (2004) focused on presumed locations of native grasslands and found that the "threshold for determining dominance of combined perennial bunchgrasses versus annual grass was 20 percent relative cover" with the latter dominated by non-native species. Relative cover is the measure of the contribution of plant species (often expressed for each species) to the total cover of vegetation in a standardized area, excluding bare ground. The initial study was limited to 55 sampling plots over the entire Centennial study area. A subsequent field effort in 2004 expanded the observations to 278 plots, but only focused on sampling the highest quality grasslands. This latter study found that areas with the highest density of bunchgrasses were concentrated in areas with thinner, eroded soils including ridge tops, terrace tops, upper slopes, and lower convex slopes. Other landscape positions with deeper, accumulated soils, including floodplains, lower slopes, and upper concave slopes tend to be dominated by non-native

annual grasses and have a low to very low bunchgrass cover. Other considerations, including soil types, slope, aspect, and presence of native annual forbs can also be used to assist in characterizing and defining the native grassland vegetation type. The field study conducted in 2004 was based on a limited number of transects that were not placed randomly. Sampling points were chosen from a select portion of the site that was “restricted to the weathered ridge system in the central-eastern region of the study area”, and was identified as “supporting high-quality perennial bunchgrass community” (Vollmar Consulting 2004). The two-year study did not map the entire Centennial Project site, and it was not directed at characterizing the amounts or proportions of desirable native or undesirable non-native plant species for purposes of open space site selection or future grassland management planning.

More detailed grassland studies conducted by Natural Resource Consultants (NRC) in the spring of 2006 were designed to determine the distribution and composition of grasslands on the site using statistical methods to model the distribution and absolute cover of native perennial bunchgrasses (NPBG) in the Project site (NRC 2006a, 2007b). Absolute cover is the measure of the total plant cover (often expressed for each species) over a standardized area and includes an estimate of bare ground. Absolute cover is the primary means used to collect field data and is the most accurate way to express the field data and used for statistical analysis and scientific reporting. Additionally, because NPBG was found to be highly correlated with diversity and native species cover, this study provides information pertaining to the diversity and “nativeness”, defined as the cover of all native species relative to all cover, of these grasslands. A Scientific Review Committee monitored all aspects of this study including study design, data acquisition, and statistical analyses. The independent Scientific Review Committee consisted of three members:

1. Dennis Murphy, PhD, Director of the Graduate Program in Ecology, Evolution, and Conservation Biology at the University of Nevada, Reno, provided in depth review of the grassland studies and other aspects of the Project.
2. Bruce Pavlik, PhD, Professor of Biology at Mills College, provided botanical expertise on development of methods and analysis of results of all grassland and wildflower field studies.
3. Michael N. Josselyn, PhD provided assistance in study method design for grassland and wetland restoration and reviewed other aspects of the Project. Dr. Josselyn is a recognized expert in the field and has served on national advisory committees to the U.S. Army Corps of Engineers (USACE), the U.S. Environmental Protection Agency (USEPA), the U.S. Fish and Wildlife Service (USFWS), the National Oceanic and Atmospheric Administration (NOAA), and the National Wetlands Technical Council in the development of federal wetland policy and research.

The study involved detailed grassland sampling procedures and utilized site-specific geographic information system (GIS) modeling to complete a Project-wide mapping of grassland communities. Surveyors collected spatially explicit botanical data that described the species diversity and percent cover of all native and non-native plants at over 300 precise locations on the Project site. The locations sampled were distributed randomly over the entire Project site. The analysis produced a quantitative assessment of the grassland areas

and provided a detailed characterization of various non-native and native grassland vegetation, including native plant species richness and abundance (NRC 2007b, 2007c, 2006a).

The study was based on over 320 samples, each containing 100 data points, during approximately 150 man-hours of field work that was conducted during the height of plant cover in the spring of 2006. The study was conducted in conjunction with GIS analysis using a digital elevation model. Field data were related to various parameters and indices that affect the distribution of native grass species, as first noted in the Vollmar Consulting 2004 study. Statistical analyses were undertaken to develop a best fit multiple regression to predict NPBG distribution. The modeling uses the relationships between several topographic variables (i.e., slope, terrain curvature, terrain complexity, slope position) and NPBG absolute cover. This information provided the basis for a GIS model that predicts the distribution of native grasslands over the entire site. To examine variability of the grassland sampling, 96 plots from the 2006 study were resampled in April 2007. Using a simplified classification system of two categories (Category A: <10 percent, Category B: ≥10 percent), the overall prediction success was 69 percent, which is considered to be a high level of accuracy (NRC 2007c). NRC also used the data to investigate the distribution of other native and non-native plant species relative to native perennial bunchgrass cover. These studies provide the map predicting the distribution of native perennial grasslands. This map was used to assess impacts associated with the Project. The most recent grassland study report prepared by NRC summarizes 2006 to 2008 data collection and predictive model analysis, including analysis of variance (ANOVA) with repeated measures and Pearson's correlation coefficient (ρ), and all statistical analyses performed for regression and general linear procedures using SAS/STAT® 2003 software (NRC 2008b). The model has also been applied to assess grasslands in the proposed mitigation sites described in Section 5.7.7 below.

Off-Site Areas

BonTerra Biologists Andrea Edwards and Rebecca Tyra performed a biological constraints survey and mapped the vegetation on a portion of the proposed off-site well locations in Kern County on April 21, 2011. As shown in Exhibit 4-25, Centennial Project – Off-Site Project Components, the off-site wells are located between just west of 300th Street West and just west of 290th Street West. On August 4, 2015, BonTerra Psomas Biologist Sarah Thomas mapped the previously unmapped portions of the off-site well locations and additional off-site features such as utilities; the water line and access road to the Water Treatment Facility; the alternative water line and access road to the Water Treatment Facility; the bridge locations; and the utilities and intersection improvements along SR-138. These additional off-site areas are shown on Exhibit 4-25 and are located along SR-138, the West Branch California Aqueduct, and along 300th Street West.

Vegetation was mapped by utilizing aerial photographs printed at a scale of 1 inch equals 200 feet. All accessible dirt roads were driven, and biologists also hiked to inaccessible areas and vantage points located throughout the area. Nomenclature generally follows that of List of Vegetation Alliances and Associations, Vegetation Classification and Mapping Program (CDFG 2010). The minimum mapping unit was set at approximately one acre, and patches of

vegetation smaller than this were generally not mapped except for observed seeps and ephemeral ponds.

Oak Tree Surveys

An initial oak tree survey was completed in 2001 by Registered Consulting Arborist Robert W. Wallace of Tree Life Concern (Tree Life Concern 2003). Revisions to the Project footprint boundary required subsequent oak tree surveys by Tree Life Concern in 2007 (Tree Life Concern 2008) and BonTerra Consulting in 2009 (BonTerra Consulting 2009a). Each oak tree survey considered all oak trees that qualified under the County of Los Angeles Oak Tree Ordinance (CLAOTO) that are located within the identified Project grading boundary, as well as a 200-foot buffer area outside the grading boundary. The surveys included the identification, tagging, measurement of trunk diameter at breast height (dbh), and health characterization of each qualifying tree and followed all survey protocols described in CLAOTO.

Jurisdictional Delineations

A preliminary planning-level jurisdictional delineation of waters and streambeds covering most of the Project site was conducted by Impact Sciences in 2001 (Impact Sciences 2002b). In 2005 and 2006, a detailed Project-level jurisdictional delineation of the entire Project site was conducted by Glenn Lukos Associates Biologists Ingrid Chlup and Dave Moskovitz (Glenn Lukos Associates 2006c). Surveys were conducted in 2005 on October 10, 13, 19–21, and 26–27 and in 2006 on January 11 and 20; February 3 and 16; March 2, 15, and 29; April 14 and 25; May 8, 10, 15, 22–23, and 30–31; June 5–7; and July 5. Suspected jurisdictional areas were field-checked for indicators of an ordinary high water mark (OHWM); presence of definable channels; potential wetland vegetation; soils and hydrology; and potential riparian vegetation. In some cases, the Impact Sciences mapped limits were refined and, where appropriate, field measurements were provided where previously not recorded. Suspected wetland areas on the site were evaluated using the method set forth in USACE's *1987 Wetland Delineation Manual* (Environmental Laboratory 1987). When the distinction between channel bank and non-jurisdictional uplands was clearly visible on an aerial photograph, the jurisdictional limits were digitized based on the aerial image. When they were not clearly visible on the photograph, field measurements were recorded on the photograph or on a Trimble GeoXT Global Positioning System (GPS) data logger and later used to digitize the limits (GLA 2006c). In addition, a preliminary jurisdictional delineation was also conducted in proposed off-site mitigation areas as discussed further in Section 5.7.7 below.

On January 18, February 1 and 14, and December 9, 2008, the site was re-evaluated by Glenn Lukos Associates in accordance with the 2006 *Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Supplement* (Arid West Supplement) as well as the May 30, 2007 USACE jurisdictional guidance document entitled *U.S. Army Corps of Engineers Jurisdictional Determination Form Instruction Guidebook*.

BonTerra Psomas Senior Regulatory Specialist David Hughes, Biological Resources Manager Marc Blain, Biologist Nathan Moffett, and Biologist Sarah Thomas performed a survey of the Project site on July 9 and 10, 2015 to (1) identify and document jurisdictional waters in a

newly included parcel to the Project site and (2) determine if any changed conditions were evident since the previous delineation field surveys were conducted in 2006 and 2008. The results of the previous delineation surveys were taken into the field and various drainages were measured to determine if any significant changes in site conditions could be detected.

Wetland Functional Assessment

A wetland functional assessment of jurisdictional areas was conducted by Glenn Lukos Associates in order to characterize and evaluate the functions of the site's drainages and riparian habitats. Glenn Lukos Associates created a Hybrid Functional Assessment (HFA) method by combining components of three different functional assessment methods (the Hydrogeomorphic [HGM] approach, the Landscape Level Functional Assessment, and CRAM). These three methods were adapted for use to perform a functional assessment at the Project site (GLA 2006b).

At the time the combined functional assessment was developed, CRAM was a method still in the process of development. Since that time, CRAM has become a widely accepted functional assessment by all regulatory agencies. For this reason and because the combined functional assessment approach was never formally approved by the regulatory agencies, BonTerra Psomas utilized the observations and findings of the Glenn Lukos Associates survey and combined them the observations during the 2015 field surveys to perform a CRAM evaluation of the various jurisdictional features on the site.

Wildlife Surveys

Methods used for the various wildlife surveys shown in Table 5.7-2 are described in focused survey reports included in Appendix 5.7-B. Additional surveys were general in nature, were conducted concurrently with other focused surveys, and consisted of recording observations of wildlife and potential wildlife habitat areas.

Special Status Species Surveys

Special Status Plants

Focused surveys for special status plant species were conducted throughout the Project site during April 1–11 and June 23–27, 2003, by biologists John Vollmar, John Hale, Vir McCoy, Michele Disney, and Shannon Hickey (Vollmar Consulting 2004). Additional focused botanical surveys were conducted during April 14–24 and June 10–13, 2004, by Vollmar Consulting Biologists Mr. Vollmar, Jon Kelsey, Ms. Hickey, Gretchen Vos, and Mr. McCoy (Vollmar Consulting 2004). Reconnaissance-level surveys were conducted using all-terrain vehicles; areas identified as having the ability to potentially support special status species were surveyed on foot. Surveys were floristic in nature. Species that could not be identified in the field were collected and identified using field manuals. Occurrences of special status species were mapped using a GPS unit (GeoXT). The surveys were comprehensive, but did not represent complete presence/absence surveys of the entire Project site (Vollmar Consulting 2004).

In 2006, NRC conducted special status plant surveys across the site (NRC 2006b). The surveys occurred from April 10 to 28 and on June 1, 2006, by Biologists Andrew Sanders,

Kemp Anderson, Kelly Herbinson, Kip Kermoian, Mary Ann Hasskamp, Michael Honer, Patty Kermoian, Russell Kokx, Rachel Woodard, and Teresa Salvato. Survey areas included all suitable habitats for special status plant species with special emphasis on locations and habitats where they had been recorded in previous years, and areas that may experience seasonal ponding of water.

In 2008, NRC repeated special status plant surveys across the site and also in the North and South Mitigation Areas (NRC 2008a). The surveys occurred from April 3 to 29, 2008, by Biologists Mr. Sanders, Caroline Inwood, David Hadersbeck, Kathy Baumberger, Mitchell Provance, Renee Galeano-Popp, Stephen Reynolds, and Ms. Salvato. Survey areas again included all suitable habitats for special status plant species with special emphasis on locations and habitats where they had been recorded in previous years and areas that may experience seasonal ponding of water.

In 2009, BonTerra conducted special status plant surveys in the California Department of Transportation (Caltrans) right-of-way survey area for all special status plant species with potential to occur based on the presence of suitable habitat; in addition, on-site areas with chaparral were surveyed for Tehachapi buckwheat, a species that was described to science in 2006, and therefore not known to exist when previous on-site surveys were conducted (BonTerra Consulting 2009b). Special status plant surveys were conducted for the Caltrans right-of-way survey area on April 16 and June 11, 2009, by BonTerra Consulting Botanists Ms. Edwards and Jeff Crain. Surveys were conducted for the Tehachapi buckwheat survey area on June 10, 2009, by Mr. Crain and Ecologist David Hughes.

In 2015, BonTerra Psomas conducted focused special status plant surveys within the Project impact footprint (BonTerra Psomas 2015b). The surveys occurred from March 23–April 5 and from May 25–June 5, 2015; surveys were led by BonTerra Psomas Botanist Jordan Zylstra, with support from BonTerra Psomas and Consulting Biologists including Chez Brungraber, Griffin Brungraber, Ian Cain, Michelle Cloud-Hughes, Michael Couffer, Sandy Leatherman, Kier Morse, Jennifer Pareti, Allison Rudalevige, Cecile Shohet, Sarah Thomas, and Cedrick Villaseñor. The entire survey area provided potentially suitable habitat for one or more special status plant species, so a systematic survey using transects spaced 130 feet apart was conducted throughout the survey area. Based on input from Centennial Founders LLC, the round two (late spring/summer) survey was conducted using a larger disturbance area and a buffer of 100 feet was surveyed. Areas containing less than a five-percent slope and that were not associated with a drainage feature were not surveyed during the round two survey because of a lack of potential for special status plants to occur in those areas during that time of year. These areas were generally in the northeastern portion of the site. Transects spaced 130 feet apart were surveyed throughout the rest of the survey area. The only small portion of the round one (early spring) and round two survey areas where transects were not feasible due to topography was the chaparral habitat in the far southwestern corner, directly north of SR-138. Binoculars were used in these areas when necessary. All plant species observed were recorded in field notes. Plant species were identified in the field or collected for later identification. Plants were identified to the taxonomic level necessary to determine whether or not they were special status species. Plants were identified using taxonomic keys, descriptions, and illustrations in Baldwin et al.

(2012), Hickman (1993), and Munz (1974). Taxonomy and nomenclature follows the Jepson Herbarium (2015) and Baldwin et al. (2012) for scientific and common names.

Special Status Wildlife

As previously mentioned, methods used for the various wildlife surveys listed in Table 5.7-2 are described in the focused survey reports included in Appendix 5.7-B. Some surveys were general in nature, conducted concurrently with other focused surveys, and consisted of recording observations of wildlife and potential wildlife habitat areas.

Experts Consulted

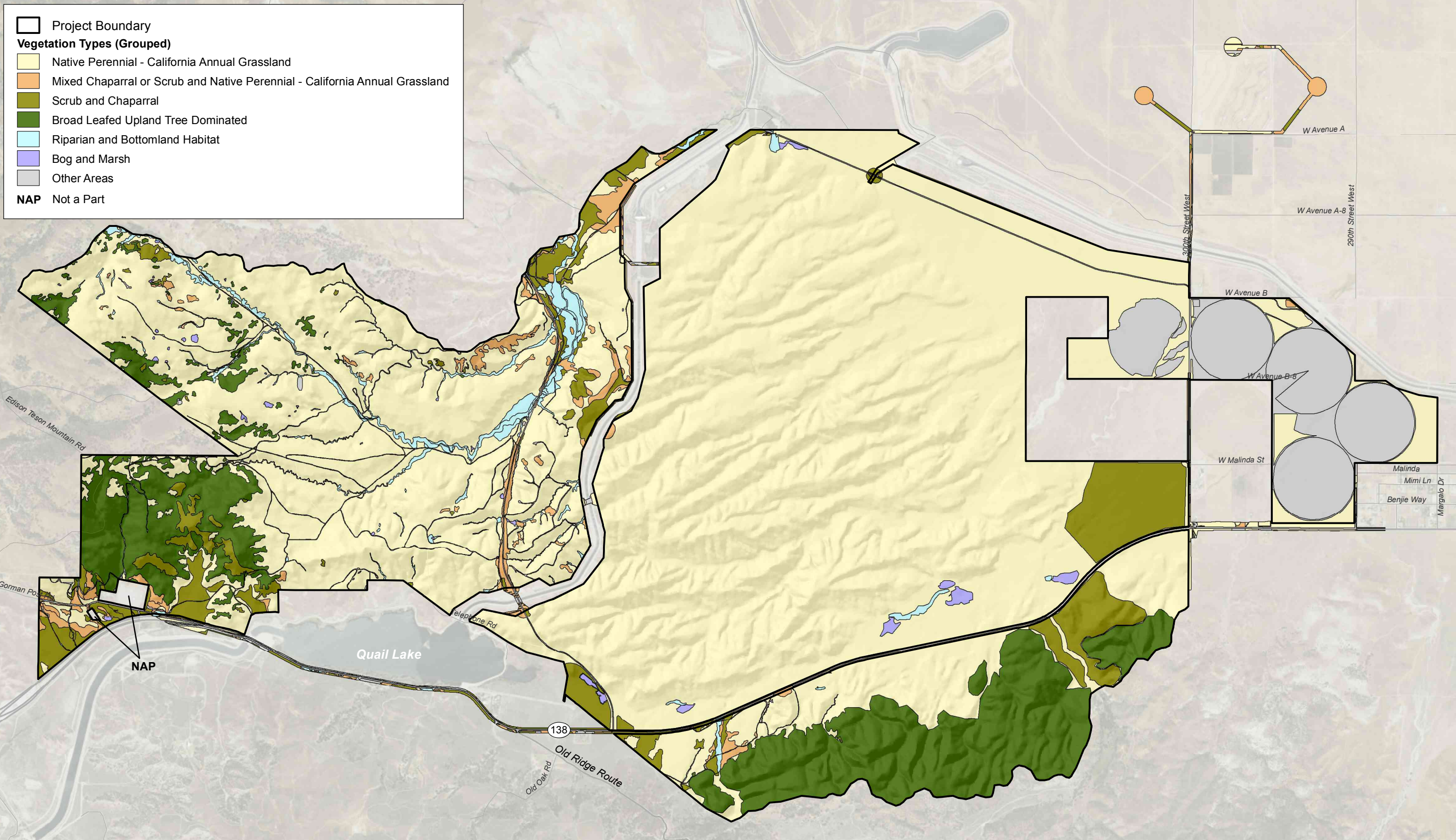
Independent scientific reviews of many field survey methods and results were conducted by Dennis Murphy, PhD, Director of the Graduate Program in Ecology, Evolution, and Conservation Biology at the University of Nevada, Reno and Daniel Dawson, Director of the Sierra Nevada Aquatic Research Laboratory–Valentine Camp at the University of California, Santa Barbara. The reviews consisted of an evaluation of the various available reports along with site tours and review of documents describing regional resources. Additional assistance with grassland studies was provided by Bruce Pavlik, PhD of Mills College.

Vegetation Types

The Project site is located near the convergence of three major geographical regions: the Mojave Desert, the San Gabriel Mountains, and the Tehachapi Foothills; this position has resulted in high vegetation type diversity throughout the area (England and Nelson Environmental Consultants 1976). Five main groups of vegetation types were identified on the Project site: (1) scrub and chaparral; (2) broad-leafed upland tree-dominated; (3) riparian and bottomland habitat; (4) bog and marsh; and (5) grass- and herb-dominated; (6) mixed chaparral or scrub and grassland (7) and other areas. The predominant vegetation type is grassland. Wildflower fields (dominated by annual forbs) occur in varying concentrations and are considered a subset of the grassland vegetation type. The grouped vegetation types are shown in Exhibit 5.7-1, Grouped Vegetation Types. Due to the large size of the site, detailed maps showing all vegetation types on the Project site are included separately as Exhibit 5.7-17, Detailed Vegetation Map.

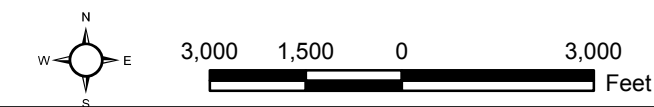
Table 5.7-3, Vegetation Type Acreages, lists the acreage the vegetation types and other areas that exist on the Project site and in off-site impact areas. The agricultural, developed, and mixed oak woodland areas identified by BonTerra are also included below.

Detailed descriptions of each vegetation type are provided below. The CNDDDB numeric code most closely associated with each vegetation type is indicated in parenthesis following the vegetation type title; where a specific numeric code for a described vegetation type is not designated in the CNDDDB classification system, the most appropriate general code is shown. A list of all plant species reported from within the Project's study area is included in Appendix 5.7-A (Plant and Wildlife Compendia).



Grouped Vegetation Types
Centennial Project

Exhibit 5.7-1



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Scrub and Chaparral Vegetation Types

Bladderpod Scrub (30.000.00)

This vegetation type is dominated by bladderpod (*Peritoma arborea*). It occurs in only one small area, on a northeast-facing slope in the northwestern portion of the Project site. Other species commonly found in this vegetation type include California buckwheat (*Eriogonum fasciculatum* var. *polifolium*), our Lord's candle (*Hesperoyucca whipplei*), and interior goldenbush (*Ericameria linearifolia*). This vegetation type most closely resembles Sawyer and Keeler-Wolf's (1995) description of the bladderpod-California ephedra-narrowleaf goldenbush series and Twisselmann and Moe's (1995) upper Sonoran subshrub plant association.

Bush Lupine Scrub (30.000.00)

This vegetation type is dominated by mountain bush lupine (*Lupinus excubitus* var. *austromontanus*). It occurs in only one small area, on a northwest-facing slope in the northeastern portion west of the Aqueduct. Other species commonly found in this vegetation type include California buckwheat, our Lord's candle, and interior goldenbush. This vegetation type most closely resembles Twisselmann and Moe's (1995) arid shrub plant association. A corresponding vegetation type for mountain bush lupine scrub is not described in Sawyer and Keeler-Wolf (1995).

California Buckwheat Scrub (32.040.00)

This vegetation type is dominated by California buckwheat. It generally occurs on slopes, mainly in the southwestern portion of the Project site, west of the Aqueduct. Other species commonly found in this vegetation type include our Lord's candle and interior goldenbush. This vegetation type most closely resembles Sawyer and Keeler-Wolf's (1995) description of the California buckwheat series and Twisselmann and Moe's (1995) upper Sonoran subshrub plant association.

California Buckwheat Scrub/Yucca Scrub (32.040.00)

This vegetation type is a mixed vegetation type that has characteristics of both California buckwheat scrub and yucca scrub. These two vegetation types are present in approximately equal proportions within the mixed vegetation type. This vegetation type most closely resembles Sawyer and Keeler-Wolf's (1995) description of the California buckwheat series and Twisselmann and Moe's (1995) upper Sonoran subshrub plant association.

**TABLE 5.7-3
VEGETATION TYPE ACREAGES**

Vegetation Type	On-Site Areas (acres)	Off-Site Areas^a (acres)	Total Existing (acres)
Scrub and Chaparral Vegetation Types			
Bladderpod Scrub	0.7	–	0.7
Bush Lupine Scrub	0.4	–	0.4
California Buckwheat Scrub	12.8	–	12.8
California Buckwheat Scrub/Yucca Scrub	1.9	–	1.9
California Juniper/California Buckwheat Scrub	4.6	–	4.6
Chamise/Bigberry Manzanita Chaparral	40.1	–	40.1
Coffeeberry Scrub	11.9	–	11.9
Goldenbush Scrub	7.7	–	7.7
Great Basin Scrub ^a	360.3	0.2	360.5
Rabbitbrush Scrub	222.9	30.5	253.4
Wand Buckwheat Scrub	0.6	–	0.6
Wright's Buckwheat Scrub*	12.2	–	12.2
Yucca Scrub	8.9	–	8.9
<i>Group Total</i>	<i>685.1</i>	<i>30.7</i>	<i>715.8</i>
Broad Leafed Upland Tree-Dominated Vegetation Type			
Mixed Oak Woodland*	1,370.8	–	1,370.8
<i>Group Total</i>	<i>1,370.8</i>	<i>–</i>	<i>1,370.8</i>
Riparian and Bottomland Vegetation Types			
Alluvial Scrub*	5.2	0.4	5.6
Cottonwood Woodland*	0.1	–	0.1
Riparian Herb*	52.7	0.6	53.3
Rush Riparian Grassland*	48.1	0.8	48.9
Southern Arroyo Willow Riparian ^{b*}	8.6	–	8.6
Southern Cottonwood Willow Woodland ^{b*}	4.0	–	4.0
Southern Willow Scrub*	12.8	0.3	13.1
Unvegetated Wash*	25.5	0.2	25.7
Valley Oak Riparian Woodland*	12.1	–	12.1
Willow Riparian Forest*	15.1	–	15.1
Willow Riparian Woodland*	8.0	0.3	8.3
<i>Group Total</i>	<i>192.1</i>	<i>2.6</i>	<i>194.7</i>
Bog and Marsh Vegetation Types			
Alkali Meadow ^{b*}	3.7	–	3.7
Baltic Rush ^{b*}	21.5	–	21.5
Coastal and Valley Freshwater Marsh ^{b*}	2.4	0.1	2.5
Seeps and Ephemeral Ponds*	8.0	0.1	8.0
<i>Group Total</i>	<i>35.6</i>	<i>0.1</i>	<i>35.7</i>

**TABLE 5.7-3
VEGETATION TYPE ACREAGES**

Vegetation Type	On-Site Areas (acres)	Off-Site Areas ^a (acres)	Total Existing (acres)
Grass- and Herb-Dominated Vegetation Types^c			
Native Perennial Grassland*/California Annual Grassland	9,079.9	81.4	9,161.4
<i>Group Total</i>	<i>9,079.9</i>	<i>81.4</i>	<i>9,161.4</i>
Mixed Chaparral or Scrub and Grassland Vegetation Types^c			
Bush Lupine Scrub/Native Perennial Grassland*/California Annual Grassland	1.4	-	1.4
California Buckwheat Scrub/Native Perennial Grassland*/California Annual Grassland	7.0	-	7.0
Goldenbush Scrub/Native Perennial Grassland*/California Annual Grassland	8.3	-	8.3
Rabbitbrush Scrub/Native Perennial Grassland*/California Annual Grassland	131.0	41.3	172.3
Wand Buckwheat Scrub/Native Perennial Grassland*/California Annual Grassland	5.4	-	5.4
Wright's Buckwheat Scrub*/Native Perennial Grassland*/California Annual Grassland	4.3	-	4.3
Yucca Scrub/Native Perennial Grassland*/California Annual Grassland	24.3	-	24.3
<i>Group Total</i>	<i>181.8</i>	<i>41.3</i>	<i>223.1</i>
Other Areas			
Agricultural	602.8	-	602.8
Developed	26.4	35.0	61.4
Developed/Disturbed	1.7	4.5	6.2
Disturbed	141.5	27.5	169.0
Disturbed (Landslide)	2.4	-	2.4
Open Water/Developed	-	1.5	1.5
Ornamental	-	2.0	2.0
<i>Group Total</i>	<i>774.7</i>	<i>70.7</i>	<i>845.4</i>
GRAND TOTAL	12,320.0	226.8	12,546.8
<p>^a Off-site areas include all areas outside the Project impact boundary that would be impacted by Project activities.</p> <p>^b Vegetation type identified by Impact Sciences (2003).</p> <p>^c Wildflower fields are not specifically delineated but are expected to occur scattered throughout the grassland vegetation types.</p> <p>* Special status vegetation type.</p> <p>NOTE: A cell with “-” indicates that there is no value, while a cell with “0.0” indicates that there is a value but that it is too small to round up to one-tenth of an acre. Vegetation mapping within areas east of the Aqueduct and south of the SR-138 (except for the 262-acre portion) was conducted at a more general programmatic level, while mapping in areas west of the Aqueduct and the 262-acre portion south of SR-138 was conducted at a Project level with greater detail. Also, due to rounding error (a miscalculation that results from rounding off numbers to a convenient number of decimals), figures may not add exactly to total shown.</p>			

California Juniper/California Buckwheat Scrub (89.100.10)

This vegetation type is dominated by California juniper (*Juniperus californica*) and California buckwheat. It generally occurs on south- and west-facing slopes in the southwestern portion of the site west of the Aqueduct. Other species commonly found in this vegetation type include our Lord's candle. This vegetation type most closely resembles Sawyer and Keeler-Wolf's (1995) description of the California juniper and California buckwheat series and Twisselmann and Moe's (1995) upper Sonoran subshrub plant association.

Chamise/Bigberry Manzanita Chaparral (37.101.01)

This vegetation type is dominated by chamise (*Adenostoma fasciculatum*) and bigberry manzanita (*Arctostaphylos glauca*). It generally occurs on hilltops and south-facing slopes in the southwestern portion of the site west of the Aqueduct. Other species commonly found in this vegetation type include our Lord's candle, California buckwheat, California juniper, and occasional oak species (*Quercus* spp.). This vegetation type most closely resembles Sawyer and Keeler-Wolf's (1995) description of the chamise-bigberry manzanita series and Twisselmann and Moe's (1995) chaparral plant association.

Coffeeberry Scrub (37.000.00)

This vegetation type is dominated by hoary coffeeberry (*Frangula tomentella* ssp. *cuspidata*) and oak gooseberry (*Ribes quercetorum*). It generally occurs on north- and northeast-facing slopes in the northwestern portion of the site west of the Aqueduct. Other species commonly found in this vegetation type include Mojave woollystar (*Eriastrum densifolium* ssp. *mohavense*), sand wash butterweed (*Senecio flaccidus*), and scarlet bugler (*Penstemon centranthifolius*). This vegetation type most closely resembles Twisselmann and Moe's (1995) chaparral plant association. A corresponding vegetation type for coffeeberry scrub is not described in Sawyer and Keeler-Wolf (1995).

Goldenbush Scrub (30.000.00)

This vegetation type is dominated by interior goldenbush. It generally occurs on slopes that are located mainly in the southwestern portion of the site west of the Aqueduct. Other species commonly found in this vegetation type include California buckwheat and our Lord's candle. This vegetation type most closely resembles Sawyer and Keeler-Wolf's (1995) description of the bladderpod-California ephedra-narrowleaf goldenbush series and Twisselmann and Moe's (1995) upper Sonoran subshrub plant association.

Great Basin Scrub (35.000.00)

Great Basin scrub is dominated by rubber rabbitbrush (*Ericameria nauseosa*). This vegetation type is particularly common in areas immediately adjacent to SR-138. This vegetation type most closely resembles Sawyer and Keeler-Wolf's (1995) description of the rubber rabbitbrush series and Twisselmann and Moe's (1995) arid shrub plant association.

Rabbitbrush Scrub (35.300.00)

This vegetation type is dominated by rubber rabbitbrush. It generally occurs in bottomlands and on gentle slopes throughout the site west of the Aqueduct. Other species commonly

found in this vegetation type include California aster (*Corethrogyne filaginifolia*), virgate buckwheat (*Eriogonum roseum*), golden aster (*Heterotheca sessiliflora*), interior goldenbush, bladderpod, and black mustard (*Brassica nigra*). This vegetation type most closely resembles Sawyer and Keeler-Wolf's (1995) description of the rubber rabbitbrush series and Twisselmann and Moe's (1995) arid shrub plant association.

Wand Buckwheat Scrub (30.000.00)

This vegetation type is dominated by wand buckwheat (*Eriogonum elongatum*). It generally occurs on slopes, mainly in the southwestern portion of the site west of the Aqueduct. Other species commonly found in this vegetation type include California buckwheat, our Lord's candle, and interior goldenbush. This vegetation type most closely resembles Twisselmann and Moe's (1995) upper Sonoran subshrub plant association. A corresponding vegetation type for wand buckwheat scrub is not described in Sawyer and Keeler-Wolf (1995).

Wright's Buckwheat Scrub (32.041.00)

This special status vegetation type is dominated by Wright's buckwheat (*Eriogonum wrightii* var. *trachygonum*). It occurs on a hilltop and west-facing slope near the eastern edge of the site west of the Aqueduct. Other species commonly found in this vegetation type include needlegrass, Sandberg bluegrass (*Poa secunda*), mountain bush lupine, and interior goldenbush. This vegetation type most closely resembles Twisselmann and Moe's (1995) upper Sonoran subshrub plant association. A corresponding vegetation type for Wright's buckwheat scrub is not described in Sawyer and Keeler-Wolf (1995).

Yucca Scrub (30.000.00)

This vegetation type is dominated by our Lord's candle. It generally occurs on south-facing slopes throughout the site west of the Aqueduct. Other species commonly found in this vegetation type include California buckwheat and interior goldenbush. This vegetation type most closely resembles Twisselmann and Moe's (1995) upper Sonoran subshrub plant association. A corresponding vegetation type for yucca scrub is not described in Sawyer and Keeler-Wolf (1995).

Broad Leafed Upland Tree-Dominated Vegetation Types

Mixed Oak Woodland (71.100.00)

Although the areas were originally mapped by Impact Sciences (2003) as scrub oak chaparral dominated by scrub oak (*Quercus berberidifolia*), field surveys conducted in October 2008 by BonTerra Consulting concluded that the hills south of SR-138 should be reclassified as mixed oak woodland. It generally occurs on slopes, mainly in the southwestern portion of the site, with additional areas present in the northwestern portion of the site. This special status vegetation type is dominated by blue oak, Tucker's oak, and interior live oak (*Quercus wislizenii*). Other species commonly found in this vegetation type include gray pine (*Pinus sabiniana*) and California juniper with a variable understory, including several shrub species such as California buckwheat and our Lord's candle. In addition, other oak species and hybrids occur in this vegetation type. On the lower, gentle slopes of the foothills, blue oak is dominant, while the steep upper slopes support a mixture

of the species mentioned above. This vegetation type most closely resembles Sawyer and Keeler-Wolf's (1995) description of the mixed oak series and Twisselmann and Moe's (1995) Douglas oak woodland plant association.

Riparian and Bottomland Vegetation Types

Alluvial Scrub (32.070.00)

This special status vegetation type is dominated by tarragon (*Artemisia dracunculus*) and rubber rabbitbrush. It occurs specifically along the north-south-trending drainage that crosses through the Project site south of SR-138. Other species commonly found in this vegetation type include scale-broom (*Lepidospartum squamatum*), Great Basin sagebrush (*Artemisia tridentata*), thick-leaf yerba santa (*Eriodictyon crassifolium*), annual bursage (*Ambrosia acanthicarpa*), California buckwheat, sand wash butterweed, and one-sided bluegrass. This vegetation type most closely resembles Sawyer and Keeler-Wolf's (1995) description of the scalebroom series and Twisselmann and Moe's (1995) arid shrub plant association.

Cottonwood Woodland (61.130.00)

This special status vegetation type is dominated by Fremont cottonwood trees (*Populus fremontii*). It occurs in one discrete location along the north-south-trending drainage at the northern border of the Project site just east of the California Aqueduct, and north of 300th Street West. Shrub cover is generally low due to closed cottonwood canopy. Various herbaceous species are commonly found in the understory such as broad-leaved peppergrass (*Lepidium latifolium*), common horseweed (*Erigeron canadensis*), and hoary nettle (*Urtica dioica* ssp. *holosericea*). This vegetation type most closely resembles Sawyer and Keeler-Wolf's (1995) description of the Fremont cottonwood series and Twisselmann and Moe's (1995) streambank plant association.

Riparian Herb (45.000.00)

This special status vegetation type is dominated by tarragon, western sunflower (*Helianthus annuus*), rushes (*Juncus* spp.), prickly lettuce (*Lactuca serriola*), dock (*Rumex* sp.), toad rush (*Juncus bufonius*), beardless wild-rye (*Elymus triticoides*), willow weed (*Polygonum lapathifolium*), cocklebur (*Xanthium strumarium*), and hoary nettle. It occurs along drainages throughout the site west of the Aqueduct. Other species commonly found in this vegetation type include water bentgrass (*Agrostis viridis*), annual beard grass (*Polypogon monspeliensis*), seep monkeyflower (*Mimulus guttatus*), wreath plant (*Stephanomeria* sp.), hairgrass (*Deschampsia* sp.), salt heliotrope (*Heliotropium curassavicum*), broad-leaved peppergrass, white water cress (*Nasturtium officinale*), and common horseweed. This vegetation type most closely resembles Twisselmann and Moe's (1995) freshwater marsh plant association. A corresponding vegetation type for the riparian herb vegetation type is not described in Sawyer and Keeler-Wolf (1995).

Rush Riparian Grassland (45.560.00)

This special status vegetation type is dominated by rushes and beardless wild-rye. It generally occurs along lower Oso Creek. Other species commonly found in this vegetation

type include cocklebur, western sunflower, dock, toad rush, and narrow-leaved milkweed (*Asclepias fascicularis*). This vegetation type most closely resembles Sawyer and Keeler-Wolf's (1995) description of the creeping ryegrass and spikerush series and Twisselmann and Moe's (1995) freshwater marsh plant association.

Southern Arroyo Willow Riparian (61.201.02)

The southern arroyo willow riparian vegetation type is dominated by arroyo willow (*Salix lasiolepis*). Various segments of this special status vegetation type are found along several sections of drainages on the site. This vegetation type most closely resembles Sawyer and Keeler-Wolf's (1995) description of the mixed willow series and Twisselmann and Moe's (1995) streambank plant association.

Southern Cottonwood Willow Woodland (61.130.02)

The southern cottonwood willow woodland vegetation type is codominated by Fremont cottonwood (*Populus fremontii*) and arroyo willow. This type occurs in a few areas immediately north of SR-138. This vegetation most closely resembles Sawyer and Keeler-Wolf's (1995) description of the mixed willow series and Twisselmann and Moe's (1995) streambank plant association.

Southern Willow Scrub (61.208.00)

This special status vegetation type is dominated by arroyo willow, red willow (*Salix laevigata*), black willow (*Salix gooddingii*), and narrow-leaved willow (*Salix exigua*). It generally occurs along drainages west of the Aqueduct. Other species commonly found in this vegetation type include hoary nettle and western sunflower. This vegetation type most closely resembles Sawyer and Keeler-Wolf's (1995) description of the mixed willow series and Twisselmann and Moe's (1995) streambank plant association.

Unvegetated Wash (99.900.01)

Washes are the scoured beds of smaller channels and stream courses and were generally unvegetated at the time of the survey; however, some wash areas supported a sparse cover of riparian species such as western sunflower, cocklebur, and beardless wild-rye. Although scoured wash areas are not a vegetation type, they are included on the vegetation map because they are naturally occurring features of drainages.

Valley Oak Riparian Woodland (74.040.07)

This special status vegetation type is dominated by valley oak (*Quercus lobata*) and occurs along upper Oso Creek. Other species commonly found in this vegetation type include arroyo willow, red willow, black willow, narrow-leaved willow, and willow weed. This vegetation type most closely resembles Sawyer and Keeler-Wolf's (1995) description of the valley oak series and Twisselmann and Moe's (1995) streambank plant association.

Willow Riparian Forest and Willow Riparian Woodland (61.200.00)

These special status vegetation types are dominated by arroyo willow, red willow, and black willow. The tree canopy of the willow riparian forest is generally considered to be closed

(e.g., 80 percent cover or greater) compared to the more open canopy of willow riparian woodland (e.g., 60 to 80 percent cover). These vegetation types generally occur along drainages throughout the site west of the Aqueduct. Other species commonly found in these vegetation types include narrow-leaved willow, Fremont cottonwood, and hoary nettle. These vegetation types most closely resemble Sawyer and Keeler-Wolf's (1995) description of the mixed willow series and Twisselmann and Moe's (1995) streambank plant association.

Bog and Marsh Vegetation Types

Alkali Meadow (45.500.00)

The alkali meadow vegetation type is dominated by saltgrass (*Distichlis spicata*) and occurs only in one small area: an apparent borrow pit immediately west of the National Cement Plant Road; this location is in the southern portion of the Project site, just north of SR-138 (Impact Sciences 2003). This special status vegetation type most closely resembles Sawyer and Keeler-Wolf's (1995) description of the saltgrass series and Twisselmann and Moe's (1995) alkali sink plant association.

Baltic Rush (45.562.00)

The Baltic rush vegetation type is dominated by Baltic rush (*Juncus balticus*), giant wild rye (*Elymus condensatus*), and beardless wild-rye. This special status vegetation type occurs in the headwater seeps and adjacent to drainages throughout the area; it most closely resembles Sawyer and Keeler-Wolf's (1995) description of the creeping ryegrass and spikerush series and Twisselmann and Moe's (1995) freshwater marsh plant association.

Coastal and Valley Freshwater Marsh (52.100.01)

The coast and valley freshwater marsh vegetation type is dominated by Pacific mosquito fern (*Azolla filiculoides*) and water lentil/lesser duckweed (*Lemna minor*). This special status vegetation type occurs in a small pond adjacent to the northern property line and in the area to the east of the Aqueduct. This vegetation type most closely resembles Sawyer and Keeler-Wolf's (1995) description of the mosquito fern and duckweed series and Twisselmann and Moe's (1995) freshwater marsh plant association.

Seeps and Ephemeral Ponds (45.000.00)

Seeps and ephemeral ponds generally cover small areas on the site (i.e., less than one acre) and are scattered throughout the site west of the Aqueduct. This vegetation type is dominated by rushes, beardless wild-rye, western sunflower, dock, narrow-leaved milkweed, and hoary nettle. Other species commonly found in this vegetation type include mallow (*Malva* sp.), salt heliotrope, sedge (*Carex* sp.), spike rush (*Eleocharis* sp.), hairgrass, water lentil/lesser duckweed, cattail (*Typha* sp.), cocklebur, common horseweed, toad rush, and annual beard grass. At the time of the surveys, some ephemeral ponds consisted of only standing water and did not support any associated vegetation. This vegetation type most closely resembles Twisselmann and Moe's (1995) freshwater marsh plant association and Sawyer and Keeler-Wolf's (1995) creeping ryegrass and spikerush series.

Grass- and Herb-Dominated Vegetation Types

Native Perennial Grassland (41.100.00)/California Annual Grassland (42.040.00)

Grasslands are composed of a mix of two vegetation types: native perennial grassland and California annual (non-native dominated) grassland. Shrub and tree cover was less than 30 percent in these vegetation types. These two grassland types occur as a mosaic across the varied topography of the landscape and include intermixed, seasonal wildflower fields that vary in density from year to year. Wildflower fields are a component of the grasslands that are temporally visible depending chiefly on rainfall amounts and timing. The California annual grassland vegetation type is characterized by wild oats (*Avena* spp.), bromes (*Bromus* spp.), fescues (*Festuca* spp.), doveweed (*Croton setigerus*), and virgate buckwheat and often intergrades with native perennial grasslands or other vegetation types. Other species commonly found in this California annual grassland vegetation type are native and non-native forbs (herbaceous, non-grass species) including flax-flowered linanthus (*Linanthus liniflorus*), western sunflower, black mustard, shortpod mustard (*Hirschfeldia incana*), and filarees (*Erodium* spp.). The California annual grassland most closely resembles Sawyer and Keeler-Wolf's (1995) description of the California annual grassland series and Twisselmann and Moe's (1995) upper Sonoran grassland plant association.

The native perennial grassland vegetation type includes varying cover of perennial bunchgrasses (needlegrass and Sandberg bluegrass) and beardless wild-rye, a perennial rhizomatous species that occurs both adjacent to drainages and on slopes with other native perennial grasses. Native perennial grassland occurs often intergrades with California annual grasslands or other vegetation types. Other species commonly found in the native perennial grassland vegetation type include squirreltail (*Elymus* sp.), desert needlegrass (*Stipa speciosa*), locoweed (*Astragalus* sp.), California aster, golden aster, flax-flowered linanthus, wild oats, fescue, virgate buckwheat, doveweed, bromes, black mustard, shortpod mustard, and filarees. As noted above, native perennial bunchgrass cover varies substantially across the site. In addition, quality of perennial grassland, based on percentage native species cover and diversity, is positively correlated with the relative cover of native bunchgrass and with wildflower species cover. Species diversity appears to be associated with topography (which varies across the landscape, from slopes of all aspects to floodplains, ridges, and mesas) as suggested by the Vollmar Consulting (2004) grassland study and as found by NRC (NRC 2007a). Other trends and associations with abiotic elements, such as soil type and geology, are likely to be factors in determining the distribution and "quality" of native perennial grasslands on the site. Native perennial grassland most closely resembles Sawyer and Keeler-Wolf's (1995) description of the one-sided bluegrass and needlegrass series and Twisselmann and Moe's (1995) upper Sonoran grassland plant association. The native perennial grassland component of the grassland mosaic is a special status vegetation type.

Wildflowers are comprised of a large number of native forb species, including multiple species of lupine (*Lupinus* spp.), California poppy (*Eschscholzia californica*), California goldfields (*Lasthenia californica*), needle goldfields (*Lasthenia gracilis*), several species of fiddleneck (*Amsinckia* spp.), and owl's clover (*Castilleja exserta*). Wildflower fields occur throughout grasslands on the site, and botanical studies conducted over several years have shown that they are seasonal and intermixed with other native and non-native grassland

species. Wildflowers are typical for this type of vegetation, and their density varies from year to year. Abundance of wildflowers is influenced by multiple environmental factors such as rainfall amounts and rainfall timing.

***Mixed Chaparral or Scrub and Grassland (Native Perennial/California Annual)
Vegetation Types***

Mixed chaparral or scrub and grassland vegetation types are vegetation types that are composed of 30 to 60 percent cover of shrubs and 60 to 30 percent cover of grasses, as described previously in the methods description. Dominant species in these vegetation types include those described for the chaparral, scrub, or grassland vegetation types previously discussed. The mixed chaparral or scrub and grassland vegetation types found on the site west of the Aqueduct (and the 262-acre portion south of SR-138) include mountain bush lupine scrub/native perennial grassland/California annual grassland, California buckwheat scrub/native perennial grassland/California annual grassland, goldenbush scrub/native perennial grassland/California annual grassland, rabbitbrush scrub/native perennial grassland/California annual grassland, wand buckwheat scrub/native perennial grassland/California annual grassland, Wright's buckwheat scrub/native perennial grassland/California annual grassland, and yucca scrub/native perennial grassland/California annual grassland. Wright's buckwheat scrub is a special status vegetation type. Due to the native perennial component of the grassland mosaic, all the mixed chaparral or scrub and grassland vegetation types are special status vegetation types.

Other Areas

Agricultural

Agricultural areas are present on the Project site. Areas under regular irrigated cultivation are, in general, considered disturbed since they are actively managed and relatively lack of native plant species. The agricultural areas are located along the northeastern edge of the Project boundary. The acreage in agricultural use (602.76 acres, as mapped in 2007 and 2015) represents the approximate ground area covered by crops at the time the aerial photograph was taken (2007) or the survey was conducted (2015). The circular cultivated agricultural fields in the northeastern corner of the Project site is shown on Exhibit 5.7-1, Grouped Vegetation Types.

Developed

Using aerial photographs, the paved roadways in the Project site areas were first mapped as developed by BonTerra Consulting, then verified in subsequent site visits. These roads occupy approximately 41 acres.

Developed/Disturbed, Disturbed, and Disturbed (Landslide) Areas

Developed/disturbed, disturbed, and disturbed (landslide) areas occur where there is a mix of development (such as roads) and disturbed areas. Disturbed areas (such as dirt roads, cattle enclosure areas, and recent landslides) occur throughout the site. Disturbed areas generally lack of vegetation.

Open Water/Developed

Open water/developed areas represent portions of the project that cross the California Aqueduct. These areas occupy approximately 1.51 acres.

Ornamental

Areas mapped as ornamental on the Project site are generally associated with roadsides or abandoned cropland. Species consist of non-native trees such as fruit trees, cypress (*Cupressus* sp.) and pine trees (*Pinus* sp.).

Off-Site Project Feature Areas

Previously unmapped vegetation types and other areas in the off-site areas were delineated in March 2007 and October 2008 by BonTerra Consulting. Vegetation types present in the off-site areas include great basin scrub, rabbitbrush scrub, alluvial scrub, riparian herb, rush riparian grassland, southern willow scrub, unvegetated wash, willow riparian woodland, coastal and valley freshwater marsh, seeps and ephemeral ponds, native perennial grassland/California annual grassland, rabbitbrush scrub/native perennial grassland*/California annual grassland, developed, developed/disturbed, disturbed, open water/developed, and ornamental. These vegetation types and other areas are the same as those described above.

Results of Grassland Study

Grasslands in the region and on the Project site have been recognized as having native and non-native plant species composition of varying degrees. Defining native grasslands is more complicated than most vegetation types because the dominant species may be non-native, may be non-grass species, and may be seasonally variable. Furthermore, native grasslands have become rare statewide and are therefore considered sensitive. In an effort to better understand the composition and distribution of grasslands on the Project site so that an adequate assessment of impacts could be made, a series of studies were conducted over the course of many years. Initial field studies were conducted by Vollmar Consulting in 2003 and 2004 to describe the species composition of native perennial grasslands relative to different landscape positions (Vollmar Consulting 2004). The results of the studies indicate differences in species composition and distribution relative to landscape position as defined by slope, aspect, and elevational position. The results for cover on north- and south-facing slopes, floodplains, and ridge/terrace tops are summarized in Table 5.7-4, Summary of Results of the 2003–2004 Grassland Study. These results are summarized from descriptive statistics tables included in the study report (Vollmar Consulting 2004).

**TABLE 5.7-4
SUMMARY OF RESULTS OF 2003-2004 GRASSLAND STUDY**

Landscape Position	Native Perennial Bunch Grasses ^a	Native Perennial Sod Grasses ^a	Native Annual Grasses ^{a, b}	Non-Native Annual Grasses ^{a, b}	Native Forbs ^{a, c}	Non-Native Forbs ^{a, c}	Total ^a
2003 Data							
Disturbed alluvial plains	0.00	0.00	0.31	2.88	11.51	83.38	98.08
Floodplains	0.64	0.74	0.83	9.49	20.72	67.58	100.00
North-facing slopes	22.37	0.00	0.16	3.96	29.94	42.62	99.05
South-facing slopes	4.48	0.00	0.08	17.35	42.32	35.34	99.57
Terrace tops	16.09	0.00	0.00	5.69	35.29	42.93	100.00
Ridge tops	32.54	0.00	0.00	2.56	25.69	37.01	97.80
2004 Data							
Floodplain	2.45	6.55	N/A	32.70	N/A	N/A	41.70
North-facing Lower Concave	19.08	5.08	N/A	23.73	N/A	N/A	47.89
North-facing Lower Convex	23.00	2.11	N/A	15.74	N/A	N/A	40.85
North-facing Upper Concave	29.30	1.30	N/A	10.35	N/A	N/A	40.95
North-facing Upper Convex	33.31	0.97	N/A	6.28	N/A	N/A	40.56
South-facing Upper Convex	20.91	0.00	N/A	12.33	N/A	N/A	33.24
South-facing Upper Concave	9.67	0.28	N/A	27.56	N/A	N/A	37.51
South-facing Lower Convex	7.81	0.19	N/A	33.75	N/A	N/A	41.75
South-facing Lower Concave	4.97	0.00	N/A	31.16	N/A	N/A	36.13
Ridge tops	32.32	0.00	N/A	4.07	N/A	N/A	36.39
N/A: not applicable							
<p>^a All values are reported in percent relative cover.</p> <p>^b Separate mean cover values for native and non-native annual grasses were not given for the 2004 data; however, the annual grass cover values were almost exclusively non-native species. The values presented here as non-native cover for 2004 include minimal cover of a native annual grass species (0.25% cover in floodplain and 0.13% cover in south-facing lower convex slopes). No other native annual grass cover values were recorded for 2004.</p> <p>^c Mean cover values for forbs were not given for the 2004 data.</p>							
Source: Vollmar Consulting 2004.							

The 2003-2004 studies, which surveyed select locations with higher native grassland cover, found that the relative cover of native perennial bunchgrass species ranged from 19 to 33 percent on north-facing slopes and from 5 to 21 percent on south-facing slopes. The relative cover of native bunchgrasses was found to be low in floodplain areas (a range of 1 to 2 percent) and higher along ridge tops and terraces (a range of 16 to 33 percent). Data for

cover values on east- and west-facing slopes were not collected during the 2003–2004 grassland studies.

In general, differences in vegetative cover between north-slope and south-slope exposures are apparently due to the different amounts of solar energy the slopes receive. In the northern hemisphere, south-facing slopes receive the most energy, and are consequently hotter and drier than north-facing slopes; therefore, vegetative cover tends to be higher on north-facing slopes. Although the effect may not be as pronounced, west-facing slopes are generally warmer and drier than east-facing slopes (Smith 1996). Cover values on east-facing slopes, therefore, are expected to be higher than those on west-facing slopes.

As the results of the 2003–2004 grassland studies indicate, the density of native bunchgrasses is closely associated with the topography, which is variable throughout the Project site. Other factors that may contribute to the “quality” of native perennial grasslands, such as wildflower density, are expected to vary substantially and are likely also to depend on topography. The result of local topography, combined with effects of livestock and other disturbances, is a high degree of heterogeneity in the grassland vegetation types.

In an effort to substantiate the results of previous studies and to develop a better understanding of the relationships between grassland “quality” and abiotic factors, NRC completed an extensive grassland assessment in spring 2006 to determine the distribution and quality of native perennial grasslands within the grasslands (including both native and non-native grasslands) that had been previously identified on the site (NRC 2007b). For quality assurance purposes, NRC worked cooperatively with a designated Scientific Review Committee that monitored the study design, data acquisition, statistical analysis, and reporting.

Grassland quality was based on native perennial bunchgrass (NPBG) cover, a conventional metric of grassland quality in California. Percent canopy cover of plant species (e.g., native perennial grass, non-native annual grass, native annual forbs) was measured at over 300 grassland sampling locations. All NPBG cover values presented in the remainder of the Grassland Assessment section refer to absolute cover as used in the NRC grassland studies reports. These data were analyzed to create a predictive model describing the distribution of NPBG and to quantify relationships between NPBG and other vegetation guilds, species diversity, and other community characteristics (NRC 2007a, 2007b, 2007c, 2006a).

The resulting multiple linear regression was then used in conjunction with GIS analysis to generate a predictive map describing NPBG distribution and overall grassland quality. These results describe NPBG cover based on topographic variables including terrain curvature, a slope-aspect index, terrain complexity, easting, and the interaction between terrain curvature and easting. The term “easting” is a GIS term which refers to a rectangular (x, y) coordinate measurement of distance east from a north-south reference line, usually a meridian used as the axis of origin within a map zone or projection.

Predicted grassland quality was classified into four categories based on absolute cover ranges: NPBG with absolute cover of less than 4.99 percent, between 5.00 and 9.99 percent,

between 10.00 and 14.99 percent, and greater than 15.00 percent. Independent validation data collected in June 2006 supports the model's ability to predict NPBG cover values.

The NPBG model provides a reliable method for determining potential impacts to grassland communities on the site. When supplemented by field data, this information can also be effective in determining the value of on-site and off-site mitigation alternatives, the potential benefits of habitat restoration, and long-term management strategies. The grassland distribution in this study is based on absolute canopy cover as measured in April 2006 and identified the topographic and locational conditions that are likely to be important to the distribution of native grassland communities in general (NRC 2007b, 2007c, 2006a).

The regression analysis used to develop this model confirmed several observations about NPBG cover: (1) bunchgrass cover is positively associated with increasing landscape convexity (ridgetops); (2) bunchgrass cover is positively associated with increasing "easting" coordinates; and (3) the relationship between cover and landscape convexity is dependent upon easting. The most influential parameter in the model is convexity. Consequently, the map depicting predicted NPBG cover values is very similar to a map of topographic curvature with slight influence from easting, the slope-aspect illumination index, terrain roughness, and degree of slope (NRC 2007b, 2007c, 2006a).

Results of the data analysis match previous observations by Vollmar (2004) that NPBG cover was highest on ridgetops and decreased down slope towards valley floors; this relationship between convexity and NPBG cover may be indirectly related to the decreased soil depth and reduced productivity of soils found on ridgetops, as remnant stands of native grass on poor sites may exhibit some resistance to invasion of introduced species and historic agriculture and grazing operations (NRC 2007b). Also, NPBG diversity and quality were found to be the highest on steep slopes.

To explore the predictive capability of the 2006 NPBG model across years and subsequently refine and improve upon the existing model, NRC re-examined NPBG stands in 2007. In addition to validating the 2006 NPBG model, the 2007 assessment (1) examined correlations in NPBG cover and distribution between the 2006 and 2007 growing seasons; (2) determined the predictive capabilities and suitability of the 2006 NPBG model to predict NPBG cover in 2007 (with particular attention given to the relationship between NPBG cover and precipitation); and (3) proposed suggestions to improve upon limitations of the 2006 and 2007 models (NRC 2007b, 2007c).

A randomly chosen subset (approximately 30 percent) of the 2006 sampling points were used for 2007 sampling to investigate between-year variation in NPBG cover. The degree of classification error arising from the 2006 NPBG model was examined by comparing the observed NPBG cover class and the predicted NPBG cover class for each plot.

By classing absolute NPBG cover into four categories (Category 1: <5 percent, Category 2: 5 to <10 percent, Category 3: 10 to <15 percent, Category 4: ≥15 percent), the 2006 NPBG model correctly predicted the cover class of 37 percent of all 2006 plots. After simplifying this classification system into two categories (Category A: <10 percent, Category B: ≥10 percent), overall prediction success increased to 69 percent. Regardless of the number

of classes used, the 2006 NPBG model overestimates the number of high quality (i.e., >10 percent NPBG) grassland plots by approximately 7 percent. This error is largely due to the overemphasis of slope position and, potentially, curvature in the model and can be minimized using a weighted regression model (NRC 2007b, 2007c).

For the four-class classification system, the 9,005 acres of grasslands present on the Project site and off-site impact areas (at that time) were distributed as follows: Category 1: 3,305 acres, Category 2: 3,315 acres, Category 3: 2,095 acres, and Category 4: 290 acres. A higher proportion of 2006 plots with low NPBG cover were classified correctly than were plots with high cover values; the number of plots predicted to have more than ten percent NPBG absolute cover were greater than the number of plots observed with greater than ten percent NPBG absolute cover. Regional rainfall in the 2007 growing season (2.5 inches) was significantly less than that in the 2006 growing season (13.6 inches) which also followed an above normal rainfall year in 2005. As a result NPBG cover was significantly less in 2007 due to the drier conditions which caused a decrease in total biomass production and an increased allocation of energy to roots and decreased stem production. NRC (2007c) states the following:

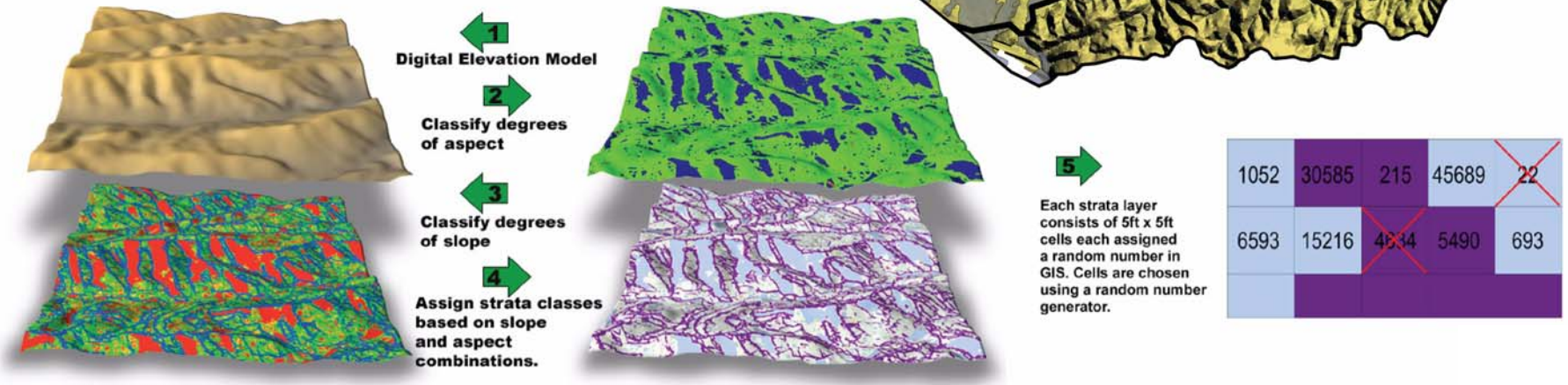
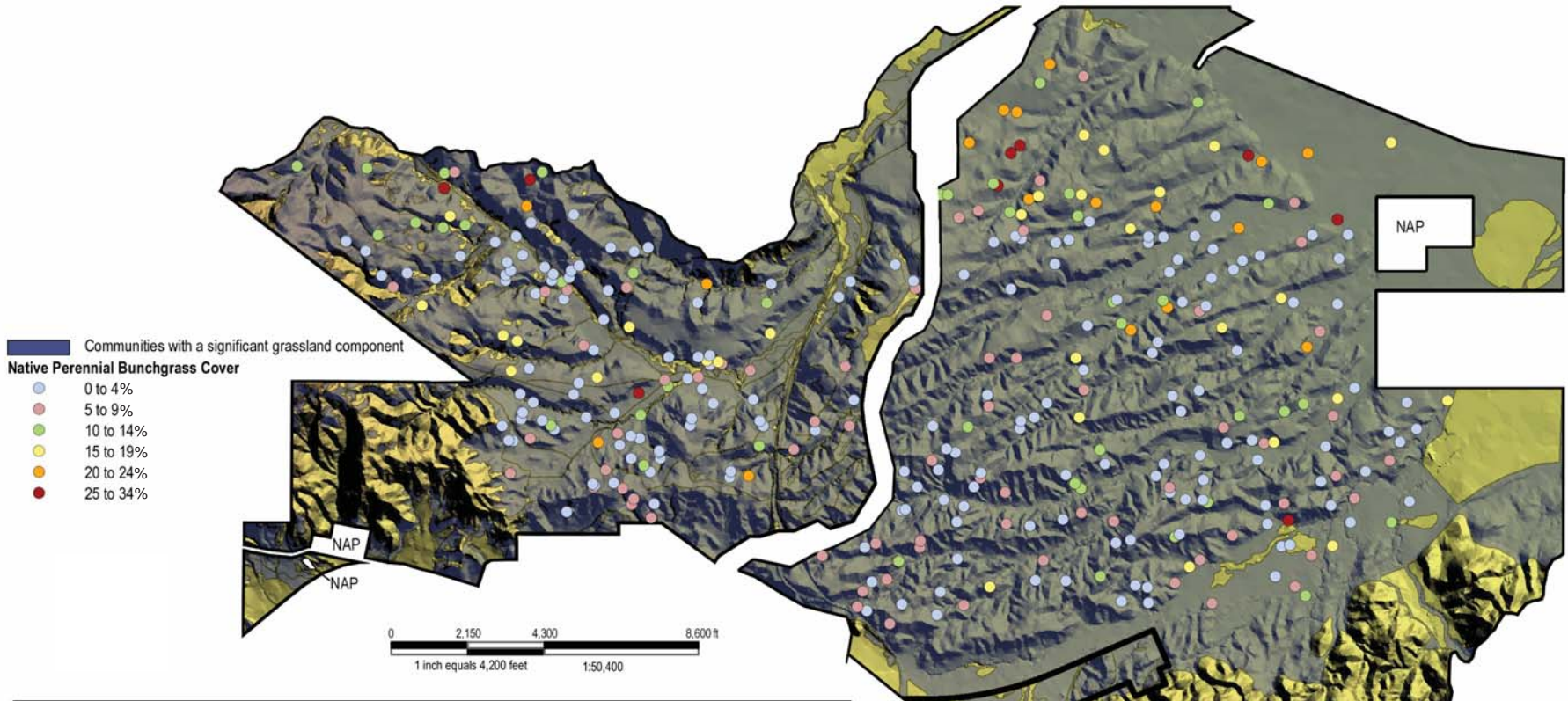
... because change in NPBG cover was greater along ridgetops than off of ridgetops it is suggested that high cover NPBG stands along ridgetops respond more strongly to drought. The data are consistent with the concept that ridgetops with high NPBG cover, reduced competition by non-native species, and shallow, low capacity soils are more responsive to variations in rainfall than are valley bottoms with deep, high-capacity soils and elevated competition with nonnative species.

NRC (2007c) also determined the following:

The results of this analysis also indicate that topographic variables can provide reliable predictions of NPBG distribution within a single year under normal, non-drought conditions. However, the utility of a single-year model is limited between years if environmental variables, including precipitation, are not constant ... of the two created models, the 2006 model is better than the 2007 model at predicting the typical distribution and quality of NPBG ... and this model can be improved to better predict across years by incorporating temporal variation of rainfall into the model.

Grassland field sampling point selection is depicted on Exhibit 5.7-2, Grassland Field Sampling Point Selection; a grassland category map is presented on Exhibit 5.7-3, Grassland Category Map; grassland sampling points are shown on Exhibit 5.7-4, Grassland Sampling Points; and points with predicted NPBG cover are included in Exhibit 5.7-5, Points with Predicted Native Perennial Bunchgrass (NPBG) Cover.³ The model was 69 percent accurate

³ Although the Project site boundary has expanded since the grassland studies were conducted, additional grassland studies were deemed unnecessary. The purpose of the studies was to develop a model for estimating native



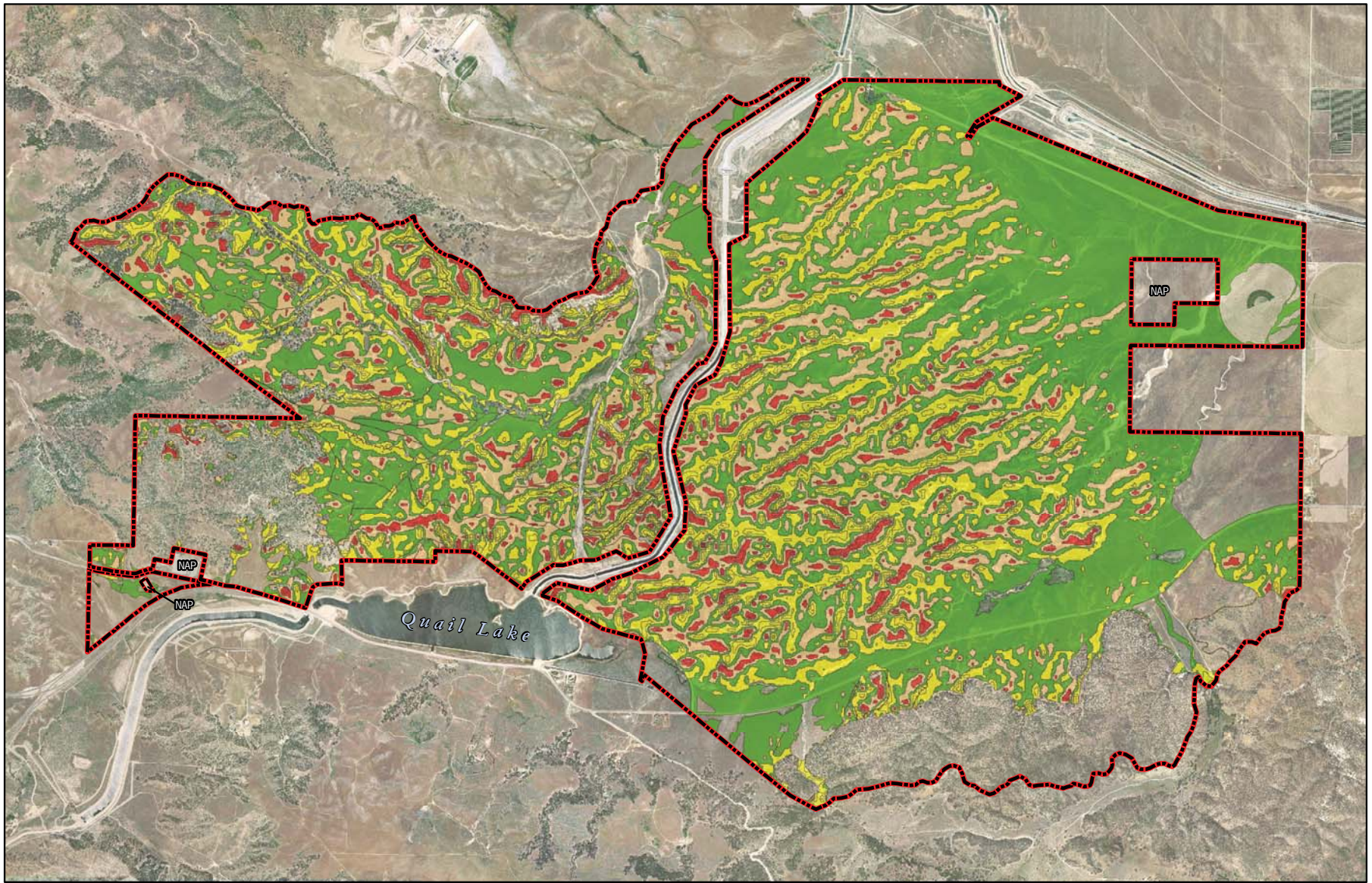
Source: Natural Resource Consultants 2008

Grassland Field Sampling Point Selection

Exhibit 5.7-2

Centennial Project





 2008 Project Boundary
 Class 0 Low Quality
 Class 1 Medium Quality
 Class 2 High Quality
 Class 3 Excellent Quality

0 2,000 4,000 8,000 Feet
 1 inch equals 4,000 feet 1:48,000

Source: Natural Resource Consultants 2008

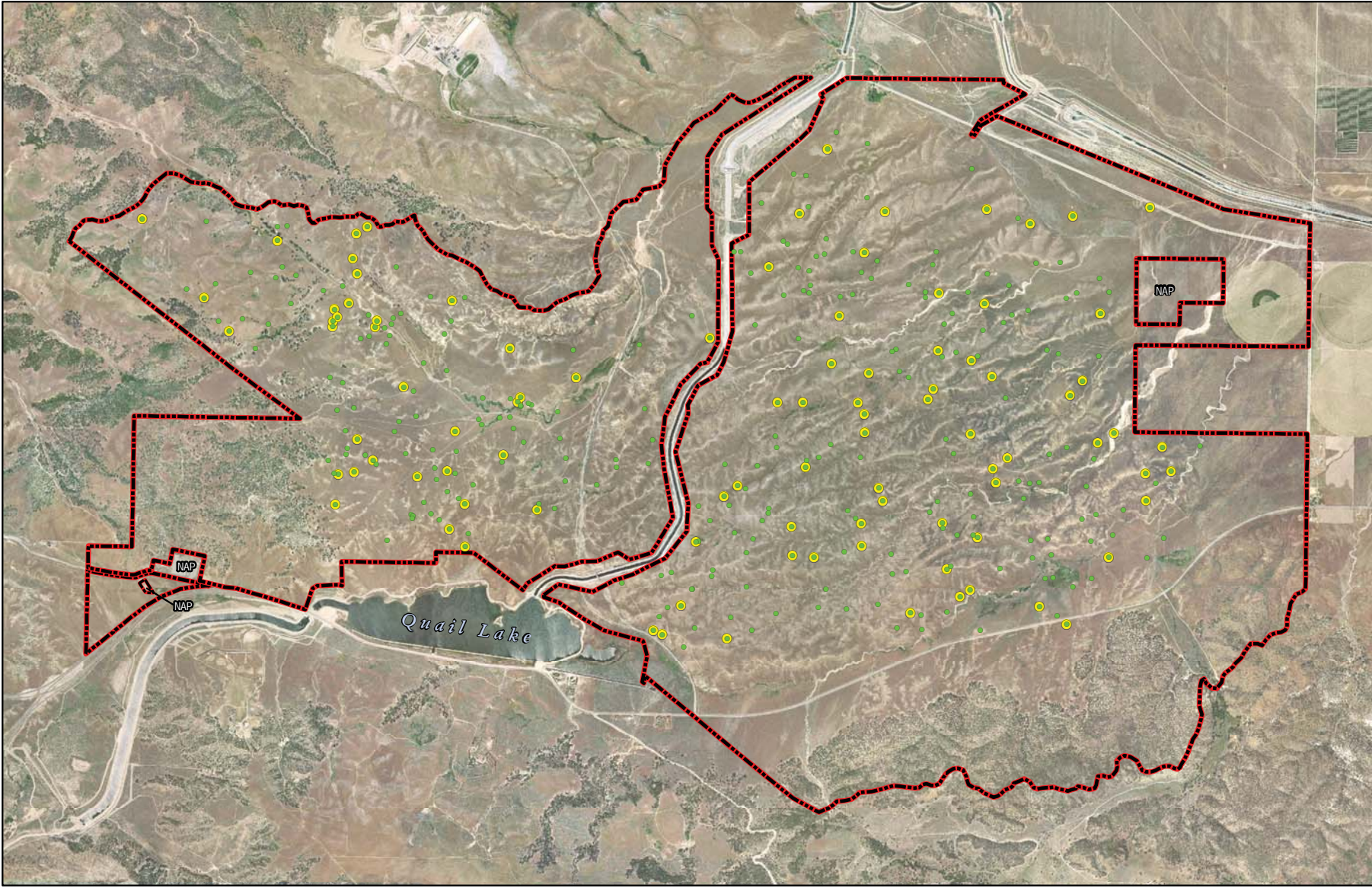
Grassland Category Map

Centennial Project

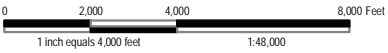


Exhibit 5.7-3

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 2008 Project Boundary
 ● 2006 Sampling Points
 ● 2007 Sampling Points



Source: Natural Resource Consultants 2008

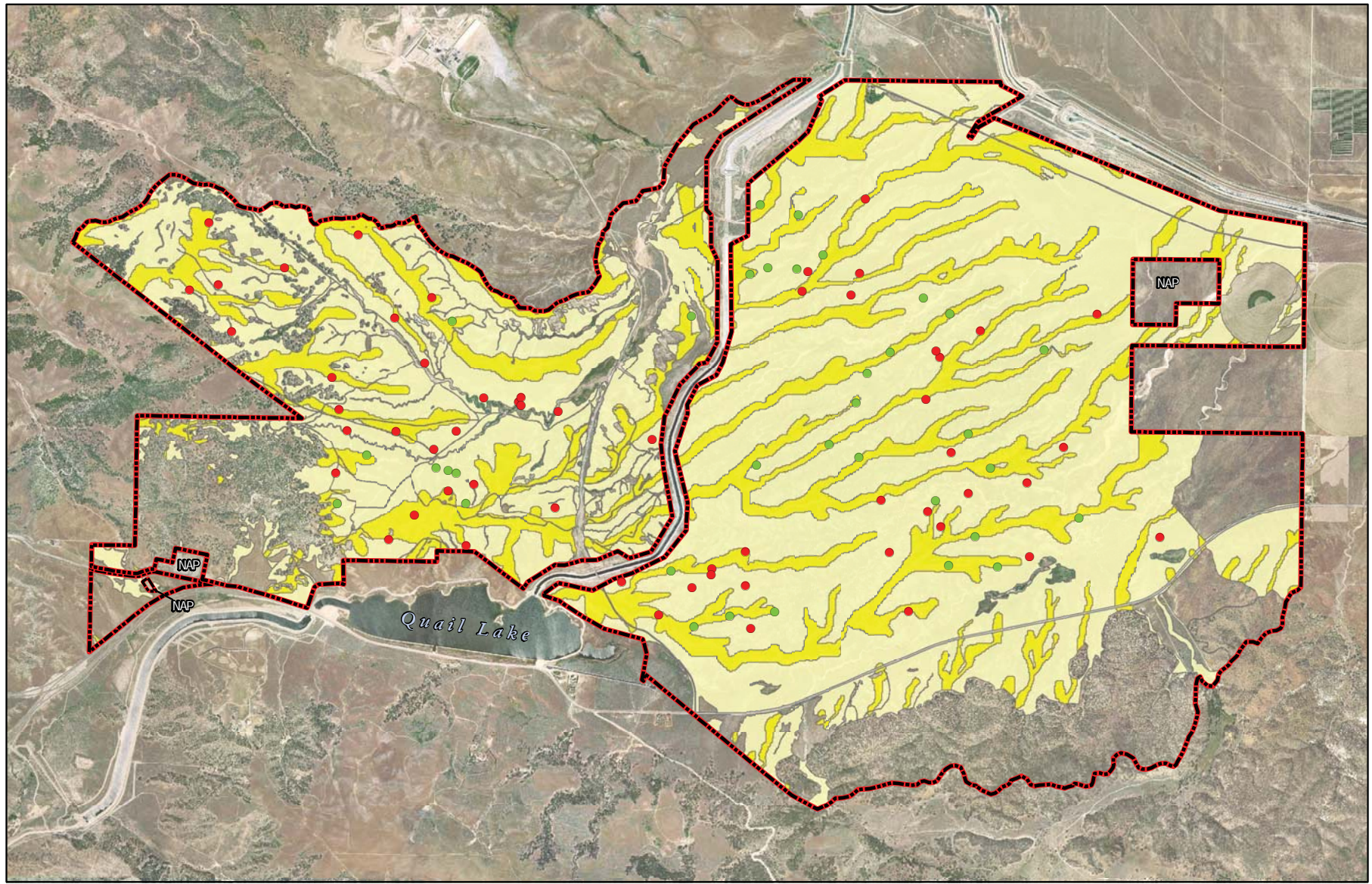
Grassland Sampling Points

Exhibit 5.7-4

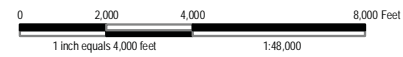
Centennial Project



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- 2008 Project Boundary
- Ridgetop Areas
- Not Ridgetop Areas
- Overestimated Points
- Correctly Predicted Points



Source: Natural Resource Consultants 2008

Points With Predicted Native Perennial Bunchgrass (NPBG) Cover

Exhibit 5.7-5

Centennial Project



in predicting percent cover between a moderate rainfall year and a very dry rainfall year (NRC 2007b, 2007c). According to the grassland Scientific Advisory Committee, for biological systems, a model with 69 percent accuracy is generally considered above average. The model was untested for ability at prediction of composition in new areas not used to form the model, so accuracy of the overall predicted values is hard to judge with so much apparent year-to-year variability. Variability from year-to-year could influence the accuracy of the estimates. However, these estimates represent the best scientific data currently available for the site (NRC 2007b, 2007c; Josselyn et al. 2009).

Wildlife

All wildlife species observed within the Project site are listed in the wildlife compendium included in Appendix 5.7-A. The term “expected” is used in this section to indicate a high likelihood of occurrence while the term “may” is used to indicate a moderate-to-low likelihood.

Invertebrates

A total of 27 relatively common and widely distributed butterfly species were observed on the Project site during field surveys conducted by a variety of consulting biologists. Nearly all of the Project site provides potentially suitable foraging habitat for butterflies, and much of the site provides suitable topography for hill-topping butterfly species, as do adjacent properties (Bruyera Biological Consulting 2004). Common hill-topping species such as checkered white (*Pontia protodice*), common hairstreak (*Strymon melinus*), and west coast lady (*Vanessa annabella*) were observed on the site in association with a low elevation hilltop area in the northwestern portion of the site. Other hilltops and ridgelines are present near this hilltop on and adjacent to the Project site, and are probably equally utilized by butterfly species in the vicinity. Common aquatic invertebrates are also expected to occur where potentially suitable areas exist. The versatile fairy shrimp (*Branchinecta lindahli*) was detected in two ephemeral ponds during fairy shrimp wet and dry season surveys (GLA 2005a, 2005b).

Fish

Most creeks and waterways in Southern California are subject to periods of high water flow in winter and spring, and little to no flow in summer and fall. During wetter years, flows in some drainages may persist for longer periods and experience ponding. These creeks and waterways can support a variety of suitable habitats for fish species. However, the amount of water flow can vary substantially from year to year. The herbaceous cover present typically varies by season from little to no cover during periods of high water flow to high cover in late summer and fall. Native fish species that inhabit Southern California drainages have adapted to living in the naturally fluctuating conditions of the area; however, natural and man-made events and circumstances (such as drought, alteration of habitat, and

composition in a given topographic location, and data gathered during the 2006 and 2007 studies is considered a sufficient analysis of the composition of grasslands on the current Project site.

introduced species) have contributed to the decline of native fish populations in Southern California.

Because most watercourses in the area are ephemeral and infiltrate into sandy desert soils on the site and east of the Project site, fish habitat is extremely limited and only the most ubiquitous and tolerant fish species, such as the non-native mosquito fish (*Gambusia affinis*), are expected to occur. No stocked fish have been reported in the Project site. Common freshwater fish are present in adjacent off-site areas, such as Quail Lake and the Aqueduct; according to the DWR, Quail Lake contains striped bass (*Morone saxatilis*), channel catfish (*Ictalurus punctatus*), blackfish (*Orthodon microlepidotus*), tule perch (*Hysterocarpus traski*), threadfin shad (*Dorosoma petenense*), and hitch (*Lavinia exilicauda*) (DWR Public Affairs 2009).

Amphibians

Amphibians require moisture for at least a portion of their life cycle and many require standing or flowing water for reproduction. Although nearly all of the Project site is dry for much of the year, a number of amphibian species occur or may occur on the Project site within the few areas of perennial surface moisture. There are a number of terrestrial species that may or may not require standing water for reproduction. These species are able to survive in dry areas by remaining beneath the soil in burrows, leaf litter, or under logs, and emerging only when temperatures are appropriate and humidity is high. Many of these species' habitats are associated with water, and the species emerge to breed once the rainy season begins. Soil moisture conditions can remain high throughout the year within some habitat types depending on factors such as amount of vegetation cover, elevation, and slope aspect.

The Project site provides habitat for common amphibian species such as the California toad (*Anaxyrus boreas halophilus*) and Baja California treefrog (*Pseudacris hypochondriaca hypochondriaca*), which were both observed during surveys (BonTerra Consulting 2005). The black-bellied salamander (*Batrachoseps nigriventris*) is expected to be present in the scrub and woodland vegetation types at the western and southern edges of the Project site.

Reptiles

Reptilian diversity and abundance typically varies with vegetation type and substrate characteristics. Many species occur in only one or two vegetation types; however, most will forage in a variety of situations. Most species that occur in open areas use rodent burrows for cover, protection from predators, and shelter during extreme weather conditions.

Common reptile species observed or expected to occur in the Project site include the western fence lizard (*Sceloporus occidentalis*), side-blotched lizard (*Uta stansburiana*), western whiptail (*Aspidoscelis tigris*), gopher snake (*Pituophis catenifer*), California kingsnake (*Lampropeltis californiae*), red racer (*Coluber flagellum piceus*), and southern Pacific rattlesnake (*Crotalus oreganus helleri*). Other species that may occur include the Skilton's skink (*Plestiodon skiltonianus skiltonianus*), western red-tailed skink (*Plestiodon gilberti rubricaudatus*), southwestern threadsnake (*Rena humilis humilis*), western yellow-bellied

racer (*Coluber constrictor mormon*), and California glossy snake (*Arizona elegans occidentalis*).

Birds

A variety of bird species are expected to reside in the Project site throughout the year. Other species are present only during certain seasons. For example, the white-crowned sparrow (*Zonotrichia leucophrys*) occurs on the site during the winter season and then migrates north in the spring to breed during the summer.

Scrub vegetation types in the Project site supports bird species adapted to the dense, low vegetation that typifies these areas. Although large numbers of individuals can often be found inhabiting these vegetation types, species diversity is usually low to moderate. Common breeding residents of these habitats include California quail (*Callipepla californica*), Bewick's wren (*Thryomanes bewickii*), California thrasher (*Toxostoma redivivum*), spotted towhee (*Pipilo maculatus*), and California towhee (*Melospiza crissalis*). During winter months, the scrub vegetation provides potential areas where a number of species may be found that migrate from breeding grounds further north. Hermit thrush (*Catharus guttatus*), fox sparrow (*Passerella iliaca*), white-crowned sparrow, and golden-crowned sparrow (*Zonotrichia atricapilla*) are expected to be common winter residents in this vegetation in the Project site. By March, migratory birds (such as warblers and vireos) return from wintering grounds and begin to appear in the Project region.

Grassland vegetation types support fewer bird species than most other vegetation types in the Project site. However, these areas do support breeding residents including the mourning dove (*Zenaidura macroura*), Say's phoebe (*Sayornis saya*), horned lark (*Eremophila alpestris*), lark sparrow (*Chondestes grammacus*), and western meadowlark (*Sturnella neglecta*). Migratory birds expected to use this vegetation type on the site, either during the summer or winter, include species such as western kingbird (*Tyrannus verticalis*) and American pipit (*Anthus rubescens*).

Woody and herbaceous vegetation along pools, seeps, streams, ponds, and other watercourses can be extremely important to birds by providing food, cover, and breeding habitat. The riparian vegetation types in the Project site provide potential resources for a wide variety of resident and migratory birds. Resident species observed include the acorn woodpecker (*Melanerpes formicivorus*), northern flicker (*Colaptes auratus*), black phoebe (*Sayornis nigricans*), western scrub-jay (*Aphelocoma californica*), bushtit (*Psaltriparus minimus*), western bluebird (*Sialia mexicana*), and song sparrow (*Melospiza melodia*) (Impact Sciences 2003). Summer residents observed during surveys of these vegetation types in the Project site include the ash-throated flycatcher (*Myiarchus cinerascens*), black-headed grosbeak (*Pheucticus melanocephalus*), blue grosbeak (*Passerina caerulea*), and Bullock's oriole (*Icterus bullockii*) (Impact Sciences 2003). During spring and fall migration, a variety of migratory birds are expected to use these vegetation types on the site. Some migrants include the pacific-slope flycatcher (*Empidonax difficilis*), warbling vireo (*Vireo gilvus*), Cassin's vireo (*Vireo cassinii*), yellow warbler, black-throated gray warbler (*Setophaga nigrescens*), Townsend's warbler (*Setophaga townsendi*), MacGillivray's warbler (*Geothlypis tolmiei*), and Wilson's warbler (*Cardellina pusilla*).

Common raptors observed within the Project site include the golden eagle, red-tailed hawk (*Buteo jamaicensis*), red-shouldered hawk (*Buteo lineatus*), and American kestrel (*Falco sparverius*) (Impact Sciences 2003). Other raptors observed or expected to occur in the Project site include the northern harrier (*Circus cyaneus*), Cooper's hawk (*Accipiter cooperi*), and sharp-shinned hawk (*Accipiter striatus*).

Mammals

Rodents and other small mammals are expected to be among the most diverse and widespread mammals in the Project site. Deer mouse (*Peromyscus maniculatus*), California ground squirrel (*Otospermophilus beecheyi*), and California pocket mouse (*Chaetodipus californicus*) are common rodents that are expected to occur throughout the Project site. Woodrats (*Neotoma* sp.) typically occur in woodlands and may occur throughout the woodland and chaparral vegetation on the property. Open grassy areas appear to provide suitable habitat for the western harvest mouse (*Reithrodontomys megalotis*), Pacific kangaroo rat (*Dipodomys agilis agilis*), brush mouse (*Peromyscus boylii rowleyi*), and the Botta's pocket gopher (*Thomomys bottae*).

Bats occur throughout most of Southern California and may use portions of the Project site to forage. The oak woodland and riparian vegetation in several areas on the site provides potential roosting habitat for many bat species. Many of the bats that could potentially occur on the site are not observable during the winter due to either hibernation or migration, depending on the species. Common bat species that may forage or roost on the site include the big brown bat (*Eptesicus fuscus*), Mexican free-tailed bat (*Tadarida brasiliensis*), California myotis (*Myotis californicus*), Yuma myotis (*Myotis yumanensis*), canyon bat (*Parastrellus hesperus*), and hoary bat (*Lasiurus cinereus*).

Carnivores may be common throughout the Project site and include many predatory and omnivorous species. The coyote (*Canis latrans*) was observed (Impact Sciences 2003) and is expected to occur throughout the Project site, while the gray fox (*Urocyon cinereoargenteus*) may occur more specifically in the vicinity of the riparian vegetation. Other carnivores that are expected to occur include the raccoon (*Procyon lotor*), American badger (*Taxidea taxus*), striped skunk (*Mephitis mephitis*), and bobcat (*Felis rufus*). Larger mammals such as the pronghorn antelope (*Antilocapra americana americana*), black bear (*Ursus americanus*), and mountain lion (*Felis concolor*) frequent the foothills above the Project site and are expected to occasionally forage at lower elevations, including within the Project site. Open grassland vegetation types and the understory of scrub and woodland vegetation types provide foraging opportunities for herbivorous mammals. Common herbivores observed during field surveys include the desert cottontail (*Sylvilagus audubonii*), feral pigs (*Sus scrofa*), and mule deer (*Odocoileus hemionus*).

Wildlife Movement

Introduction

The following describes the existing landscape conditions on the Project site used for wildlife dispersal at both the local and regional scale. A number of wildlife species disperse through or use the Project site at the local scale for either foraging or nesting, integrating some

landscape areas into their extended home ranges. However, in general, a lack of vegetation cover and the presence of significant existing barriers to wildlife dispersal combine to make the Project site an area of limited opportunity for regional wildlife movement. The wildlife movement discussion acknowledges that individual animals move on and off the site and travel across portions of it; this discussion also recognizes that some species may cross significant portions of or the entire site on occasion.

Regional and local wildlife movement can be organized into three major categories: (1) movement within home ranges (e.g., foraging for food or water, defending territories, or searching for mates, breeding areas, or cover); (2) dispersal that serves to extend range distributions; and (3) seasonal migration. In addition, the transfer of genes and the enhancement of genetic variability in populations of less agile wildlife are important to consider.

Another important concept of wildlife movement involves separating wildlife into five ecological groupings or guilds of species that share similar life histories, home ranges, and dispersal capabilities. These five guilds are (1) high mobility ground-dwelling species; (2) moderate mobility ground-dwelling species; (3) low mobility ground-dwelling species; (4) high mobility aerial species; and (5) moderate mobility aerial species.

The high mobility ground-dwelling guild consists of large to moderately sized mammals such as black bear, bobcats, coyotes, mountain lions, and mule deer, which require large home ranges. The moderate mobility ground-dwelling guild includes species such as the American badger, raccoon, and western gray squirrel (*Sciurus griseus*) that have smaller home ranges. Small wildlife with small home ranges that were placed in the low mobility ground-dwelling guild include amphibians, reptiles and rodents, which frequently can be limited in their movements by man-made physical obstructions. The high mobility aerial guild includes most birds and bats, which are typically not constrained by physical obstructions such as roads and buildings. The moderate mobility aerial guild includes birds with relatively weak flight abilities (i.e., the wrentit [*Chamaea fasciata*]), which are unable to cross or move into areas of unsuitable habitat.

A number of terms are used in this discussion of wildlife movement to refer to areas through which wildlife move from one landscape location to another. To simplify concepts, to clarify terminologies, and to facilitate discussion of wildlife movement in this analysis, definitions for these terms are provided:

Travel Route: A landscape feature (such as a ridgeline, drainage, canyon, or riparian strip) within a larger open space that warrants use to move frequently and access necessary resources (e.g., water, food, cover, den sites). Travel routes can be used frequently during more or less daily activities to move back and forth within an individual's home range or territory (an area which organisms occupy and defend, usually to protect offspring and other members of the same species or their breeding and living quarters). A specific travel route may be repeatedly used by wildlife because it provides the least topographic resistance to animals moving from one area to another. It contains adequate food, water, and/or cover for individuals during movement between open space habitats.

Wildlife Corridor: A portion of landscape, usually linear and generally a smaller scale that connects two or more habitat patches that would otherwise be isolated. Wildlife corridors frequently are bound by urban land areas or other areas that are unsuitable for wildlife. A wildlife corridor generally supports suitable cover, food, water, or other resources to support individuals moving through the corridor. The value of a corridor varies among the species that use it since different species require different habitats that may or may not be present within a given corridor. Large, landscape-level corridors (often referred to as landscape linkages, which are described further below) can simultaneously provide both transitory habitat for all five mobility guilds including wide-ranging species and resident habitat values for a diversity of less mobile species.

Landscape Linkage: A segment of land with similar characteristics and habitat that connects similar habitats, thereby facilitating dispersal of species that occupy such habitat types. These linkages connect the natural processes that are associated with the habitat. Linkages are typically associated with larger scale connectivity.

Wildlife Crossing: A narrow or otherwise limited area, relatively short in length and generally constricted in nature, that allows wildlife to pass under or through a physical obstacle or barrier that otherwise hinders or prevents wildlife movement, but which otherwise lacks most or all of the habitat values required by an individual. Wildlife crossings typically are man-made and include culverts, underpasses, drainage pipes, and tunnels. These structures provide access across or under roads, highways, pipelines, or other physical obstacles. Such areas often represent “choke points” along a wildlife movement corridor, impeding wildlife movement and increasing the risk of predation; although, absent such crossing, the man-made obstacles (e.g., a freeway) might make movement very difficult for terrestrial wildlife.

Landscape Area: An area of land that has a particular quality or activity and similar characteristics. The scale can vary depending on the application but typical is used in regard to larger scale concepts.

Home Range: The area to which an animal usually confines its daily activities.

Landscape linkages used by wildlife of all five mobility guilds can serve to provide dispersal corridors between areas that provide wildlife habitats and that are otherwise separated by impassable terrain, vegetation, developed lands, or other disturbances. The fragmentation of open spaces resulting from urbanization can create isolated “islands” of wildlife habitat imbedded in a suitable matrix. Landscape linkages mitigate the effects of fragmentation by allowing animals to move between otherwise isolated habitats, thereby permitting depleted populations to be replenished; promoting genetic exchange; and providing wildlife with potential escape routes from fire, predators, and human disturbances. These linkages thus provide opportunities to reduce the likelihood that catastrophic events (such as fire or disease) may result in extirpation of populations of susceptible species. Landscape linkages also may serve as travel routes for individual animals as they disperse across their home ranges in search of food, water, mates, and other necessary resources.

In large, continuous open space areas where there are few or no man-made or naturally occurring physical constraints to wildlife movement, wildlife corridors, as defined above, may not exist or be determinable. Given an open space area that is both large enough to maintain viable populations of certain species and to provide a variety of local travel routes (e.g., canyons, ridgelines, trails, riverbeds), individuals of all five mobility guilds will use those local routes while searching for food, water, shelter, and mates and may not cross into other large open space areas to access additional habitats. Within the project region, the Tehachapi Mountains east and north of I-5 represent an example of an area that is sufficiently extensive and open (with few current barriers to movement), allowing resident individuals for many species living there adequate habitat and space to satisfy virtually all life-history requirements (e.g., nesting, foraging, breeding) (Beier 2004; Penrod et al. 2004, 2005).

For a subset of the guilds or species that occur in the region, landscape linkages may play a greater role. Based on their size, location, vegetation cover and composition, and availability of food resources, some landscape areas (such as large drainages and canyons) may be occupied by dispersing wildlife (such as lower mobility guilds) for longer periods, and may even serve as habitat patches, particularly for small- and medium-sized animals (low and medium mobility guilds). This is especially true if a wildlife corridor is located in a larger open space area with differing types of surrounding habitat or other landscape features. However, once open space areas become constrained and/or fragmented as a result of urban development or construction of physical obstacles, the remaining landscape features or travel routes that connect the larger open space areas can become movement “corridors”. To fulfill this corridor role, they must provide adequate space, cover, food and water, and must not support barriers or behavioral obstacles (e.g., human-generated noise, lighting) that could hinder wildlife movement.

Higher mobility guilds, including species such as such as mule deer, bear, mountain lion, gray fox, and coyote and medium mobility guilds including species such as raccoon, skunk, badger, and opossum [*Didelphis virginiana*]) have relatively large home ranges through which they move to secure adequate food, water, and breeding and wintering habitat. Corridors that serve higher mobility guilds may also serve low mobility guilds including species such as such as reptiles, amphibians, and rodents) as long as suitable live-in habitat attributes are also present. Regional movement for these species can facilitate gene flow among populations. Lower mobility guilds may require local “stepping stone” movement of individuals between populations. It may take several separate movements of individuals or even generations of individual species to traverse an entire corridor.

Ideally, a wildlife corridor or a landscape linkage should encompass a heterogeneous mix of vegetation types to accommodate the ecological requirements of a multiple mobility guilds and a wide variety of resident species in any particular region. Most species require adequate vegetation cover to protect against weather and predators during dispersal activities and when foraging for necessary food. Drainages, riparian areas, and forested canyon bottoms normally serve as natural movement corridors because these features provide cover, food, and often water for a variety of species. The Project region contains many natural and man-made features which contribute to a large degree of isolation and narrow landscape linkages. The mountainous habitats and associated species are restricted due to the stark contrast with lower foothill and valley habitats. Very few species in the Project region tend to move

across open or otherwise exposed landscape areas unless individuals are compelled to move under duress and the open areas are the only subregional dispersal option available. However, some species adapted to lower elevation foothills or valley floor habitats in the region, including the Project Site, may readily use such landscapes using different modes of travel and having different tolerances to exposure. The high degree of separation due to terrain and elevation and habitat in the Project region has resulted in a concentrated area of evolutionary divergence. The project region, consequently, represents the edge of many species or subspecies ranges. Similarly, natural landscape features of the region, such as the Tehachapi Mountains, form a natural linkage or corridor on a regional scale. Many of these features are further constrained by anthropogenic barriers such as I-5 and the California Aqueduct resulting in small wildlife crossings where passage for some species is one of a small number of remaining linkages in the region.

For smaller animals or low mobility guilds (such as rodents and reptiles), wildlife corridors must be able to provide adequate food and cover to survive for sustained rather than just brief periods. In areas with large expanses of grassland and little cover, typical medium- and large-bodied animals, or low to medium mobility guilds, are generally adapted otherwise. Larger animals are fleet-footed (pronghorn antelope, and coyote) and typical of a high mobility guild. Some, like the badger, can dig into hiding in less than a minute. Smaller animals, typically of the low mobility guild, usually are fossorial (inhabit burrows or holes dug into the ground) regardless of the habitat they inhabit. Such species are typical of those which inhabit the Project site, and an open-space corridor for these species might require wider spaces than one for animals that require cover.

Wildlife and plant diversity is nearly always enhanced by the maintenance of naturally occurring open space linkages in the face of land development, but there are other critical considerations for development and open space design. So, while naturally occurring landscape linkages should be maintained wherever they exist, it is important to note that many open spaces do not facilitate dispersal for low mobility guilds or otherwise types of wildlife that require cover because of inadequate vegetation cover or physical constraints or impediments. Not all areas through which wildlife move contribute positively to regional species persistence (some areas draw individuals from higher quality habitats to lower quality ones). Some species of high mobility aerial guilds, such as birds and bats for example, do not require landscape linkages to realize dispersal between open spaces, and many species (including most insects) can persist regionally in multiple large but circumscribed populations. Constrained landscape linkages may subject wildlife to higher mortality from edge effects and increased contact with humans, and constraints on the linkage can result in lower (not greater) likelihoods of regional persistence. In most circumstances, open space linkages within development, especially linear narrow corridors, have not been shown to enhance survival of the species that are most in need of conservation attention.

In development adjacent to wildlands, where development is of such a density that only limited movement corridors are an option, designs that separate development from protected open spaces by use of hardened edges are the preferred design strategies (MacArthur and Wilson 1967; Soule 1987; Harris and Gallagher 1989; Bennett 1990). The dominant conservation planning strategy for most areas in Southern California and elsewhere in the West is to focus development in one area and expand the open space

available for movement with minimal animal-human interaction, rather than to incorporate limited movement corridors in the developed areas at the expense of adjoining open space (Bolger 2007; Crooks et al. 2004). The strategy is most applicable to areas where corridors with limited sparse development would face multiple other restrictions to movement such as (in the case of the Project) roadways, aqueducts, and otherwise disturbed areas. Development projects in areas that are mostly surrounded by large contiguous open spaces in all directions with few or no restrictions to movement do not need to rely on such limited corridor strategies to maintain linkages. However, planners should look at the surrounding areas to determine where development is possible and consider wildlife corridor provision in each project, especially if the surrounding areas are also subject to development.

Methodology

The analysis of wildlife movement within the Project site and vicinity considers substantial scientific literature regarding wildlife movement corridor principles; landscape linkage considerations from island biogeographic theory; and site characteristics from ground surveys, topographic maps, and aerial photographs. Regional wildlife linkage studies, including those conducted by the South Coast Wildlands Project (Penrod et al. 2004, 2005) were reviewed. Further evidence was gleaned from site-specific and Tejon Ranch-wide studies, including assessments of Tejon Ranch lands for the ranch-wide agreement that identified Tejon Ranch lands with the highest wildlife dispersal value; the proposed reserve design for Tejon Ranch that was prepared by the Conservation Biology Institute and South Coast Wildlands Project; a motion-sensitive camera study of I-5 underpasses by the Tejon Ranch Company; an assessment of the site's wildlife movement value from Dr. Dennis Murphy from the University of Nevada, Reno (Murphy 2002); a linkage analysis of the Project region that was conducted by Paul Beier (2003); a wildlife movement study by Tejon Ranch, which included the Project site (Pioneer Environmental Services 2004); and a linkage modeling study designed to replicate and refine the South Coast Wildlands Project's Tehachapi Linkage modeling (Dudek 2013).

Potentially existing landscape linkages between large open space areas in the region were identified and characterized by BonTerra Consulting, as were potential wildlife crossing points across existing major impediments to wildlife movement, specifically along I-5, SR-138, and the California Aqueduct. In addition, BonTerra evaluated wildlife movement between the Project site and regional open space areas using the sources described above and additional site-specific field reconnaissance surveys searching for evidence of presence and movement.

Additional field data were collected during various surveys of the Project site (see Table 5.7-2, Biological Surveys Conducted within the Project Site [1999–2015]) and were used to identify probable animal movement corridors on the Project site. Those data include assessment of the type and extent of vegetation on the site that may facilitate wildlife movement; the location and characteristics of on-site riparian drainages and channels; identification of animal signs (primarily scat and tracks); characterization of the physical attributes of potential physical and biotic wildlife movement barriers and choke points; and determination of type and extent of surrounding land uses and landscape conditions. Because the Project site is mostly surrounded by undeveloped open space, the focus of the

analysis was on potential regional open space connections since wildlife species that exhibit large home ranges, when unimpeded, can move somewhat freely to available open space in search of food, water, and shelter.

The most extensive and recent of these various studies of regional connectivity was the modeling study conducted by Dudek (2013), which focuses on wildlife movement through the I-5 corridor in the Tejon Ranch area. The study uses multiple survey methods, including use of a motion-sensitive camera placed at several I-5 underpasses. Pre-modeling analysis included identifying species present in the Tehachapi Mountains and the Sierra Nevada that would be potentially recorded at the study sites, then assigning them into the five different guilds.

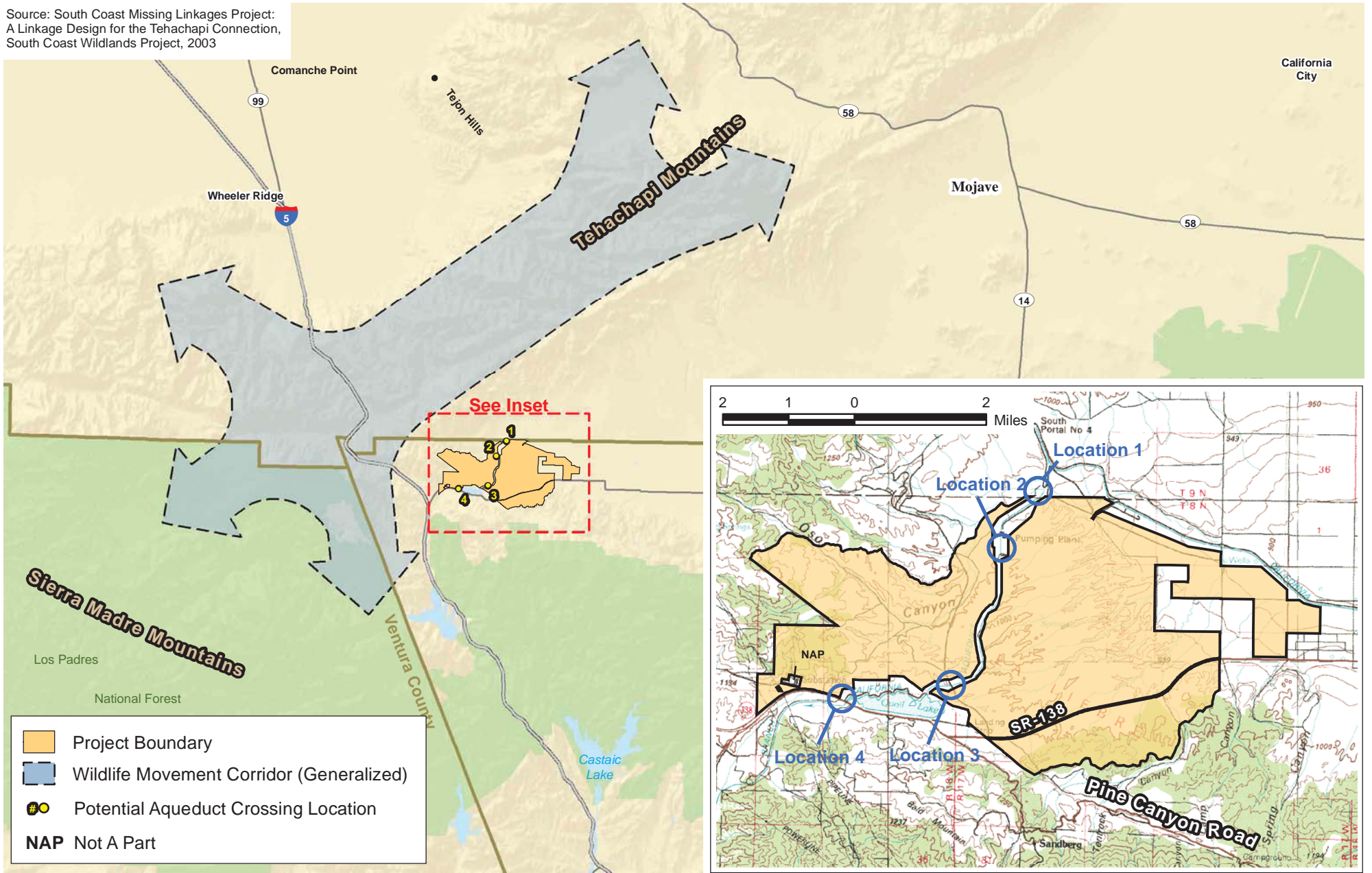
The Dudek study included a more recent and refined analysis of the Missing Linkages permeability modeling study and proposed linkage (Penrod et al. 2003). The study re-examined the permeability modeling analysis that was used as the basis for identifying proposed linkages (Majka et al. 2007). Dudek updated the model based on current conditions and used more refined site data for the permeability modeling analysis. The analysis showed that wildlife movement occurs at least at some level through the whole study area, but the northern portions of the study area provide the most permeable (available) wildlife movement routes. This study as well as the original Missing Linkages study reviewed the entire project region, inclusive of the Project site, and focused on more mountainous areas in subsequent detail study based on preliminary results indicating highest permeability within these areas. While these corridors are considered to be the highest importance for regional wildlife preservation, other wildlife corridors or landscape linkages occur to lesser degree elsewhere in the region.

In the analysis of wildlife movement within the project region, one additional method was utilized. Literature regarding several representative species from each guild grouping was reviewed. Specific points of review included preferred habitat, known species range, known local distribution, and known population locations with the western Antelope Valley. This data was then compared to regional scale vegetation maps (USGS California Gap Vegetation Data) to determine if habitat, such as foothill grasslands, on the project represent a highly constrained linkage in habitat surrounding the Antelope Valley and if such a restriction would likely effect regional populations of these species occupying such habitats.

Regional Wildlife Movement

Recent reports that discuss the biotic resources in the vicinity of the Tehachapi Mountains (including the Project region) describe the importance of these mountains as a landscape linkage between the Sierra Nevada and the Coast Ranges (see Exhibit 5.7-6, Regional Wildlife Movement). Typically, landscape linkages facilitate wildlife movement between large areas of similar terrain, vegetation types, or habitats. Because of the unique adaptations required of wildlife species that inhabit the low elevations of the San Joaquin Valley to the north of the Tehachapi Mountains and the Antelope Valley and adjacent Mojave Desert to the south of the mountain range, most species that occupy these geographically separate and distinct ecosystems do not venture south or north, into or over, the Tehachapi Mountains. As noted above, wildlife species within the mountains surrounding the project site are expected to move freely within the mountains to satisfy their life history requirements. Accordingly,

Source: South Coast Missing Linkages Project:
A Linkage Design for the Tehachapi Connection,
South Coast Wildlands Project, 2003

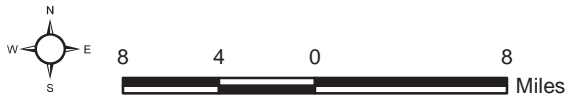


	Project Boundary
	Wildlife Movement Corridor (Generalized)
	Potential Aqueduct Crossing Location
NAP	Not A Part

Regional Wildlife Movement

Exhibit 5.7-6

Centennial Project



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most wildlife movement in the mountains probably occurs within large landscape areas in upland portions of the Tehachapi range, and to the south of the Centennial property within the western extent of the San Gabriel Mountains much more than between these areas. The same can be expected of movement on the valley floor and surrounding low foothills, where the proposed project is located.

The Biological Resources Assessment of SEAs in the Project vicinity states that the region encompasses “an important linkage between the San Gabriel Mountains and the Tehachapi Mountains”, and that “this linkage to the Tehachapi Mountains is important because it represents a link to the western-most extent of the Sierra Nevada Mountains . . . represent[ing] the only mountain linkage from the Transverse Ranges or the Coast Ranges to the Sierra Nevada Range” (PCR et al. 2000). The Biological Assessment also suggests that lands within SEA 17 may be an important topographic reference for migrating birds, with essential high elevation foraging grounds along the route. The Assessment does not, however, address the significant constraints on movement posed by I-5 and the Aqueduct. The assessment also does not reference any studies that demonstrate that the Project site serves a significant element of the regional landscape linkage.

Habitat types in the Tehachapi Mountains vary significantly with elevation and directional orientation. Their lower elevation foothills, for example, are characterized by scrub and woodland plant communities, while higher elevations support conifer-dominated habitats. Abiotic factors (e.g., topography, soil type, and temperature) also vary across the range. As a result, movement of certain groups of wildlife or mobility guilds (as either individual events or over multiple generations) occurs within the habitats to which the group or particular species are best adapted. For example, species adapted to scrub communities are expected to move through the Tehachapi Mountains in the lower elevation areas (foothill slopes) that support scrub communities, while species adapted to pinyon forest would be more likely to move through the higher elevation zone. Wildlife corridor assessments conducted by Paul Beier (2003) and Tejon Ranch (Pioneer Environmental Services 2004) generally confirm that wildlife movement occurs within, but not across, the various habitat types and elevation zones within Tehachapi uplands, foothills, and the adjacent plains and desert areas to which particular species are associated.

I-5 presents a formidable obstacle to animals attempting to move east or west along the Tehachapi Mountains since it is a primary and heavily traveled transportation corridor that is elevated in some areas and is bordered by fences and dividers along extensive stretches. While I-5 provides a substantial barrier to wildlife dispersal, individuals of a variety of species are expected to occasionally attempt to make highway crossings at grade and more frequently through underpasses and overpasses with reduced traffic. The at-grade crossings are less likely to be successful. Occasional movement is not likely to occur frequently enough to link continuous ecological areas on either side of I-5.

A number of culverts, underpasses, and overpasses occur along I-5 from approximately the Tejon Ranch headquarters in Lebec to the intersection with SR-138 and represent potentially more suitable pathways for navigating the I-5 obstacle. Ongoing evaluations of photographs taken from remote cameras positioned in all 11 underpasses and culverts under I-5 between the California Aqueduct undercrossing in the Grapevine area and the

intersection of I-5 with SR-138 indicate that certain of these underpasses facilitate movement under I-5 by larger, wide-ranging high mobility species (e.g., deer, coyote, bobcat, and fox) (Impact Sciences 2003; Pioneer Environmental Services 2004). Additional data gathered in more recent years indicate that some underpasses are used on a fairly regular basis by some species such as deer, coyote, and bobcat. The importance of such areas was recognized in the choice of lands for preservation in the Ranch-wide Agreement.

For species attempting to move from the Tehachapi Mountains (east of I-5) in a south-southwest direction to the Angeles National Forest, open spaces to the east of I-5 and west of the Aqueduct offer a potential wildlife corridor extending at least as far south as SR-138. These areas, which include the riparian communities along Oso Canyon and its tributaries and the oak woodlands along the western portion of the Project site (which continues farther to the west), may be suitable areas for some wildlife movement given available forest or shrubland vegetation cover, which may serve as shelter and protection from predators.

SR-138 currently does not pose a substantial hindrance for most medium to high mobility groups or medium to large wildlife species trying to cross it because it is a two-lane surface road with no fencing or dividers and because it is not as heavily traveled by auto and truck traffic as I-5. Additionally, small culverts may allow for passage of at least smaller animals under SR-138. However, this highway is expected to become a more formidable barrier in the near future due to Caltrans' pending plans to slightly realign and increase it to a six-lane divided freeway that includes a 22-foot median to accommodate area growth; this SR-138 expansion is expected to occur regardless of the Project (refer to Section 4.5.5 in the Project Description).

The West Branch of the California Aqueduct extends from the north and through the center of the Project site south to Quail Lake, crosses underneath SR-138, and reappears immediately south of SR-138, where it continues in a southwesterly direction to its intersection with I-5. Because the Aqueduct channel has steep, smooth rounded sides, often has high velocity water flows, and is fenced on both sides with a relatively high chain-link fence, it represents a significant wildlife barrier. Animals that might travel down the open spaces to the east of I-5 and west of the Aqueduct (across the western portion of the site), and then successfully cross SR-138 west of Quail Lake would likely be funneled into the intersection of the Aqueduct with I-5; the small culvert at this intersection is fenced and impassable to wildlife. The intersection of the SR-138 and the Aqueduct is passable by a narrow 50 foot gap, and some individuals may cross by following the SR-138 shoulder eastward. Alternatively, wildlife could move north to a large underpass which conveys a tributary to Gorman Creek, which is regularly used by wildlife.

Wildlife movement to the east of the Aqueduct, particularly in a north-south direction, is also problematic. The East Branch of the Aqueduct, which runs off site near the northern boundary of the Project site, forms an essentially impassable barrier to animals moving north and south. Drainages are oriented west-east with little cover of vegetation other than grasses and an occasional tree. While extensive open space is found in these areas through which wildlife presumably can move freely, both the West Branch and the East Branch of the Aqueduct significantly preclude north-south regional wildlife movement from the Tehachapi

Mountains through the site to the Angeles National Forest. The West Branch of the Aqueduct and the formidable fencing that surrounds it severs east-west regional dispersal options through the site except for four crossings or “choke points” (listed below). Given that the east-west drainages dissipate into porous soils at the eastern portion of the site and given that areas to the east of the site are in agricultural use, the value of the portion of the site east of the Aqueduct for wildlife dispersal is expected to be minimal.

Four minor gaps in the West Branch of the California Aqueduct provide opportunities for wildlife to move across the Project site, as depicted on Exhibit 5.7-6, Regional Wildlife Movement. Specifically, wildlife may cross the Aqueduct just to the north of the northern site boundary where the Aqueduct is underground (Location 1); at the Oso Pumping Plant where the Aqueduct is located underground (Location 2); where the National Cement Plant Road bridges the Aqueduct (Location 3); and to the west of Quail Lake where the Aqueduct crosses under SR-138 (Location 4). Wildlife that might cross the West Branch of the Aqueduct at any of these locations might proceed southward to the Angeles National Forest or northward to the western end of the Tehachapi Mountains. Potential use and limitations of each of the Aqueduct crossings are discussed below.

Location 1: Location 1 is at the far northern boundary of the Project site. This crossing is not fenced and wildlife may be able to move across the road that bridges the Aqueduct. Wildlife that cross the Aqueduct at this location would have to traverse open areas to reach the crossing from the north or east, then traverse over three miles of relatively open grassland and cross SR-138 to reach cover provided by woodlands south of SR-138. As a result, this crossing is likely to provide occasional wildlife movement opportunities for a subset of species of the region typical of grassland dominated landscapes similar to the project site.

Location 2: A barbed-wire fence, an Aqueduct security requirement, surrounds Location 2 (at the Oso Pumping Plant) and poses a barrier to the movement of larger wildlife species of the ground dwelling high mobility guild. Some larger mammal species of this guild (e.g., coyote, fox, or bobcat) may successfully pass through, under, or around the fence and cross the Aqueduct. The fence probably does not pose a barrier to the movement of ground dwelling low and moderate mobility fluids or smaller wildlife species (e.g., insects, rodents, and reptiles) that may pass through the fence and then cross the Aqueduct. Wildlife may travel along the Oso Creek corridor while approaching (or departing) from west of Location 2, and then traverse approximately 1,700 feet of grassland to reach the Aqueduct crossing. Wildlife approaching or departing from east of Location 2 would again have to traverse a large grassland area (approximately three miles) and SR-138 to reach the shelter provided by the woodlands south of SR-138. For similar reasons, As a result, this crossing is likely to provide occasional wildlife movement opportunities for a subset of species of the region typical of grassland dominated landscapes similar to the project site.

Location 3: The bridge on the National Cement Plant Road is not fenced on the northern and southern sides of the Aqueduct; large and small wildlife species may move across the road that bridges the Aqueduct. Wildlife approaching Location 3 from woodlands in the southern portion of the Project site may cross SR-138 at grade, proceed along the large drainage that parallels the north side of SR-138, then traverse approximately 2,600 feet of open grassland. Wildlife may travel along Oso Creek and its tributaries while approaching (or departing) from the north of Location 3, then traverse approximately 3,300 feet of open grassland to

reach the Aqueduct crossing. Wildlife use of this crossing is likely limited at certain times due to truck traffic to and from the National Cement Plant, which occurs during the day. More favorable conditions for wildlife to cross the Aqueduct at this location occur at night when there is little or no truck traffic. This crossing is also likely to provide occasional wildlife movement opportunities for a subset of species of the region typical of grassland dominated landscapes similar to the project site.

Location 4: Location 4 has a chain-link fence where there is a gravel embankment between the Aqueduct and the road. Larger wildlife species unable to cross the chain-link fence would have to move further down the highway to an area where the fence line transitions to a more permeable barbed wire fence. Wildlife (both large and small species) would have to move diagonally across SR-138 to cross the Aqueduct. It is expected that ground dwelling high mobility guilds have better chances of successfully crossing the highway than animals of low mobility guilds. To approach Location 4 from Oso Canyon, wildlife may move through the oak woodland and areas of scattered oaks, and then traverse approximately 750 feet of open grassland. To approach Location 4 from the woodlands south of SR-138, wildlife may move along one of the drainages then traverse approximately 1,000 feet of open grassland. Similarly, this crossing is likely to provide limited wildlife movement opportunities for a subset of species of the region typical of grassland dominated landscapes similar to the project site.

Although individual direct movement across the site may be limited for larger species, it is possible for insects, plants, birds, bats, and other small-bodied species to pass through some of the low elevation “choke points” described above. Such movement over many generations may contribute to gene flow between subpopulations on different parts of the site or on opposite sides of the site. However, this type of movement is expected to occur more readily in other areas in the vicinity, but off site where there are fewer restrictions. Individual dispersal events by wildlife from adjacent open spaces onto the site, with individuals returning to an original location, are expected to occur as species utilize the site for foraging. This type of movement is discussed in the “Local Wildlife Movement” section below.

The analysis of representative plant and wildlife species from each guild (described in the Wildlife Movement Methodology section above) provided similar results. Areas providing connectivity—specifically, adjacent areas of similar habitat, were generally available to a greater degree outside the Project’s proposed development footprint. Most representative species occurring on the Project site occupy scrub and/or grassland vegetation with varying degrees of annual and scrub cover. Grouping the two vegetation communities reveals a large degree of connectivity throughout the Antelope Valley, as expected, because the grasslands and scrublands of the Project site occur as remnant patches and are scattered across the valley floor. The regional Southcoast Missing Linkages study similarly reviewed vegetation types for the purposes of determining regional species movement opportunities. The study report includes a map of aggregated vegetation types showing that grasslands do not ring the Antelope Valley but are instead concentrated at the western end. Moving in a northwesterly direction from the site along the Tehachapi foothills, grasslands transition to scrub and woodland as you go beyond the project mitigation lands. Although vegetation types in the region may not be classified with the same name, the structures are similar and there are likely to be many shared species making the areas suitable for occupation and

movement. Most of the representative wildlife species that were reviewed fell into this category including desert stink beetles (*Eleodes* sp.), short horned-grasshopper (*Melanoplus* sp.), monarch butterfly, side-blotched lizard, southern pacific rattlesnake, horned lark, western meadowlark, northern harrier, coyote, and cottontail rabbit. These species will traverse, breed, or forage in the surrounding vegetation types such as rubber rabbitbrush scrub, desert scrub, and undifferentiated grasslands. Some wildlife species occurring in the Project region may have more specific habitat requirements such as the Tehachapi pocket mouse and the coast horned lizard. Based on current CNDDDB records, although historically ranging wider, the current distribution for the Tehachapi pocket mouse is limited to the Tehachapi Mountains slopes. The coast horned lizard is more widely distributed currently extending from the southern coastal ranges into the Tehachapis and the southern Sierra Nevada range as well as the Central Valley. Plant species reviewed in this analysis had a similar set of results with some common species from the Project site occurring in a variety of habitats throughout the Antelope Valley such as the California poppy bristly fiddleneck (*Amsinckia tessellata*), Mojave suncup (*Camissonia campestris*), rubber rabbitbrush, little gilia (*Gilia minor*), needle goldfields, Veatch's blazingstar (*Mentzelia veatchiana*). Some plant species with narrower habitat requirements such as desert larkspur (*Delphinium parishii*), variable linanthus (*Leptosiphon parviflorus*), creamcups (*Platystemon californicus*), and thistle sage (*Salvia carduacea*) may have a more fragmented distribution reflective of the location of the specific microhabitat type. Desert larkspur is known to occur in creosote bush scrub, Joshua tree woodland, pinyon-juniper woodland, and chaparral which are scarce or non-existent vegetation communities on the site and not within the Project impact area (Jepson 2015, CCH 2016). This species occurs within scattered remnant patches of Joshua tree woodland and creosote bush scrub on the valley floor, but occurs to a much greater degree in higher elevation mountains and foothills in the Project region. The distribution of variable linanthus indicates a tendency for more mountainous or foothill habitat where it occurs in sandy washes, mesas, meadows and openings of coastal sage scrub (Jepson 2015; Prigge, B.A. and Gibson, A.C. 2007). This type of habitat occurs within adjacent higher elevations to a much greater degree than on the Project site, which is consistent with this species' known distribution (CCH 2016). Creamcups reportedly have some degree of affinity for serpentine soils, and the known distribution does not indicate any specific connection through the Project area (Safford et al. 2005). Populations have been recorded in all directions from the Project site (CCH 2016). Thistle sage occurs in sandy or gravelly, open places in creosote bush scrub, coastal sage scrub, and valley grassland in the region and beyond. Similar to the variable linanthus, known occurrences of this species have a preponderance to occur in foothills similar to the upper portions of the Project site and the surrounding areas. Populations of this species are known from all directions of the Project site and would indicate that higher elevation foothills provide connectivity to a greater degree and are more readily available than lower elevation areas such as occurs on most of the Project development area (CCH 2016; Jepson Herbarium 2015; CCH 2016; Lady Bird Johnson Wildflower Center 2017).

The results of the analysis indicate no particular identifiable bottle neck through the Project area for species occurring on the site and within adjacent foothills of the Antelope Valley. For species that are restricted to grasslands and do not utilize scrub habitat, loss of grasslands on the site would result in loss of habitat but would not result in a break in an otherwise contiguous band of grasslands with large populations of these species occurring on either side. For species with more flexible habitat requirements allowing both grasslands and scrub, or species restricted to scrub, would not become disconnected from scrub/grassland habitats on either sides of the Antelope Valley due to the post-project persistence of scattered areas of contiguous habitat across the Western Antelope Valley floor and continuing further to the east. This conclusion can be applied to all ground dwelling mobility guilds and with aerial mobility guilds to an even greater extent due to greater ability to traverse areas of otherwise unsuitable habitat. Little is known about the pollinators of the specific rare plant impacts by the project other than round leaved filaree which is known to be self-pollinating. However, pollinators of both common and rare plants of the region are expected to fit into one or more of the five mobility guilds and all have been shown to have linkages which would persist after Project buildout and would not result in negative effects on regional populations.

Long-Term Sustainability of Regional Linkage

As previously described, the Tehachapi Mountains provide a regional landscape linkage between the Sierra Nevada, the Coast Ranges, and the San Gabriel Mountains to the south. Although I-5 and the California Aqueduct substantially reduce the permeability of the linkage for many wildlife species, it remains functional for many species to some degree. This is largely due to the limited amount and sparse nature of development in the vicinity of the remaining wildlife crossings and elsewhere in the Tehachapi Mountains. Keeping the Tehachapi linkage functional is important for the long-term viability of many species and for the overall health of the plant and wildlife communities in the region.

It is widely recognized that Tejon Ranch, the largest single-owner landholding west of central Texas, constitutes an unmatched conservation acquisition opportunity that can greatly benefit wildlife in Southern California. Private holdings in an area the size of the Tehachapi Mountains typically would include many landowners; however, in the case of the Tehachapis, the breadth of the mountain range is owned by a single private entity, the TRC.

Two regional conservation plans will assist in sustaining the functionality of the regional landscape linkage for future wildlife populations. These plans offer elements for long-term sustainability and management of a Tehachapi Mountains landscape linkage: the Tejon Ranch Conservation and Land Use Agreement (TRCRWA) and the Tehachapi Upland Multiple Species Habitat Conservation Plan (TU MSHCP).

Under the TRCRWA, the Tejon Ranch Conservancy will adopt, update, monitor and enforce implementation of the Ranch-Wide Management Plan (RWMP) on dedicated conservation areas and option areas subject to conservation, preservation, mitigation, and enhancement measures, as required under applicable law or imposed by federal, State or local agencies as part of any permit or approval for the Ranch or projects within the Ranch. Maintenance of the open space or conserved lands will be the responsibility of the Conservancy, funded in large part by a fee based on a portion of the purchase price for each residential parcel on

Tejon Ranch. Since Centennial constitutes over 75 percent of the currently planned residential units on the Ranch, it will bear the substantial costs of funding the Conservancy and maintaining wildlife movement corridor areas through the Ranch. As mentioned previously in 5.7.2, no public agency is a party to the Ranchwide agreement, although the federal and State agencies responsible for administering biological protection laws and regulations confirmed that lands under the RWMP continue to be eligible mitigation lands.

In addition, the TU MSHCP ensures the persistence of covered species, including sustaining viable populations of those species, providing for (within property dispersal) and protecting current opportunities for wildlife movement beyond the Ranch by preserving existing landscape linkages. Lands to be conserved as part of the TU MSHCP are adjacent to other lands within Tejon Ranch ownership and are also slated to be protected as part of the TRCRWA. The sum of these interconnected open space commitments, development restrictions, and mitigation measures is a conservation commitment that is, by design, consistent with conservation biology principles calling for large, interconnected blocks of habitat that support the life history requirements of Covered Species and other resident wildlife. The TU MSHCP, if fully implemented, will sustain crucial landscape linkages across cismontane Southern California.

The TU MSHCP will be a major contributor to ensuring the viability of the Tehachapi Landscape linkage into the future. Through the various conditions and measures stipulated by the TU MSHCP for the various covered species, habitat for these and many additional species will be preserved and enhanced, which will promote healthy plant and wildlife communities throughout the region. Although the focus of the TU MSHCP is on the California condor and other species of the montane upland communities, many of the same species occur in the foothills and lowland areas as well, including the Centennial site. These species will benefit from the TU MSHCP in addition to the Centennial Mitigation Preserve program described in this document.

Local Wildlife Movement

Oso Canyon and its many tributaries west of the Aqueduct and the east-west-oriented drainages that are located east of the Aqueduct undoubtedly are used by some animals as local travel paths as they move across their home range areas on the Project site; however, the Aqueduct probably effectively serves to block east-west movement on the Project site for most ground-dwelling wildlife. As discussed above, limited opportunities for wildlife to cross the Aqueduct have been identified at four locations, but wildlife movement across that formidable barrier is probably a rare event.

Because of the presence of cover and canopy provided by trees and shrubs, and because of the availability of seasonal water, the drainage area immediately north of SR-138 and east of the Aqueduct on the Project site may serve as a valuable foraging resource area. Tracks of mountain lion, bobcat, black bear, and numerous small mammal species were observed along this drainage during the wetland delineation study conducted on the site (Impact Sciences 2002b). Most wildlife using this area likely access it for water and/or to forage by crossing SR-138 from the more vegetated upland areas to the south of SR-138. Because individuals of many of the larger wildlife species in the region tend not to cross large expanses with sparse shrub cover (typical of the majority of the Project site), the central and

eastern portions of the Project site are not likely to be used by them to disperse between and within the regional open space areas in the site vicinity. The Project site does provide unobstructed local movement opportunities for small animals and aerially dispersing plants and animals that reside in the area.

Special Status Biological Resources

This section addresses special status biological resources that have been observed, reported, or that have the potential to occur on the Project site. These resources include plant and wildlife species that have been afforded special status and/or recognition by federal and State resource agencies (principally the USFWS and the CDFW) and by the California Native Plant Society (CNPS). The CNPS is a conservation organization commonly relied upon for plant distribution and occurrence information. In general, the principal reason an individual taxon (i.e., species, subspecies, or variety) is given such recognition is the documented or perceived decline of its population size, geographic range, and/or distribution. Decline has resulted, in most cases, from habitat loss.

Tables 5.7-6 and 5.7-8 provide a summary of each special status plant and wildlife species, respectively, known to occur in the Project region and shown on adjacent USGS 7.5-minute quadrangle maps. The Project region is chiefly considered to be the western Antelope Valley and associated watersheds west of 90th Street West. This includes the slopes of the surrounding ranges that face the Antelope Valley and represents the western edge of the desert biome of the Mojave Desert. The Project vicinity is considered to be the surrounding area within approximately a one-mile radius of the Project site. The Project is located on the USGS Lebec and La Liebre Ranch 7.5-minute quadrangle maps. Ten surrounding quadrangles are the Grapevine, Pastoria Creek, Winters Ridge, Liebre Twins, Frazier Mountain, Neenach School, Alamo Mountain, Black Mountain, Liebre Mountain, and Burnt Peak 7.5-minute quadrangles. Table 5.7-5, Special Status Plant Species, and Table 5.7-8, Special Status Wildlife Species, also include information on the likelihood for each species to occur on the Project site along with definitions for the various status designations. In addition, special status biological resources include vegetation types and habitats that are either unique, of relatively limited distribution in the region, or of particularly high wildlife value. These resources have been defined by federal, State, and local government conservation programs. Sources used to determine the special status of biological resources are as follows:

Plants. Locational Inventory of Rare and Endangered Vascular Plants of California (CNPS 2015); the CDFW's California Natural Diversity Database (CNDDDB) (CDFW 2015a); various Federal Register notices from the USFWS regarding listing status of plant species; and the CDFW's *Special Vascular Plants, Bryophytes, and Lichens List* (CDFW 2016b).

Wildlife. The CDFW's California Wildlife Habitat Relationships Database System (CDFW BDB 2014); the CNDDDB; various USFWS Federal Register notices regarding listing status of wildlife species; and the CDFW's Special Animals List (CDFW 2017b).

Vegetation Types. The CDFW's List of Natural Communities (CDFG 2010); the CNDDDB; and the County of Los Angeles Oak Tree Ordinance (County of Los Angeles 1988).

Definitions

A federally Endangered species is one facing extinction throughout all, or a significant portion of, its geographic range. A federally Threatened species is one likely to become Endangered in the foreseeable future throughout all or a significant portion of its range. The presence of any federally Threatened or Endangered species in a study area generally imposes severe constraints on development, particularly if development would result in “take” of the species or its habitat. The term “take” means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, collect, or attempt to engage in such conduct. Harm, in this sense, can include any disturbance to habitats used by the species during any portion of its life history.

Proposed species or Candidate species are those officially proposed by the USFWS for addition to the federal Threatened and Endangered species list. Because proposed species may soon be listed as Threatened or Endangered, these species could become listed prior to or during implementation of a proposed project. The presence of a Proposed or Candidate species in a project impact area may impose constraints on development if they are listed prior to issuance of project permits, particularly if a project would result in “take” of the species or its habitat.

The State of California considers an Endangered species to be one whose prospects of survival and reproduction are in immediate jeopardy; a Threatened species as one present in such small numbers throughout its range that it is likely to become an Endangered species in the near future in the absence of special protection or management; and a Rare species as one present in such small numbers throughout its range that it may become Endangered if its present environment worsens. “Rare species” only applies only to California native plants. State-listed Threatened and Endangered species are protected against take unless an Incidental Take Permit is obtained from the resource agencies. The presence of any State-listed Threatened or Endangered species in a project impact area generally imposes severe constraints on development, particularly if a project would result in “take” of the species or its habitat.

California Species of Special Concern is an informal designation used by the CDFW for some declining wildlife species that are not State Candidates for listing. This designation does not provide legal protection, but signifies that these species are recognized as special status by the CDFW. In recent years, the CDFW has downlisted several species from Species of Special Concern to the Watch List.

Species that are California Fully Protected and Protected include those protected by special legislation for various reasons, such as the mountain lion and white-tailed kite. Fully Protected species may not be taken or possessed at any time. California Protected species include those species that may not be taken or possessed at any time except under special permit from the CDFW issued pursuant to the *California Code of Regulations* (Title 14, Sections 650 and 670.7) or Section 2081 of the *California Fish and Game Code*.

Species of Local Concern are those that have no official status with the resource agencies, but are being watched because there is either a unique population in the region or the species is declining in the region.

Special Animal is a general term that refers to species that the CNDDDB is interested in tracking, regardless of legal or protective status. This term includes species designated as any of the above terms, but also includes species that may be considered biologically rare; are restricted in distribution; are declining throughout their range; have a critical, vulnerable stage in their life cycle that warrants monitoring; are on the periphery of their range and are threatened with extirpation in California; are associated with special status habitats; or are considered by other State or federal agencies or private organizations to be sensitive or declining.

The California Rare Plant Rank (CRPR), formerly known as CNPS List, is a ranking system by the Rare Plant Status Review group (which consists of over 300 botanical experts from the government, academia, non-governmental organizations, and the private sector) and is managed by the CNPS and the CDFW (CNPS 2015). A CRPR summarizes information on the distribution, rarity, and endangerment of California's vascular plants. Plants with a CRPR of 1A are presumed extinct because they have not been seen in the wild for many years. Plants with a CRPR of 1B are Rare, Threatened, or Endangered throughout their range. Plants with a CRPR of 2A are presumed extirpated from California, but are more common elsewhere. Plants with a CRPR of 2B are considered Rare, Threatened, or Endangered in California, but are more common elsewhere. Plants with a CRPR of 3 require more information before they can be assigned to another rank or rejected; this is a "review" list. Plants with a CRPR of 4 are of limited distribution or are infrequent throughout a broader area in California; this is a "watch" list. The Threat Rank is an extension that is added to the CRPR to designate the plant's endangerment level. An extension of .1 is assigned to plants that are considered to be "seriously threatened" in California (i.e., over 80 percent of the occurrences are threatened or have a high degree and immediacy of threat). Extension .2 indicates the plant is "fairly threatened" in California (i.e., between 20 and 80 percent of the occurrences are threatened or have a moderate degree and immediacy of threat). Extension .3 is assigned to plants that are considered "not very threatened" in California (i.e., less than 20 percent of occurrences are threatened or have a low degree and immediacy of threat or no current threats are known). The absence of a threat code extension indicates that this information is lacking for the plant(s) in question.

Special Status Vegetation Types

In addition to providing an inventory of special status plant and wildlife species, the CNDDDB also provides an inventory of vegetation types that are considered special status by State and federal resource agencies, academic institutions, and various conservation groups (such as the CNPS). In addition, the County of Los Angeles Oak Tree Ordinance protects all oak trees in Los Angeles County that are 8 inches or more in diameter measured at 4.5 feet above natural grade. At the community level, oak woodlands are protected via Section 21083.4 of the *California Public Resources Code* (PRC), which was enacted by Senate Bill (SB) 1334 in 2004. Finally, all wetland and riparian vegetation types are also considered special status by (1) the CDFW in its capacity as a natural resource trustee for purposes of CEQA review and (2) the federal CWA, Section 404, which protects "waters of the U.S.," including those jurisdictional wetlands that are defined by the presence of hydrophytic vegetation, hydric soils, and wetland hydrology. The CDFW considers the vegetation types listed below as being a high priority for preservation.

Special status vegetation types existing on the Project site and on a portion of the off-site impact areas (see Table 5.7-3, Vegetation Type Acreages) include the following: Wright's buckwheat scrub (12.2 acres); mixed oak woodland (1,370.8 acres); alluvial scrub (5.6 acres); cottonwood woodland (0.1 acre); riparian herb (53.3 acres); rush riparian grassland (48.9 acres); southern arroyo willow riparian (8.6 acres); southern cottonwood willow woodland (4.0 acres); southern willow scrub (13.1 acres); unvegetated wash (25.7 acres); valley oak riparian woodland (12.1 acres); willow riparian forest (15.1 acres); willow riparian woodland (8.3 acres); alkali meadow (3.7 acres); Baltic rush (21.5 acres); coastal and valley freshwater marsh (2.5 acres); seeps and ephemeral ponds (8.0 acres); and native perennial grasslands and wildflower fields that are coincident and mixed with annual grasslands and other vegetation types (see Table 5.7-3 for individual acreages). Undifferentiated grasslands and wildflower fields cover 9,324.3 acres on the site and in mapped off-site areas, a portion of which includes the native perennial grassland and wildflower field special status vegetation type. Additionally, some of these special status vegetation types occur in mixed communities on site, as noted in the "Mixed Chaparral or Scrub and Grassland Vegetation Types" portion of Table 5.7-3. Special status vegetation types on the Project site are illustrated in Exhibit 5.7-1, Grouped Vegetation Types, and in greater detail in Exhibit 5.7-17, Detailed Vegetation Map.

Special Status Plants

Many special status plant species are known to occur in the Project region. The 12 quadrangles listed earlier were used to compile a list of potential special interest species that might occur on the Project site from the database of the CNDDDB and the CNPS Inventory of Rare and Endangered Plants. These plants and their potential to occur on the Project site are listed in Table 5.7-5. Exhibit 5.7-7a, Special Status Plant Species Observations, depicts the locations of the eight special status plant species that were identified on the site. Descriptions of all species follow the table.

Several additional special status plant species were considered, but were excluded from further review (and therefore not listed in Table 5.7-5) due to their lack of any potential to occur in the Project region (defined as the western Antelope Valley and associated watersheds). These include the California jewel-flower (*Caulanthus californicus*; State- and federally listed Endangered, CRPR List 1B.1), striped adobe-lily (*Fritillaria striata*, State-listed Threatened, CRPR List 1B.1), San Joaquin woollythreads (*Monolopia congdonii*; federally listed Endangered, CRPR 1B.2), and San Joaquin adobe sunburst (*Pseudobahia peirsonii*; State-listed Endangered, federally listed Threatened, CRPR List 1B.1). Two species—New York Mountains cryptantha (*Cryptantha tumulosa*) and San Gabriel ragwort (*Senecio astephanus*)—were identified during the CNPS Inventory search as being within the 12 quadrangle vicinity of the Project. However, no further documentation was found (such as CNDDDB, herbarium collections, or any other reporting databases) to support these species as being in the vicinity. Furthermore these locations would be significantly disjunct from the otherwise known distribution of these species. Therefore, these two species were excluded from further review.

**TABLE 5.7-5
SPECIAL STATUS PLANT SPECIES**

Species	Status			Preferred Habitat and Site Suitability/Potential to Occur	Observations*
	USFWS	CDFW	CRPR		
<i>Acanthoscyphus</i> [<i>Oxytheca</i>] <i>parishii</i> var. <i>parishii</i> Parish's oxytheca	-	-	4.2	Dry, granitic sites in yellow pine forests and chaparral. Some potentially suitable habitat exists on the site. Potential to occur.	Not Observed
<i>Androsace elongata</i> ssp. <i>acuta</i> California androsace	-	-	4.2	Dry, grassy places in coastal sage scrub, chaparral, and oak woodlands. In 2008, 5 total occurrences (381 plants) were identified on the site. In 2015, 320 total occurrences (over 29,000 estimated plants) were identified on the site. Most were located on ridgetops and north-facing slopes.	Observed
<i>Astragalus hornii</i> var. <i>hornii</i> Horn's milk-vetch	-	-	1B.1	Salty flats/lake shores and alkali sink habitats. Some marginally suitable habitat exists on the site. Low potential to occur.	Not Observed
<i>Atriplex coronata</i> var. <i>coronata</i> crownscale	-	-	4.2	Alkaline, often clay soils in chenopod scrub, grassland, and around vernal pools. In 2015, 8 occurrences with over 16,000 estimated plants were identified on the site.	Observed
<i>Boechera lincolnensis</i> [<i>Arabis pulchra</i> var. <i>munciensis</i>] Lincoln rockcress	-	-	2B.3	Carbonate soils, in chenopod scrub and Mojavean desert scrub. Project is not in the range of this species. Not expected to occur.	Not Observed
<i>California</i> [<i>Erodium</i>] <i>macrophyllum</i> round-leaved filaree	-	-	1B.2	Open sites in grasslands and scrub, especially with friable clay loam soils. In 2004, 39 occurrences were identified on the site. Most were located along the low hills and slopes south of SR-138, typically associated with limestone-derived friable clay loam soils. Some large occurrences covered several acres and supported several thousand plants. In 2008, several occurrences, each with several thousand plants, were observed on the site. In 2015, 117 occurrences, totaling nearly	Observed

**TABLE 5.7-5
SPECIAL STATUS PLANT SPECIES**

Species	Status			Preferred Habitat and Site Suitability/Potential to Occur	Observations*
	USFWS	CDFW	CRPR		
				25,000 plants, were observed at the site.	
<i>Calochortus clavatus</i> var. <i>gracilis</i> slender mariposa lily	-	-	1B.2	Chaparral and coastal scrub in shaded foothill canyons, and on grassy slopes. Suitable habitat exists on the site. Potential to occur.	Not Observed
<i>Calochortus fimbriatus</i> [<i>Calochortus weedii</i> var. <i>vestus</i>] late-flowered mariposa lily	-	-	1B.2	Dry slopes in chaparral and woodlands. Some potentially suitable habitat exists on the site. Potential to occur.	Not Observed
<i>Calochortus palmeri</i> var. <i>palmeri</i> Palmer's mariposa lily	-	-	1B.2	Meadows and vernal moist sites in yellow-pine forests and chaparral. Potentially suitable habitat exists on the site. Potential to occur.	Not Observed
<i>Calystegia peirsonii</i> Peirson's morning-glory	-	-	4.2	Dry slopes in chaparral, scrub, woodlands, forests, and grasslands. Potentially suitable habitat exists on the site. Potential to occur.	Not Observed
<i>Castilleja gleasoni</i> Mt Gleason paintbrush	-	-	1B.2	Cliffs, rocky slopes in open yellow-pine forest, chaparral, and pinyon and juniper woodland. Potentially suitable habitat exists on the site. Potential to occur.	Not Observed
<i>Caulanthus lemmonii</i> Lemmon's jewel flower	-	-	1B.2	Dry slopes in grasslands, chaparral, and woodlands. Potentially suitable habitat exists on the site. Potential to occur.	Not Observed
<i>Chorizanthe spinosa</i> Mojave spineflower	-	-	4.2	Dry sandy and gravelly places in desert scrub. In 2004, 19 densely populated occurrences were identified in grasslands along the alluvial slopes near the central/southern edge of the Project site, south of SR-138. In 2006, approximately 47,575 individuals were observed on the site. In 2008, approximately 6,000 individuals were observed on the site. In 2015, approximately 10,000	Observed

**TABLE 5.7-5
SPECIAL STATUS PLANT SPECIES**

Species	Status			Preferred Habitat and Site Suitability/Potential to Occur	Observations*
	USFWS	CDFW	CRPR		
				individuals were estimated on the site.	
<i>Clinopodium mimuloides</i> monkey flower savory	-	-	4.2	Moist places, streambanks, in chaparral and woodland. Some marginally suitable habitat on site. Potential to occur.	Not Observed
<i>Delphinium inopinum</i> unexpected larkspur	-	-	4.3	Rocky upper montane coniferous forest. No suitable habitat exists on the site. Not expected to occur.	Not Observed
<i>Delphinium parryi</i> ssp. <i>purpureum</i> Mt Pinos larkspur	-	-	4.3	Chaparral, Mojavean desert scrub, pinyon-juniper woodland. Suitable habitat exists on the site. Potential to occur.	Not Observed
<i>Delphinium umbraculorum</i> umbrella larkspur	-	-	1B.3	Chaparral and cismontane woodland. Suitable habitat exists on the site. Potential to occur.	Not Observed
<i>Eriogonum callistum</i> Tehachapi buckwheat	-	-	1B.1	Openings in chaparral on rocky, limestone substrates. Suitable habitat exists on the site. Potential to occur.	Not Observed
<i>Eriogonum kennedyi</i> var. <i>austromontanum</i> southern mountain buckwheat	FT	-	1B.2	Dry, stony slopes in yellow pine forests. No suitable habitat exists on the site. Not expected to occur.	Not Observed
<i>Eriophyllum lanatum</i> var. <i>hallii</i> Fort Tejon woolly sunflower	-	-	1B.1	Dry sites with metamorphic soils, especially north-facing slopes near oak woodlands. Some potentially suitable habitat exists on the site. Potential to occur.	Not Observed
<i>Eschscholzia lemmonii</i> ssp. <i>kernensis</i> Tejon poppy	-	-	1B.1	Open grasslands with heavy clay soils. Some marginally suitable habitat exists on the site. Potential to occur.	Not Observed
<i>Frasera</i> [<i>Swertia</i>] <i>neglecta</i> pine green-gentian	-	-	4.3	Dry slopes in montane coniferous forests and pinyon/juniper woodlands. Some potentially suitable habitat exists on the site. Potential to occur.	Not Observed

**TABLE 5.7-5
SPECIAL STATUS PLANT SPECIES**

Species	Status			Preferred Habitat and Site Suitability/Potential to Occur	Observations*
	USFWS	CDFW	CRPR		
<i>Githopsis tenella</i> delicate bluecup	-	-	1B.3	Moist places in oak woodlands. Some potentially suitable habitat exists on the site. Potential to occur.	Not Observed
<i>Hulsea vestita</i> ssp. <i>gabrielensis</i> San Gabriel Mountains sunflower	-	-	4.3	Montane coniferous forests. No suitable habitat exists on the site. Not expected to occur.	Not Observed
<i>Leptosiphon</i> [<i>Linanthus</i>] <i>serrulatus</i> Madera leptosiphon	-	-	1B.2	Open areas in woodlands and chaparral. Suitable habitat exists on the site, but species has not been observed in Project region (or even more than 60 miles to the north) since the 1930s. Low potential to occur.	Not Observed
<i>Lilium humboldtii</i> ssp. <i>ocellatum</i> ocellated Humboldt lily	-	-	4.2	Gravelly soils of gullies and canyons in chaparral and oak woodlands. Suitable habitat exists on the site. Potential to occur.	Not Observed
<i>Microseris sylvatica</i> sylvan scorzonella	-	-	4.2	Grasslands and open woodlands, especially upper ridges and ephemeral drainages. In 2004, numerous (500+) occurrences were identified on the Project site. In 2008 and 2015, this species was found to be common on ridgetops and dirt roads, with a total population estimate likely exceeding 100,000 on the site.	Observed
<i>Mimulus pictus</i> calico monkeyflower	-	-	1B.2	Around granite outcrops in bare, sunny, shrubby areas. Some marginally suitable habitat exists on the site. Low potential to occur.	Not Observed
<i>Monardella linoides</i> ssp. <i>oblonga</i> flax-like monardella	-	-	1B.3	Desert scrub, pinyon-juniper woodlands, open conifer forests, and subalpine areas. Some marginally suitable habitat exists on the site. Low potential to occur.	Not Observed

**TABLE 5.7-5
SPECIAL STATUS PLANT SPECIES**

Species	Status			Preferred Habitat and Site Suitability/Potential to Occur	Observations*
	USFWS	CDFW	CRPR		
<i>Navarretia fossalis</i> spreading navarretia	FT	-	1B.1	Vernal pools, alkali grasslands, alkali playas, and alkali sinks. Some potentially suitable habitat exists on the site. Potential to occur.	Not Observed
<i>Navarretia peninsularis</i> Baja navarretia	-	-	1B.2	Wet areas in open forests and openings in chaparral. Some potentially suitable habitat exists on the site. Potential to occur.	Not Observed
<i>Navarretia setiloba</i> Piute Mountains navarretia	-	-	1B.1	Depressions in clay or gravelly loam in woodlands and grasslands. In 2004, 3 occurrences were identified with approximately 20,100 total plants. Occurrences were all located in the hills (associated with clay soils) in the far western region and found in areas that had been recently disturbed by feral pigs.	Observed
<i>Nemacladus secundiflorus</i> var. <i>robbinsii</i> Robbins' nemacladus	-	-	1B.2	Dry, gravelly slopes in openings of chaparral and grassland. Suitable habitat exists on site. Potential to occur.	Not Observed
<i>Opuntia basilaris</i> var. <i>treleasei</i> Bakersfield cactus	FE	SE	1B.1	Alluvial benches and fans in arid plains. No suitable habitat is present on the site. Not expected to occur.	Not Observed
<i>Perideridia pringlei</i> adobe yampah	-	-	4.3	Grassy slopes, serpentine outcrops, and openings in oak woodlands. In 2004, 1 occurrence with 16 plants was identified on an open, north-facing slope in the western portion of the Project site, associated with sandy to gravelly loam soils. In 2006, 3 occurrences were identified, including approximately 15 individuals. In 2008, approximately 108 individuals were observed on the site. In 2015, nearly 100 occurrences were recorded on site, with an estimate of over 3,000 total plants.	Observed

**TABLE 5.7-5
SPECIAL STATUS PLANT SPECIES**

Species	Status			Preferred Habitat and Site Suitability/Potential to Occur	Observations*
	USFWS	CDFW	CRPR		
<i>Symphyotrichum defoliatum</i> [<i>Aster bernardinus</i>] San Bernardino aster	-	-	1B.2	Meadows, marshes, and moist sites in scrub, woodlands, forests, and grasslands. Suitable habitat exists on the site. Potential to occur.	Not Observed
<i>Symphyotrichum</i> [<i>Aster</i>] <i>greatae</i> Greata's aster	-	-	1B.3	Canyons with chaparral or oak woodlands. Some potentially suitable habitat exists on the site. Potential to occur.	Not Observed
<i>Syntrichopappus lemmonii</i> Lemmon's syntrichopappus	-	-	4.3	Open, sandy to gravelly areas in chaparral and Joshua tree woodlands. In 2004, 1 occurrence with 30 plants was identified on an open, moderately steep northwest-facing slope in the north-central portion of the site west of the Aqueduct. This species was not observed in the survey area in 2015.	Observed
<i>Thermopsis macrophylla</i> var. <i>argentata</i> [<i>Thermopsis californica</i> var. <i>argentata</i>] silvery false lupine	-	-	4.3	Pine forests and open ridges, especially with limestone-derived soils. Potentially suitable habitat exists on the site, especially bordering Oso Canyon. Potential to occur.	Not Observed
<p>USFWS: U.S. Fish and Wildlife Service; CDFW: California Department of Fish and Wildlife; CRPR: California Rare Plant Rank; SR: State Route</p> <p>LEGEND</p> <p>STATUS DESIGNATIONS</p> <p>Federal (USFWS) Designations State (CDFW) Designations</p> <p>FE federally Endangered species SE State Endangered species</p> <p>CRPR (California Native Plant Society)</p> <p>1B Plants rare, threatened, or endangered in California and elsewhere</p> <p>2B Plants rare, threatened, or endangered in California, but more common elsewhere</p> <p>4 Plants of Limited Distribution – A Watch List</p> <p>CRPR Threat Code Extensions</p> <p>None Plants lacking any threat information</p> <p>.1 Seriously endangered in California (over 80% of occurrences threatened; high degree and immediacy of threat)</p> <p>.2 Fairly endangered in California (20–80% of occurrences threatened)</p> <p>.3 Not very endangered in California (less than 20% of occurrences threatened or no current threats known)</p> <p>* Sources: Impact Sciences 2003; Vollmar Consulting 2004; Natural Resource Consultants 2006b and 2008a; BonTerra Consulting 2009b, BonTerra Psomas 2015b.</p>					

Parish's Oxytheca

Parish's oxytheca (*Acanthoscyphus* [*Oxytheca*] *parishii* var. *parishii*) is a CRPR 4.2 species. This annual herb occurs on dry granitic slopes and flats, mostly in yellow pine forest habitat, between approximately 4,000 and 8,300 feet above mean sea level (msl); it typically blooms between June and September (Munz 1974). It is also found in chaparral and sandy or gravelly lower montane coniferous forest, and is known from Los Angeles, San Bernardino, and Ventura Counties (CNPS 2015). In the Project vicinity, it occurs about 15 miles southwest of the site, near the Little Mutau Trail, just west of the McDonald Cabin in Ventura County (CCH 2016). Although potentially suitable habitat for this species exists on the site, Parish's oxytheca was not observed during focused surveys.

California Androsace

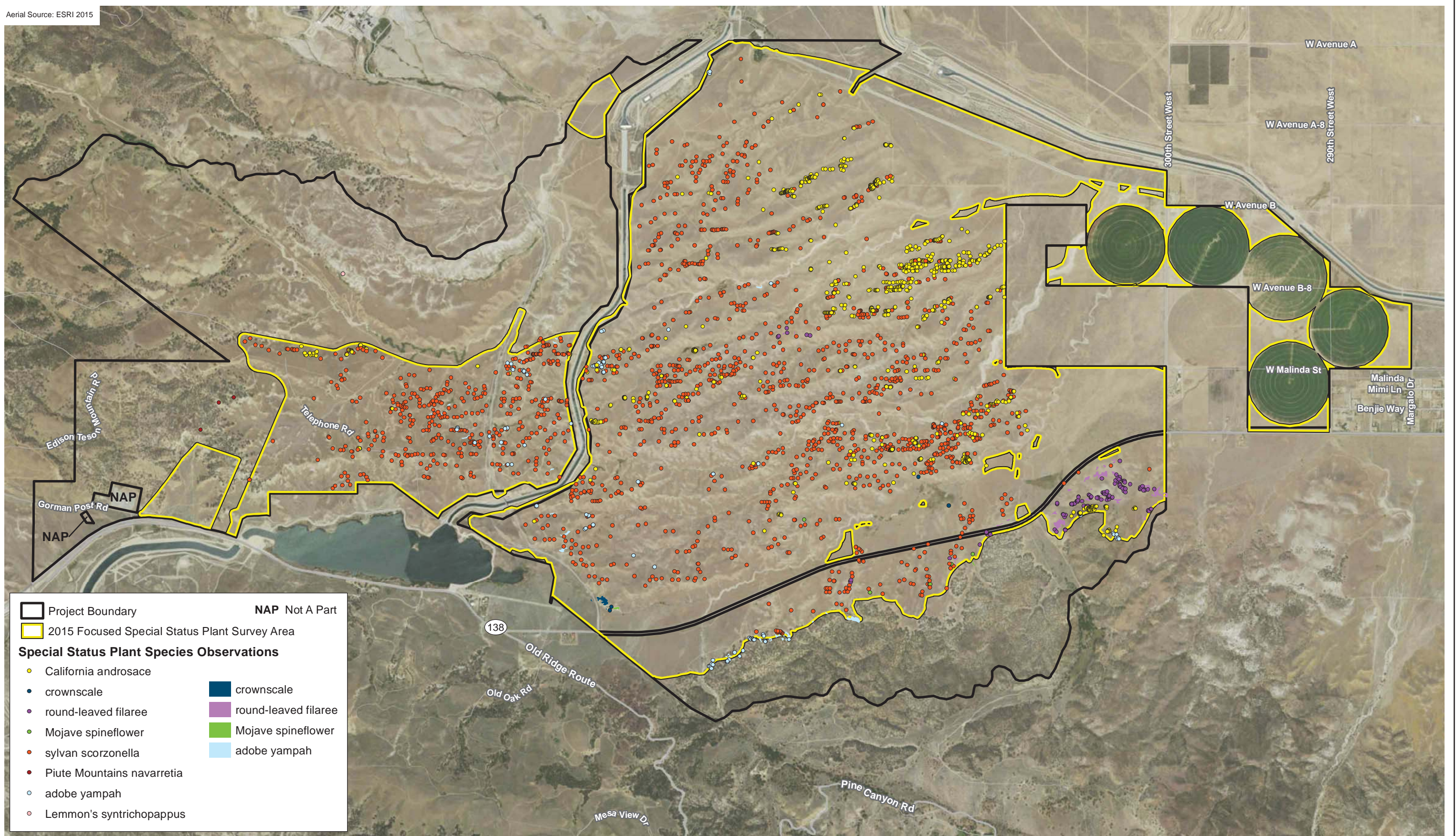
California androsace (*Androsace elongata* spp. *acuta*) has a CRPR of 4.2. It typically blooms between March and June (CNPS 2015). This annual herb occurs in dry grassy places between sea level and approximately 4,000 feet above msl in coastal sage scrub, chaparral, and oak woodland habitats (Munz 1974). This species occurs in Alameda, Contra Costa, Colusa, Fresno, Glenn, Kern, Los Angeles, Merced, Riverside, San Bernardino, San Benito, Santa Clara, San Diego, Siskiyou, San Joaquin, San Luis Obispo, San Mateo, Stanislaus, and Tehama Counties, as well as in Oregon and Baja California, Mexico (CNPS 2015). In 2008, although 15 occurrences were found in the region, only 5 occurrences with 381 total plants were found in the survey area. All other occurrences were found in proposed mitigation areas to the southeast and northwest of the site. All occurrences of this species on the site were highly localized and directly associated with hot, exposed, mostly south-facing slopes (NRC 2008a). In 2015, California androsace was found scattered throughout the site on hilltops and on upper north-facing slopes, with the highest abundances on the lower hills in the northeastern section of the Project site. Over 29,000 individuals in 320 locations were estimated during field surveys; however, due to poor general detectability of this small plant, surveys likely underestimated both the extent and population numbers in the survey area.

Horn's Milk-Vetch

Horn's milk-vetch (*Astragalus hornii* var. *hornii*) is a CRPR List 1B.1 species. It typically blooms between May and October (CNPS 2015). This annual herb prefers salty flats and lake shores (Jepson Herbarium 2015); it occurs in alkali sink habitats at elevations of about 2,500 to 3,700 feet above msl in the western Mojave Desert, at lower elevations in the San Joaquin Valley, and formerly in the San Bernardino Valley (Munz 1974). This species occurs in Inyo, Kern, San Bernardino, and Tulare Counties (CNPS 2015). In the Project vicinity, according to a historical record from 1863, it occurred about ten miles northwest of the Project site, near Fort Tejon (CDFW 2015a). Although some suitable habitat for this species exists on the site, Horn's milk-vetch was not observed during focused surveys.

Crownscale

Crownscale (*Atriplex coronata* var. *coronata*) has a CRPR of 4.2. It typically blooms between March and October. This annual herb is generally found in alkaline, often clay, soil in chenopod scrub, grasslands, and around vernal pools usually between sea level and approximately 2,000 feet above msl (CNPS 2015). Historically it has been known only from



Legend

Project Boundary
 NAP Not A Part
 2015 Focused Special Status Plant Survey Area

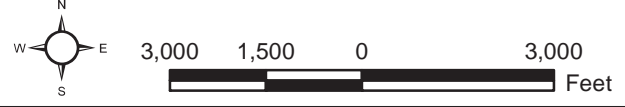
Special Status Plant Species Observations

● California androsace	● crownscale
● round-leaved filaree	● round-leaved filaree
● Mojave spineflower	● Mojave spineflower
● sylvan scorzonella	● adobe yampah
● Piute Mountains navarretia	
● adobe yampah	
● Lemmon's syntrichopappus	

Special Status Plant Species Observations

Exhibit 5.7-7a

Centennial Project



the Sacramento Valley, San Joaquin Valley, and the Inner South Coast Ranges (Jepson Herbarium 2015). The closest known location outside the Project boundary is approximately 30 miles to the north, near the town of Arvin (CCH 2016). On the Project site, 2015 surveys identified 8 populations with more than 16,000 estimated total plants within the same drainage feature. The largest populations were found on alkali scalds and dry pools near the intersection of SR-138 and National Cement Plant Road. Populations on the Project site are not entirely consistent with published descriptions of the species, with most individuals expressing spherical, densely tubercled fruit bracts, along with flattened compressed fruit bracts. This results in a mixed key characteristic between the more common crownscale, and the federally listed Endangered San Jacinto Valley crownscale (*Atriplex coronata* var. *notatior*), which is known only from a limited distribution in Riverside County over 100 miles to the southeast. Based on expert opinion and its closer proximity to known distribution of the more common crownscale, it was decided that individuals on the Project site be considered as an unusual form of the more common crownscale (Sanders 2015).

Lincoln Rockcress

Lincoln rockcress (*Boechea lincolnensis* [*Arabis pulchra* var. *munciensis*]) is a CRPR 2B.3 species. It typically blooms between March and May (CNPS 2015). This perennial herb is generally found on rocky slopes and gravelly soil in sagebrush and shrublands at elevations of about 4,590 to 6,560 feet above msl (Jepson Herbarium 2015). It occurs in the White and Inyo Mountains, the mountains of the Mojave Desert, and into Nevada and Utah (Jepson Herbarium 2015). There is one CNDDDB record of this species approximately nine miles east of the Project at Ripley Desert Woodland State Park (CDFW 2015a). However, this occurrence is based solely on a March 2005 CalPhotos picture of Lincoln rockcress which was originally misidentified as *Boechea lincolnensis*. The Project site is outside the known range of this species and it is therefore unlikely to occur on the site.

Slender Mariposa Lily

Slender mariposa lily (*Calochortus clavatus* var. *gracilis*) is a CRPR 1B.2 species. This bulbiferous herb typically blooms between March and June and usually occurs in chaparral and coastal scrub in shaded foothill canyons, but is also found on grassy slopes in other habitats (CNPS 2015; Jepson Herbarium 2015). This species occurs in Los Angeles and Ventura Counties (CNPS 2015). Slender mariposa lily is known to hybridize with club-haired mariposa lily (*Calochortus clavatus* ssp. *clavatus*), which is a more common subspecies. Slender mariposa lily occurs approximately 2.5 miles south of the Project site along Liebre Gulch road on the Angeles National Forest (CDFW 2015a). Although suitable habitat for this species exists on the site, slender mariposa lily was not observed during focused surveys. Rainfall patterns during the 2015 season resulted in diminutive plants and a very short blooming period for all mariposa lily species observed on site, and many individuals were only observed in vegetative or fruiting conditions. The majority of the observed plants were assumed to be butterfly mariposa lily (*Calochortus venustus*), but slender mariposa lily cannot be ruled out.

Round-Leaved Filaree

Round-leaved filaree (*California [Erodium] macrophyllum*) has a CRPR of 1B.2. It typically blooms between March and May (Munz 1974). This low-growing forb is found in open sites in grassland and shrubland at elevations between sea level and approximately 3,940 feet above msl. It occurs throughout California to northern Mexico (Jepson Herbarium 2015). The 2004 special status plant survey report indicated that 46 occurrences were observed, but only 39 of these occurrences are located on the Project site (each ranging in size from 20 individuals to several thousand plants); the other occurrences are located in proposed open space just north of the Project site. All 2004 occurrences of this species on the site were directly associated with friable clay loam soils, as evidenced by the presence of limestone fragments in the soils and, in some cases, nearby limestone outcrops (Vollmar 2004). In 2008, several occurrences, each with several thousand plants, were observed on the site (NRC 2008a). In 2015, 117 occurrences were identified, with an estimated total population of about 25,000 plants. Populations were strongly associated with distinctive areas of friable clay loam soils, which also supported associated patches of common monolopia (*Monolopia lanceolata*) and Great Valley phacelia (*Phacelia ciliata*). Identified populations largely overlap those found in previous surveys, so the higher number of occurrences is likely due to mapping these occurrences at a finer scale. Germination rates of this species appeared to be high in 2015, which resulted in large population numbers; however, spring rainfall patterns caused a high percentage of individuals to die before producing viable fruit, which could affect population numbers in subsequent seasons.

Late-Flowered Mariposa Lily

Late-flowered mariposa lily (*Calochortus fimbriatus [Calochortus weedii var. vestus]*) is a CRPR 1B.2 species. It typically blooms between July and August (Munz 1974). This bulbiferous perennial herb occurs on dry slopes in chaparral at elevations between sea level and approximately 2,500 feet above msl (Munz 1974). It is found in dry, open coastal woodlands and chaparral (Jepson Herbarium 2015). This species occurs in Kern, Los Angeles, Monterey, Santa Barbara, San Luis Obispo, and Ventura Counties (CNPS 2015). It has been reported approximately ten miles from the Project site (CNPS 2015). However, no further documentation was found (such as CNDDDB, herbarium collections, or any other reporting databases) to support these species as being in the vicinity. Although potentially suitable habitat exists on the site, the Project site is likely out of range for the species. Late-flowered mariposa lily was not observed during focused surveys.

Palmer's Mariposa Lily

Palmer's mariposa lily (*Calochortus palmeri var. palmeri*) is a CRPR 1B.2 species. It typically blooms between May and July (Munz 1974). This bulbiferous perennial herb occurs in meadows and other vernal moist places at elevations between approximately 3,500 and 6,500 feet above msl in the San Bernardino and Tehachapi Mountains (Munz 1974). It is associated with yellow-pine forests and chaparral (Jepson Herbarium 2015). This species occurs in Kern, Los Angeles, Riverside, Santa Barbara, San Bernardino, San Luis Obispo, and Ventura Counties (CNPS 2015). A population of approximately 2,000 plants has been reported less than one mile north of the Project site, east of the National Cement Plant, along

the margins of a wet meadow (CDFW 2015a). Although potentially suitable habitat for this species exists on the site, Palmer's mariposa lily was not observed during focused surveys.

Peirson's Morning-Glory

Peirson's morning-glory (*Calystegia peirsonii*) is a CRPR 4.2 species. This perennial herb occurs on dry slopes between approximately 3,000 and 4,500 feet above msl and typically blooms between May and June (Munz 1974). It is found in chaparral, scrub, woodland, forest, and native grassland habitats, and is known from Los Angeles County (CNPS 2015). In the Liebre Mountain region, this species is considered widespread and locally common in grassland and open situations in scrub and woodland (Boyd 1999). In the Project vicinity, it occurs more than ten miles southeast of the Project site on the Fish Canyon Truck Trail at Castaic Creek (CDFW 2015a) and also about eight miles southeast of the site, near the confluence of Pine Canyon and Bear Canyon (CCH 2016). Historical records exist from 1896 and 1935 from the vicinity of Neenach, which is less than three miles east of the Project site (CCH 2016). Although potentially suitable habitat for this species exists on the site, Peirson's morning-glory was not observed during focused surveys.

Mt. Gleason Paintbrush

Mt. Gleason paintbrush (*Castilleja gleasoni*) is a CPRP 1B.2 species. It typically blooms between May and September (CNPS 2015). This perennial herb occurs on cliffs and rocky slopes in open yellow pine forest, chaparral, and pinyon and juniper woodland between approximately 3,600 and 7,200 feet above msl (Jepson Herbarium 2015; CNPS 2015). This species is known only from Los Angeles County (CNPS 2015). In the Project vicinity, it occurs on the western end of Liebre Mountain, less than three miles south of the Project site (CDFW 2015a). Although suitable habitat for this species occurs on the site, the Project site is slightly under the elevation range of the species, and Mt. Gleason paintbrush was not observed during focused surveys.

Lemmon's Jewel Flower

Lemmon's jewel flower (*Caulanthus lemmonii*) is a CRPR 1B.2 species. It typically blooms between March and May (CNPS 2015). This annual herb occurs on dry slopes between sea level and about 5,000 feet above msl in valley grassland, chaparral, and foothill woodland habitats (Munz 1974). In Southern California, this species occurs in Kern, Santa Barbara, San Luis Obispo, and Ventura Counties (CNPS 2015). It occurs approximately 19 miles northwest of the Project site, in the vicinity of Wheeler Ridge (CDFW 2015a). Although potentially suitable habitat for this species exists on the site, Lemmon's jewel flower was not observed during focused surveys. A closely related species, Coulter's jewel flower (*Caulanthus coulteri*) was found to be common in the mixed chaparral community on the western end of the Project site. Some individuals in these populations were found to have spreading to erect fruits, which is a key characteristic of Lemmon's jewel flower, but were otherwise consistent with Coulter's jewel flower. It is possible there has been some hybridization between these and Lemmon's jewel flower, or alternatively this is simply an uncommon, undescribed characteristic of Coulter's jewel flower.

Mojave Spineflower

Mojave spineflower (*Chorizanthe spinosa*) has a CRPR of 4.2. It typically blooms between March and July (CNPS 2015). This annual forb is found in desert scrub between sea level and 4,270 feet above msl (Jepson Herbarium 2015). It is prostrate and loosely branched and prefers dry sandy and gravelly places (Munz 1974). It occurs in Kern, Los Angeles, and San Bernardino Counties (CNPS 2015). Prior to focused surveys for the Project, this species was not known to occur in the vicinity of the Project site (Munz 1974). The closest reported occurrence outside the site is in the Antelope Valley along SR-138 at the intersection of 140th Street West (CCH 2016). In 2004, 19 densely populated occurrences were observed (Vollmar 2004). In 2006, approximately 47,575 individuals were observed on the site (NRC 2006b). In 2008, approximately 6,000 individuals were observed on the site (NRC 2008a). In 2015, approximately 10,000 individuals were observed on the site.

Monkey Flower Savory

Monkey flower savory (*Clinopodium mimuloides*) is a CRPR 4.2 species. It typically blooms between June and October. This perennial herb occurs at elevations between approximately 1,000 and 5,900 feet above msl, and prefers moist sites and streambanks in chaparral and coastal coniferous forests (CNPS 2015). This species occurs in Los Angeles, Monterey, Santa Barbara, San Luis Obispo, and Ventura Counties. The closest known occurrence of this species is approximately nine miles south of the Project in Middle Fish Canyon (CCH 2016). Although marginally suitable habitat exists on the site, monkey flower savory was not observed during focused surveys.

Unexpected Larkspur

Unexpected larkspur (*Delphinium inopinum*) is a CRPR 4.3 species. It typically blooms between May and July. This perennial herb occurs at elevations between approximately 6,200 and 9,200 feet above msl, and prefers rocky sites in upper montane coniferous forests. This species occurs in Fresno, Inyo, Kern, Tulare, and Ventura Counties (CNPS 2015). The closest recorded occurrence of this species is from an undated collection approximately 14 miles west of the Project, near Cuddy Valley (CCH 2016). The Project is well below the known elevation range of this species and there is no suitable habitat on the site. Unexpected larkspur was not observed during surveys, and is not expected to occur.

Mt. Pinos Larkspur

Mt. Pinos larkspur (*Delphinium parryi* ssp. *purpureum*) is a CRPR 4.3 species. It typically blooms between May and June. This perennial herb occurs at elevations between approximately 3,300 and 8,500 feet above msl, and is generally found in chaparral, Mojavean desert scrub, and pinyon-juniper woodland. This species occurs in Kern, Santa Barbara, and Ventura Counties (CNPS 2015). The closest known record of this species is less than one mile south of the Project site along Pine Canyon Road (CCH 2016). Suitable habitat exists on the Project site; however no individuals of Mt. Pinos larkspur were identified during focused surveys.

Umbrella Larkspur

Umbrella larkspur (*Delphinium umbraculorum*) is a CRPR 1B.3 species. It typically blooms between April and June. This perennial herb occurs at elevations between approximately 1,300 and 5,250 feet above msl, and typically grows in chaparral and cismontane woodland. This species occurs in Kern, Monterey, Santa Barbara, San Luis Obispo, and Ventura Counties (CNPS 2015). The closest recorded occurrence of this species is approximately six miles northeast of the Project near I-5 and Lebec Road in Rising Canyon (CDFW 2015a). Suitable habitat for this species exists on the Project site; however, no individuals of umbrella larkspur were identified during focused surveys.

Tehachapi Buckwheat

Tehachapi buckwheat (*Eriogonum callistum*) is a CRPR 1B.1 species. It typically blooms between May and July. This perennial herb occurs at elevations between approximately 4,600 and 4,900 feet above msl; it prefers openings in chaparral on rocky, limestone substrates. This species has only recently been described, and is known from fewer than five occurrences in Kern County (CNPS 2015). The closest known occurrence of this species is approximately 1.5 miles northwest of the Project boundary (CDFW 2015a). Although suitable habitat for this species occurs on the site, Tehachapi buckwheat was not observed during focused surveys.

Southern Mountain Buckwheat

Southern mountain buckwheat (*Eriogonum kennedyi* var. *austromontanum*) is a federally listed Threatened and a CRPR 1B.2 species. It typically blooms between June and September (CNPS 2015). This perennial herb occurs on dry, stony slopes at elevations between approximately 6,300 and 6,500 feet above msl, in yellow pine forest habitats (Munz 1974). This species occurs in San Bernardino and Ventura Counties (CNPS 2015). In the Project vicinity, this species has been collected several times in Lockwood Valley, more than ten miles west of the Project site (CCH 2016). Suitable elevation and habitat for this species does not exist on the site; southern mountain buckwheat was not observed during focused surveys.

Fort Tejon Woolly Sunflower

Fort Tejon woolly sunflower (*Eriophyllum lanatum* var. *hallii*) is a CRPR 1B.1 species. It typically blooms between May and July (CNPS 2015). This herbaceous perennial grows in dry sites at elevations between approximately 3,940 and 4,600 feet above msl (Munz 1974; Jepson Herbarium 2015). It occurs in both Kern and Santa Barbara Counties, and the nearest occurrence is approximately three miles north of the Project site (CDFW 2015a). This species is associated with soils derived from metamorphic rock and is also known from 17 sites located a few miles north of the Project site; these sites were located mainly on steep, north-facing hillsides within or adjacent to dense or moderately open oak woodlands (BonTerra Psomas 2015b). Although potentially suitable habitat for this species exists on the site, Fort Tejon woolly sunflower was not observed during focused surveys.

Tejon Poppy

Tejon poppy (*Eschscholzia lemmonii* ssp. *kernensis*) is a CRPR 1B.1 species. It typically blooms between March and May (CNPS 2015). This annual grows in open grasslands at elevations between approximately 650 and 3,280 feet above msl (Jepson Herbarium 2015). It only occurs in Kern County (CNPS 2015). This species is generally found on the northern side of the Tehachapi Mountains, and is associated with heavy clay soils (Vollmar Consulting 2004). It is reported from the canyon west of Fort Tejon State Historic Park; however, when this purported location was revisited, Tejon poppy was not found, and a similar species, the foothill poppy (*Eschscholzia caespitosa*), was found. It is possible that this foothill poppy was misidentified in this location as Tejon poppy (Vollmar Consulting 2004). Although potentially suitable habitat for this species exists on the site, Tejon poppy was not observed during focused surveys.

Pine Green-Gentian

Pine green-gentian (*Frasera* [*Swertia*] *neglecta*) is a CRPR 4.3 species. This perennial herb occurs on dry slopes between approximately 4,500 and 8,000 feet above msl, largely in yellow pine forest habitat, and typically blooms between May and July (Munz 1974). It is found in dry, open woodlands (Jepson Herbarium 2015). More specifically, it prefers montane coniferous forest and pinyon/juniper woodland habitats, and is known from Kern, Los Angeles, Santa Barbara, San Bernardino, and Ventura Counties (CNPS 2015). In the Project vicinity, it is known from approximately six miles to the north along Blue Ridge (CCH 2016). It is also known from multiple collections southwest of the site in the Mount Pinos region of Ventura County, including about 14 miles away on Alamo Mountain, 16 miles away along Seymour Creek, and 18 miles away in Lockwood Valley (CCH 2016). Although potentially suitable habitat for this species exists on the site, pine green-gentian was not observed during focused surveys.

Delicate Bluecup

Delicate bluecup (*Githopsis tenella*) is a CRPR List 1B.3 species. It typically blooms between May and June (CNPS 2015). This annual grows in moist places in oak woodlands at elevations between 3,600 and 6,230 feet above msl (Jepson Herbarium 2015). It occurs in Kern and Tulare Counties (CNPS 2015). It occurs approximately eight miles from the Project site, on Purdie Ridge, south of Purdie Canyon, in the Tehachapi Mountains (CDFW 2015a). The Purdie Ridge location supports an isolated stand of white fir (*Abies concolor*) within a grove of canyon live oak (*Quercus chrysolepis*). Although potentially suitable habitat for this species exists on the site, delicate bluecup was not observed during focused surveys.

San Gabriel Mountains Sunflower

San Gabriel Mountains sunflower (*Hulsea vestita* ssp. *gabrielensis*) is a CRPR 4.3 species. This perennial herb occurs in montane coniferous forest habitat between approximately 4,900 and 8,200 feet above msl (Jepson Herbarium 2015). It typically blooms between May and July, and is known from Los Angeles, San Bernardino, and Ventura Counties (CNPS 2015). In the Project vicinity, it occurs about 10 miles west of the site at the summit of Frazier Mountain, and about 13 miles southwest of the site, west of Sewart Mountain Peak in Ventura

County (CCH 2016). Suitable elevation and habitat for this species does not exist on the site, and San Gabriel Mountains sunflower was not observed during focused surveys.

Madera Leptosiphon

Madera leptosiphon (*Leptosiphon [Linanthus] serrulatus*) is a CRPR 1B.2 species. This annual herb occurs in open areas in woodland and chaparral habitats (Jepson Herbarium 2015). It is found between approximately 1,000 and 4,250 feet above msl, and typically blooms between April and May. It is known from Fresno, Kern, Madera, Mariposa, and Tulare Counties (CNPS 2015). In the Project vicinity, according to a historical record from 1935, it was collected in the general vicinity of the Tehachapi Mountains, among scattered oaks (CDFW 2015a). Other than this collection, the closest known occurrences (also historical records from the 1930s) are more than 60 miles north of the Project site, in the Sequoia National Forest area, near the Kern/Tulare County boundary (CDFW 2015a; CCH 2016). Although potentially suitable habitat for this species exists on the site, Madera leptosiphon has not been observed in the Project region (or even more than 60 miles to the north) since the 1930s, so it has very low potential to occur on the site, and it was not observed during focused surveys.

Ocellated Humboldt Lily

Ocellated Humboldt lily (*Lilium humboldtii* ssp. *ocellatum*) is a CRPR 4.2 species. Ocellated Humboldt lily is a bulbiferous herb endemic to California that typically blooms between March and August (CNPS 2015). It occurs at elevations below about 3,000 feet above msl, in gravelly soil in gullies and canyons, usually in chaparral and oak woodland habitats (Munz 1974). This species is known from Los Angeles, Orange, Riverside, Santa Barbara, San Bernardino, San Diego, and Ventura Counties, and Anacapa Island, Santa Cruz Island, and Santa Rosa Island (CNPS 2015). In the Liebre Mountain region, this species is considered widespread but generally rather scattered on shaded benches along streams (Boyd 1999). In the Project vicinity, it occurs about 12 miles southeast of the site in Warm Springs Canyon, west of Lake Hughes Road (CCH 2016). Although suitable habitat for this species exists on the site, ocellated Humboldt lily was not observed during focused surveys.

Sylvan Scorzonella

Sylvan scorzonella (*Microseris sylvatica*) has a CRPR of 4.2. It typically blooms between March and May (Munz 1974). This herb is found in grasslands and open woodlands between sea level and approximately 5,600 feet above msl. It occurs in the North Coast Ranges, Sacramento Valley, Sierra Nevada Foothills, Tehachapi Mountains, eastern San Francisco Bay, South Coast Ranges, western Transverse Ranges, and Mojave Desert (Jepson Herbarium 2015). In Los Angeles County, it was reported along SR-138 in the western portion of the Antelope Valley (CCH 2016). Numerous occurrences of sylvan scorzonella were observed on the Project site during 2004 focused surveys. It was most commonly found on thin, well-drained gravelly or coarse sandy loam and clay loam soils on the upper north sides of ridges and hills and on slopes and flats immediately bordering ephemeral drainages. Nearly all occurrences were located within native perennial grasslands, and a few were in areas bordered by oak woodlands (Vollmar 2004). In 2008, this species was found to be common on ridgetops and dirt roads, with a total population estimate on the site likely exceeding

100,000 plants (NRC 2008a). In 2015, focused surveys estimated that the population exceeded 100,000 plants.

Calico Monkeyflower

Calico monkeyflower (*Mimulus pictus*) is a CRPR 1B.2 species. It typically blooms between March and May (CNPS 2015). This annual herb grows in bare, sunny, shrubby areas around granite outcrops between about 300 and 4,700 feet above msl (Jepson Herbarium 2015; CNPS 2015). It occurs in Kern and Tulare Counties and occurs approximately 5.5 miles north of the Project site along Geghus Ridge, near Bear Trap Canyon (CNPS 2015; CDFW 2015a). Although some marginally suitable habitat for this species exists on the site, calico monkeyflower was not observed during focused surveys.

Flax-Like Monardella

Flax-like monardella (*Monardella linoides* ssp. *oblonga*) is a CRPR 1B.3 species. It typically blooms between June and August (Munz 1974). This perennial herb grows on gravelly dry slopes and flats in chaparral, conifer woodland, and forests at elevations between approximately 4,900 and 8,500 feet above msl (Jepson Herbarium 2015). It occurs in Los Angeles, Ventura, Tulare, and Kern Counties and occurs approximately 13 miles from the Project site, near Chuchupate Campground, which is located close to Frazier Mountain (CNPS 2015; CDFW 2015a). This location is situated on a rocky, north-facing slope with thin soils and is surrounded by chaparral (Vollmar Consulting 2004). Although some marginally suitable habitat for this species exists on the site, flax-like monardella was not observed during focused surveys.

Spreading Navarretia

Spreading navarretia (*Navarretia fossalis*) is a federally Threatened and CRPR 1B.1 species. It typically blooms between April and June (CNPS 2015; Jepson Herbarium 2015). This annual herb occurs at elevations between approximately 100 and 4,265 feet above msl in Los Angeles, Orange, San Diego, and Riverside Counties, as well as in Baja California, Mexico (USFWS 2010b; CNPS 2015). It prefers areas characterized by mounds, swales, and depressions within a matrix of upland habitat that result in intermittently flowing surface and subsurface water in swales, drainages, ephemeral vernal pools, and seasonally flooded alkali vernal plains (USFWS 2010b). It has been reported approximately 13 miles southeast from the Project boundary, in a seasonal depression situated between the toe slope of a small ridge and a disturbed field (former agricultural field) (CCH 2016). Although potentially suitable habitat for this species occurs on the site, spreading navarretia was not observed during focused surveys.

Baja Navarretia

Baja navarretia (*Navarretia peninsularis*) is a CRPR 1B.2 species. It typically blooms between June and August (CNPS 2015). This annual herb occurs at elevations between approximately 4,900 and 7,500 feet above msl in Kern, Los Angeles, Santa Barbara, San Bernardino, San Diego, and Ventura Counties, as well as in Baja California, Mexico (CNPS 2015). It prefers wet areas in open forests and openings in chaparral and lower montane coniferous forests (CNPS 2015; Jepson Herbarium 2015). It has been reported less than 1,000 feet from the Project

boundary on a disturbed slope in oak-pine woodland near German Peak, on the west end of the Project (CDFW 2015a). Although potentially suitable habitat for this species occurs on the site, Baja navarretia was not observed during focused surveys

Piute Mountains Navarretia

Piute Mountains navarretia (*Navarretia setiloba*) is a CRPR 1B.1 species. It typically blooms between April and July (CDFW 2015a). This annual grows in depressions in clay or gravelly loam at elevations between approximately 1,640 and 6,890 feet above msl (Jepson Herbarium 2015). Before surveys for this site, it was reported only in Kern and Tulare Counties (CNPS 2015). This species is a rare local endemic, restricted to woodland and valley and foothill grassland, in the far southern Sierra Nevada Mountains and in the Tehachapi Mountains (Vollmar Consulting 2004). In the Project vicinity, 39 occurrences were identified a few miles north of the Project site during surveys for a project located approximately 5 miles northwest. They were located in annual grasslands and open oak woodlands (Vollmar Consulting 2004). Piute Mountains navarretia was observed within the 2004 focused survey study area; the three occurrences included approximately 20,100 total plants. These occurrences represent the only known occurrences for this species in Los Angeles County and are the southernmost known occurrences (Vollmar Consulting 2004). Surveys in 2015 verified these occurrences still exist on the Project site; however focused surveys found no occurrences within the proposed impact area.

Robbins' Nemacladus

Robbins' nemacladus (*Nemacladus secundiflorus* var. *robbinsii*) is a CRPR 1B.2. It typically blooms between April and June (CNPS 2015). This species grows on dry gravelly slopes in openings of chaparral and grassland at elevations between 1,150 and 5,600 feet above msl (CNPS 2015; Jepson Herbarium 2015). It occurs in Los Angeles, Santa Barbara, San Benito, San Luis Obispo, and Ventura Counties (CNPS 2015). This species was recorded occurring in oak-juniper woodland approximately five miles to the west of the Project site in Hungry Valley, near Gorman (CDFW 2015a). Although suitable habitat is present on the site, Robbins' nemacladus was not observed during focused surveys.

Bakersfield Cactus

Bakersfield cactus (*Opuntia basilaris* var. *treleasei*) is a federally and State-listed Endangered species and a CRPR 1B.1 species. It typically blooms between April and May. This species grows in arid plains at elevations between approximately 390 and 4,750 feet above msl. It occurs only in Kern and Los Angeles Counties (CNPS 2015). This species is endemic to the alluvial benches and fans along the southern and southeastern edges of the San Joaquin Valley (Vollmar Consulting 2004). This species has been reported at the base of the Tehachapi Mountains just west of I-5, approximately 20 miles northwest of the Project site, and at Comanche Point, which is more than 20 miles north of the Project site (Vollmar Consulting 2004). In 2013, this species was reported just east of the I-5, south of Gorman Post Road, and just north of the Quail Lake Road exit (CCH 2016). This population occurs approximately 1 mile west of the Project site. Although suitable habitat exists on the site, Bakersfield cactus was not observed during focused surveys.

Adobe Yampah

Adobe yampah (*Perideridia pringlei*) has a CRPR of 4.3. It typically blooms between April and July (CNPS 2015). This perennial herb is found on grassy slopes and serpentine outcrops at elevations between approximately 980 and 5,910 feet above msl (Jepson Herbarium 2015). It occurs in Los Angeles, Kern, Monterey, Santa Barbara, Tulare, Ventura, and San Luis Obispo Counties (CNPS 2015). Ten occurrences were identified a few miles north of the Project site within openings in oak woodlands and associated annual grasslands. Adobe yampah was observed in the north-central portion of the Project site during 2004 focused surveys. One occurrence with 16 individuals was found in native perennial grasslands on a dry, moderately steep slope with bare soil and low total vegetation cover (Vollmar 2004). In 2006, it was observed at three locations east of the Aqueduct, including approximately 15 individuals (NRC 2006b). In 2008, scattered populations were found east of the Aqueduct, including approximately 108 individuals (NRC 2008a). In 2015, adobe yampah was observed along drainage cut banks and also on north slopes of the larger hills in the southern and western halves of the Project site. Nearly 100 occurrences were recorded on site, with an estimate of over 3,000 total plants. This is assumed to be significantly underestimated, as 2015 spring rainfall patterns caused many populations to die without flowering, therefore becoming undetectable during the focused blooming period surveys.

San Bernardino Aster

San Bernardino aster (*Symphyotrichum defoliatum* [*Aster bernardinus*]) is a CRPR 1B.2 species. It typically blooms between July and November (Munz 1974). This rhizomatous herb prefers damp meadows, and is generally found from between sea level and 6,700 feet above msl (CNPS 2015). This species occurs in Imperial, Kern, Los Angeles, Orange, Riverside, San Bernardino, San Diego, and possibly San Luis Obispo Counties. It is associated with meadows and seeps; marshes and swamps; cismontane woodland; coastal scrub; lower montane coniferous forest; and vernal mesic grasslands near ditches, streams, and springs (CNPS 2015). According to a historical record from 1939, this species was observed in Kern County in the vicinity of Lebec, about five miles northwest of the Project site (CDFW 2015a). Although suitable habitat for this species exists on the site, San Bernardino aster was not observed during focused surveys.

Greata's Aster

Greata's aster (*Symphyotrichum* [*Aster*] *greatae*) is a CRPR 1B.3 species. It typically blooms between June and October (CNPS 2015). This perennial herb occurs in moist or dry places in canyons at elevations between approximately 1,000 and 6,600 feet above msl, and is associated with chaparral and oak woodlands (CNPS 2015; Munz 1974). It occurs in Los Angeles, San Bernardino, and Ventura Counties, although historically was only known from the southern slopes of the San Gabriel Mountains (CNPS 2015; Jepson Herbarium 2015). In the region, it has been found near springs in the understory of oak woodlands (Boyd 1999). It occurs approximately nine miles from the Project site, on Liebre Mountain and in Fish Canyon just north of the Cienega Campground (CDFW 2015a). Although potentially suitable habitat for this species exists on the site, Greata's aster was not observed during focused surveys.

Lemmon's Syntrichopappus

Lemmon's syntrichopappus (*Syntrichopappus lemmonii*) is a CRPR 4.3 species. It typically blooms between April and June (CNPS 2015). This annual species is found in open, sandy to gravelly areas at elevations between approximately 2,950 and 4,920 feet above msl (Jepson Herbarium 2015). It is associated with chaparral habitats and Joshua tree woodlands, and ranges from the southwestern border of the Mojave Desert to adjoining slopes of the San Gabriel and San Bernardino Mountains (Munz 1974). It occurs in Kern, Los Angeles, Monterey, Riverside, San Bernardino, and Ventura Counties (CNPS 2015). No records were found in the Project vicinity prior to focused surveys in the Project site (Vollmar Consulting 2004). Lemmon's syntrichopappus was observed during 2004 focused surveys (outside the 2015 survey area). The occurrence, with approximately 30 individuals, was located in a sparsely vegetated area composed of non-native annual grasses, native perennial bunchgrasses, and native forbs, with prominent areas of bare soil and exposed sandstone bedrock (Vollmar Consulting 2004). Lemmon's syntrichopappus was not observed during the 2015 focused surveys.

Silvery False Lupine

Silvery false lupine (*Thermopsis macrophylla* var. *argentata*), considered a synonym of *Thermopsis californica* var. *argentata*, is a CRPR 4.3 species. This rhizomatous perennial herb typically blooms between April and October. It grows in lower montane coniferous forest, cismontane woodland, and pinyon/juniper woodland at elevations between approximately 2,200 and 5,200 feet above msl. It occurs in Kern, Siskiyou, Shasta, Modoc, Lassen, Los Angeles, Santa Barbara, and Ventura Counties (CNPS 2015). This species is associated with slopes, especially areas below limestone outcrops or limestone-derived soils (Vollmar Consulting 2004). This species was found in numerous locations on alluvial slopes below a limestone formation a few miles north of the Project site (Vollmar Consulting 2004). Scattered locations have also been reported in the vicinity of the National Cement Plant, which is located immediately north of the Project site (Vollmar Consulting 2004). Although potentially suitable habitat for this species does occur on the site, silvery false lupine was not observed during focused surveys.

Oak Trees

Tucker's Oak (*Quercus john-tuckeri*)

A previous botanical survey report prepared for the Project included a review of the species Tucker's oak also known as shrub live oak (*Quercus turbinella*), which is a CNPS List 4 species (Vollmar Consulting 2004). However, communication with a representative of the CNPS indicated that the two taxa are in fact distinct, and that only individuals that match the morphology for *Quercus turbinella* as described by E.L. Greene in 1889 are considered special status by the CNPS (Ward 2005). The range of *Quercus turbinella* in California is thought to be limited to the New York Mountains in the southeastern portion of the California Mojave Desert (CNPS 2015). Given the known range of *Quercus turbinella*, the oaks on the Project site are likely *Quercus john-tuckeri*; however, additional taxonomic studies of the oaks in the Project site would be required to confirm this. The oak tree study conducted in 2001 did not differentiate *Quercus john-tuckeri* from other scrub oak species observed on the Project site (Tree Life Concern 2003).

Tucker oak was reported on slopes in the southeastern and southwestern portions of the Project site (Vollmar Consulting 2004). These sites are located in two general regions: (1) scattered in the hills in the southwestern region of the Project site in open, mixed oak woodland and chaparral habitat and (2) in oak woodland and chaparral habitat along the southeastern edge in the hills south of SR-138. Although Tucker oak should not be considered a CNPS List 4 special status plant species, all individuals of the genus *Quercus* are considered under the County of Los Angeles Oak Tree Ordinance, described in the following section.

Regulated Oak Trees

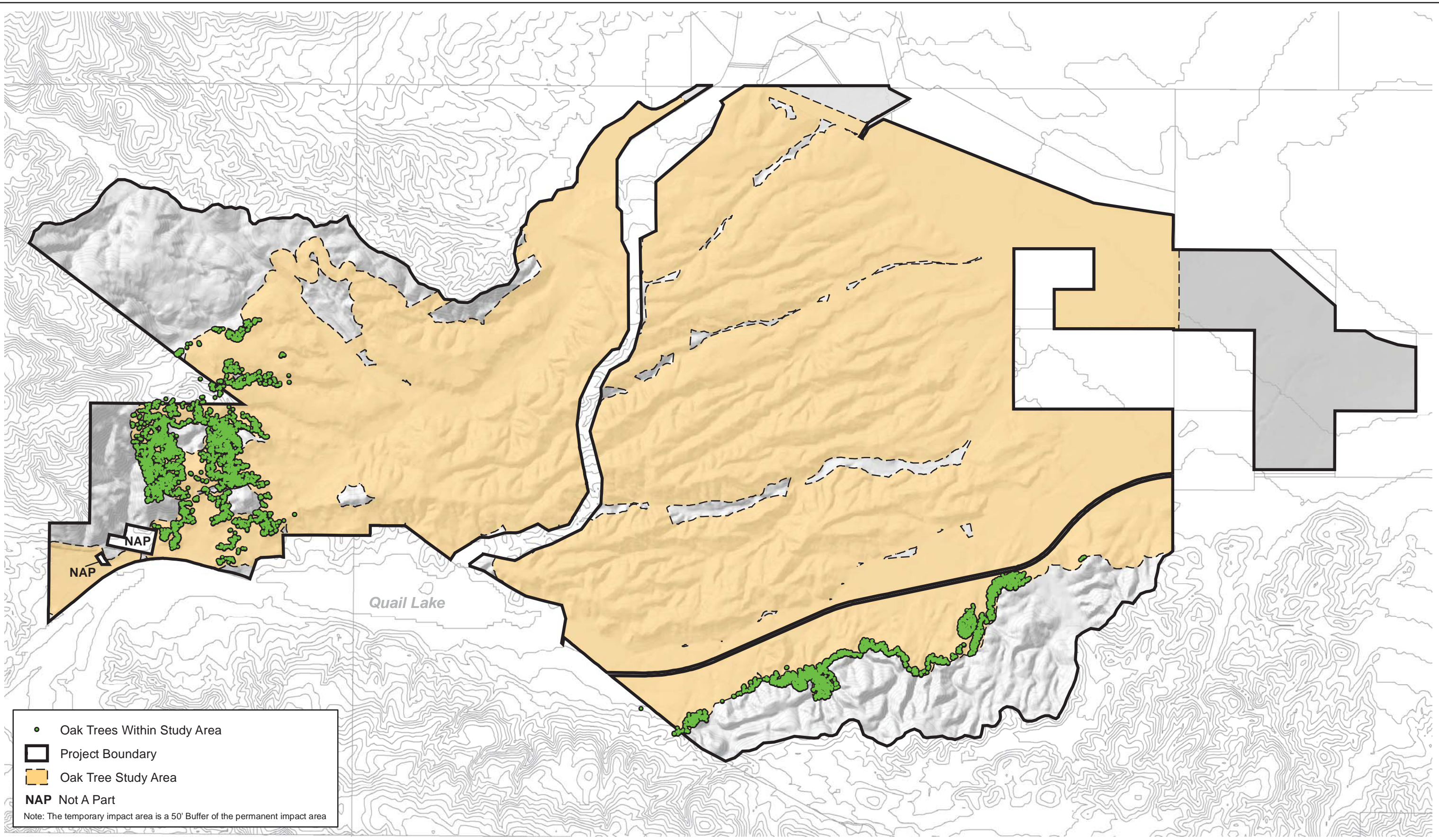
As stated previously, Sections 22.56.2050–22.56.2260 of the County of Los Angeles Oak Tree Ordinance protects “regulated oaks” in unincorporated areas of Los Angeles County that are 25 inches or more in circumference (8 inches in diameter) as measured 4.5 feet above mean natural grade; in the case of oaks with more than 1 trunk, the ordinance protects those trees with a combined circumference of any 2 trunks of at least 38 inches (12 inches in diameter) as measured 4.5 feet above mean natural grade (LACDRP 1988). A “heritage oak”, as defined by the CLAOTO, is (1) any oak tree that measures 36 inches or more in diameter, as measured 4.5 feet above the natural grade or (2) any oak less than 36 inches in diameter having a significant historical or cultural importance to the community. The CLAOTO requires that all potential impacts to regulated oak trees regulated by the ordinance be preceded by an application to the County that includes a detailed Oak Tree Report. Mitigation for impacts to regulated oak trees is usually required as a condition to receive a County oak tree permit.

Oak tree surveys were conducted of the on-site oak woodlands occurring inside, and within 200 feet outside, both the original and revised proposed grading limits. The surveys identified 7,149 oaks potentially regulated by the CLAOTO. Blue oak, scrub oak, interior live oak, canyon live oak, valley oak, and hybrids were recorded during the survey (see Exhibit 5.7-8, Oak Trees within Study Area). Of the 7,149 oaks surveyed, 127 are “heritage oaks” as defined by the CLAOTO.

Because the CLAOTO mandates that oak surveys focus on oak trees likely to be either directly or indirectly impacted by proposed development, the survey did not include the vast majority of the oaks that would be preserved in open space areas. Specifically, an extensive oak woodland area is present south of SR-138 and within Significant Ecological Area No. 17. A blue and valley oak-dominated area lies in the western portion of the Project site north of SR-138.

To roughly determine the approximate number of preserved oaks (of all sizes) that will occur on the Project site following development, a limited census was conducted using a standard plant population sampling method. Within the proposed open space areas, oak tree densities were generally lower on the northern side of SR-138 than on the southern side of SR-138 due in part to the different composition of species in these two areas. The results of the oak census are summarized in Table 5.7-6, Estimated Number of Oaks on the Project site.

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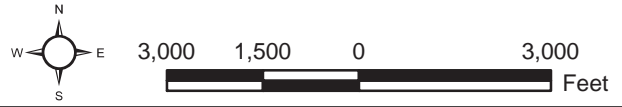


- Oak Trees Within Study Area
- ▭ Project Boundary
- Oak Tree Study Area
- NAP** Not A Part

Note: The temporary impact area is a 50' Buffer of the permanent impact area

Oak Trees Within Study Area

Centennial Project



**TABLE 5.7-6
ESTIMATED NUMBER OF OAKS ON THE PROJECT SITE**

Location	Density	Area	Number of Oaks (regulated and non- regulated)
South of SR-138	169.5 oaks per acre	841 acres	142,550 oaks
North of SR-138	85.6 oaks per acre	450 acres	38,520 oaks
Total		1,291 acres*	181,070 oaks
SR: State Route			
* 10.4% of the Project's on-site and off-site components			
<i>Note: These estimates are not used for the impact assessment. They are meant only to provide a rough approximation number for discussion and therefore have not been statistically tested for margin of error.</i>			
Sources: BonTerra Consulting 2009a; Tree Life Concern 2003, 2008; Impact Sciences 2003.			

Using this same method, an estimate of oak tree populations in various size classes was also calculated. Either the diameter of the trunk (at breast height or above any basal swelling) or the largest diameter trunk (if multi-trunked) was estimated for all the oaks both north and south of SR-138. The majority of the trees (70.4 percent) have trunk diameters smaller than 12 inches. The estimated number of oaks in each size class is provided in Table 5.7-7, Estimated Number of Oaks by Size Class on the Project Site.

**TABLE 5.7-7
ESTIMATED NUMBER OF OAKS BY SIZE CLASS
ON THE PROJECT SITE**

Size Category (Largest Trunk)	Percent of Oaks in Size Category (Rounded to nearest percent)	Number of Oaks in Size Category (Rounded to nearest unit)
0-5 inches	34	61,563
5-12 inches	36	65,186
12-24 inches	25	45,267
24-36 inches	4	7,243
Greater than 36 inches in diameter	1	1,811
<i>Note: These estimates are not used for the impact assessment. They are meant only to provide a rough approximation number for discussion and therefore have not been statistically tested for margin of error.</i>		
Source: Tree Life Concern 2003.		

Of the 1,370.8 acres of mixed oak woodland existing on the site, 1,364.6 acres would be unimpacted by the Project (500.8 acres north of SR-138 and 870.0 acres south of SR-138). Additionally, of the 1,370.8 acres of mixed oak woodland existing on the site, 1,291.8 acres (473.2 north of SR-138 and 818.6 acres south of SR-138) would be preserved in the on-site preservation areas (unimpacted areas within SEA 17). As mentioned above, oak tree surveys that were performed in support of the impact analysis for the Project only considered trees within the proposed grading footprint at that time, including a 200-foot buffer area (this oak tree survey area includes potential habitat within the current proposed grading footprint). Therefore, in order to estimate the number of oaks under the jurisdiction of CLAOTO that

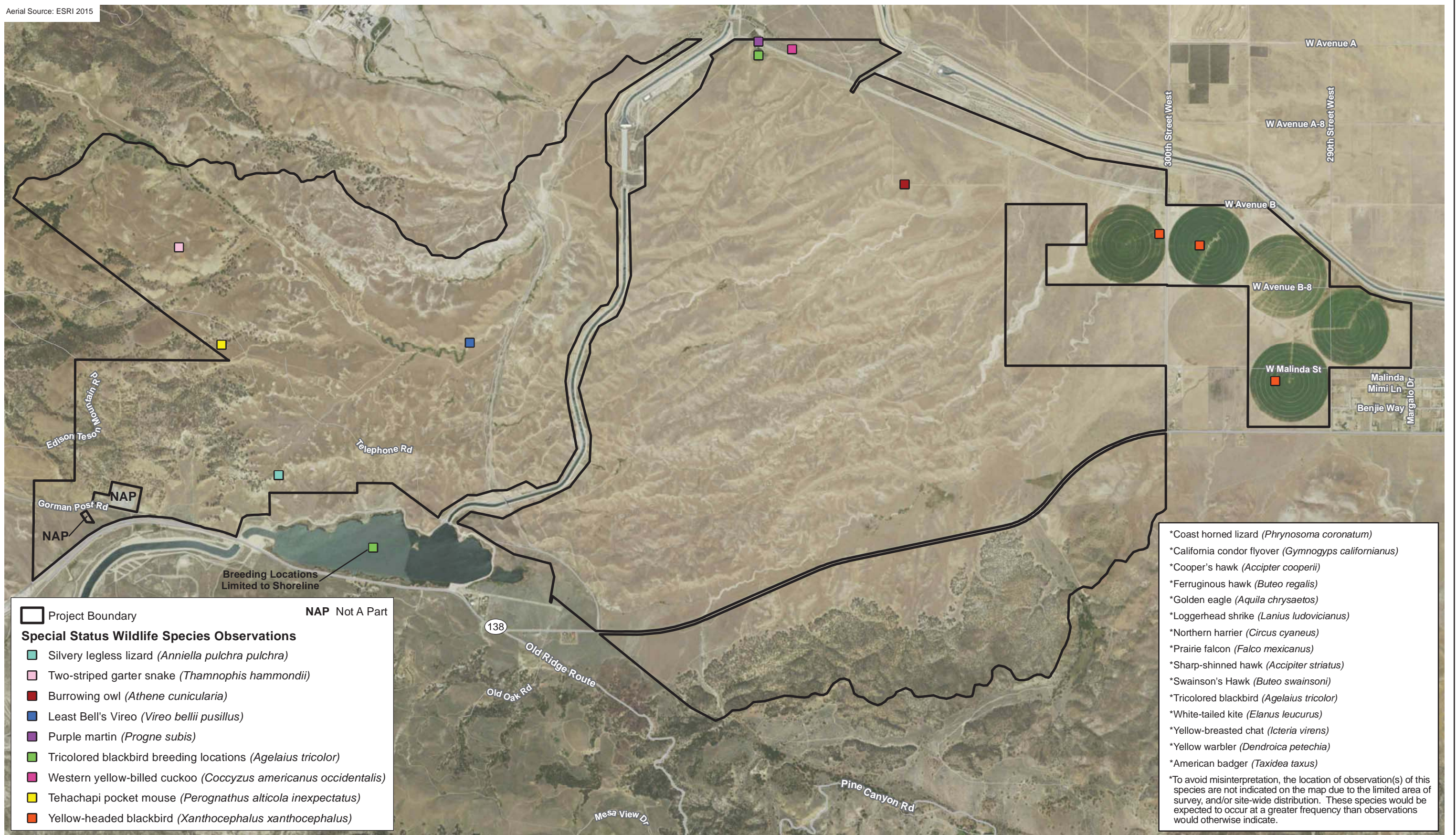
would be preserved by the Project, twenty 1-acre sample areas were randomly chosen in the mixed oak woodlands located in the survey area of the previous tree studies (10 sample areas were located north of SR-138 and 10 were located south of SR-138). The average tree density for areas north and south of SR-138 was calculated and extrapolated to determine the number of oaks within the adjacent on-site preservation areas (unimpacted areas within SEA 17). Only oaks that are regulated by CLAOTO were considered for this analysis.

In areas north of SR-138, the average density of oaks under the jurisdiction of CLAOTO was 20.9 trees per acre. By extrapolating this density into adjacent on-site preservation areas, it is estimated that approximately 9,890 regulated oaks would be preserved. In areas south of SR-138, the average density of regulated oaks was 27.4 trees per acre, meaning that approximately 22,430 regulated oaks would be preserved. Therefore, according to this method, it is estimated that approximately 32,319 oaks under the jurisdiction of CLAOTO would be preserved on the site (outside the proposed impact boundary and within SEA 17). Overall it is estimated that about 33,861 regulated oaks are present on the site.

Special Status Wildlife

A total of 42 special status wildlife species that are known to occur or potentially occur in the Project region (defined as the western Antelope Valley and its associated watersheds) are listed in the table below. Thirty-three of these species have at least some potential to occur, albeit low in many cases, or were observed by Biologists working with Impact Sciences during the course of various field surveys conducted on the Project site. Of these potentially occurring species, 10 are State- and/or federally listed as Endangered, Threatened, or Candidate Species: conservancy fairy shrimp (*Branchinecta conservatio*), vernal pool fairy shrimp (*Branchinecta lynchi*), Tehachapi slender salamander, arroyo toad (*Anaxyrus californicus*), Swainson's hawk, western yellow-billed cuckoo, southwestern willow flycatcher, California condor, bald eagle, and least Bell's vireo. The Project site is not located within any USFWS-designated or proposed Critical Habitat for any of these species. The remaining species are considered to be "of concern" by the CDFW. Table 5.7-8, Special Status Wildlife Species, lists the special status wildlife; the suitability of the habitat on or adjacent to the site; and their potential to occur on the Project site. Following the table are descriptions of special status wildlife species that may be potentially impacted by the Project. Exhibit 5.7-7b, Special Status Wildlife Species Observations, depicts the locations of the special status wildlife species that were observed on the site.

Other species formally considered to be "of concern" by the CDFW but that were recently down-graded to "Watch List" (i.e., as a result of studies suggesting the species numbers and/or distribution are more extensive than previously thought) were considered but not addressed further due to their status. An additional set of species was reviewed due to occurrence records on USGS 7.5-minute quadrangle maps of adjacent regions. The species that did not have records in the Project region and are not expected to occur anywhere in the Project region were excluded from further analysis. Lastly, those species that are tracked by the CDFW through the CNDDDB but have no State-listed special status were excluded from additional analysis.



Project Boundary NAP Not A Part

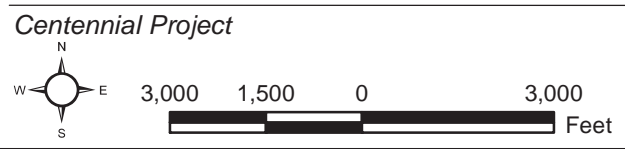
Special Status Wildlife Species Observations

- Silvery legless lizard (*Anniella pulchra pulchra*)
- Two-striped garter snake (*Thamnophis hammondi*)
- Burrowing owl (*Athene cunicularia*)
- Least Bell's Vireo (*Vireo bellii pusillus*)
- Purple martin (*Progne subis*)
- Tricolored blackbird breeding locations (*Agelaius tricolor*)
- Western yellow-billed cuckoo (*Coccyzus americanus occidentalis*)
- Tehachapi pocket mouse (*Perognathus alticola inexpectatus*)
- Yellow-headed blackbird (*Xanthocephalus xanthocephalus*)

- *Coast horned lizard (*Phrynosoma coronatum*)
 - *California condor flyover (*Gymnogyps californianus*)
 - *Cooper's hawk (*Accipiter cooperii*)
 - *Ferruginous hawk (*Buteo regalis*)
 - *Golden eagle (*Aquila chrysaetos*)
 - *Loggerhead shrike (*Lanius ludovicianus*)
 - *Northern harrier (*Circus cyaneus*)
 - *Prairie falcon (*Falco mexicanus*)
 - *Sharp-shinned hawk (*Accipiter striatus*)
 - *Swainson's Hawk (*Buteo swainsoni*)
 - *Tricolored blackbird (*Agelaius tricolor*)
 - *White-tailed kite (*Elanus leucurus*)
 - *Yellow-breasted chat (*Icteria virens*)
 - *Yellow warbler (*Dendroica petechia*)
 - *American badger (*Taxidea taxus*)
- *To avoid misinterpretation, the location of observation(s) of this species are not indicated on the map due to the limited area of survey, and/or site-wide distribution. These species would be expected to occur at a greater frequency than observations would otherwise indicate.

Special Status Wildlife Species Observations

Exhibit 5.7-7b



The Los Angeles Audubon maintains a list of Sensitive Bird Species that they consider to be at risk of decline or extirpation in Los Angeles County (Allen et. al 2009). Although not considered special status for the purposes of State CEQA guidelines, these species were analyzed for potential to occur on the Project site and are included in Table 5.7-9, Other L.A. Audubon Sensitive Bird Species, presented further below. Species already included in Table 5.7-8 are not included in Table 5.7-9 to avoid duplication of information.

**TABLE 5.7-8
SPECIAL STATUS WILDLIFE SPECIES**

Species	Status ^a		Preferred Habitat	Habitat Suitability and Potential to Occur	Occurrence ^b
	USFWS	CDFW			
Invertebrates					
<i>Branchinecta conservatio</i> conservancy fairy shrimp	FE	-	Highly turbid water of ephemeral or temporary pools of fresh water (vernal pools) that form in the cool, wet months of the year; dependent upon seasonal fluctuations in their habitat, such as absence or presence of water during specific times of the year.	Although potentially suitable habitat is present, this species was not identified during wet and dry season protocol surveys in 2004–2005.	Not observed
<i>Branchinecta lynchi</i> vernal pool fairy shrimp	FT	-	Inhabits small vernal pools with cool water (10°C) of moderate alkalinity and conductivity that are less than 1-m deep; occurs primarily in vernal pools and seasonal wetlands that fill with water during fall and winter rains and dry up in spring and summer.	Not known to occur on the Project site; although potentially suitable habitat is present, this species was not identified during wet and dry season protocol surveys of 2 ponds in 2004–2005.	Not observed
Amphibians					
<i>Anaxyrus californicus</i> arroyo toad	FE	SSC	Washes/streams, sandy banks, willows, cottonwoods, or sycamores; riparian habitats of semiarid areas, small cobbly streambeds.	Potentially suitable habitat is present in large drainages; not detected during protocol surveys in 2006; may occur.	Not observed
<i>Batrachoseps stebbinsi</i> Tehachapi slender salamander	-	ST	North-facing slopes in valley-foothill hardwood conifer and valley-foothill riparian habitats.	Some potentially suitable habitat in oak woodland areas of the site and within high elevation <i>Hesperoyucca whipplei</i> ; not detected during focused surveys in 2006; may occur.	Not observed

**TABLE 5.7-8
SPECIAL STATUS WILDLIFE SPECIES**

Species	Status ^a		Preferred Habitat	Habitat Suitability and Potential to Occur	Occurrence ^b
	USFWS	CDFW			
<i>Ensatina eschscholtzii croceator</i> yellow-blotched ensatina (salamander)	-	SSC	Coniferous habitats, montane hardwood habitats, and mixed chaparral.	Potentially suitable habitat present in the heavily wooded drainages in the westernmost portion of the site; may occur.	Not observed
<i>Rana aurora draytonii</i> California red-legged frog	FT	SSC	Humid forests, woodlands, grasslands and streamsides, especially where cattails and other plants provide good cover.	Not detected during focused protocol surveys conducted in 2001; not detected during protocol surveys in 2006; marginally suitable habitat present on the site.	Not observed
<i>Spea hammondi</i> western spadefoot	-	SSC	Relatively open areas in lowland grasslands, chaparral, and pine-oak woodlands, sandy or gravelly soil in alluvial fans, washes, and floodplains.	Potentially suitable habitat is present; not detected during 2005 focused surveys west of the Aqueduct; may occur east of the Aqueduct.	Not observed
Reptiles					
<i>Anniella pulchra pulchra</i> silvery legless lizard	-	SSC	Coastal dune, valley-foothill, chaparral, and coastal scrub habitats.	1 silvery legless lizard was observed in the far western portion of the site. Potentially suitable habitat is present in many areas on the site.	Observed
<i>Emys marmorata pallida</i> western pond turtle	-	SSC	Ponds, marshes, rivers, streams, irrigation ditches.	Western pond turtles have been observed at Quail Lake; limited potentially suitable habitat is present on the Project site.	Not observed
<i>Gambelia sila</i> blunt-nosed leopard lizard	FE	SE FP	Vegetative ground cover of 50% or less, dominated by a relatively short grass component. Vegetation types utilized include grassland, saltbush scrub, and valley sink scrub.	Blunt-nosed leopard lizard has a range that stops north of the Tehachapi Range; not expected to occur on the site.	Not observed

**TABLE 5.7-8
SPECIAL STATUS WILDLIFE SPECIES**

Species	Status ^a		Preferred Habitat	Habitat Suitability and Potential to Occur	Occurrence ^b
	USFWS	CDFW			
<i>Phrynosoma blainvillii</i> coast horned lizard	-	SSC	Valley-foothill hardwood, conifer, and riparian habitats, pine-cypress, juniper and annual grassland habitats from sea level to 6,000 feet above msl and open country, especially sandy areas, washes, floodplains, and windblown deposits.	Horned lizards were observed in several drainages, primarily in the eastern portion of the site; potentially suitable habitat is present in many areas.	Observed
<i>Thamnophis hammondi</i> two-striped garter snake	-	SSC	Riparian and freshwater marshes with perennial water.	1 individual was observed in the northwestern portion of the site; potentially suitable habitat is also present in other permanent water sources on the site, including cattle ponds and along Oso Creek.	Observed
Birds					
<i>Agelaius tricolor</i> tricolored blackbird (nesting colony)	-	SCE, SSC	Freshwater marshes and riparian scrub.	This species was observed foraging and nesting. A large nesting colony along the north-central edge of the Project site was observed during surveys in 2006 and 2008. This species was not observed nesting on the site in 2015, although it was observed nesting in Quail Lake and foraging on site.	Observed

**TABLE 5.7-8
SPECIAL STATUS WILDLIFE SPECIES**

Species	Status ^a		Preferred Habitat	Habitat Suitability and Potential to Occur	Occurrence ^b
	USFWS	CDFW			
<i>Ammodramus savannarum</i> grasshopper sparrow (nesting)	-	SSC	Grassland habitats including a variety of tall- and mixed-grass habitats such as native prairies, hayfields, pastures, and grassy fallow fields.	Grassland habitats provide potentially suitable habitat, but the Project site is outside the historic and current known range; not expected to occur.	Not observed
<i>Aquila chrysaetos</i> golden eagle (nesting and non-breeding/ wintering)	-	FP, WL	Mountains, deserts, and open country; prefer to forage over grasslands, deserts, savannahs and early successional stages of forest and shrub habitats.	Observed foraging in the northwestern and northeastern portions of the site; limited potential nesting but extensive foraging habitat is present on the site.	Observed
<i>Asio otus</i> long-eared owl (nesting)	-	SSC	Breeding habitat includes thickly wooded areas with nearby open spaces for hunting. Winters in dense conifer groves or brushy thickets.	Limited potentially suitable habitat in the western portion of the Project site.	Not Observed
<i>Athene cunicularia</i> burrowing owl (burrow sites and some wintering sites)	-	SSC	Dry grasslands, desert habitats, open pinyon-juniper, and ponderosa pine woodlands between sea level and 5,300 feet above msl; berms, ditches, and grasslands adjacent to rivers, agricultural, and scrub areas.	1 pair observed in the eastern portion of the site in 2001 and 1 pair just off the site in 2006; potentially suitable foraging and nesting habitat exists throughout the site; although not detected on site since 2001, this species is expected to occur in low numbers.	Observed
<i>Aythya americana</i> redhead (nesting)	-	SSC	Marshes, lakes, reservoirs, river pools, and bays.	Potentially suitable habitat at adjacent Quail Lake; not expected to occur for breeding on the Project site.	Not Observed

**TABLE 5.7-8
SPECIAL STATUS WILDLIFE SPECIES**

Species	Status ^a		Preferred Habitat	Habitat Suitability and Potential to Occur	Occurrence ^b
	USFWS	CDFW			
<i>Buteo swainsoni</i> Swainson's hawk (nesting)	-	ST	Plains, ranges, open hills, sparse trees.	Observed on an adjacent site during 2004 spring migration; a group of 5 non-breeding birds was present in summer 2008; potentially suitable breeding habitat is present on the site; this species is not known to breed in the Project region, although in recent years nesting has been observed to the east of the Project region.	Observed
<i>Charadrius montanus</i> mountain plover (wintering)	-	SSC	Open grasslands and agricultural fields of larger valleys and basins of the region	The eastern portions of the Project site dominated by grasslands and agricultural fields on relatively gentle terrain provide potentially suitable wintering habitat. This species was not observed during focused surveys.	Not observed
<i>Circus cyaneus</i> northern harrier (nesting)	-	SSC	Coastal salt marshes, freshwater marshes, grasslands, and agricultural fields; occasionally forages over open desert and brushlands.	This species was observed foraging during field investigations; potentially suitable foraging and nesting habitat is present on the site.	Observed

**TABLE 5.7-8
SPECIAL STATUS WILDLIFE SPECIES**

Species	Status ^a		Preferred Habitat	Habitat Suitability and Potential to Occur	Occurrence ^b
	USFWS	CDFW			
<i>Coccyzus americanus occidentalis</i> western yellow-billed cuckoo (nesting)	FT	SE	Riverine woodlands, thickets, and farms.	One individual was reported during June 2003 surveys and is considered to be a migrant; the limited amount of suitable nesting habitat probably would not support breeding for this species.	Observed
<i>Elanus leucurus</i> white-tailed kite (nesting)	-	FP	Grasslands with scattered trees, near marshes, along highways.	Observed on the site; potentially suitable breeding and foraging habitat is present on the site; local breeder in small numbers in Antelope Valley.	Observed
<i>Empidonax traillii extimus</i> southwestern willow flycatcher (nesting)	FE	SE	Wet meadow and montane riparian habitats, river valleys and large mountain meadows.	Although migrant willow flycatchers (unknown subspecies) have been observed on the site, no breeding southwestern willow flycatchers were present in 2006 and 2008; the site provides potentially suitable nesting habitat for this species.	Not Observed
<i>Gymnogyps californianus</i> California condor	FE	SE	Montane and foothill regions; vast expanses of open savannah, grasslands, and chaparral with cliffs, large trees, and snags.	No suitable breeding habitat; potential foraging habitat is present, but lack of thermals appears to prohibit use of the site. Although there are many flyover records from the site (and 1 landing) and from the surrounding areas, this species is expected to occur only as a relatively rare flyover compared with core	Observed

**TABLE 5.7-8
SPECIAL STATUS WILDLIFE SPECIES**

Species	Status ^a		Preferred Habitat	Habitat Suitability and Potential to Occur	Occurrence ^b
	USFWS	CDFW			
				habitat in the adjacent mountains to the north and west.	
<i>Haliaeetus leucocephalus</i> bald eagle (nesting and non-breeding/ wintering)	(De-listed 2007)	SE, FP	Lakes, reservoirs, rivers, offshore islands, and some rangelands and coastal wetlands in Southern California.	Not observed on the site, but observed foraging adjacent to the site at Quail Lake; marginal nesting habitat is present on the site; may occur.	Not observed
<i>Icteria virens</i> yellow-breasted chat (nesting)	-	SSC	Riparian woodlands with a thick understory.	Singing males present during May 2006 and 2008 but none remained to breed; potentially suitable nesting habitat on the site.	Observed
<i>Lanius ludovicianus</i> loggerhead shrike (nesting)	-	SSC	Open habitats with scattered shrubs, trees, posts, fences, utility lines, or other perches.	Observed foraging on the site in 2006, 2008, and 2015; present throughout site; nesting habitat is present in the Oso Canyon drainage and also the woodland habitats at western edge of site.	Observed
<i>Piranga rubra</i> summer tanager (nesting)	-	SSC	Mature, desert riparian habitat dominated by cottonwoods and willows, especially older, dense stands.	Cottonwood woodlands on the site provide potentially suitable breeding habitat, although this species is rare this far west; may occur.	Not observed

**TABLE 5.7-8
SPECIAL STATUS WILDLIFE SPECIES**

Species	Status ^a		Preferred Habitat	Habitat Suitability and Potential to Occur	Occurrence ^b
	USFWS	CDFW			
<i>Polioptila californica californica</i> coastal California gnatcatcher	FT	SSC	Prefers open sage scrub with California sagebrush as a dominant or co-dominant species. More abundant near sage scrub-grassland interface than where sage scrub grades into chaparral. Dense sage scrub is occupied less frequently than more open sites. Mostly absent from coastal areas dominated by black sage, white sage, or lemonade berry.	No suitable habitat exists on the site; not expected to occur.	Not observed
<i>Progne subis</i> purple martin (nesting)	-	SSC	In Southern California, now only a rare and local breeder on the coast and in interior mountain ranges, with few breeding localities. Absent from higher desert regions except as a rare migrant. Often nests in tall, old trees near a body of water. Also nests occasionally in residential areas. Frequents old-growth, multi-layered, open forest and woodland with snags.	Observed in oak woodlands on the site; potentially suitable breeding and foraging habitat exists and it may nest on the site.	Observed
<i>Setophaga petechia</i> yellow warbler (nesting)	-	SSC	Sparse to dense woodland and forest habitats with or without heavy brush understory.	Common migrant of riparian habitats during 2006 and 2008 surveys, but none remained to breed; may potentially nest in the more dense riparian areas of Oso Creek and other drainages on the site.	Observed

**TABLE 5.7-8
SPECIAL STATUS WILDLIFE SPECIES**

Species	Status ^a		Preferred Habitat	Habitat Suitability and Potential to Occur	Occurrence ^b
	USFWS	CDFW			
<i>Strix occidentalis occidentalis</i> California spotted owl	-	SSC	Oak and oak-conifer habitats.	Oak woodlands in the western portion of the site provide potentially suitable breeding and foraging habitat; may occur on site.	Not observed
<i>Vireo bellii pusillus</i> least Bell's vireo (nesting)	FE	SE	Perennial and intermittent streams with low, dense riparian scrub and riparian woodland habitats generally between sea level and 2,000 feet above msl (about 4,000 feet above msl on eastern side of the Sierra Nevada).	Cottonwood and willow woodlands on the site provide potentially suitable breeding habitat; 1 singing male was present on June 22, 2006, but not thereafter and presumed to be an unmated wandering male; none were present during 2008 surveys.	Observed
<i>Xanthocephalus xanthocephalus</i> yellow-headed blackbird (nesting)	-	SSC	Freshwater marshes and riparian scrub	Agricultural fields on the Project site provide suitable foraging habitat. This species was observed foraging on the site in the agricultural fields in 2015. Not observed nesting on the site.	Observed
Mammals					
<i>Ammospermophilus nelsoni</i> Nelson's antelope squirrel	-	ST	Primarily valley saltbush scrub; often lives sympatrically with giant kangaroo rat.	Current and historical geographic range do not include the Project site and are separated by a mountain range; not expected to occur.	Not observed
<i>Antrozous pallidus</i> pallid bat	-	SSC	Roosts in cliffs, crevices, mine tunnels, caves, house attics, and other man-made structures.	Potentially suitable roosting habitat present in oak woodlands; likely forages throughout the site; expected to occur.	Not observed

**TABLE 5.7-8
SPECIAL STATUS WILDLIFE SPECIES**

Species	Status ^a		Preferred Habitat	Habitat Suitability and Potential to Occur	Occurrence ^b
	USFWS	CDFW			
<i>Corynorhinus townsendii</i> Townsend's big-eared bat	-	SSC	Caves, mine tunnels, and buildings.	No potentially suitable hibernation or maternity roosting features observed on the Project site; potential to forage throughout the site; low potential to occur.	Not observed
<i>Dipodomys nitratooides nitratooides</i> Tipton kangaroo rat	FE	SE	Primarily valley sink scrub.	Current and historical geographic range do not include the Project site and are separated by a mountain range; not expected to occur.	Not observed
<i>Eumops perotis</i> western mastiff bat	-	SSC	In arid and semi-arid lowlands; roosts in cliffs and rock crevices.	No potentially suitable roosting habitat; may occur to forage, but not expected to roost.	Not observed
<i>Onychomys torridus ramona</i> southern grasshopper mouse	-	SSC	Grasslands, desert areas, especially scrub with friable soils.	Potentially suitable habitat present in grasslands and scrub habitat; may occur.	Not observed
<i>Perognathus alticolus inexpectatus</i> Tehachapi pocket mouse	-	SSC	Arid annual grassland, desert shrub, fallow grain fields, Russian thistle; burrows for cover and nesting; aestivates and hibernates; forages on open ground and under shrubs.	1 individual was observed during small mammal trapping surveys; potentially suitable habitat present in the western part of the site.	Observed
<i>Taxidea taxus</i> American badger	-	SSC	Prefers drier open stages of most shrub, forest, and herbaceous habitats with friable soils. Badgers are generally associated with treeless regions, prairies, park lands, and cold desert areas but are unlikely in cultivated lands.	Individual badgers were observed in both the eastern and western portions of the site and a number of badger dens were observed throughout the site during various field surveys.	Observed

**TABLE 5.7-8
SPECIAL STATUS WILDLIFE SPECIES**

Species	Status ^a		Preferred Habitat	Habitat Suitability and Potential to Occur	Occurrence ^b														
	USFWS	CDFW																	
<i>Vulpes macrotis mutica</i> San Joaquin kit fox	FE	ST	Mostly grassland and saltbush scrub; however, quite tolerant of human-caused disturbances and will, to an extent, utilize oil fields and cultivated agriculture lands.	Southernmost range is north of Los Angeles County (in Kern County); not expected to occur on the site.	Not observed														
<p>USFWS: U.S. Fish and Wildlife Service; CDFW: California Department of Fish and Game; °C: degrees Celsius; m: meters; msl: mean sea level</p> <p>LEGEND</p> <p>^aStatus Definitions</p> <table> <tr> <td>Federal (USFWS)</td> <td>State (CDFW)</td> </tr> <tr> <td>FE: Federally Endangered</td> <td>SE: State Endangered</td> </tr> <tr> <td>FT: Federally Threatened</td> <td>ST: State Threatened</td> </tr> <tr> <td></td> <td>SCE: State Candidate for listing as Endangered</td> </tr> <tr> <td></td> <td>SSC: Species of Special Concern</td> </tr> <tr> <td></td> <td>FP: Fully Protected</td> </tr> <tr> <td></td> <td>WL: Watch List</td> </tr> </table> <p>^b "Not Observed" does not infer that focused surveys were conducted.</p> <p>Note: All observation data is from wildlife surveys listed in Table 5.7-2.</p>						Federal (USFWS)	State (CDFW)	FE: Federally Endangered	SE: State Endangered	FT: Federally Threatened	ST: State Threatened		SCE: State Candidate for listing as Endangered		SSC: Species of Special Concern		FP: Fully Protected		WL: Watch List
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	FP: Fully Protected																		
	WL: Watch List																		

**TABLE 5.7-9
OTHER L.A. AUDUBON SENSITIVE BIRD SPECIES**

Species	Status	Preferred Habitat	Potential to Occur on the Project site; Results of Surveys	Occurrence
	L.A. Audubon			
<i>Anser albifrons</i> greater white-fronted goose	CSBS	Tundra wetlands for breeding; winters in agricultural fields, marshes, bays, and lakes.	The Project site does not provide suitable breeding habitat, but does provide marginal wintering habitat; not expected to occur as species has strong site fidelity for known wintering locations supporting large flocks.	Not observed
<i>Asio flammeus</i> short-eared owl	CSBS	Large, open areas with low vegetation, including prairie and coastal grasslands, meadows, shrub steppe, savanna, tundra, marshes, dunes, and agricultural areas; nests most commonly on tundra, inland and coastal prairies, extensive marshes, farmland.	The Project site provides a very limited amount of potentially suitable marsh habitat that is not substantial enough for breeding; may occur for wintering in the scrub, grassland, and agricultural areas of the Project site.	Not observed
<i>Botaurus lentiginosus</i> American bittern	CSBS	Wetlands of a variety sizes and kinds; freshwater marshes with tall vegetation for breeding; near the coast they occasionally use brackish marshes; managed wetlands important for wintering, may also forage in dry grasslands and other terrestrial habitats in winter.	The Project site provides a very limited amount of potentially suitable marsh habitat that is not substantial enough to support breeding or wintering birds; not expected to occur other than as a rare migrant.	Migrant observed
<i>Buteo regalis</i> ferruginous hawk	CSBS	Open-country; grasslands, sagebrush, saltbush-greasewood shrublands, and edges of pinyon-juniper forests at low to moderate elevations for breeding; breeding habitat includes features such as cliffs, outcrops, and tree groves for nesting; grasslands or deserts with abundant rabbits or pocket gophers for wintering.	The Project site is outside known breeding range for this species, but does provide suitable foraging habitat for wintering birds; it is expected to occur in small numbers on and in the vicinity of the Project site during winter.	Observed

**TABLE 5.7-9
OTHER L.A. AUDUBON SENSITIVE BIRD SPECIES**

Species	Status	Preferred Habitat	Potential to Occur on the Project site; Results of Surveys	Occurrence
	L.A. Audubon			
<i>Cathartes aura</i> Turkey Vulture	CSBS (breeding)	Open areas including mixed farmland, forest, and rangeland; nest on ground, hollow logs and trees, caves, cliff ledges, and rocky cavities; roost in trees, on rocks, and other high secluded spots.	Suitable foraging and roosting habitats are present throughout most of the Project site, but only the more remote western portions of the site provide potentially suitable nesting sites; expected to occur year-round for foraging.	Observed
<i>Cardellina pusilla</i> Wilson's warbler	CSBS (ML breeding)	Thickets of riparian habitats, lakes, bogs, and overgrown clear-cuts of montane and boreal zone for breeding; winters in tropical evergreen and deciduous forest, cloud forest, pine-oak forest, and forest edge habitat; also found in mangrove undergrowth, secondary growth, thorn-scrub, dry washes, riparian gallery forest, mixed forests, brushy fields, and plantations.	The riparian habitats on the Project site are considered to be too sparse to suitable breeding habitat for this species, so it is expected to occur only as a migrant.	Migrants Observed
<i>Catharus ustulatus</i> Swainson's thrush	CSBS (breeding)	Coniferous forests for breeding, except in coastal California where they are found primarily in deciduous streamside woodlands, alder or willow thickets, and occasionally in coastal scrub; sea level up to about 8,500 feet in elevation; winter habitat includes primary and old second-growth tropical forest and forest-pasture edges.	The riparian habitats on the Project site are considered to be too sparse to suitable breeding habitat for this species, so it is expected to occur only as a migrant.	Migrants observed

**TABLE 5.7-9
OTHER L.A. AUDUBON SENSITIVE BIRD SPECIES**

Species	Status	Preferred Habitat	Potential to Occur on the Project site; Results of Surveys	Occurrence
	L.A. Audubon			
<i>Chen caerulescens</i> snow goose	CSBS	Colonial breeder on Canadian and Northern Alaskan tundra in the vicinity of the coast; winter in regions on both American coasts as well as in some inland areas, frequenting open habitats like marshes, grasslands, marine inlets, freshwater ponds, and agricultural fields.	The Project site does not provide suitable breeding habitat, but does provide marginal wintering habitat; not expected to occur as species has strong site fidelity for known wintering locations supporting large flocks.	Migrant observed
<i>Chordeiles acutipennis</i> lesser nighthawk	CSBS (coastal slope)	Large open areas with relatively level topography and naturally open land; nest on vernal pool soils in large.	The Project site provides potentially suitable breeding and foraging habitat; this species may occur for foraging and breeding.	Not observed
<i>Cistothorus palustris</i> marsh wren	CSBS (interior breeding)	Marshes (cattail, bulrush, or brackish); breeds in many fresh and brackish marsh situations, usually with a large area of cattails, bulrushes, or cordgrass; winters in a wider variety of large and small marshes, including salt marshes and brushy edges of ponds or irrigation ditches.	The Project site provides a limited amount of potentially suitable marsh habitat for breeding and wintering; may occur for breeding and wintering.	Not observed
<i>Empidonax wrightii</i> gray flycatcher	CSBS (breeding)	Sagebrush, and pinyon and juniper; open and rather arid habitats for breeding, especially sagebrush plains with a few taller trees or shrubs, also scrubby woods of juniper and pinyon pine; winters in mesquite groves and in streamside willows and other trees, in lowlands.	Project site is outside known breeding range; not expected to occur other than as rare migrant.	Migrant observed
<i>Eremophila alpestris actia</i> California horned lark	CSBS (coastal slope)	Open areas dominated by sparse low herbaceous vegetation or widely scattered low shrubs; nests in hollow on ground often next to grass tuft or clod of earth or manure.	The Project site is outside the breeding range for this subspecies that occurs primarily on the coastal slope of Los Angeles County; the Mojave horned lark (<i>E. a. ammophila</i>) does nest on the Project site.	Not observed

**TABLE 5.7-9
OTHER L.A. AUDUBON SENSITIVE BIRD SPECIES**

Species	Status	Preferred Habitat	Potential to Occur on the Project site; Results of Surveys	Occurrence
	L.A. Audubon			
<i>Falco mexicanus</i> prairie falcon	CSBS (breeding)	Bluffs and cliffs in open country for nesting; the majority spend the winter in the Great Plains and Great Basin, In winter, often found in farmland and around lakes and reservoirs, and may regularly winter in some western cities; avoids forested country, and usually scarce on the immediate coast.	The Project site does not provide suitable nesting sites for this species, but this species is expected to occur during the breeding and winter seasons for foraging.	Observed
<i>Geococcyx californianus</i> greater roadrunner	CSBS	Semi-open, scrubby habitat including areas dominated by creosote, mesquite, chaparral, and tamarisk, as well as grasslands, riparian woodlands and canyons.	The Project site provides suitable breeding and foraging habitat and it is expected to occur.	Observed
<i>Hydroprogne caspia</i> caspiian tern	CSBS (breeding)	Breeds in wide variety of habitats along water, such as salt marshes, barrier islands, dredge spoil islands, freshwater lake islands, and river islands; during migration and winter found along coastlines, large rivers and lakes; roosts on islands and isolated spits.	The Project site does not provide suitable habitat for this species; this species is an infrequent visitor to Quail Lake and may, as a result, be seen from or over the project site.	Observed
<i>Icterus parisorum</i> Scott's oriole	CSBS (breeding)	Dry woods and scrub in desert mountains, yuccas, Joshua-trees, pinyons; breeds in semi-arid zones of Southwest in oak zones of lower canyons, open woods of juniper and pinyon pine, stands of Joshua-trees, grassland with many yuccas, palm oases; avoids true desert.	The Project site does not provide suitable breeding habitat, so it is not expected to occur.	Not observed

**TABLE 5.7-9
OTHER L.A. AUDUBON SENSITIVE BIRD SPECIES**

Species	Status	Preferred Habitat	Potential to Occur on the Project site; Results of Surveys	Occurrence
	L.A. Audubon			
<i>Megaceryle alcyon</i> belted kingfisher	CSBS (breeding)	Need access to bodies of water (streams, rivers, ponds, lakes, estuaries, and calm marine waters) for feeding; vertical earthen banks for nesting.	The Project site does not provide suitable foraging habitat, and is not expected to provide any potentially suitable nesting sites near Quail Lake; may occur on Project site as fly-over, but not expected to occur for nesting.	Not observed
<i>Melospiza lincolni</i> Lincoln's sparrow	CSBS (breeding)	Bogs, wet meadows, and riparian thickets for breeding, mostly in northern and montane areas; winters in brushy areas, thickets, hedgerows, understory of open woodlands, forest edges, clearings, and scrubby areas.	The Project site does not provide suitable breeding habitat; expected to occur as migrant and winter visitor.	Observed
<i>Numenius americanus</i> long-billed curlew	CSBS (wintering)	Sparse, short grasses, including shortgrass and mixed-grass prairies as well as agricultural fields for breeding; winters at coastal and interior Mexico, in wetlands, tidal estuaries, mudflats, flooded fields, and occasionally beaches.	The Project site provides suitable foraging habitat and potentially suitable breeding habitat, although south of known breeding locations in California; may occur in winter, but has been observed in migration and summer.	Observed
<i>Picoides villosus</i> Hairy woodpecker	CSBS (lowland)	Mature woodlands with medium to large trees, and coniferous forests, deciduous forests, or mixtures, and generally up to about 6,500 feet elevation.	The Project site provides suitable habitat for this species; it is expected to occur in the woodlands on western portions of the Project site; may occur in the riparian woodlands elsewhere on the Project site.	Not observed
<i>Plegadis chihi</i> white-faced Ibis	CSBS (breeding)	Fresh and saltwater marshes containing many rushes and sedges for nesting; also found around ponds, rivers and in flooded pastures and agricultural fields; movement patterns shift depending on rain.	The Project site does not provide suitable breeding habitat, but does provide suitable foraging habitat; observed during migration and may occur during winter.	Observed

**TABLE 5.7-9
OTHER L.A. AUDUBON SENSITIVE BIRD SPECIES**

Species	Status	Preferred Habitat	Potential to Occur on the Project site; Results of Surveys	Occurrence
	L.A. Audubon			
<i>Podiceps nigricollis</i> eared grebe	CSBS (breeding)	Breeds in shallow lakes and ponds; migration and in winter prefers salt water.	The Project site does not provide suitable habitat for this species; Quail Lake provides suitable habitat for this species; may occur on Project site but only as fly-over.	Observed
<i>Pooecetes gramineus</i> vesper sparrow	CSBS	Found in various open habitats with grass, including prairie, sagebrush steppe, meadows, pastures, and roadsides.	The Project site is outside the breeding range for this species, but does provide suitable wintering habitat; this species is expected to occur in migration and winter.	Observed
<i>Porzana carolina</i> sora	CSBS (breeding)	Breeds in shallow wetlands with lots of emergent vegetation.	The Project site provides a very limited amount of potentially suitable marsh habitat for breeding and wintering; may occur during migration and winter but not expected to breed as marsh habitat not substantial enough.	Not observed
<i>Rallus limicola</i> Virginia rail	CSBS	Freshwater marshes in dense emergent vegetation; occasionally inhabits salt marshes.	The Project site provides a very limited amount of potentially suitable marsh habitat for breeding and wintering; may occur during migration and winter but not expected to breed as marsh habitat not substantial enough.	Not observed
<i>Sialia currucoides</i> mountain bluebird	CSBS (wintering)	Open areas with a mix of short grasses, shrubs, and trees, at elevations of up to 12,500 feet above sea level for breeding; winter at lower elevations—in meadows, hedgerows, prairies, and flat grasslands with few scattered trees and bushes, pinyon-juniper and oak-juniper woodlands, and	The Project site provides suitable wintering habitat; small numbers observed wintering on the Project site during surveys.	Observed

**TABLE 5.7-9
OTHER L.A. AUDUBON SENSITIVE BIRD SPECIES**

Species	Status	Preferred Habitat	Potential to Occur on the Project site; Results of Surveys	Occurrence
	L.A. Audubon			
		agricultural areas; they avoid the most arid desert habitats.		
<i>Sturnella neglecta</i> western meadowlark	CSBS	Open grasslands, prairies, meadows, and some agricultural fields; avoid wooded edges and areas with heavy shrubs; in winter they forage for seeds on nearly bare ground.	The Project site provides suitable habitat; moderate numbers observed year-round on the Project site during surveys.	Observed
<i>Thalasseus elegans</i> elegant tern	CSBS (breeding)	Coastal waters, occasionally ocean far from land; breeds on low, flat, sandy islands.	The Project site is outside the known range of this species; not expected to occur.	Not observed
<i>Thalasseus maximus</i> royal tern	CSBS (breeding)	Coasts, sandy beaches, salt bays; favors warm coastal waters, especially those that are shallow and somewhat protected, as in bays, lagoons, estuaries; usually nests on low-lying sandy islands.	The Project site is outside the known range of this species; not expected to occur.	Not observed
<i>Toxostoma lecontei</i> Le Conte's thrasher	CSBS	Desert flats with sparse growth of saltbush; also on creosote bush flats in some areas; mainly where there are a few slightly larger mesquites or cholla cactus.	The Project site is outside the known range of this species; not expected to occur	Not observed
ML=Mountain and lowland				
L. A. Audubon				
CSBS County Sensitive Bird Species				

Invertebrates

Conservancy Fairy Shrimp

The conservancy fairy shrimp is a federally listed Endangered Species. It was listed on September 19, 1994. The species is currently known from several disjunct populations: the Vina Plains in Tehama County; south of Chico in Butte County; the Jepson Prairie Preserve and surrounding area in Solano County; the Sacramento National Wildlife Refuge in Glenn County; Mapes Ranch west of Modesto; San Luis National Wildlife Refuge and the Haystack Mountain/Yosemite Lake area in Merced County; and two locations on the Los Padres National Forest in Ventura County (USFWS 1994b). Critical Habitat was designated for this species on February 10, 2006. A total of 161,786 acres in Butte, Colusa, Mariposa, Merced,

Solano, Stanislaus, Tehama, and Ventura Counties were determined to be critical habitat for this species. Three other vernal pool crustacean species had Critical Habitat designated within the same document: longhorn fairy shrimp (*Branchinecta longiantenna*), vernal pool fairy shrimp, and vernal pool tadpole shrimp (*Lepidurus packardii*). Although there are no records of this species within the vicinity of the site, survey data are limited. A habitat assessment conducted by Glenn Lukos Associates indicated that suitable conditions for this species may occur on the Project site (GLA 2005b). This species was not observed during protocol dry and wet season surveys of two seasonal ponds in 2004–2005 (GLA 2005a). The conservancy fairy shrimp is not expected to occur on the Project site due to negative results of focused surveys.

Vernal Pool Fairy Shrimp

The vernal pool fairy shrimp is a federally listed Threatened Species. It occupies a variety of different vernal pool habitats from small, clear, sandstone rock pools to large, turbid, alkaline, grassland valley pools. The vernal pool fairy shrimp requires water temperatures of 10 degrees Celsius (°C, 50 degrees Fahrenheit [°F]) or less for cysts to hatch, and time to sexual maturity ranges from an absolute minimum of 18 days at 20°C (68°F) to a more typical 41 days at 15°C (59°F). Longevity ranges from about 70 days to a maximum of 139 days (Eriksen and Belk 1999). Although the species has been collected from large vernal pools, including 1 exceeding 25 acres, it tends to occur in smaller pools. It is most frequently found in pools measuring less than 0.05 acre (Impact Sciences 2003). These are most commonly found in grass- or mud-bottomed swales, or basalt flow depression pools in unplowed grasslands (USFWS 1994b). This species has been recorded from elevations as high as 5,600 feet above msl. The vernal pool fairy shrimp is known from three locations in Los Angeles County: one near Via Princessa, one at Cruzan Mesa, and the third at nearby Plum Canyon in the Santa Clarita area (Impact Sciences 2011; GLA 2005b).

A total of 597,821 acres in Jackson County, Oregon and Alameda, Amador, Butte, Contra Costa, Fresno, Kings, Madera, Mariposa, Merced, Monterey, Napa, Placer, Sacramento, San Benito, San Joaquin, San Luis Obispo, Santa Barbara, Shasta, Solano, Stanislaus, Tehama, Tulare, Ventura, and Yuba Counties, California were determined to be Critical Habitat for this species. A habitat assessment conducted by Glenn Lukos Associates indicated that suitable conditions for this species may occur on the Project site (GLA 2005b); however, it was not observed during protocol dry and wet season surveys of two seasonal ponds in 2004–2005 (GLA 2005a). Based on the absence of this species from the two ponds during protocol surveys, the lack of reported occurrences in the site vicinity, and the location of the Project site outside the Critical Habitat designation for this species, the vernal pool fairy shrimp is not expected to occur on the Project site.

Amphibians and Reptiles

Arroyo Toad

The arroyo toad is a federally listed Endangered Species and a California Species of Special Concern. This species historically occurred from San Luis Obispo to San Diego Counties along most major rivers. Most of the remaining populations occur in the national forests. The nearest recorded observation location is Piru Creek in the Los Padres National Forest (CDFW

2015a). The arroyo toad is generally found in semi-arid regions near washes or intermittent streams (Zeiner et al. 1988); however, this species has highly specialized habitat requirements, such as breeding pools within approximately 300 feet of juvenile and adult habitats, consisting of stream banks comprised of stable, sandy terraces (Jennings and Hayes 1994).

On February 9, 2011, the USFWS published the current Final Rule designating 98,366 acres of land as critical habitat for the arroyo toad in Santa Barbara, Ventura, Los Angeles, San Bernardino, Riverside, Orange, and San Diego Counties (USFWS 2011b). The study area is not located in areas designated as critical habitat for the arroyo toad. Although potentially suitable habitat is present in some drainages on the Project site, the site is located outside the species' known current range, and it has not been observed during other biological surveys and site visits. The Project site is not within the 2001, 2005, or 2011 designated Critical Habitat areas determined by the USFWS; the closest Critical Habitat is from the 2011 designation and is located about four miles southwest of the site. Surveys for this species were completed by BonTerra Consulting in spring/summer 2006 and results were negative. The arroyo toad is not expected to occur on the Project site.

Tehachapi Slender Salamander

The Tehachapi slender salamander is a State-listed Threatened Species. It occurs in scattered populations through the Tehachapi Mountains to Fort Tejon in Kern County, California (Stebbins 2003). This species is associated with north-facing slopes; it is found within and under rock talus and rotting logs; and it is located in moist, decomposing, our Lord's candle leafbases (Hansen and Wake 2005; Sweet 2011). The Tehachapi slender salamander occurs in moist canyons comprised of canyon live oak, blue oak, interior live oak, western sycamore (*Platanus racemosa*), Fremont cottonwood, California buckeye (*Aesculus californica*), foothill pine (*Pinus sabiniana*) woodlands, and juniper woodland (Hansen and Wake 2005; Sweet 2011). Individuals are usually observed between elevations of 2,000 and 4,600 feet above msl (Stebbins 2003). In the vicinity (within ten miles) of the site, this species has been reported from Bear Trap Canyon and Fort Tejon State Park (CDFW 2015a). The range of distribution for this species overlaps with only one other slender salamander species: the black-bellied slender salamander. The black-bellied slender salamander and Tehachapi slender salamander can be easily distinguished from each other. Although Tehachapi slender salamander was not observed on the site, potentially suitable habitat is present in the north-facing oak woodlands in the western portion of the site and in the southern portion of the site south of SR-138. Focused surveys for this species were completed by BonTerra Consulting in spring/summer 2006 and results were negative for all salamanders. The Tehachapi slender salamander may occur on the Project site.

On April 22, 2009, the USFWS published a 90-day finding concluding that the petition to list the salamander contained substantial scientific or commercial information to indicate that listing the Tehachapi slender salamander may be warranted (USFWS 2009). On October 11, 2011, the petition to list the Tehachapi slender salamander was denied by the USFWS. It was determined that the threats to the species did not warrant federal protective status and that, despite the species limited range and population, it was not threatened throughout the entirety of its occurrences (USFWS 2011a).

Yellow-Blotched Ensatina (Salamander)

The yellow-blotched ensatina, a subspecies of ensatina (*Ensatina eschscholtzii*), is a California Species of Special Concern. This subspecies occurs in the Tehachapi Mountains, on Mount Pinos, in the vicinity of Fort Tejon, and in the Frazier-Alamo Mountain area. This species is found under rotting logs, bark, and rocks. In the south, this species is found in forests and well-shaded canyons, oak woodlands, grasslands, and chaparral (Stebbins 2003). In the vicinity of the site, yellow-blotched ensatina has been reported from Fort Tejon State Park (near Lake Castaic) and Tejon Peak (CDFW 2015a). Wooded drainages in the western portion of the Project site could possibly support the yellow-blotched ensatina. Surveys for this species were completed by BonTerra Consulting in spring/summer 2006 and results were negative. However, this species may occur in unsurveyed areas on the Project site where there is suitable habitat.

California Red-Legged Frog

The California red-legged frog (*Rana aurora draytonii*) is a federally listed Threatened Species and a California Species of Special Concern. This frog has been extirpated from approximately 70 percent of its historic range and now primarily occurs only in wetlands and streams in Central California (USFWS 2006a). Until 2004, the red-legged frog (*Rana aurora*) was considered to comprise two subspecies, the California red-legged frog (*Rana aurora draytonii*) and the northern red-legged frog (*Rana aurora aurora*) until genetic studies (Shaffer et al. 2004) determined that the two taxa are actually two separate species, *R. aurora*, and *R. draytonii*. The ranges of these two species overlap in Mendocino County. However, the regulatory agencies (CDFW and USFWS) continue to recognize the older taxonomy of one species of red-legged frog as having two subspecies: the California red-legged frog and the northern red-legged frog. Only the California red-legged frog (*Rana aurora draytonii* or *R. draytonii*) occurs in the Project region. This frog prefers areas with deep ponds in slow-moving streams where emergent vegetation is found on the bank edges (Jennings and Hayes 1994). Adults feed primarily on aquatic and terrestrial invertebrates.

On March 17, 2010, the USFWS published the current Final Rule designating 1,636,609 acres of land as Critical Habitat for the California red-legged frog in 27 California counties, including Los Angeles County. The Project site is not located in the final Critical Habitat designations for this species. This species was not observed during focused protocol surveys in 2001, and the stream conditions on the site indicate that this species is not expected to occur (Impact Sciences 2001a). Focused surveys for this species were completed by BonTerra in spring/summer 2006 and results were negative. The Project site is not located within areas designated as Critical Habitat in either 2001, 2006, or 2010 (USFWS 2010a); the closest Critical Habitat is from the 2010 designation, and is located approximately 16 miles south of the Project site.

Western Spadefoot

The western spadefoot is a California Species of Special Concern. This species occurs in the Central Valley, in its bordering foothills, and in the Pacific Coast Ranges from Monterey Bay south to Baja California, Mexico (Stebbins 2003). From the Santa Clara River Valley in Los Angeles and Ventura Counties southward, an estimated 80 percent of habitat for this species

has been lost. This species inhabits grassland, coastal sage scrub, and other habitats with open sandy, gravelly soils. The western spadefoot is primarily a species of the lowlands, frequenting washes, floodplains of rivers, alluvial fans, and alkali flats (Stebbins 2003). The western spadefoot breeds in quiet streams, vernal pools, and temporary ponds. This species is rarely seen outside the breeding season. The Project site provides conditions potentially suitable for this species at cattle ponds, ephemeral ponds, and other areas where there are water ponds during the wet season; however, the Project site is located just outside the known geographical range for this species (Zeiner et al. 1988). The western spadefoot was not observed during focused surveys in 2005 (only a portion of the Project site was surveyed). This species may occur in other unsurveyed areas on the Project site where there is potentially suitable habitat.

Silvery Legless Lizard

The silvery legless lizard (*Anniella pulchra pulchra*) is a California Species of Special Concern. It occurs in the Coast, Transverse, and Peninsular Ranges from Contra Costa County south to Baja California, Mexico (Stebbins 2003). It is nearly endemic to the state of California (Jennings and Hayes 1994). Though currently viewed as subspecies of silvery legless lizard by the CDFW, the silvery legless lizard's taxonomic classification is under review due to the present amount of genetic similarity between the silvery legless lizard and black legless lizard (*Anniella pulchra nigra*) populations. This report conforms to the regulatory agency, CDFW, and thus places the silvery legless lizard and black legless lizard as subspecies of silvery legless lizard. The distribution ranges of the silvery legless lizard and black legless lizard do not overlap in the Project region, and the Project site is within the silvery legless lizard's known geographical range (Zeiner et al. 1988).

The silvery legless lizard is a small, secretive lizard that spends most of its life beneath the soil, under stones, logs, debris, or in leaf litter. This species requires areas with loose, sandy soil, moisture, warmth, and plant cover. It occurs in chaparral, pine-oak woodland, beach, and riparian vegetation types at elevations ranging from sea level to about 5,100 feet above msl (Stebbins 2003). The strict habitat requirements for this species (such as substrates with high sand and moisture content) and its limited range make this species extremely vulnerable to disturbance. It is threatened by development, grazing, off-road vehicle activity, sand mining, beach erosion, excessive recreational use of coastal dunes, and the introduction of exotic plants (Jennings and Hayes 1994). The Project site provides suitable habitat for this species; one silvery legless lizard was observed, although no focused surveys for this species were conducted.

Western Pond Turtle

The western pond turtle (*Actinemys marmorata pallida*) is a California Species of Special Concern. This subspecies occurs from approximately the San Francisco Bay area south to northern Baja California, Mexico. The western pond turtle is thought to be in decline in 75 to 80 percent of its range (Stebbins 2003). The western pond turtle occurs primarily in freshwater rivers, streams, lakes, ponds, vernal pools, and seasonal wetlands, requiring water depths in excess of six feet and basking sites such as logs, banks, or other suitable areas above water level. Nesting occurs during spring or early summer (generally between April and August). Nest sites can be located along sandy banks adjacent to large, slow-moving

streams, but females may travel up to approximately 300 feet in search of suitable nesting sites and have been known to nest in open grasslands on south-facing slopes (Morey 2000; Lovich n.d.). Other long-distance movements (e.g., overwintering) may be in response to drying bodies of water or other local factors (Morey 2000). In cold regions where hibernation is more common, it usually occurs in mud beneath water, though this has been documented in upland areas as well. The life history of western pond turtles living in perennial water bodies, such as at Quail Lake, may be almost exclusively aquatic, only leaving the water to nest (Zargoza et al. 2015).

In addition to losses of habitat, this species is also threatened by grazing, non-native species, and disease (Jennings and Hayes 1994). There are reported occurrences of this species in the vicinity of the Project site in the Lebec and Frazier Mountain USGS topographic quadrangles (CDFW 2015a); however, specific location information is suppressed by the CDFW to protect this species from collectors. This species has been observed adjacent to the Project site at Quail Lake. The Project site has limited availability of similar suitable habitat (Impact Sciences 2004b). General surveys conducted during 2006 and 2008 found habitat insufficient to support pond turtle except for the ranch pond located near the north-central edge of the Project site (also where the tricolored blackbird colony was observed). Although no live trapping for the pond turtle was conducted during the 2006 and 2008 surveys, this species is not expected to occur due to poor water quality. Other wetland areas on the site were inadequate for turtle occupation. Upland areas just north (within 300 feet) of Quail Lake may contain potentially suitable nesting habitat, partially overlapping the Project site. This species was not detected during surveys.

Blunt-Nosed Leopard Lizard

The blunt-nosed leopard lizard (*Gambelia sila*) is a federally listed Endangered, State-listed Endangered, and a California Fully Protected species. No Critical Habitat has been designated for this species. Endemic to California, this species inhabits the San Joaquin Valley and nearby valleys and foothills, from extreme northwest Santa Barbara County and western Kern County north to southern Merced County. Elevation requirements extend from 100 to 2,400 feet above msl. It is no longer present throughout most of its former range as the habitat has been significantly altered by farming, urban development, overgrazing, oil wells, mining, reservoirs, and off-road vehicle use. At one time, it hybridized with long-nosed leopard lizard (*Gambelia wislizenii*) in the upper Cuyama drainage in Ventura County (near Santa Barbara County), but much of the habitat in this region has now been degraded. This species uses mammal dens and burrows for cover and shelter. The number of available burrows will determine the size of this lizard's population in an area (Stebbins 2003). Blunt-nosed leopard lizard inhabits relatively open wash habitat, floodplain, and grasslands (Warrick et al. 1998) with sparse open vegetation comprised of bunch grass, alkali bush, sagebrush, creosote bush, or other scattered low plants (Germano et al. 2001). It avoids dense grass and brush, which interfere with running (Stebbins 2003). The blunt-nosed leopard lizard has a current range that stops north of the Tehachapi Range. It has not been observed and is not expected to occur on the site.

Coast Horned Lizard

The coast horned lizard is a California Species of Special Concern. It occurs throughout much of California, west of the desert and Cascade-Sierra highlands south to Baja California, Mexico (Stebbins 2003); however, many of the populations in lowland areas have been reduced or eliminated due to urbanization and agricultural expansion (Stebbins 2003). It is a small, spiny, somewhat rounded lizard that occurs in scrubland, grassland, coniferous forest, and broadleaf woodland vegetation types; it prefers open areas for basking and loose, friable soil for burrowing. Three factors have contributed to its decline: loss of habitat, overcollecting, and the introduction of exotic ants. In some places, especially adjacent to urban areas, the introduced ants have displaced the native species upon which the lizard feeds (Fisher et al. 2002; Suarez and Case 2002; Suarez et al. 2000). In addition to loss of habitat, this species is also threatened by fires, off-road vehicles, grazing and pets, especially domestic cats (Jennings and Hayes 1994). In the vicinity of the site, this species has been reported from Hungry Valley, Tejon Peak, Tehachapi Mountains, and two miles east of Gorman along SR-138 (CDFW 2015a). This species was observed in several drainages scattered across the Project site in 2003 (Impact Sciences) and in washes and upland scrub habitat during various surveys on the Project site in 2015.

Two-Striped Garter Snake

The two-striped garter snake is a California Species of Special Concern. It occurs from Monterey County, south to Rio Rosario in Baja California, Mexico at elevations between sea level and approximately 8,000 feet above msl (Stebbins 2003). It is considered locally rare in southwestern California. The two-striped garter snake is highly aquatic and occurs primarily in or near perennial or intermittent freshwater streams with rocky beds in riparian habitats bordered by oak woodlands, willows (*Salix* spp.), or other dense vegetation (Jennings and Hayes 1994; Stebbins 2003). The two-striped garter snake feeds on small fishes, frogs, tadpoles, and earthworms. It is estimated that development and other human impacts have reduced the historic range of this species in California by 40 percent (Stebbins 2003). A two-striped garter snake was observed in Oso Canyon (Impact Sciences 2003). Due to the suitable aquatic habitat and the known reported occurrence, it is determined that this species is expected to occur on the Project site.

Birds

Tricolored Blackbird

The tricolored blackbird is a California Species of Special Concern and a California Candidate for listing as an Endangered Species. These colonially nesting birds prefer to breed in marsh vegetation of bulrushes (*Schoenoplectus* spp.) and cattails (*Typha* sp.) and have also been recorded nesting in willows (*Salix* spp.), blackberries (*Rubus* spp.), and mustard (*Brassica* spp.) (Beedy et al. 1991). During winter months, they are often found foraging in wet pastures, grasslands, agricultural fields, and seasonal wetlands. Tricolored blackbirds are nomadic, wandering during the nonbreeding season and occupying colony sites intermittently (Unitt 1984). There are reported occurrences of this species in the vicinity of the site along the southern edge of Quail Lake (north of SR-138) and on the shores of Holiday Lake approximately five miles east of the Project site (CDFW 2015a). The Project site provides suitable foraging and small amounts of suitable nesting habitat, which consists of

areas of dense reeds (*Typha* spp.) and nettles (*Urtica dioica*). The tricolored blackbird was observed nesting in large numbers along the north-central edge of the Project site and was also observed in Oso Creek (BonTerra Consulting 2008; Impact Sciences 2004a). Most recently, focused surveys for tricolored blackbird were conducted in 2015 and they were observed nesting off site along the northern shore of Quail Lake and at Holiday Lake, and these birds were observed foraging on the Project site (BonTerra Psomas 2015d).

Tricolored blackbird breeding was detected at Quail Lake and approximately 3.4 miles east at Holiday Lake. No evidence of tricolored blackbird breeding was detected on the Project site. However, tricolored blackbirds from the Quail Lake and potentially the Holiday Lake breeding locations were detected foraging on the Project site. The breeding birds at Quail Lake were observed foraging on caterpillars and grasshoppers in the grasslands and rabbitbrush scrub on the Project site, while the breeding birds potentially from Holiday Lake were observed foraging on unknown insects in the agriculture fields in the easternmost portion of the Project site. The assumption that birds from Holiday Lake may have been feeding at the agricultural fields on the Project site was made based on flight direction, while the birds from Quail Lake were directly observed foraging on the Project site. Flocks of what appeared to be unpaired males were also observed foraging throughout the Project site during these surveys. Areas where these flocks were detected with high frequency included the Oso Canyon portion of the Project site; the rabbitbrush scrub along the length of the East Branch of the California Aqueduct (east-west alignment); in the northern section of the Project site immediately east of the Aqueduct; and the agricultural fields. Details on breeding colonies and population counts are provided below.

Five distinct breeding colony locations were detected in the bulrush vegetation on the shores of Quail Lake. The breeding colony with the closest proximity to the Project site was Location 1 at 50 feet (west), while the farthest proximity was Location 5 at approximately 2,030 feet (southwest). All other locations fall between those proximities. Breeding tricolored blackbirds along the northern shore of Quail Lake were detected foraging on the Project site, while birds from Location 5 were observed foraging south of SR-138, off site.

Population counts for breeding tricolored blackbirds at the Quail Lake locations numbered as high as 1,000 adults on March 31, 2015. By June 11, 2015, this number had dropped to approximately 200 birds; a mix of adult males, females, and juvenile birds were observed. Adults were still observed feeding nestlings and fledglings at this time. No feeding of nestlings was detected during the June 26, 2015, survey and it was determined that all birds had fledged. The Holiday Lake colony had an estimated population count of approximately 3,500 adult birds. Breeding was detected there from March 31, 2015 to June 26, 2015.

On February 26, 2016, the CDFW issued a Public Notice that announced the tricolored blackbird as a Candidate Threatened or Endangered species under the CESA (CDFW 2016). The CDFW has initiated a status review of the tricolored blackbird and will review data and comments on the petitioned action (listing of the species). The CDFW has 12 months to review the petition; evaluate the available information; and report whether or not the petition action is warranted. A 30-day public comment period will be allowed prior to taking any action on the CDFW recommendation. According to the Notice, as a Candidate

Threatened or Endangered species, the tricolored blackbird receives the same legal protection afforded to an Endangered or Threatened species.

Grasshopper Sparrow

The grasshopper sparrow (*Ammodramus savannarum*) is a California Species of Special Concern. This sparrow is an uncommon and very local summer resident along the coastal slope of Southern California (Garrett and Dunn 1981). This is an inconspicuous bird of grasslands with an insect-like song; it is declining throughout North America due to loss of habitat and inhibition of fire. In the southwestern part of its breeding range, this sparrow prefers more lush areas with some shrub cover in arid grasslands (Vickery 1996). Reports of this species at Gorman Ranch, including a recent CNDDDB report of 1 adult observed in grasslands 0.8 mile northeast of the I-5/SR-138 interchange, are believable since this species is migratory and can appear in places previously unknown (CDFW 2015a). Potentially suitable habitat for this species is present in the grassland vegetation types of the Project site. It has not been observed during the surveys and, since the Project site is outside the historic and current known breeding range for the species, it is not expected to occur to breed, though it may migrate through the site.

Golden Eagle

The golden eagle is a California Fully Protected Species, a California Species of Special Concern Watch List Species, and is also protected by the Federal Bald Eagle Act. Habitat for this species generally consists of grasslands, deserts, savannas, and early successional stages of forest and shrub habitats. Broad expanses of open country are required for foraging, while nesting is primarily restricted to rugged mountainous areas with large trees or cliffs (Johnsgard 1990). The golden eagle is an uncommon resident throughout Southern California, except in the Colorado Desert and Colorado River, where it is a casual winter visitor (Garrett and Dunn 1981). This species is threatened by habitat destruction, shooting, and human disturbance at nest sites (Remsen 1978). This species has been reported from the Tehachapi Mountains two miles west-northwest of Quail Lake (CDFW 2015a). Potentially suitable foraging habitat is present for this species throughout the Project site; however, only limited nesting opportunities are present in woodland areas of the site. The golden eagle was observed on multiple occasions soaring over the site (BonTerra Consulting 2008; Impact Sciences 2004a; BonTerra Psomas 2013). Golden eagle is expected to occur on-site for foraging, and may occur on site for nesting.

Long-Eared Owl

The long-eared owl is a California Species of Special Concern. The breeding range of this species in California includes Central and coastal Southern California (AOU 1998). This species occupies coniferous, deciduous and evergreen forests, orchards, wooded parks, farm woodlots, river woods, and desert oases. Wooded areas with dense vegetation are needed for roosting and nesting, while open grasslands or shrublands are needed for hunting (Marks et al. 1994; AOU 1998). Population declines in Southern California are attributed to loss of riparian and grassland habitats to development (Marti and Marks 1989; Bloom 1994). This species has not been detected on site; however there are records for this species in the Project region (eBird 2016). The western portion of the Project site provides a limited

amount of potentially suitable wintering and breeding habitat for this species; therefore, the long-eared owl has a low potential to occur.

Burrowing Owl

The burrowing owl is a California Species of Special Concern. Although the burrowing owl was proposed as a State Candidate for listing, it was determined that the species did not warrant listing. This species is considered a Species of Local Concern, however, because it is much less common in Southern California than in the Central Valley. In Southern California, burrowing owls breed and forage in grasslands and prefer flat to low rolling hills in treeless terrain; this species has declined in many other areas due to habitat modification, poisoning of its prey items, shooting, and human disturbance (Remsen 1978). In the vicinity, this species has been reported approximately eight miles east of the Project site in the Antelope Valley (CDFW 2015a). Potentially suitable conditions for foraging and nesting for this species are present throughout most of the Project site. One pair of burrowing owls was observed on the site in 2001 (Impact Sciences 2004a); one individual was observed just off the site to the north during surveys in 2006 (BonTerra Consulting 2008). Due to the lack of incidental observations of burrowing owls by biologists conducting other surveys on the site over multiple years, burrowing owls are expected to occur in very low numbers.

Redhead

The redhead (*Aythya americana*) is a California Species of Special Concern. The redhead is a duck that breeds in open water areas from central Alaska, British Columbia, central Canada, and the midwestern United States south to southern California, Arizona, New Mexico, and north-central Texas; also sporadically in the northeastern United States, southeastern Canada, and interior Mexico (Shuford and Gardali 2008). Since the mid-1940s breeding populations in California have been greatly reduced, with the largest breeding populations occurring in northeastern California. Breeding redheads have been documented in Southern California in Bishop, Inyo County, Antelope Valley, and eastern Kern County. Redheads continue to breed in small numbers at the Salton Sea. Redheads have been observed at Quail Lake and Holiday Lake (approximately 3.4 miles east of the project site) during migration (eBird 2016). The Project site is within the current breeding range for the redhead (Shuford and Gardali 2008). The Project site does not contain suitable breeding habitat for the redhead, not expected to occur for breeding but may occur as an occasional visitor.

Swainson's Hawk

The Swainson's hawk is a State-listed Threatened species. The Swainson's hawk is a Neotropical migrant that breeds in grassland and savannah habitats in western North America east to the Great Plains and from southwest Alaska and southern Canada south to northern Mexico. This is a gregarious species that is often observed in migrating flocks, sometimes numbering in the thousands (England et al. 1997). Although the total population has been conservatively estimated at 40,000 to 55,000 breeding pairs, the Swainson's hawk has experienced serious local declines in parts of its breeding range such as in Oregon and California (del Hoyo et al. 1994). In California, the Swainson's hawk is considered to be a locally common to rare breeder with the majority of breeding territories located in the Central Valley and Great Basin regions. Most breeding pairs are located in the middle of the

Central Valley between Sacramento and Modesto, and in the northern San Joaquin Valley (Woodbridge 2004).

Swainson's hawks are now absent from most of their historic range in the central and southern parts California (Woodbridge 2004). Bloom (1980) estimated the California breeding population to be 375 pairs and found this to represent a 91 percent decline from historical population estimates. More recent surveys have shown an increase with estimates as high as 1,000 pairs (Woodbridge 2004). Unpublished data from Pete Bloom and Woodridge (2004) indicates that there has been recent recolonization of historic habitats in the Antelope Valley and population increases in the Owens Valley. In addition, recent surveys in 2008, 2009, and 2010 in the western Antelope Valley, east of the Project region, have found nesting Swainson's hawks at new sites (CEC and CDFG 2010). This species is threatened by loss of habitat, habitat deterioration at the South American wintering grounds, human disturbance at nest sites, shooting, and possibly pesticides (Remsen 1978). Potentially suitable foraging and nesting habitat for this species occurs on the site, and this species nests in high desert areas such as the Antelope Valley. Swainson's hawk was observed on the Project site as a spring migrant (Impact Sciences 2004a) and as a non-breeding summer visitor. A Swainson's hawk group of five individuals, which was observed during the 2008 breeding season (July 2008), was considered to be summering outside their known breeding range (BonTerra Consulting 2008). Focused surveys for Swainson's hawk were conducted on the Project site in 2013. No breeding Swainson's hawks were detected during the focused surveys; however, migrating Swainson's hawks were detected then and were detected incidentally during tricolored blackbird surveys (BonTerra Psomas 2013, 2015d). Swainson's hawk is expected to occur on site for foraging, but is not expected to occur on site for nesting.

Mountain Plover

Mountain plover (*Charadrius montanus*) is a California Species of Special Concern. This species breeds from southern Alberta and southwestern Saskatchewan, Canada south through Montana and Wyoming to southeastern New Mexico and western Texas (AOU 1998). Most of these birds spend the winter in the Central and Imperial valleys of California (Knopf 1996). Its winter range in California was previously described as interior valleys and plains at low elevations from the Sacramento Valley and eastern parts of the San Francisco Bay region south to the coastal counties of Southern California and the Imperial Valley (Grinnell and Miller 1986). The largest numbers of mountain plovers currently winter in the Imperial Valley and in the Central Valley from Colusa County south to Kern County. Relatively small populations also occur in the Panoche Valley and Carrizo Plains west of the San Joaquin Valley (or southern Central Valley), in the Colorado River Valley near Blythe, and the western Antelope Valley (Shuford and Gardali 2008). For both breeding and wintering, mountain plovers are strongly associated with short-grass prairie habitats or other similar habitats that are flat and generally lack vegetation (Knopf 1996). They also occur on more natural, non-cultivated sites, such as alkali sink scrub, valley sink scrub, alkali playa, and annual grasslands (USFWS 1999). Grazed or burned agricultural fields also provide suitable habitat for this species, as well as Bermuda grass fields (Knopf 1996). Flocks of this plover have been detected on about 75 percent of the National Audubon Society's (NAS) Christmas Bird Counts conducted annually at Lancaster since 1990 (NAS 2017). The Project site contains

grasslands and agricultural fields on relatively gentle terrain that provide potentially suitable wintering habitat; however, due to a lack of detections during focused surveys or otherwise, the mountain plover is not expected to occur on site.

Northern Harrier

The northern harrier is a California Species of Special Concern. It is a regular winter migrant in marshes and fields throughout Southern California, but is very scarce as a local breeder (Garrett and Dunn 1981). This species nests in protected marshes or open grassy meadows. Northern harriers can be expected at any month of the year and can be seen foraging in grassland, scrub, and riparian vegetation types. While once a relatively common species during fall, winter, and spring in undeveloped areas of Los Angeles County, the northern harrier population is now greatly reduced and localized in distribution. This species is threatened by loss of suitable breeding habitat (Grinnell and Miller 1986). Potential foraging and nesting conditions for this species are present on the site. In addition, the northern harrier was observed on the site near Oso Canyon (Impact Sciences 2003) and observed during the summer season (BonTerra Consulting 2008; BonTerra Psomas 2013). Northern harrier is expected to occur on site for foraging, and may occur on site for nesting.

Western Yellow-Billed Cuckoo

The western yellow-billed cuckoo is a federally Threatened and a California Endangered species. There is currently no designated Critical Habitat for this species. California's population of western yellow-billed cuckoo was once estimated to be over 15,000 pairs, but in less than 100 years, it has declined to less than 30 pairs with most cuckoos concentrated at 3 locations: the Sacramento River, the South Fork of the Kern River, and the lower Colorado River (Hughes 1999). Cuckoos appear to have been extirpated from other locations such as at the Santa Ana River in the Prado Basin where small numbers (three to seven) were reported annually prior to 1995 (Pike et al. 2004). Breeding western yellow-billed cuckoos require relatively large (i.e., greater than 20 hectares or 50 acres) contiguous patches of multilayered riparian habitats (Daw 2014). They require broad areas of old-growth riparian vegetation dominated by willows and Fremont's cottonwoods (*Populus fremontii*) with dense understories. Mature riparian woodlands with cottonwoods (*Populus* sp.) and willows exist on the Project site in just a few scattered small patches. These are not considered substantial enough to support breeding cuckoos. A Western yellow-billed cuckoo was reported during surveys in June 2003 in the north-central portion of the site (Impact Sciences 2004a). This observation was considered most likely a rare migrating individual. Follow-up visits in the following weeks to the location where the bird was observed were negative for the cuckoo (Babcock 2005). Avian surveys conducted in 2006 by BonTerra Consulting did not detect this species on the Project site, and it has not been observed on the Project site to date. Western yellow-billed cuckoo may occur onsite as a rare migrant, but it is not expected to occur on site for nesting.

White-Tailed Kite

The white-tailed kite is a California Fully Protected Species. This species is an uncommon to common resident in coastal Southern California, and a rare visitor on the western edge of the deserts (Garrett and Dunn 1981). This raptor has been slowly increasing in interior

regions in recent years and small numbers breed locally in the Antelope Valley. Kites nest primarily in oaks, willows and western sycamores (*Platanus racemosa*), and forage in grassland and scrub vegetation types. White-tailed kites show strong site fidelity to nest groves and trees. Conditions suitable for foraging and nesting are present throughout the site. The Project site provides potentially suitable nesting habitat and there is potential for this species to breed on the site. It has been observed flying over the grasslands in the western portion of the Project site. White-tailed kite is expected to occur on site for foraging, and it may occur on site for nesting.

Southwestern Willow Flycatcher

The southwestern willow flycatcher is a federally and State-listed Endangered Species. This subspecies was once considered a common breeder in coastal Southern California; however, it has declined drastically due to losses of breeding habitat and nest parasitism by the brown-headed cowbird (*Molothrus ater*). This species occurs in riparian habitats along rivers, streams, or other wetlands where a dense growth of willows, baccharis (*Baccharis* sp.), arrowweed (*Pluchea* sp.), tamarisk (*Tamarix* sp.), or other riparian plants are present, often with a scattered overstory of cottonwood (USFWS 1995). Critical Habitat for this species was originally designated on July 22, 1997, and was updated on October 19, 2005. In 2007, the USFWS announced that it would review the 2005 designation; then, in November 2007, the USFWS declared that it would maintain the 2005 designation. The USFWS designated final Critical Habitat in Arizona, California, Nevada, New Mexico, and Utah. Counties containing Critical Habitat in California include Kern, Santa Barbara, San Bernardino, and San Diego. Of the 48,896 USFWS-designated acres of Critical Habitat for the southwestern willow flycatcher, 17,212 acres are located in California (USFWS 2013). Limited suitable habitat for this species is present in the riparian vegetation types on the site. The Project site is not located within the final 2013 USFWS-designated Critical Habitat. Focused surveys were completed and, although transient willow flycatchers (unknown subspecies) were detected, no breeding southwestern willow flycatchers were detected (Impact Sciences 2003; BonTerra Consulting 2008). The southwestern willow flycatcher may occur on site during migration, but it is not expected to occur for nesting due to extreme rarity of the subspecies in the region.

California Condor

The California condor is a federally and State-listed Endangered Species. It has broad habitat and climatic tolerances. Suitable habitat for the condor includes adequate food supply, open areas to locate food, and reliable air movements to allow for extending soaring (Bloom 2009). Foraging habitat consists of vast expanses of open savannah and grassland, including potreros (cattle ranches or pastures) within chaparral with cliffs, large trees, and snags that are often separated by far distances from the nesting sites. Roosting habitat is located near important foraging grounds, often near a previously discovered carcass. Nesting habitat ranges from chaparral to forested montane regions, including redwood forests. The California condor nests in caves, crevices, and large ledges on high sandstone cliffs. Expending very little energy, these scavengers soar on thermal updrafts and wind currents until they spot potential food sources. Breeding birds typically forage within 50 to 70 kilometers (31 to 43.5 miles) of their nesting areas, with core foraging areas ranging from 2,500 to 2,800 square kilometers (970 to 1,100 square miles) (Bloom 2009).

In the early 1980s, the total population for this species was estimated at fewer than 20 individuals. By the end of 1986, all but two condors had been taken into captivity. On April 19, 1987, the last wild condor was captured and taken to the San Diego Wild Animal Park (Bloom 2009). Decline of this species has been attributed to many factors, including reduction or modification of foraging habitat, decrease in available food, disturbance around nest sites, shooting, poisoning, pesticide residues, and general senescence (growing old; aging) of the species (Garrett and Dunn 1981). A captive breeding program was initiated and birds have since been reintroduced into the wild at the Sespe Reserve, at Big Sur, and in the Grand Canyon. Currently, there are over 400 condors in the world population (both captive and wild), 128 of whom are in California (CDFW 2015a). Due to the combination of captive breeding and limited wild nest reproduction, the condor population is steadily increasing (Bloom 2009). In more recent years, the greatest cause of death is believed to be lead poisoning from eating carcasses with lead shot in them. Efforts to reduce lead poisoning in the region have been led by Tejon Ranch by voluntarily placing a ban on lead shot ammunition on Tejon Ranch lands. Most recently, the State of California has followed suit by enacting into law the Ridley-Tree Condor Preservation Act, which bans lead shot ammunition within the range of the California condor (Bloom 2009).

Nesting California condors, prior to the use of radio telemetry in the wild, were not known to travel more than 50–75 kilometers (31–43.5 miles) from an active nest. As opportunistic scavengers, California condors may travel tremendous distances in search of food (Bloom 2009); in some instances they can travel up to 225 kilometers (about 140 miles; Meretsky and Snyder 1992). As a resident, non-migratory species, the California condor has the largest home range of any terrestrial bird in North America studied to date. The Centennial Project site is about 30 kilometers (18.5 miles) from current active nest sites known since 2000, and approximately 10 kilometers (6 miles) from the closest known historical nesting site (Bloom 2009). Current satellite and radio-telemetry location data have shown that California condors occasionally travel in the perimeter of the Project site, but rarely occur actually on the Project site. There is one recorded instance of a bird landing on the site (Bloom 2009).

Condors apparently avoid valley floors for foraging; they rarely fly over valley floor habitat and almost never land there (Bloom 2009). By example, from 1982 to 1987, no condors with transmitters were known to cross the Central Valley. Instead, all birds followed the foothills and mountains surrounding the valley floor to move from the Sierra Nevada foothills to the Coast Ranges and back. Observations of flying condors prior to 1987 indicate that, on the few instances that they were known to have flown over valley floor habitat (including the Centennial Project site), the birds were usually flying high over the landscape, probably at an altitude of over 1,000 feet. During these flights, the condors rarely, if ever, landed and their movements appeared transitory. To date, four GPS location points out of many thousands were in the vicinity of the Centennial Project site. Numbers of GPS locations of released birds are increasing in the region as the number of condors in the wild increases (Bloom 2009).

Observations and data from telemetered birds (by radio and satellite) indicate that the Project site is not used for diurnal or nocturnal roosts, but may rarely be used for foraging or flyovers. It contains no features suitable for nesting, no cliffs or large trees of the height

and stature typical of condor nests. As the condor population increases, the Project site may receive flyovers by California condors; however, based upon known condor movements, flyovers would likely be rare events. Possibly as a result of limited big-game hunting or reduced wind currents and thermals, the Centennial Project site appears not to have the essential elements needed to attract condors (Snyder and Snyder 2000; Bloom 2009). Unreliable seasonal winds and/or thermals may be the reason for the area's limited use by past and present condors.

In the Project region, condors have been reported from the Sespe Reserve, Tejon Ranch, and Redrock Mountain (CDFW 2015a); On the Project site, a few hundred records,⁴ representing high flying birds, exist including one landing (CDFW 2015a; Bloom 2009). Relative to the plethora of observation data that have been gathered for this species over the past 20 years, occurrence on the Project site is extremely rare. The thousands of other records for this species in the region are almost entirely located more than ten miles from the site. A study of all available California condor data gathered by the USFWS in recent years shows a preference for several high elevation areas in the region and an obvious avoidance of the low-lying western Antelope Valley, including the Project site (Bloom 2009). The California condor is not expected to occur on site for nesting or foraging.

On September 24, 1976, the USFWS designated Critical Habitat for the condor consisting of 9 areas that encompass approximately 600,000 acres (USFWS 1976). These areas occur in the following counties: Tulare, San Luis Obispo, Ventura, Kern, Santa Barbara, and Los Angeles. The Sespe-Piru, Matilija, Sisquoc-San Rafael, and Hi Mountain-Beartrap condor areas were considered critical for nesting and related year-long activity and the Mt. Pinos and Blue Ridge condor areas were considered critical for roosting. Tejon Ranch, Kern County rangelands, and Tulare County rangelands were considered important for feeding and related activities. Tejon Ranch and the Bitter Creek Wildlife Refuge were considered to be important because they contained the only significant feeding habitat remaining in close proximity to the Sespe-Piru condor nesting area (USFWS 1976). The Project site is not located within designated Critical Habitat for this species.

Bald Eagle

The bald eagle was a federally listed Endangered species until 2007 when USFWS removed the bald eagle from the federal Endangered species list (USFWS 2007b). It does remain a California State-listed Endangered and California Fully Protected species; and it is also protected by the Federal Bald Eagle Protection Act of 1940 and the Migratory Bird Treaty Act of 1918 (U.S. Congress 1994, 2005). Several recovery plans from 1982 to 1990 were used to help the bald eagle populations recover. California is located within the Pacific Recovery Plan approved in 1986. Currently, there is no Critical Habitat designated for this species. Bald eagles usually nest in trees near water, but are known to nest on cliffs and are rarely on the ground. Fish are the major component of its diet, but waterfowl, gulls, and carrion are also eaten. The species may also use prairies if adequate food is available. Bald eagles frequent estuaries, large lakes, reservoirs, major rivers, and some seacoast habitats. Conditions marginally suitable for nesting and foraging are present on the Project site. The bald eagle

⁴ It is important to note that hundreds of records does not equate to hundreds of condors. Rather, multiple data points for one bird would be recorded as it flew over the site.

has not been observed on the site, but has been observed adjacent to the site at Quail Lake (Impact Sciences 2004a). Due to the proximity of potentially suitable foraging habitat just off the site at Quail Lake and along the California Aqueduct, the bald eagle may occasionally occur and may potentially nest in trees on the site. Success of any potential future breeding at Quail Lake would be dependent on the quality of the foraging opportunities provided by available aquatic habitats regardless, to some degree, of adjacent upland habitats. This species would be expected to opportunistically scavenge on available carrion (i.e., dead prey including mammals), as it does elsewhere, but this behavior is more common in the non-breeding season. The bald eagle may occur for foraging and nesting.

Yellow-Breasted Chat

The yellow-breasted chat (*Icteria virens*) is a California Species of Special Concern. This species occurs as an uncommon and local summer resident in Southern California along the coast and in the deserts (Garrett and Dunn 1981). This large warbler was once a fairly common summer resident in riparian woodlands throughout California, but is now much reduced in numbers, especially in Southern California (Remsen 1978). For nesting, this species requires dense, brushy tangles near water and riparian woodlands supporting a thick understory. Singing males that were present in the Oso Canyon drainage during May 2006 and in 2008 did not remain to breed. The Project site provides potentially suitable habitat, and the yellow-breasted chat may occur during migration and for nesting on the site.

Loggerhead Shrike

The loggerhead shrike (*Lanius ludovicianus*) is a California Species of Special Concern. This species is now a fairly uncommon resident of lowlands and foothills in Southern California. Shrikes inhabit grasslands and other dry, open habitats. They can often be found perched on fences and posts from which prey items (e.g., large insects, small mammals, and lizards) can be seen. This species is threatened by habitat loss and pesticides (Ehrlich et al. 1988). The loggerhead shrike was observed on the site to the east and west of the California Aqueduct near the central portion of the site; it was also observed during summer season 2006 and 2008 surveys, and was seen incidentally during 2015 site visits (BonTerra Consulting 2008; Impact Sciences 2004a). The loggerhead shrike is expected to occur on site for foraging and nesting.

Summer Tanager

The summer tanager (*Piranga rubra*) is a California Species of Special Concern. This tanager is an uncommon summer resident along the Colorado River and locally elsewhere in the desert riparian habitats of Southern California (Garrett and Dunn 1981). It is primarily a rare migrant and winter visitor to the Southern California coast (Garrett and Dunn 1981; Lehman 1994). Breeding habitat for the summer tanager in the west consists of low elevation riparian woodlands dominated by willows and cottonwoods (Robinson 1996). In particular, older dense stands of willows and cottonwoods along rivers and streams provide suitable nesting habitat (Zeiner et al. 1990b). Riparian vegetation types on the Project site provide potentially suitable conditions for the summer tanager and it may occur, although the site is at the western edge of this species' breeding range.

Coastal California Gnatcatcher

The coastal California gnatcatcher (*Polioptila californica californica*) is a federally listed Threatened species and a California Species of Special Concern. This species occurs in most of Baja California, Mexico's arid regions, but is extremely localized in the United States where it predominantly occurs in coastal regions of highly urbanized Los Angeles, Orange, Riverside, and San Diego Counties (Atwood 1992). In California, this species is an obligate resident of several distinct subassociations of the coastal sage scrub vegetation type. Brood parasitism by brown-headed cowbirds and loss of habitat to urban development have been cited as causes of the coastal California gnatcatcher population decline (Unitt 1984; Atwood 1990). On December 19, 2007, the USFWS published a final rule revising critical habitat for the coastal California gnatcatcher. The revised critical habitat designates 197,303 acres of land in Ventura, Los Angeles, Orange, Riverside, San Bernardino, and San Diego Counties, California (USFWS 2007a). The Project site is within the revised Critical Habitat for this species.

This species has been observed south of Lebec near the I-5/SR-138 interchange (CDFW 2015a); however, this was a highly unusual location for a sighting. There is no potentially suitable sage scrub habitat for this species on the Project site. Furthermore, the Project site is generally considered to be well north of the gnatcatcher's current range. Therefore, coastal California gnatcatcher is not expected to occur on the Project site.

Purple Martin

The purple martin is a California Species of Special Concern. This large swallow is a rare and local summer resident in the region (Garrett and Dunn 1981). It breeds in woodlands of the foothill regions, often found in open or semi-open country near water. The purple martin was observed in the oak woodlands and grasslands on the Project site and may occur for nesting on the site (Impact Sciences 2004a).

Yellow Warbler

The yellow warbler is a California Species of Special Concern. Most yellow warblers in Southern California are migrants, occurring in coastal areas south to western Baja California, Mexico (Dunn and Garrett 1997). Yellow warblers breed locally in riparian woodlands, but during migration they can forage in a variety of different habitat types. This species is threatened by loss of habitat and nest parasitism by brown-headed cowbirds (Remsen 1978). It was a common migrant during 2006 surveys for riparian habitats along the Oso drainage and its tributaries, but none remained to breed (BonTerra Consulting 2008). Yellow warbler is expected to occur on site during migration, and it may occur on site for nesting.

California Spotted Owl

The California spotted owl (*Strix occidentalis occidentalis*) is a subspecies of the spotted owl (*Strix occidentalis*) and is a California Species of Special Concern. It is a non-migratory bird and is one of three subspecies of spotted owl. This medium-sized owl ranges from 16 to 19 inches in length with a wingspan of 42 to 45 inches. California spotted owls do not build their own nests; instead they rely on naturally occurring nest sites or nests built by other animals (Gutierrez et al. 1995). Historically, the California spotted owl has ranged

throughout most of California and has been known to occur from Monterey to San Diego Counties. A year-long resident of California, this nocturnal species is usually observed between elevations of 2,500 feet to 6,000 feet above msl, but has been observed from 1,000 feet to 7,700 feet above msl (Grinnell and Miller 1986). This uncommon bird is found in dense forested or woodland areas, adjacent to cliffs or steep-sided wooded canyons that generally consist of oak/bigcone Douglas-fir forest, redwood/California laurel forest, mixed conifer forest, and riparian/hardwood areas on the western side of the Sierra Nevada Mountains from Shasta County south to the Tehachapi Mountains; it is also found in all major mountains of Southern California with isolated observations on the eastern side of the Sierra Nevada Mountains and the central Coast Ranges as far north as Monterey County (USFWS 2006b; Grinnell and Miller 1986). A search of the CNDDDB showed no historic records for the California spotted owl. However, within the vicinity (i.e., ten miles) of the site, this species has been reported from Tejon Ranch north of the Project site (CDFW 2015a). Focused surveys for the spotted owl were conducted on the site in 2006, and results were negative (BonTerra Consulting 2006a). Due to survey results, limited potentially suitable habitat, and nearby range limits, this species is not expected to occur on the Project site. There is currently no CDFW-designated Critical Habitat for the California spotted owl.

Least Bell's Vireo

The least Bell's vireo is a federally and State-listed Endangered Species. The vireo is now a rare and local summer resident of Southern California's lowland riparian woodlands. While destruction of lowland riparian habitats has played a major role in driving this species to its present situation, brood parasitism by brown-headed cowbirds is the most important factor in its decline (Garrett and Dunn 1981). Local cowbird-control programs have been effective in maintaining some populations (Small 1994), and the species has begun to recover. The least Bell's vireo breeds primarily in riparian habitats dominated by willows with dense understory vegetation (USFWS 1986). Sharon Goldwasser found that a dense shrub layer two to ten feet above ground is the most important habitat characteristic for this species (Olson and Gray 1989). On February 2, 1994, the USFWS designated Critical Habitat for the least Bell's vireo at ten different locations. The designated Critical Habitat includes approximately 38,000 acres in Santa Barbara, Ventura, Los Angeles, San Bernardino, Riverside, and San Diego Counties, California. These areas account for nearly 49 percent of the least Bell's vireo population in the United States (USFWS 1994a). Conditions potentially suitable for this species are present in riparian vegetation on the site. The Project site is not located in the Critical Habitat designated for this species by the USFWS (USFWS 1994a). Focused surveys were completed in 2006 and 2008, and the only observation of the species consisted of a single male least Bell's vireo singing on June 22, 2006, in the Oso drainage portion of the Project site; it did not remain and was presumed to be a wandering unmated male (BonTerra Consulting 2008). The least Bell's vireo is expected to occur only as an occasional migrant and is not expected to occur for nesting based on negative results from multiple years of focused surveys.

Yellow-Headed Blackbird

Yellow-headed blackbird (*Xanthocephalus xanthocephalus*) is a California Species of Special Concern. Depending on availability of food resources, these blackbirds are either territorial or form loose colonies. Male yellow-headed blackbirds are typically polygynous, generally

mating with two to six females (Twedt and Crawford 1995). These blackbirds typically nest in marshes with tall emergent vegetation such as tules (*Scirpus* spp.) and cattails adjacent to open water (Shuford and Gardali 2008). A common summer resident at the Salton Sea and in the Colorado River Valley, this species is an uncommon to fairly common migrant that remains to breed irregularly at just a few locations elsewhere in Southern California (Garrett and Dunn 1981). This species breeds in the Antelope Valley, including the Lancaster area (Jaramillo 2008). The Project site does not provide suitable breeding habitat for the yellow-headed blackbird (although they have been documented breeding immediately off site at Quail Lake), but does provide suitable foraging habitat and this species has been observed foraging in the agricultural fields on the east of the Project site.

Mammals

Nelson's Antelope Squirrel

The Nelson's antelope squirrel (*Ammospermophilus nelsoni*) is a California Threatened species. The current and historical geographic distribution includes portions of Kern, Kings, Merced, San Luis Obispo, Santa Barbara, and Tulare Counties (CDFW BDB 2014). This species resides primarily in the western San Joaquin Valley from 200 to 1,200 feet above msl. Suitable habitat for Nelson's antelope squirrel is frequently found in areas with sandy loam soils, widely spaced alkali scrub vegetation, and dry washes. This species prefers broken terrain with small gullies and washes with slopes that are 20 degrees or less (Harris and Stearns 1991). Loss of suitable habitat for this species is a result of cultivation, overgrazing, and rodenticides (CDFW BDB 2014). These squirrels dig burrows or use existing kangaroo rat burrows. They also use cover provided by rocks and other topographic features (CDFW BDB 2014). Both the historical and recent distributions of the Nelson's antelope squirrel do not include the Project site (CDFW 2015a). The Nelson's antelope squirrel has not been observed on the Project site; therefore, it is not expected to occur.

Pallid Bat

The pallid bat (*Antrozous pallidus*) is a California Species of Special Concern. This species occurs throughout California except for the high Sierra Nevada from Shasta to Kern Counties and the northwestern portion of the state. The Project site is within this species' known geographical range. It most commonly occurs in mixed oak and grassland habitats. This large bat roosts in rock crevices and in cavities of trees, especially oaks. The pallid bat is very sensitive to disturbance at its roosting sites (Zeiner et al. 1990a). Neither the historical nor recent distributions of pallid bat include the Project site (CDFW 2015a). Potentially suitable foraging and roosting conditions are present on the site. Due to its presence in the region and potentially suitable habitat, the pallid bat is expected to occur on the site.

Townsend's Big-Eared Bat

The Townsend's big-eared bat (*Corynorhinus townsendii*) is a Candidate for listing as a California Threatened species, and a California Species of Special Concern. Townsend's big-eared bat is considered an uncommon, year-round resident throughout the state (Zeiner et al. 1990a). In California, the species is found throughout most of the state, from the inland deserts to the coastal redwood forests, in oak woodlands of the inner Coast Ranges and Sierra Nevada foothills, and lower to mid-elevation mixed coniferous-deciduous forests.

Distribution is patchy and strongly correlated with the availability of caves and cave-like roosting habitat, with population centers occurring in areas dominated by exposed, cavity-forming rocks and/or historic mining districts. Townsend's big-eared bat prefers open surfaces of caves or cave-like structures (e.g., subsurface hard rock mines) and large undisturbed spaces in buildings, bridges, and water diversion tunnels. Specific roosts may be used only one time of year or may serve different functions throughout the year (such as for maternity roosts, hibernation, or during the breeding season). Maternity colonies may use multiple sites for different stages (pregnancy, birthing, and rearing). Males remain solitary during the maternity season. Townsend's big-eared bat appears to have fairly restrictive roost requirements with temperature appearing to be critical. Townsend's big-eared bat is highly sensitive to human disturbance; however, in some instances it can become habituated to reoccurring and predictable human activity (CDFW 2013). The Project site is within this species' known geographical range (Zeiner et al. 1990a). The Project site contains suitable foraging habitat; however, no suitable maternity or hibernation roost locations are known to be present on or in the immediate vicinity of the site. Therefore, the Townsend's big-eared bat has low potential to occur on the site for foraging.

Tipton Kangaroo Rat

The Tipton kangaroo rat (*Dipodomys nitratoides nitratoides*) is a federal and California Endangered Species. It is one of three subspecies of the San Joaquin kangaroo rat (*Dipodomys nitratoides*). The historical geographic range of Tipton kangaroo rat had a southern extent to the northern foothills of the Tehachapi Mountains (Williams 1985). By 1986, the distribution had been reduced to 3.7 percent of its historical acreage as a result of cultivation and urbanization (Williams 1986). The 1986 range was primarily located in northwestern Kern and southwestern Tulare Counties. The current acreage of occupied habitat is unknown, but it probably does not differ much from the 1985 estimate (USFWS 1998). Tipton kangaroo rat habitat is limited to arid-land communities occupying the valley floor of the Tulare Basin on level or nearly level terrain. It occupies alluvial fan and floodplain soils ranging from fine sands to clay-sized particles with high salinity. Much of the currently occupied habitat has one or more species of sparsely scattered woody shrubs and a ground cover of mostly introduced and native annual grasses and forbs. Woody shrubs commonly associated with Tipton kangaroo rats are: spiny and common saltbushes, arrowscale (*Atriplex phyllostegia*), quailbush (*Atriplex lentiformis*), iodine bush (*Allenrolfea occidentalis*), goldenbush (*Ericameria* spp.), and honey mesquite (*Prosopis glandulosa* var. *torreyana*) (Williams 1985). Tipton kangaroo rats live in ground burrows probably dug by the occupant or a predecessor of the same species (Germano and Rhodehamel 1995). Neither historical nor recent distributions of the Tipton kangaroo rat include the Project site (CDFW 2015a). The Tipton kangaroo rat has not been observed on the Project site. It is not expected to occur due to the large distance from the site to its current known range.

Western Mastiff Bat

The western mastiff bat (*Eumops perotis*), the largest bat in the United States, is a California Species of Special Concern. The subspecies that occurs in Southern California is the California mastiff bat (*E. p. californicus*). The western mastiff bat is a very wide-ranging and high-flying insectivore that typically forages in open areas with high cliffs. This species roosts in small colonies in crevices on cliff faces with a vertical drop of at least ten feet below the roost to

achieve flight speeds when emerging (Brylski et al. 1998). It occurs in the southeastern San Joaquin Valley and Pacific Coast Ranges from Monterey County southward through Southern California, and from the coast eastward to the Colorado Desert. The Project site is within this species' known geographical range. The western mastiff bat is found in many open, semi-arid to arid habitats including conifer and deciduous woodlands, coastal scrub, grasslands, palm oases, chaparral, desert scrub, and urban areas (Zeiner et al. 1990a). Threats to this species include loss of habitat due to development, drainage of marshes, and conversion of land to agriculture (Williams 1986). Although not observed, this species may forage on the Project site. Due to the lack of suitable roosting habitat, it is not expected to roost on site.

Southern Grasshopper Mouse

The southern grasshopper mouse (*Onychomys torridus ramona*) is a California Species of Special Concern. It is a territorial, predatory rodent of grassland and sparse scrub vegetation types and prefers sandy soils. It has been found to occur in Los Angeles County south to northwestern Baja California, Mexico (McCarty 1975). Threats to this species include the loss of habitat due to development. This species was not observed during small mammal trapping in 2001 and 2003. Although not observed in the region since 2003, the southern grasshopper mouse may occur on the site in potentially suitable areas.

Tehachapi Pocket Mouse

The Tehachapi pocket mouse is a California Species of Special Concern. This species occurs in arid annual grassland and desert shrub vegetation types in the region. This species has been reported in the vicinity of the Project site two miles east of Gorman and two miles west of Quail Lake (CDFW 2015a). This species was not observed during small mammal trapping in 2001 and 2003 (Impact Sciences 2001d, 2003), but conditions potentially suitable for this species are present throughout the grasslands on the Project site. Focused surveys for this species were completed in 2006, and one individual was detected on the Project site as shown in Exhibit 5.7-7b, Special Status Wildlife Species Observations (Ecological Sciences 2006).

American Badger

The American badger is a California Species of Special Concern. This species occupies a wide variety of habitats and ranges throughout the state except for the coastal redwood forests of the extreme northwest. In Southern California, this species is most commonly associated with grasslands and other relatively open habitats with friable, uncultivated soils. In the vicinity of the Project site, this species has been reported from Quail Lake, Liebre Gulch, and Pastoria Creek (CDFW 2015a). The American badger has been observed on the site in several areas east and west of the West Branch of the California Aqueduct, and is expected to occur across most of the site (Crawford 2003).

San Joaquin Kit Fox

The San Joaquin kit fox (*Vulpes macrotis mutica*) is a federally Endangered and California Threatened species. The historic range of the San Joaquin kit fox included most of the San Joaquin Valley from southern Kern County north to Tracy in San Joaquin County (on the west side) and near La Grange in Stanislaus County (on the east side) (Grinnell et al. 1937). More

than 50 percent of the suitable kit fox habitat has been lost as a result of habitat conversion from valley and foothill grassland, arid shrub, and oak savanna to irrigated agriculture, urban development, and oil fields. Habitat loss and degradation by agricultural, industrial, and urban development within and among kit fox populations are negatively affecting kit fox movement and population connectivity, leading to isolated and unconnected kit fox populations. The San Joaquin kit fox prefers open habitats including grasslands and open scrubland. In the southernmost portion of the range, the kit fox is commonly associated with valley sink scrub, valley saltbush scrub, upper Sonoran subshrub scrub, and annual grassland. Kit foxes also inhabit grazed grasslands, petroleum fields, urban areas, and survive adjacent to tilled or fallow fields. Kit foxes use some types of agricultural land where uncultivated land is maintained, allowing for denning sites and a suitable prey base. Kit foxes also den on small parcels of native habitat surrounded by intensively maintained agricultural lands and adjacent to dryland farms. They prefer loose-textured soils for denning, but are found in virtually every soil type (USFWS 1998). The diet of kit foxes varies geographically, seasonally, and annually, based on variation in abundance of potential prey, and abundance of a prey base significantly influences reproductive success in kit foxes (USFWS 1998; Egoscue 1975). Kit foxes in the southern portion of their range feed on a variety of prey including small mammals, ground-nesting birds, and insects (USFWS 1998; ECCCHC 2007). The southernmost edge of the San Joaquin kit fox is north of Los Angeles County in Kern County. Therefore, this species is not expected to occur on the site.

Other Regionally Limited Wildlife

In addition to the species listed above, which have a special status designated by the CDFW and/or the USFWS, one additional species warrants consideration as a result of its limited population size in the region: the pronghorn antelope.

Pronghorn Antelope

Although resource agencies have not assigned the pronghorn antelope with any special status designation due to the abundance of the species throughout most of its range, numbers in California have been in decline (Morton et al. 2008) and pronghorn are uncommon in the Project region. Donald McLean describes that pronghorn were extirpated from the Project region by 1940 as a result of over-hunting (Ferrel and Leach 1950). In 1985 and 1987 the CDFG re-introduced a group of pronghorn into the region (Autenrieth et al. 2006; Koch and Yoakum 2002). The re-introduced pronghorn population in the Antelope Valley consisted originally of 93 individuals translocated from an existing, wild population in the northeastern portion of California extending into Oregon (Autenrieth et al. 2006). This translocated population originally increased in number until about 2000 (Geivet 2009); however, the known population size in the Antelope Valley around 2006 was considered to be approximately 70 individuals (Autenrieth et al. 2006). Reasons for this decline are as yet unknown. Currently, in the larger regional area, pronghorn occur not only in Antelope Valley but also in nearby Carrizo Plain and in the Central Valley.

While pronghorn are capable of long-range movements, it is unknown whether there is genetic exchange between subherds. Topography, vegetation community composition, developments, range conditions, and fencing are likely reducing the ability of regional pronghorn populations to intermix. Pronghorn do not typically jump over fences, although

they are known to go under or around fences wherever they come across them (Wilson and Ruff 1999). A habitat suitability assessment for pronghorn was recently completed for the Carrizo Plain/Shandon area. However, a similar analysis has not been initiated for the area between the Carrizo Plain and the Antelope Valley.

This 90-pound to 130-pound horned mammal uses flat or rolling, expansive grass-, shrub-, and range-lands from sea level to 11,000 feet above msl. High-quality forage is considered to include succulent and nutritious grasses, forbs, and shrubs (Wilson and Ruff 1999). They prefer to consume the new, green growth on plants, and they are capable of consuming plants that are considered toxic or lethal to livestock (Autenrieth et al. 2006; Wilson and Ruff 1999). However, the CDFG found the re-introduced population to be heavily dependent on less typical scrub species for forage such as rabbitbrush (Mohr 2008). Adult pronghorn rely primarily on speed and ability to detect moving predators at long distances rather than vegetative cover for protection (CDFW BDB 2014; Wilson and Ruff 1999). However, low shrubs in otherwise open habitat are a very important feature for concealing young fawns. In the vicinity of the Project site, this species has been reported in the Fish Creek Area, Northrup Area, and upper Oso Canyon (Geivet 2009). The pronghorn is occasionally observed on the Project site in suitable habitat areas. Pronghorn have reportedly been seen on rare occasions in random locations in the region, but have been commonly observed and are known to primarily occupy the western portion of the site (upper Oso Canyon in particular) and other locations along the foothills continuing to the northeast.

Drainages and Wetlands

The waters and wetlands on the Project site were identified as primarily riverine with an intermittent streambed, or as palustrine (non-tidal marsh without flowing water), forested, or emergent (one stream section was classified as scrub shrub). The small pond near the northern boundary of the site, just southeast of the fork in the Aqueduct, is classified as palustrine with an unconsolidated bottom.

The dominant water sources for the site are runoff from the mountains to the west and north, surface water runoff, and groundwater discharge. Oso Canyon, the prominent drainage in the northern portion of the site west of the Aqueduct, often has a significant flow from snowmelt and subsequent groundwater discharges.

The Project site contains a number of riverine and palustrine systems and riverine, slope, flat, and depression wetland types (these are known as Hydrogeomorphic [HGM] classes). Several distinct watersheds are present on the site with the directional flows of their drainages oriented to the northeast. These drainages flow into the previously mentioned large alluvial fan composed of deep sand to the east. All of the water infiltrates into the substrate; the distance that flows remain on the surface before infiltrating into the sand depends on the amount of rainfall.

Short drainages (less than 0.1 mile) on the western side of the Aqueduct flow into or toward Quail Lake. No surface waters from the Project site enter the lined portions of the California Aqueduct. Culverts under the Aqueduct facilitate eastward-flowing drainage courses.

Several small areas of impounded water or depressions are present on the site and are generally associated with springs or flats.

The descriptions below provide more detail about the various drainage features in the Project site.

Oso Creek

Oso Creek begins in the higher elevations to the north and west of the Project site and drains from west to east. The creek has a number of tributaries that feed into the main drainage. Segments of this creek have perennial flowing water; however, portions of the drainage course appear to be subsurface, particularly during the dry summer months. Oso Creek eventually infiltrates into the alluvial fan to the east, which (in normal years) is approximately 200 feet west of 300th Street West, just north of the Project site and the California Aqueduct. Oso Creek is a seasonally high-energy stream with eroded, generally vertical banks that clearly define the ordinary high water mark along most of its reach. On the Project site mainly west of the West Branch of the Aqueduct, arroyo willow trees, with occasional other willow species and, periodically, mule fat (*Baccharis salicifolia*) occur in areas not subject to scouring by high-water flows. Exposed flow lines are dominated by water speedwell (*Veronica* sp.), a perennial emergent aquatic plant. In areas of lesser flow energy, stinging nettles (*Urtica* sp.) form a vegetation zone along the upper banks.

Eight larger tributaries to Oso Creek are present on the site, several of which maintain flows well into the summer. The recent erosional channels are actively eroding along steeper slopes and are occurring at such a pace that riparian vegetation is unable to become established. Consequently, the grassland vegetation in these areas, which does not stabilize deeper sediments, is being lost at a relatively rapid rate.

Non-eroded channels associated with Oso Creek support a variety of plants. Non-hydrophytic grasses and forbs occur in parts of channels that dry out or that have deeper subsurface flows. Herbaceous wetland vegetation is generally dominated by rushes (*Juncus* sp.), dock, sedge, spike rush, monkeyflower (*Mimulus* sp.), and giant wild-rye. Scattered riparian plants, dominated by willows and mule fat, also occur in and adjacent to the streambeds.

Most of the tributaries begin on the southern side of Oso Creek and on north-facing, sloped wetlands vegetated by rushes, spikerush, and monkeyflower. Several of the headwater tributaries begin at springs (identified on the USGS topographic quadrangle maps). Most of these springs have been dammed to provide a source of water for livestock. Slope wetlands have sandy loam soils that may remain saturated or moist near surfaces into the late spring in years with average rainfall (Impact Sciences 2003).

Watersheds East of the National Cement Plant Access Road

The main watershed in the eastern portion of the Project site is located just north of SR-138 and east of the National Cement Plant Road. Its upper source is near the National Cement Plant Road and flows toward the east, ending in the sandy alluvial fan where it infiltrates into subterranean flows or aquifers. This watershed has a number of tributaries. Tributaries

entering from the north begin at seeps and springs on hillsides, while those from the south emerge from hills south of SR-138 and flow northward through culverts under the highway. The major creek from the south is Tentrock Canyon Creek, which crosses north under SR-138 and joins the watershed near its eastern terminus.

Several segments of these drainages are dominated by willows, while a few localized sites along the channels are dominated by large cottonwoods. Most of the channel reaches are dominated by emergent vegetation, specifically watercress (*Nasturtium officinale*) and water speedwell. Adjacent to the channels, several areas of the wet flats and depressions are associated with Chino loam soils. These areas are dominated by Baltic rush, sedge, spike rush, wild-rye (*Elymus* [*Leymus*] sp.), and dock. The wettest depressions, primarily where berms have been created to provide water for cattle, support California bulrush (*Schoenoplectus* [*Scirpus*] *californicus*) and broad-leaved cattail (*Typha latifolia*). In most of the dry areas of this watershed, grasslands are present, with varying cover of native perennial grasses, forbs, and non-native annual grasses.

To the north of this watershed are ten additional “blue-line” streams (as indicated on the USGS topographic quadrangle maps). Seven of these drainages have natural channels (bed and banks), while the other three are broad swales between ridges. These drainages have ephemeral or intermittent flows from west to east. Most of these drainages begin east of the Aqueduct; however, two begin to the west, flowing through culverts under the Aqueduct. These drainages vary from shallow and narrow, to wide and deep (when flowing), but all end on the site, and infiltrate into the sandy alluvial fan to the east. Several springs are present on slopes adjacent to the drainages, and several drainages have eroded deeply enough to possibly reach groundwater. In both cases, these areas remain wet long into the summer. The drainage systems beyond the first ridge north of SR-138 are less diverse botanically than the watershed along SR-138, with increasing non-native vegetation to the north. In contrast to the drainage along SR-138, these drainages lack willow riparian and rush vegetation.

Ponds and Impoundments

Surveys conducted on the Project site have identified ten seasonal pools/depressional features in the Project site (GLA 2005a, 2005b, 2005c, 2006a, 2006b; see Appendix 5.7-B). Most, if not all, these sites were created to provide water for livestock and some have been disturbed by livestock grazing. These features are described in a fairy shrimp habitat assessment, most as roadside depressions that receive local watershed runoff and direct rainfall; the report contains detailed information on existing conditions, dimensions, ponding depth, and common vegetation for each feature (GLA 2005b).

The ponding depth of the identified depressional features varies from a few inches to over two feet. Ponding is associated with runoff, direct rainfall, slope discharge from shallow subsurface groundwater, and overbank connection to adjacent creeks during high flows. Although some depressional features are unvegetated, others support vegetation, including black mustard, bromes, small-flowered melic grass (*Melica imperfecta*), willow-herb (*Epilobium pygmaeum*), toad rush, common knotweed (*Polygonum arenastrum*), everlasting (*Gnaphalium* sp.), Mexican rush (*Juncus mexicanus*), black willow, spike rush (*Eleocharis acicularis*), perennial spike rush (*Eleocharis macrostachya*), alkali plagiobothrys (*Plagiobothrys leptocladus*), and woolly-heads (*Psilocarphus tenellus* var. *tenellus*).

Small Drainages

A number of short, isolated drainages originating at seeps occur on steep slopes on the Project site, primarily west of the Aqueduct. Most of the smaller drainages either evaporate or infiltrate within a short distance of the source. Because of the erosive character of the soils, channels are often incised. In a few cases, one or several riparian trees or shrubs may be present along the channel.

Ecological Functions Associated with Drainages and Wetlands in the Project Area

Potential Wildlife Habitat

A functional assessment of the drainages and other aquatic features on the Project site was completed by Glenn Lukos Associates (GLA 2006b, 2009a) using a combined assessment approach and subsequently refined by BonTerra Psomas (BonTerra Psomas 2015a) using the California Rapid Assessment Method (CRAM). The results of these assessments indicate that the wetlands on the site provide potentially suitable habitat for a variety of invertebrate and vertebrate species. The riparian, palustrine, and small lacustrine systems also provide potential wildlife habitat for several species. For the wetland functional assessment, the functional capacity of jurisdictional resources was determined using a Functional Capacity Index, which is a ratio of the functional capacity of a wetland under an existing condition, and the functional capacity of a wetland under attainable conditions. The Functional Capacity Index provides a measure of a wetland's ability to perform a function relative to similar wetlands in the region, as evaluated in the field based on multiple metrics (indicators of wetland function). Functional capacity units, therefore, provide a measure of a wetland's ability to perform a function and are calculated by multiplying a Functional Capacity Index by the area of wetland it represents.

The wetland vegetation includes monkeyflowers, which provide nectar resources for adult hawkmoths (feeding on nectar) and other pollinators. The hawkmoths (white-lined sphynx moth [*Hyles lineata*] and tobacco hornworm sphinx [*Manduca sexta*]) are abundant during the summer, and were observed visiting flowers for nectar. Dragonfly and damselfly species (e.g. common green darner [*Anax junius*] and damselfly [*Enallagma* sp.]) are abundant around open water. Several pools appear to be densely populated by microcrustaceans (Impact Sciences 2003).

The drainages, ponds, and pools provide potentially suitable habitat for a number of frog and toad species. In turn, a number of snakes and lizards have been observed adjacent to open water feeding on the frogs, toads, and their tadpoles. The sand deposition downstream has created potential habitat for coast horned lizards (which were observed) along the lower reaches of dry sandy streambeds, and continuing into the alluvial fans. Waterbirds (mallard [*Anas platyrhynchos*], bufflehead [*Bucephala albeola*], black-necked stilt [*Himantopus mexicanus*], Wilson's phalarope [*Phalaropus tricolor*], and lesser yellowlegs [*Tringa flavipes*]) and a variety of swallow species [e.g. violet-green swallow [*Tachycineta thalassina*], northern rough-winged swallow [*Stelgidopteryx serripennis*], cliff swallow [*Petrochelidon pyrrhonota*], and barn swallow [*Hirundo rustica*]) have been observed on or using open water on the site. Bullock's orioles have been frequently observed among the mature valley oaks adjacent to Oso Creek. Livestock and other mammals also utilize the ponds as water

sources. Large and small mammal tracks were observed along the sandy banks and within both wet and dry washes of many of the drainages on the site. Coyotes, including two pups, were observed using the Baltic rushes in moist to seasonally dry drainage channels at den sites (Impact Sciences 2003).

The opportunity for plant diversity in the riverine, palustrine, and small lacustrine environments appears to be limited, likely due to water stress during dry periods and scouring flows during the rainy season. All wetland and drainage communities on the site exhibit generally low species diversity, except for Oso Creek in the northwestern portion of the site and the drainage north of SR-138 and east of the National Cement Plant Road. Limiting factors for diversity may be livestock grazing and the presence of invasive, non-native plants.

Stream Shoreline Stabilization/Sediment Retention, Storm Water Attenuation, and Groundwater Recharge

Stream shoreline stabilization is occurring where sufficient vegetation is present along the drainages to control stream bank erosion. Most of the sparsely vegetated stream banks are eroding and contribute to the quantity of sediment moving downstream. The translocation of sediments is evident in the size of the alluvial fans and by direct observation of sediment movement, even during periods with low stream flows. Storm water attenuation is limited in the systems because the on-site sandy soils do not retain significant water and stream gradients encourage water to move through the site rapidly. The wetlands associated with the loam soils retain some of the peak runoff and release the water into the drainages at a slower rate than do the adjacent sandy soils (see Table 5.7-1, Soil Types and their Hydrological Characteristics, for permeability and runoff rates of each soil type).

Groundwater recharge has a high degree of opportunity to occur and a high degree of effectiveness since all the water flowing through the site infiltrates in the alluvial fans at the downstream ends of each in the watershed. All of the water from the drainages assist in recharging groundwater, as discussed in greater detail in Section 5.2, Hydrology and Flood, which apparently moves in a subterranean manner toward the east, where a large quantity is extracted for agricultural irrigation.

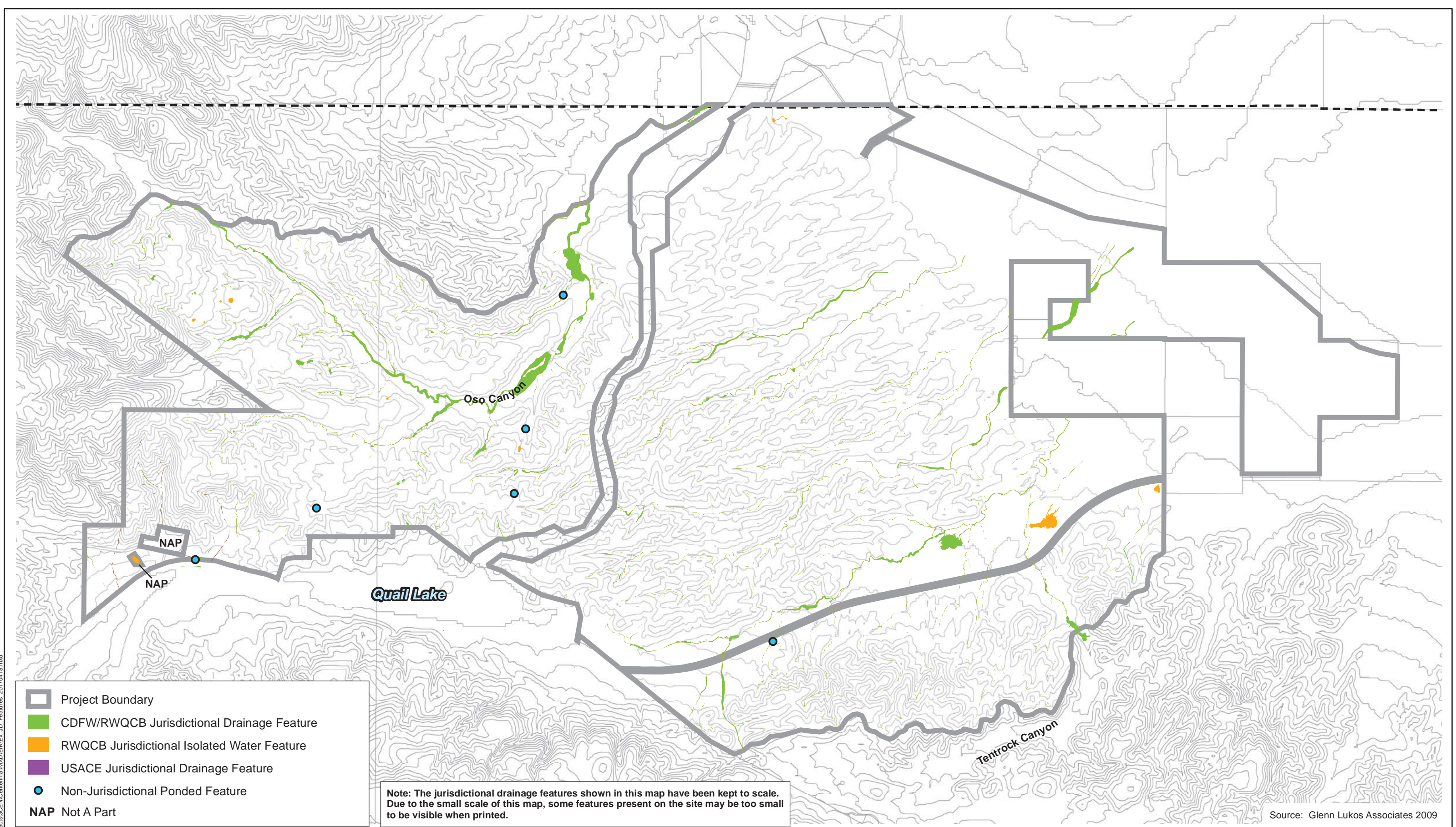
Jurisdictional Resources

Wetlands and permanent and intermittent drainages, creeks, and streams are generally subject to the jurisdiction of the U.S. Army Corps of Engineers (USACE) under Section 404 of the Federal Clean Water Act (CWA) (U.S. Congress 2008). By USACE definition, all aquatic or riverine habitats between the ordinary high water mark (OHWM) of rivers, creeks, and streams, are considered “waters of the U.S.” and may fall under USACE jurisdiction. If adjacent wetlands occur, the jurisdictional limits extend beyond the ordinary high water mark to the outer edge of the wetlands. The USACE defines wetlands as “those areas that are inundated or saturated by surface or groundwater at a frequency or duration to support, and under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions” (Environmental Laboratory 1987). The presence and extent of wetland areas are normally determined by examination of the vegetation, soils, and

hydrology of a site. The USACE definition of wetlands requires that all three wetland identification parameters be met.

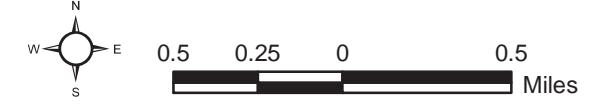
Streambeds in the Project site are also subject to CDFW regulation under Sections 1600 et seq. of the *California Fish and Game Code*. A stream is defined under these regulations as a body of water that flows at least periodically or intermittently through a bed or channel having banks and that support fish or other aquatic life. This definition includes watercourses having a surface or subsurface flow that supports or has supported riparian vegetation. The CDFW jurisdiction typically extends to the edge of the riparian vegetation canopy. In addition, groundwater, surface water, and wetlands fall under RWQCB jurisdiction.

Table 5.7-10, Jurisdictional Wetlands and Waters Summary, provides the acreages associated with aquatic resources on the site. This table summarizes the results of a delineation of features under the jurisdiction of the CDFW, the Regional Water Quality Control Board (RWQCB), and/or the USACE. The results summarized below are based on field surveys conducted by Glenn Lukos Associates in 2006 and 2009 (GLA 2005c, 2006b, 2009b) and refined by field surveys conducted by BonTerra Psomas in July 2015 (BonTerra Psomas 2015a). Exhibit 5.7-9, Jurisdictional Drainage Features, depicts the location and extent of jurisdictional features on the Project site. Water runoff from the Project site generally originates in the western portion of the site and flows east toward the Antelope Valley. The drainages historically infiltrated into the groundwater on the site; however, six short on-site drainages and three short off-site drain toward Quail Lake. These drainages were determined to be Non-Relatively Permanent Waters without a Significant Nexus to a Traditional Navigable Water, and therefore not under the jurisdiction of the USACE. Since Quail Lake is connected to the California Aqueduct, these drainages have a tenuous connection to the aqueduct. Much of the water that flows on the surface in drainages on the site eventually infiltrates into the alluvial sandy soils before exiting the site, while the remainder infiltrates the soils soon after exiting the site (Impact Sciences 2002b). A functional assessment of the jurisdictional features on the site was conducted by Glenn Lukos Associates (GLA 2006b, 2009a) and subsequently refined by BonTerra Psomas (2015a). The delineation of jurisdictional drainage features is subject to change at the discretion of permitting agencies as part of the permitting process. Changes in the determination of jurisdiction, if any, would be expected to be relatively minor. The jurisdictional delineation verification provided by the USACE indicates general consensus in the determination at that time.



Jurisdictional Drainage Features

Centennial Project



**TABLE 5.7-10
JURISDICTIONAL WETLANDS AND WATERS SUMMARY**

Agency with Jurisdiction		On Site	Off Site	Total Project Area (acres)
USACE *	acres	1.7	0.1	1.8
	linear feet	21,896	23	21,919
CDFW	acres	165.3	0.3	165.6
	linear feet	551,061	2,273	553,334
RWQCB	acres	148.9	0.3	149.2
	linear feet	551,061	2,273	553,334
USACE: U.S. Army Corps of Engineers; CDFW: California Department of Fish and Wildlife; RWQCB: Regional Water Quality Control Board * All of the USACE acreage consists of non-wetland waters Source: BonTerra Psomas 2015a				

U.S. Army Corps of Engineers Jurisdiction

Several surveys were conducted to delineate the jurisdictional waters and streambeds in accordance with the USACE regulatory definition of “waters of the U.S.”. The definition of a wetland, as summarized above, is included in the 1987 USACE manual and streambed criteria from the *California Fish and Game Code* (Impact Sciences 2002b; GLA 2005c, 2006b, 2006c, 2009b). The results of the original jurisdictional delineations for the Project site have been verified by the USACE (Impact Sciences 2002b; USACE 2002). Three on-site drainages that flow toward Gorman Creek have been determined to be jurisdictional under the CWA due to hydrologic connection with navigable waters. The remaining drainages and associated wetlands on the site infiltrate into the alluvial sandy plain to the east of the site and do not connect to navigable waters. Therefore, these features have been determined to be non-jurisdictional under current USACE regulations. The estimated total USACE jurisdictional “waters of the U.S.” on the Project site is 1.7 acres (BonTerra Psomas 2015a).

As described in Section 5.7.2, the USACE and USEPA issued a Final Clean Water Rule whose implementation has since been blocked by a federal court. If the USACE interprets “waters of the U.S.” as defined in the Final Clean Water Rule when the Project enters a regulatory permit processing phase, no changes to the amount of “waters of U.S.” on the Project site are expected. Though there are waters that exist within 4,000 feet of the OHWM of a covered tributary (thereby subject to a case-specific significant nexus determination), these waters flow to the east and do not have a significant nexus with a downstream Traditional Navigable Water (TNW) (i.e., they do not provide chemical, physical, or biological functions to downstream waters).

California Department of Fish and Wildlife Jurisdiction

All the drainages, adjacent wetlands, and riparian areas on the Project site are under the jurisdiction of the CDFW pursuant to Sections 1600–1616 of the *California Fish and Game Code*. CDFW jurisdiction extends to the top of the bank, at a minimum, and to the outer edge

of the canopy of riparian vegetation, if a canopy is present. Many of the stream banks exhibit nearly vertical slopes. The total CDFW jurisdictional “streambeds and riparian vegetation” on the Project site is 165.5 acres (BonTerra Psomas 2015a).

Regional Water Quality Control Board Jurisdiction

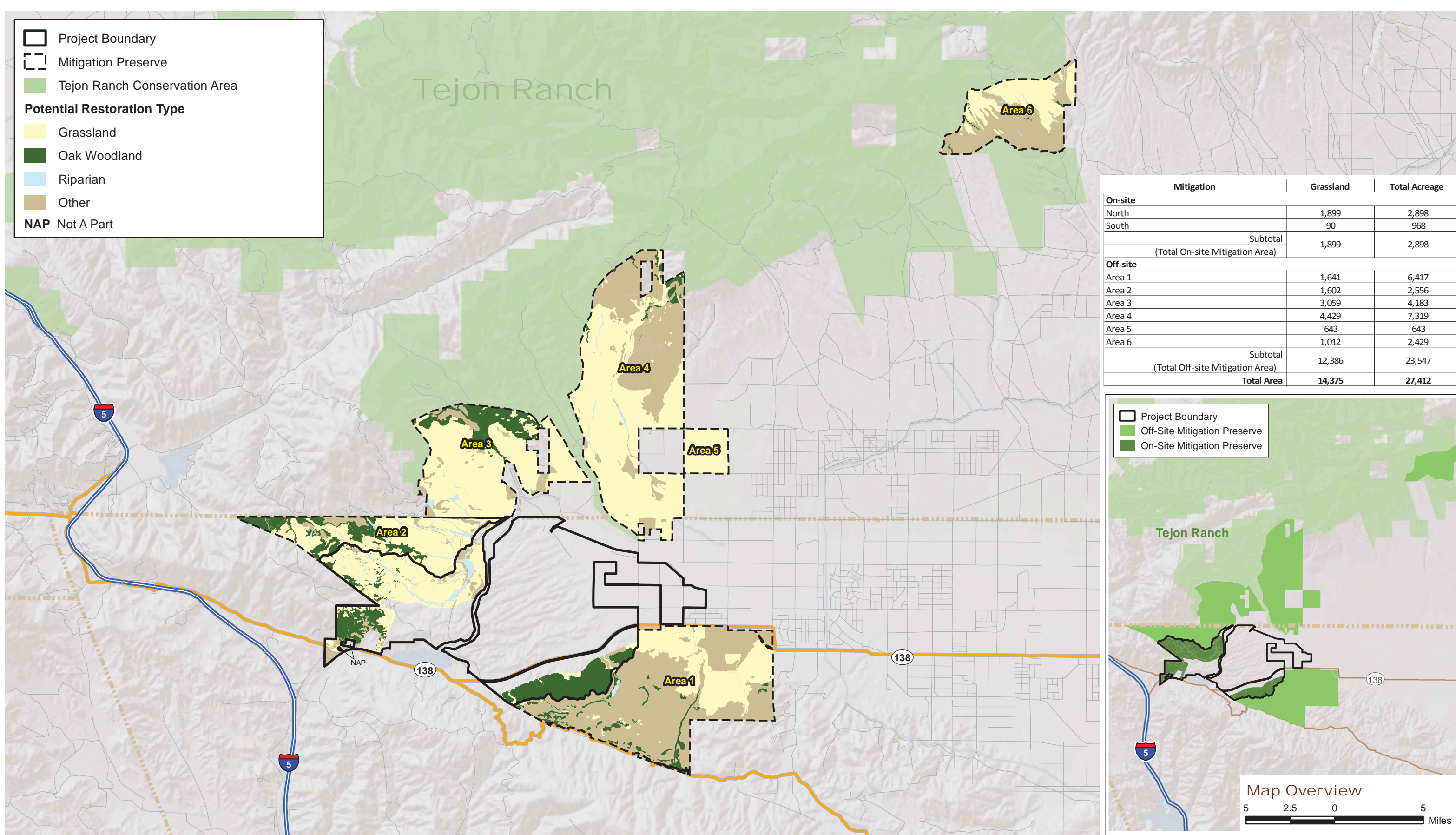
All the groundwater, surface water, and wetlands on the Project site are under the jurisdiction of the two RWQCBs that govern the site (i.e., Lahontan and Los Angeles), pursuant to the Porter-Cologne Water Quality Control Act (*California Water Code*, Section 13000 et seq.) (SWRCB 2009). The extent of their jurisdiction tracks that of the CDFW with regard to the drainages on the Project site, but does not include some CDFW-regulated riparian vegetation. The RWQCB jurisdiction does extend, however, to isolated wetlands and discharges to groundwater that the CDFW does not cover. The surface waters on the Project site that are under the RWQCBs’ jurisdiction total 149.2 acres (BonTerra Psomas 2015a).

5.7.4 PROJECT DESIGN FEATURES

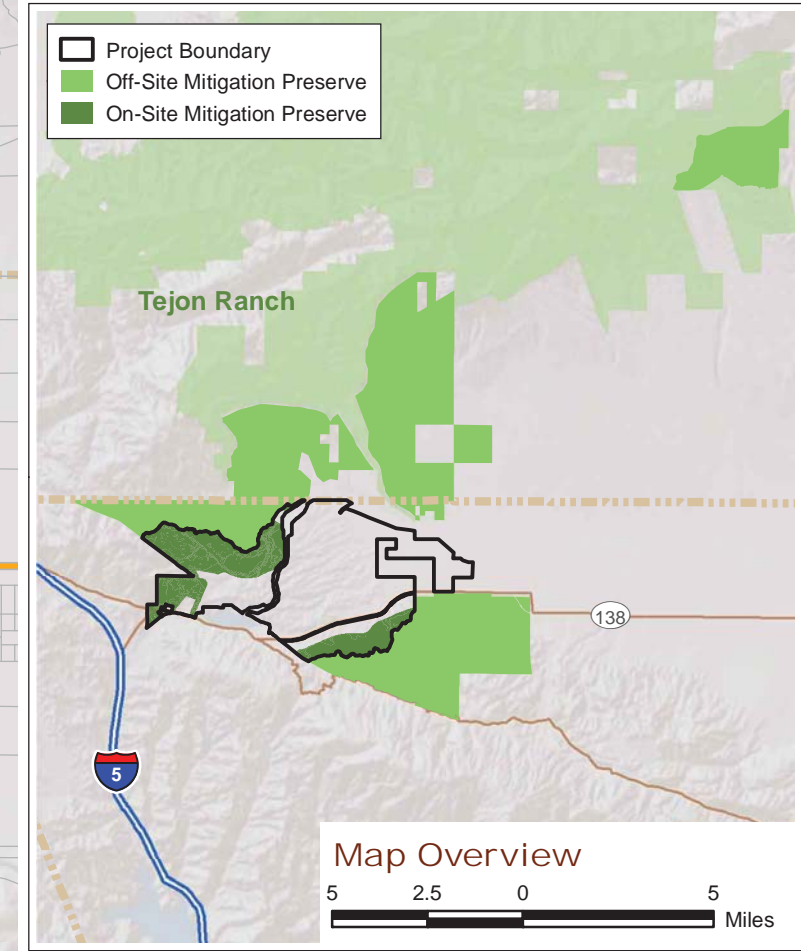
PDF 7-1 The dedication schedule for the Mitigation Preserve program is designed to accommodate full Project implementation, which would occur over an approximate 20-year timeframe. The Mitigation Preserve program distinguishes two components: (1) preservation via open space dedication and (2) enhancement and management of certain resources (such as oak woodlands and riparian habitats) to maintain biological resource values. The overall concept is to retain biological resources in a manner that is feasible and maximizes the potential for success.

The Project’s Mitigation Preserve program is designed to maintain regional biological resource functions and values. In this way, the biological impacts of developing the Project are being mitigated to levels that are less than significant under CEQA at a Project-specific level.

The Mitigation Preserve program includes preservation of grasslands as well as preservation, enhancement, restoration, and creation of other special status resources. The level of mitigation necessary will correspond to the quality of the affected habitats and to the quality of habitats that are currently present in the specified mitigation areas. Each individual resource mitigation plan will describe the areas for proposed mitigation for that particular resource which occur both within Significant Ecological Area (SEA) 17; within the Project boundary; and within off-site mitigation areas. These areas combine to form an extensive regional mitigation preserve system of 27,408 acres (see Exhibit 5.7-10, Mitigation Preserve). Detailed floral sampling was conducted within grasslands on the Project site including impact areas, as well as within the Mitigation Preserve (NRC 2006a, 2007a, 2007b, 2007c, 2008b). Generally, studies consisted of quadrat sampling (338 total quadrats) and analysis of data generated results on regional species composition, between-site species composition, and plant community-based analysis. within grasslands on the Project site within the impact area and mitigation areas (NRC 2008b) and



	Mitigation	Grassland	Total Acreage
On-site			
North		1,899	2,898
South		90	968
	Subtotal	1,899	2,898
	(Total On-site Mitigation Area)		
Off-site			
Area 1		1,641	6,417
Area 2		1,602	2,556
Area 3		3,059	4,183
Area 4		4,429	7,319
Area 5		643	643
Area 6		1,012	2,429
	Subtotal	12,386	23,547
	(Total Off-site Mitigation Area)		
	Total Area	14,375	27,412



Mitigation Preserve

Centennial Project

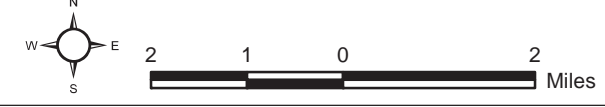


Exhibit 5.7-10

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2016 site reconnaissance surveys over a period of four days, within mitigation areas. Both the detailed floral sampling and the site reconnaissance surveys indicate the presence of similar vegetation and habitat types, species composition, and special status species presence throughout the Preserve in varying degrees similar to the range of impacted areas.

The proposed 27,408-acre preserve system contains all major habitat types affected by the Project, as well as particular individual biological resource values which are described in each of the corresponding mitigation plans. In addition, the overall value of the preserve system is enhanced by configuration of the preserved areas within large and contiguous biological core areas (see Exhibit 5.7-10). The biological value of the proposed preserve system is further enhanced by its continuity with other open space areas. Most of the core is immediately bordered by additional existing and proposed preserved lands, which increases the conservation value of the dedication areas. When a preserve is comprised of many small areas within a larger unreserved area, there are greater edge effects, even when the overall acreage may seem substantial. Edge effects include indirect effects from adjacent land uses such as noise from roadway traffic or night lighting from development. The lands proposed for preservation, especially those occurring off site, have been chosen with the intent to minimize such edge effects so that the biological resources within them are not jeopardized by the Project or potential future development in the region. In addition, the adjacent open space lands include Los Angeles County SEAs and National Forest Lands that would similarly benefit from the preservation of adjacent lands.

An additional factor in the high value of the proposed preservation lands is buffering of the regional landscape linkage through the region. The open space areas in the northwestern and southeastern portions of the site and the off-site preservation lands in these areas provide a layer of protection for the potential wildlife linkage to the immediate northwest, which may be an essential part of sustaining healthy populations of a wide variety of wildlife species in the surrounding mountainous regions. Additionally, several smaller local linkages between open space on site and preservation areas off site and in contiguous lands have been preserved.

Based on the large size of the Mitigation Preserve, the connectivity of this area to other regionally important open space areas, and the similarity to resources removed by development of the Project, the proposed mitigation preserve system provides a core for biological mitigation planning. The resources preserved in the reserve area, when supplemented by individual programs for special-status resources, would mitigate all significant impacts to biological resources on the Project site.

Each of the resource mitigation plans, required per mitigation measures below, will be incorporated into an overall Mitigation Monitoring and

Reporting Program (MMRP). This document will describe the procedures for mitigation implementation, success criteria, and reporting requirements.

PDF 7-2

Mitigation for impacts to vegetation types, such as native grasslands, would require preservation with minimal management. Other resources, such as jurisdictional riparian habitats and wetlands, would require more intensive creation, restoration, and/or enhancement efforts to mitigate for Project impacts. The acreages of the primary resources identified in the mitigation areas are listed in Table 5.7-11, Primary Biological Resources within the On-Site and Off-Site Preserve System, below.

Mitigation lands for impacts to biological resources would consist of approximately 3,861 acres of unimpacted/SEA lands on the site and 23,547 acres within additional off-site areas, including areas on Tejon Ranch, referred to as Areas 1 through 6. These mitigation lands comprise six areas which would provide sufficient land and biological resources to implement mitigation strategies to fully mitigate for Project impacts. Two of these areas, Areas 3 and 4, are the subject of conservation easements that expressly allow for such mitigation use of these lands. The dominant biological resources within these mitigation lands (such as the vegetation types and jurisdictional drainages) are depicted on Exhibit 5.7-10. The acreages of the dominant biological resources identified within the mitigation areas are listed in Table 5.7-11 below.

It should be noted that the similarity of the biological resources contained within the impact areas and mitigation areas is relative. The greater the level of detail available for a particular resource, the greater potential for variability between sites. Although intensive studies may reflect differences between the impacted grasslands and preserved grasslands, this is to be expected. The understanding of the general similarity and the long-term preservation goals for regional native species biodiversity should dictate the appropriateness of preservation lands. Grassland and wildflower studies of mitigation areas also indicate an acceptable degree of similarity in vegetation species composition at varying degrees consistent with Project impact areas (NRC 2008b). For a detailed analysis and representative photographs of mitigation lands see Appendix 5.7-D.

Area 1 consists of 6,417 acres located adjacent to and immediately east of the southeastern corner of the Project site. These lands are located within Significant Ecological Area (SEA) No. 17 and support many resources including a relatively undisturbed north-to-south running riparian corridor that provides connectivity to the wildlands to the south of the site. This drainage is likely to function as an important wildlife movement corridor for wildlife moving between the higher elevations of Liebre Mountain in the Angeles National Forest and grassland and scrubland resources in the lower foothills.

Area 2 consists of 2,556 acres located adjacent and contiguous to the northwestern portions of the Project site. These lands are also located within SEA No. 17. This area has experienced minimal disturbance and contains a complement of resources similar to the Project site, but it generally has a higher quality. This area contains extensive grasslands, oak woodlands, and riparian corridors. The woodlands and riparian zones include degraded and disturbed areas that are suitable for restoration and enhancement. Additionally, this mitigation area contains several substantial drainages, including upper Oso Canyon. Preservation of these features would retain wildlife movement values, allowing wildlife to continue to use these pathways to move between the on-site mitigation preserve and the Tehachapi Mountains.

Area 3 consists of 4,183 acres; this mitigation area is located in Kern County, immediately north of the Project site. It consists almost entirely of grassland habitat on the alluvial fans of several major drainages that flow into the Antelope Valley from the Tehachapi Mountains. Oak and sycamore woodlands are found in these canyons. The California Aqueduct also runs through this parcel. A portion of the Pacific Crest Trail alignment parallels the northeastern boundary of Area 3.

Area 4 consists of 7,319 acres; this mitigation area is also located in Kern County on the northern slope of the Antelope Valley, northeast of both Area 3 and the Project site. This site contains similar biological resources as described for Area 3 above. A portion of the Pacific Crest Trail alignment parallels the southwestern boundary of Area 4.

Area 5 consists of 643 acres and is a square-shaped parcel located in Kern County on the northern slope of the Antelope Valley, immediately east of Area 4 and northeast of the Project site. It consists entirely of undifferentiated grasslands along the alluvial fans of several major drainages in the foothills of the Tehachapi Mountains. The lower flatter areas are divided into a number of grazing areas, and it is intensively grazed.

Area 6 consists of 2,429 acres and is located in Kern County on the northern slope of the Antelope Valley, farthest to the northeast of the Centennial Project site. Approximately half of Area 6 is dominated by undifferentiated grasslands. The area represents a transitional zone between the grasslands and forb-dominated habitats found in Areas 3, 4, and 5 to the more desert habitats consisting of Joshua tree woodland and various scrub lands. It has several major drainages that flow from the Tehachapi Mountains that provide for riparian habitat and, at higher elevations, oak woodlands.

The combined off-site mitigation preserve area amounts to 23,547 acres of mitigation lands. In total, the mitigation preserve system available for mitigation covers 27,408 acres and includes both on- and off-site mitigation areas.

- PDF 7-3** The primary features retained in the mitigation preserve are the western portion of Oso Canyon and the mountainous areas along the western and southern edges of the site. The western portion of Oso Creek and several large tributaries, which are considered high wildlife use areas, would be preserved as open space. At least three ephemeral ponds would also be preserved in the open space area; which may provide habitat for amphibians, invertebrates, and migratory birds. In addition, existing drainages have been incorporated into the Project's design as greenways and open space areas to buffer the riparian corridors from indirect impacts.
- PDF 7-4** The removal of oaks on the site has been minimized: of the estimated 181,070 oaks of all sizes on the site, and of the estimated 33,861 oaks under the jurisdiction of the County of Los Angeles Tree Ordinance (CLAOTO) on the site, only 91 regulated oaks [blue oak (*Quercus douglasii*) and hybrid oak species⁵] occur within the disturbance area. Of those, 49 (blue oak) are within the grading footprint and would presumably be directly impacted by the Project, while 42 occur within the temporary disturbance area and would potentially be unimpacted/preserved, or 99.99 percent of regulated oaks would be preserved. The majority of the mixed oak woodland located in the western portion of the site and nearly the entire mixed oak woodland area located in the southern portion of the site would be preserved as natural open space.
- PDF 7-5** Regulated oaks within the Project's temporary disturbance area shall be avoided to the maximum extent feasible. Construction activities will employ methods, such as temporary orange mesh fencing, to surround the regulated oak trees at the dripline in order to avoid impacts to regulated oak trees in these areas, when feasible.
- PDF 7-6** If a golf course is developed on the site, it will be built and managed in accordance with the Audubon Cooperative Sanctuary Program for Golf Courses (or equivalent), which is a cooperative effort between the United States Golf Association and Audubon International that is designed to promote ecologically sound land management and to conserve natural resources.
- PDF 7-7** As an additional Project feature, the Project Applicant will explore locating a wildlife-friendly crossing across the Aqueduct with the California Department of Water Resources. The ideal location for such a crossing would be adjacent to Quail Lake or adjacent to the new bridge proposed across the Aqueduct. Final design of any such crossing shall be reviewed and approved by Los Angeles County.

⁵ Hybrid oak species are probably (*Quercus x alvordiana*) and (*Quercus x macdonaldi*) but hybridization within hybrids can even result in triple hybrids making positive identification of these species very difficult (Tree of Life 2008).

PDF 7-8 To minimize the introduction and spread of invasive plants on the site, the *Centennial Specific Plan* contains a list of invasive plant species that will be prohibited from being planted on the site.

PDF 11-4 from Section 5.11, Air Resources, is also applicable to the analysis in this section.

5.7.5 THRESHOLD CRITERIA

California Environmental Quality Act Criteria

The following significance threshold criteria are derived from the County of Los Angeles Environmental Checklist. The Project would have a significant impact related to biological resources if it would:

Threshold 7-1 Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the CDFW or USFWS.

Threshold 7-2 Have a substantial adverse effect on any sensitive natural communities (e.g., riparian habitat, coastal sage scrub, oak woodlands, non-jurisdictional wetlands) identified in local or regional plans, policies, regulations or by CDFW or USFWS.

Threshold 7-3 Have a substantial adverse effect on federally or state protected wetlands (including, but not limited to, marshes, vernal pools, coastal wetlands, and drainages) or waters of the United States, as defined by §404 of the federal Clean Water Act or California Fish and Game code §1600 et seq. through direct removal, filling, hydrological interruption, or other means.

Threshold 7-4 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.

Threshold 7-5 Convert oak woodlands (as defined by the state, oak woodlands are oak stands with greater than 10 percent canopy cover with oaks at least 5 inches in diameter measured at 4.5 feet above mean natural grade) or otherwise contain oak or other unique native trees (junipers, Joshuas, southern California black walnut, etc.).

Threshold 7-6 Conflict with any local policies or ordinances protecting biological resources, including Wildflower Reserve Areas (L.A. County Code, Title 12, Ch. 12.36), the Los Angeles County Oak Tree Ordinance (L.A. County Code, Title 22, Ch. 22.56, Part 16), the Significant Ecological Areas (SEAs) (L.A. County Code, Title 22, §22.56.215),

and Sensitive Environmental Resource Areas (SERAs) (L.A. County Code, Title 22, Ch. 22.44, Part 6).

Threshold 7-7 Conflict with the provisions of an adopted state, regional, or local habitat conservation plan.

An evaluation of whether an impact on biological resources would result in a “substantial adverse effect” must consider both the resource itself and how that resource fits into a regional context. For the Project, the regional setting includes the western portion of the Antelope Valley, including the slopes of the surrounding mountains that face the Valley. Impact analysis is based on the Project’s impact relative to the amount of the resource within the Project region.

For purposes of the impact analysis, “substantial adverse effect” is defined as the loss or harm of a magnitude which, based on current scientific data and knowledge, would (1) substantially diminish population numbers of a species or distribution of a habitat type within the region or (2) eliminate the functions and values of a biological resource in the region.

5.7.6 ENVIRONMENTAL IMPACTS

The determination of direct impacts in this analysis is based on changes to the existing biological resources on the Project site (as previously described in Section 5.7.3, Environmental Setting) that would occur from Project implementation, which includes all on-site and off-site earth disturbing/grading activities (including staging, trenching, and equipment storage). Impacts on biological resources associated with the Project were evaluated with respect to common vegetation types and common plant and wildlife species and, in greater detail, special status biological resources.

Indirect impacts on biological resources as a result of Project implementation may include the following: (1) increased lighting and glare effects on wildlife species in the remaining and adjacent open space areas; (2) potential increase in use of pesticides, herbicides, and in release of pollutants into adjacent drainages, creeks, and wetlands as a result of landscaping maintenance, irrigation, and storm water runoff; (3) increase in non-native plant species that are adapted to more urban environments and can out-compete native species for available resources, thus reducing the distribution and population of native species; (4) increases in human activity and domestic animal presence that can disturb natural habitat areas by trampling and extirpating native vegetation and displacing wildlife populations; and (5) erosion and dust resulting from construction and grading activities.

Threshold 7-1 **Would the project have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the CDFW or USFWS?**

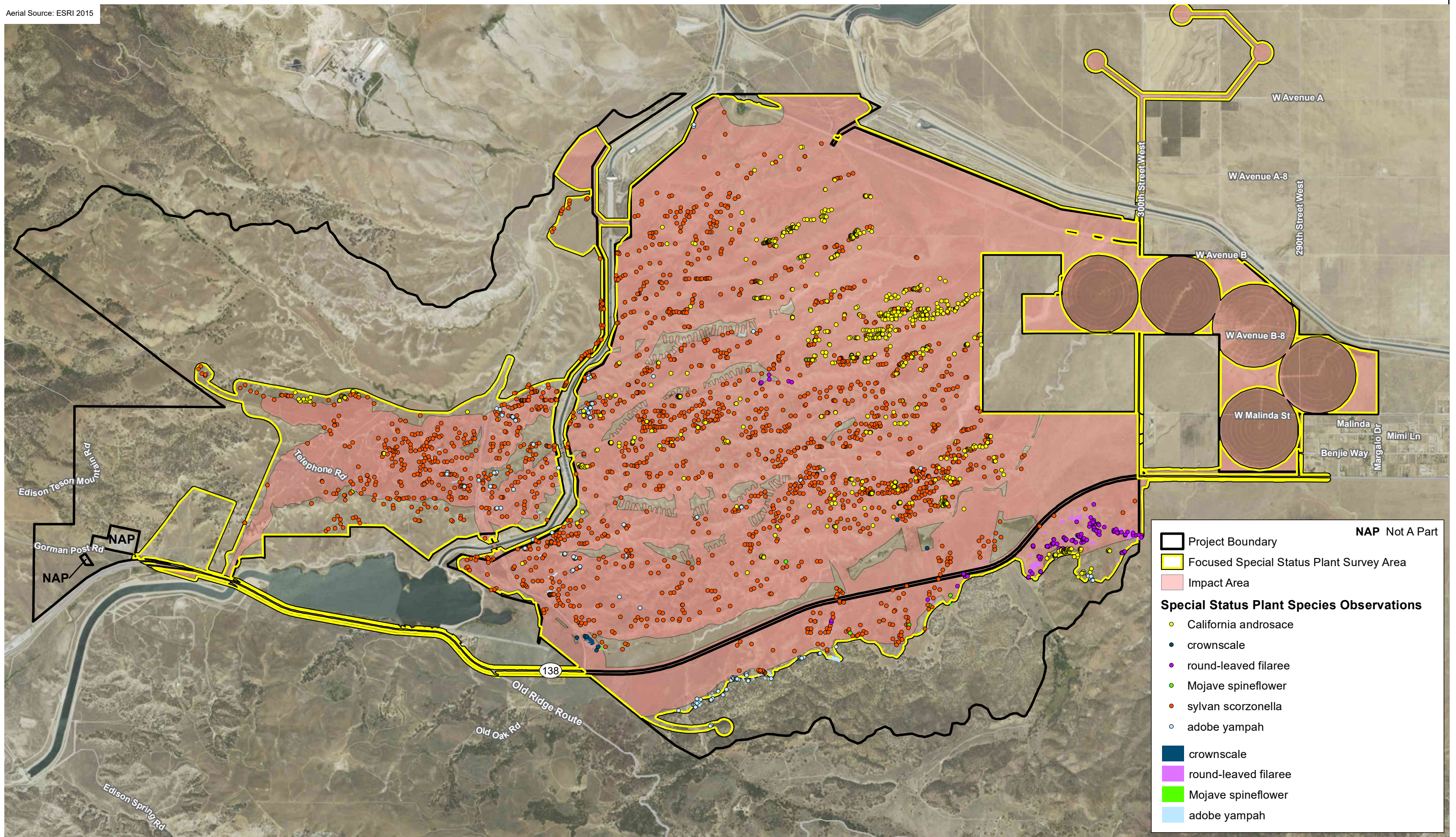
On-Site Impacts

Special Status Plant Species

Most of the special status plants listed as having a potential to occur on the Project site in Table 5.7-5, Special Status Plant Species would not be impacted by the Project because of negative results of multiple focused botanical surveys and/or they are not expected to occur on the site due to lack of suitable habitat. However, six of the eight special status plant species found on the site, including California androsace, crownscale, round-leaved filaree, Mojave spineflower, sylvan scorzonella, and adobe yampah would be impacted by Project implementation, as shown in Exhibit 5.7-11a, Special Status Plant Species Observation with Impact Boundary. The two remaining special status plant species observed on the site, Piute Mountains navarretia and Lemmon's syntrichopappus, were found in locations that lie outside the proposed development footprint and would therefore not be directly impacted; indirect impacts are not expected due to their distance from proposed development and their occurrence within proposed open space.

California androsace is a CRPR 4.2 species. In 2008, 5 occurrences with 381 total plants were found on the Project site. In 2015, over 29,000 individuals on 320 locations were estimated during focused surveys, with the highest abundances on the lower hills in the northeastern section of the Project site. The on-site population is the largest known population of the species in the County. Project implementation would result in impacts to approximately 28,345 individuals (up to 97 percent of the on-site population) detected during focused surveys. On Liebre Mountain, this species has been described as "occasional in grassland and openings in scrub at the northern base of the range" (Boyd 1999). As discussed, the County of Los Angeles Department of Regional Planning typically does not require mitigation for impacts to CRPR 4.2 species. However, due to the lack of botanical knowledge in the region for this species, the level of impact is difficult to ascertain and impacts are considered potentially significant. Implementation of MM 7-1, proposed to mitigate for impacts to special status plants, would reduce the level of impact by promoting the distribution of this species in the Project region through the propagation of new populations in the Mitigation Preserve. The expansion of the local population of this species is expected to increase its potential to be sustained in perpetuity.

Crownscale has a CRPR of 4.2. Historically it has been known only from the Sacramento Valley, San Joaquin Valley, and the Inner South Coast Ranges (Jepson Herbarium 2015). The closest known location outside the Project boundary is approximately 30 miles to the north, near the town of Arvin (CCH 2016). On the Project site, 2015 surveys identified 8 populations with more than 16,000 estimated total individual plants. The largest populations were found on alkali scalds and dry pools near the intersection of SR-138 and National Cement Plant Road. Approximately 16,690 individuals (the entire on-site population) would be impacted by the Project. CRPR 4.2 species are considered naturally limited in distribution and have

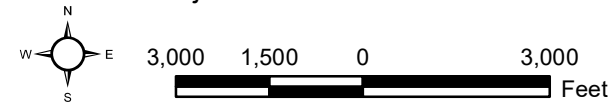


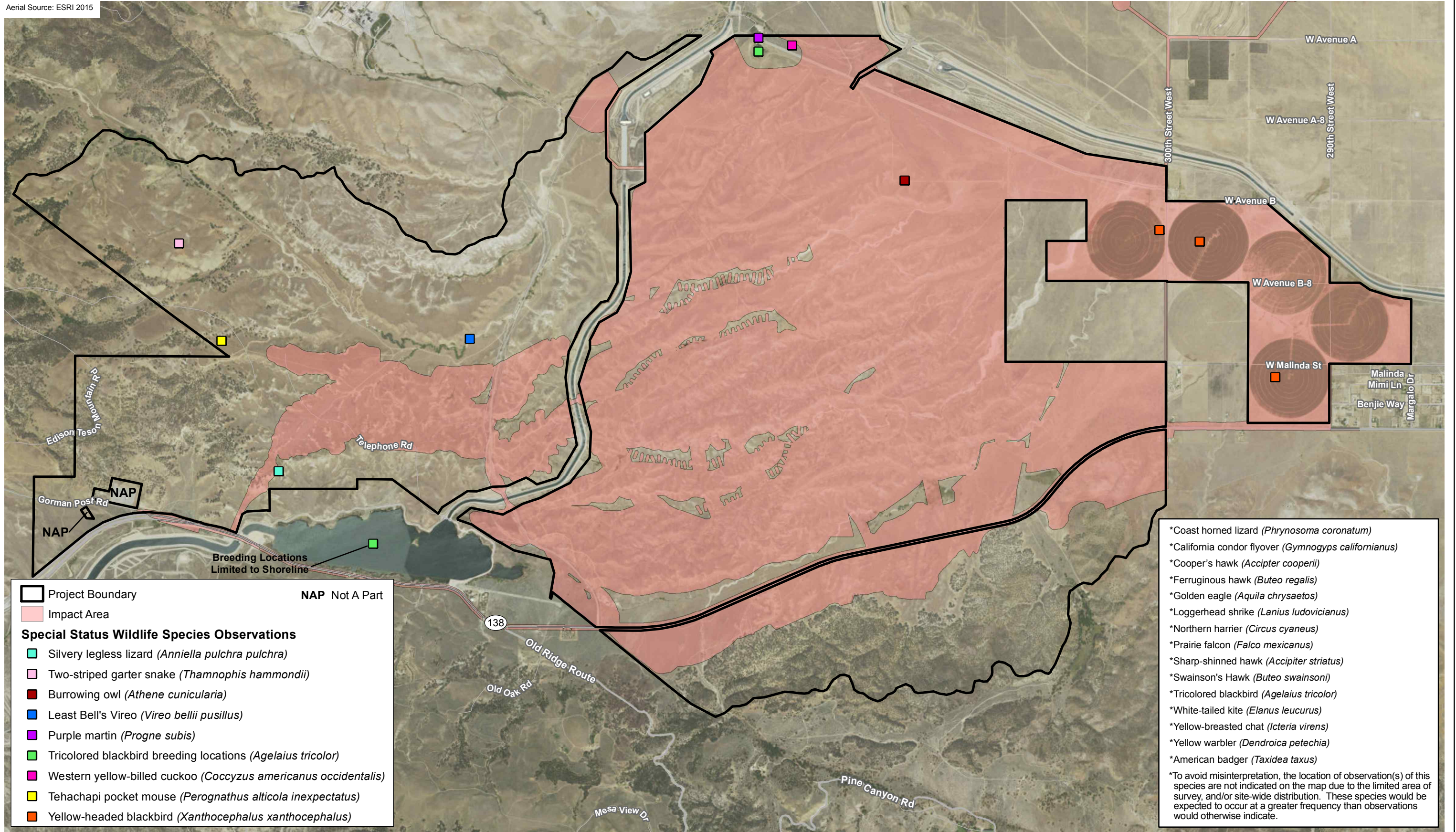
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Special Status Plant Species Observations with Impact Boundary

Exhibit 5.7-11a

Centennial Project





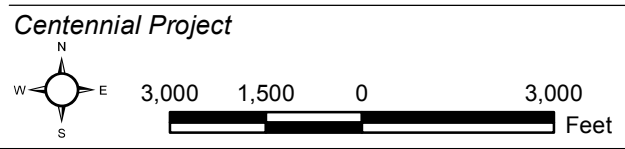
Legend

- Project Boundary
- Impact Area
- Special Status Wildlife Species Observations**
- Silvery legless lizard (*Anniella pulchra pulchra*)
- Two-striped garter snake (*Thamnophis hammondi*)
- Burrowing owl (*Athene cunicularia*)
- Least Bell's Vireo (*Vireo bellii pusillus*)
- Purple martin (*Progne subis*)
- Tricolored blackbird breeding locations (*Agelaius tricolor*)
- Western yellow-billed cuckoo (*Coccyzus americanus occidentalis*)
- Tehachapi pocket mouse (*Perognathus alticola inexpectatus*)
- Yellow-headed blackbird (*Xanthocephalus xanthocephalus*)

NAP Not A Part

- *Coast horned lizard (*Phrynosoma coronatum*)
 - *California condor flyover (*Gymnogyps californianus*)
 - *Cooper's hawk (*Accipiter cooperii*)
 - *Ferruginous hawk (*Buteo regalis*)
 - *Golden eagle (*Aquila chrysaetos*)
 - *Loggerhead shrike (*Lanius ludovicianus*)
 - *Northern harrier (*Circus cyaneus*)
 - *Prairie falcon (*Falco mexicanus*)
 - *Sharp-shinned hawk (*Accipiter striatus*)
 - *Swainson's Hawk (*Buteo swainsoni*)
 - *Tricolored blackbird (*Agelaius tricolor*)
 - *White-tailed kite (*Elanus leucurus*)
 - *Yellow-breasted chat (*Icteria virens*)
 - *Yellow warbler (*Dendroica petechia*)
 - *American badger (*Taxidea taxus*)
- *To avoid misinterpretation, the location of observation(s) of this species are not indicated on the map due to the limited area of survey, and/or site-wide distribution. These species would be expected to occur at a greater frequency than observations would otherwise indicate.

Special Status Wildlife Species Observations with Impact Boundary



been placed on a “watch list”. These species are considered relatively common within their ranges, although it is important to note the location of their occurrences to assist in identifying a decline in population should one occur. Although the CNPS considers CRPR 4.2 species to be special status, impacts to these species often do not meet the significance criteria under CEQA to require mitigation. Because this population is far removed from other known populations of the taxon, its identity is uncertain, and it is the only known population of its taxon in the County, the County of Los Angeles Department of Regional Planning considers the loss of the on-site population to be a significant impact, and therefore mitigation is proposed to reduce impacts to the regional population. Implementation of MM 7-1, to mitigate for impacts to special status plants, would reduce the level of impact by promoting the distribution of this species in the Project region through the propagation of new populations in the Mitigation Preserve. The expansion of the local population of this species is expected to increase its potential to be sustained in perpetuity.

Round-leaved filaree is a CRPR 1B.2 species. Although the CNPS considers it to be Rare, Threatened, or Endangered in California and elsewhere, it has no State or Federal listing status. Other than the recent on-site observation, this species was known to occur in the region based on a 1962 collection on Tejon Ranch, from the northern side of Oso Canyon; the population size of this occurrence was not reported (CDFG 2015a). In 2004, 39 occurrences of round-leaved filaree, each ranging in size from 20 to several thousand individual plants, were identified on the Project site. In 2015, over 29,000 individuals on 320 locations scattered throughout the site on hilltops and on upper north-facing slopes were detected in the survey area. The on-site population is the largest documented population of the species in the County. Approximately 22,900 individuals (80 percent of the on-site population) would be impacted by the Project. The remaining occurrences would be retained in open space. Due to the large number of plants that would be lost, impacts to the round-leaved filaree are considered significant. Implementation of MM 7-1 would reduce adverse impacts to a less than significant level by preserving existing populations within the Mitigation Preserve and promoting the distribution of this species within the Project region through the propagation of new populations. The expansion of the local population of this species is expected to increase its potential to be sustained in perpetuity.

Mojave spineflower is a CRPR 4.2 species, but it has no State or federal listing status. Nineteen densely populated occurrences were identified on the Project site in 2004; they were located along alluvial slopes in the southeastern portion of the Project site. In 2015, approximately 10,000 individuals were observed in the survey area. Project implementation would result in impacts to approximately 5,100 individuals. This annual plant varies in population size from year to year; during 2006 surveys approximately 47,575 individuals were found on the site, but during 2008 only 6,000 were observed. On Liebre Mountain, this species is considered scarce, and was documented by a historical collection from near Elizabeth Lake, which is located almost 20 miles southeast of the Project site (Boyd 1999). As discussed above, the County of Los Angeles Department of Regional Planning typically does not require mitigation for impacts to CRPR 4.2 species. However, due to the lack of botanical knowledge in the region for this species, the level of impact is difficult to ascertain and therefore the impact is considered potentially significant and mitigation is proposed to reduce impacts to the regional population. Implementation of MM 7-1, to mitigate for impacts to special status plants, would reduce the level of impact by preserving existing

populations within the Mitigation Preserve and promoting the distribution of this species in the Project region through the propagation of new or expanded populations in the Mitigation Preserve. The expansion of the local population of this species is expected to increase its potential to be sustained in perpetuity.

Sylvan scorzonella is a CRPR 4.2 species. Numerous occurrences (roughly approximated at 500), were identified on the Project site in 2004 and, in 2008 the number of individuals observed across the site likely exceeded 100,000 plants. This species was observed in scattered patches in grasslands predominately east of the Aqueduct. It was most commonly found on the upper north sides of ridges and hills, and on slopes and flats immediately bordering ephemeral drainages. Nearly all occurrences were located within grasslands; a few were in areas bordered by oak woodland (Vollmar Consulting 2004). In 2015, estimated population counts exceeded 100,000 and, as in previous years, it was observed predominately in grasslands, but was also noted to occur in scrub habitat. Project implementation would remove most occurrences of this species on the site. As discussed above, the County of Los Angeles Department of Regional Planning typically does not require mitigation for impacts to CRPR 4.2 species. However, due to the lack of botanical knowledge in the region for this species, the level of impact is difficult to ascertain and therefore the impact is considered potentially significant. Implementation of MM 7-1, proposed to mitigate for impacts to special status plants, would reduce the level of impact by preserving existing populations within the Mitigation Preserve and promoting the distribution of this species in the Project region through the propagation of new or expanded populations in the Mitigation Preserve. The expansion of the local population of this species is expected to increase its potential to be sustained in perpetuity.

Piute Mountains navarretia is a CRPR 1B.1 species. It was observed on the Project site in 2004 at 3 locations, with approximately 20,100 total plants. Occurrences on the site were all located in the hills in the far western region of the Project site, associated with clay soils in areas that had been recently disturbed by feral pigs. These occurrences represent the only known occurrences for this species in Los Angeles County and the southernmost known occurrences. However, this population is outside the Project impact area; as such, impacts to this species are not expected to occur and no mitigation for this species would be required.

Adobe yampah is a CRPR 4.3 species. In 2004, one occurrence of this species with approximately 16 individuals was identified on the Project site. It was found in native grassland habitat on a dry, moderately steep slope with bare soil and low total vegetation cover south of SR-138 (Vollmar Consulting 2004). In 2006, three occurrences were identified including approximately 15 individuals. In 2008, approximately 108 individuals were observed. In 2015, approximately 100 occurrences were recorded in the survey area, with an estimate of 3,100 individuals. Project implementation would result in impacts to approximately 1,490 individuals. On Liebre Mountain, this species has been described as “generally infrequent and scattered in open chaparral and grassland on the higher ridges, but locally common in clay-rich openings on the north face of Sawmill Mountain” (Boyd 1999); Sawmill Mountain is located about ten miles southeast of the Project site. Like CNPS 4.2 species, although CRPR 4.3 species are considered special status species, impacts on CRPR 4.3 species often do not meet the significance criteria under CEQA to require mitigation. However, due to the lack of botanical knowledge in the region for this species, the

level of impact is difficult to ascertain and therefore the impact is considered potentially significant. Implementation of MM 7-1, proposed to mitigate for impacts to special status plants, would reduce the level of impact by preserving existing populations within the Mitigation Preserve and promoting the distribution of this species in the Project region through the propagation of new or expanded populations in the Mitigation Preserve. The expansion of the local population of this species is expected to increase its potential to be sustained in perpetuity.

Lemmon's syntrichopappus has a CRPR of 4.3. This annual herb in the Sunflower family is endemic to California. It occurs in Kern, Los Angeles, Monterey, Riverside, San Bernardino, and Ventura Counties (CNPS 2015). No records were found in the Project region prior to focused surveys in the Project site. In 2004, 1 occurrence with 30 plants was identified on an open, moderately steep northwest-facing slope in the north-central portion of the site west of the Aqueduct. This species was not observed in the survey area in 2015. The population detected in 2004 is outside the Project impact area; as such, impacts to this species are not expected to occur and no mitigation for this species would be required.

Special Status Wildlife Species

A total of 44 special status wildlife species are known to occur in the Project region. Forty of these species have some potential to occur on the Project site, including 17 federally or State-listed species: conservancy fairy shrimp, vernal pool fairy shrimp, arroyo toad, Tehachapi slender salamander, California red-legged frog, blunt-nosed leopard lizard, tricolored blackbird, Swainson's hawk, western yellow-billed cuckoo, southwestern willow flycatcher, California condor, bald eagle, least Bell's vireo, Nelson's antelope squirrel, Townsend's big-eared bat, Tipton kangaroo rat, and San Joaquin kit fox (see Table 5.7-8, Special Status Wildlife Species). Five of these species, the blunt-nosed leopard lizard, golden eagle, white-tailed kit, California condor, and bald eagle are also a State Fully Protected species. Currently, the tricolored blackbird and Townsend's big-eared bat are Candidate State-listed species, require a CESA take permit, and receive the same legal protection afforded to an Endangered or Threatened species. All these species, including the non-listed special status species, are discussed further below based on habitat requirements.

Invertebrates

The conservancy fairy shrimp and vernal pool fairy shrimp were not observed during multiple surveys performed for invertebrates between March 2001 and January 2007 including wet- and dry-season protocol surveys for fairy shrimp conducted in 2004–2005 and 2006–2007 (see Table 5.7-2); therefore, these two listed species are considered to be absent from the Project site. As a result, Project implementation would not impact these species and no mitigation would be required.

Amphibians and Reptiles

The arroyo toad and California red-legged frog were not observed during multiple surveys performed for amphibians between March 2000 and June 2006 including protocol surveys conducted in 2006 for the arroyo toad and 2001 and 2006 for the red-legged frog (see Table 5.7-2); therefore, these listed species are considered to be absent from the Project site.

As a result, Project implementation would not impact these species and no mitigation would be required.

The Tehachapi slender salamander was not observed during multiple surveys performed for amphibians between March 2000 and June 2006 including focused surveys conducted in 2006 (see Table 5.7-2). Potentially suitable habitat for this species includes the north-facing slopes of oak woodland and in a more recent discovery, within the decaying leaves of our Lord's candle plants located in higher elevation woodland (including Joshua tree woodland) where snow melt is retained within the dead plant material (Sweet 2011). Methods for the 2006 focused survey included searching traditional habitats (north-facing oak woodlands) on the Project site. Although yucca scrub does occur within the Project's impact footprint (Exhibit 5.7-12), this habitat is not potentially suitable for Tehachapi slender salamander due to lack of sufficient snowfall (either direct or runoff). The 2006 protocol survey conducted within the Project's impact footprint was negative for this species. The species may occur well outside the Project's impact footprint in the western portion of the Project site and the southern portion of the Project site south of SR-138. As a result, Project implementation would not impact this listed species and no mitigation would be required.

The yellow-blotched ensatina was not observed during multiple surveys performed for amphibians between March 2000 and June 2006 including focused surveys for salamanders in 2006 (see Table 5.7-2). The Project site provides potentially suitable habitat for this salamander, but these habitat areas are mostly located outside the Project's impact footprint. The 2006 surveys conducted within the Project's impact footprint were negative for this species (and all salamander species). The yellow-blotched ensatina may occur outside the Project's impact footprint in the western portion of the Project site and the southern portion of the Project site south of SR-138. As a result, Project implementation would not impact this species and no mitigation would be required.

The western spadefoot was not observed during multiple surveys performed for amphibians between March 2000 and June 2006 including focused surveys for this species in 2004 and 2005 (see Table 5.7-2). Since the Project site is outside the known range of the western spadefoot, the focused surveys were conducted only in those areas supporting high quality habitat for the species. The results of these surveys were negative, and western spadefoot is not expected to occur on the Project site. As a result, Project implementation would not impact this species and no mitigation would be required.

The blunt-nosed leopard lizard was not observed during multiple surveys performed for reptiles between March 2000 and June 2006 (see Table 5.7-2). The Project site provides potentially suitable habitat for the blunt-nosed leopard lizard; however, it has not been observed during the surveys and the Project site is outside the known range for this species. The expected Gambelia species for the Project site is the long-nosed leopard lizard (*G. wislizenii*) (not a special status species), which has not been observed on the Project site to date. As a result, Project implementation would not impact this listed species and no mitigation would be required.

The western pond turtle was not observed during multiple surveys performed for reptiles between March 2000 and June 2006, including focused surveys conducted for this species in

2001 (see Table 5.7-2). Although, not documented officially in CNDDDB records, the western pond turtle has been observed incidentally off-site at Quail Lake, so it is possible that individuals may occur on the Project site for nesting. One two-striped garter snake was observed outside the Project's impact footprint in the northwestern portion of the Project site. Based on an absence of official records, if Quail Lake in fact does support a population of western pond turtle, the population is expected to be small. The two-stripe garter snake is a highly aquatic species that depends on a perennial water source. Project impacts would result in the loss of a small amount of potentially suitable western pond turtle nesting habitat available to a population that may persist at Quail Lake. For both these species, the amount of potentially suitable habitat on the Project site is very limited and would only amount to a couple of acres at most. Project impacts to this limited potentially suitable habitat for both species is not expected to have a substantial impact on regional populations. Therefore, the loss of limited and isolated cattle pond features and the grassland/scrub habitat immediately adjacent to Quail Lake that would occur with Project implementation would be considered adverse, but less than significant for the western pond turtle and two-striped garter snake. The loss of individuals for these two species, however, may be considered significant under Section 15380 of the State CEQA Guidelines. Implementation of MM 7-2 through MM 7-4 requiring avoidance of impacts outside disturbance limits, pre-construction surveys, and biological monitoring (including relocation of individuals from the Project's impact footprint) would reduce the impact to less than significant.

The silvery legless lizard and coast horned lizard were both observed during multiple surveys performed for reptiles between March 2000 and June 2006 (see Table 5.7-2). One legless lizard was observed at the far western edge of the Project site. Horned lizards were observed in several site drainages, primarily in the eastern portions of the Project site. Suitable and potentially suitable habitat for these two species generally may occur within grassland, scrub, riparian, and oak woodland habitat types. The legless lizard requires a high soil moisture content, while the coast horned lizard can tolerate dryer habitats. Areas on the Project site with high soil moisture content are limited and the legless lizard is expected to occur mainly in the oak woodland and riparian habitats where the soil moisture content is higher due to factors such as plant cover and leaf litter. The coast horned lizard has been detected mainly in the dry, sandy, washes within the grassland and scrub habitats in the eastern portion of the project site. Based on these vegetation types and the habitat requirements of these species, potentially suitable habitat on the Project site is expected to be scattered patchy in distribution, amounting to no more than 10% of the total area. Of the roughly 7,000 acres impacted by the Project, it is estimated that no more than 700 acres of potentially suitable habitat occurs for both species, though is likely much less for the legless lizard. These two species are expected to be relatively abundant in the region; therefore, the loss of roughly 700 acres associated with Project implementation would be considered adverse, but less than significant for the silvery legless lizard and coast horned lizard and no mitigation is required. Even though impacts would be less than significant, implementation of MM 7-2 through MM 7-4 requiring avoidance of impacts outside disturbance limits, pre-construction surveys, and biological monitoring (including relocation of individuals from the Project's impact footprint) if detected would further help these species.

Birds

Of the eight listed bird species with potential to occur on the Project site, the western yellow-billed cuckoo, southwestern willow flycatcher, and least Bell's vireo occupy similar riparian habitats. Multiple bird surveys performed between March 2000 and July 2015 including protocol surveys for the flycatcher and vireo conducted in 2006 and 2008 (see Table 5.7-2) have not detected any breeding activities for these three species. One yellow-billed cuckoo was observed in the north-central part of the Project site in June 2003, but follow-up avian surveys in 2006 were negative for the species and the sighting was considered to represent a rare migrant rather than a breeding bird (BonTerra Consulting 2006b). Although the southwestern willow flycatcher was not present during the 2006 and 2008 protocol surveys, migrant willow flycatchers were observed. These migrants represent more northerly breeders of different subspecies that are relatively common in the region during May and June when southwestern willow flycatchers are breeding. A territorial willow flycatcher detected in southern California late June would be identified as a southwestern willow flycatcher, as the northern subspecies would have migrated out of the area by that time. Except for a singing least Bell's vireo on June 22, 2006, the 2006 and 2008 protocol surveys were negative for documenting breeding activity. Migrant landbirds or songbirds (i.e., passerines) can use a wide range of habitats and are typically present for short periods of time (generally one to three days in spring). Based on the results of these surveys, the Project site is not considered to be occupied by the western yellow-billed cuckoo, southwestern willow flycatcher, or least Bell's vireo. Therefore, Project implementation is not expected to impact these three listed species and no mitigation would be required. Since all three of these listed species are migratory, however, and may occur as breeders in the future, MM 7-5 is included to conduct pre-construction protocol surveys for the western yellow-billed cuckoo, southwestern willow flycatcher, and least Bell's vireo to confirm absence prior to disturbance.

The bird surveys performed between March 2000 and July 2015 (see Table 5.7-2) have shown that both the California condor and bald eagle are rarely seen on the Project site. Quail Lake provides suitable foraging habitat for the bald eagle where it has occasionally been observed. Trees in the surrounding area provide potentially suitable nests sites for the bald eagle, but nesting at this location has not yet been documented. All California condors are wing-tagged and fitted with radio transmitters. These birds have been documented flying high over the area (with one reported landing), but foraging and breeding activities are conducted elsewhere and not on or in the vicinity of the Project site (Bloom 2009; BonTerra Psomas 2015d). Therefore, Project implementation is not expected to result in any impacts on these two species and no mitigation is required. MM 7-6 is included to further ensure that the proposed Project does not result in future impacts on the California condor.

Migrant Swainson's hawks have been observed on the Project site during focused protocol surveys performed between March 2000 and July 2013 (see Table 5.7-2), as well as incidentally during 2015 tricolored blackbird surveys during and 2015-2016 plant surveys. Breeding Swainson's hawks have not been detected during protocol surveys. Most migrant sightings on the Project site have been in spring (March—May) and consist of fly-overs, but also include observations of foraging individuals that often concentrate in the alfalfa fields at the east end of the Project site. The sightings also include a small group of non-breeders

summering on the Project site in July 2008. This group consisted of five immatures foraging for grasshoppers in the Oso Canyon grasslands just west of Cement Plant Road. Project implementation would result in the loss of habitats used by migrating Swainson's hawks, occasional non-breeding birds in summer, and potentially suitable nesting habitats in the eastern portions (i.e., alfalfa fields and surrounding trees) of the Project site. The primary threat to this species is the loss of breeding habitats; therefore, these impacts are considered adverse but less than significant and no mitigation is required. As with other migratory birds, however, this species may occur as a breeder in the future and MM 7-2 is included to conduct pre-construction protocol surveys for the Swainson's hawk to confirm absence prior to disturbance.

The Project site is outside the known range and does not provide suitable habitat for the coastal California gnatcatcher. Therefore, Project implementation is not expected to impact this listed species and no mitigation would be required.

The tricolored blackbird is currently a Candidate State-listed species that receives the same legal protection afforded to an endangered or threatened species. Its status was only recently elevated, so protocol surveys were conducted for the first time in 2015 (BonTerra Psomas 2015c). The results of this focused survey documented relatively heavy use of the Project site for foraging purposes by tricolored blackbirds nesting off site at Quail Lake, and to a much lesser degree, Holiday Lake. In an effort to determine the Project's potential effect on tricolored blackbird nesting colony foraging lands of the region, an assessment of each of four known colonies was conducted (BonTerra Psomas 2015c). Breeding colonies are known to forage as far as five miles away from the nesting location. Therefore, the suitability of foraging was assessed for all lands within a five-mile radius of each colonies nesting location. Based on vegetation types, potentially suitable foraging habitat occurs on nearly 100,000 acres in the Project region. The Project would result in the loss of approximately 8 percent of this nesting colony foraging habitat. Although this loss is considerable, the effect on individual colonies may be more informative in determining overall effects on the regional nesting population.

Due to the shifting of tricolored blackbird nesting locations from year to year, a subset of two or three of the available nesting locations may represent the entire regional breeding population. A substantial reduction of foraging lands surrounding this subset of nesting locations could result in considerable reduction of nesting success. A review of the Quail Lake and the on-site colony subset identified a potential post-Project reduction of approximately 20 percent of potentially suitable foraging habitat at each location. In a given year, if these two areas were used for nesting, the reduced availability of suitable foraging land could result in substantial reduction in nesting success.

The indirect impacts described above may be considered potentially significant pursuant to CEQA; and mitigation may be required to reduce the impact to a less than significant level. Potentially suitable areas for enhancement and preservation include the pond area along the northern boundary and Oso Canyon, as well as any other created water bodies as part of the Project Drainage Plan, where feasible. Tricolored blackbirds were observed foraging heavily within the Mitigation Preserve in Oso Canyon and, with some hydrology and habitat enhancement in this area, it may be suitable to support a breeding colony in the future. An

additional colony of nesting tricolored blackbird birds was incidentally detected in 2016 within Mitigation Areas north of the Project site. Enhancement factors shall include the creation of cattail/bulrush marsh habitat or other substrate known to support breeding tricolored blackbirds, persistent nearby standing water during the breeding season, and sufficient available adjacent foraging habitat with an appropriate food source.

To avoid all direct impacts and minimize indirect impacts to the nesting colonies on the Project site, MM 7-7 is included. This MM states that the Project shall incorporate avoidance and additional open space buffer features for the identified nesting areas such as at the northern edge of the Project site and at Quail Lake. Permanent impacts will be restricted to a minimum distance of 400 feet from the nesting area. The nesting area will be delineated by a qualified Ornithologist based on all available data (a minimum of three years of site-specific data shall be used). Temporary impacts (i.e., construction noise) within 400 feet shall be restricted to the non-breeding season. The breeding season for this species shall be considered April 1 through July 1. In addition to MM 7-7, the Project design incorporates a buffer of greater than 1,000 feet along the northern shore of Quail Lake to minimize impacts to adjacent foraging grounds. At the east end of the Lake, east of the mouth of the aqueduct, where a small section of shoreline is close to the project impact footprint, land uses include a regional park within a low density development zone so that lands immediately beyond the required 400 foot buffer (if nesting is identified) remain permeable and retain some potential for foraging for this species.

Of the 13 non-listed special status bird species with potential to occur on the Project site (see Table 5.7-8), focused surveys have been conducted for the mountain plover and California spotted owl (BonTerra Consulting 2010, 2006a). The results of these surveys were negative; therefore, Project implementation would not be expected to impact the mountain plover or California spotted owl and no mitigation would be required.

Only single pairs or individual burrowing owls have been observed on or in the vicinity of the Project site during multiple bird surveys performed between March 2000 and July 2015 (see Table 5.7-2). Focused burrowing owl surveys have also been conducted (NRC 2006c; Impact Sciences 2003). The Project site does not support a population of this species that would be considered regionally important; therefore, the loss of potentially suitable habitat for this species would be considered adverse, but less than significant. The loss of individual burrowing owls, however, may be considered significant under Section 15380 of the State CEQA Guidelines. Implementation of MM 7-2 for biological monitoring during construction is recommended to relocate individuals from the Project's impact footprint.

The golden eagle, northern harrier, and white-tailed kite have been observed foraging on the Project site, but nesting has not yet been documented on the Project site. Project implementation would result in the loss of approximately 6,416 acres of foraging habitat for these raptors that would be considered adverse, but less than significant. The potential exists for all three raptors to nest on the Project site. As golden eagle and white-tailed kite are California Fully Protected species, "take" would not be allowed. In addition, the nests of all three species would be protected by the Migratory Bird Treaty Act (MBTA). Therefore, MM 7-8 is included to protect nesting birds during construction.

The Project site's wooded areas in the western portions provided limited potentially suitable breeding habitat (and wintering) for the long-eared owl. The long-eared owl has not been detected on the Project site but may occur. The Project site does not support a population of this species that would be considered regionally important; therefore, the loss of limited potentially suitable habitat for this species would be considered adverse, but less than significant. The nests of this species would be protected by the MBTA. Therefore, MM 7-8 is included for protection of nesting birds during construction.

The yellow warbler and yellow-breasted chat were observed during the surveys, but no nesting was documented for the Project site. The riparian habitats dominated by willows and cottonwoods, especially those in Oso Canyon, provide potentially suitable nesting habitat for these two species as well as the summer tanager, which was not observed during the surveys. The purple martin may also nest in these areas, but is more likely to occur on the upslope oak woodlands in western portions of the Project site. Project implementation would result in the loss of approximately 35 acres potentially suitable nesting habitat for these four species that would be considered adverse, but less than significant. The nests of all four species would be protected by the MBTA. Therefore, MM 7-8 is included for protection of nesting birds during construction.

The Project site's grasslands provide potentially suitable habitat for the grasshopper sparrow; however, this species has not been observed during multiple bird surveys performed between March 2000 and July 2015 (see Table 5.7-2) and the Project site is outside the known range for the species. Therefore, Project implementation is not expected to impact this species and no mitigation would be required.

Small numbers of loggerhead shrikes have been observed year-round on the Project site. Although nesting has not yet been documented, this species is expected to breed on the Project site. Relative to numbers of this species elsewhere in the Antelope Valley, the Project site does not support a population that would be considered regionally important; therefore, the loss of approximately 460 acres of suitable habitat for this species would be considered adverse, but less than significant. The nests of this species would be protected by the MBTA; therefore, MM 7-8 is included for protection of nesting birds during construction.

During the focused surveys for tricolored blackbird (BonTerra Psomas 2015c), large numbers of yellow-headed blackbirds were observed foraging with other blackbird species in the eastern portions of the Project site. This species may nest in the cattail beds of Quail Lake, but is not expected to nest on the Project site. Project implementation would result in the loss of suitable foraging habitat for this species that would be considered adverse, but less than significant and no mitigation is required.

Mammals

The Project site is outside the known range and does not provide suitable habitat for the Nelson's antelope squirrel or Tipton kangaroo rat. The Project site may provide potentially suitable habitat for the San Joaquin kit fox, but it is also outside the known range for this species. If present, the multiple biological surveys conducted on the Project site since 2001 (see Table 5.7-2) would have detected this species. Therefore, Project implementation is not expected to impact these three listed species and no mitigation would be required.

Disturbance and loss of large colony roost sites during the maternity and hibernation seasons are considered primary factors that may negatively impact the Townsend's big-eared bat in California (CDFW 2014). There are no known maternity or significant roosting sites for the Townsend's big-eared bat on or in the vicinity of the Project site. The oak woodlands in western portions of the Project site may provide temporary roost sites for individual Townsend's big-eared bats. Potential foraging habitat is expected to be limited to edge habitats along streams and areas adjacent to and within the oak woodlands in western portions of the Project site outside the Project's impact footprint; therefore, Project implementation is not expected to impact the Townsend's big-eared bat and no mitigation is required. The loss of individual Townsend's big-eared bats, however, may be considered significant under Section 15380 of the State CEQA Guidelines. Implementation of MM 7-9 for pre-construction bat surveys, MM 7-3 for biological monitoring during construction, and MM 7-4 for clear demarcation of disturbance limits are recommended to avoid taking of solitary roosting individuals that may be present within the Project's impact footprint.

The Project site provides potentially suitable foraging habitat for both the pallid and western mastiff bats, but limited roosting opportunities for pallid bats and no roosting opportunities for western mastiff bats. Project implementation would result in the loss of roughly 7,000 acres of potentially suitable foraging habitat for these 2 bat species. This loss is small relative to the amount of foraging habitat available to these two species elsewhere in the region; therefore, the loss of potential foraging habitat for the pallid bat and western mastiff bat is considered to be adverse but less than significant and no mitigation is required. The loss of individual pallid bats, however, may be considered significant under Section 15380 of the State CEQA Guidelines. Implementation of MM 7-3 for biological monitoring during construction, MM 7-4 for clear demarcation of disturbance limits, and MM 7-9 for pre-construction bat surveys are recommended to avoid taking of roosting individuals that may be present within the Project's impact footprint.

The Tehachapi pocket mouse has been reported in the vicinity of the Project site at points across the Tehachapi foothills within grassland and desert shrub. One individual of this species was also detected on the Project site during focused surveys. It is expected to occur, albeit in very low numbers, within arid annual grassland and desert shrub vegetation types on the site. The only area where this species was detected is outside the Project's disturbance limits. However, there is reasonable opportunity for this species to occur in very low numbers within impact areas of potentially suitable habitat. Based on current known distribution, this species is likely to occupy much of the Tehachapi foothill south facing slope stretching from the project site to the northeast for some distance. Although small mammal trapping surveys in the region are fairly limited, CNDDDB records from recent years (2000 and up) provide evidence of this projected distribution. The loss of potentially suitable habitat for this species would be considered adverse, however, substantial adverse effects on the regional population are not expected to occur due to the relative abundance of mostly contiguous habitat across the southern slope of the Tehachapi Mountains. The loss of potentially suitable habitat is therefore considered less than significant. The loss of individuals, however, may be considered significant under Section 15380 of the State CEQA Guidelines. Implementation of MM 7-3 for biological monitoring during construction is recommended to relocate individuals from the Project's impact footprint if detected.

The Southern grasshopper mouse has not been detected on site during focused mammal surveys, but the Project site is within the known historical range. Although not observed in the region since 2003, the southern grasshopper mouse may potentially occur on the site in potentially suitable areas such as low, open, and semi-open scrub habitats including mixed chaparral, riparian scrub, and annual grasslands with scattered shrubs. Due to a lack of detection during focused mammal surveys on the Project site, it is unlikely that the Project site supports a population of this species that would be considered regionally important; therefore, the loss of approximately 460 acres of potentially suitable habitat for this species would be considered adverse, but less than significant. The loss of individuals, however, may be considered significant under Section 15380 of the State CEQA Guidelines. Implementation of MM 7-3 for biological monitoring during construction is recommended to relocate individuals from the Project's impact footprint if detected.

The American badger was observed at several locations on the Project site east and west of the California Aqueduct. Suitable habitat is found throughout the Project site. American badgers have large home ranges and wander widely. As a result, Project implementation is not expected to impact more than a few territories, at most, of this species. Compared to the amount of suitable habitat available in the region, the loss of roughly 7,000 acres of suitable habitat associated with Project implementation would be considered adverse but less than significant for the American badger and no mitigation is required. The loss of individual American badgers, however, may be considered significant under Section 15380 of the State CEQA Guidelines. Implementation of MM 7-2 for pre-construction surveys and MM 7-3 for biological monitoring during construction are included to relocate individuals from the Project's impact footprint.

Although not classified as a special status species (CDFW 2017b), the relatively small population of reintroduced pronghorn antelope on the Project site is considered of interest due to limited numbers and historical presence in the. Additionally, the CDFW issues permits allowing the occasional hunting of pronghorn in this population. Project implementation would reduce the amount of available foraging habitat for this population. However, impacts on a reintroduced population of a non-special status species that may result from Project implementation would be considered adverse but less than significant under applicable CEQA significance thresholds. As part of the Ranchwide Management Plan (TRC 2013), which is an implementation tool of the Ranchwide Agreement, the Project Applicant will work with the Tejon Ranch Conservancy to identify and implement potential enhancement measures that are also supported by CDFW. Potential measures could focus on enhancing pronghorn fawn survivorship with GPS-tracking devices and other measures to evaluate and minimize losses from coyote predation; completing further evaluation of modeling tools at a site-specific level (such as those used on the Carrizo Plain), and incorporating volunteer involvement with supportive activities such as fencing retrofits.

Nesting Birds

Construction activities could result in the direct loss of active bird nests or the abandonment of active nests by adult birds in a variety of habitats across the site. In particular, raptor species are prone to nest abandonment. Bird nests with eggs or young are protected under the MBTA and the *California Fish and Game Code*. Specific provisions of the statute include

the establishment of a federal prohibition, unless permitted, to “pursue, hunt, take, capture, kill, attempt to take, capture or kill, possess, offer for sale, sell, offer to purchase, purchase, deliver for shipment, ship, cause to be shipped, deliver for transportation, transport, cause to be transported, carry, or cause to be carried by any means whatever, receive for shipment, transportation or carriage, or export, at any time, or in any manner, any migratory bird, included in the terms of the Convention for the protection of migratory birds or any part, nest, or egg of any such bird” (16 USC 703).

Bird species protected under the provisions of the MBTA are identified by the List of Migratory Birds (50 *Code of Federal Regulations* [CFR] 10.13, as updated by the 1983 American Ornithologists’ Union [AOU] Checklist and USFWS-published supplements through 2014). Impacts to nesting birds, including raptors, resulting from Project development are considered significant. Implementation of MM 7-8 would reduce adverse impacts to a less than significant level by minimizing disturbance to nesting birds during construction through seasonal avoidance in some areas and pre-construction surveys and avoidance of designated active nesting areas.

Off-Site Impacts

The potential for impacts to special status plant and wildlife species and nesting birds with implementation of the off-site Project components, including intersections with SR-138, utility connections, water wells, and California Aqueduct crossings, are discussed below.

Special Status Plant Species

The off-site Project areas contain potentially suitable habitat for some of the special status plant species shown in Table 5.7-5, Special Status Plant Species. Focused surveys for these areas were conducted in 2016. During focused surveys, approximately 1 adobe yampah, 64 round-leaved filaree, and 1,590 sylvan scorzonella plants were observed. Impacts to these rare plant populations would be considered potentially significant. Implementation of MM 7-1, proposed to mitigate for impacts to special status plants, would reduce the level of impact by preserving existing populations within the Mitigation Preserve and promoting the distribution of this species in the Project region through the propagation of new or expanded populations in the Mitigation Preserve. The expansion of the local population of this species is expected to increase its potential to be sustained in perpetuity.

Special Status Wildlife Species

The off-site Project areas contain potentially suitable habitat for the special status wildlife species as shown in Table 5.7-8, Special Status Wildlife Species. Impacts in these areas are considered to be the same as the Project except at a smaller scale due to the much smaller area of impact. Mitigation described in MM 7-2, MM 7-3, MM 7-4, MM 7-5, MM 7-6, MM 7-7, MM 7-8, and MM 7-9 would reduce adverse impacts to a less than significant level; these mitigation measures minimize disturbance during construction through clear demarcation of disturbance limits, pre-construction surveys, monitoring during construction to ensure no mortality, relocation of individuals prior to grading, focused surveys for certain species prior to Project implementation, and seasonal avoidance of certain areas. These measures also mitigate for losses to tricolored blackbird foraging habitat.

Nesting Birds

Impacts associated with development of off-site Project features may result in the disturbance of nesting birds. Due to their protected status, impacts to nesting birds resulting from off-site development are considered significant. Implementation of MM 7-8 would reduce adverse impacts to a less than significant level by minimizing disturbance to nesting birds during construction through seasonal avoidance in some areas and pre-construction surveys and avoidance of designated active nesting areas.

Impact Summary: Impacts to special status plants, special status wildlife, and nesting birds that would result from implementation of the Project would be reduced to a level considered less than significant through implementation of MMs 7-1, 7-2, 7-3, 7-4, 7-5, 7-6, -7, and 7-9.

Threshold 7-2 **Would the Project have a substantial adverse effect on any sensitive natural communities (e.g., riparian habitat, coastal sage scrub, oak woodlands, non-jurisdictional wetlands) identified in local or regional plans, policies, regulations or by the CDFW or USFWS?**

On-Site and Off-Site Impacts

Table 5.7-11, Impacts to Vegetation Types, below details the impacts to vegetation types in the Project's on-site and off-site study areas, which are discussed separately below. Table 5.7-12, Primary Biological Resources within the Impact Areas and the On-Site and Off-Site Mitigation Preserve System, summarizes the on- and off-site impacts to the primary, group vegetation types and the associated acres to be preserved. The Mitigation Preserve refers to the on-site unimpacted lands that are within SEA 17 and the off-site open space preserve areas.

**TABLE 5.7-11
IMPACTS TO VEGETATION TYPES**

Vegetation Type	Existing On-Site Areas (acres)	Existing Off-Site Areas^a (acres)	Total Existing (acres)	Percent Impact of Total (acres)
Scrub and Chaparral Vegetation Types				
Bladderpod Scrub	0.7	-	0.7	0.00%
Bush Lupine Scrub	0.4	-	0.4	0.00%
California Buckwheat Scrub	12.8	-	12.8	0.00%
California Buckwheat Scrub/Yucca Scrub	1.9	-	1.9	0.00%
California Juniper/California Buckwheat Scrub	4.6	-	4.6	0.00%
Chamise/Bigberry Manzanita Chaparral	40.1	-	40.1	0.00%
Coffeeberry Scrub	11.9	-	11.9	0.00%
Goldenbush Scrub	7.7	-	7.7	0.00%
Great Basin Scrubs ^a	360.3	0.2	360.5	76.85%

**TABLE 5.7-11
IMPACTS TO VEGETATION TYPES**

Vegetation Type	Existing On-Site Areas (acres)	Existing Off-Site Areas^a (acres)	Total Existing (acres)	Percent Impact of Total (acres)
Rabbitbrush Scrub	222.9	30.5	253.4	30.50%
Wand Buckwheat Scrub	0.6	-	0.6	0.00%
Wright's Buckwheat Scrub*	12.2	-	12.2	0.00%
Yucca Scrub	8.9	-	8.9	52.40%
<i>Group Total</i>	685.1	30.7	715.8	50.2%
Broad Leafed Upland Tree-Dominated Vegetation Type				
Mixed Oak Woodland*	1,370.8	-	1,370.8	0.45%
<i>Group Total</i>	1,370.8	-	1,370.8	0.45%
Riparian and Bottomland Vegetation Types				
Alluvial Scrub*	5.2	0.4	5.6	92.30%
Cottonwood Woodland*	0.1	-	0.1	0.00%
Riparian Herb*	52.7	0.6	53.3	12.56%
Rush Riparian Grassland*	48.1	0.8	48.9	2.88%
Southern Arroyo Willow Riparian ^b *	8.6	-	8.6	14.90%
Southern Cottonwood Willow Woodland ^b *	4.0	-	4.0	0.00%
Southern Willow Scrub*	12.8	0.3	13.1	12.53%
Unvegetated Wash*	25.5	0.2	25.7	9.97%
Valley Oak Riparian Woodland*	12.1	-	12.1	0.00%
Willow Riparian Forest*	15.1	-	15.1	10.88%
Willow Riparian Woodland*	8.0	0.3	8.3	13.16%
<i>Group Total</i>	192.1	2.6	194.7	11.0%
Bog and Marsh Vegetation Types				
Alkali Meadow ^b *	3.7	-	3.7	65.76%
Baltic Rush ^b *	21.5	-	21.5	34.72%
Coastal and Valley Freshwater Marsh ^b *	2.4	0.1	2.5	2.00%
Seeps and Ephemeral Ponds*	8.0	0.0	8.0	10.90%
<i>Group Total</i>	35.6	0.1	35.7	30.11%
Grass- and Herb-Dominated Vegetation Types^c				
Native Perennial Grassland*/California Annual Grassland	9,076.1	81.4	9,161.4	70.03%
<i>Group Total</i>	9,076.1	81.4	9,161.4	70.03%
Mixed Chaparral or Scrub and Grassland Vegetation Types^c				
Bush Lupine Scrub/Native Perennial Grassland*/California Annual Grassland	1.4	-	1.4	0.00%
California Buckwheat Scrub/Native Perennial Grassland*/California Annual Grassland	7.0	-	7.0	0.00%
Goldenbush Scrub/Native Perennial Grassland*/California Annual Grassland	8.3	-	8.3	14.37%

**TABLE 5.7-11
IMPACTS TO VEGETATION TYPES**

Vegetation Type	Existing On-Site Areas (acres)	Existing Off-Site Areas^a (acres)	Total Existing (acres)	Percent Impact of Total (acres)
Rabbitbrush Scrub/Native Perennial Grassland*/California Annual Grassland	131.0	41.3	172.3	59.88%
Wand Buckwheat Scrub/Native Perennial Grassland*/California Annual Grassland	5.4	-	5.4	0.00%
Wright's Buckwheat Scrub*/Native Perennial Grassland*/California Annual Grassland	4.3	-	4.3	0.00%
Yucca Scrub/Native Perennial Grassland*/California Annual Grassland	24.3	-	24.3	4.43%
<i>Group Total</i>	<i>181.8</i>	<i>41.3</i>	223.1	47.23%
Other Areas				
Agricultural	602.8	-	602.8	100.00%
Developed	26.4	35.0	61.4	90.19%
Developed/Disturbed	1.7	4.5	6.2	93.98%
Disturbed	141.5	27.5	169.0	76.54%
Disturbed (Landslide)	2.4	-	2.4	0.00%
Not Yet Mapped	3.8	99.0	102.8	96.31%
Open Water/Developed	-	1.5	1.5	100.00%
Ornamental	-	2.0	2.0	100.00%
<i>Group Total</i>	<i>778.5</i>	<i>146.9</i>	925.4	94.49%
GRAND TOTAL	12,320.0	226.8	12,546.8	61.78%
<p>^a Off-site areas include all areas outside the Project impact boundary that would be impacted by Project activities.</p> <p>^b Vegetation type identified by Impact Sciences (2003).</p> <p>^c Wildflower fields are not specifically delineated but are expected to occur scattered throughout the grassland vegetation types.</p> <p>* Special status vegetation type.</p> <p>NOTE: A cell with “-” indicates that there is no value, while a cell with “0.0” indicates that there is a value but that it is too small to round up to one-tenth of an acre. Also, due to rounding error (a miscalculation that results from rounding off numbers to a convenient number of decimals), figures may not add exactly to total shown.</p>				

TABLE 5.7-12
PRIMARY BIOLOGICAL RESOURCES
WITHIN THE IMPACT AREAS AND THE ON-SITE AND OFF-SITE PRESERVE SYSTEM

Biological Resource	Total Impacted Acres (Including Off-Site Impact Areas)	Acres		
		Preserved (Unimpacted/ SEA) On-Site Acres	Preserved Off-Site Acres	Total On-Site and Off-Site Preserved Acres
Grasslands	6,416	1,989	12,386	14,375
Oak woodlands	6	1,292	1,810	3,102
Jurisdictional drainages and riparian habitat	32	159	291	450
Other natural areas	594	421	9,060	9,481
Total	7,048	3,861	23,547	27,408
SEA: Significant Ecological Area				

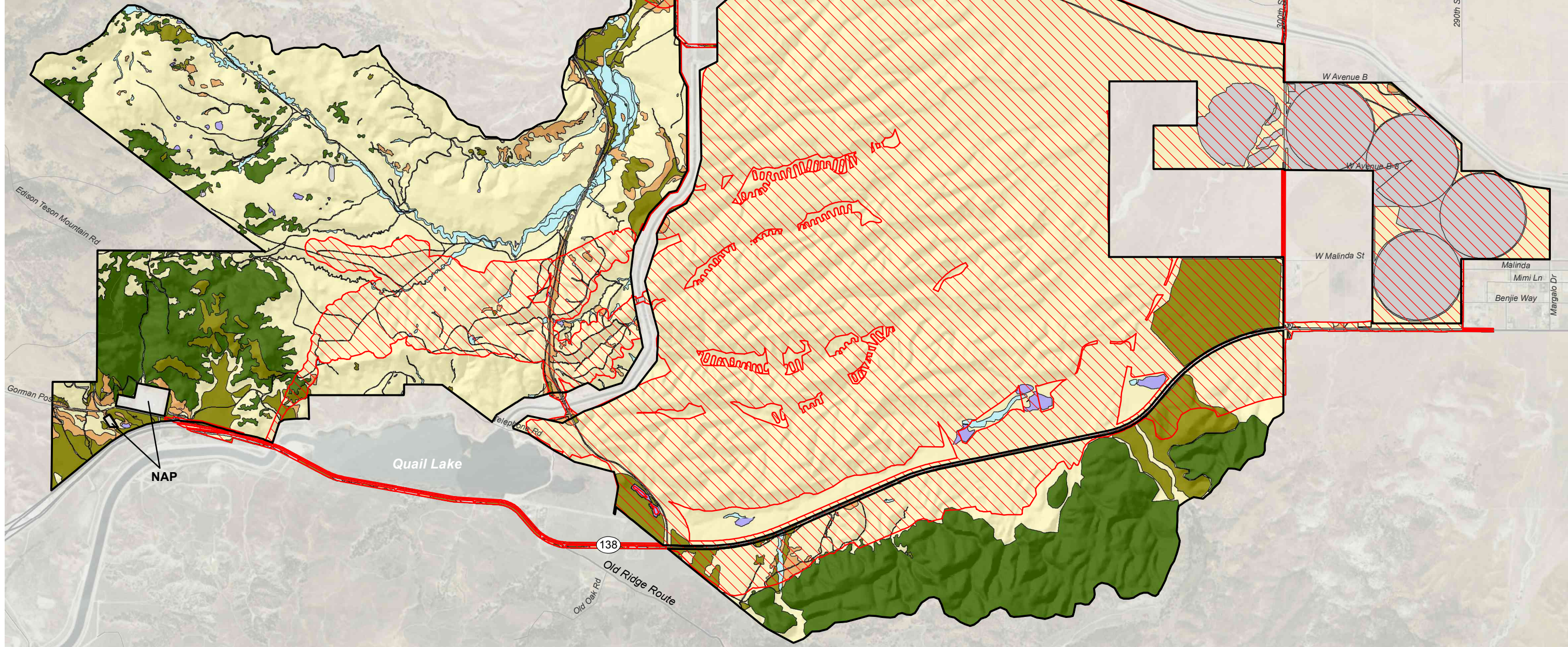
Native Perennial Grasslands and Wildflower Fields

Native perennial grasslands and wildflower fields are considered special status vegetation types (CDFG 2010) and are classified within the grass- and herb-dominated vegetation type group. Project construction would result in the loss of native perennial grasslands and wildflower fields as quantified in Table 5.7-11 (see also Exhibit 5.7-12, Vegetation Type Impacts). Note that the distribution and quantity of wildflower fields is not specifically delineated, although this community occurs in a patchy distribution throughout the grassland vegetation types on the Project site. In a preliminary study of Centennial grasslands, conducted in a high rain fall year (2003), the investigators characterized large areas of the site as an “herbaceous community” based on the wildflower blooms observed (Impact Sciences 2003).

The grass- and herb-dominated vegetation type group includes grassland areas that are considered to be a mix of native perennial grassland and California annual grassland (with associated wildflower fields). Areas of increased native cover tend to include the upper slopes and ridge tops of existing hills and ridges. Most of these grassland areas would be directly impacted by implementation of the Project. Subsequent studies indicate that the grassland includes areas where the percent cover of native grass species increases relative to non-native grasses and other species. The wildflower field component of these areas is also considered a special status vegetation type (CDFG 2010).

Grasslands on the site are dominated by non-native plants including two introduced annual grasses, foxtail chess (*Bromus madritensis*), and cheat grass (*B. tectorum*); and two introduced annual forbs, red-stemmed filaree (*Erodium cicutarium*), and broad leaf filaree (*E. botrys*). Although the percent cover on the site is dominated by these non-native plants, the species richness (number of species per unit area) on the site is overwhelmingly dominated by native species. Approximately 80 percent of the species occurring within the grasslands are native forbs, grasses, and perennials. Native species accounted for

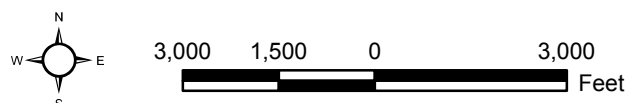
Project Boundary
 Impact Area
Vegetation Types (Grouped)
 Native Perennial - California Annual Grassland
 Mixed Chaparral or Scrub and Native Perennial - California Annual Grassland
 Scrub and Chaparral
 Broad Leafed Upland Tree Dominated
 Riparian and Bottomland Habitat
 Bog and Marsh
 Other Areas
NAP Not a Part



Vegetation Type Impacts

Centennial Project

Exhibit 5.7-12



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approximately eight percent of the total cover with native grasses alone providing approximately five percent cover in the 2006 and 2007 study years.

Native grasslands are believed to have once covered nearly a fifth of the state and have been reduced to approximately 0.1 percent of their former area (Barry 1972). Given its dramatic decline, the native grassland vegetation type is considered special status in California (CDFG 2010). Although no detailed accounts of the composition of California's pre-settlement grasslands exist, Heady (1977) and others believe that before the arrival of the earliest explorers, perennial bunchgrasses formed a rather stable climax community on well-drained upland sites and that a wide array of annual herbaceous plants (or forbs) dominated intermediate and early successional circumstances there and elsewhere. Today, native grasslands survive on shallow soils, in ruderal areas, on serpentine-based and other anomalous soils, and in other situations like those on the Project site.

Although intensive grazing can be associated with loss of native perennial grasses, less intensive grazing may inhibit non-native establishment. Most areas in California that support extensive remnant stands of native grassland plants have been grazed continuously over at least the past century, and evidence indicates that livestock grazing at intermediate stocking levels discourages and slows the invasion of weedy non-native species in these grassland areas. This evidence may explain the persistence of native grasslands on the Project site despite a history of moderate cattle grazing over most of the site. Some studies have indicated that grasslands where cattle grazing has ceased have shown an increase in the percentage of native taxa (Murphy and Ehrlich 1989); however, longer-term assessments are not available. Differences in native grass and forb response from location to location are likely due to environmental factors specific to each site, making direct comparison very difficult.

While native grasslands have declined in California, native grasslands in the Project region may be more prevalent than they are in more developed or disturbed portions of Southern California. Open space is abundant within the remainder of the Tejon Ranch property, in the nearby National Forests, and along the foothills of the Tehachapi Mountains to the northeast of the site. Within the mountainous areas, grasslands are limited to relatively small patches. Recent large-scale studies of the vegetation types in the Mojave Desert region, including the Project site, found over 59,500 acres of grassland, including 22,000 acres of native grasslands. Based on a review of aerial photos, review of California Gap Analysis Project (GAP) regional vegetation maps, and field observation from a distance, the foothills of the Tehachapi Mountains (continuing north and northeast from the site) and the valley floor (continuing east) appear to be predominantly covered by grassland vegetation not unlike the Project site. The surrounding grasslands, including approximately 30,000 acres along the southern Tehachapi slope, have a similar species composition.

Although the abundance of native perennial grasses on the Project site has been reduced over the past century, the persistence of moderate but sustainable levels of these grasses over thousands of contiguous acres is highly impressive when compared to the rest of California. From either a statewide or regional perspective, the quality and extent of native perennial grasslands on the site is excellent. Most of the remaining stands in the Southern California area are generally small (less than 100 acres) and isolated in widely scattered

areas. GAP vegetation maps indicate that grasslands are relatively abundant in the Project region and in the closely associated surrounding regions. As shown in Table 5.7-11, Impacts to Vegetation Types, the Project would impact 6,415 acres of the Native Perennial Grassland/California Annual Grassland vegetation type on site. Due to the loss of approximately 11 percent of the grasslands in general in the Mojave Desert region, the loss of thousands of acres of grassland at least potentially containing a native perennial component (a special status vegetation type) is significant. Loss of wildflower fields, considered to be a subset vegetation type within the grasslands, is similarly considered a significant impact due to their rarity and status as a special status vegetation type (CDFG 2010; Holland 1986). Implementation of MM 7-10 would reduce these impacts to less than significant levels through preservation of 14,375 acres of on-site and off-site grasslands. The proposed preservation reflects greater than a 2:1 ratio of preservation acreage to impact acreage. This ratio has been applied to all impacted grasslands (undifferentiated) although typically is only applied to native grasslands. Due to the intent and objective of preserving a mixed community similar to that which is impacted by the project, areas selected for preservation are similarly mixed. Furthermore, studies indicate a high degree of similarity between impacted grasslands and preserved grasslands assuring a sustained community throughout the region.

The grassland mitigation is based on site-specific characteristics including, for example, the existence of native grasslands in the 27,408-acre on-site (unimpacted/SEA lands) and off-site preserve areas. The availability of native grassland in the vicinity of the Project site is unique and allows for the implementation of the preferred preservation mitigation approach (existing native grasslands to be preserved), which generally results in better quality habitat with higher potential for long-term stability, rather than the implementation of creation mitigation (new native grasslands are created as mitigation), which has a higher degree of uncertainty.

Other factors considered in determining the grassland mitigation ratio include the size, scale, and biological diversity of the contiguous preserve. The preserve is designed to maximize the potential for success by creating a contiguous large open space with minimum potential for edge effects from regional development. This program is described in the Mitigation Measures section below. Specifically, the Project proposes to preserve 14,375 acres of grasslands within the 27,404 -acre on-site (unimpacted/SEA lands) and off-site mitigation preserve, which is part of a larger 240,000-acre conservation area (including dedication and acquisition areas). Regardless of the status of the acquisition areas in the future, the grassland mitigation area will remain contiguous with the larger dedicated open space areas. The contiguity of the preserve with the larger Tejon Ranch open space dedication areas ensures that the preserved grasslands are not “islands” surrounded by development but rather part of a larger, contiguous natural landscape that will be preserved in perpetuity.

Other Special Status Vegetation Types

In addition to grasslands and wildflower fields, several special status vegetation types on the Project site would be directly impacted by Project implementation, as quantified in Table 5.7-11 and detailed below (see Exhibit 5.7-12, Vegetation Type Impacts). Due to the status of these special status vegetation types as high priority and the additional protection

of oak woodlands afforded by the *California Public Resources Code* and County ordinance, the loss resulting from Project implementation is considered significant. Implementation of MM 7-11 would reduce these impacts to less than significant levels. This measure outlines a plan to preserve, enhance, and restore these community types within the mitigation preserve on and off the site (when it is not feasible on site). The details included in this plan are described in depth in the “Mitigation Measures” section below.

Broad Leafed Upland Tree-Dominated Vegetation Types

Within the broad leafed upland tree-dominated vegetation type group, Project implementation would create impacts to mixed oak woodland, a special status vegetation type. All oak woodlands found on the site are subject to Senate Bill (SB) 1334 (*California Public Resources Code* [PRC] Section 21083.4), which “provides funding for the conservation and protection of California’s oak woodlands”. This bill mandates that oak woodlands be regulated by mitigation measures that are defined in the bill itself. Additionally, the loss of individual oak trees would be subject to the CLAOTO, as further described below under Threshold 7-5, and therefore would require an Oak Tree Permit with associated conditions before the Project can be implemented.

Riparian and Bottomland Vegetation Types

Within the riparian and bottomland vegetation type group, impacts would occur to the following special status vegetation types with Project implementation: alluvial scrub, riparian herb, rush riparian grassland, southern arroyo willow riparian, southern willow scrub, unvegetated wash, willow riparian forest, and willow riparian woodland. Project impacts, such as reduced access to the unnamed drainage that runs north of SR-138, will also reduce foraging habitat available to common or non-special status species such as the mountain lion and black bear.

Bog and Marsh Vegetation Types

Within the bog and marsh vegetation type group, alkali meadow, Baltic rush, Coastal and valley freshwater marsh, and seeps and ephemeral ponds are all special status vegetation types and would be impacted by Project implementation.

Grass- and Herb-Dominated Vegetation Types

Within the grass- and herb-dominated vegetation types group, the native perennial grassland/California Annual Grassland vegetation type would be impacted by Project implementation.

Mixed Chaparral or Scrub and Grassland Vegetation Types

Within the mixed chaparral or scrub and grassland vegetation type group, special status vegetation types would be impacted by Project implementation. These include goldenbush scrub/native perennial grassland/California annual grassland; rabbitbrush scrub/native perennial grassland/California annual grassland; bush lupine scrub/native perennial grassland/ California annual grassland, California buckwheat scrub/native perennial grassland/ California annual grassland, wand buckwheat scrub/native perennial grassland/

California annual grassland, and Wright’s buckwheat scrub/native perennial grassland/
California annual grassland and yucca scrub/native perennial grassland/California annual
grassland.

Impact Summary: Impacts to all special status vegetation types, including native
perennial grasslands and wildflower fields, would be reduced to less
than significant levels with implementation of MM 7-10 and 7-11.

Threshold 7-3: **Would the project have a substantial adverse effect on federally or
state protected wetlands (including, but not limited to, marshes,
vernal pools, coastal wetlands, and drainages) or water of the
United States, as defined by Section 404 of the Clean Water Act or
California Fish & Game Code Section 1600 et. seq. through direct
removal, filling, hydrological interruption, or other means?**

On-Site Impacts

A determination of direct impacts resulting from Project implementation to USACE, CDFW,
and RWQCB jurisdictional drainage features was conducted by overlaying development and
grading plans on the jurisdictional delineation map (Impact Sciences 2002b, 2003; GLA
2009b; BonTerra Psomas 2015a). Table 5.7-13, Impacts to Jurisdictional Wetlands and
Waters, below provides a summary of these direct impacts.

**TABLE 5.7-13
IMPACTS TO JURISDICTIONAL WETLANDS AND WATERS**

Agency with Jurisdiction		On Site (acres)		Off Site (acres)	No Impacts (acres)	Total Project (acres)
		Permanent Impacts	Temporary Impacts	Permanent Impacts		
USACE ^a	Acres	0.04	0.0	0.01	1.7	1.8
	Linear feet	340	0	23	21,556	21,919
CDFW	Acres	48.7	8.0	0.3	108.6	165.6
	Linear feet	201,738	23,538	2,273	325,785	553,334
RWQCB ^b	Acres	47.6	7.9	0.3	93.4	149.1
	Linear feet	201,738	23,538	2,273	325,785	553,334

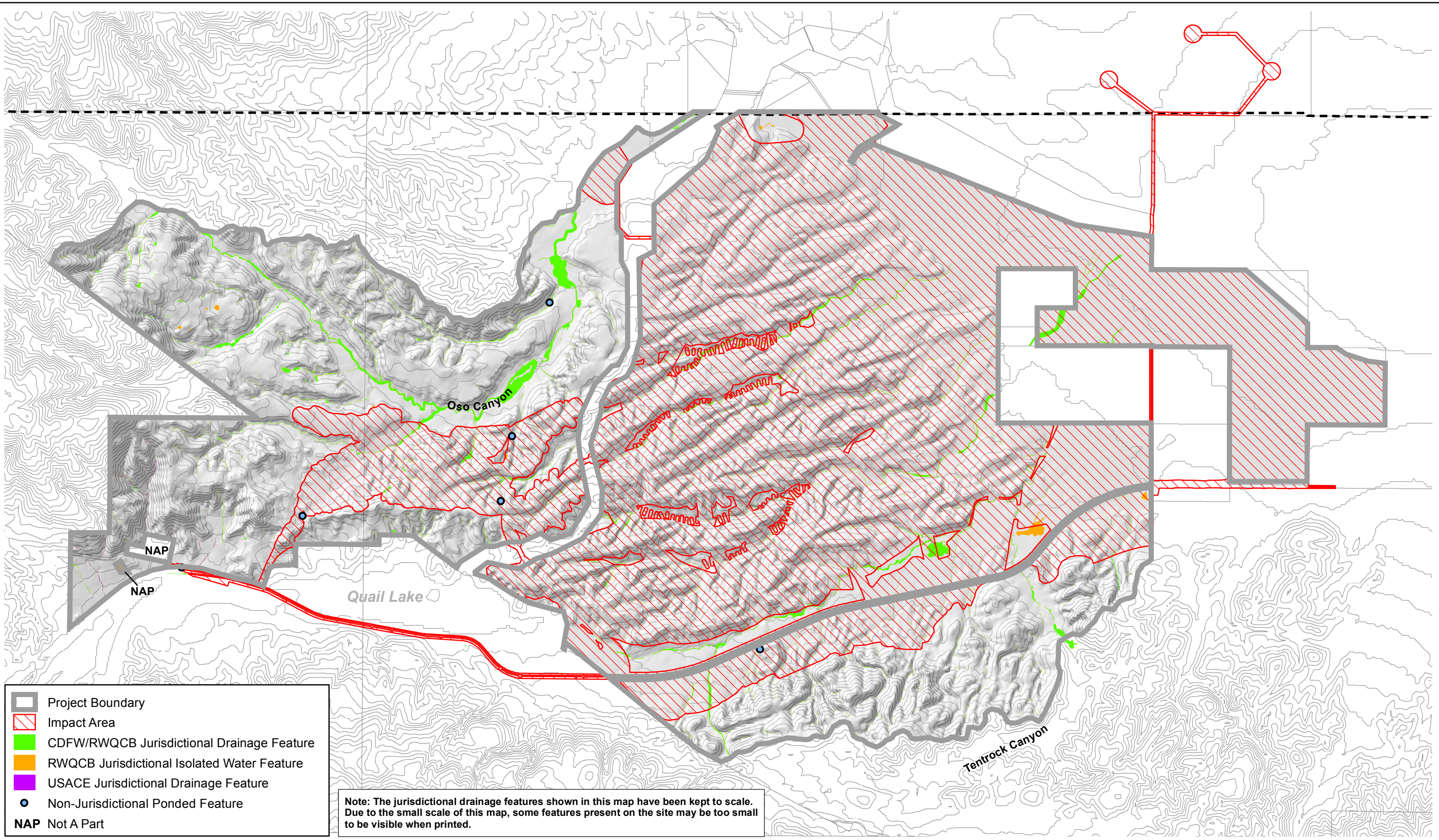
USACE: U.S. Army Corps of Engineers; CDFW: California Department of Fish and Wildlife; RWQCB: Regional Water Quality Control Board

^a All of the USACE acreage consists of non-wetland waters.

Source: BonTerra Psomas 2015a.

As shown in the table above and illustrated on Exhibit 5.7-13, Jurisdictional Drainage Feature
Impacts, impacts to USACE-regulated “waters of the U.S.” total 0.04 acre. The vast majority
of streambed features on the Project site drain toward the Mojave Desert and are not “waters

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	Project Boundary
	Impact Area
	CDFW/RWQCB Jurisdictional Drainage Feature
	RWQCB Jurisdictional Isolated Water Feature
	USACE Jurisdictional Drainage Feature
	Non-Jurisdictional Ponded Feature
NAP	Not A Part

Note: The jurisdictional drainage features shown in this map have been kept to scale. Due to the small scale of this map, some features present on the site may be too small to be visible when printed.

Jurisdictional Drainage Feature Impacts

Centennial Project



of the U.S.” because there is no significant nexus to a Traditional Navigable Water. The USACE issued an Approved Jurisdictional Determination (AJD) on December 1, 2009, confirming that 1.745 acres of “waters of the U.S.” occur on the Project site and another 0.009 acre occurs off site along the southern edge of Quail Lake. As described in the AJD, impacts to “waters of the U.S.” are as follows:

- **On-Site Permanent Impacts:** 0.04 acre (all non-wetland waters)
- **Off-Site Permanent Impacts:** 0.01 acre (all non-wetland waters)

Impacts to CDFW-regulated streambeds and riparian areas total 57.0 acres (48.7 acres of on-site permanent impacts; 8.0 acres of on-site temporary impacts; and 0.3 acre of off-site permanent impacts) (BonTerra Psomas 2015a). These impacts are further broken down as follows:

- **On-Site Permanent Impacts:** 48.7 acres (13.1 acres of riparian habitat and 35.6 acres of unvegetated streambeds)
- **On-Site Temporary Impacts:** 8.0 acres (3.7 acres of riparian habitat and 4.3 acres of unvegetated streambeds)
- **Off-Site Permanent Impacts:** 0.3 acre (0.03 acre of riparian habitat and 0.3 acre of unvegetated streambeds)

Impacts to RWQCB-regulated waters total 55.8 acres (47.6 acres of on-site permanent impacts; 7.9 acres of on-site temporary impacts; and 0.3 acre of off-site permanent impacts) (BonTerra Psomas 2015a). These impacts are further broken down as follows:

- **On-Site Permanent Impacts:** 47.6 acres (36.6 acres of non-wetland waters and 11.0 acres of wetlands)
- **On-Site Temporary Impacts:** 7.9 acres (4.2 acres of non-wetland waters and 3.7 acres of wetlands)
- **Off-Site Permanent Impacts:** 0.3 acre (all non-wetland waters)

Additionally, the following vegetation types are associated with the drainages on the site and fall under the jurisdiction of the CDFW: riparian herb; rush riparian grassland; southern arroyo willow riparian; southern cottonwood willow woodland; southern willow scrub; unvegetated wash; valley oak riparian woodland; willow riparian forest; willow riparian woodland; alkali meadow; Baltic rush; and coastal and valley freshwater marsh.

Impacts to the drainages, wetlands, and riparian vegetation on the Project site are considered significant due to their protected status. A less than significant impact would be achieved through implementation of MM 7-12, which includes preservation, enhancement, and creation of jurisdictional wetland and water features to maintain the overall pre-Project functional values in the Mitigation Preserve. This MM would result in a “no net loss” of functional values of jurisdictional resources, as determined by a functional assessment of existing and proposed restoration activities. Additionally, in accordance with PDF 7-6, if a

golf course is developed in an area with jurisdictional features on the site, it would be built in accordance with the Audubon Cooperative Sanctuary Program for Golf Courses, a cooperative effort between the United States Golf Association and Audubon International designed to promote ecologically sound land management and conservation of natural resources.

Impact Summary: Project implementation will result in impacts to the jurisdictional drainages, wetlands, and riparian vegetation in the Project site. Implementation of PDF 7-6, and MM 7-12 would reduce these impacts to less than significant levels by managing biological resources in any golf courses; by replacing all lost functional values; by obtaining appropriate regulatory agency permits and/or agreements; and by complying with the mitigation measures stipulated in those permits/agreements.

Threshold 7-4: **Would the project interfere substantially with the movement of any native or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?**

On-Site Impacts

Direct Impacts

Wildlife movement corridors are identified at two spatial scales: regional and local (or home range level). At the regional level, landscape linkages, typically kilometers or more in breadth, connect large, otherwise disjunct open space areas (such as parklands, forests, preserves, and wilderness). At the local or home range level, movement corridors of substantially lesser breadth typically occur as linear habitat features (e.g., drainages and ridgetops) facilitating movement of individual animals across their home ranges or territories. For short-ranging species (e.g., insects, rodents, and reptiles), these corridors may connect subpopulations and promote some genetic diversity. The impact of Project implementation at each of these scales is addressed below.

Regional Movement

From an impact assessment perspective, the statement “interfere substantially with the movement of any native resident or migratory fish or wildlife species”, from the Significance Threshold, refers to blockages, barriers, or other substantial impediments to animal dispersal between large, regional open space areas. Subsequent barriers have consequences to wildlife persistence where they reduce genetic diversity, limit range extensions, inhibit colonization of new areas, and interfere with maintenance of ecological processes and functions. As stated in the wildlife movement discussion, camera and tracking studies to show regional wildlife linkages were conducted off site (with the nearest location approximately one mile to the west of the Project site). Such studies were not warranted and not conducted on the Project site because they would not have contributed to the regional wildlife linkage analysis. The area of the site that provides the greatest cover and is nearest to the regional wildlife corridor, located on the western edge of the Project site, is largely

included in permanent open space and is not grassland. However, linkages still remain important among populations for maintaining genetic diversity that promotes long-term species viability, even for those species that have individuals spending their lives in a restricted amount of habitat.

Although large areas of open space occur in and adjacent to the vicinity of the Project site, the California Aqueduct and I-5 substantially limit the site's ability to contribute to regional wildlife movement. In particular, as shown in Exhibit 5.7-6, Regional Wildlife Movement, the Aqueduct presents a barrier to the regional movement of wildlife to and from the site in the east-west and north-south directions. The Aqueduct's West Branch extends north to south through the center of the Project site to Quail Lake and is a barrier to east-west movement across the site. The East Branch runs close to the northern boundary of the site and is a barrier to north-south movement in that area. Underpasses and culverts located on I-5, north of its intersection with SR-138, do facilitate east-west movement of some species across this freeway (Pioneer Environmental Services 2004). Wildlife access to these would not be hindered by the Project.

As previously stated, possible impacts on wildlife corridors from development must be evaluated with respect to blockages or barriers to movement in a regional context (i.e., the animal's ability to move between existing large, regional open space areas) (Beier 2003). Project development is not expected to interfere with a majority of regional wildlife movement (1) based on the findings of independent studies that the Project site is largely outside the regional wildlife movement corridor; (2) since the site's feasibility to be utilized as part of a regional wildlife corridor between the Tehachapi Mountains (to the north) and the Angeles National Forest (to the south and west) is limited by the Aqueduct and I-5; and (3) because the majority of the site is open grassland and does not support the forest and shrub cover that many larger, wide-ranging species tend to use during movement episodes. The most likely north-south passage across or in the vicinity of the Project site (on the western edge of the site and adjacent areas) would be retained as open space.

Although the Project includes a new road along its western edge (Cement Plant Road), the road's use would be limited to infrequent daytime truck traffic to and from the Cement Plant, functioning the same as the existing Cement Plant Road to the east. Nighttime use will be prohibited except for emergency. This new Cement Plant Road would connect to SR-138 via a Gorman Post Road extension, and a new intersection in this area will be avoided.

Similar findings resulted from a review of representative species likely to occur on site and within similar vegetation and terrain conditions around the Antelope Valley (i.e. foothill grass/scrublands). While these conditions are expansive on the southern slopes of the Tehachapi Mountains, they are comparatively much more limited on the north side of the Liebre Mountains on the south side of the western Antelope Valley. Although the south side of the western Antelope Valley has incurred more human disturbance than the north side, the limited of foothill grass/scrubland is more of a result of topography. The north side of the Liebre Mountains drop in elevation quickly and die into the valley floor creating minimal low elevation foothills. Analysis of species preferred habitats and known current distribution in the Project region indicate that most are expected to utilize a variety of grass and scrub vegetation types which occur scattered throughout the region. As a result, there is no

indication that development of the site would restrict genetic exchange of species occurring in foothills on the north and south sides of the Antelope Valley.

Development of the Project site will result in some losses of areas that may be used for foraging and/or breeding for these species. Pathways to or from foraging or breeding grounds on the Project site, such as along ridge-lines or canyon bottoms, may become “dead ends” to through dispersal. However, these sorts of impacts are not expected to destabilize the regional population dynamics of these species, especially given the substantial amount of similar terrain in the northwestern Antelope Valley area. Multi-generational gene flow among wildlife populations in the region is expected to be sustained in the open spaces on and off the site that will remain following Project implementation. The direct impacts of Project development, therefore, are considered less than significant.

Local Movement

The open space areas proposed for development on the Project site provide breeding and foraging habitat for a variety of invertebrates, amphibians, reptiles, birds (including raptors and passerines), mammals, and connective breeding areas for plants. Accordingly, open spaces on the Project site also facilitate the local movement of wildlife and dispersal and gene flow between populations of small organisms (particularly insects, amphibians, reptiles, small mammals). Following Project implementation, select local populations of certain wildlife species could become isolated from one another (such as those in the internal open space patches east of the Aqueduct and in the southwestern portion of the site) and genetic exchange between local populations might be reduced. In addition, although the four identified potential wildlife crossings of the West Branch would remain intact, the feasibility of their use as such would become further reduced with Project buildout. This reduction would result from increased barriers to access as well substantial increases in truck traffic at the SR-138 crossing due to the realignment of Cement Plant Road to intersect with SR-138 immediately adjacent to the potential local wildlife crossing point at the SR-138 (Location 4 on Exhibit 5.7-6). However, new dispersal impediments would only affect portions of populations of small organisms that are not considered to be of conservation concern, and these impediments are not expected to substantially affect the likelihood of the regional population persistence of those species. Impacts on local wildlife dispersal are considered to be less than significant. Although impacts on local wildlife movement are considered less than significant and no mitigation is required, MM 7-14 is proposed to reduce impacts on local wildlife movement and to provide for habitat connectivity in the Quail Lake area.

Indirect Impacts

Dispersal events by some species, such as mountain lion, may be rare, but are nonetheless important in facilitating ecological interactions and for retaining genetic diversity among regional populations. The Project’s indirect impacts may accumulate in the long term and may affect dispersal events by individuals of some species, resulting in reduced genetic diversity. Genetic diversity is important to organisms by allowing for greater potential to adapt to changing environmental conditions. Indirect impacts include, but are not limited to nighttime light and glare, non-native plant species, exotic and pest wildlife, pathogens and pests associated with landscaping, increased human presence, and noise, as described below.

Nighttime Light and Glare

Development of the Project would substantially increase the number of nighttime light and glare sources on the site. Currently, these levels are low to non-existent; however, open spaces at higher elevations near the Project site's southern boundaries serve as a natural barrier to effects from increased lighting in landscaped areas south of the Project boundaries by reducing the amount of light that reaches open space areas. Impacts could result from light entering other open space portions of the Project site or adjacent open space off the site. Nighttime illumination is known to impact many species of animals in natural areas by disturbing movement, resting, and foraging behavior. It can potentially alter breeding cycles and nesting behavior; hence, where such light is near remaining open space areas, it could adversely impact the behavior of wildlife species that occur in these areas by disrupting wildlife movement or breeding and foraging on the Project site and adjacent open space areas.

Implementation of MM 13-2 and 13-6 from Section 5.13, Visual Resources, which requires the Project Applicant to develop a Lighting Plan to reduce potential impacts to biological resources caused by light and glare, would reduce the level of the impact. The Lighting Plan, also referred to as the Dark Sky Plan, shall be consistent with County lighting standards and shall provide guidelines for outdoor lighting that will be used throughout the Project site. Final lighting orientation and design shall be approved by the County of Los Angeles Department of Building and Safety. This measure will reduce the impact of light and glare to a level considered less than significant.

Non-Native Plant Species

After Project completion, certain non-native plant species that are more adapted to urban environments are likely to increase in population and may locally displace native species because of their ability to more effectively compete for resources. Certain non-native plant species are adapted to a wide variety of growing conditions and may out-compete native plant populations for available nutrients, prime growing locations, and other resources. Because some non-native plants reproduce so quickly, they can replace many native plant populations. This eventually results in lower species diversity; loss of areas suitable for breeding and/or nesting by common and special status wildlife species; changes to the riparian ecosystem; and overall reductions in habitat values. Such impacts may result in reduced viability of wildlife movement corridors in adjacent open space areas. In order to reduce these impacts, PDF 7-8 and MM 7-15 shall be implemented. These measures include the development of a Landscaping Plan (subject to County review) and will identify both a plant palette composed of non-invasive species and a list of invasive plant species prohibited from being planted on the Project site. In addition, the measures require pressurized rinsing of vehicles entering open space preservation areas. These efforts are expected to minimize invasive species impacts of the Project and reduce the level of the impact to less than significant.

Exotic and Pest Wildlife

Urban development also tends to attract wildlife species that are better adapted to urban settings; these include house sparrows (*Passer domesticus*), European starlings (*Sturnus vulgaris*), rock pigeons (*Columba livia*), brown-headed cowbirds, American crows (*Corvus brachyrhynchos*), ravens (*Corvus corax*), striped skunks, Virginia opossum (*Didelphis virginiana*), red foxes (*Vulpes vulpes*), raccoons, and Norway rats (*Rattus norvegicus*). Most native species are less adapted to urban development; their populations tend to decrease or be eliminated entirely in the vicinity of residential or recreational developments. In addition, local increases in meso-predators (e.g., skunk, opossum, fox) can adversely impact native rodent and bird populations. Developed areas also attract non-native Argentine ants, which respond to high soil moisture in horticultural circumstances. These ants have the potential to impact native ant populations, which serve as pollinators and seed dispersers for many native plant species. Additionally, the reduction of native ant populations due to the introduction of Argentine ants could adversely affect various wildlife species such as the coast horned lizard (a species of special concern), which depends on native ants as a food source and which does not eat the exotic Argentine ants. Such impacts may result in reduced viability of wildlife movement corridors in adjacent open space areas. Implementation of MM 7-16 through MM 7-18 would reduce these impacts. These measures require installation of waste and recycling receptacles that discourage foraging by wildlife species; inspection of all landscaping materials to ensure that they are free of Argentine ants prior to planting; and distribution of educational pamphlets to future Project residents regarding the importance of not feeding wildlife. Additionally, in order to mitigate for potential oak (*Quercus* spp.) pests being brought in on firewood, the Homeowners Association rules shall ban the use of wood burning devices. No wood burning fireplaces or stoves shall be installed, and wood burning is banned from outdoor fire pits and outdoor freestanding fireplaces (see MM 11-3 from Section 5.11, Air Quality). Implementation of these measures and Homeowners Association rules would reduce the impact to a level considered less than significant.

Pathogens and Pests Associated with Landscaping

Landscaping and restoration efforts can introduce pathogens and pests into an ecosystem. Common pathogens that cause plant diseases (e.g., root and crown diseases) include microorganisms such as bacteria, fungi, and viruses. Pathogens are spread in numerous ways, such as splashing water, wind, insects, irrigation runoff, contaminated seeds, infected transplanted material, infected soil and debris on boots and shoes, and contaminated tools and equipment. Additionally, invertebrate pests such as non-native ants (as discussed above), nematodes, scales, aphids, whiteflies, and mites can be introduced on the foliage of plant material, or in infested soil. Pathogens and pests can spread into, and cause die-off, of ornamental areas, native habitat, and restored areas if conditions favorable to the pathogen or pest persist, and to a greater degree if host plants are stressed or damaged. Pathogens and pest infestations could potentially impact native habitat and/or restored habitat, and native and/or restored special status plant species on or adjacent to the Project site. Such impacts could potentially lead to habitat degradation or reduced numbers of special status plant species. These impacts would be considered potentially significant. Implementation of MM 7-17 requiring inspections of all landscaping material for Argentine ant infestations and MM 7-19 requiring various nursery and field protocols to reduce the potential for the

introduction of pathogens and pests into the Project site and for spreading outside the Project site would reduce these impacts to less than significant.

Increased Human Presence

To date, human activities have been largely limited on the Project site. An added resident human population would likely cause increased disturbances and degradation of conserved areas within and adjacent to developed areas. Additionally, there would be increased use of Quail Lake. Increased recreational and other human activities along proposed trails and in open space areas would likely result in increased noise disturbances to wildlife (especially within the breeding season of birds) which can, in turn, result in nest abandonment and cessation of local breeding activity. In addition, human habitation increases the harassment and/or capture of slower moving species, such as some reptiles and amphibians; increases the displacement of wildlife species; increases amounts of refuse and pollutants in the area; and causes soil compaction and trampling of ground-dwelling plants and wildlife.

Increased use of open space and natural areas by Centennial residents would also result in a corresponding increase in domestic animals. Dogs can disturb nesting or roosting sites and disrupt the normal foraging activities of wildlife in adjacent habitat areas. Such activity over a long time period results in long-term effects on the behavior of both common and special status wildlife and would likely result in their extirpation from the area. Feral cats and house cats cause substantial damage to the species composition of natural areas, including populations of special status species, through predation. Over time, the effects of these indirect impacts would reach further into open space, reducing habitat quality, and may result in reduced wildlife movement through the area.

Implementation of MM 7-18 is expected to reduce these impacts. This mitigation measure involves implementation (by the Project Applicant) of a public awareness program (prior to the first occupancy permit and ongoing throughout development) in an effort to restrict public access to the riparian and open space areas to designated trails and to prevent unleashed domestic animals from entering these areas. This program will also include signs that identify the boundaries of ecologically sensitive areas; the use of temporary fencing around sensitive areas; and the promotion of public education and awareness of such areas. In addition, only passive recreational activities shall be permitted in designated natural open space areas. All dogs shall be required to be leashed while in the designated natural open space areas. As required by the Los Angeles County Code (Section 10.20.350), all residents of unincorporated areas in Los Angeles County must have their dogs and cats neutered or spayed; dogs must have an identification microchip implanted; and evidence of this shall be shown to Management prior to entry into the Project. Implementation of these measures would reduce the impact to a level considered less than significant.

Noise

Noise levels on the Project site will increase substantially above present levels during Project construction. During construction, temporary noise impacts could disrupt the foraging, nesting, roosting, and denning activities for a variety of wildlife species such as birds and medium to large mammals. These impacts are considered adverse and significant because the Project will impact a large landscape area. Nesting raptors will potentially incur

temporary impacts from construction noise if present in the Project vicinity and could be temporarily displaced. The effects of increased noise levels have been well documented for many types of animals and can be responsible for reduced bird nesting success. Although no specific noise thresholds have been established for wildlife on the Project site, substantial noise-level increases can be expected relative to the amount of construction.

Noise will likely also increase after construction; therefore, open spaces and wildlife remaining within and immediately surrounding the Project site would likely be subject to increased disturbance. Wildlife stressed by noise may be displaced and may alter wildlife movement patterns. In an effort to minimize operational noise impacts, the Conceptual Land Use Plan (see Exhibit 4-1) has been designed to maximize the distance between areas of high noise and preserved open space. Higher density housing and higher volume traffic roadways are near the center of developed areas, while the lower density housing and lower traffic roadways occur at the edge of the Project near open space areas. In addition, industrial and business park land uses are located adjacent to the roadway with the highest noise level (SR-138). As a result, potential wildlife impacts due to potential Project related noise are reduced to a level considered less than significant.

Indirect Impacts Conclusion

Project implementation may have substantial indirect impacts on wildlife movement adjacent to the site. Although some wildlife movement in adjacent areas may be disrupted, areas further north and northwest in the Tehachapi Mountains would not likely be impacted. Information presented in the Wildlife Movement discussion clearly identifies the foothills and highlands of the Tehachapi Mountains as the regional linkage zone, and the core area of this linkage zone is several miles to the northwest of the Project site. As a result, the Project's indirect impacts are not expected to reach the primary regional linkage area, and regional connectivity is expected to be minimally impacted. The Project would not cause any regional populations of plants or animals in adjacent regions to become isolated. The Project's indirect impacts on wildlife movement are therefore considered to be less than significant. Please note that the evaluation of cumulative impacts on wildlife movement is provided in Section 7.0, Cumulative Impacts, of this document and results in a separate conclusion.

Off-Site Impacts

Development of off-site Project features is expected to result in isolated and mostly temporary impacts with very few permanent impacts. Due to the small scale of those features with aboveground components (e.g., wells, bridges, and utility lines), both individually and collectively, and the widely spaced geographic distribution of these features, impacts on wildlife movement due to the presence of these features, alone, are expected to be temporary and minor. Impacts of off-site Project features are not expected to affect movement of regional or local populations and are not expected to be substantially adverse.

Impact Summary: Project implementation would result in potentially significant impacts on wildlife movement. These impacts are addressed in PDF 7-7 and PDF 7-8, and are further minimized with implementation of MMs 7-13 through 7-19, which incorporate planning and construction methods to

reduce potential indirect impacts such as developing a Lighting Plan and Landscaping Plan and to create public awareness concerning multiple urban interface issues. With implementation of the identified SCs and MMs, impacts to wildlife movement would be less than significant.

Threshold 7-5 **Would the project convert oak woodlands (as defined by the state, oak woodlands are oak stands with greater than 10% canopy cover with oaks at least 5 inch in diameter measured at 4.5 feet above mean natural grade) or otherwise contain oak or other unique native trees (junipers, Joshuas, southern California black walnut, etc.)?**

Threshold 7-6 **Would the project conflict with any local policies or ordinances protecting biological resources, including Wildflower Reserve Areas (L.A. County Code, Title 12, Ch. 12.36), the Los Angeles County Oak Tree Ordinance (L.A. County Code, Title 22, Ch. 22.56, Part 16), the Significant Ecological Areas (SEAs) (L.A. County Code, Title 22, Section 22.56.215), and Sensitive Environmental Resource Areas (SERAs) (L.A. County Code, Title 22, Ch. 22.44, Part 6)?**

The analysis of oak tree impacts, as well as related mitigation measures and PDFs, are generally consistent with the OWCMP, because they consider the ecological function of the woodland habitat and examine functions at several spatial levels.

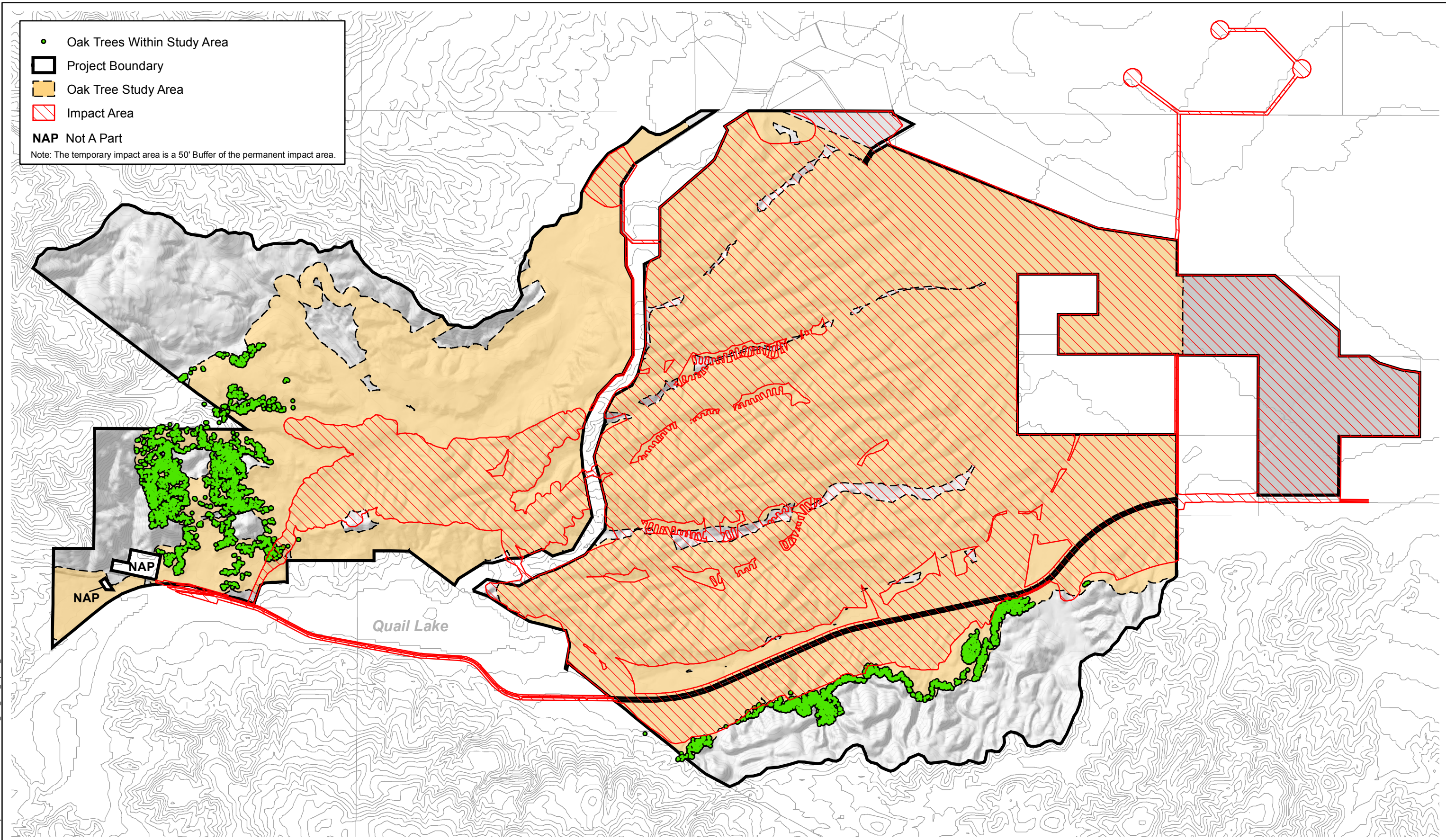
On-Site Impacts

Oak Trees

The County of Los Angeles Oak Tree Ordinance (CLAOTO) protects oak trees in unincorporated areas of Los Angeles County that are 25 inches or more in circumference (8 inches in diameter) as measured 4.5 feet above mean natural grade; in the case of oaks with more than 1 trunk, the ordinance protects those trees with a combined circumference of any 2 trunks of at least 38 inches (12 inches in diameter), as measured 4.5 feet above mean natural grade (LACDRP 1988). A "Heritage Oak", as defined by CLAOTO, is any oak tree that: (1) measures 36 inches or more in diameter, as measured 4.5 feet above the natural grade or (2) any oak less than 36 inches in diameter having a significant historical or cultural importance to the community. CLAOTO requires that all potential impacts to oak trees be preceded by an application to the County that includes a detailed Oak Tree Report, and that requires mitigation for impacts to oak trees (which may include the replacement of oak trees at a ratio of at least two to one [2:1]; this ratio may be greater if required as a condition in the County-issued Oak Tree Permit) (LACDRP 1988).

The Project site contains an estimated 181,070 oak trees of all sizes; of these, an estimated 33,861 oaks under the jurisdiction of CLAOTO are present on the site; an estimated 91 regulated oaks would be directly impacted by the Project (see Exhibit 5.7-14, Oak Tree Impacts) (Tree Life Concern 2008, 2003; BonTerra Consulting 2009a). Of the oaks to be

- Oak Trees Within Study Area
 - Project Boundary
 - Oak Tree Study Area
 - Impact Area
 - NAP** Not A Part
- Note: The temporary impact area is a 50' Buffer of the permanent impact area.



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Oak Tree Impacts

Centennial Project

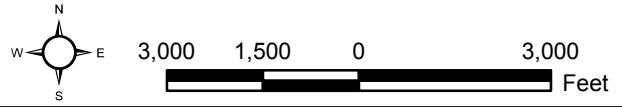


Exhibit 5.7-14

impacted, 7 qualify as “heritage” oaks. As shown in Exhibit 5.7-14, oak impacts are generally limited to two areas. The first area is located north of SR-138, directly west of Quail Lake, and occurs in Mixed Oak Woodland. The second area occurs south of the SR-138 and in the western portion of the Project site, also in Mixed Oak Woodland. As listed in Table 5.7-6 of the Special Status Biological Resources Section, areas north and south of the SR-138 have different oak tree densities with areas north of SR-138 being less dense than areas south of SR-138. Species impacted north of the SR-138 include blue and valley oaks and in the south blue oak and hybrid oaks. Any oak tree removals would be subject to a mitigation plan, which would be reviewed subject to County approval. These oak tree impacts are considered significant; therefore, implementation of PDF 7-4, 7-5, and MM 7-11, MM 7-20, and MM 7-21 are recommended in order to reduce adverse impacts to a less than significant level by reducing impacts and by creating, enhancing, and/or restoring oak habitats. For potential restoration areas refer to Exhibit 5.7-16, Oak Tree/Oak Woodland Restoration/Creation Areas, presented in MM 7-11 further below.

Significant Ecological Areas⁶

The San Andreas Significant Ecological Area (No. 17) incorporates two former SEAs in the Project region; those resources, which were previously within SEAs 58 and 59 continue as designated resources within SEA 17. The SEA would remain intact, and the Project would not result in any fragmentation of this area (see Exhibit 5.7-15, Significant Ecological Areas). Approximately 3,865 acres of on-site lands are located within the boundaries of SEA 17 and would be preserved as potential on-site mitigation lands. As such, MM 7-22 is included to ensure that fuel modification zones are contained within the current Project impact boundary and would not intrude into the adjacent SEA 17.

Off-Site Impacts

Oak Trees

No oak trees would be impacted as a result of development of the off-site Project features; therefore no additional oak tree impacts are expected to occur.

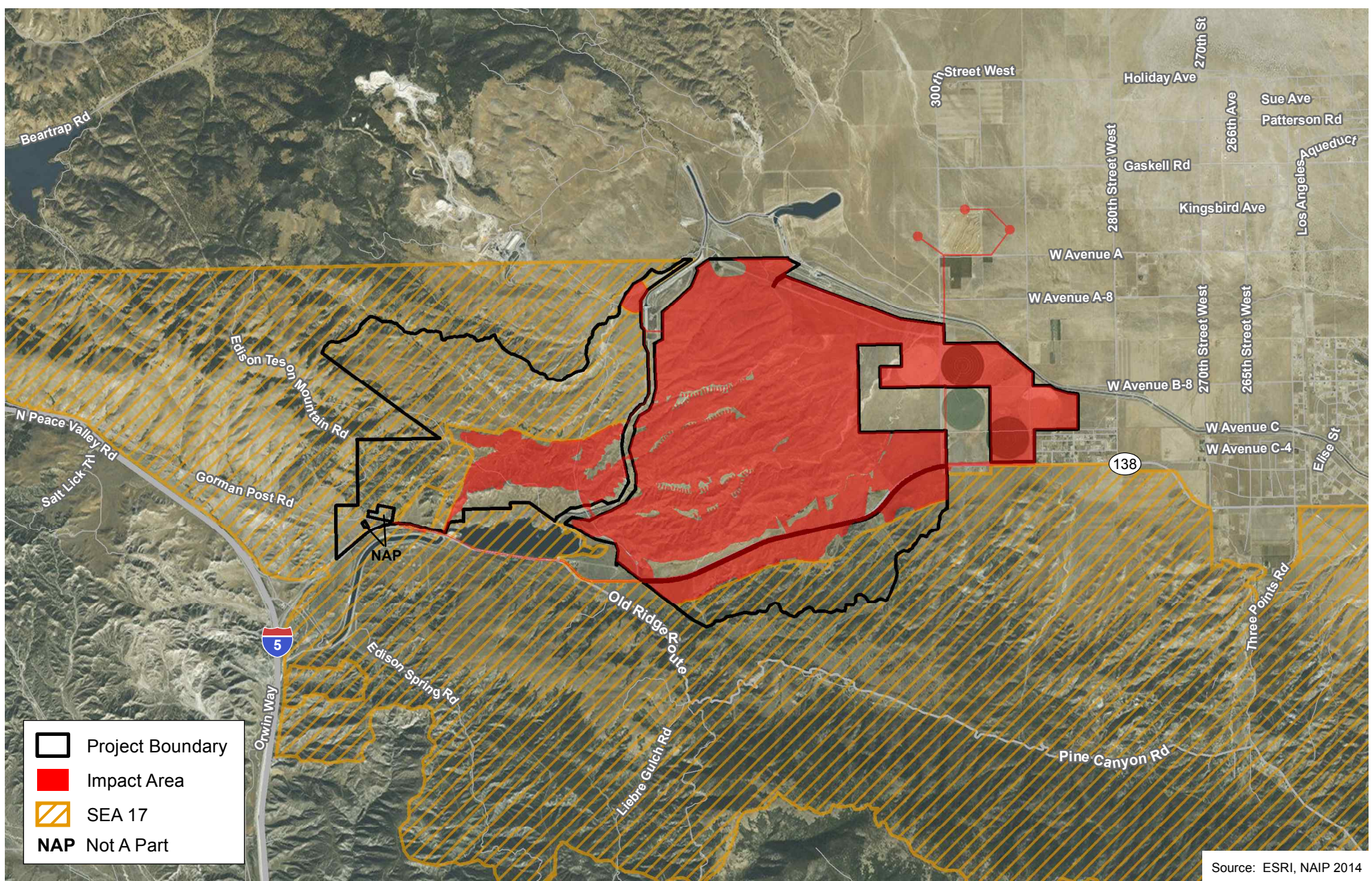
Significant Ecological Areas

None of the proposed off-site Project features, including intersections with SR-138, utility connections, water wells, or the California Aqueduct crossings, would impact the designated SEA boundaries; therefore no SEA impacts would occur.

Impact Summary: Impacts on oak tree resources as a result of Project implementation are considered significant. Implementation of PDF 7-5, 7-5, MM 7-11, MM 7-20, and MM 7-21 would reduce adverse impacts to oak trees to a less than significant level by performing additional oak surveys and by creating, enhancing, and/or restoring oak habitats.

⁶ There is a proposed change to the SEA boundaries within the Draft Los Angeles General Plan Update, which is discussed in Section 5.8.2, Land Use, Entitlements, and Planning; Relevant Plans and Policies, and Regulations.

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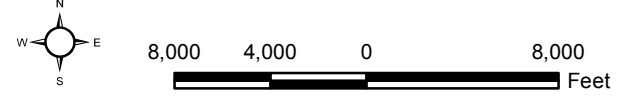


Source: ESRI, NAIP 2014

Significant Ecological Areas

Exhibit 5.7-15

Centennial Project



Threshold 7-7 Would the project conflict with the provisions of an adopted state, regional, or local habitat conservation plan?

On-Site Impacts

As discussed previously, the Tejon Ranch Company has received a permit pursuant to Section 10(a)(1)(B) of FESA (16 USC Sections 1531–1544) for incidental take of the Covered Species and to meet the requirements for this permit, has developed a multiple species habitat conservation plan (MSHCP). This MSHCP was approved in April 2013.

The TU MSHCP's Covered Lands propose to encompass 141,886 acres of the 270,365-acre Ranch. The TU MSHCP focuses on the California condor and other species of the montane upland communities. The communities on the Centennial Project site, which is primarily in a valley area, do not fit into the same criteria for coverage. Regardless, many of the same species occur in the foothills and lowland areas, including on the Centennial site. These species will mutually benefit from the MSHCP and the Centennial Mitigation Preserve Program.

There are no other approved or proposed habitat conservation plans near the site or that cover the Project site. There would, therefore, be no conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or State habitat conservation plan.

Off-Site Impacts

There are no other approved or proposed habitat conservation plans near the site or that cover the Project site. There would, therefore, be no conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or State habitat conservation plan.

Impact Summary: There would be no impact due to habitat conservation plans (HCPs) or natural community conservation plans (NCCPs) as there are no active HCPs or NCCPs for the Project site. The Project site is outside the TU MSHCP boundaries, therefore impacts are not expected to occur.

5.7.7 MITIGATION MEASURES

MM 7-1 Prior to issuance of grading permits in areas of the Project site that may disturb California androsace, crownscale, round-leaved filaree, Mojave spineflower, sylvan scorzonella, or adobe yampah populations, focused surveys of mitigation lands shall have been completed to confirm compliance with the 2:1 mitigation ratio for the California androsace, crownscale, round-leaved filaree, Mojave spineflower, sylvan scorzonella, and adobe yampah. Surveys will be conducted in accordance with current California Native Plant Society (CNPS) protocol and will occur during the appropriate time of year. The Survey Report shall be submitted to the County and the California Department of Fish and Wildlife (CDFW) for their review. In addition to rare

plant species populations that have previously been found in the Mitigation Preserve, newly detected populations will be preserved and managed for long-term preservation. These populations will provide baseline information for management efforts described below and will provide information to help determine habitat suitability in areas where propagation of rare plants may be considered.

The Project Applicant shall prepare and implement a Special Status Plant Species Restoration Plan covering the California androsace, crownscale, round-leaved filaree, Mojave spineflower, sylvan scorzonella, and adobe yampah that shall specify the following: (1) procedures for the collection and temporary storage of seed (all available seed from every impacted occurrence shall be collected); (2) planting procedures, including soil preparation and irrigation; (3) a schedule and action plan to maintain and monitor enhanced, restored, and/or created populations; (4) methods to control plant densities (of competing plants) to promote the establishment of California androsace, crownscale, round-leaved filaree, Mojave spineflower, sylvan scorzonella, and adobe yampah; and (5) a list of County-approved success criteria (e.g., germination rates, growth, plant cover) to compare to the density of existing populations. The Project Applicant shall develop the Special Status Plant Species Restoration Plan and the County shall approve it prior to any vegetation clearing or grading on the site. Adoption of this plan shall be used as the performance standard. An overview of the plan objectives is provided in the Biological Resource Mitigation Program to be submitted and approved by the County prior to issuance of grading permits.

Prior to the commencement of vegetation clearing and/or grading activities, the Project Applicant shall contract a qualified firm to harvest California androsace, crownscale, round-leaved filaree, Mojave spineflower, sylvan scorzonella, and adobe yampah seeds from the impacted populations on the Project site. The seeds shall be collected in the manner and time described in the Special Status Plant Species Restoration Plan. The harvested seed shall be used for the enhancement, restoration, or creation of these species' populations to be preserved in open space areas on the Project site. Additionally, prior to implementation of the Plan, a focused survey for the special status species impacted (listed above) shall occur in the preserve areas to document existing populations.

The previously documented populations of California androsace, round-leaved filaree, Mojave spineflower, sylvan scorzonella, and adobe yampah occurring in the designated on-site mitigation areas (north of State Route [SR] 138 and south of SR-138), and Mitigation Areas 1, 2, 3 shall be preserved in perpetuity. These existing areas shall be enhanced, expanded, or restored or new areas shall be created in suitable habitat in order to compensate at a 2:1 ratio for the thousands of individual special status plants that will be lost due to the Project.

Those portions of the crownscale and Mojave spineflower populations that are located within and along the western edge of the open space polygon located approximately 500 feet east of Cement Plant Road and approximately 650 feet north of the SR-138 shall be protected. No temporary or permanent disturbance (including fuel modification) shall occur in the identified occurrence points or polygons; these occurrence points or polygons shall be flagged by a qualified Biologist prior to the start of Project activities in the area. In addition, the post-construction hydrology that supports these protected populations shall be consistent with the pre-Project hydrologic condition. The supporting area consists of the adjacent slope, which drains to the protected plant populations and consists of approximately 300 feet to the north and north northwest.

Planting of California androsace, crownscale, round-leaved filaree, Mojave spineflower, sylvan scorzonella, and adobe yampah shall be performed in accordance with the specifications in the Special Status Plant Species Restoration Plan, which will also indicate the target densities for each of these species so that the new populations will support at least as many individuals of each species as were impacted.

MM 7-2

A pre-construction/grading survey of all areas proposed for construction/grading activities that contain potentially suitable habitat for silvery legless lizard, coast horned lizard, two-striped garter snake, and American badger shall be conducted by a qualified Biologist. Surveys will consist of 1 pass-through by a qualified Wildlife Biologist walking 50-meter belt transects across areas to be impacted while visually searching for the species listed above. Surveys will be conducted no more than three days prior to the disturbance of the surveyed area. If any of these species or other wildlife species that can be easily moved are observed within the construction/grading zone, the Biologist (who must have a valid California Scientific Collecting Permit) shall relocate them to a suitable area outside the construction zone. Suitable areas would include appropriate habitats within the proposed open space areas in the northwestern portion of the Project site and would be identified in a Wildlife Relocation Plan (described below) prior to surveys but before construction begins.

Areas adjacent to Quail Lake and on the Project site potentially supporting western pond turtle breeding habitat shall not be disturbed during the breeding season for the turtles (April through August). No Project activities shall occur within 300 feet from the edge of Quail Lake, due to potential for nesting in those areas.

Pre-construction burrowing owl and Swainson's hawk surveys shall be conducted in all potentially suitable habitat areas prior to initial site preparation. Methods employed shall be consistent with standard and appropriate protocols for both species within the appropriate season of the year prior to construction. Burrowing owl pre-construction surveys shall be

conducted prior to the start of construction/ground-breaking activities. Surveys will be conducted following the California Department of Fish and Wildlife's (CDFW's) 2012 burrowing owl survey protocol. These surveys shall be conducted weekly beginning 30 days prior to the start of construction with the final survey occurring 1 day prior to construction.

If pre-construction surveys locate an active Swainson's hawk nest on the Project site, then no construction activities will occur within ½ mile of the nest between March 1 and September 15. Furthermore, a Swainson's hawk Monitoring and Mitigation Plan shall be prepared within 90 days after locating an active Swainson's hawk nest in consultation with the County and the CDFW.

The Wildlife Relocation Plan shall describe: (1) all areas potentially suitable for receiving relocated animals and (2) methods that shall be used in the relocation process. Methods shall include appropriate species-specific handling techniques and appropriate hygienic methods to prevent the spread of pathogens. The Plan shall also identify thresholds for the number of individuals of each species that shall be allowed to be placed in any particular area. The Wildlife Relocation Plan shall be prepared by the Project Applicant/Developer and submitted to the CDFW prior to Project implementation. County and CDFW approval of the Plan shall indicate that the performance standards have been met. Although, implementation of the mitigation plan may have some impact on wildlife, it is expected to be negligible relative to the project as a whole and expected to have a net positive effect as required.

MM 7-3

For all grading and construction activities, the Project Applicant/Developer shall retain a qualified Biologist (with selection reviewed by the County) to ensure that incidental construction impacts on special status wildlife species are avoided or minimized. The Biologist shall relocate silvery legless lizard, coast horned lizard, two-striped garter snake, American badger, and any other special status wildlife species that can be moved which would otherwise be destroyed or adversely affected by construction and/or site-preparation activities. Responsibilities of the Construction Biological Monitor shall include:

- a. Attendance at the pre-construction meeting to ensure that timing and location of construction activities do not conflict with other mitigation requirements (e.g., seasonal surveys for nesting birds). The meeting shall be conducted with the Contractor and other key construction personnel to describe the importance of restricting work to designated areas.
- b. Discussion with the Contractor of procedures to minimize harm/harassment of wildlife that may be encountered during construction.
- c. Review/designation of the construction area with the Contractor in accordance with the Final Grading Plan. Haul roads, access roads, and

on-site staging and storage areas shall be sited in grading areas to minimize degradation of habitat adjacent to these areas. If activities outside these limits are necessary, they shall be evaluated by the Biologist to ensure no special status species or habitats will be affected.

- d. A field review that is conducted to stake designated construction limits (to be set by the Surveyor). Any construction activity areas immediately adjacent to riparian areas or other special status resources (such as large trees or bird nests) may be flagged or temporarily fenced by the Monitor at his/her discretion.
- e. Periodic visits to the site during construction to coordinate and monitor compliance with the above provisions.
- f. Submittal of a brief report to the County and CDFW discussing any conflicts or errors resulting in impacts to special status resources within 48 hours of the incident. At the conclusion of construction of each planning area, submittal of a Final Report discussing the results of the activities and any recommendations for improving the process. Submission of this report shall be the performance standard.

In addition, a Biological Monitor will be on site during all initial vegetation removal and will employ salvage methods to minimize direct impacts to common wildlife species. Where feasible, the biological monitor will attempt to ensure wildlife are out of potential direct impact. If a wildlife species is in harm's way and has not moved on its own, the Biologist will attempt to scare them away from the area. If wildlife does not move, and where feasible, the wildlife species will be relocated to suitable habitat.

MM 7-4 All open space preservation areas adjacent to active construction sites shall be denoted with fencing installed and maintained during construction to ensure that construction activities remain within the development footprint. Construction area temporary signage shall not have holes (or holes shall be covered or filled within the top four inches) to prevent raptor talon entanglement. Construction fencing and signage will be overseen by the Project Biologist.

MM 7-5 Within the year prior to, and within the appropriate season, focused surveys for the following special status species shall be repeated: arroyo toad, Tehachapi slender salamander, California red-legged frog (concurrent with two-striped garter snake and western pond turtle focused surveys), western spadefoot, mountain plover, southwestern willow flycatcher, and least Bell's vireo. Surveys shall be conducted in accordance with the approved CDFW or U.S. Fish and Wildlife Species (USFWS) protocol for that species.

MM 7-6 The Project Applicant/Developer shall retain a qualified Biologist with knowledge of California condors to monitor construction activities in the Project area. The resumes of the proposed Biologist(s) will be provided to the CDFW for concurrence. This Biologist(s) will be referred to as the "Authorized

Biologist” hereinafter. During clearing and grubbing of construction areas, the Authorized Biologist shall be present at all times. During mass grading, construction sites shall be monitored on a daily basis, and the Authorized Biologist will have the authority to stop all activities until appropriate corrective measures have been completed. If condors are observed landing in the Project area, the Applicant shall avoid further construction within 500 feet of the sighting until the animals have left the area, or as otherwise authorized by CDFW and USFWS. All condor sightings in the Project area will be reported to CDFW and USFWS within 24 hours of the sighting.

To further protect California condors potentially foraging in the Project area over the long term from negative interactions with humans and/or artificial structures, the Project Applicant/Developer shall remove dead cattle that are found or reported within 1,000 feet of the boundary of a residential or commercial development. Dead cattle shall be relocated to a predetermined location. The locations where carcasses shall be placed shall be a minimum of 1,000 feet from a development area boundary. Appropriate locations for transfer of carcasses include open grasslands and oak/grassland areas where condors can readily detect carcasses and easily land and take off without encountering physical obstacles such as powerlines and other utility structures. The proposed locations would be selected and approved by the CDFW and USFWS. Pursuant to this measure, a telephone number for reporting dead cattle shall be provided and actively maintained. Any cattle carcasses transferred to the relocation areas shall be reported to the USFWS Condor Group.

All surfaces on new antennae and phone/utility towers shall be designed and operated with anti-perching devices in conformance with Avian Power Line Interaction Committee standards to deter California condors and other raptors from perching. During construction, the area shall be kept clean of debris (e.g., cable, trash, and construction materials). The Project Applicant/Developer shall collect all microtrash and litter (i.e., anything shiny, such as broken glass), vehicle fluids, and food waste from the Project area on a daily basis. Workers shall be trained on the issue of microtrash: what constitutes microtrash, its potential effects on California condors, and how to avoid the deposition of microtrash.

MM 7-7

The Project shall incorporate avoidance and additional open space buffer features for this tricolored blackbird nesting area. Permanent impacts will be restricted to a distance of 400 feet from the nesting area excluding small impact areas associated with infrastructure and utilities along SR-138 immediately south of Quail Lake. The nesting area will be delineated by a qualified Ornithologist based on all available data (three years of site-specific data shall be used). Temporary impacts (i.e., construction noise) within 400 feet shall be restricted to the non-breeding season. The breeding season for this species shall be considered April 1 through July 1.

The Project shall include enhancement, restoration, and/or preservation of potentially suitable tricolored blackbird breeding and foraging habitat. Potentially suitable areas for enhancement and preservation include lower Oso Canyon in close proximity to Cement Plant Road, as well as any other created water bodies as part of the Project Drainage Plan, where feasible. Enhancement factors shall include the creation of bulrush marsh habitat or other substrate known to support breeding tricolored blackbirds; a persistent nearby standing water during the breeding season; and available adjacent foraging habitat with an appropriate food source.

MM 7-8 Project construction activities (including, but not limited to, staging and disturbances to native and nonnative vegetation, structures, and substrates) shall occur outside of the avian breeding season, if feasible, which generally runs from February 1–August 31 (as early as January 1 for some raptors) to avoid take of birds or their eggs. “Take” means to hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture or kill (*California Fish and Game Code*, Section 86), and includes take of eggs or young resulting from disturbances that cause abandonment of active nests. Depending on the avian species present, a qualified Biologist may determine that a change in the breeding season dates is warranted.

If avoidance of the avian breeding season is not feasible, a qualified Biologist with experience in conducting breeding bird surveys shall conduct weekly bird surveys beginning 30 days prior to the initiation of Project activities, to detect protected native birds occurring in suitable nesting habitat that is to be disturbed and (as access to adjacent areas allows) any other such habitat within 500 feet of the disturbance area. The surveys shall continue on a weekly basis with the last survey being conducted no more than three days prior to the initiation of Project activities. If a protected native bird is found, the Project Applicant/Developer shall delay all Project activities within 300 feet of on- and off-site suitable nesting habitat (within 500 feet for suitable raptor nesting habitat) until August 31. Alternatively, the qualified Biologist could continue the surveys in order to locate any nests. If an active nest is located, Project activities within 300 feet of the nest (within 500 feet for raptor nests) or as determined by a qualified Biological Monitor, must be postponed until the nest is vacated; the juveniles have fledged; and there is no evidence of a second attempt at nesting. Flagging, stakes, or construction fencing shall be used to demarcate the inside boundary of the buffer of 300 feet (or 500 feet) between the Project activities and the nest. Project personnel, including all contractors working on site, shall be instructed on the sensitivity of the area. The Project Applicant/Developer shall provide the Department of Regional Planning with the results of the recommended protective measures described above to document compliance with applicable State and federal laws pertaining to the protection of native birds.

If the Biological Monitor determines that a narrower buffer between the Project activities and observed active nests is warranted, he/she shall submit a written explanation as to why (e.g., species-specific information; ambient conditions and birds' habituation to them; and the terrain, vegetation, and birds' lines of sight between the Project activities and the nest and foraging areas) to the Department of Regional Planning and, upon request, the CDFW. Based on the submitted information, the Department of Regional Planning (and the CDFW, if the CDFW requests) will determine whether to allow a narrower buffer.

The Biological Monitor shall be present on site during all grubbing and clearing of vegetation to ensure that these activities remain within the Project footprint (i.e., outside the demarcated buffer); to ensure that the flagging/stakes/fencing is being maintained; and to minimize the likelihood that active nests are abandoned or fail due to Project activities. The Biological Monitor shall send weekly monitoring reports to the Department of Regional Planning during the grubbing and clearing of vegetation, and shall notify the Department of Regional Planning immediately if Project activities damage active avian nests.

MM 7-9 A qualified Biologist (retained by the Project Applicant/Developer with selection reviewed by the County) shall conduct a field survey no earlier than 20 days prior to any grading activity that would occur during the breeding season (i.e., April 1 through August 31) of native bat species that potentially utilize the site. This should be done to determine if active roosts of special status bats (such as pallid bat) are present in the applicable habitats on the site (e.g., woodlands). If active roosts are found, construction within 200 feet shall be postponed or halted until the roost is vacated and juveniles are self-sufficient, as determined by the Biologist.

MM 7-10 The Project Applicant/Developer shall preserve grasslands, including native perennial grassland and associated wildflower field vegetation types, at a minimum 2:1 ratio within the approximate 27,408-acre mitigation preserve (see Table A). The Project would impact 6,416 acres of grasslands; therefore, a total of 12,832 acres of grassland mitigation acreage is required to bring impacts to a less than significant level.

**TABLE A
GRASSLAND MITIGATION ACREAGES**

Mitigation Area	Grasslands	Total Acreage
On-Site Unimpacted/SEA		
On-Site Unimpacted/SEA	1,989	3,861
<i>Subtotal (Total On-Site Mitigation Area)</i>	1,989	3,861
Off-Site Open Space		
Area 1	1,641	6,417
Area 2	1,602	2,556
Area 3	3,059	4,183
Area 4	4,429	7,319
Area 5	643	643
Area 6	1,012	2,429
<i>Subtotal (Total Off-site Mitigation Area)</i>	12,386	23,547
Total Mitigation Area	14,375**	27,408
SEA: Significant Ecological Area		
**Goal for 2:1 Grassland Mitigation is 12,832 Acres		

Mitigation for loss of those areas modeled as native perennial grassland will provide similar habitat quality as that which was lost. The result shall be native perennial grassland and wildflower field values that are equal to or greater than the overall ecological functions and values of those lost as a result of Project implementation. Preservation shall include dedication and long-term management working towards the goal of a self-sustaining system. Long-term management will include focused major problematic non-native species eradication (e.g., feral pigs) where feasible. Preservation will occur on open space lands on the Project site and on other lands within Tejon Ranch.

As outlined in Table A above, the 14,375 acres of grassland preservation will occur in open space areas on site and in the six other areas. A full description of these areas is in PDF 7-2. Many of these grassland areas have been part of the expansive grassland studies conducted for the Project over the course of several years. Detailed plot analysis and modeling show the high level of similarity between these preserved grasslands and the grasslands within the Project impact area. In addition, the grasslands are contiguous with other preserved open space in the region and support other important biological functions (e.g., drainages and local wildlife movement pathways). As a result, the preserved grassland is part of a more watershed-level preservation allowing for long-term sustainment and a total value that is greater than the sum of its parts.

The preservation phasing through conservation easements shall be based on the percentage of total area of impact per phase of development, regardless of specific resource impacts. The specific location of the acreage to be dedicated within a particular phase will be chosen to maximize the replacement of resource values lost during that phase of construction while maintaining as much contiguous acreage as possible. In order to preserve an adequate quantity of grassland, lands outside the County of Los Angeles, within the County of Kern, would be used for mitigation. As each phase is proposed, a percentage of the mitigation preserve (which is equivalent to the percentage of that phase's impacts) shall be dedicated concurrent with the entitlement approval of that phase.

The open space preserve, including the grasslands within it, shall be preserved in perpetuity to offset Project impacts on native grasslands and wildflower fields prior to issuance of a grading permit for the Project site. The phasing of mitigation has been previously described. The Native Perennial Grassland and Wildflower Field Mitigation Plan will sufficiently offset and fully mitigate the impacts on native grasslands and wildflower fields associated with the Project.

MM 7-11 This measure prescribes mitigation for other special status vegetation types including mixed oak woodland, oak trees, and other riparian and wetland vegetation types. Each of these three vegetation types is discussed separately (native grassland and wildflower fields are addressed in MM 7-10).

Mixed Oak Woodlands

The Project Applicant/Developer shall create mixed oak woodlands to achieve resulting vegetation/habitat values. Since there would be approximately 6.2 acres of oak woodland impacts, mitigation will result in the preservation of a minimum of 6.2 acres of mixed oak woodland and creation of a minimum of 6.2 acres of mixed oak woodland, which will include the establishment⁷ of 322 oak trees completed as part of oak tree replacement in accordance with the County of Los Angeles oak tree permit requirements (see Oak Trees Section below). Oak trees established in created oak woodlands will be credited towards both oak woodland and oak tree mitigation requirements. If Project impacts are reduced through a reduction in Project disturbance limits in oak woodland areas, required mitigation acreage will be reduced accordingly.

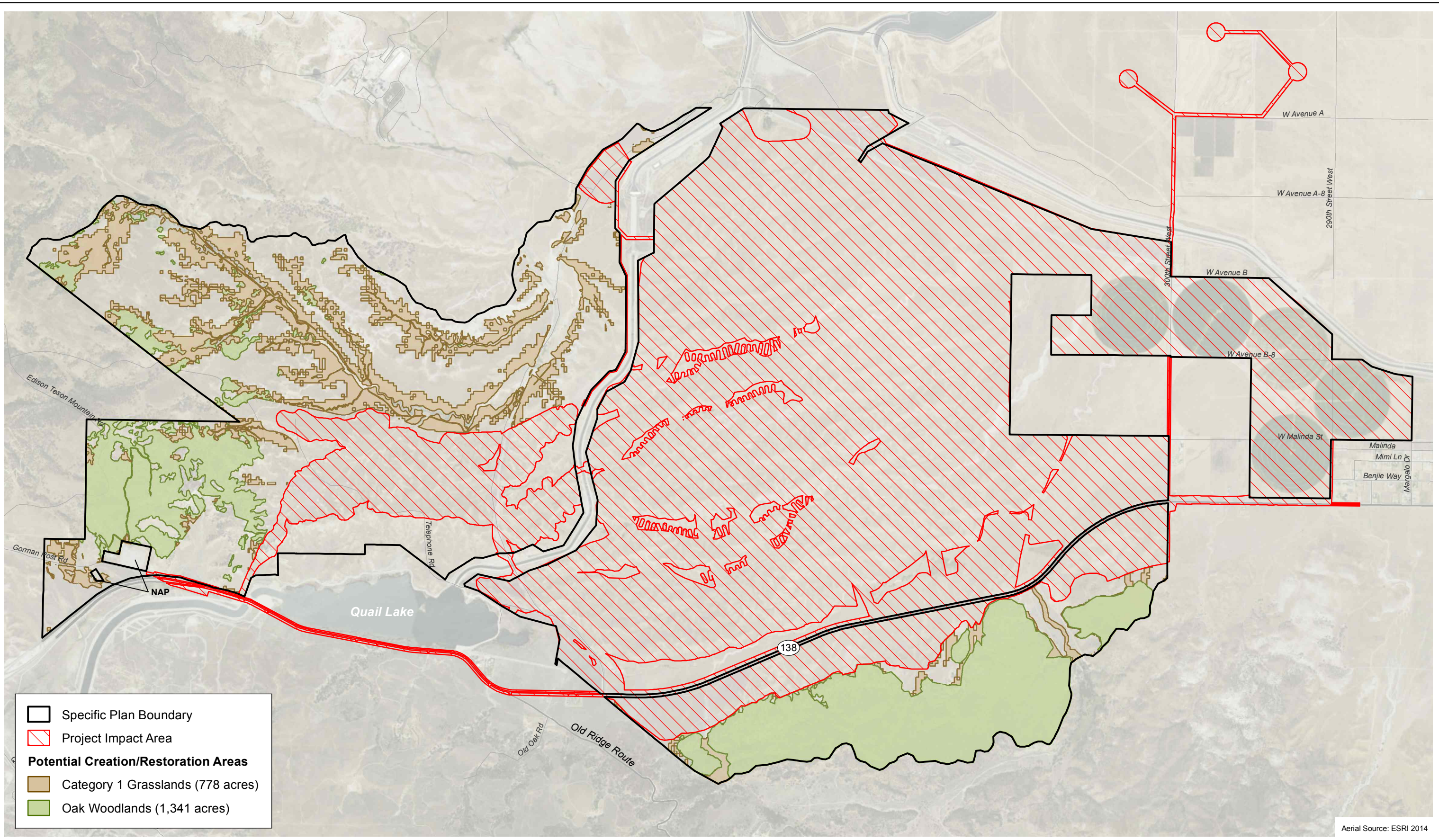
In accordance with mitigation options outlined in Section 21083.4 of the *California Public Resources Code* (PRC), replacement of oak woodlands shall consist of no greater than ½ of the oak woodland mitigation requirement. Therefore, half of the 6.2 oak woodland impact acreage will be mitigated via the alternate option of preservation. The combined acreage of oak woodland preserved both on site (unimpacted/Significant Ecological Area [SEA]) and

⁷ In Biology, "establish", in this sense, refers to vegetation (including seeds) that has been planted and is becoming a healthy, surviving plant with as much chance to survive as plants that have existed for a long period of time.

within the off-site mitigation areas is 3,102 acres and is expected to substantially exceed the required 50 percent of mitigation as preservation.

Mitigation through creation is typically implemented on lands with minimal habitat value (e.g., ruderal vegetation, graded slopes) rather than in areas with a substantial component of existing native vegetation. However, evidence of lack of naturally occurring recruitment on site indicates that the existing woodlands are likely to be eventually replaced by non-woodland vegetation. Based on the lack of naturally occurring replacement trees, it is anticipated that oak woodland planting is necessary to sustain the oak woodlands. Therefore, the goal of oak resource mitigation efforts will be to create and enhance oak woodlands. To maximize potential for success, oak woodlands will be created within and adjacent to the same areas where oak woodlands currently exist. This method will create future generations of oak trees and oak woodland on the site in these areas. Details of the oak woodland mitigation program are described below in items 1–10.

1. To mitigate for impacts to oak woodland and oak trees, site-specific native acorns will be collected. Acorns will be collected within the watershed area of the Project site to ensure that acorns collected are of a similar genetic stock to those existing on the site. Some acorns will be planted and maintained in containers, and others will be stored and planted directly on site within the Oak Mitigation Areas.
2. To maximize oak woodland biological values and the potential for long-term success, some locally collected oak acorns will be planted directly into the ground. These acorns will be planted in appropriate locations in the Oak Mitigation Areas. The locations identified for acorn planting will be reviewed by the County Forester.
3. Container plants will be propagated and maintained from locally collected acorns. In this way, more established container plants will be available for mitigation efforts, and they will contain the most suitable genetic variability appropriate for the region to increase mitigation success. The preferred method of propagation will include the establishment of a temporary nursery on the Project site. The nursery will include partial shade areas to reduce water loss and a constant water supply to supplement planted trees. Using the acorns collected from within the watershed area of the Project site, container plantings will be cultivated at this location. Development of trees on site will ensure that they are acclimated to the typical weather conditions at their eventual permanent location. If necessary, and in consultation with the County Forester, acorns collected from the site may be stored or propagated and maintained under contract with a reputable native plant nursery off site.
4. To provide overstory, midstory, and understory tree/plant coverage, some container plants and oak trees, grown from locally collected acorns, will be installed in addition to the application of native seed mixes. Since studies indicate that the younger the planting is, the more likely the



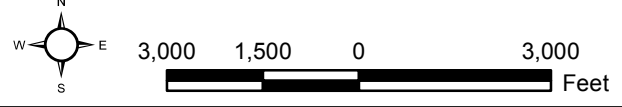
	Specific Plan Boundary
	Project Impact Area
Potential Creation/Restoration Areas	
	Category 1 Grasslands (778 acres)
	Oak Woodlands (1,341 acres)

Aerial Source: ESRI 2014

Oak Tree/Oak Woodland Restoration/Creation Areas

Exhibit 5.7-16

Centennial Project



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chance is for successful establishment and long term viability⁸ locally collected acorns as well as locally collected, nursery-cultivated young oak trees (one-gallon or five-gallon containers of oaks) would be planted on site.

5. The Project Applicant/Developer will provide an annual report to the County that will include an accounting of each of the following in the mitigation areas: (a) the number of acorns planted; (b) the number of germinated acorns (whether planted or natural) protected; (c) the number of new oak trees planted in mitigation areas, including the species of each tree planted; (d) the caliper of each new tree planted and/or protected; (e) the acreage of woodlands created and/or conserved in the mitigation areas.
6. Creation of structurally diverse oak woodland habitat within and contiguous to existing oak woodlands will be accomplished by planting locally collected oak acorns, plus yearly sowings of additional locally collected acorns, as well as, temporary irrigation, weed abatement, pest deterrence, and/or other maintenance tasks as needed to facilitate oak seedling germination and survival.
7. Prior to Project grading, locally collected acorns will be planted and grown. Once trees reach a diameter of one inch just above ground surface (i.e., basal height) within the Oak Tree/Oak Woodland Mitigation Areas, they will be appropriated as “mitigation trees” to be used for oak woodland and oak tree permit mitigation purposes with approval from the County Forester as part of the oak woodland and oak tree permit mitigation process and will be credited as a mitigation tree if the tree is determined to be healthy by the Los Angeles County Forester at the end of the monitoring period.
8. The required 12.4 acres of mixed oak woodland creation will occur within 473 acres of existing oak woodland (primary area) and 716 acres of adjacent low quality non-native grassland (secondary area, if needed) on the western portion of the Project site. Additional suitable areas may also be identified within reduced grading footprints following final detailed tract map production to the satisfaction of the County Forester. Mitigation planting areas will be refined within the proposed mitigation areas through a multi-variable query of existing Geographical Information System (GIS) data sets, and intensive field analysis to precisely identify suitable planting locations (e.g., localized soil types, microtopography). Created oak woodlands will have an approximate average density of 80 appropriately sized oak trees per acre at the end of the monitoring period (or other density as directed by the County Forester), while staying within the mitigation areas. The contiguity of the created woodland habitat within or adjacent to existing oak woodlands will be ecologically beneficial, and will also improve the logistics of

⁸ Young and Evans 2000

restoration installation, maintenance, and monitoring, compared to a fragmented habitat creation program. These methods will help to ensure the success of created oak woodlands to replace the existing woodlands over time.

9. In order to implement the creation of habitat on the site and to ensure the persistence of the overall biological functions and values over time, the Project Applicant/Developer shall submit an Oak Woodland Habitat Mitigation Plan to the County for approval prior to the issuance of a grading permit for each tract map or combination of tract maps. The mitigation approach described in the Plan shall comply with Section 21083.4 of the *California Public Resources Code* (PRC), which was enacted by California Senate Bill (SB) 1334. County approval of the Plan shall be required prior to the initiation of any clearing or grading on the site that affects any oak woodland vegetation. The Oak Woodland Habitat Mitigation Plan shall be developed by a qualified Restoration Specialist, to be retained by the Project Applicant/Developer, and shall be subject to County approval. The objective of the Oak Woodland Habitat Mitigation Plan will be to preserve 6.2 acres of existing oak woodland and to create 6.2 acres of oak woodland. The Oak Woodland Habitat Mitigation Plan serves the purpose of satisfying the conditions of Section 21083.4 of the *California Public Resources Code*.
10. Implementation of the Oak Woodland Mitigation Plan will be the responsibility of the Project Applicant/Developer or its designated party; the Plan shall specify, the following:
 - a. **Personnel:** The responsibilities and qualifications of personnel required to implement and supervise the plan will be specified. The responsibilities of the Landowner, County staff, Specialists, and Maintenance Personnel that will supervise and implement the plan will also be included.
 - b. **Site Selection:** The mitigation site(s) will be determined in coordination with the project applicant/Developer and the County. The site(s) will be located in open space areas that will be managed in perpetuity through a conservation easement, open space dedication, performance bond, management at the Tejon Ranch Conservancy, or other method approved by the County.
 - c. **Native Species Seed Collection, Site Preparation, and Planting Implementation:** Under the supervision of the County Forester, site preparation will include (i) protection of existing native species; (ii) trash and weed removal; (iii) native species salvage and reuse (i.e., duff); (iv) soil treatments (i.e., imprinting, and/or decompacting); (v) erosion-control measures (i.e., rice or willow wattles); (vi) native seed mix application; and (vii) procedures for native seed collection from the site, including acorns of native oak species.

- d. **Schedule:** Restoration/revegetation sites will be established between October 1 and January 30. Seeding and planting of container plants will take place immediately after preparation of the mitigation sites and will take place under the supervision of the County Forester.
- e. **Maintenance Plan and Guidelines:** The Maintenance Plan, to be approved by the County, will include (i) weed control; (ii) herbivory control (e.g., feral pigs); (iii) trash removal; (iv) irrigation system maintenance; (v) maintenance training; (vi) replacement planting; and (vii) a vehicle washing program to capture invasive propagules. The Maintenance Plan will also indicate who is responsible for each of these listed tasks.
- f. **Monitoring Plan:** The monitoring plan, to be approved by the County, will include (i) qualitative monitoring (i.e., photographs and general observations); (ii) yearly quantitative monitoring (i.e., randomly placed transects to assess vegetation type coverage and systematically assess all mitigation oak trees); (iii) performance criteria as approved by the County; and (iv) annual reports that will be submitted to the County for five consecutive years after initial planting (or longer if the County requires) and following plan approval.
- g. **Long-Term Preservation:** Long-term preservation of the mitigation site(s) will be outlined in the Restoration Plan to ensure that they are not impacted by future development. An open space dedication, conservation easement, performance bond, management by the Tejon Ranch Conservancy, or other County-approved method will be used to ensure long-term preservation.
- h. **Growth/Vegetation Standards:** Growth/vegetation standards will be developed by a qualified Biologist in accordance with County and regulatory agency requirements.

Oak Trees

The mitigation approach for replacing lost oak trees shall comply with the County of Los Angeles Oak Tree Ordinance (CLAOTO) requirements. The goal of this program is to replace impacted oak trees at a ratio of 3:1 for non-heritage oaks and 10:1 for heritage oaks in accordance with the County's oak tree permit requirements. This would result in the establishment of 322 oak trees. However, if Project impacts are reduced through a reduction in Project disturbance limits within oak woodland areas, required tree numbers will be reduced accordingly.

Mitigation trees are typically planted on lands with minimal habitat value (e.g., ruderal vegetation, graded slopes) rather than in areas with a substantial

component of existing native vegetation. To maximize potential for success, oak trees will be planted in the same areas where oak woodlands currently exist. This method will create future generations of oak trees and oak woodland on the site in these areas and will be done as described in Numbers 1-10 under the "Mixed Oak Woodlands" portion above. Additionally, quantitative tree monitoring data for all mitigation trees (whether for County of Los Angeles Oak Tree Ordinance [CLAOTO] mitigation or oak woodland mitigation) will be submitted to the County Forester yearly and, for convenience, will be included as an appendix to the annual report required in 10(f)(ii) above.

Other Riparian and Wetland

In addition, the Applicant shall create, enhance, and/or restore all impacted riparian and wetland vegetation types that are not considered jurisdictional by permitting resource agencies (i.e., those not mitigated through regulatory permit conditions) at a 1:1 ratio. This applies to areas mapped as alluvial scrub; riparian herb; rush riparian grassland; southern arroyo willow riparian; southern willow scrub; unvegetated wash; willow riparian forest; willow riparian woodland; alkali meadow; Baltic rush; and seeps and ephemeral ponds. These areas shall be included in the Streambed and Wetland Habitat Creation and Enhancement Plan discussed in MM 7-12, which shall be approved by the County prior to issuance of grading permits.

MM 7-12 Prior to any fill of or alteration to drainage tributaries, wetlands, and/or riparian vegetation on the Project site, the Project Applicant/Developer shall obtain the appropriate regulatory agency permits and/or agreements from the U.S. Army Corps of Engineers (USACE), the California Department of Fish and Wildlife (CDFW), and the applicable Regional Water Quality Control Board (RWQCB). The Project Applicant/Developer shall comply with all mitigation measures specified in the regulatory agency permits and/or agreements. Pursuant to the permit requirements, the Project Applicant/Developer will develop a Storm Water Pollution Prevention Plan (SWPPP) that incorporates Best Management Practices (BMPs) for reducing or eliminating construction-related pollutants in the site runoff.

The Project is subject to the following Mitigation Performance Standards: As anticipated to be required by USACE, CDFW, and Regional Water Quality Control Board (RWQCB) regulatory permits, the Project Applicant/Developer shall create, enhance, and/or restore acreage to ensure that net habitat values are at least equal to those lost from Project implementation. Mitigation ratios are typically specified in the regulatory permits. However, if mitigation is conducted prior to impacts taking place, mitigation ratios can be pro-rated; this type of mitigation pro-rating allows time to evaluate if created, enhanced, and/or restored habitat values are at least equal to those that will eventually be lost from Project implementation. Under this scenario, it can be verified

that the restoration/creation goals have been accomplished or are proceeding satisfactorily.

The extent of drainages and wetlands that would be preserved under the Project will provide opportunities to expand and enhance the drainages, wetlands, and riparian vegetation on the Project site.

As discussed previously, a wetland functional assessment of the drainages and other aquatic features in the Project site was conducted by Glenn Lukos Associates in 2006 and 2009 in order to characterize and evaluate the functions of the site's drainages and riparian habitats (GLA 2009a). An update to that functional assessment was conducted in 2015 (BonTerra Psomas 2015a). Overall, aquatic resources on the site were evaluated in terms of Functional Capacity Units (FCU), which indicate more specifically the mitigation level necessary to restore riparian functions after Project implementation by providing a measure of the ability of a wetland area to perform typical wetland functions.

The purpose of the mitigation is to replace lost habitat value, as measured in FCU rather than based on a standard acreage ratio. Mitigation will include a combination of on-site and off-site preservation of jurisdictional resources; on-site and off-site enhancement/restoration of preserved jurisdictional resources in order to increase overall functional capacity; and the creation (expansion) of riparian/wetland habitats along degraded drainages, including Oso Creek and two of its tributaries in addition to the three other drainages (including the main drainage located along and immediately north of State Route [SR] 138).

The direct and indirect loss in on-site functional units will be mitigated through passive enhancement of open space areas, active enhancement of 6.5 acres of wetland, and creation of approximately 78.4 acres of wetland/riparian habitat (GLA 2009a). Following implementation of mitigation, the Project provides approximately 4,748.5 FCUs. Therefore, the proposed mitigation will result in a functional gain of 327.5 FCUs, thereby ensuring a net increase in functionality in the post-Project condition (GLA 2009a). In summary, implementation of the proposed jurisdictional resource mitigation will actually result in a net gain in the measurable functional capacity and therefore, the habitat values, of the on-site and off-site drainages and other aquatic features.⁹

To implement the creation/restoration/enhancement of streambed/wetland habitats on the site, the Project Applicant/Developer shall develop a Streambed and Wetland Habitat Creation and Enhancement Plan commensurate with regulatory agency permits and/or agreements. The purpose of this plan is to demonstrate the feasibility of creating the required

⁹ For information about the functional values of the impacted jurisdictional resources and proposed mitigation areas, see GLA 2009b in Appendix 5.7-B.

mitigation acreage and to ensure that the overall biological functions and values are increased. The plan shall be developed by a qualified Restoration Specialist and shall be submitted to the County for approval. The Streambed and Wetland Habitat Creation and Enhancement Plan shall specify the following:

- **Personnel:** Responsibilities and qualifications of the personnel required to implement and supervise the plan will be specified. The responsibilities of the Landowner, Specialists, and Maintenance Personnel that will supervise and implement the plan will also be included.
- **Site Selection:** The sites for mitigation will be determined through coordination between the project applicant/Developer, the USACE, the CDFW, the applicable RWQCB, and the County.
- **Site Preparation and Planting Implementation:** Site preparation will include: (1) protection of existing native species; (2) trash and weed removal; (3) native species salvage and reuse (i.e., duff); (4) soil treatments (i.e., imprinting and/or decompacting); (5) erosion-control measures (i.e., rice or willow wattles); (6) seed mix application and quantities; and (7) procedures for seed collection from existing habitat on the site.
- **Schedule:** Establishment of restoration/revegetation sites will be conducted between October 1 and January 30. Seeding and planting of container plants will take place immediately after preparation of the restoration sites.
- **Maintenance Plan/Guidelines:** The maintenance plan will include (1) weed control; (2) herbivory control; (3) trash removal; (4) irrigation system maintenance; (5) maintenance training; (6) replacement planting; and (7) vehicle washing program to capture invasive propagules.
- **Monitoring Plan:** The monitoring plan will include (1) qualitative monitoring (i.e., photographs and general observations); (2) quantitative monitoring (i.e., randomly placed transects); (3) performance criteria, as approved by the USACE, the CDFW, and the applicable RWQCB; (4) biannual reports (i.e., two reports the first year) for the first year will be submitted to the USACE, the CDFW, the applicable RWQCB; and (5) annual reports, which will be submitted to all three agencies and the County for an additional four years after initial planting. The monitoring is planned for five years, but may be shorter or longer depending upon the performance of the mitigation sites.
- **Long-Term Preservation:** Long-term preservation of the mitigation sites will be outlined in the mitigation plan to ensure that they are not impacted by future development. An open space dedication, conservation easement, performance bond, management by the Tejon Ranch Conservancy, or other County-approved method will be used to ensure long-term preservation.

- **Performance Standards:** These will be developed by conducting a biological functions and values assessment (using an accepted method such as Hydrogeomorphic Modeling [HGM]) to establish a baseline for the overall biological value of the affected streambeds and riparian areas on the site. Revegetation will be considered successful at five years if the percent cover and species diversity of the restored and/or created habitat areas are similar to percent cover and species diversity of adjacent existing habitats, as determined by quantitative testing of existing, restored, and created habitat areas. Contingency measures shall also be described in the event that mitigation efforts are not successful.
- **Cattle Exclusion Methods:** Measures to exclude cattle from habitat creation areas and enhancement areas (where applicable) shall be identified and described.
- **Funding:** The funding source(s) for all proposed mitigation actions shall be identified.

The Streambed and Wetland Habitat Creation and Enhancement Plan shall be subject to approval by the County, the USACE, the CDFW, and the applicable RWQCB for impacts within the respective jurisdictional areas of these agencies. If pro-rated mitigation ratios are used, it shall be demonstrated that the mitigation performance standards have been accomplished. The accomplishment shall be verified by the USACE, the CDFW, and the applicable RWQCB based on the performance standards established above prior to the County's issuance of a grading permit. Implementation of these mitigation measures may serve the dual purpose of satisfying the conditions (or a portion of the conditions) of the agreements/permits of the USACE, the CDFW, and the applicable RWQCB.

MM 7-13 The Project Applicant/Developer shall develop a Landscaping Plan for review and approval by the County Biologist, which includes a plant palette composed of non-invasive species that are adapted to the conditions found on the Project site and do not require high irrigation rates. The Landscaping Plan will also include a list of invasive plant species prohibited from being planted on the Project site. In addition, retail sales of these invasive plant species will be prohibited at any businesses (nurseries) located within the Project site. Landscape plans shall encourage planting of local natives typical of native vegetation within ten miles of the Project site.

The Homeowners Association shall supply future residents of the Project site with the list of invasive plant species from the Landscaping Plan that will be prohibited from being planted on the Project site and educational materials that emphasize the importance of adhering to the list. A list of local native plants shall be provided to homeowners.

MM 7-14 The designated SR-138 underpass shall be located where the highway crosses the Project's western border near the current intersection with Cement Plant

Road. The width of the underpass shall be 100 feet and shall flare out on both sides of the highway to a 150-foot width in the Project open space adjacent to the highway. These specifications are expected to allow some local wildlife to safely pass between open space areas on opposite sides of the highway.

In addition, a 50-foot open space buffer will be incorporated on the eastern and western sides of Cement Plant Road; this buffer shall be from the southern side of the bridge that spans the California Aqueduct to the nearest open space polygon that meets the property edge. The undeveloped 50-foot buffer shall run parallel with the Aqueduct along its southern bank. This buffer may be temporarily disturbed during construction, but shall be retained as greenspace to increase connectivity for local wildlife between open space areas and potential Aqueduct crossing locations.

- MM 7-15** Waste and recycling receptacles that discourage foraging by wildlife species adapted to urban environments shall be installed by the Project Applicant/Developer in common areas (i.e., any area where public trash receptacles would be placed, such as parks, sidewalks, community centers, and walking trails) throughout the Project site. Documentation of the completion of this measure shall be submitted to the County prior to occupation of housing units.

The Homeowners Association shall supply an educational pamphlet to future residents of the Project site regarding: the importance of not feeding wildlife; information stating that trash (containing food) and microtrash that could potentially attract condors should not be accessible to wildlife; the necessity of keeping the ground free of fallen fruit from trees; and instructions about not leaving pet food outside.

- MM 7-16** All landscaping materials (including organic mulches) for common/public areas (i.e., parks and intervening unpaved areas which are not a part of any homeowner's parcel) shall be inspected and certified by landscape suppliers as being "free" of Argentine ants prior to planting. Additionally, container plants and other landscaping materials to be installed within common/public areas within 200 feet of the open space areas shall be inspected by a qualified restoration specialist for the presence of Argentine ants. Plants or other materials with Argentine ants shall be rejected.

Upon initiating landscaping within a development area, quarterly monitoring shall be initiated for Argentine ants along the development/construction-open space interface at sentinel locations where invasions could occur (e.g., where moist microhabitats that attract Argentine ants may be created). A qualified biologist shall determine the monitoring locations. Ant pitfall traps will be placed in these sentinel locations and operated on a quarterly basis to detect invasion by Argentine ants. If Argentine ants are detected during monitoring, direct control measures will be implemented immediately to help prevent the invasion from worsening.

These direct controls may include but are not limited to nest/mound insecticide treatment, or available natural control methods being developed. A general reconnaissance of the infested area would also be conducted to identify and correct the possible source of the invasion, such as uncontrolled urban runoff, leaking pipes, or collected water. Each site visit shall be followed up with a summary monitoring report sent electronically to Applicant indicating the status of the site. Monthly monitoring reports, as needed, shall be submitted to CDFG and the County of Los Angeles). Monitoring reports shall include remedial recommendations and issue resolution discussions when necessary. Monitoring and control of Argentine ants would occur for a 5-year period. After the first 5 years, the Homeowners Association or other entity will be responsible for controlling Argentine ants. Additionally, to further guard against Argentine ants, the Homeowners Association shall discourage irrigated landscape planting through distribution of educational information and other feasible methods to reduce the potential for importing Argentine ants.

To preclude the invasion of Argentine ants into preserved populations of round leaved filaree and crownscale and their associated buffers, controls will be implemented using an integrated pest management (IPM) approach. The controls include (1) Providing "dry zones" between development and round leaved filaree and crownscale populations, where typical soil moistures are maintained at levels below about 10% soil saturation, which will deter the establishment of nesting colonies of ants; and providing dry zone buffers of sufficient width to reduce the potential for Argentine ant activity within core habitat areas; (2) Where feasible, and/or appropriate, dry areas such as parking lots and roadways shall be built adjacent to the boundaries of these populations; (3) designing adjacent areas to slope away from the preserved populations to avoid runoff entering the area; (4) Pedestrian pathways placed next to preserve populations shall consist of decomposed granite or other gravel to minimize the holding of moisture, thereby preventing establishment of suitable habitat for Argentine ant colonies; (5) Ensuring that landscape container plants installed within 200 feet of preserved populations are ant free prior to installation to reduce the chance of colonies establishing in areas close to the preserved populations; (6) Maintaining natural hydrological conditions in the preserved populations areas, including the buffers, through project design features for roadways, French drains, irrigation systems, underground utilities, drainage pipes and fencing, storm drains, and any other BMP measures that apply to surface water entering the preserved populations areas; (7) Using drought resistant plants in fuel modification zones and minimizing irrigation to the extent feasible.

- MM 7-17** The Project Applicant/Developer shall implement a public awareness program (prior to the first occupancy permit) in an effort to restrict public access to the riparian and open space areas on the Project site to designated trails and to prevent unleashed domestic animals from entering these areas. This program shall include signs that identify the boundaries of ecologically

sensitive areas; the use of temporary fencing around sensitive areas that appear to be receiving a high level of disturbance until the disturbance is reversed; and promotion of public education and awareness of such areas. The Project Applicant/Developer shall be responsible for the initial development of the public awareness program and installation of interpretive signs and fencing. The Homeowners Association, the Project Applicant/Developer, or an acceptable Land Manager/Agency (as approved by the County) shall be responsible for maintaining this program, including signs and fencing.

Only passive recreational activities shall be permitted within the designated natural open space areas and shall be restricted to trails. Some areas may allow slightly greater impacts if designated as picnic and/or camping areas.

All dogs shall be required to be leashed while in the designated natural open space areas. In addition, all dogs and cats shall be required to be neutered or spayed; all dogs shall be required to have a microchip; and potential owners shall show evidence prior to entry into the Centennial Development, as required by Los Angeles County Code (Section 10.20.350).

MM 7-18 Common area landscaping and restoration methods shall follow protocols to reduce the potential for the introduction of pathogens and pests into the Project site and to reduce the spread of pathogens and pests outside the Project site (should they inadvertently be introduced). Protocols for reducing the potential for introduction of pathogens and pests into the site via plant foliage/soil from nurseries supplying the material shall include the following anti-contamination procedures: sanitizing all containers, tools, and footwear (boots, pots, clippers, soil scoops, shovels) in soil potting areas; sanitizing all transplanting and prep tables; sanitizing plant storage locations (e.g., benches); sanitizing plant transportation devices (e.g., carts); sanitizing floor surfaces where plants are stored on a regular basis; and using anti-splash watering methods for particularly susceptible plant species. Field installation crews shall sanitize all tools and footwear during landscaping and restoration activities prior to using them or entering the site and shall install plants in a way that minimizes conditions that support pathogens and pests (e.g., minimizing standing water). All plant materials brought onto the site will be inspected by landscape/restoration personnel familiar with signs of pathogen and pest infestation. Should pathogens or pests be detected, the infected material shall be bagged, secured, and disposed of off-site to a contained location. Long-term control methods shall include monitoring to examine vegetation and surrounding areas for pests to evaluate trends and to identify when controls are needed; establishing action thresholds that trigger control actions; and implementing pest control methods—cultural, mechanical, environmental, and biological—and appropriate pesticides.

MM 7-19 Prior to vegetation clearing or grading, additional surveys shall be performed to confirm that all oak trees within the impact and buffer areas are recorded. The Project Applicant/Developer will be required to comply with all

mitigation measures stipulated in the County-issued Oak Tree Permit pursuant to the County of Los Angeles Oak Tree Ordinance (CLAOTO) and the *County of Los Angeles Oak Woodlands Conservation Management Plan* (OWCMP). Trees would be planted pursuant to the Oak Woodland Restoration Plan discussed in MM 7-11.

MM 7-20 All oak tree driplines within 50 feet of land clearing (including brush clearing) or areas to be graded shall be enclosed with temporary fencing for the duration of the clearing or grading activities. Fencing shall extend to the root protection zone (RPZ) (that area at least 15 feet from the trunk or half again as large as the distance from the trunk to the dripline, whichever is greater). No parking or storage of equipment, solvents, or chemicals that could adversely affect the trees shall be allowed within 25 feet of the trunk at any time. Fence removal shall occur only after the Project Biologist confirms the health of preserved trees.

All upslope grading and drainage shall be engineered to minimize resultant erosion, soil compaction, or drainage into preserved oak tree areas. Whenever possible, utilities shall be designed to avoid crossing under the canopies of preserved trees unless the utilities are installed by drilling under the root zones (where feasible) in order to avoid impacts associated with cutting roots. Feasibility of drilling under trees will be based on soil conditions. Utilities will be clustered whenever possible to lessen impacts to oak RPZs.

MM 7-21 In order to ensure that no direct impacts to Significant Ecological Area (SEA) 17 occur, brush clearance zones shall be contained within the current Project impact boundary and no overlap with the adjacent SEA 17 shall occur. Vegetation management for fire abatement purposes is not authorized in SEA areas. An Implementation Plan, including fire risk abatement measures (including but not limited to vegetation management) required to comply with State and County fire prevention and response legal requirements, shall be submitted as part of the tentative tract map for portions of the Project site that border an SEA or mitigation preserve area. The Plan shall include this prohibition on vegetation clearance within these biologically sensitive areas.

MM 7-22 If a golf course is developed as part of Project implementation, the Project Applicant/Developer shall prepare a Golf Course Management Plan that requires any golf course developed on the site to be built and managed in accordance with the Audubon Cooperative Sanctuary Program for Golf Courses (or equivalent), which is a cooperative effort between the United States Golf Association and Audubon International that is designed to promote ecologically sound land management and to conserve natural resources.

MM 11-3 from Section 5.11, Air Resources, will also be implemented to help reduce impacts to Biological Resources.

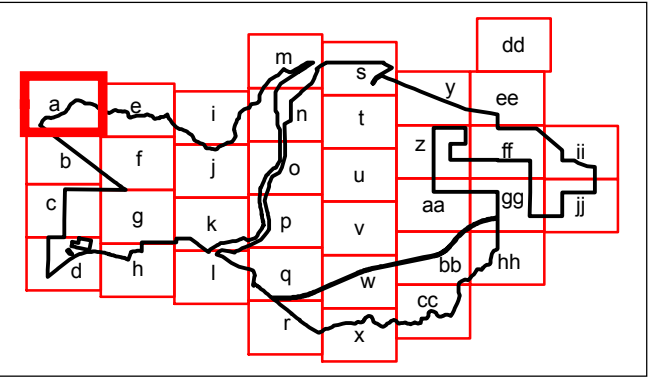
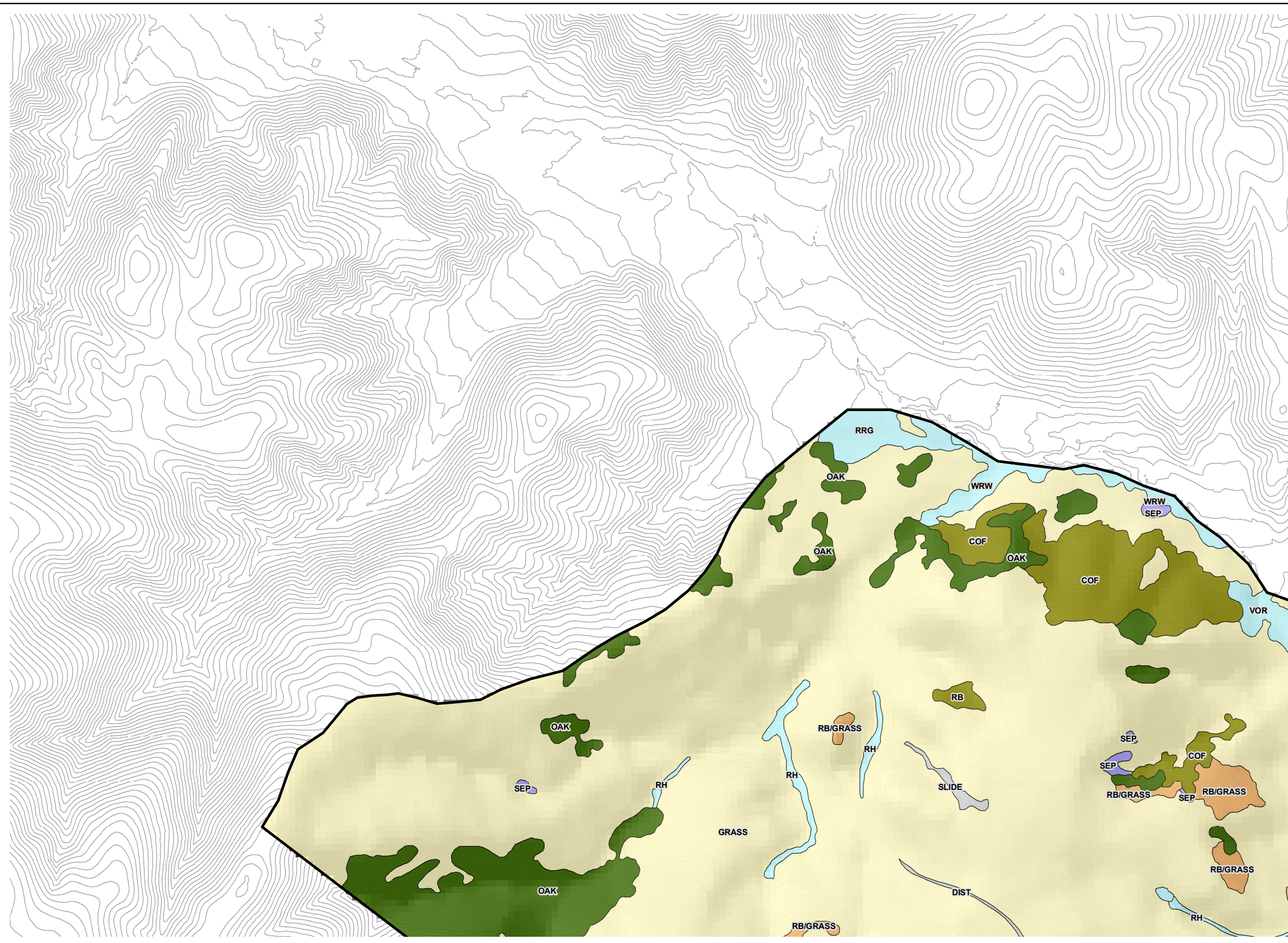
5.7.8 LEVEL OF SIGNIFICANCE AFTER MITIGATION

The direct and indirect impacts on biological resources that may result from implementation of the Project shall be mitigated to a less than significant level with implementation of the mitigation measures described above. Specific strategies to mitigate each impact to a level that is less than significant are included. Therefore, Project impacts are considered less than significant after mitigation. Cumulative impacts on biological resources are discussed in Section 7.0 of this document.

5.7.9 REFERENCES

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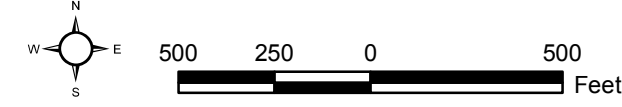


- Project Boundary
- Impact Area
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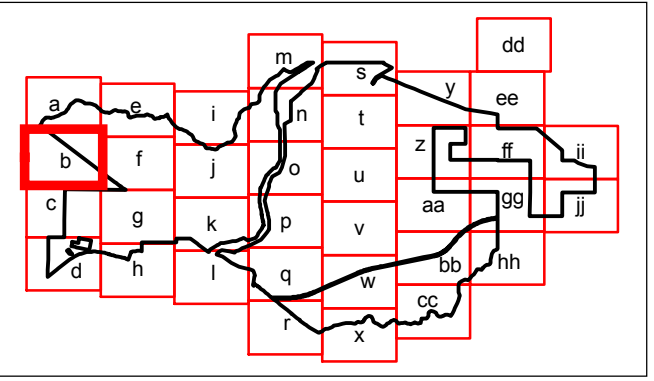
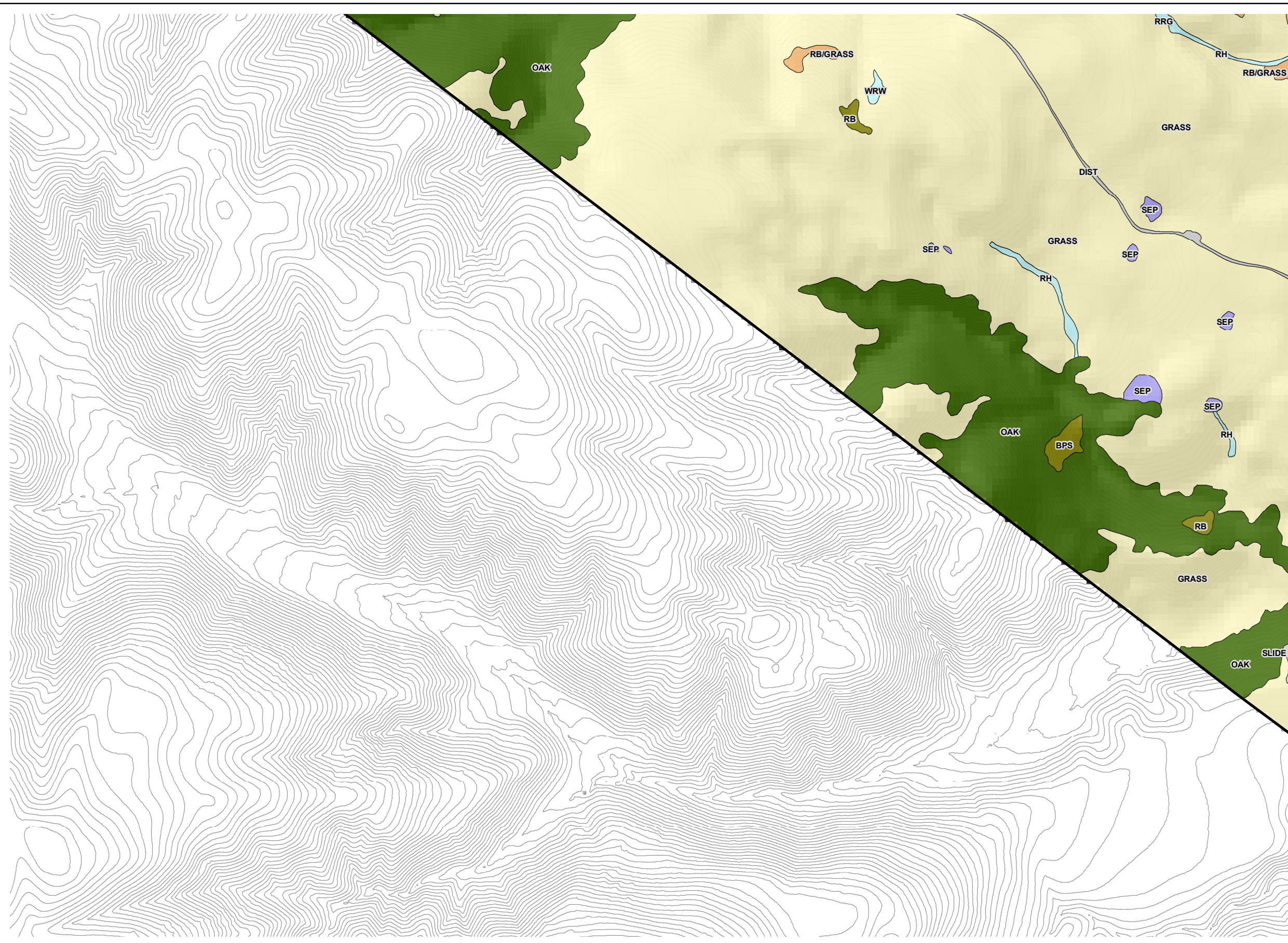
Detailed Vegetation Map

Exhibit 5.7-17a

Centennial Project



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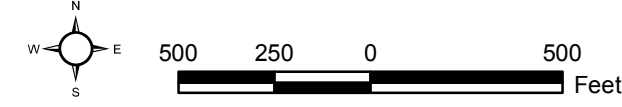


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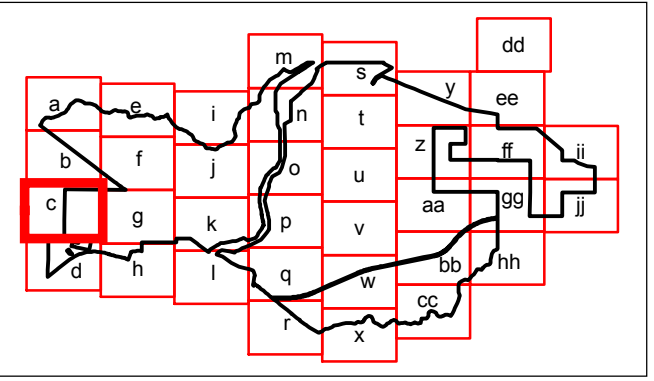
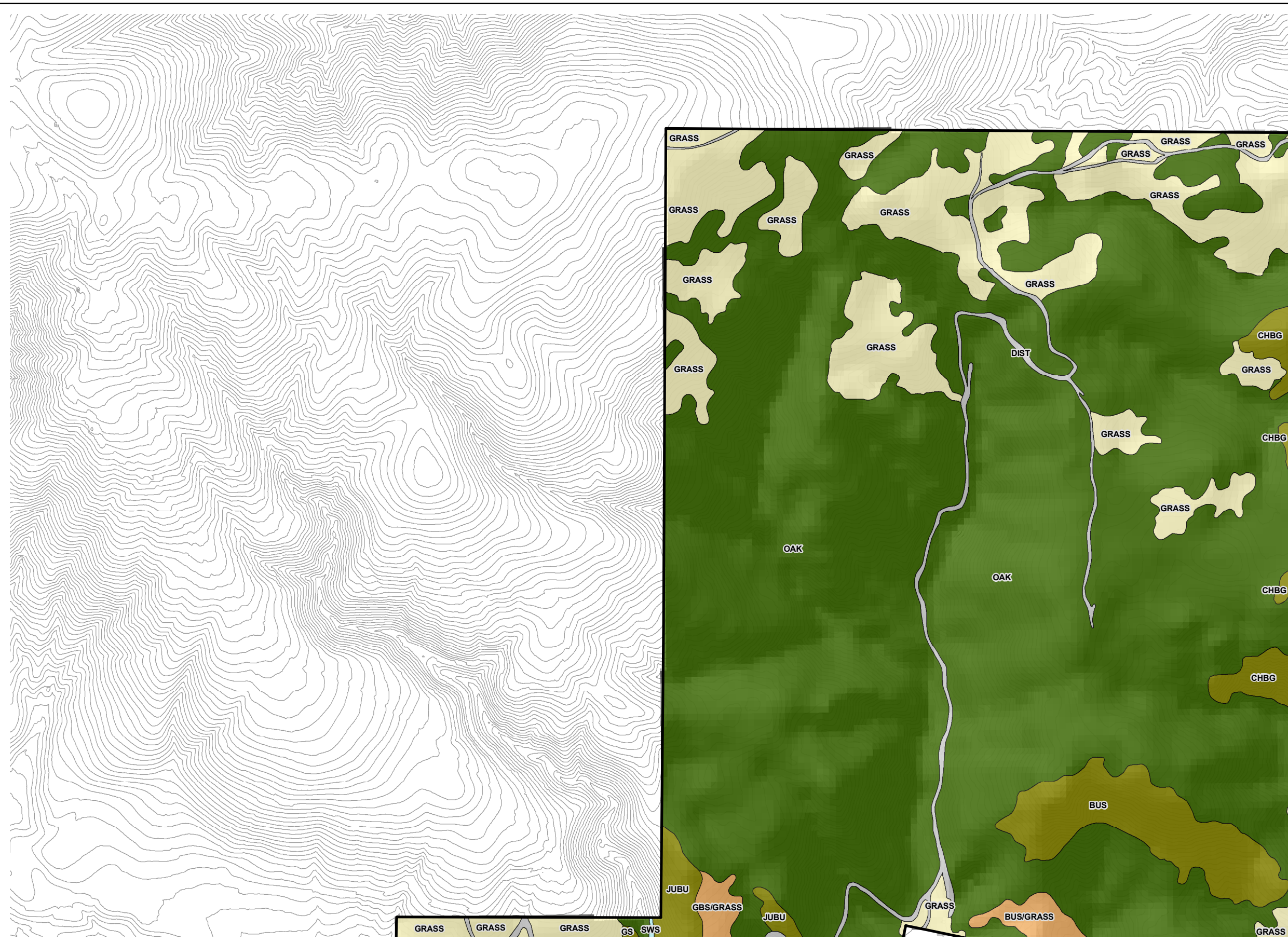
Detailed Vegetation Map

Exhibit 5.7-17b

Centennial Project



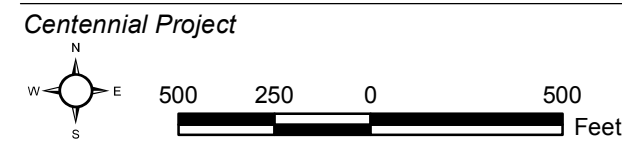
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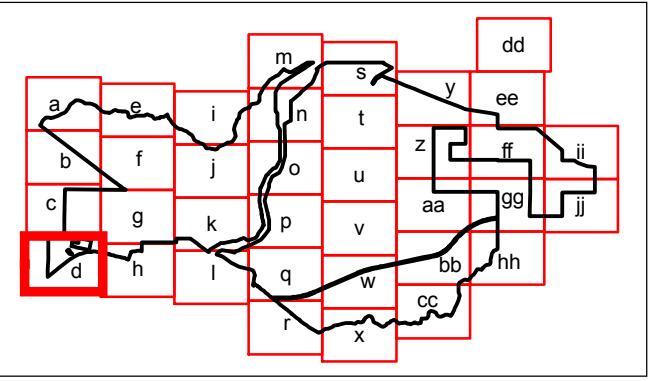
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Detailed Vegetation Map

Exhibit 5.7-17c



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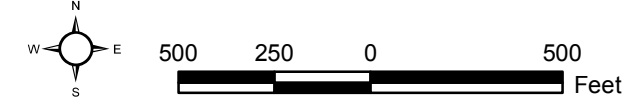


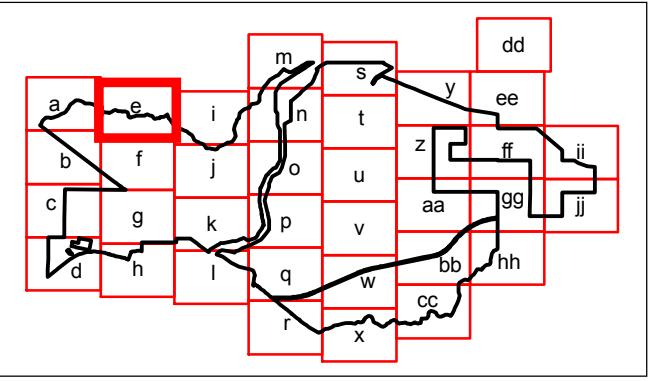
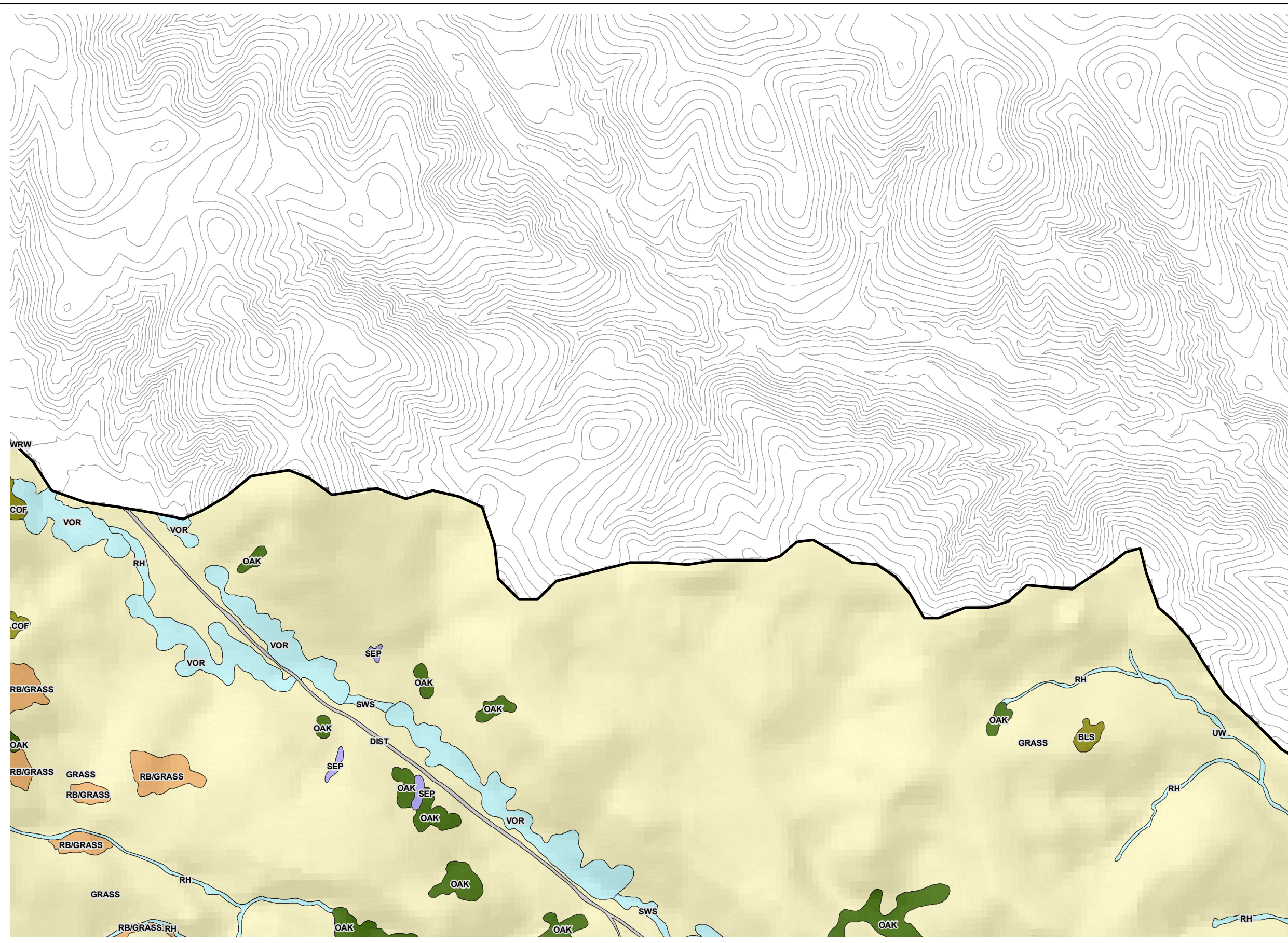
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Detailed Vegetation Map

Exhibit 5.7-17d

Centennial Project





- Legend**
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BLS/GRASS - Bush Lupine Scrub/Native Perennial/CA Annual Grassland
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GBS/GRASS - Goldenbush Scrub/Native Perennial/CA Annual Grassland
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WBW/GRASS - Wright's Buckwheat Scrub/Native Perennial/CA Annual Grassland
YUS/GRASS - Yucca Scrub/Native Perennial/CA Annual Grassland
 - Scrub and Chaparral**
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BUS/YUS - California Buckwheat Scrub/Yucca Scrub
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 - Broad Leafed Upland Tree Dominated**
OAK - Mixed Oak Woodland
 - Riparian and Bottomland Habitat**
AS - Alluvial Scrub
CW - Cottonwood Woodland
RH - Riparian Herb
RRG - Rush Riparian Grassland
SAWR - Southern Arroyo Willow Riparian
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VOR - Valley Oak Riparian Woodland
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 - Bog and Marsh**
AM - Alkali Meadow
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CVFM - Coastal and Valley Freshwater Marsh
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 - Other Areas**
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Detailed Vegetation Map

Centennial Project

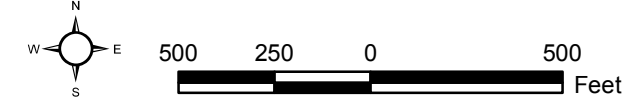
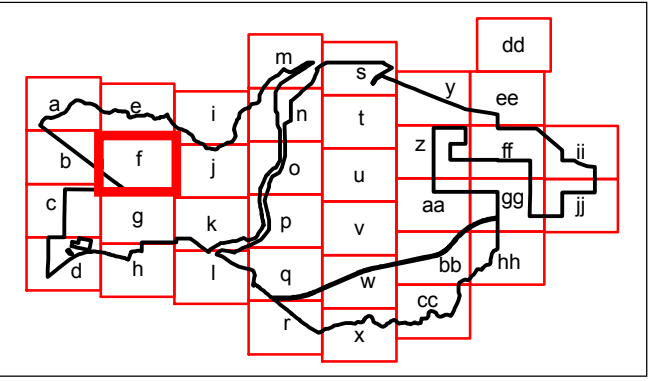
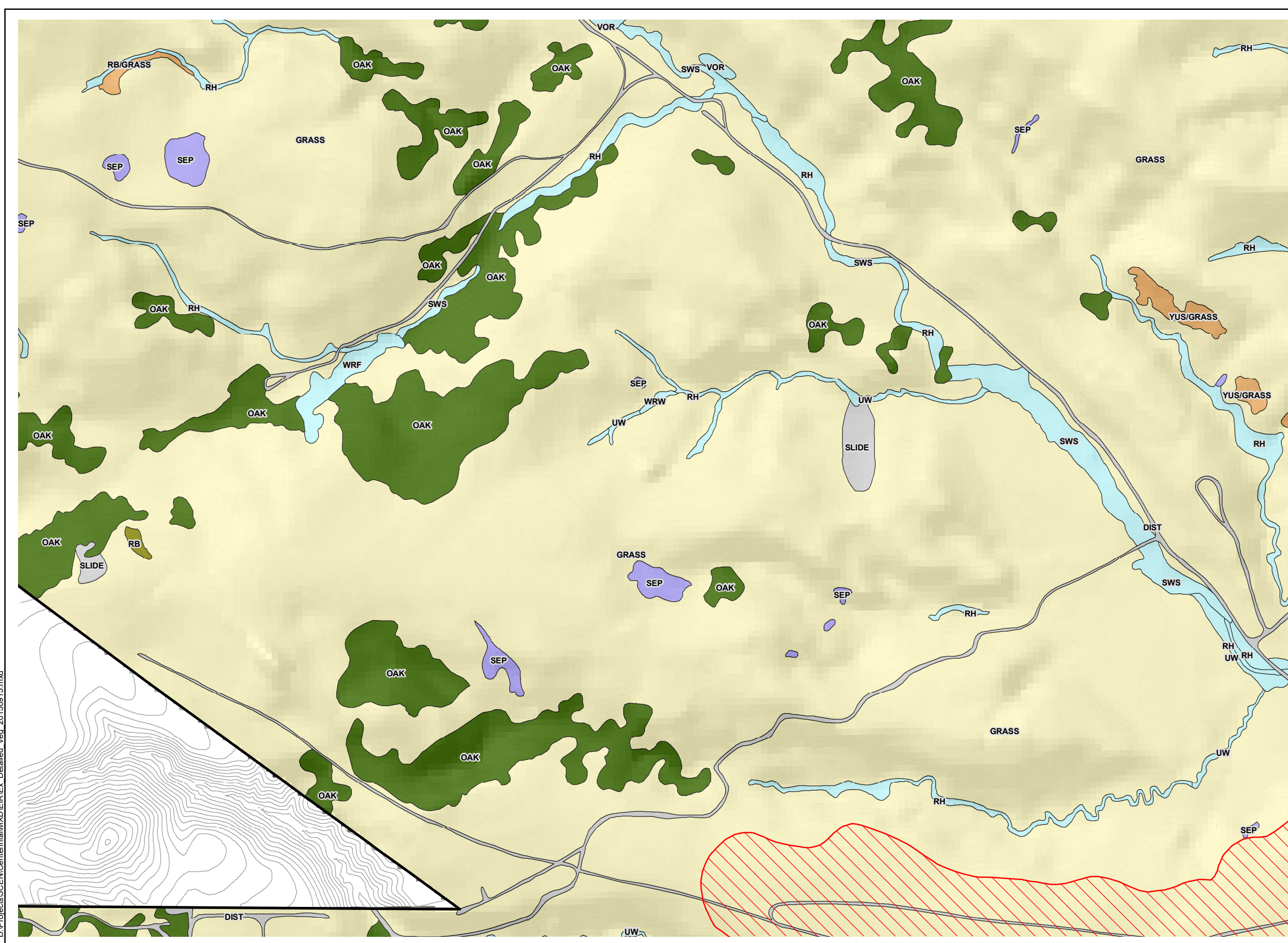


Exhibit 5.7-17e

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Detailed Vegetation Map

Centennial Project

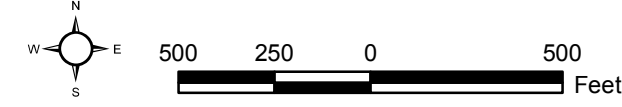
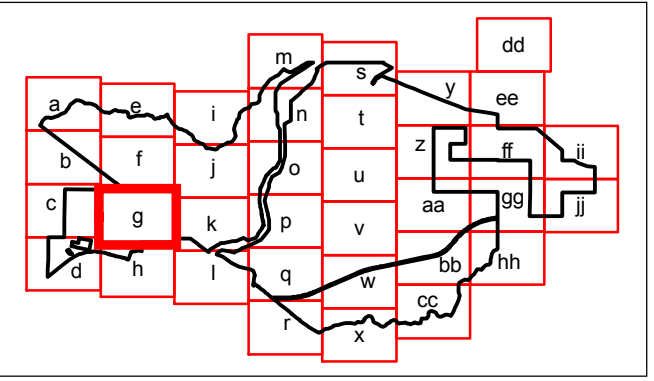
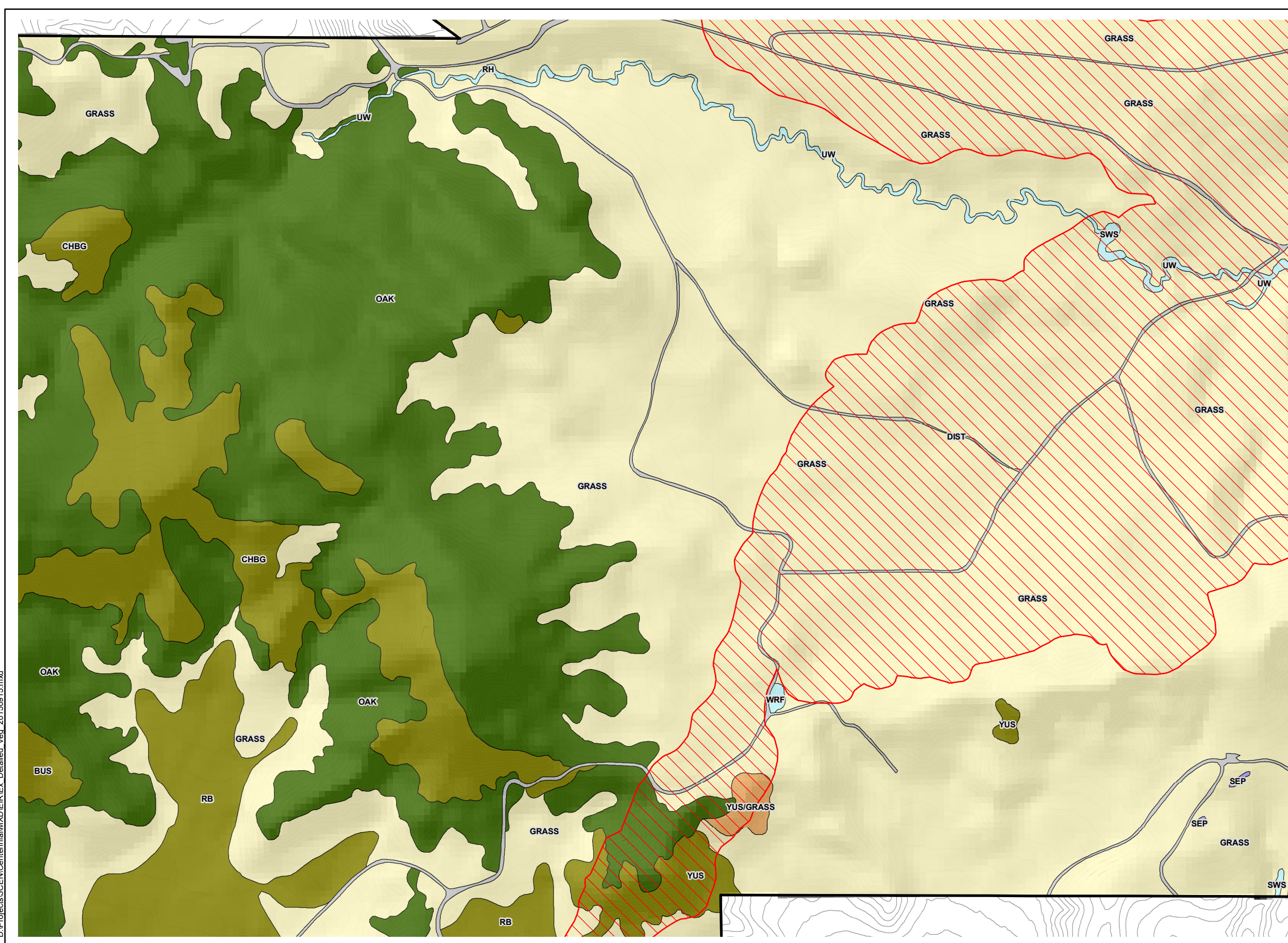


Exhibit 5.7-17f

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Detailed Vegetation Map

Centennial Project

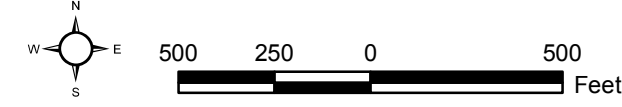
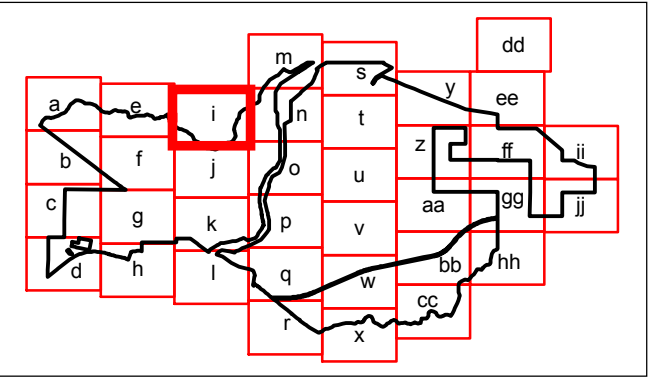
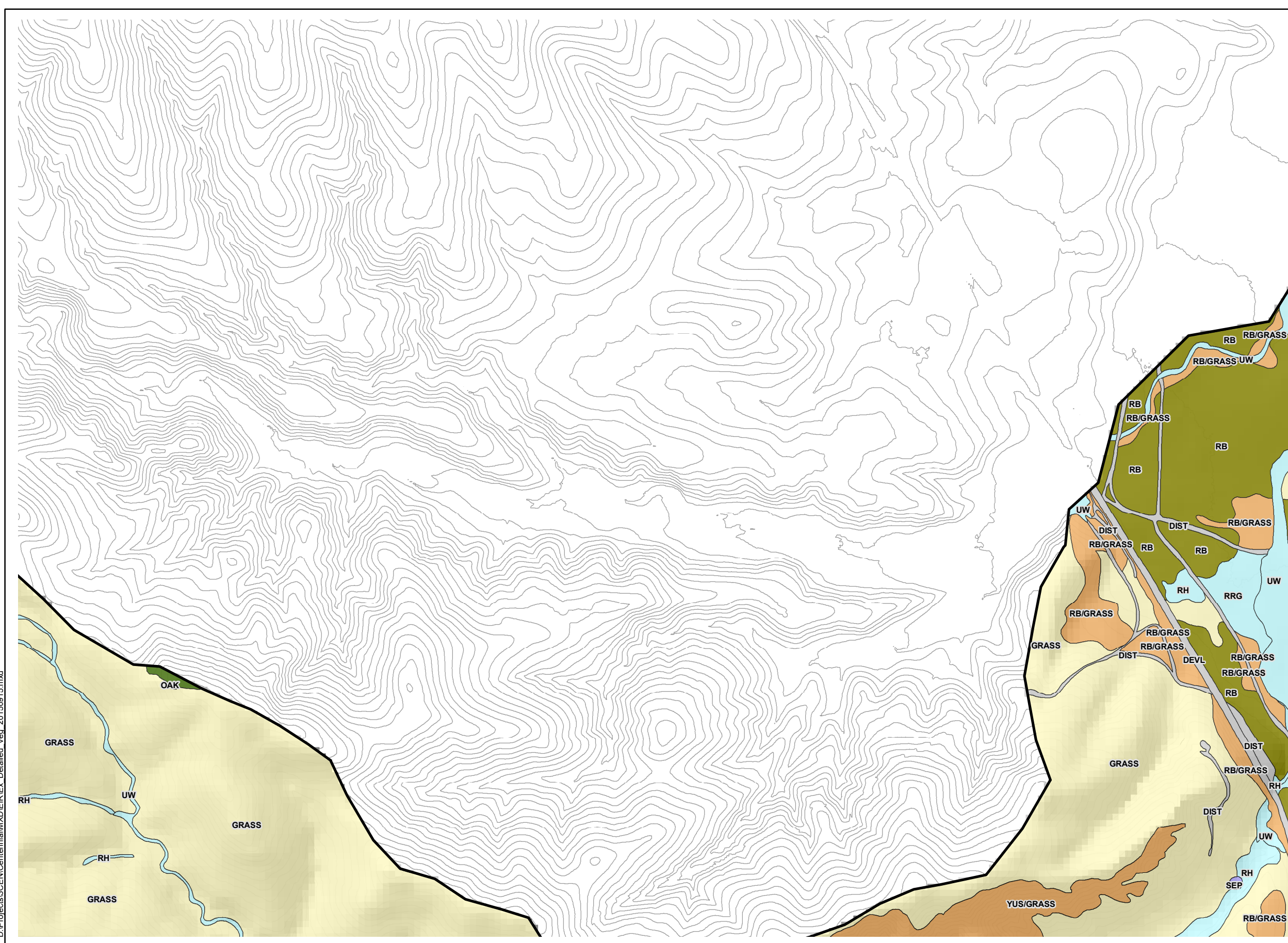


Exhibit 5.7-17g

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Detailed Vegetation Map

Centennial Project

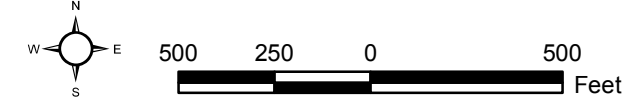
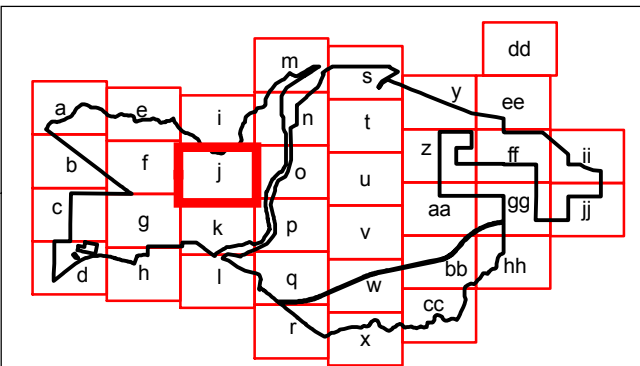
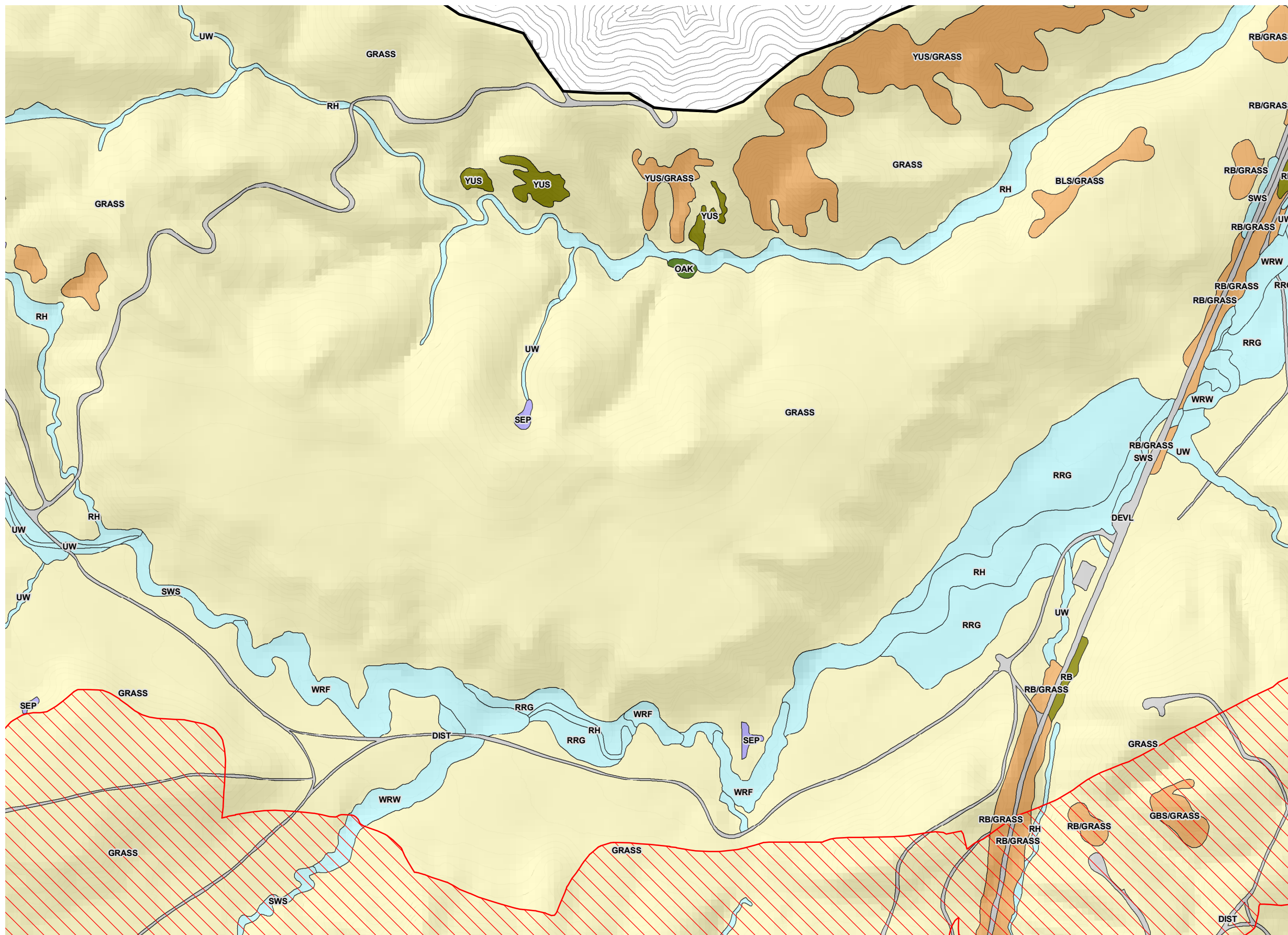


Exhibit 5.7-17i

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- Project Boundary
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Detailed Vegetation Map

Centennial Project

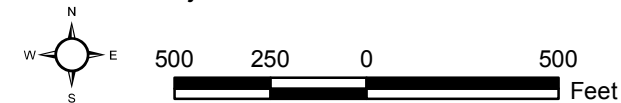
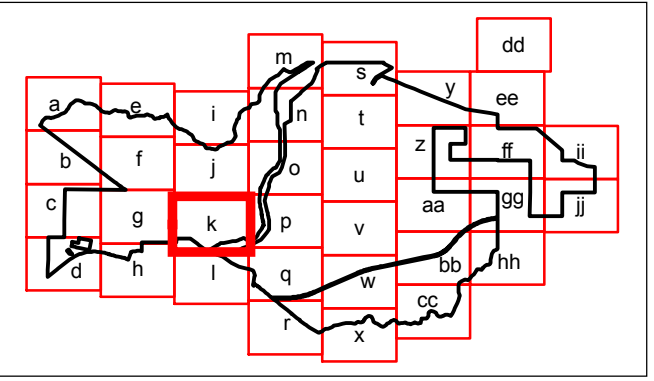
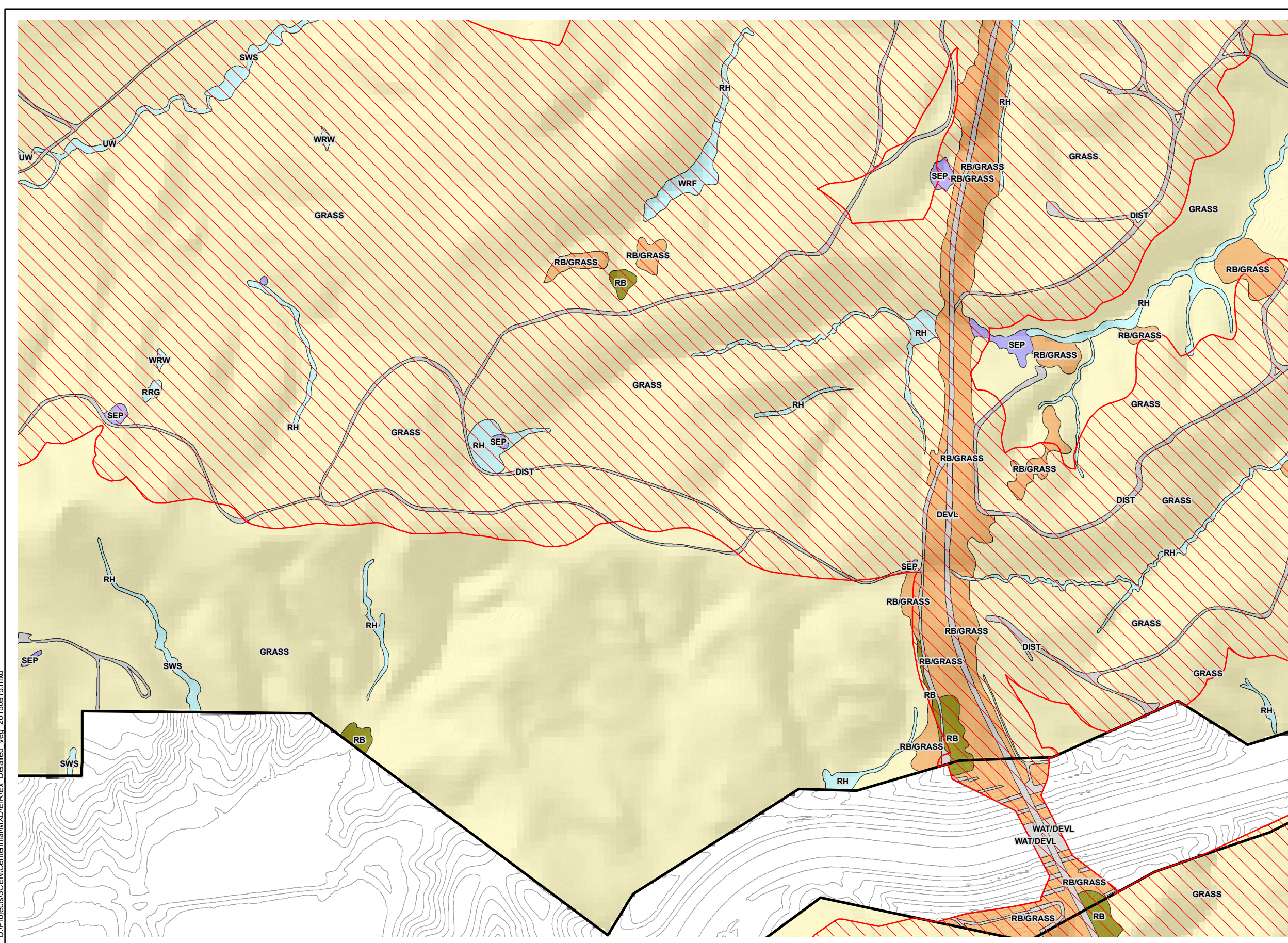


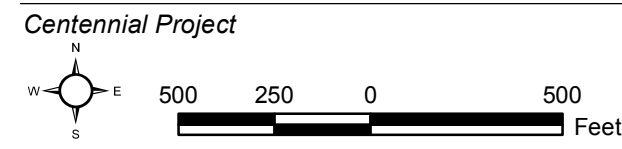
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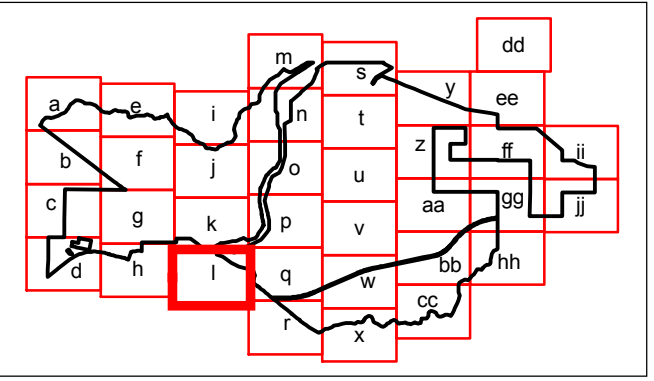
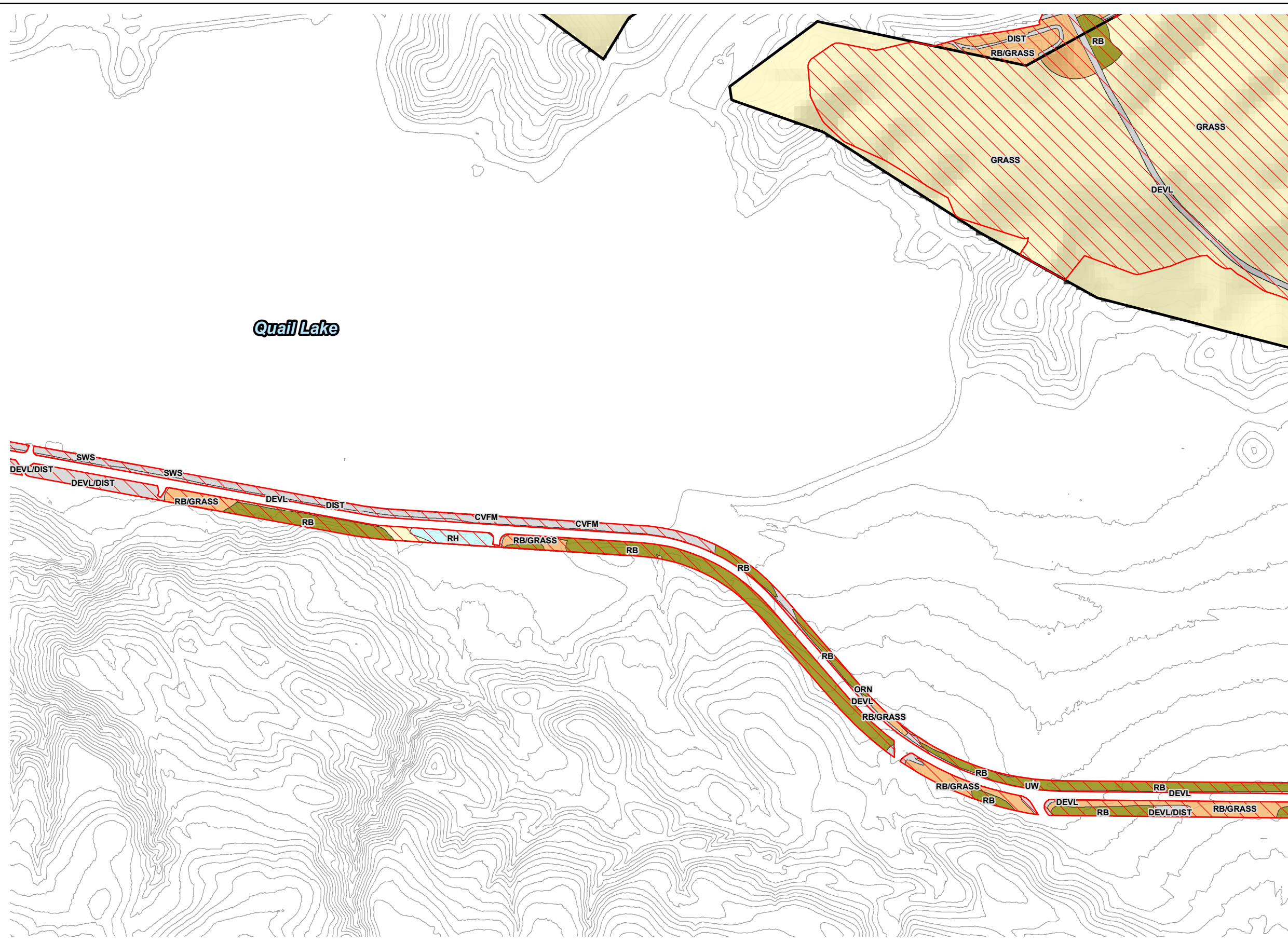
- Project Boundary
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Detailed Vegetation Map

Exhibit 5.7-17k



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- Project Boundary** [Symbol]
- Impact Area** [Symbol]
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Detailed Vegetation Map

Centennial Project

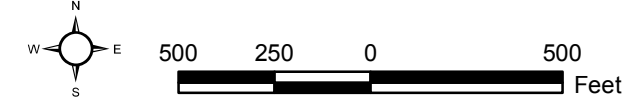
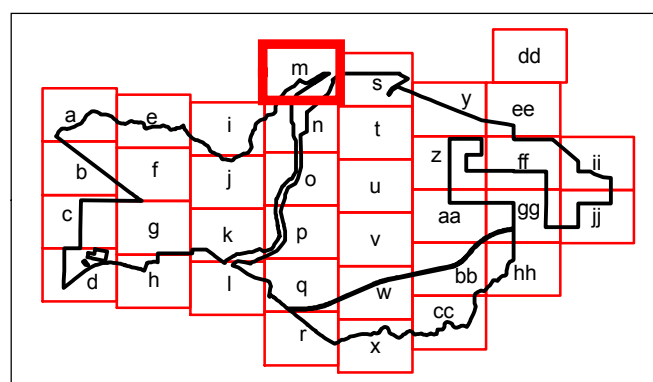


Exhibit 5.7-171

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Detailed Vegetation Map

Centennial Project

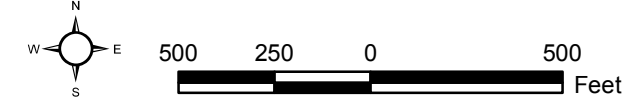
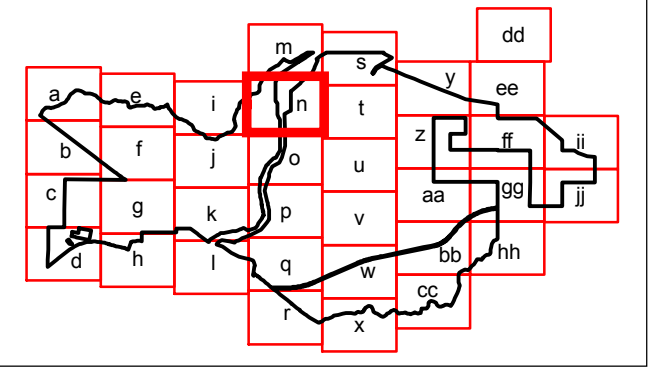
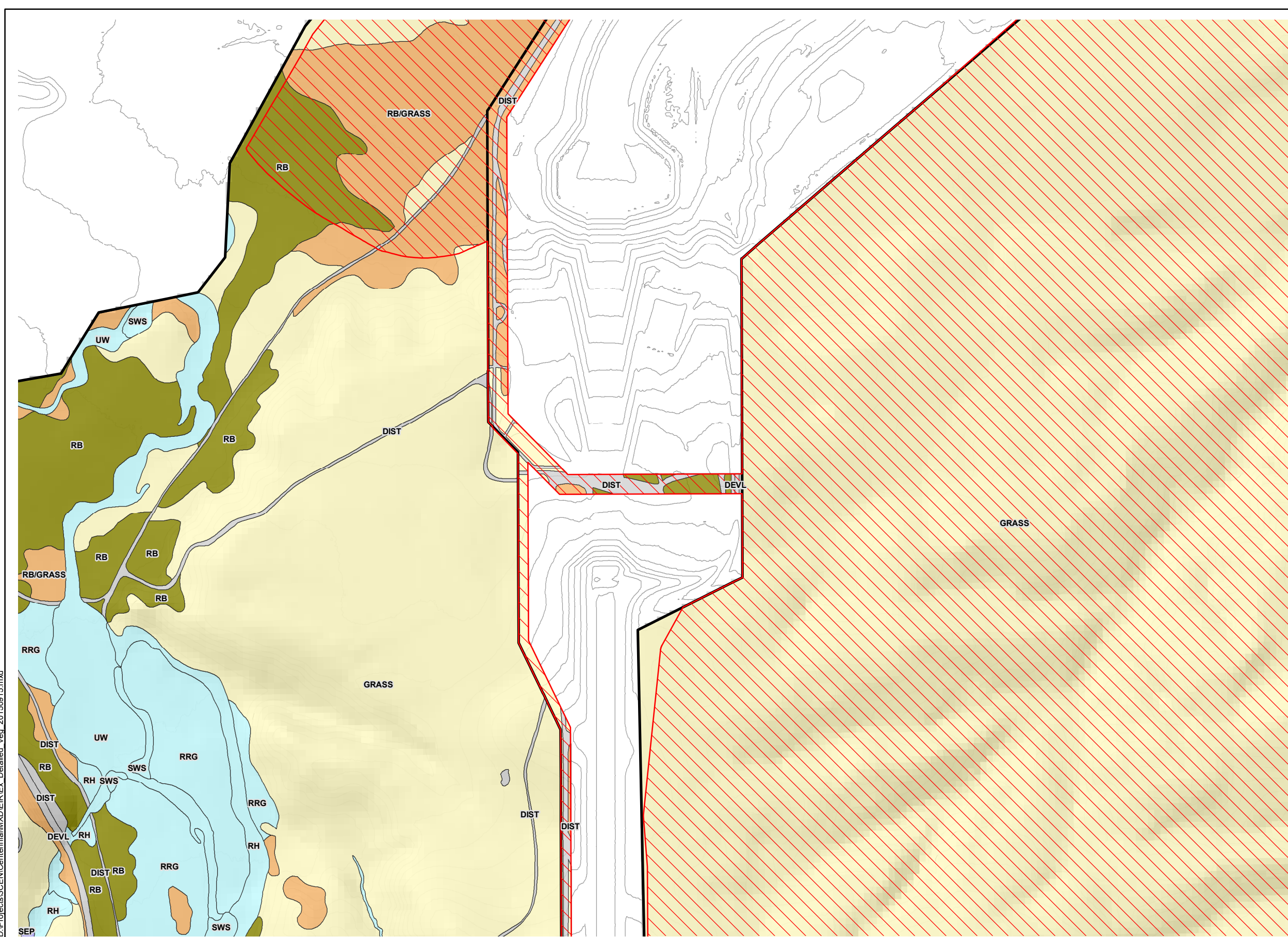


Exhibit 5.7-17m

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SEP - Seeps and Ephemeral Ponds
 - Other Areas**
AG - Agricultural
DEVL - Developed
DEVL/DIST - Developed/Disturbed
DIST - Disturbed
ORN - Ornamental
SLIDE - Disturbed (Landslide)
WAT/DEVL - Open Water/Developed

Detailed Vegetation Map

Centennial Project

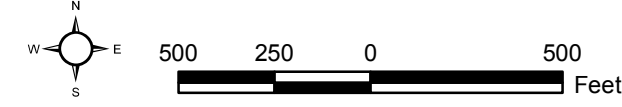
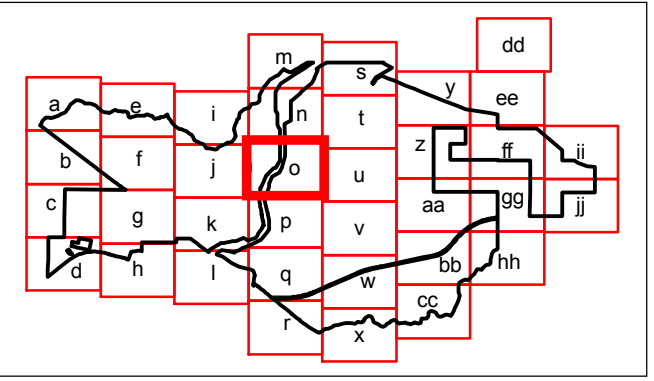
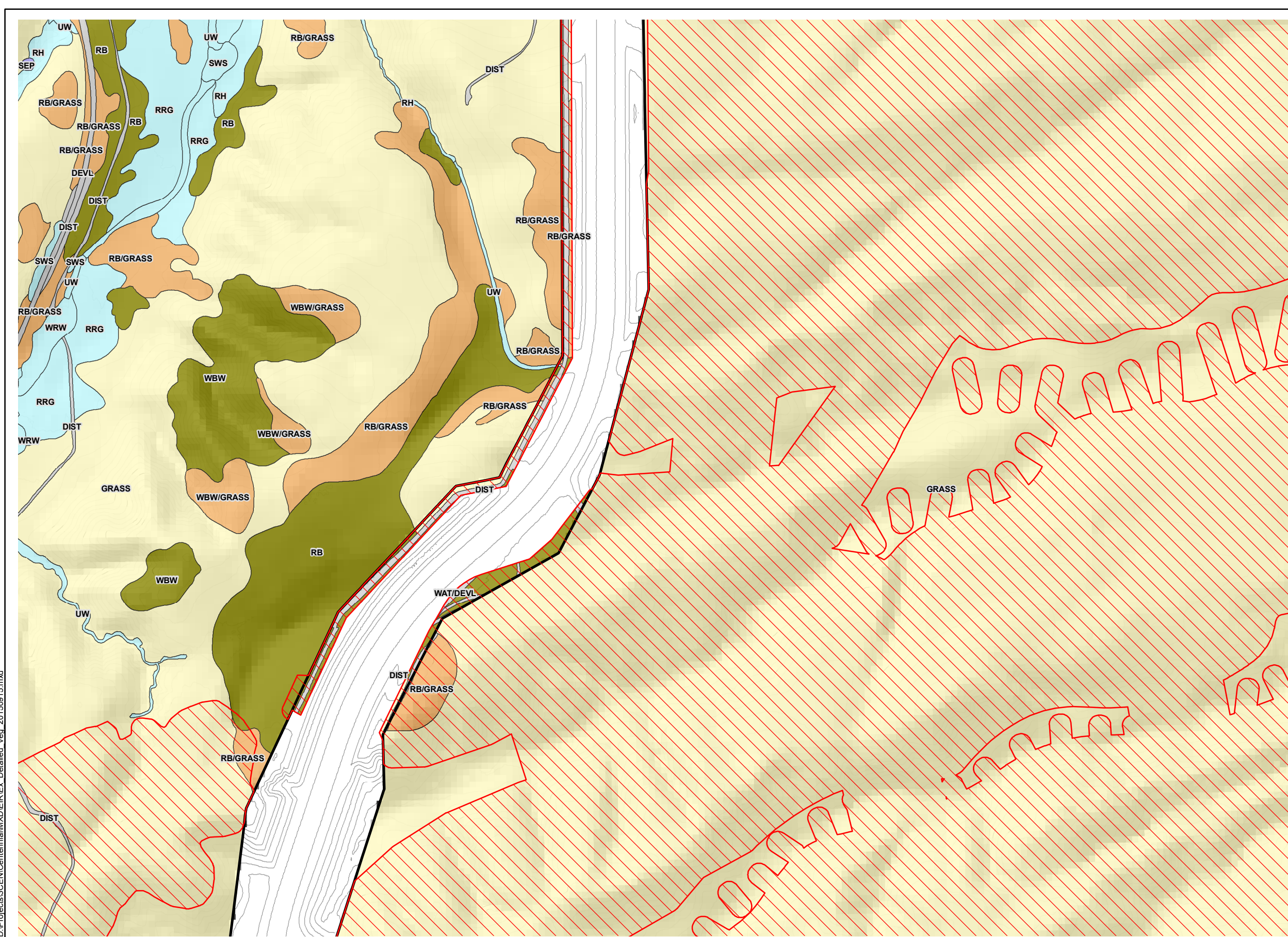


Exhibit 5.7-17n

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- Project Boundary
 Impact Area
- Vegetation Types and Other Areas**
- Native Perennial/CA Annual Grassland**
GRASS - Native Perennial/CA Annual Grassland
 - Mixed Chaparral or Scrub and Native Perennial**
 BLS/GRASS - Bush Lupine Scrub/Native Perennial/CA Annual Grassland
 BUS/GRASS - California Buckwheat Scrub/Native Perennial/CA Annual Grassland
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 WBS/GRASS - Wand Buckwheat Scrub/Native Perennial/CA Annual Grassland
 WBW/GRASS - Wright's Buckwheat Scrub/Native Perennial/CA Annual Grassland
 YUS/GRASS - Yucca Scrub/Native Perennial/CA Annual Grassland
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 BLS - Bush Lupine Scrub
 BPS - Bladderpod Scrub
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 CHBG - Chamise/Bigberry Manzanita Chaparral
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 GS - Goldenbush Scrub
 GBS - Great Basin Scrubs
 JUBU - California juniper/California buckwheat Scrub
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 WBS - Wand Buckwheat Scrub
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 - Broad Leafed Upland Tree Dominated**
OAK - Mixed Oak Woodland
 - Riparian and Bottomland Habitat**
 AS - Alluvial Scrub
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 RH - Riparian Herb
 RRG - Rush Riparian Grassland
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 SCWW - Southern Cottonwood Willow Woodland
 SWS - Southern Willow Scrub
 UW - Unvegetated Wash
 VOR - Valley Oak Riparian Woodland
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Centennial Project

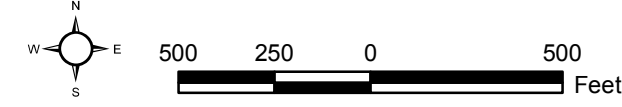
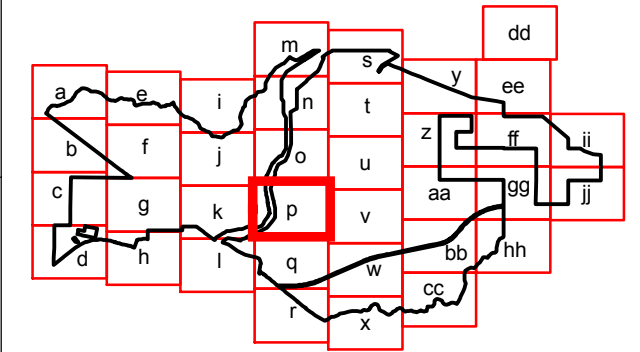
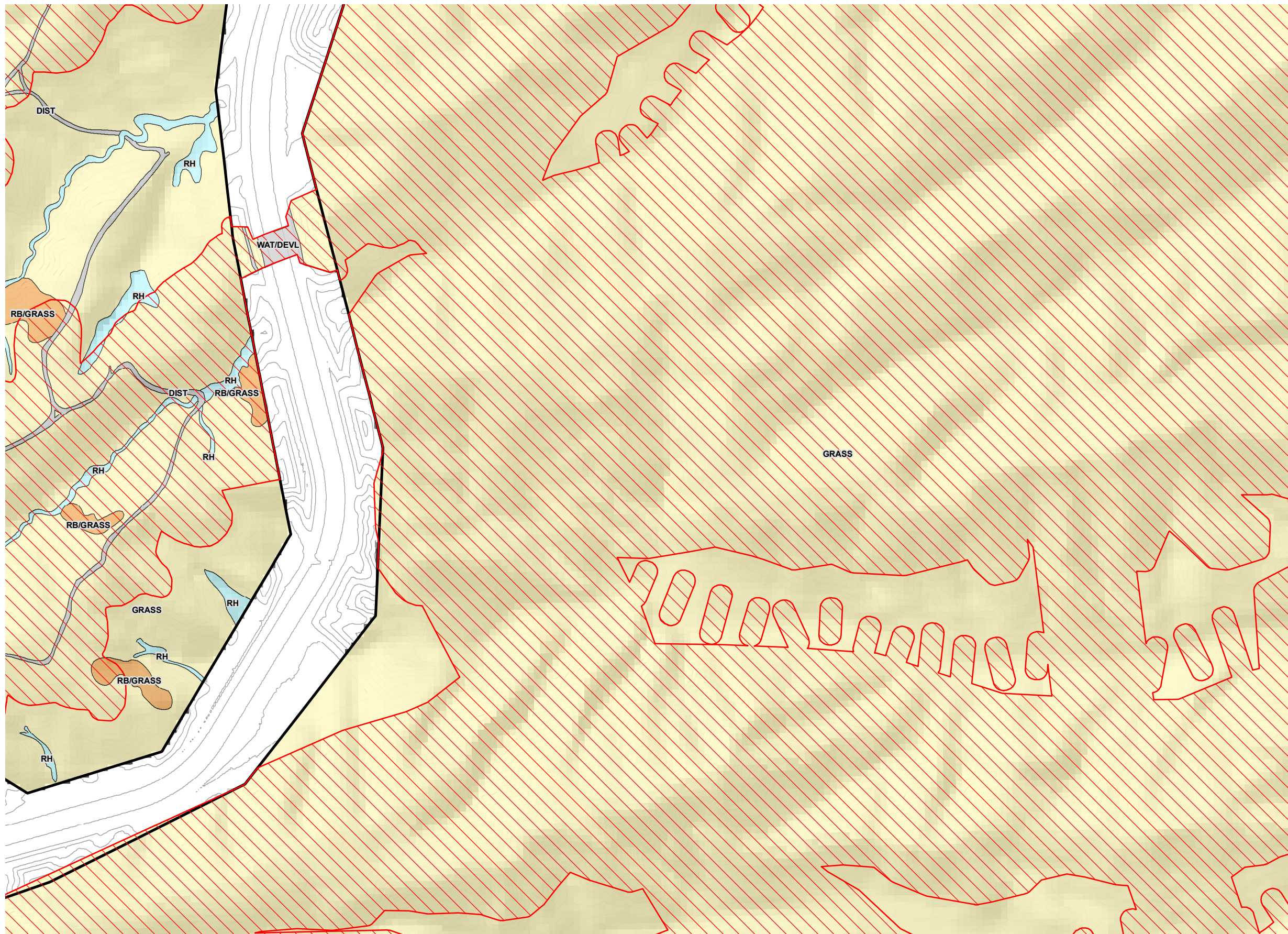


Exhibit 5.7-17o

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Detailed Vegetation Map

Centennial Project

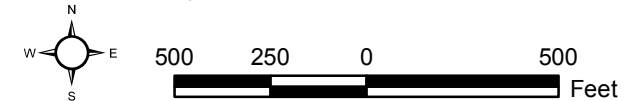
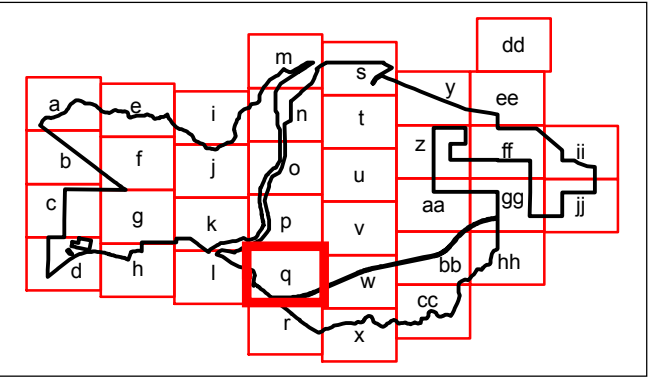
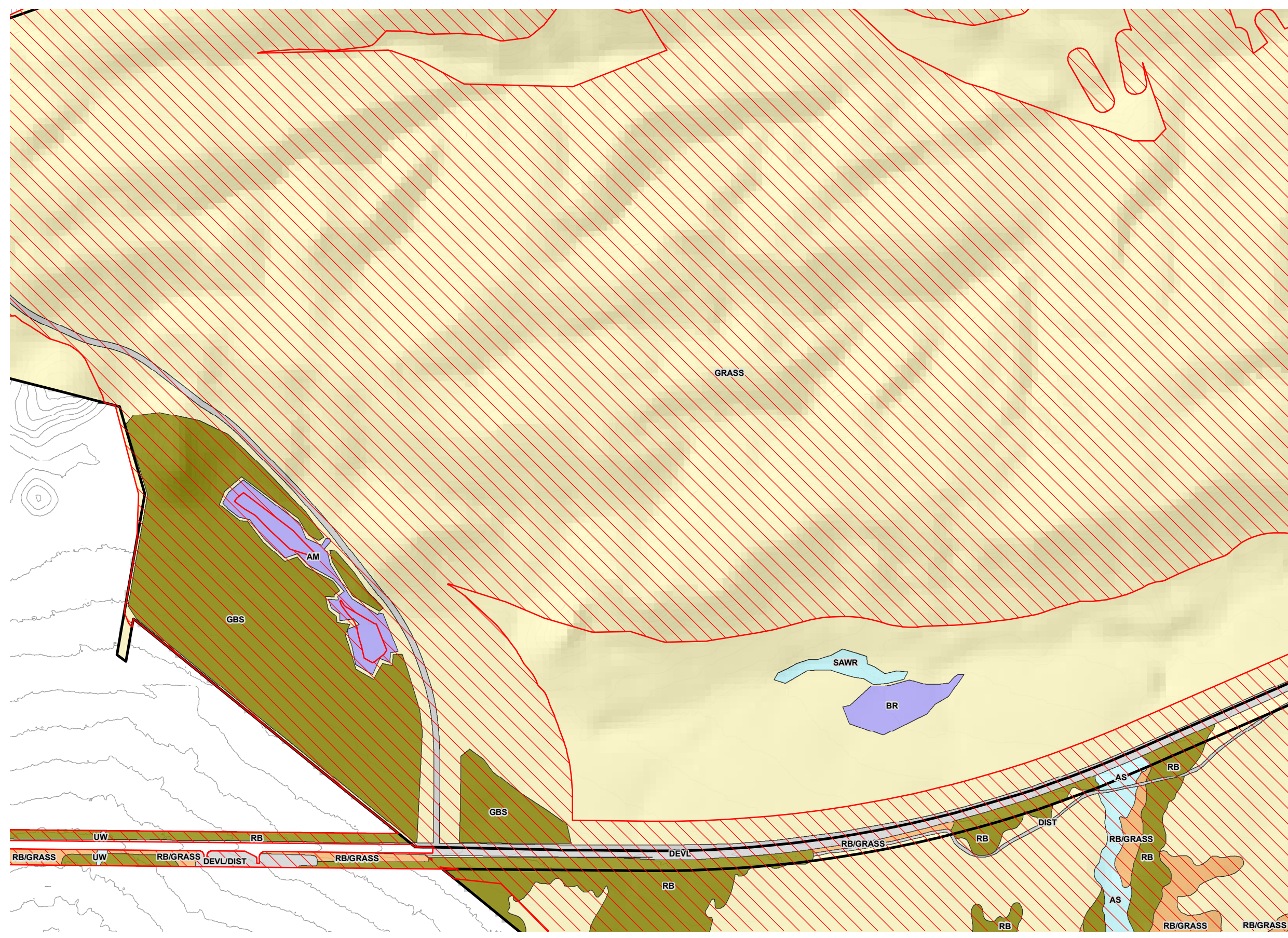


Exhibit 5.7-17p



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Detailed Vegetation Map

Centennial Project

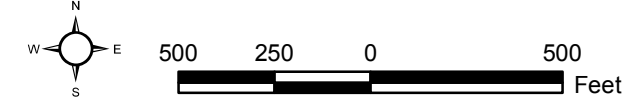
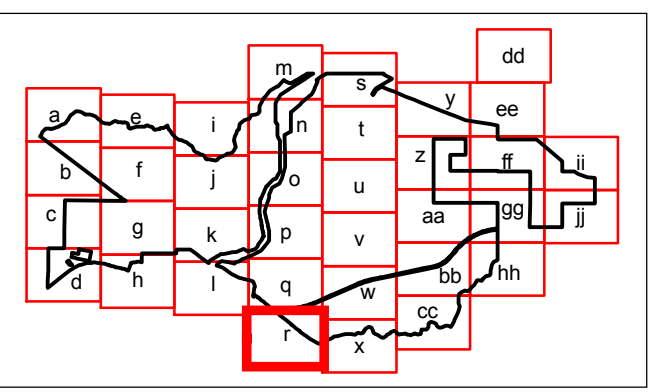
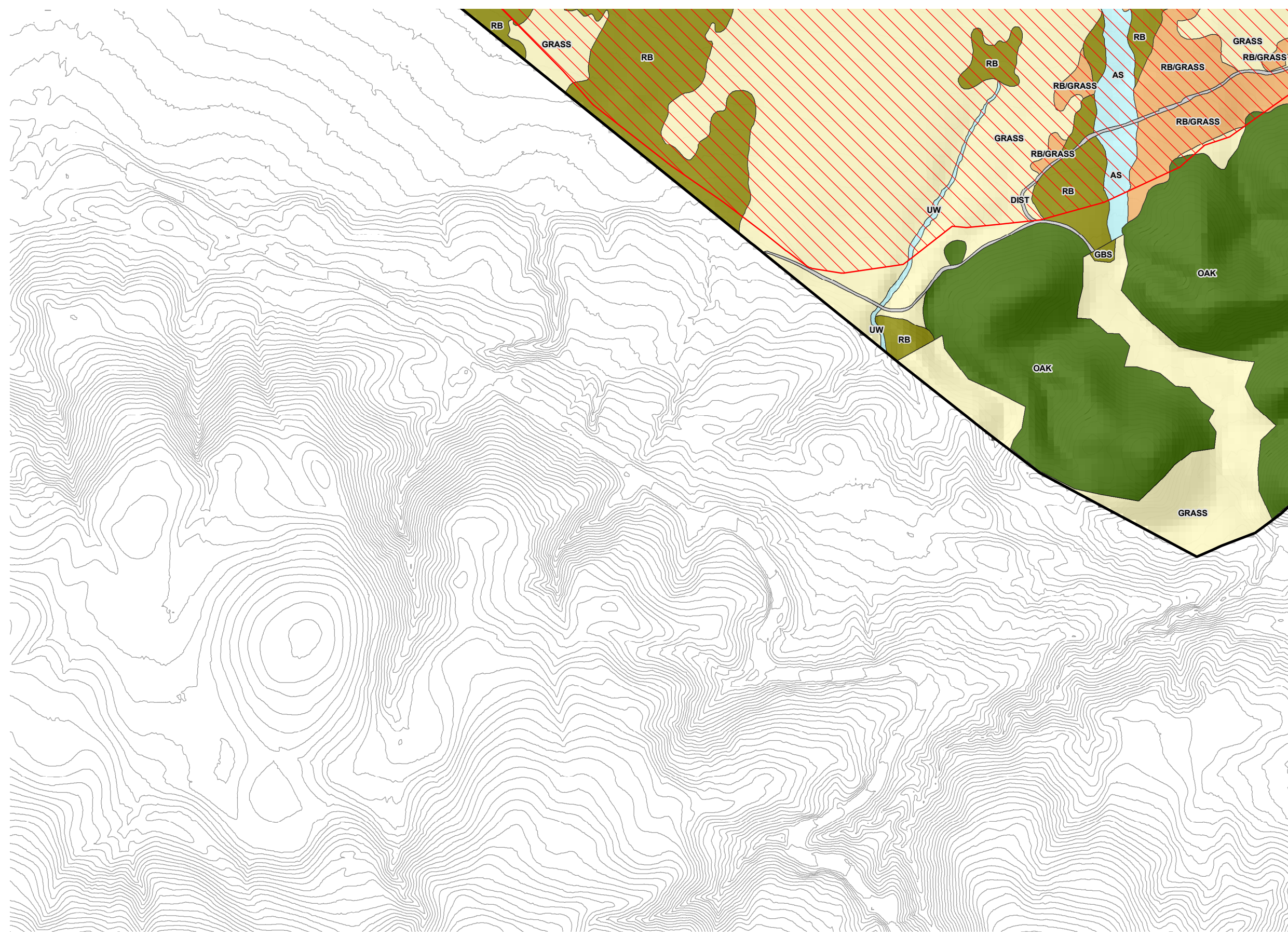


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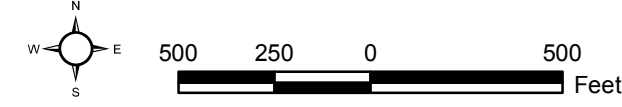


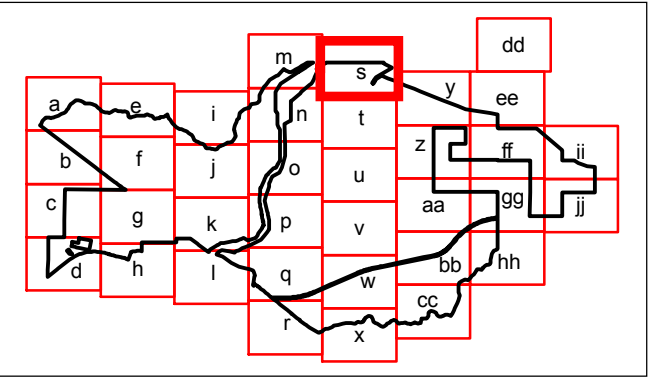
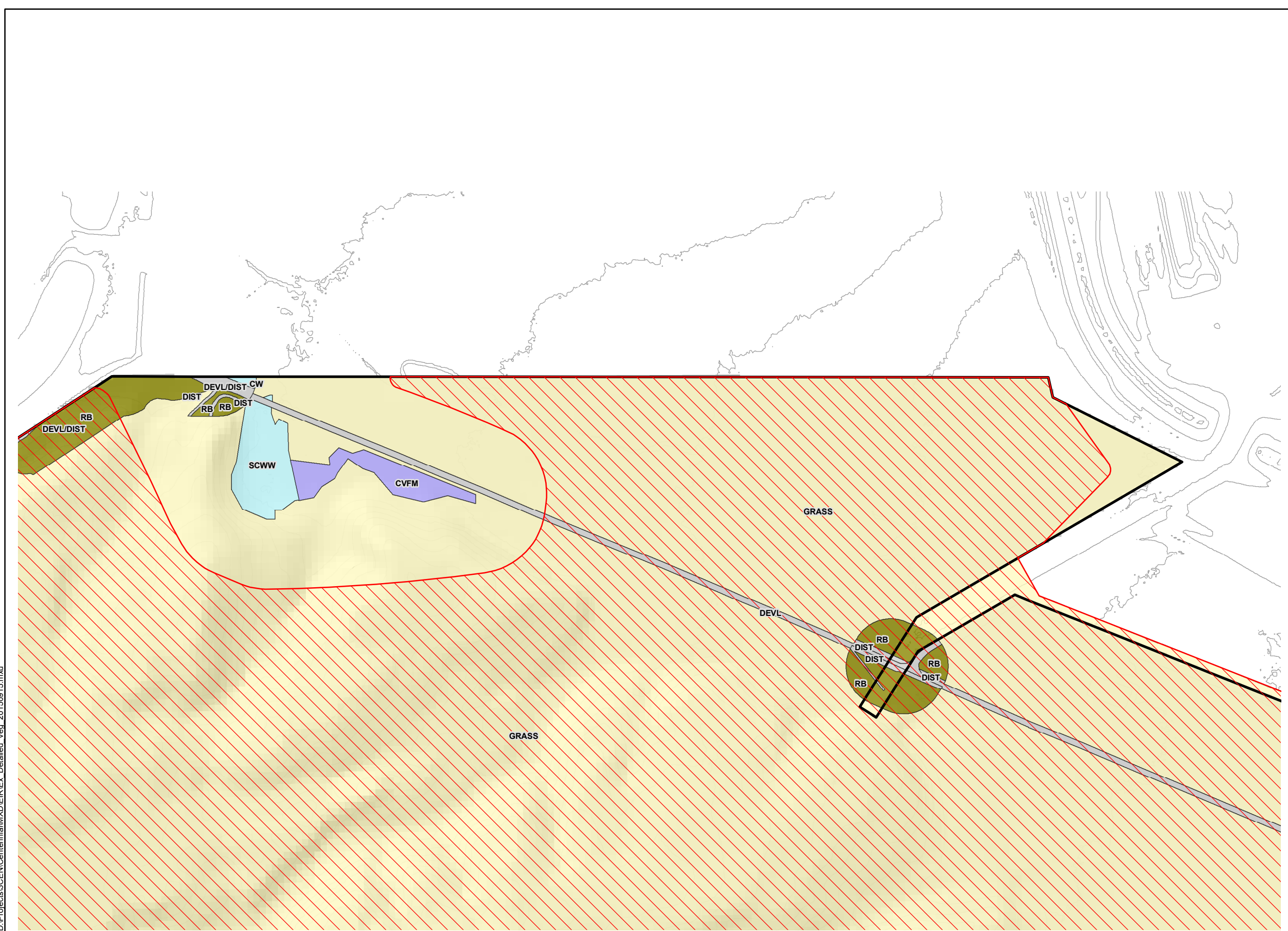
- Project Boundary
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Detailed Vegetation Map

Exhibit 5.7-17r

Centennial Project





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Detailed Vegetation Map

Centennial Project

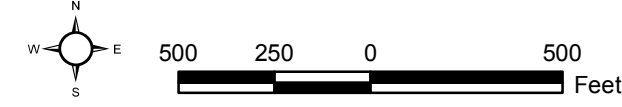
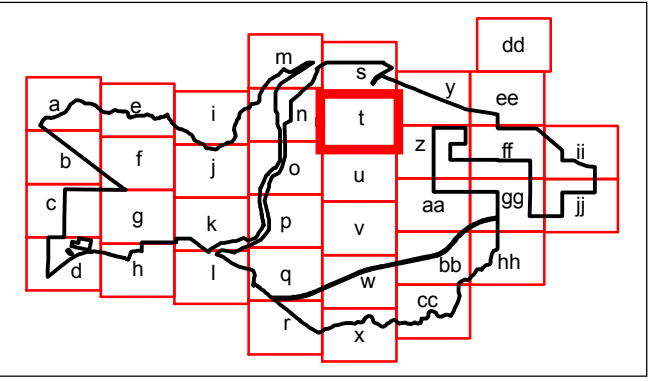
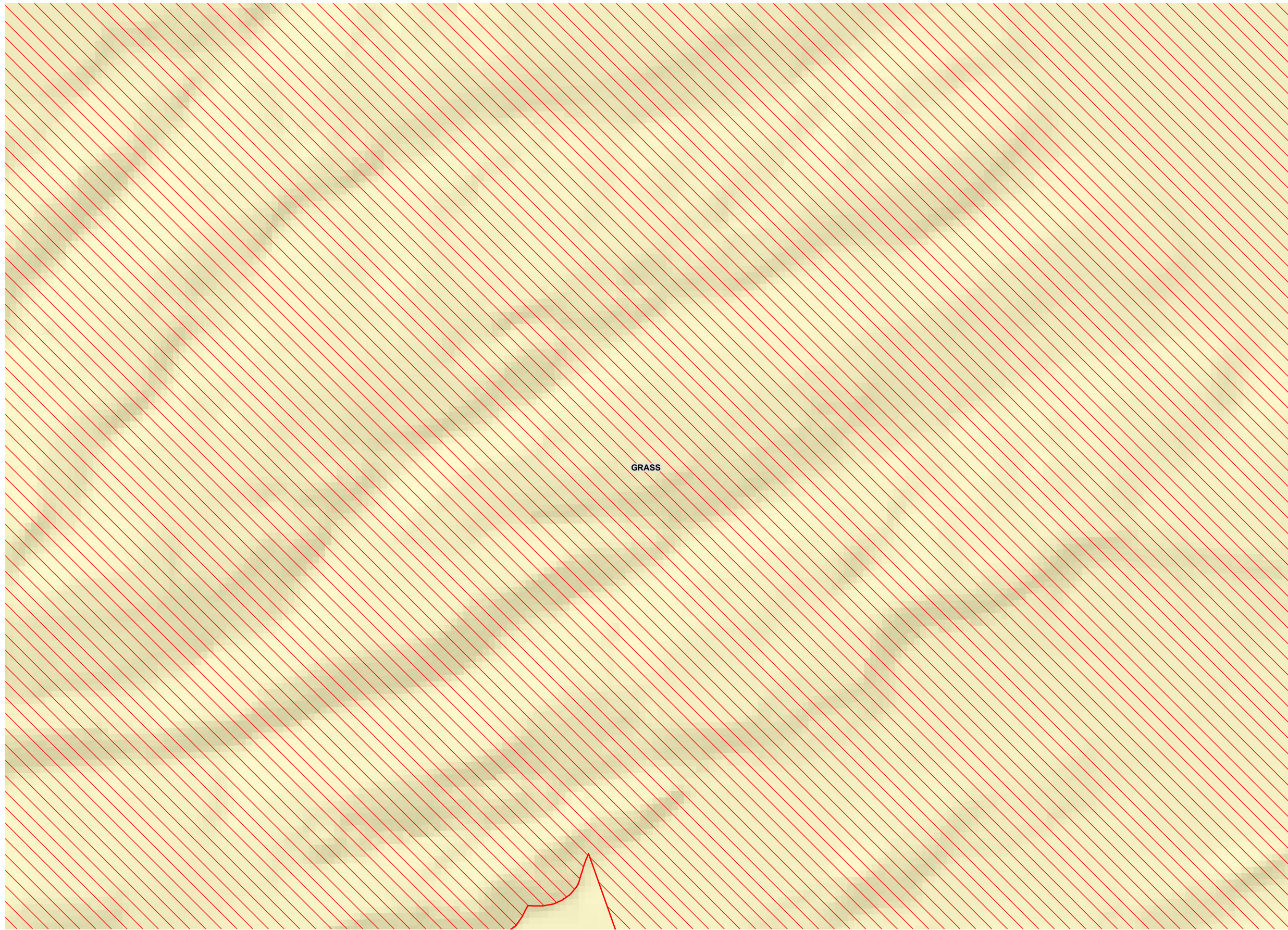


Exhibit 5.7-17s

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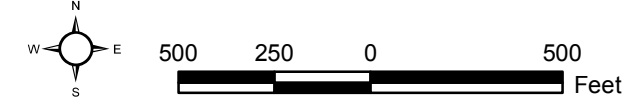


- Project Boundary Impact Area
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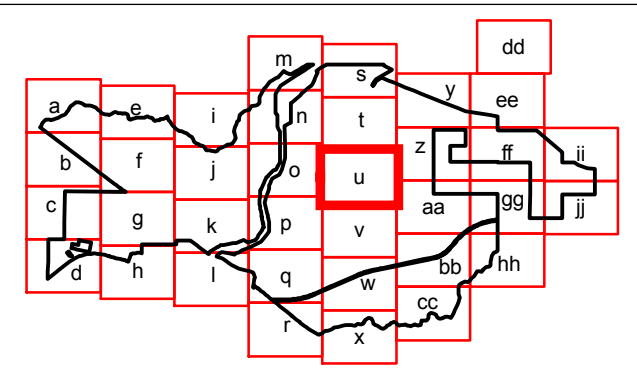
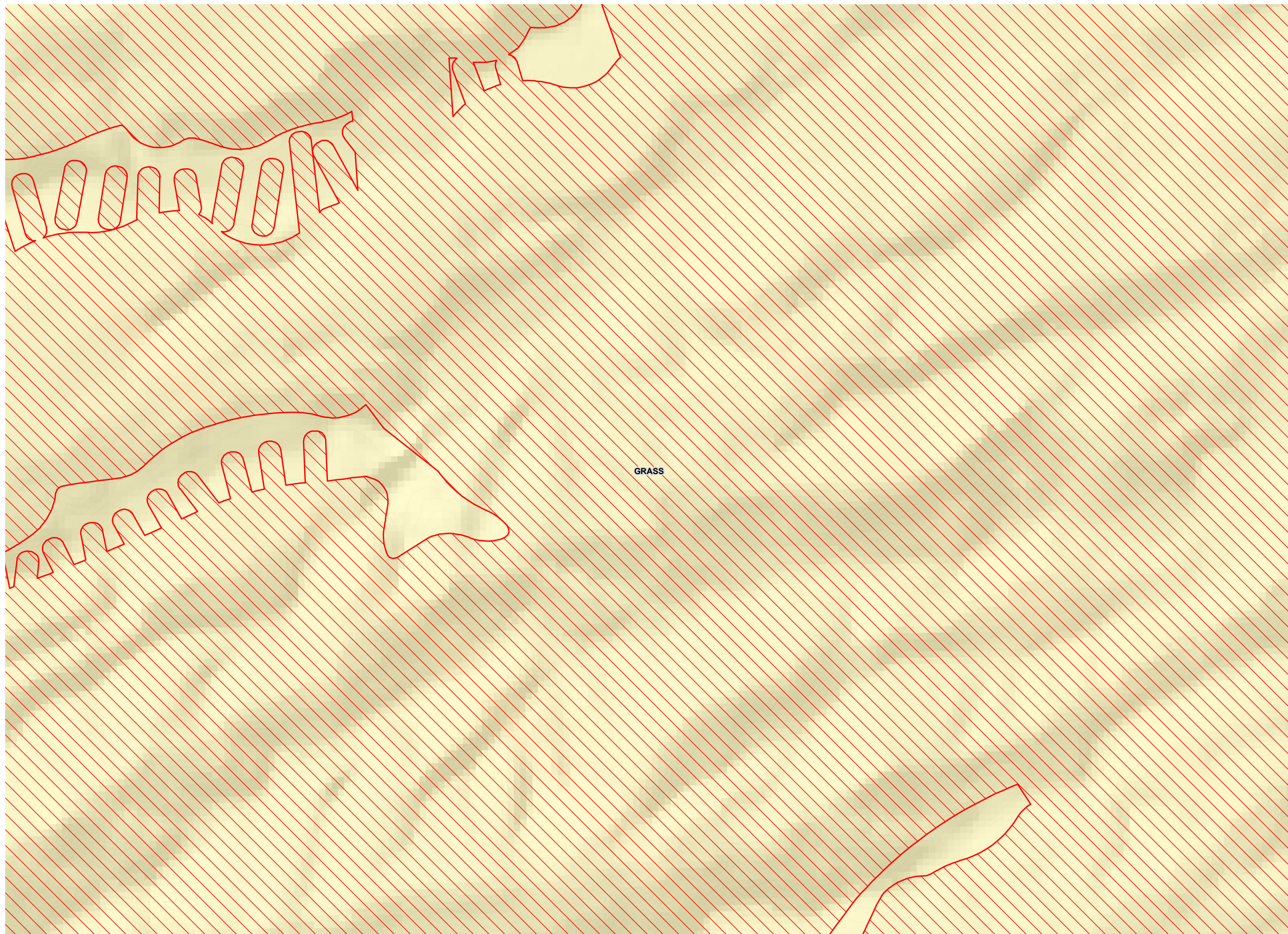
Detailed Vegetation Map

Exhibit 5.7-17t

Centennial Project



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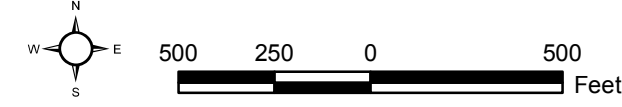


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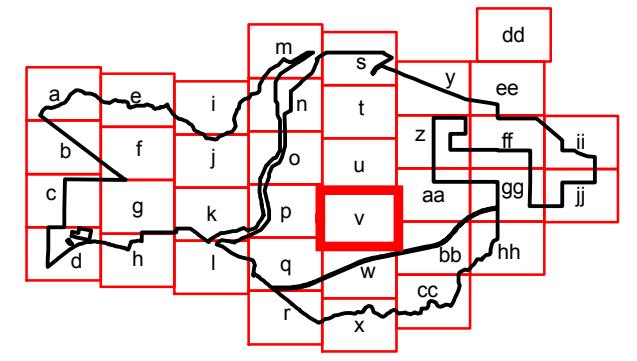
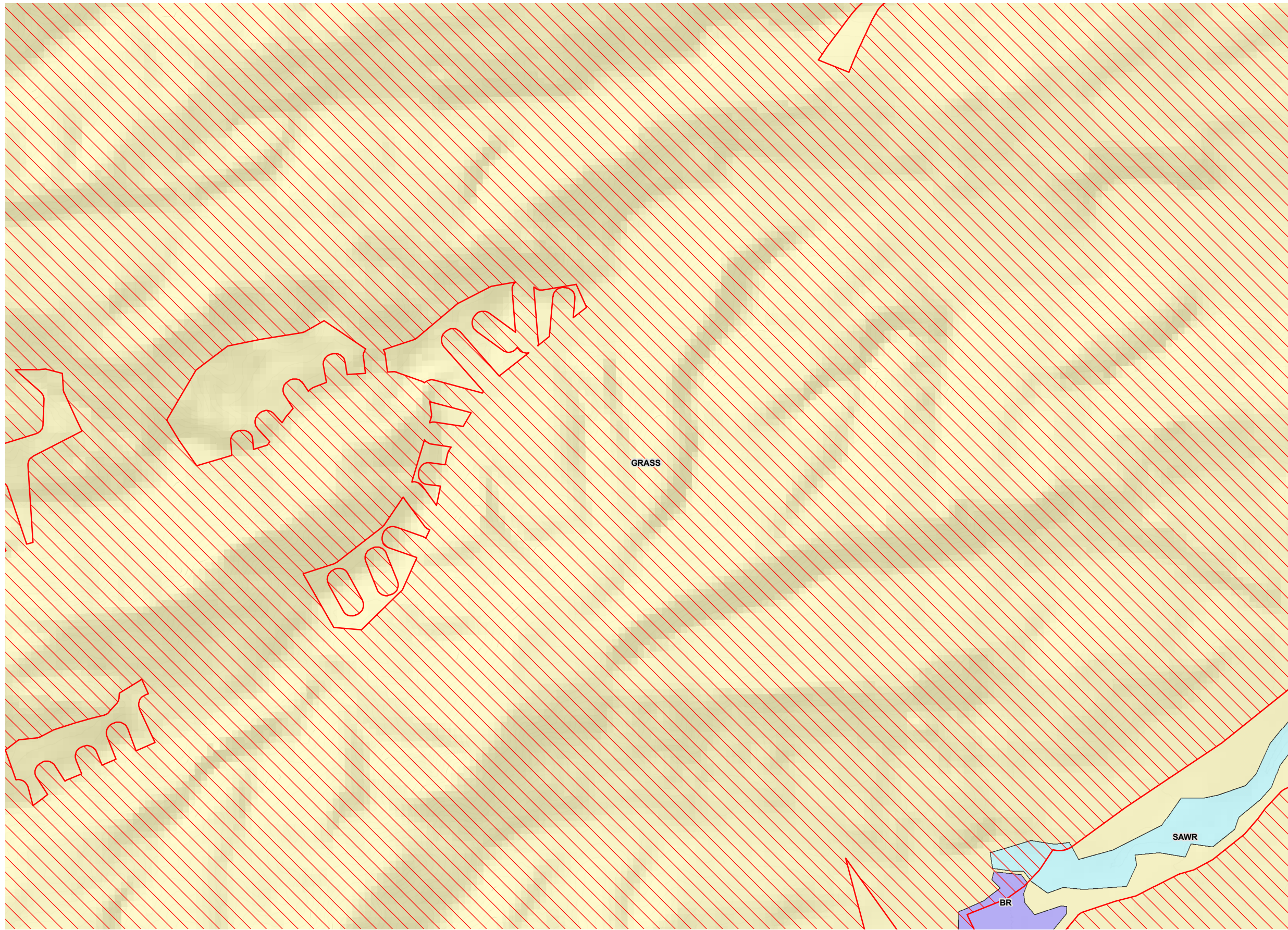
Detailed Vegetation Map

Exhibit 5.7-17u

Centennial Project



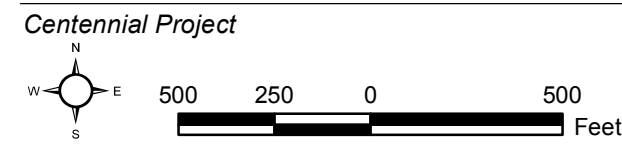
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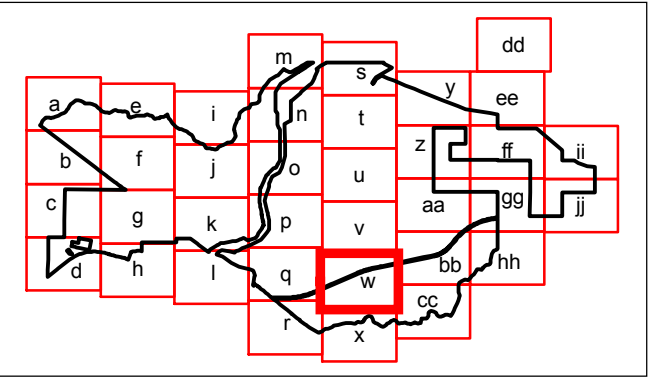
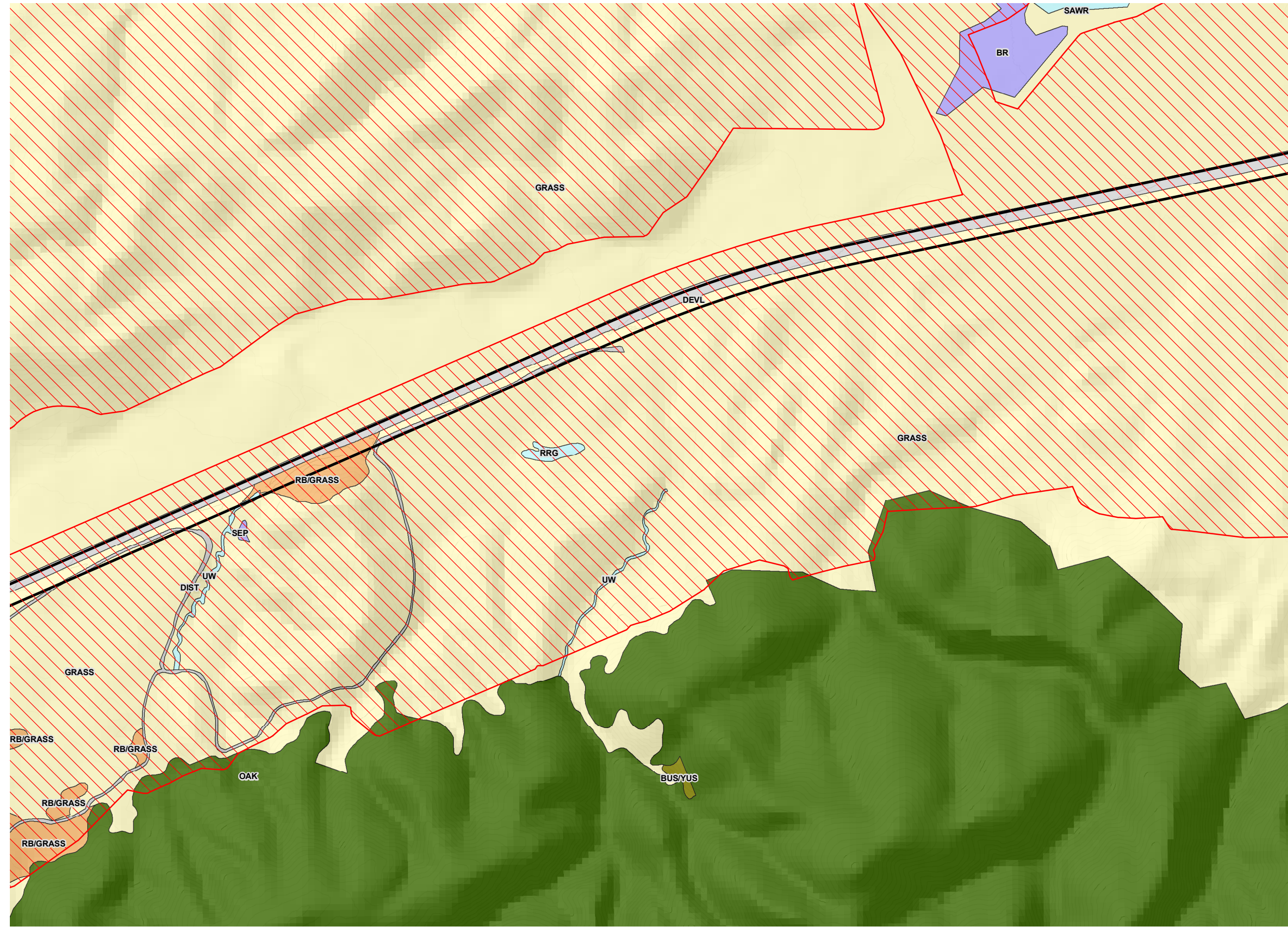
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Detailed Vegetation Map

Exhibit 5.7-17v



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Detailed Vegetation Map

Centennial Project

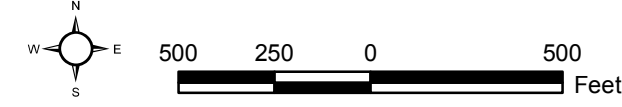
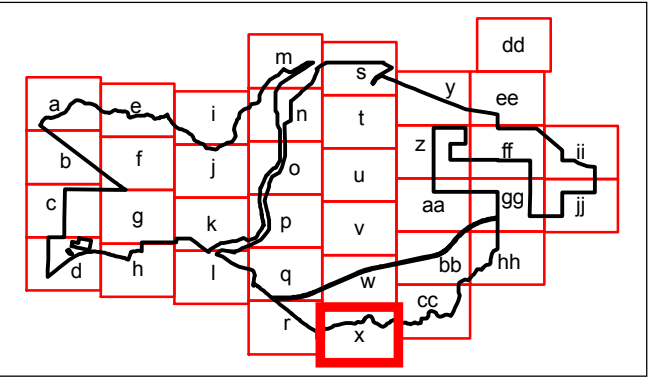


Exhibit 5.7-17w



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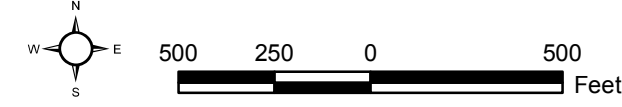
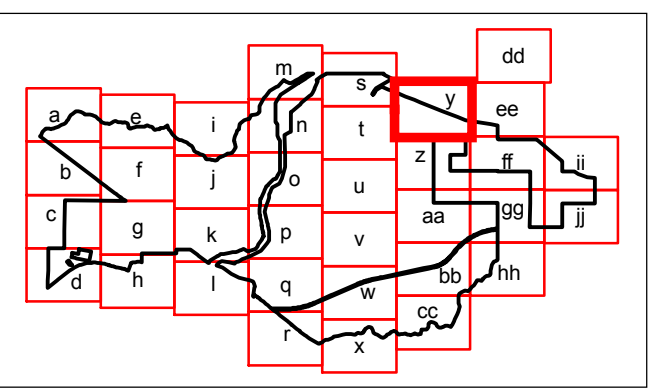
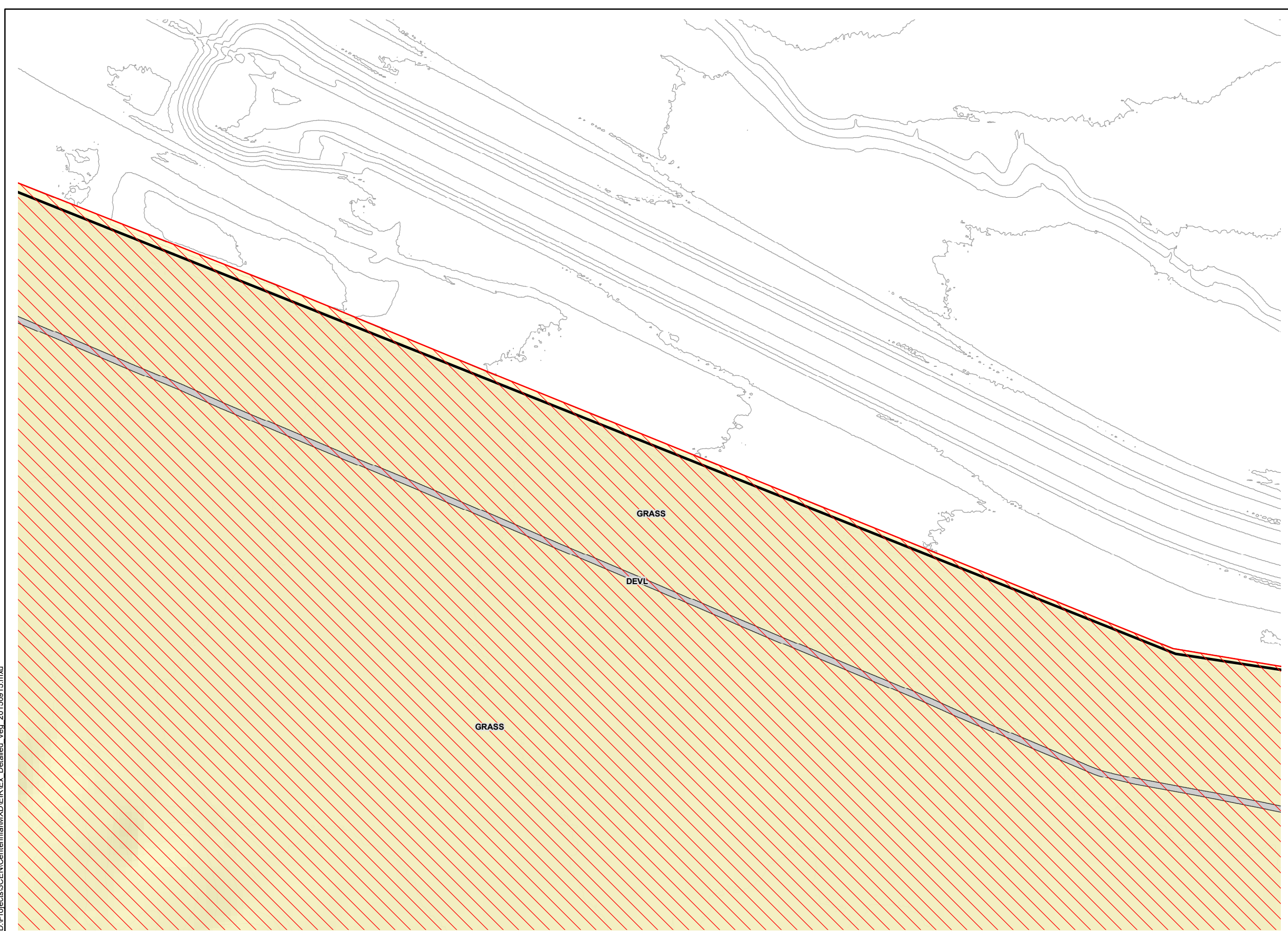


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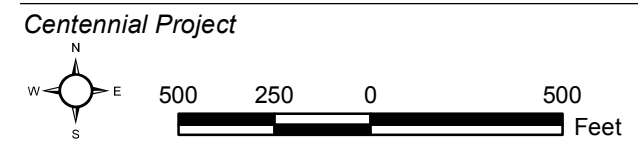
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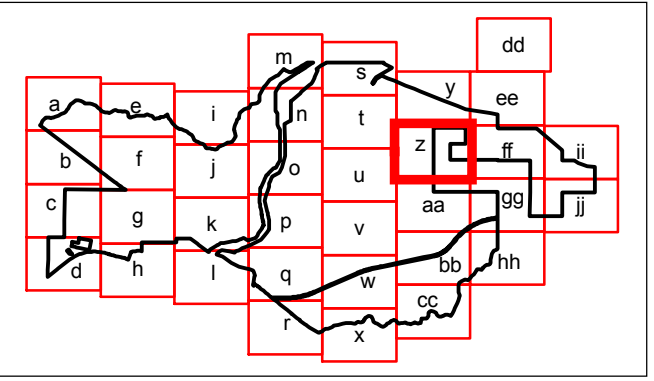
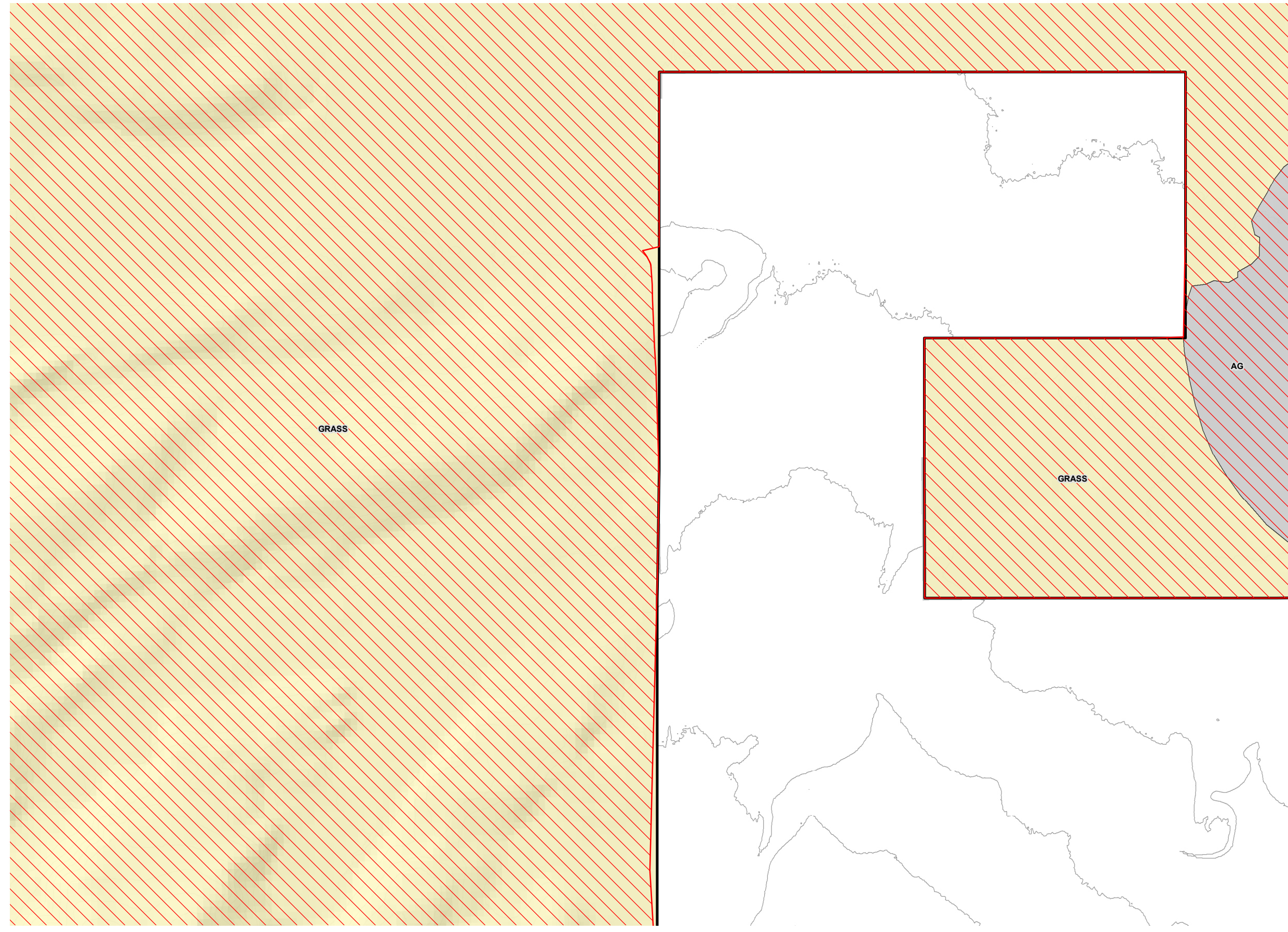
Detailed Vegetation Map

Exhibit 5.7-17y



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Detailed Vegetation Map

Centennial Project

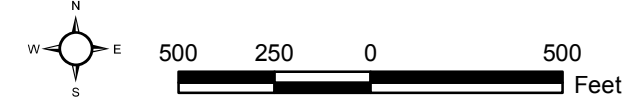
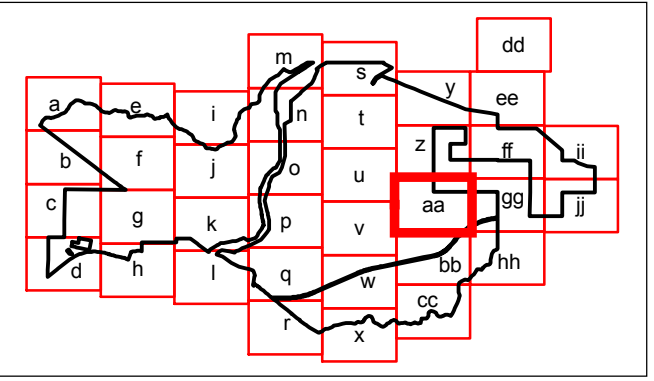
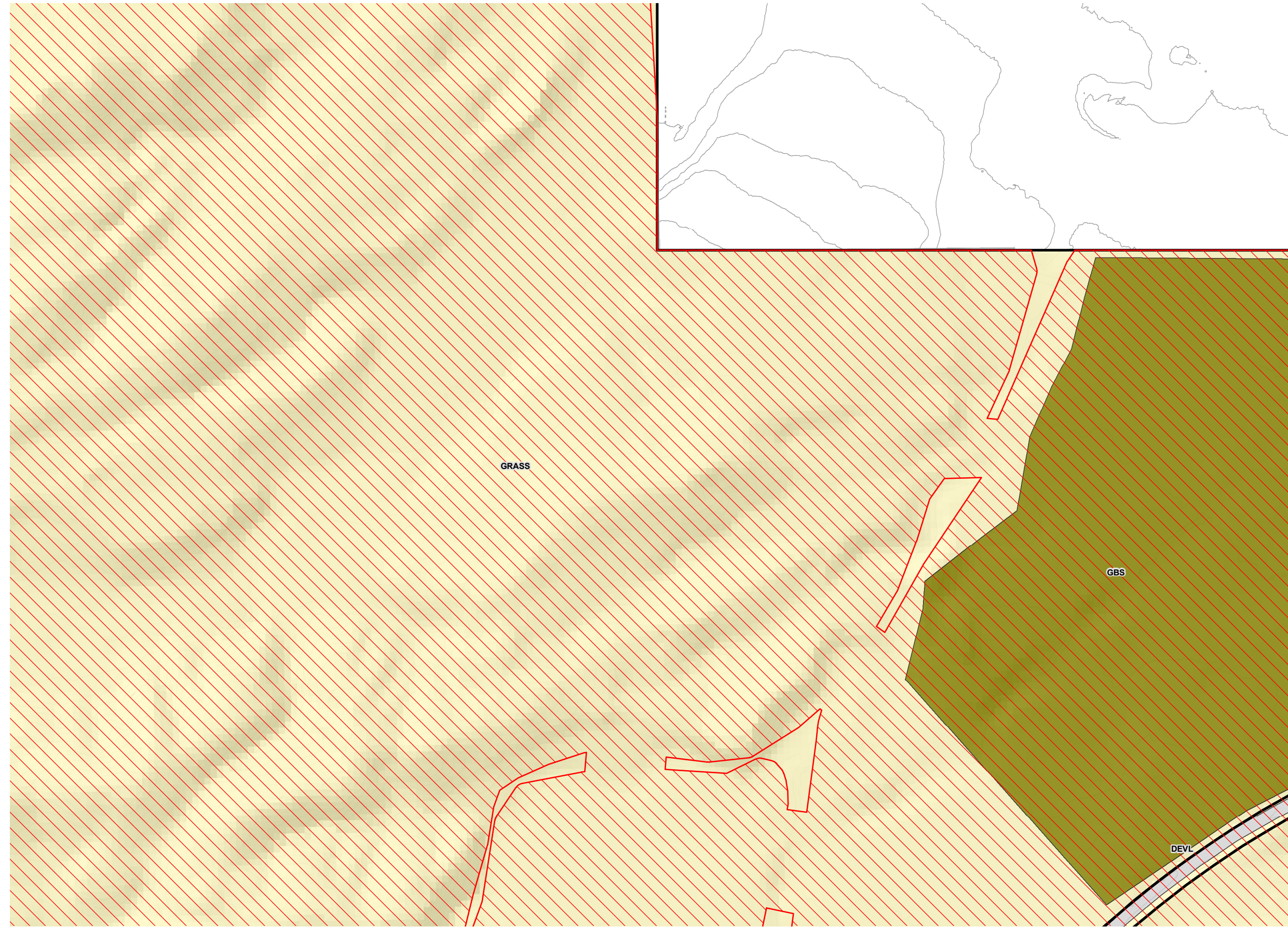


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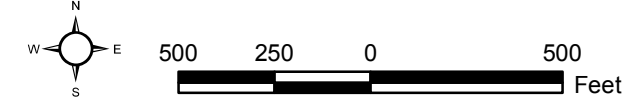


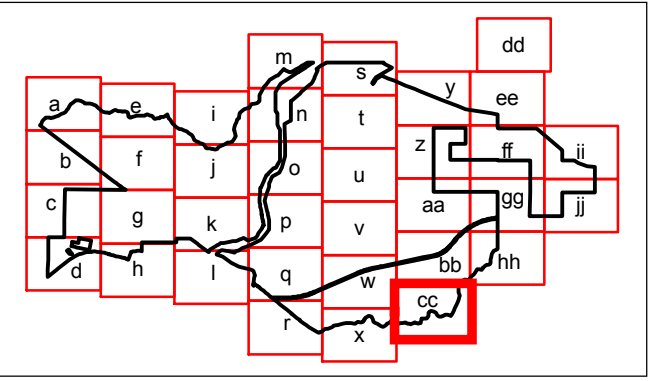
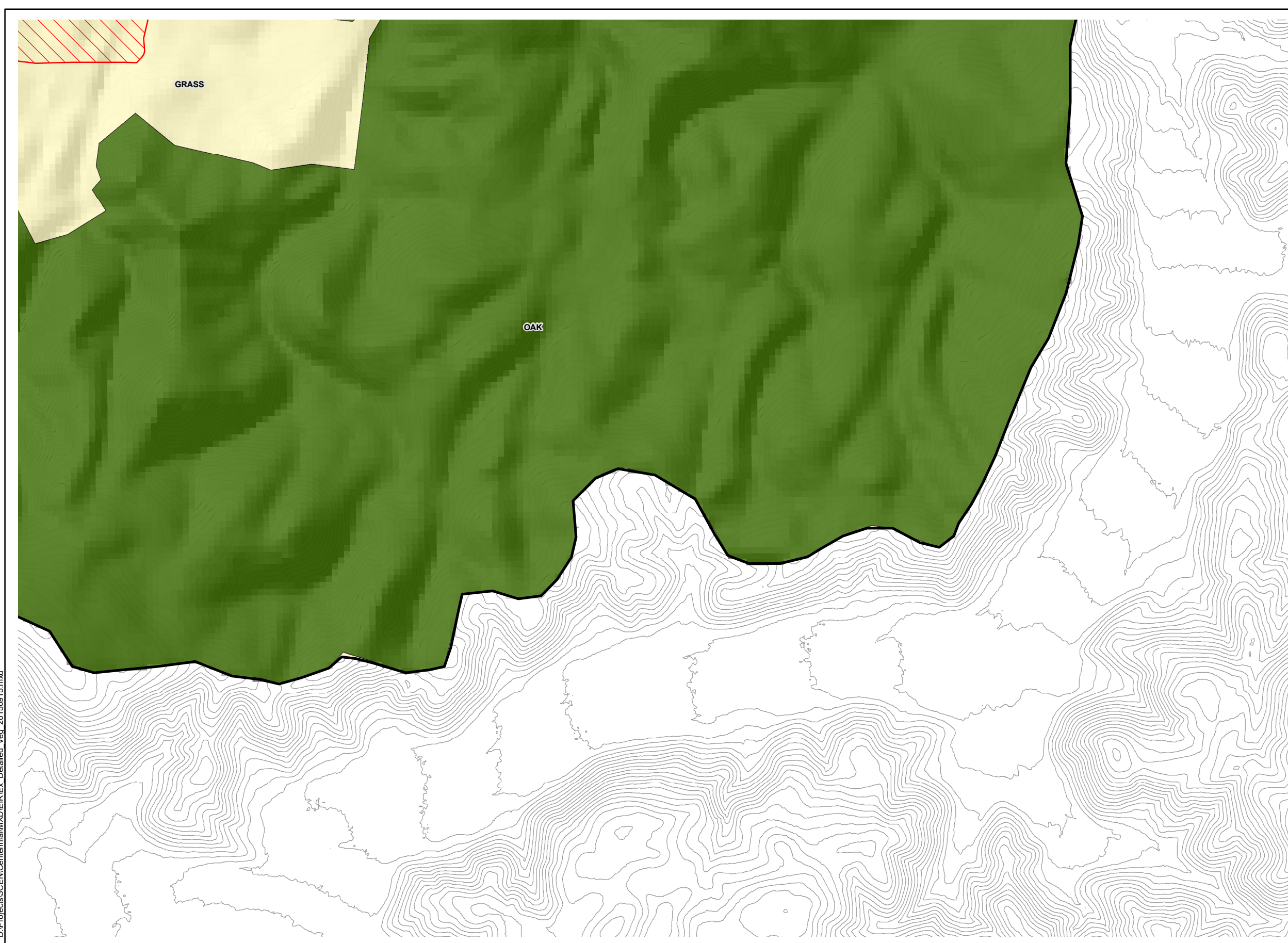
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Detailed Vegetation Map

Exhibit 5.7-17aa

Centennial Project

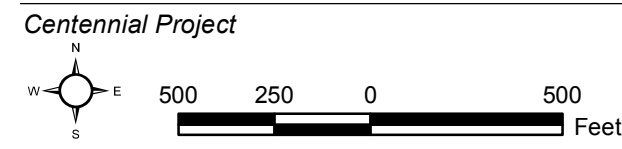




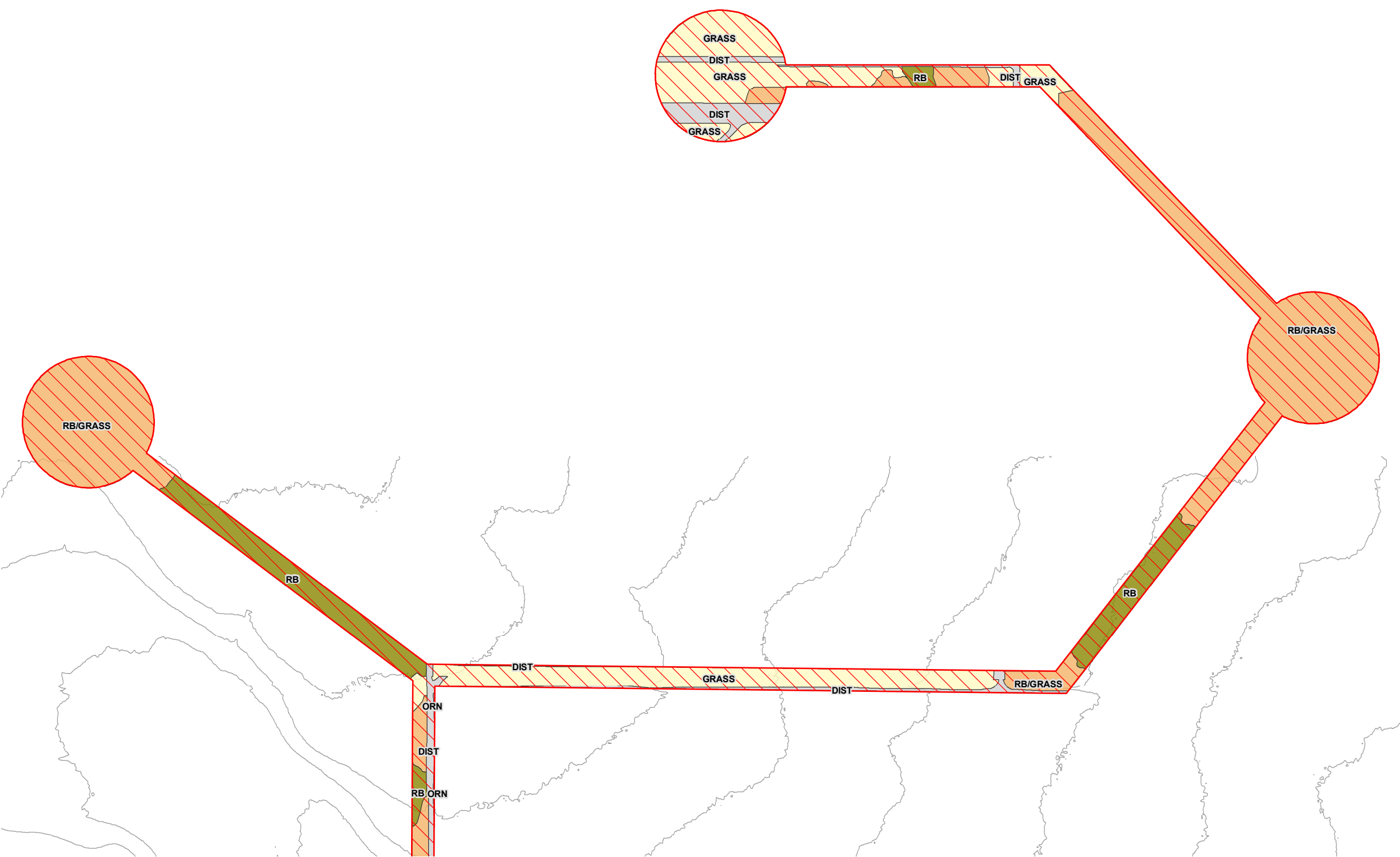
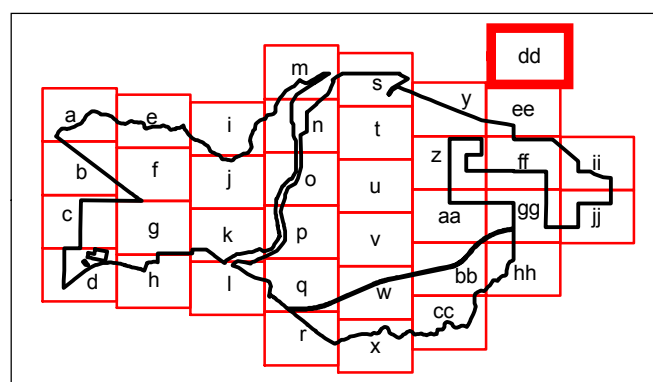
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Detailed Vegetation Map

Exhibit 5.7-17cc



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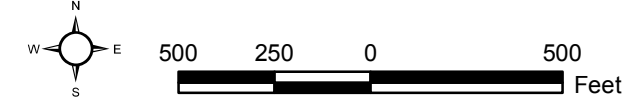
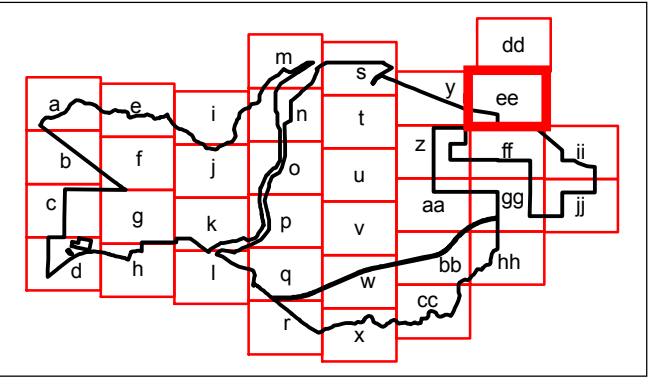
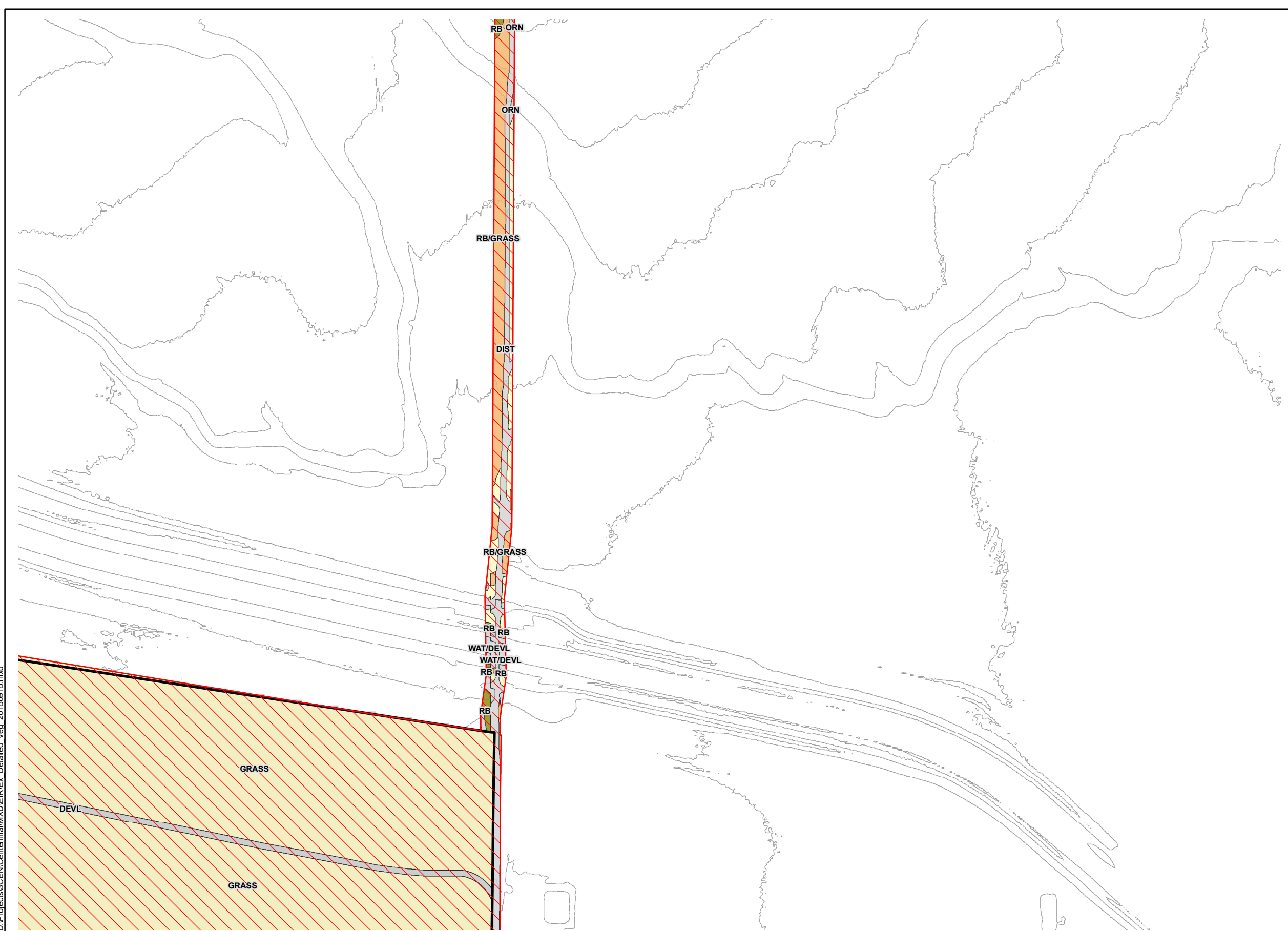


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Centennial Project

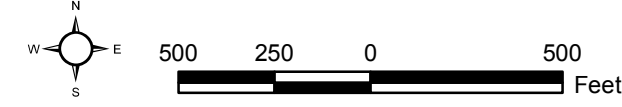
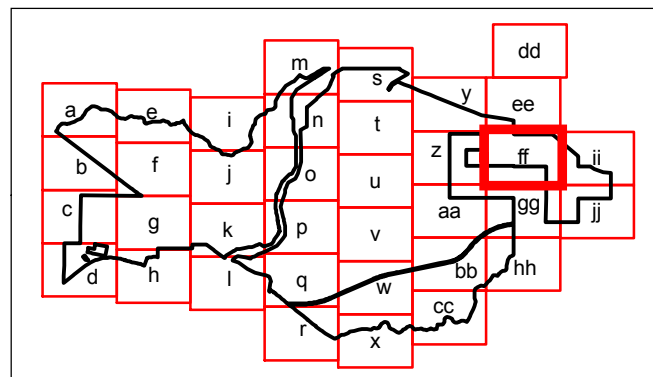
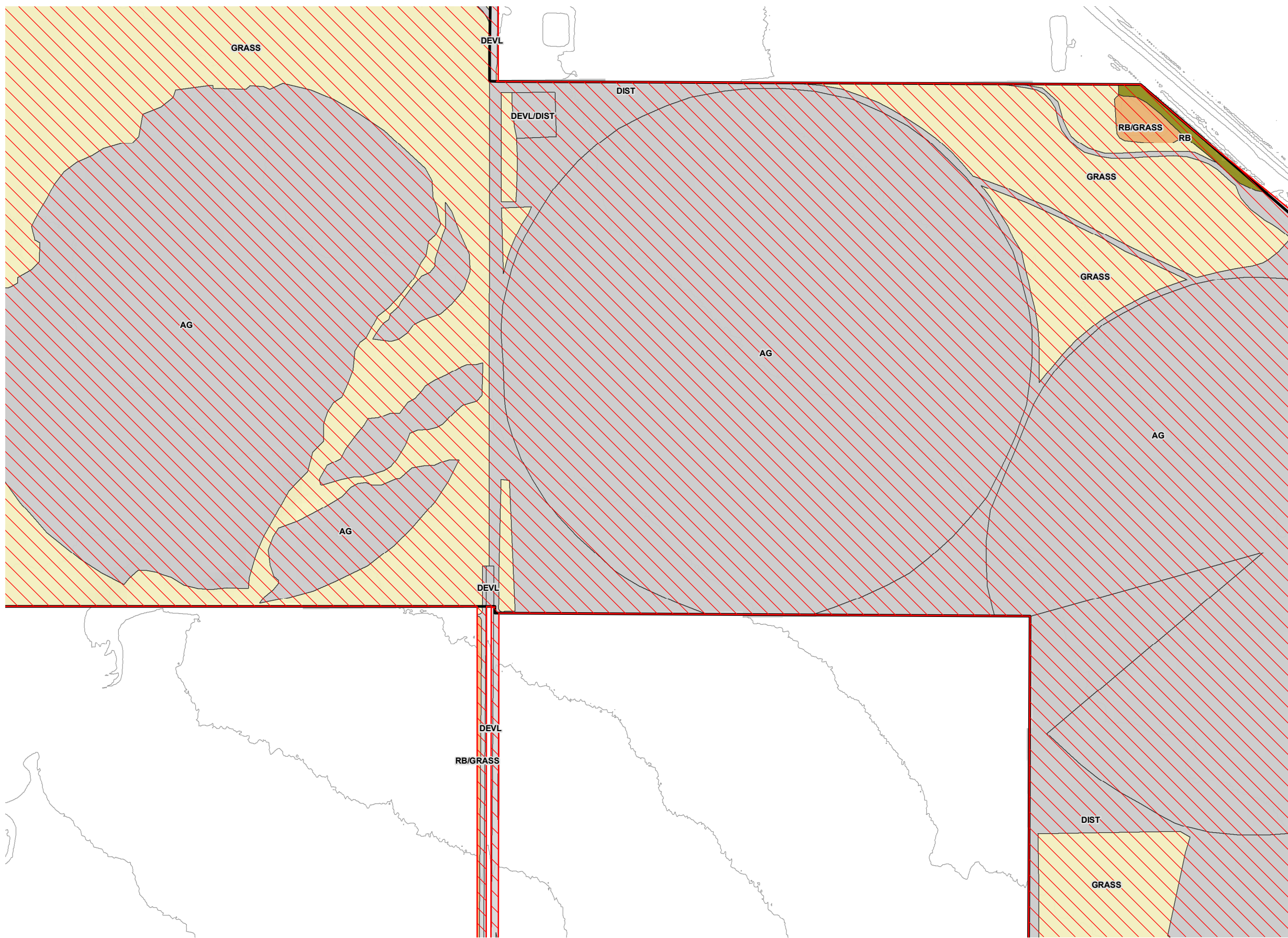


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 SLIDE - Disturbed (Landslide)
 WAT/DEVL - Open Water/Developed

Detailed Vegetation Map

Centennial Project

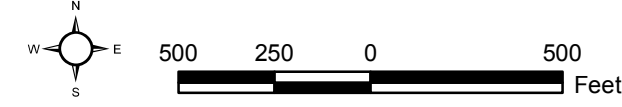
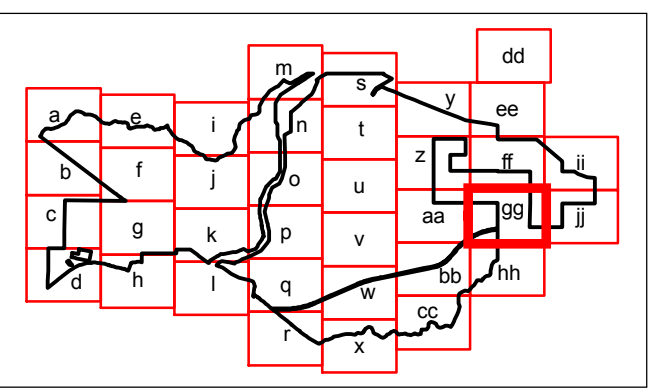
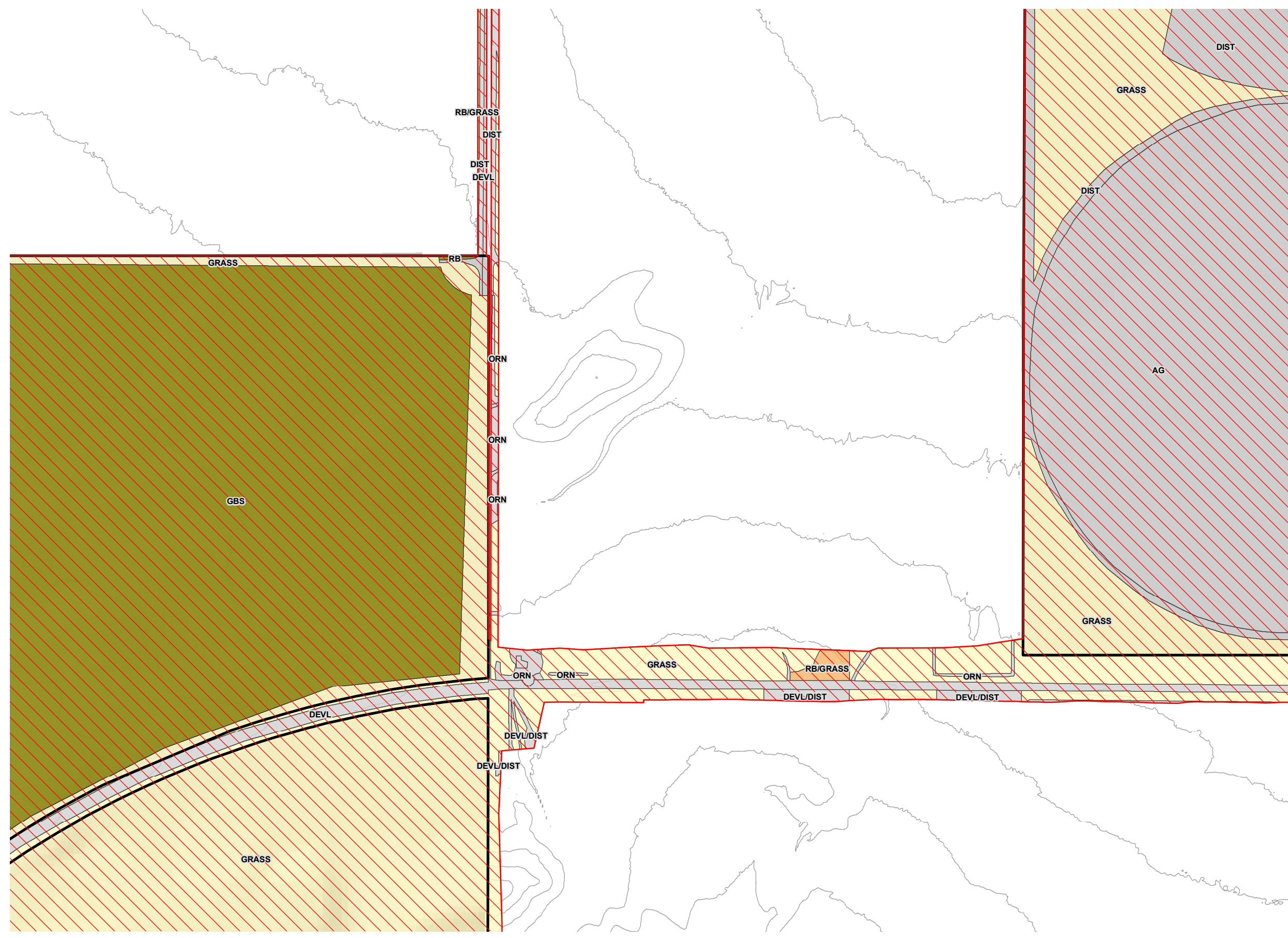


Exhibit 5.7-17ff

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- Project Boundary** **Impact Area**
- Vegetation Types and Other Areas**
- Native Perennial/CA Annual Grassland**
GRASS - Native Perennial/CA Annual Grassland
 - Mixed Chaparral or Scrub and Native Perennial**
BLS/GRASS - Bush Lupine Scrub/Native Perennial/CA Annual Grassland
BUS/GRASS - California Buckwheat Scrub/Native Perennial/CA Annual Grassland
GBS/GRASS - Goldenbush Scrub/Native Perennial/CA Annual Grassland
RB/GRASS - Rabbitbrush Scrub/Native Perennial/CA Annual Grassland
WBS/GRASS - Wand Buckwheat Scrub/Native Perennial/CA Annual Grassland
WBW/GRASS - Wright's Buckwheat Scrub/Native Perennial/CA Annual Grassland
YUS/GRASS - Yucca Scrub/Native Perennial/CA Annual Grassland
 - Scrub and Chaparral**
BLS - Bush Lupine Scrub
BPS - Bladderpod Scrub
BUS - California Buckwheat Scrub
BUS/YUS - California Buckwheat Scrub/Yucca Scrub
CHBG - Chamise/Bigberry Manzanita Chaparral
COF - Coffeeberry Scrub
GS - Goldenbush Scrub
GBS - Great Basin Scrubs
JUBU - California juniper/California buckwheat Scrub
RB - Rabbitbrush Scrub
WBS - Wand Buckwheat Scrub
WBW - Wright's Buckwheat Scrub
YUS - Yucca Scrub
 - Broad Leafed Upland Tree Dominated**
OAK - Mixed Oak Woodland
 - Riparian and Bottomland Habitat**
AS - Alluvial Scrub
CW - Cottonwood Woodland
RH - Riparian Herb
RRG - Rush Riparian Grassland
SAWR - Southern Arroyo Willow Riparian
SCWW - Southern Cottonwood Willow Woodland
SWS - Southern Willow Scrub
UW - Unvegetated Wash
VOR - Valley Oak Riparian Woodland
WRF - Willow Riparian Forest
WRW - Willow Riparian Woodland
 - Bog and Marsh**
AM - Alkali Meadow
BR - Baltic Rush
CVFM - Coastal and Valley Freshwater Marsh
SEP - Seeps and Ephemeral Ponds
 - Other Areas**
AG - Agricultural
DEVL - Developed
DEVL/DIST - Developed/Disturbed
DIST - Disturbed
ORN - Ornamental
SLIDE - Disturbed (Landslide)
WAT/DEVL - Open Water/Developed

Detailed Vegetation Map

Centennial Project

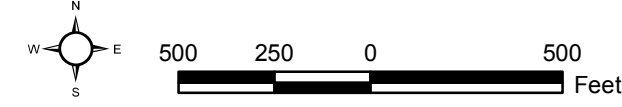
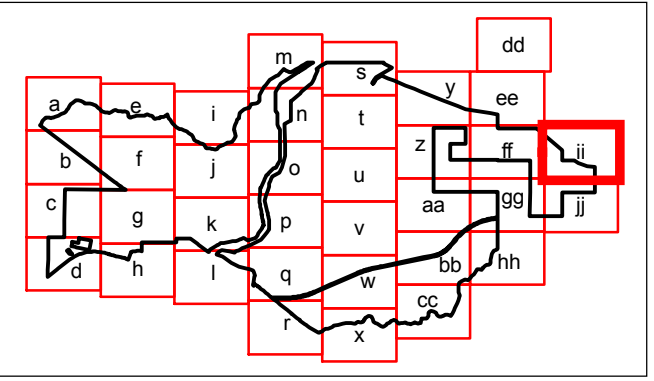
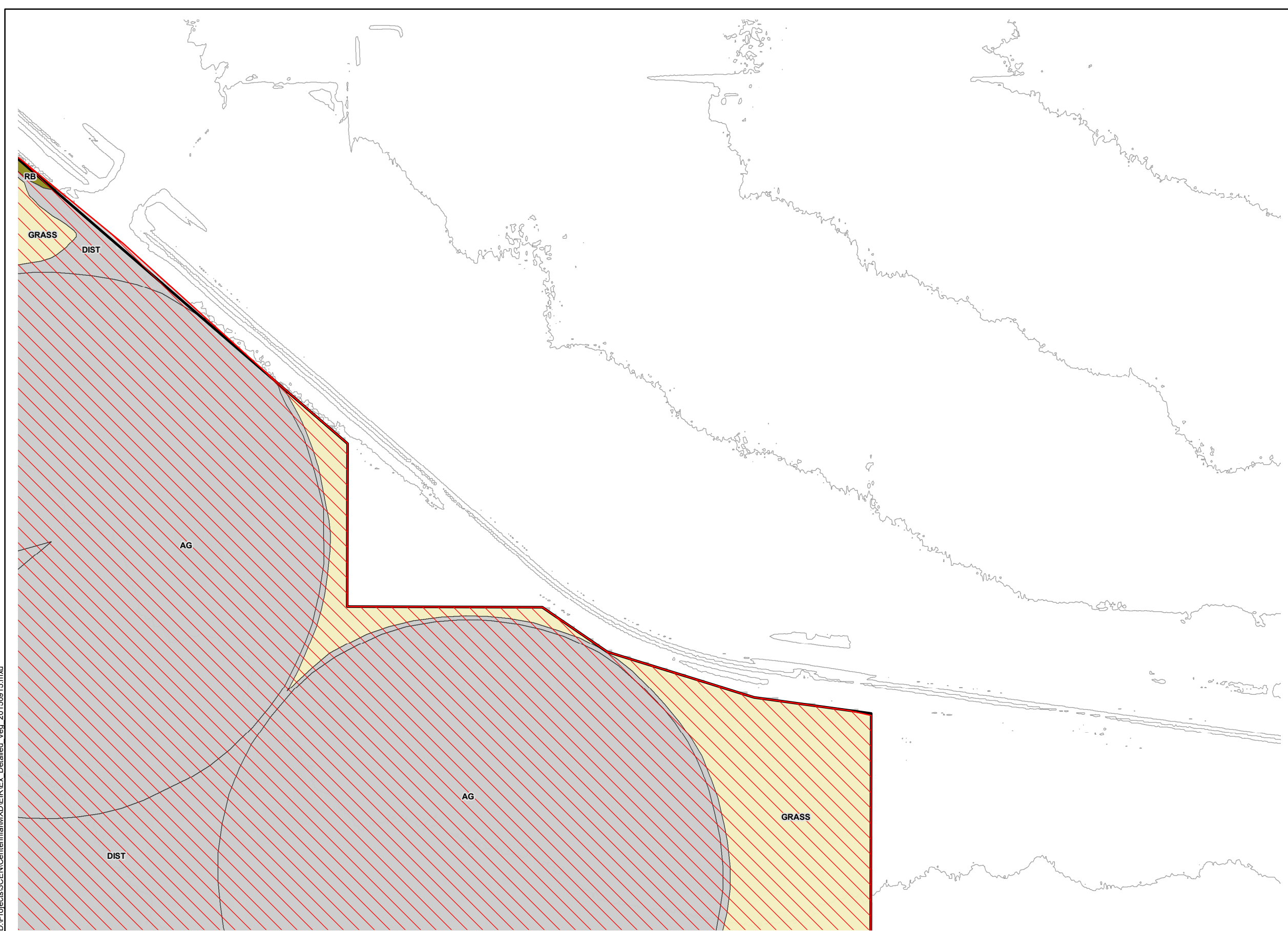


Exhibit 5.7-17gg



- Project Boundary** **Impact Area**
- Vegetation Types and Other Areas**
- Native Perennial/CA Annual Grassland**
GRASS - Native Perennial/CA Annual Grassland
 - Mixed Chaparral or Scrub and Native Perennial**
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WBW/GRASS - Wright's Buckwheat Scrub/Native Perennial/CA Annual Grassland
YUS/GRASS - Yucca Scrub/Native Perennial/CA Annual Grassland
 - Scrub and Chaparral**
BLS - Bush Lupine Scrub
BPS - Bladderpod Scrub
BUS - California Buckwheat Scrub
BUS/YUS - California Buckwheat Scrub/Yucca Scrub
CHBG - Chamise/Bigberry Manzanita Chaparral
COF - Coffeeberry Scrub
GS - Goldenbush Scrub
GBS - Great Basin Scrubs
JUBU - California juniper/California buckwheat Scrub
RB - Rabbitbrush Scrub
WBS - Wand Buckwheat Scrub
WBW - Wright's Buckwheat Scrub
YUS - Yucca Scrub
 - Broad Leafed Upland Tree Dominated**
OAK - Mixed Oak Woodland
 - Riparian and Bottomland Habitat**
AS - Alluvial Scrub
CW - Cottonwood Woodland
RH - Riparian Herb
RRG - Rush Riparian Grassland
SAWR - Southern Arroyo Willow Riparian
SCWW - Southern Cottonwood Willow Woodland
SWS - Southern Willow Scrub
UW - Unvegetated Wash
VOR - Valley Oak Riparian Woodland
WRF - Willow Riparian Forest
WRW - Willow Riparian Woodland
 - Bog and Marsh**
AM - Alkali Meadow
BR - Baltic Rush
CVFM - Coastal and Valley Freshwater Marsh
SEP - Seeps and Ephemeral Ponds
 - Other Areas**
AG - Agricultural
DEVL - Developed
DEVL/DIST - Developed/Disturbed
DIST - Disturbed
ORN - Ornamental
SLIDE - Disturbed (Landslide)
WAT/DEVL - Open Water/Developed

Detailed Vegetation Map

Centennial Project

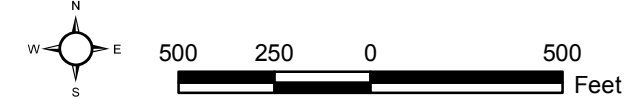
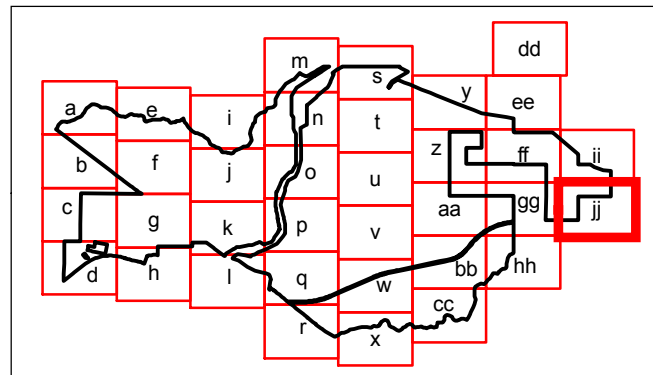
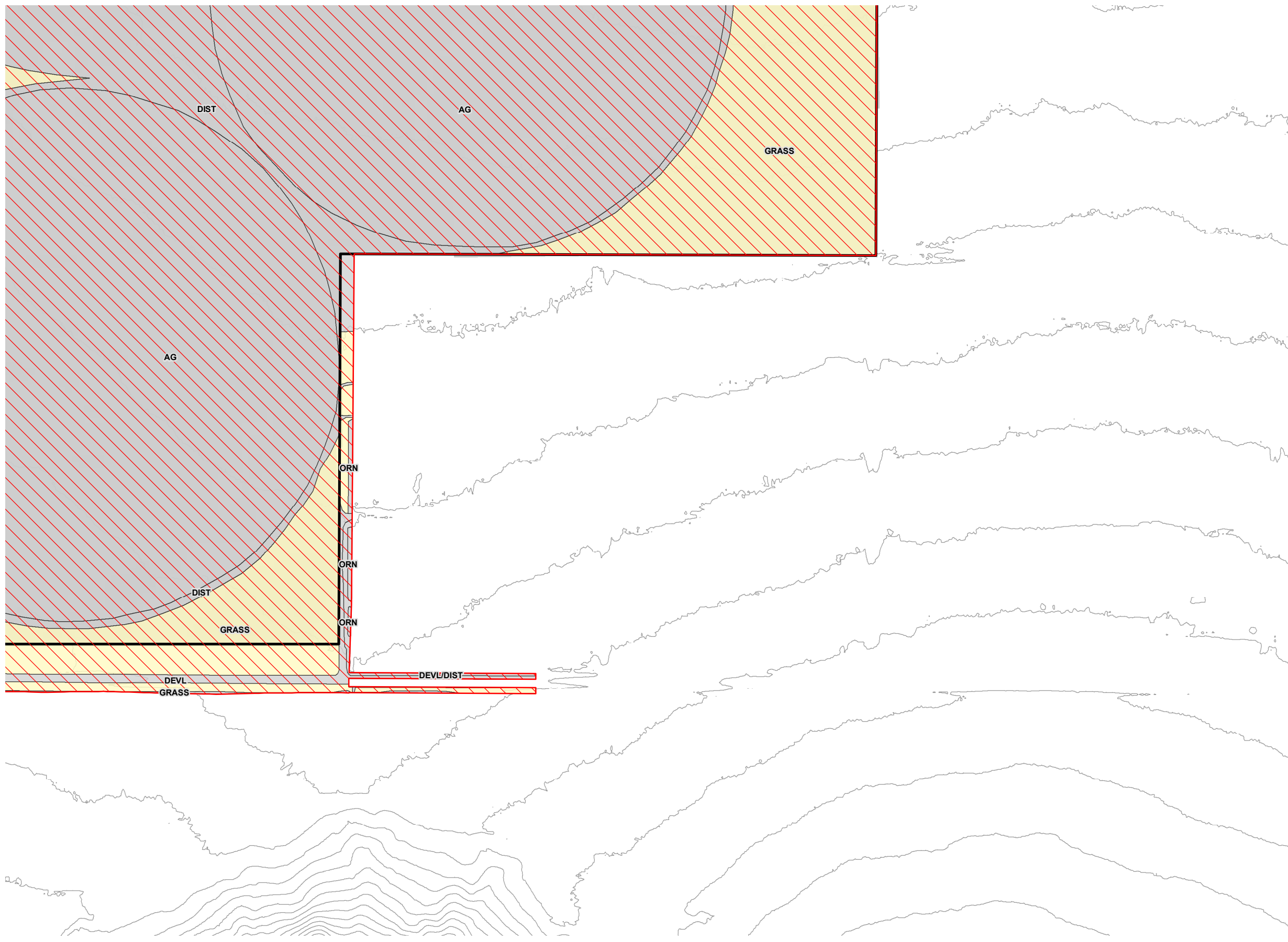


Exhibit 5.7-17ii

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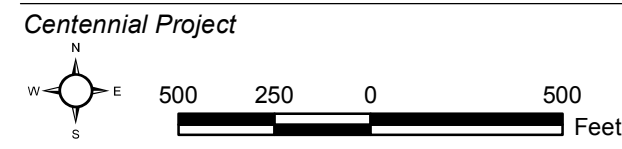
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- Project Boundary
 Impact Area
- Vegetation Types and Other Areas**
- Native Perennial/CA Annual Grassland**
GRASS - Native Perennial/CA Annual Grassland
 - Mixed Chaparral or Scrub and Native Perennial**
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 BUS/GRASS - California Buckwheat Scrub/Native Perennial/CA Annual Grassland
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 WBS/GRASS - Wand Buckwheat Scrub/Native Perennial/CA Annual Grassland
 WBW/GRASS - Wright's Buckwheat Scrub/Native Perennial/CA Annual Grassland
 YUS/GRASS - Yucca Scrub/Native Perennial/CA Annual Grassland
 - Scrub and Chaparral**
 BLS - Bush Lupine Scrub
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 BUS - California Buckwheat Scrub
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 YUS - Yucca Scrub
 - Broad Leafed Upland Tree Dominated**
OAK - Mixed Oak Woodland
 - Riparian and Bottomland Habitat**
 AS - Alluvial Scrub
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 SAWR - Southern Arroyo Willow Riparian
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 VOR - Valley Oak Riparian Woodland
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 - Bog and Marsh**
 AM - Alkali Meadow
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 CVFM - Coastal and Valley Freshwater Marsh
 SEP - Seeps and Ephemeral Ponds
 - Other Areas**
 AG - Agricultural
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 DIST - Disturbed
 ORN - Ornamental
 SLIDE - Disturbed (Landslide)
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Detailed Vegetation Map

Exhibit 5.7-17jj



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