

September 4, 2019

Ms. Kari McNickle  
 Fehr & Peers

**Subject: Marsh Creek Corridor: Natural Resources Inventory**

Dear Ms. McNickle,

This letter summarizes Environmental Science Associates’ (ESA) procedures for conducting the natural resources inventory along Marsh Creek Road between Clayton and Round Valley Regional Preserve in Contra Costa County, California. This inventory consisted of a two-step approach including a desktop review and field assessment of sensitive biological resources within the approximately 12-mile trail study corridor.

This inventory examined the distribution of common and sensitive vegetation communities, aquatic habitat (creeks, ponds, and seasonal wetlands) and special-status species. A focused list of special-status species was considered in this assessment, to include those species that could affect planning or permitting efforts. These were: California red-legged frog (*Rana draytonii*), foothill yellow-legged frog (*Rana boylei*), California tiger salamander (*Ambystoma californiense*), Alameda whipsnake (*Masticophis lateralis*), and San Joaquin kit fox (*Vulpes macrotis mutica*). Other special-status species could occur in the study area such as burrowing owl (*Athene cunicularia*), American badger, or rare plants but their presence would not affect project routing or feasibility. Hence, they were excluded for this planning-level document. Additionally, ESA documented and mapped invasive plant populations that were identifiable during the field assessment.

**Initial Desktop Review**

ESA’s wildlife biologist, Julie McNamara, conducted an initial desktop review and habitat classification and mapping for the 12-mile trail study corridor fitted with a 300-foot buffer. Multiple data sources were consulted to construct an accurate baseline habitat map to be field verified (**Table 1**).

**TABLE 1  
 DATA SOURCES USED IN THE NATURAL RESOURCES INVENTORY DESKTOP REVIEW**

<b>Data Used in Natural Resources Inventory</b>	<b>Data Source</b>	<b>Description</b>	<b>Actions Using Data</b>
Major Road Center Lines	Tele Atlas North America via ESRI	All major roads in North America.	Created a 300 foot buffer around Marsh Creek Road to establish inventory boundary line.
Vegetation Communities	United States Forest Service (2018)	Classification and Assessment with LANDSAT of Visible Ecological Groupings. Image sources from 1998 to 2015. Scale of 1:24,000 to 1:100,000.	This data set was used as a base line for habitat mapping. Boundary lines of habitat types were modified using aerial imagery from Google Earth (2019) and ESRI imagery (2019). They were additionally modified using the creeks layer, and road buffer zones.

**TABLE 1 (CONTINUED)**  
**DATA SOURCES USED IN THE NATURAL RESOURCES INVENTORY DESKTOP REVIEW**

Creeks and Drainages	Contra Costa County GIS	Creeks and drainages	Created a Riparian Zone layer using the centerlines of this file. The buffer distance was equal to 10-feet that was determined by the field assessment.
Ponds and Seasonal Wetlands	East Contra Costa County Habitat Conservation Plan / Natural Community Conservation Plan (ECCC HCP/ NCCP)	Modeled Habitat Distribution Maps for California red-legged frog and California Tiger Salamander.	These maps were georeferenced in ArcGIS and features were cross checked with Google Earth Imagery (2019) and Imagery from ESRI (2019), which was then digitized into a Ponds layer.
Potential Suitable Habitat	East Contra Costa County Habitat Conservation Plan / Natural Community Conservation Plan (ECCC HCP/ NCCP)	Modeled Habitat Distribution Maps for California red-legged frog, California Tiger Salamander, Alameda whipsnake and San Joaquin kit fox.	These maps were georeferenced in ArcGIS and features were digitized into a Ponds layer.
California Natural Diversity Database (CNDDDB)	California Department of Fish and Wildlife	Documented occurrence records for California red-legged frog, California Tiger Salamander, Alameda whipsnake and San Joaquin kit fox.	The locations of occurrences were used in the assessment of determining potential suitable habitat.

Source: ESA

**Field Assessment**

The window field assessment of the 12-mile trail study corridor and 300-foot buffer was conducted on August 13, 2019 by Julie McNamara (Wildlife Biologist and Certified Arborist) and Brad Allen (GIS Specialist). ESA staff stopped at numerous locations to verify habitat classification, creek and drainage locations, water presence, identify seasonal ponds and wetlands, map invasive plant species, and determine potential suitable habitat for special-status species.

Habitat types identified during the field assessment include: agriculture, blue oak woodlands, grasslands, mixed oak woodlands, mixed oak woodlands- gray pine, and residential rural. The riparian corridor is a separate layer that was identified as having an average width of 10 feet on each side of creek and drainages. The riparian corridor crosses the various habitat types with varying riparian plant species and a varying density of vegetation.

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Ponds identified in the initial desktop review that were accessible, i.e. not on private property or visible from the public right-of-way, were assessed in the field for their potential to provide suitable aquatic habitat for California red-legged frog and the California tiger salamander.

Two listed California Invasive Plant Council (Cal IPC) species were identified during the field assessment and include: giant reed (*Arundo donax*) which is listed as having a high invasive score, and tree tobacco (*Nicotiana glauca*) which is listed as having a moderate invasive score.

### **Potential Suitable Habitat Assessment**

All potential habitat files were clipped to the 300-foot buffer of the 12-mile trail study corridor. Pond habitat is delineated within the data as to which species has the potential to occur at that location based off of California Natural Diversity Database (CNDDDB) occurrence records.

#### *California Red-legged Frog*

Potentially suitable habitat for this species was divided into two layers: aquatic habitat and upland habitat. Aquatic habitat was mapped to include riparian zone, in which the potential suitable habitat limits were determined by the field assessment which considered the presence of appropriate vegetation, water and shade cover. The upland habitat is a half mile buffer around the aquatic habitat.

#### *Foothill Yellow-legged Frog*

Though known from the regional project area, including Mitchell Canyon at Mt. Diablo State Park; based on CNDDDB occurrence records for this species, which state that it was extirpated from the area, foothill yellow-legged frog was eliminated as having the potential to occur within the study area.

#### *California Tiger Salamander*

This species potential suitable habitat was divided into two layers: aquatic habitat and upland habitat. Aquatic habitat is based on the pond layer, field verification of accessible ponds, and CNDDDB occurrence records. The upland habitat is a half mile buffer around the aquatic habitat.

#### *Alameda Whipsnake*

While no suitable coastal scrub or chaparral habitat communities were identified within the study area that could support the Alameda whipsnake, using the ECCC HCP/ NCCP modeled habitat distribution maps, a movement corridor was established.

#### *San Joaquin Kit Fox*

Potential suitable habitat for this species is identified as the grasslands habitat classification. Field verification and the use of the ECCC HCP/ NCCP modeled habitat distribution maps determined the potential suitable habitat for the San Joaquin kit fox.

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If you have any questions or concerns regarding the survey results, please contact myself (530-401-2669) at your earliest convenience.

Sincerely,



Julie McNamara  
Wildlife Biologist  
ESA Petaluma