# Western Riverside County Multiple Species Habitat Conservation Plan Determination of Biologically Equivalent or Superior Preservation For Impacts to Riparian/Riverine Resources

### Legado Project

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### PURPOSE OF THIS DETERMINATION OF BIOLOGICALLY EQUIVALENT OR SUPERIOR PRESERVATION DOCUMENT

This document provides an analysis in support of a Determination of Biologically Equivalent or Superior Preservation (DBESP) for the Legado Project (the "Project"), in regards to the Multiple Species Habitat Conservation Plan (MSHCP) requirements for *Protection of Species Associated with Riparian/Riverine Areas and Vernal Pools (MSHCP Volume I, Section 6.1.2)* (Dudek 2013).

This document has been prepared following the County of Riverside Environmental Programs Department (EPD) DBESP Guidelines, and is consistent with the guidelines identified in *Volume I*, *Section 6.1.2* of the MSHCP document, in order to demonstrate that with the appropriate mitigation, the Project will represent a "biologically equivalent or superior alternative." This assessment provides a comprehensive documentation of onsite sensitive biological resources, including a summary of findings of general and focused habitat assessments as it relates to Section 6.1.2, and vegetation mapping. A more detailed reporting of biological resources, including results of species-specific focused surveys, are contained in the *Biological Technical Report for the Legado Project* (GLA 2019a) and the *Jurisdictional Delineation of the Legado Project* (GLA 2019b). The project would affect Riparian/Riverine Resources as defined by the MSHCP, specifically riverine features. This DBESP discusses project details, environmental setting, potential impacts, and proposed avoidance, minimization, and compensatory mitigation measures.

This document has been revised from the most recent version (September 5, 2018) to incorporate updated information regarding the delineation of riparian/riverine and vernal pool resources, and the completion of additional fairy shrimp surveys. The U.S. Fish and Wildlife Service (USFWS) and the California Department of Fish and Wildlife (CDFW), collectively referred to as the "Wildlife Agencies" submitted a DBESP comment letter (dated March 4, 2019) to the City of Menifee, which referenced issues that are subsequently addressed in this revised DBESP analysis. A representative of the Project proponent (Noah Shih) and Glenn Lukos Associates (David Moskovitz) met with the wildlife agencies (James Thiede and Carly Beck) at the Project site on June 17, 2019 to review the resources and discuss revisions to the DBESP analysis. The site meeting was a follow up to a meeting held at the Regional Conservation Authority (RCA) on May 16, 2019 to discuss the wildlife agency comment letter and the pending DBESP analysis revisions.

#### 1.0 PROJECT DESCRIPTION

#### 1.1 Project Location

The Project area comprises approximately 331 acres in the City of Menifee, Riverside County, California [Exhibit 1 – Regional Map] and is located within Section 22 of Township 5 South, Range 3 West of the U.S. Geological Survey (USGS) 7.5" quadrangle map Romoland, California (dated 1953 and photorevised in 1979) [Exhibit 2 – Vicinity Map]. The Project area is bordered by Rouse Road to the north, Encanto Drive to the west, commercial/residential development and the Hans Christensen Middle School to the south, and undeveloped land to the east.

#### 1.2 Project Description

The proposed Project consists of a master-planned, medium-density residential community with freeway-oriented commercial uses on the approximately 331-acre site. The Project will include up to 1,061 dwelling units on lot sizes ranging from 5,000 square feet (s.f.) to 30,000 s.f., up to 225,000 s.f. of freeway-oriented commercial uses, and a 12.9-acre community park/community center [Exhibit 3 – Site Plan Map]. The Project also includes offsite impacts associated with road improvements, including existing Encanto Road and Rouse Road, and to construct the intersection of Rouse Road and Antelope Road.

For this report, the term *Project area* is defined as the 331 acres of land composed of Assessor's Parcel Numbers (APNs): 333-020-009, 333-020-010 (portion), 333-030-012, 333-030-013, 333-030-021, and 333-030-022. The term *Study area* includes the Project area and lands proposed for off-site improvements. The term *Project footprint* is defined as the land proposed for direct impact by the Project, either temporary or permanently. For this document we have assumed that all direct impacts would be permanent. The term, *Open Space* is land not proposed for development (avoided) and thus occurs outside of the Project footprint but within the Project area.

#### 1.3 MSHCP Context to the Project

The Project is located within the MSHCP Sun City/Menifee Valley Area Plan but is not located within the MSHCP Criteria Area. Portions of the Project area are located within the NEPSSA, while the entire Project area is located within the Burrowing Owl Survey Area [Exhibit 4 – MSHCP Overlay Map]. The Project area is not located within the Amphibian Species Survey Area, Mammalian Species Survey Area, CAPSSA Survey Area, or Special Linkage Areas. The Project is not adjacent to Public/Quasi-Public lands.

#### 1.4 Why Avoidance Alternative Is Not Feasible

Volume I, Section 6.1.2 of the MSHCP requires that projects develop avoidance alternatives, if feasible, that would allow for full or partial avoidance of riparian/riverine areas. Avoidance of MSHCP riparian/riverine areas by the Project is not feasible. The location and extent of the riparian/riverine resources are scattered within the greater portion of the Project area, which makes effective reduction of impacts to riparian/riverine resources difficult. To make an appreciable reduction to these resources, the Project would need to reduce the number of lots throughout the proposed development, thus making the Project financially nonviable.

#### 2.0 EXISTING CONDITIONS

The majority of the Project area is disturbed from farming and other land uses. The site mostly contains maintained fields supporting a predominance of non-native, ruderal vegetation. The northeastern portion of the site has not historically been farmed due to the presence of scattered rock outcrops. However, this area still has been subject to disturbance, and is vegetated with a mix

of non-native plants and some native forb species associated with grasslands. The northeastern corner of the site consists of a hill vegetated with Riversidean sage scrub.

#### 2.1 Vegetation

The Project area contains five (5) vegetation/land use associations. Table 2-1 provides a summary of the vegetation/land-use associations and includes acreage totals for the Project area. Detailed descriptions of each vegetation/land use follow the table. A vegetation map/land use map is included as Exhibit 5. Site photographs depicting existing conditions and vegetation types are included as Exhibit 6. A complete list of plant species observed on site is presented in the floral compendium and is attached as Appendix A.

Vegetation/Land Use Type	Onsite	Offsite	Total
Agriculture	299.26	0.01	299.27
Cactus Scrub	0.55	0	0.55
Disturbed/Developed	16.39	4.90	21.29
Emergent Wetland	0.11	0	0.11
Riversidean Sage Scrub	1.56	0.26	1.82
Ruderal	12.86	0.86	13.72
Seasonal Pools	0.28	0	0.28
Total	331.01	6.03	337.04

Table 2-1. Summary of Vegetation/Land Use Types

#### **Agricultural Land**

Approximately 299.27 acres of the Project area consist of agricultural land, including 0.01 acre of the offsite impact areas. These areas consist of cultivated barley (*Hordeum vulgare*) that are routinely maintained and harvested.

#### **Cactus Scrub**

The Project area contains a slightly elevated outcrop area (approximately 0.55 acre) in the eastern portion of the site containing patches of cane cholla (*Cylindropuntia californica* var. *parkeri*). In addition, this area contains a small population of Parry's spineflower (*Chorizanthe parryi* var. *parryi*). Other species include stink net (*Onocosiphon piluliferum*), everlasting nest straw (*Stylocline gnaphaloides*), rattlesnake week (*Daucus pusillus*), Hartweg's milkvine (*Sarcostemma cycanchoides* ssp. *hartwegii*), Mediterranean schismus (*Schismus barbatus*), and red brome (*Bromus madritensis* ssp. *rubens*).

#### **Disturbed Developed Areas**

Approximately 20.37 acres of the Project area consist of disturbed/developed lands, including 4.90 acres of the offsite impact areas. These areas consist of improved storm water channels, and existing paved and unpaved roads. The disturbed/developed lands are mainly unvegetated, however vegetation observed in these areas include Russian thistle (*Salsola tragus*), summer mustard (*Hirschfeldia incana*), and telegraph weed (*Heterotheca grandiflora*).

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#### **Emergent Wetland**

A man-made drainage ditch occurs in the southern portion of the property, receiving nuisance and storm flows from a storm-drain outlet at the intersection of Sherman Road and Chambers Avenue. An approximately 500 linear-foot segment of the ditch supports emergent wetlands totaling 0.11 acre, dominated by southern cattail (*Typha domingensis*), Olney's bulrush (*Scirpus americanus*), alkali bulrush (*Scirpus maritimus*), and smooth cocklebur (*Xanthium strumarium*).

#### Riversidean Sage Scrub

Approximately 1.82 acres of the Project area contains patches of sparse Riversidean Sage Scrub (including 0.26 acre in the offsite impact area), the majority of which is associated with a rocky hill located in the northeastern portion of the Project area. These areas are characterized by sparse brittlebush (*Encelia farinosa*) and California buckwheat (*Eriogonum fasciculatum*) intermixed with rock outcrops and ruderal vegetation. Additional species include California sagebrush (*Artemisia californica*), California aster (*Corethrogyne filaginifolia* var. *californica*), white sage (*Salvia apiana*), and common fiddleneck (*Amsinkia intermedia*). A much smaller patch of buckwheat-dominated scrub located in the northeast portion of the site would be impacted under the proposed Project.

#### **Ruderal Areas**

Approximately 13.83 acres of the Project area is dominated by ruderal vegetation, including 0.86 acre of the offsite impact areas. This habitat type consists of both native species with an affinity for disturbance as well as non-native species common in disturbed areas. Vegetation within this habitat consists of red brome, summer mustard, Russian thistle, red-stemmed filaree (*Erodium cicutarium*), prickly lettuce (*Lactuca serriola*), California aster (*Corethrogyne filaginifolia* var. *californica*), paniculate tarplant (*Deinandra paniculata*), California plantain (*Plantago erecta*), common fiddleneck, telegraph weed, common cryptantha (*Cryptantha intermedia*), cheeseweed (*Malva parviflora*), and field bindweed (*Convolvulus arvensis*).

#### **Seasonal Pools**

The Project site contains four features where water has been documented to pond seasonally. Features 1, 2, and 4 are located within the northeastern portion of the site, whereas Feature 3 is located within the northwestern portion of the site. Feature 1 consists of two disturbed areas close in proximity with each other that exhibit very limited ponding (1a and 1b) and are treated as a single feature. During the 2019 wet season, the typical area of surface ponding for each feature was well less than 0.01 acre, with Feature 1a exhibiting a surface area of 1.5 meters by 4.9 meters (0.002 acre), and Feature 1b exhibiting a surface area of 1.5 meters by 2.0 meters (0.0007 acre). Both features exhibit upland vegetation (predominantly non-native), including foxtail chess (Bromus madritensis subsp. rubens), stinknet (Oncosiphon piluliferum), red-stemmed filaree (Erodium cicutarium) and common cryptantha (Cryptantha intermedia). Feature 2 is located immediately south of Feature 1b, and has similar evidence of disturbance, including off-road vehicle traffic, trash disposal, and pedestrian and pet traffic. However, Feature 2 remained inundated for a much longer time period in 2019 (0.12 acre of surface ponding) than Features 1a and 1b, and in addition to supporting similar plant species as 1a and 1b, Feature 2 also supports a prominent cover of wooly marbles (*Psilocarphus brevissimus*), which is a vernal pool indicator plant. Additionally, Feature 2 supports high densities of the non-listed versatile fairy shrimp (Branchinecta lindahli). As a result

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of the prolonged inundation and the presence of the woolly marbles, Feature 2 is classified as a MSHCP vernal pool. Features 3 and 4 both consist of tire track features that are vegetated with non-native upland vegetation, and neither support vernal pool indicator species such as the woolly marbles. As a result of their artificial nature and lack of wetland vegetation, neither feature is classified as a MSHCP vernal pool. Feature 3 exhibited 2.7 meters by 23.5 meters (0.15 acre) of surface ponding, with Feature 4 exhibiting 2.1 meters by 2.7 meters (0.001 acre) of surface ponding. Both features support the non-listed versatile fairy shrimp.

#### 2.2 Soils

The Natural Resource Conservation Service (NRCS) identifies the following soil types (series) as occurring (currently or historically) within the Project area [Exhibit 7]:

- Arbuckle Loam, 8 to 15 Percent Slopes (AkD)
- Buchenau Silt Loam, 2 to 8 Percent Slopes, Eroded (BkC2)
- Cajalco Fine Sandy Loam, 8 to 15 Percent Slopes, Eroded (CaC2), Cajalco Fine Sandy Loam, 8 to 15 Percent Slopes, Eroded (CaD2), and Cajalco Rocky Fine Sandy Loam, 5 to 15 Percent Slopes, Eroded (CbD2)
- Cieneba Rocky Sandy Loam, 15 to 20 Percent Slopes, Eroded (CkF2)
- Exeter Sandy Loam, Channeled, 2 to 8 Percent Slopes, Eroded (EnC2)
- Fallbrook Fine Sandy Loam, 2 to 8 Percent Slopes, Eroded (FfC2)
- Las Posas Loam, 2 to 8 Percent Slopes (LaC) and Las Posas Loam, 5 to 8 Percent Slopes, Eroded (LaC2)
- Madera Fine Sandy Loam, 0 to 2 Percent Slopes (MaA) and Madera Fine Sandy Loam, 2 to 5 Percent Slopes (MaB2)
- Placentia Fine Sandy Loam, 0 to 5 Percent Slopes (PlB)
- Porterville Clay, 0 to 8 Percent Slopes (PoC), Porterville Cobbly Clay, 2 to 15 Percent Slopes (PrD), and Porterville Clay, Moderately Deep, 2 to 8 Percent Slopes (PsC)
- Yokohl Loam, 2 to 8 Percent Slopes (YbC)

#### 3.0 SUMMARY OF BIOLOGICAL STUDIES

Biologists from Glenn Lukos Associates, Inc. (GLA) conducted biological surveys for the Project area from March 31, 2017 to July 26, 2017, with additional biological surveys performed in 2019, in order to comply with the MSHCP, the California Environmental Quality Act (CEQA), and the Endangered Species Act (ESA). The results of surveys relevant to MSHCP *Section 6.1.2* are summarized in this document. A more detailed reporting of general and focused biological surveys is provided within the Project's Biological Technical Report (GLA 2019a).

#### 3.1 MSHCP Riparian/Riverine Areas

The Project area contains four drainage features that would be considered MSHCP riverine features,

totaling 0.68 acre [Exhibit 5 – Vegetation & MSHCP Riverine Areas]. Three of the features (B, C, and D) do not support riparian vegetation. However, Drainage A supports approximately 0.11 acre of emergent wetland dominated by southern cattails (*Typha domingensis*) that is supported by runoff from a storm drain and is intermittently removed by storm scour and maintenance of the storm drain. Upland vegetation adjacent to the drainage features include Russian thistle, rattlesnake weed (*Chamaesyce albomarginata*), dove weed (*Croton setiger*), vinegar weed (*Trichostema lanceolatum*), cultivated barley, field bindweed, summer mustard (*Hirschfeldia incana*), and fascicled tarweed (*Hemizonia fasciculata*). Table 3-1 summarizes MSHCP riverine areas for the Project area.

Drainage	Unvegetated Riverine	MSHCP Riparian	Total MSHCP Riparian/Riverine
A	0.30	0.11	0.41
В	0.07	0	0.07
С	0.12	0	0.12
D	0.08	0	0.08
Total	0.57	0.11	0.68

**Table 3-1. Summary of MSHCP Riverine Areas** 

#### Drainage A

Approximately 0.41 acre of MSHCP riparian/riverine jurisdiction is associated with Drainage A, of which 0.11 acre consists of emergent wetland and 0.30 acre consists of riverine. The drainage feature has two segments, including a natural ephemeral segment with a width of one foot that originates in the southeastern portion of the property, in part as runoff from Chambers Avenue. The drainage extends west until the bed/bank disappears in the agricultural field. The second segment of Drainage A originates from a storm drain at Chambers Avenue/Sherman Road where diverted runoff enters the site into an artificially constructed ditch. The ditch conveys flows to the north for approximately 600 linear feet and then turns west/northwest to follow the natural flow path of Drainage A. The drainage then extends west for another 1,400 linear feet (seven-foot average width) until it dissipates into the agricultural field.

#### Drainage B

Approximately 0.07 acre of MSHCP riverine jurisdiction is associated with Drainage B, none of which consists of riparian vegetation. As with Drainage A, this drainage is also an ephemeral feature with a width of one foot. Feature B traverses from the eastern boundary in a westward direction until a bed/bank is no longer visible near the central portion of the Property.

#### Drainage C

Approximately 0.12 acre of MSHCP riverine jurisdiction is associated with Drainage C. Drainage C is an ephemeral feature that is one-foot wide and that only exhibits flows during and immediately

after storm events, supporting a limited bed/bank for varying distances. The drainage enters the property at the eastern boundary and extends westward until a bed/bank is no longer visible near the northern central portion of the Project area.

#### Drainage D

Approximately 0.08 acre of MSHCP riverine jurisdiction is associated with Drainage D. Drainage D is an ephemeral feature that is three-feet wide and receives runoff from the western terminus of Chambers Avenue. The drainage only exhibits flows during and immediately after storm events, supporting a limited bed/bank for varying distances before the flows continue along another paved portion of Chambers Avenue before crossing Encanto Road offsite into a ditch that flows north along Encanto Road and I-215.

#### 3.2 Habitat for Riparian Birds

Pursuant to MSHCP Section 6.1.2, GLA evaluated riparian habitat within the Project area for the potential to support the least Bell's vireo (Vireo bellii pusillus), southwestern willow flycatcher (Empidonax traillii extimus), and western yellow-billed cuckoo (Coccyzus americanus occidentalis).

#### 3.2.1 Least Bell's Vireo

The least Bell's vireo (LBV) primarily occupies riverine riparian habitats that typically feature dense cover within 3.2-6.4 feet off the ground and a dense, stratified canopy. It inhabits low, dense riparian growth along water or along dry parts of intermittent streams. Typically, it is associated with southern willow scrub, cottonwood forest, mule fat scrub, sycamore alluvial woodland, coast live oak riparian forest, arroyo willow riparian forest, wild blackberry, or mesquite in desert localities. The LBV uses habitat limited to the immediate vicinity of water courses below 1,500 feet elevation in the interior (USFWS 1986; Small 1994). In the coastal portions of southern California, the LBV occurs in willows and other low, dense valley foothill riparian habitat and lower portions of canyons and along the western edge of the deserts in desert riparian habitat. The LBV primarily nests in small, remnant segments of vegetation typically dominated by willows and mule fat but may also use a variety of shrubs, trees, and vines. The birds forage in riparian and adjoining chaparral or scrub habitat (Salata 1983). Nests are typically built within three feet off the ground in the fork of willows, wild rose (Rosa californica), mule fat (Baccharis salicifolia), or other understory vegetation (Franzreb 1989). Cover surrounding nests is moderately open midstory with an overstory of willow, cottonwood, sycamore, or oak. Crown cover is usually more than 50 percent and contains occasional small openings. The most critical structural component to LBV breeding habitat is a dense shrub layer at 2 to 10 feet above the ground (Goldwasser 1981; Franzreb 1989).

The Project area does not support riparian scrub/forest vegetation. There is no potential for LBV to occur on or adjacent to the Project.

#### 3.2.2 Southwestern Willow Flycatcher

The southwestern willow flycatcher (SWWF) is restricted to riparian woodlands along streams and rivers with mature, dense stands of willows (*Salix* spp.), cottonwoods (*Populus* spp.) or smaller spring fed or boggy areas with willows or alders (*Alnus* spp.) (Sedgwick and Knopf 1992). The SWWF breeds in relatively dense riparian habitats, nesting from zero to 13 feet above ground in thickets of trees and shrubs approximately 13 to 23 feet tall with a high percentage of canopy cover and dense foliage. The nest site plant community is typically even-aged, structurally homogeneous and dense (Brown 1988; Whitfield 1990; Sedgwick and Knopf 1992). Nesting willow flycatchers invariably prefer areas with surface water nearby (Phillips et al. 1966). In almost all cases, slowmoving or still surface water and or saturated soil will be present at or near the breeding sites during normal precipitation years (USFWS 2001).

Riparian scrub/forest vegetation is absent from the Project area. There is no potential for SWWF to occur on or adjacent to the Project.

#### 3.2.3 Western Yellow-Billed Cuckoo

The western yellow-billed cuckoo (WYBC) in California requires dense, wide riparian woodlands with well-developed understories for breeding (Garrett and Dunn 1981). It occurs in densely foliaged, deciduous trees and shrubs, especially willows which are required for roost and nest sites. It is restricted when breeding to river bottoms and other mesic habitats where humidity is high and where the dense understory abuts slow-moving watercourses, backwaters or seeps (Zeiner et al. 1990). Willow is almost always a dominant component of the vegetation.

Riparian scrub/forest vegetation is absent from the Project area. There is no potential for WYBC to be present on or adjacent to the Project.

#### 3.3 Vernal Pools

As discussed above in Section 2.1, the Project area contains four depression features that exhibit evidence of seasonal ponding. Exhibit 5 depicts the locations of the seasonal depressions. Features 1, 3, and 4 consist of disturbed depression features, two of which are tire track features, that support upland vegetation and that do not support vernal pool indicator plant species, or other wetland plant species. However, Feature 2 supports a moderate cover of woolly marbles, which is a vernal pool indicator plant species. As such, Feature 2 is classified as a MSHCP vernal pool. Feature 2 was monitored during the 2018-2019 rainy season and exhibited approximately 0.12 acre of surface ponding. As is detailed below, none of the features support listed fairy shrimp, although Features 2, 3, and 4 support medium-to-high densities of the non-listed versatile fairy shrimp.

#### 3.3.1 Listed Fairy Shrimp

The MSHCP identifies two species of listed fairy shrimp that occur within the overall MSHCP Plan Area, and that have special survey requirements pursuant to Volume I, Section 6.1.2 of the MSHCP. These include the listed Riverside fairy shrimp (*Streptocephalus woottoni*) and the listed

Vernal Pool fairy shrimp (*Branchinecta lynchi*). The Santa Rosa Plateau fairy shrimp (*Linderiella santarosae*) is endemic to western Riverside County, associated with Southern Basalt Flow vernal pools at and near the Santa Rosa Plateau. This species does not occur on site due to a lack of suitable habitat, and because the Project area is well outside of the species distribution range. As such, the species will not be further addressed in this report. Additionally, the listed San Diego fairy shrimp (*Branchinecta sandiegonensis*) is not a Covered Species under the MSHCP, but is recently known to occur in Riverside County, and so may have the potential to occur at the site and in proximity to the site.

The Riverside fairy shrimp, Vernal Pool fairy shrimp, and San Diego fairy shrimp were treated as having a low potential to occur on site, although it is unclear whether Features 1a and 1b (refer to Exhibit 5) at the site would pond long enough to support the life cycle of the Riverside fairy shrimp.

In 2005, GLA performed a dry season survey of the two depression features. Soil samples collected from both depression features were found to contain cysts of the genus *Branchinecta*, however no cysts of the genus *Streptocephalus* (i.e., Riverside fairy shrimp) were detected. With the permission of USFWS, GLA subcontracted to D. Christopher Rogers (EcoAnalysts, Inc.) to conduct hydration of the collected *Branchinecta* cysts. The non-listed versatile fairy shrimp (*Branchinecta lindahli*) was reared from cysts collected from both depression features. No other species of *Branchinecta*, including the Vernal Pool fairy shrimp or the San Diego fairy shrimp were present in the hatched specimens; however, USFWS does not consider cyst hydration to be conclusive to establish the absence of other species. A wet season survey following a dry season survey would be necessary to demonstrate absence of other *Branchinecta* species. A wet season survey was attempted during the 2005/2006-rainfall season; however, the depression features did not adequately pond to allow for sampling. Due to the lapse of time since the 2005 survey, the results of older survey are no longer adequate.

GLA initiated new surveys by first performing a dry season survey in 2017 for Features 1a/1b and 2, with cysts of the genus *Branchinecta* again being detected in Feature 2. Cysts of the genus Streptocephalus were not detected in either feature. GLA notified the USFWS in September 2017 of the intent to perform a wet season survey for the 2018 season; however, the site did not receive adequate rainfall to perform valid wet season surveys, and therefore the surveys could not be completed. GLA re-notified the USFWS on December 6, 2018 to perform a wet season survey for 2019. GLA sampled all of the depression features discussed above, detecting the non-listed B. lindahli in Features 2, 3, and 4. No species of listed fairy shrimp were detected in any of the features. Two of the sampled features (3 and 4) were not surveyed during the prior dry season survey; therefore, a dry season survey was recently completed for both features for the current (2019) season. Cysts of the genus *Branchinecta* were detected in both features, which was consistent with the detection of *B. lindahli* during the wet season surveys. Cysts of the genus Streptocephalus were not detected in either feature. With the completion of the 2017 dry season survey, and 2019 dry and season surveys, GLA has successfully completed the two-survey protocol for all depression features at the Project site with the potential to support fairy shrimp, and has demonstrated that listed species of fairy shrimp are absent from the site. The detailed results of the fairy shrimp surveys are included as Appendix C.

### 4.0 QUANTIFICATION OF UNAVOIDABLE IMPACTS TO RIPARIAN/RIVERINE RESOURCES

#### 4.1 Riparian/Riverine Areas

*Volume I, Section 6.1.2* of the MSHCP describes the process through which the protection of riparian/riverine areas and vernal pools is intended to occur within the MSHCP Plan Area. The purpose of this process is to ensure that the biological functions and values of riparian/riverine areas and vernal pools throughout the MSHCP Plan Area are maintained such that habitat values for animal and plant species inside the MSHCP Conservation Area are also maintained.

The MSHCP defines riparian/riverine areas as "lands which contain habitat dominated by trees, shrubs, persistent emergents, or emergent mosses and lichens, which occur close to or which depend upon soil moisture from a nearby fresh water source; or areas with fresh water flow during all or a portion of the year." With the exception of wetlands created for the purpose of providing wetlands habitat or resulting from human actions to create open waters or from the alteration of natural stream courses, areas meeting the criteria of riparian/riverine as described above, but which are artificially created, are not included in the definition.

The Project will impact all the MSHCP riparian/riverine resources in the Project area totaling 0.68 acre, of which 0.11 consists of emergent wetland. In addition, the Project will impact the 0.12-acre vernal pool (Feature 2). Table 4-1 summarizes the proposed impacts to MSHCP riparian/riverine areas from the Project.

Table 4-1. Summary of Proposed Impacts to MSHCP Riparian/Riverine Areas

Drainage	Vegetation	Acreage
A	Agriculture	0.30
	Emergent Wetland	0.11
В	Agriculture	0.07
С	Agriculture	0.11
	Disturbed/Developed	0.01
D	Agriculture	0.08
Total		0.68

#### 4.2 Riparian/Riverine Functions and Values

The 0.68 acre of MSHCP riparian/riverine resources to be impacted by the Project consist mostly of unvegetated ephemeral drainages that cease on the Project area. These features have been mechanically modified across decades by farming and disking. Weedy plant species occur adjacent to the features including Russian thistle, rattlesnake weed, dove weed, vinegar weed, cultivated barley, field bindweed, summer mustard, and fascicled tarweed. The hydrological functions and

values are minimal based on the routine disturbances and their low flows. Water does not remain long enough to support nutrient retention and transformation. The features would support sediment trapping and transport to a limited extent. The approximately 0.11 acre of emergent marsh (included in the 0.68-acre total) is associated with the artificially constructed ditch that receives flows from the storm drain at the southern end of the Project site. The first part of the ditch concrete-lined and is intermittently vegetated with a predominance of southern cattails, as a result of scour and maintenance of the storm drain. The ditch does not provide habitat for any of the *Section 6.1.2* species.

The area in and around the vernal pool has been degraded over the years as a result of unauthorized dumping. When GLA initially performed surveys in 2005, the vernal pool contained a washing machine and other trash/debris. Much of the refuse has been cleaned out in recent years, although not entirely. The pool exhibits very deep cracking as a result of clay content, and a relatively low cover of plants, although as noted above the pool has a relatively moderate cover of woolly marbles that establishes in traditional rings beyond the cracked soils in the center. Besides the woolly marbles, the pool area is vegetated with several non-native plant species. The vernal pool provides habitat for the versatile fairy shrimp and other aquatic invertebrates, although special-status invertebrates (i.e., listed fairy shrimp) have not been detected in the pool. Western spadefoot (Spea hammondii) tadpoles were detected in the vernal pool during the latter part of fairy shrimp surveys, but the pool dried up before the tadpoles could mature. Since 2019 had an above-normal rainfall season, and the pool remained inundated for an above-average period, it is unclear the frequency with which spadefoots can complete the transition to mature toads. Tadpoles were not detected in any of the other features. Section 6.1.2 of the MSHCP identifies the western spadefoot as one of many additional species that benefit from the riparian/riverine policies, although the spadefoot does not have species-specific survey requirements and the conservation objectives are limited to habitat within the MSHCP Conservation Area. Since the Project site is not located within or in proximity to the Criteria Area/Conservation Area, the vernal pool would not be applicable to Reserve Assembly goals.

#### 4.3 Wildlife habitat and Aquatic Habitat

Volume I, Section 6.1.2 of the MSHCP document (Purpose) identifies a number of plant and animal species for which the protection of riparian/riverine areas is generally important to the conservation of such species. In addition, Section 6.1.2 identifies other plant and animal species for which the benefits of the riparian/riverine policies would extend to (Additional Species Benefits). None of the plant species identified in Section 6.1.2 were detected within the Project area, and none would not be expected to occur due to a lack of suitable habitat. Of the animal species, none of the bird species have the potential to occur within the riparian and riverine habitat to be impacted by the Project. As discussed above, western spadefoot tadpoles were observed in the vernal pool during the latter part of the wet season fairy shrimp surveys, but the pool dried up before the tadpoles could

mature, it is unclear the frequency with which spadefoots are able to complete the transition to mature toads. The spadefoot is classified under the "additional species benefits".

#### 5.0 PROPOSED MITIGATION

For unavoidable impacts to Riparian/Riverine areas, the MSHCP requires that a Project demonstrate that it would be "biologically equivalent or superior" to complete avoidance of existing habitat. Impacts to 0.68 acre of MSHCP riparian/riverine resources and the 0.12-acre vernal pool will be mitigated at a minimum 3:1 ratio through off site mitigation, targeting in-lieu fee mitigation with the Riverpark Mitigation Bank. If mitigation credits are not yet available at the Mitigation Bank, then the applicant will coordinate with the wildlife agencies and the RCA regarding alternate mitigation opportunities on conservation lands managed by the RCA. If necessary, the applicant will submit a revised DBESP that proposes an alternate mitigation strategy. The alternate mitigation strategy may include an applicant-responsible mitigation in the same watershed. Alternate mitigation would require Wildlife Agency concurrence before impacts to Riparian/Riverine areas could be made.

### 6.0 FINDING OF BIOLOGICALLY EQUIVALENT OR SUPERIOR PRESERVATION

As noted above, implementation of the Project will result in impacts to 0.68 acre of MSHCP riparian/riverine areas and a 0.12-acre vernal pool. As discussed in Section 1.4 of this document, avoidance of these impacts is infeasible based on the wide distribution of the riverine resources in the Project footprint. The proposed mitigation will result in a biologically equivalent or superior condition within the MSHCP Plan Area compared with the existing onsite Riparian/Riverine resources. This determination is based on one or more of the following factors: effects on Conserved Habitats; effects on riparian/riverine planning species; and effects on riparian linkages and function of the MSHCP conservation area.

#### 6.1 Effects on Conserved Habitats

Although the Project will impact approximately 0.68 acre of riverine areas and the 0.12-acre vernal pool, the proposed mitigation would result in superior preservation in the amount and quality of riparian/riverine habitat within the MSHCP. The Project will purchase credits at an off-site mitigation bank or in-lieu fee program (intended to be the Riverpark Mitigation Bank) at a 3:1 ratio for direct impacts to riverine habitat, with the resulting mitigation being riparian and connecting to downstream riparian resources and habitats that will support riparian-associated species, rather than upland species.

#### 6.2 Effects on Riparian/Riverine Planning Species

The Project will impact riverine habitat with no potential to support wildlife typical of riparian areas. The habitat to be impacted is not suitable to support riparian birds with MSHCP survey/conservation requirements, including the LBV, SWWF, and WYBC. The proposed mitigation will provide habitat with biologically equivalent or superior preservation opportunities for MSHCP Riparian/Riverine Planning Species, and other Planning Species.

### 6.3 Effects on Riparian Linkages and Function of the MSHCP Conservation Area

The Project will not adversely impact existing or proposed Conservation Areas and will not adversely impact existing or proposed Linkages or Constrained Linkages. Furthermore, the features on the Project area do not connect to downstream resources. As such, the proposed Project will not adversely affect linkage and/or overall MSHCP conservation function.

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#### **Legado Project**

### Western Riverside County Multiple Species Habitat Conservation Plan Determination of Biologically Equivalent or Superior Preservation

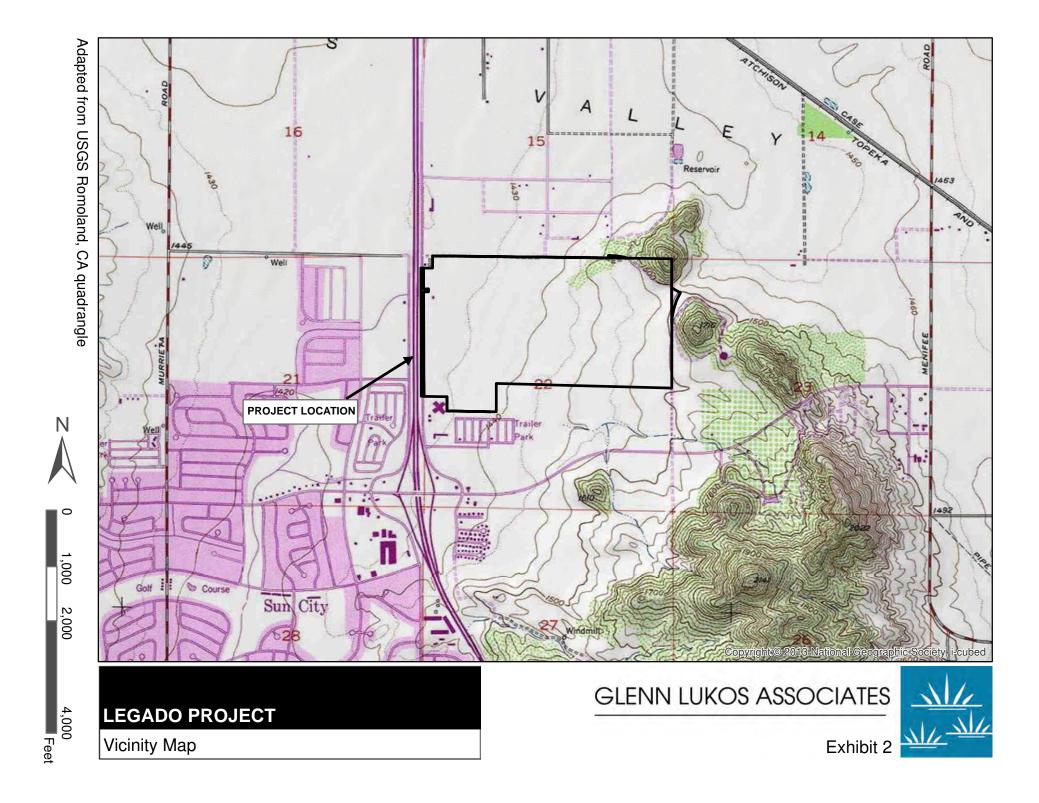
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#### 8.0 CERTIFICATION

s:0849-20e.rpt\_DBESP.docx

I hereby certify that the statements furnished above and in the attached exhibits present data and information required for this biological evaluation, and that the facts, statements, and information presented are true and correct to the best of my knowledge and belief.

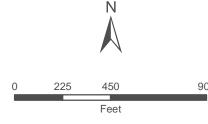
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Signed:_		Date:	8/7/2019	







Project Site Plan



**LEGADO PROJECT** 

Site Plan

GLENN LUKOS ASSOCIATES

Exhibit 3



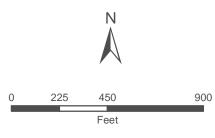




Offsite Impact Areas

Narrow Endemic Plants Survey Area

Burrowing Owl Survey Area





MSHCP Overlay Map

GLENN LUKOS ASSOCIATES



1 inch = 450 feet

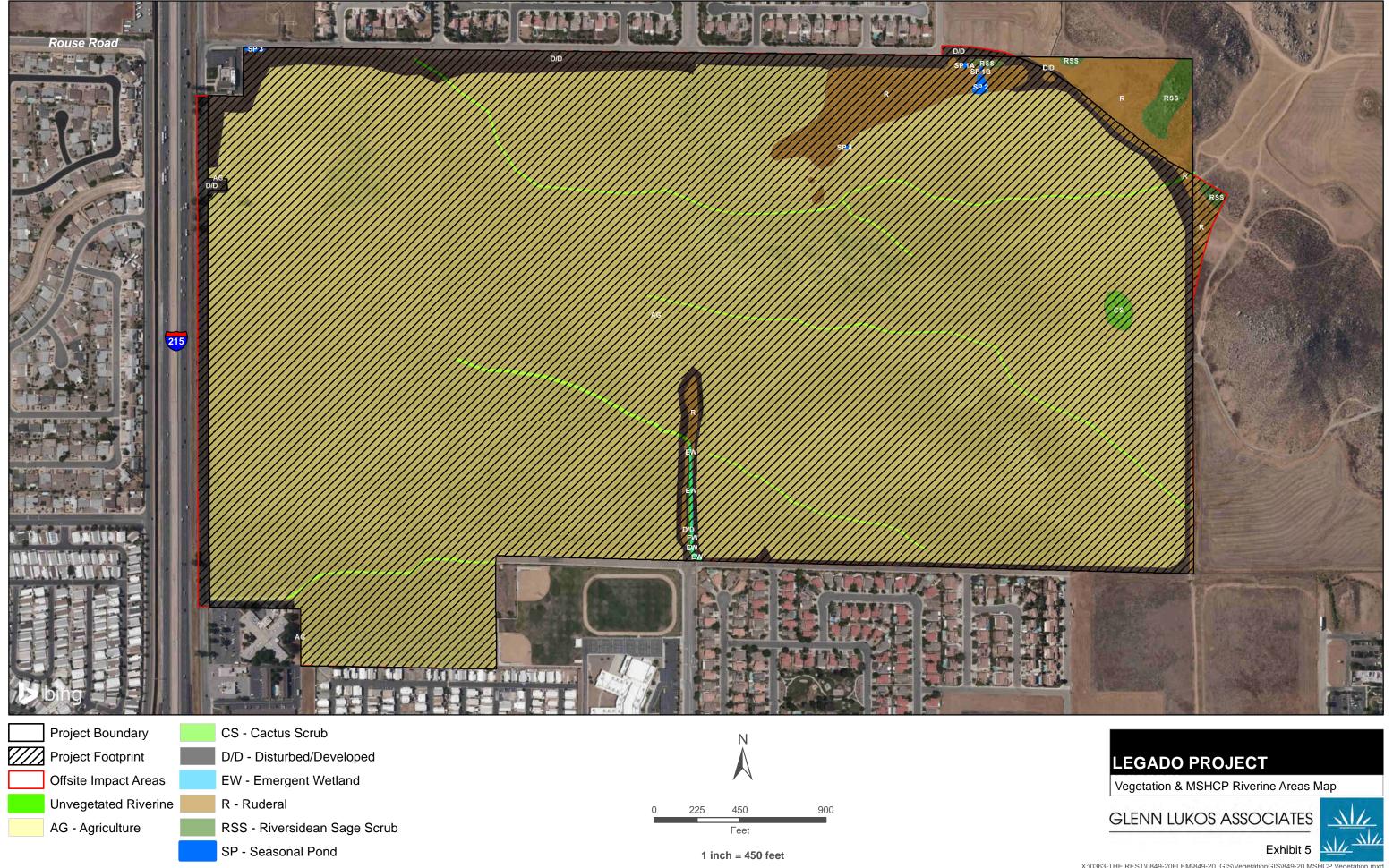




Exhibit 6A

Site Photographs





Photograph 1: View of the drainage ditch (Drainage A) looking south towards the storm drain outlet.



Photograph 3: View of the drainage ditch looking south, depicting where the ditch transitions from a deeper earthen channel (with rock lining) to a shallower earthen channel.



Photograph 2: View of the drainage ditch looking north where the ditch transitions from a concrete-lined ditch to an earthen ditch with un-grouted rock.



Photograph 4: View looking west towards the general dissipation area of Drainage A, but where flow indicators are absent due in part to disking.



Photograph 5: View of the vernal pool (Feature 2) during the 2019 wet season.



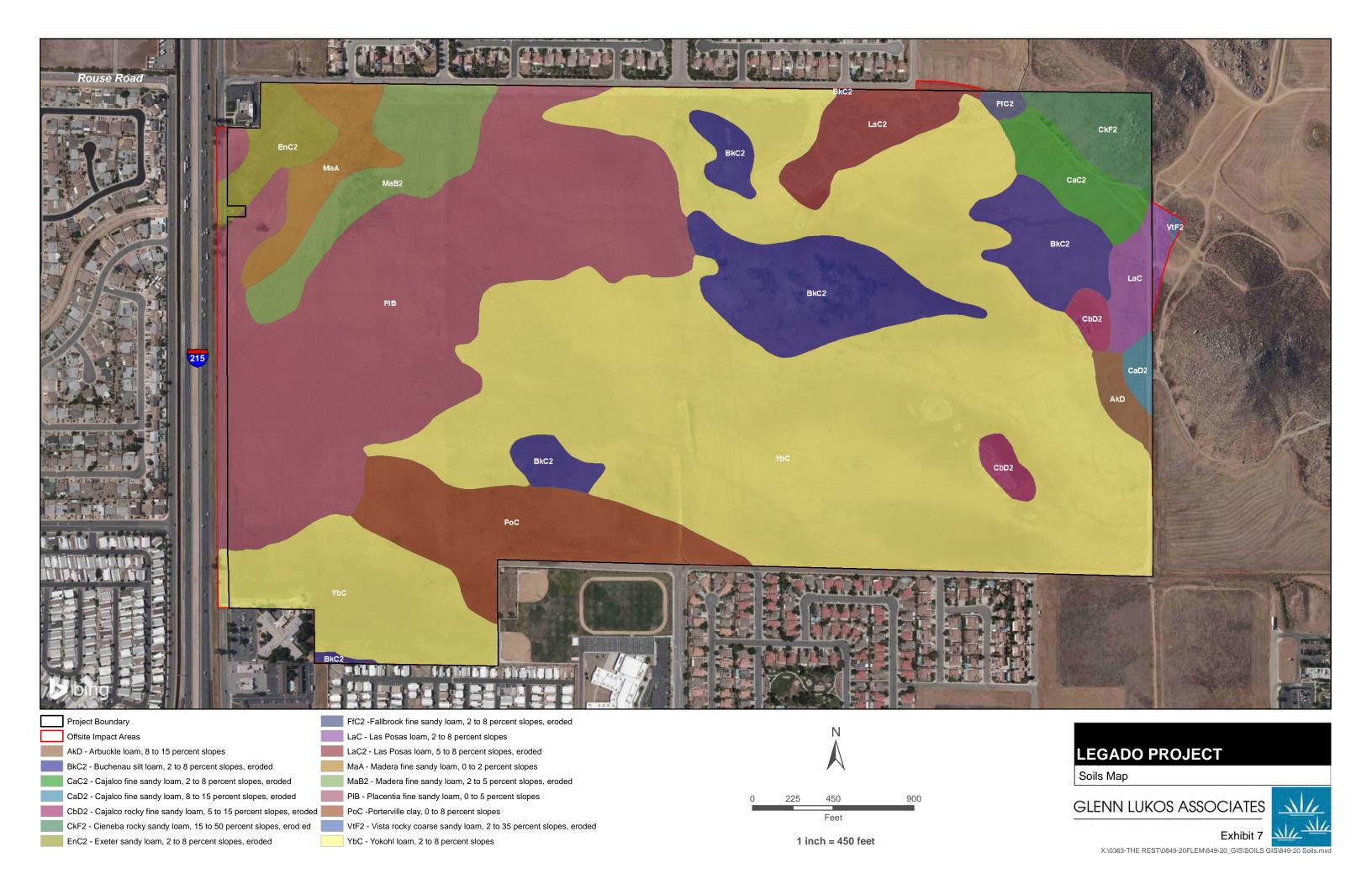
Photograph 7: Aerial view of the Project site from the northwest corner depicting the general area traversed by Drainage A, B, and C.



Photograph 6: View of the vernal pool (Feature 2) in the early part of the dry phase. The light green vegetation established as a ring around the pool is the woolly marbles (*Psilocarphus brevissimus*).



Photograph 8: Aerial view of the Project site from the southwest corner depicting where Drainage D extends from the paved terminus of Chambers Avenue.



#### APPENDIX A

#### FLORAL COMPENDIUM

The floral compendium lists species identified on the project site. Taxonomy follows the Jepson Manual (Baldwin et al. 2012) and, for sensitive species, the California Native Plant Society's Rare Plant Inventory (Tibor 2001). Common plant names are taken from Hickman (1993), Munz (1974), and Roberts (1998). An asterisk (\*) denotes a non-native species.

#### **DICOTS**

AMARANTHACEAE AMARANTH FAMILY

\*Amaranthus albus tumbling pigweed

APIACEAE CARROT FAMILY

Daucus pusillus rattlesnake weed

ASTERACEAE SUNFLOWER FAMILY

Baccharis salicifolia mule fat \*Cirsium vulgare bull thistle Deinandra fasciculata fascicled tarweed Deinandra paniculata paniculate tarplant Encelia farinosa desert brittlebush Ericameria pinifolia pine goldenbush Erigeron canadensis common horseweed Helianthus annuus western sunflower Holocarpha virgata graceful tarplant \*Lactucca serriola prickly lettuce

\*Logfia gallica narrow leaved-filago Psilocarphus brevissimus wooly marbles Stylocline gnaphaloides everlasting nest straw

BORAGINACEAE BORAGE FAMILY

smooth cocklebur

Amsinckia intermedia common fiddleneck

Xanthium strumarium

#### **BRASSICACEAE**

\*Brassica nigra \*Hirschfeldia incana \*Sisymbrium irio

**CACTACEAE** 

Cylindropuntia californica

**CARYOPHYLLACEAE** 

\*Spergularia bocconei

**CHENOPODIACEAE** 

\*Bassia hyssopifolia \*Salsola tragus

**CONVOLVULACEAE** 

Convolvulus arvensis

**EUPHORBIACEAE** 

Eremocarpus setigerus Chamaesyce albomarginata

**FABACEAE** 

Lotus hamatus \*Melilotus officinalis

**GERANIACEAE** 

\*Erodium cicutarium

**LAMIACEAE** 

\*Marrubium vulgar Trichostema lanceolatum **MUSTARD FAMILY** 

black mustard summer mustard London rocket

**CACTUS FAMILY** 

valley cholla

PINK FAMILY

Boccone's sand spurry

**GOOSEFOOT FAMILY** 

five-hook bassia Russian thistle

MORNING GLORY FAMILY

field bindweed

**SPURGE FAMILY** 

doveweed rattlesnake spurge

**LEGUME FAMILY** 

San Diego lotus yellow sweet clover

**GERANIUM FAMILY** 

red-stemmed storksbill

**MINT FAMILY** 

horehound vinegar weed

MALVACEAEA

**MALLOW FAMILY** 

\*Malva parviflora

cheeseweed

**ONAGRACEAE** 

**EVENING PRIMROSE FAMILY** 

Eplilobium ciliatum

willow herb

**POLYGONACEAE** 

**BUCKWHEAT FAMILY** 

Calandrinia ciliata

Chorizanthe parryi var. parryi Eriogonum fasciculatum \*Polygonum arenastrum

Polygonum lapathifolium \*Rumex crispus

red maids

Parry's spineflower California buckwheat common knotweed willow smartweed

curly dock

**SOLANACEAE** 

NIGHTSHADE FAMILY

Datura wrightii

Solanum xanti

Jimsonweed

chaparral nightshade

**TAMARICAEAE** 

TAMARISK FAMILY

\*Tamarix ramosissima

Tamarisk

#### **MONOCOTS**

**CYPERACEAE** 

**SEDGE FAMILY** 

Cyperus eragrostis Schoenoplectus americanus Schoenoplectus robustus tall umbrella sedge Olney's bulrush coastal bulrush

#### **POACEAE**

\*Avena sp.

\*Bromus diandrus

\*Bromus hordeaceus

\*Bromus madritensis rubens

\*Hordeum murinum

\*Hordeum vulgare

\*Lolium perenne

\*Phalaris sp.

\*Polypogon monspeliensis

\*Schismus barbatus

\*Vulpia myuros var myuros

#### **TYPHACEAE**

Typha domingensis

#### **GRASS FAMILY**

wild oats
ripgut brome
soft chess
red brome
barley
cultivated barley
English ryegrass
canary grass
rabbitfoot grass

#### **CATTAIL FAMILY**

Mediterranean grass

southern cattail

rattail fescue

#### APPENDIX B

#### **FAUNAL COMPENDIUM**

The faunal compendium lists species that were either observed within or adjacent to the Project Site (denoted by a '\*'), or that have some potential to occur within or adjacent to the Project Site (denoted by a '+'). Taxonomy and common names are taken from the California Wildlife Habitat Relationships System (CDFG 2003); AOU (1998) and CDFG (2008) for birds; Stebbins (1985), Collins (1990), Jones et al. (1992), and CDFG (2008) for reptiles and amphibians; and CDFG (2008) for mammals.

#### **AMPHIBIANS**

#### **BUFONIDAE – TRUE TOADS**

+ Anaxyrus boreas western toad

#### **HYLIDAE – TREE FROGS AND RELATIVES**

+ Pseudacris cadaverina California chorus frog + Pseudacris regilla Pacific chorus frog

#### REPTILES

#### PHRYNOSOMATIDAE – LIZARDS

- + Phrynosoma coronatum blainvillei San Diego horned lizard
- \* Sceloporus occidentalis western fence lizard
- \* Sceloporus orcutti granite spiny lizard
- \* *Uta stansburiana* side-blotched lizard

#### SCINCIDAE – SKINKS

+ Eumeces skiltonianus western skink

#### TEIIDAE – WHIPTAILS

+ Aspidoscelis hyperythra orangethroat whiptail + Aspidoscelis tigris multiscutatus coastal western whiptail

#### **ANGUIDAE – ALLIGATOR LIZARDS**

+ Elgaria multicarinata southern alligator lizard

#### **BOIDAE - BOAS**

+ Charina trivirgata rosy boa

#### **COLUBRIDAE - COLUBRIDS**

- $+ \ Coluber\ constrictor$ 
  - racer
- + Diadophis punctatus ringneck snake
- + Lampropeltis getula

California kingsnake

- + Masticophis flagellum coachwhip
- + Pituophis melanoleucus

gopher snake

+ Salvadora hexalepis western patch-nosed snake

#### **VIPERIDAE – VIPERS**

+ Crotalus ruber

red diamond rattlesnake

+ Crotalus viridis

western rattlesnake

#### **BIRDS**

#### **CATHARTIDAE – NEW WORLD VULTURES**

\* Cathartes aura turkey vulture

#### **ACCIPITRIDAE – HAWKS AND HARRIERS**

+ Accipiter cooperi

Cooper's hawk

+ Accipiter striatus

sharp-shinned hawk

+ Aquila chrysaetos

golden eagle

\* Buteo jamaicensis

red-tailed hawk

+ Buteo lineatus

red-shouldered hawk

+ Buteo regalis

ferruginous hawk

+ Circus cyaneus

northern harrier

+ Elanus leucurus

white-tailed kite

#### FALCONIDAE - FALCONS

+Falco columbarius

merlin

+ Falco mexicanus

prairie falcon

\* Falco sparverius

American kestrel

#### CHARADRIIDAE – PLOVERS AND RELATIVES

+ Charadrius vociferus killdeer

#### **COLUMBIDAE – PIGEONS AND DOVES**

+ Columbia livia

rock dove

+ Columbina passerina

common ground dove

\* Zenaida macroura

mourning dove

#### **CUCULIDAE - TYPICAL CUCKOOS**

+ Geococcyx californianus

#### greater roadrunner

#### **APODIDAE – SWIFTS**

+ Aeronautes saxatalis white-throated swift

#### TROCHILIDAE – HUMMINGBIRDS

+ Archilochus alexandri black-chinned hummingbird

+ Calypte anna

Anna's hummingbird

+ Calypte costa

Costa's hummingbird

+ Selasphorus sasin

Allen's hummingbird

#### TYRANNIDAE - TYRANT FLYCATCHERS

+ Myiarchus cinerascens ash-throated flycatcher

\* Sayornis nigricans black phoebe

\* Sayornis saya

Say's phoebe

\* Tyrannus verticalis

western kingbird

 $+\ Tyrannus\ vociferans$ 

Cassin's kingbird

#### LANIIDAE – SHRIKES

+ Lanius ludovicianus loggerhead shrike

#### **CORVIDAE – JAYS, MAGPIES, AND CROWS**

\* Corvus brachyrhynchos

American crow

\* Corvus corax

common raven

#### ALAUDIDAE – LARKS

\* Eremophila alpestris actia California horned lark

#### **HIRUNDINIDAE – SWALLOWS**

- \* Petrochelidon pyrrhonota cliff swallow
- \* Stelgidopteryx serripennis northern rough-winged swallow
- \* Tachycineta thalassina violet-green swallow

#### **AEGITHALIDAE – BUSHTIT**

\* Psaltriparus minimus bushtit

#### TROGLODYTIDAE - WRENS

- + Catherpes mexicanus canyon wren
- $+\ Salpinctes\ obsolet us$

rock wren

- \* Thryomanes bewickii
  - Bewick's wren
- + Troglodytes aedon house wren

#### SYLVIIDAE – OLD WORLD WARBLERS AND GNATCATCHERS

- + Polioptila caerulea
  - blue-gray gnatcatcher
- + *Polioptila californica californica* coastal California gnatcatcher

#### TIMALIIDAE – BABBLERS

+ Chamaea fasciata wrentit

#### MIMIDAE – MOCKINGBIRDS AND TRASHERS

+ Mimus polyglottos northern mockingbird

#### STURNIDAE – STARLINGS

+ Sturnus vulgaris
European starling

#### PARULIDAE – WOOD WARBLERS AND RELATIVES

+ *Dendroica coronata* yellow-rumped warbler

\* Geothlypis trichas

common yellowthroat

#### **EMBERIZIDAE – EMBERIZINES**

+ Aimophila ruficeps canescens

Southern California rufous-crowned sparrow

+ Chondestes grammacus

lark sparrow

+ Junco hyemalis

dark-eyed junco

+ Melospiza lincolnii

Lincoln's sparrow

+ Melospiza melodia

song sparrow

\* Passerculus sandwichensis

savannah sparrow

+ Pipilo crissalis

California towhee

+ Pipilo maculatus

spotted towhee

+ Spizella passerina

chipping sparrow

+ Zonotrichia atricapilla

golden-crowned sparrow

+ Zonotrichia leucophrys

white-crowned sparrow

#### CARDINALIDAE - CARDINALS, GROSBEAKS, AND ALLIES

+ *Passerina amoena* lazuli bunting

#### ICTERIDAE – BLACKBIRDS, ORIOLES, AND ALLIES

\* Agelaius phoeniceus red-winged blackbird

+ Euphagus cyanocephalus

Brewer's blackbird

+ Icterus bullocki

Bullock's oriole

+ Icterus cucullatus

hooded oriole

+ Molothrus ater

brown-headed cowbird

\* Sturnella neglecta

western meadowlark

# FRINGILLIDAE – FINCHES

+ Carduelis lawrencei

Lawrence goldfinch

+ Carduelis psaltria

lesser goldfinch

+ Carduelis tristis

American goldfinch

+ Carpodacus mexicanus

house finch

## PASSERIDAE – OLD WORLD SPARROWS

+ Passer domesticus house sparrow

# **MAMMALS**

## **DIDELPHIDAE - MARSUPIALS**

+ *Didelphis virginiana* Virginia opossum

#### **SORICIDAE – SHREWS**

+ Notiosorex crawfordi

desert shrew

+ Sorex ornatus

ornate shrew

# TALPIDAE - MOLES

+ Scapanus latimanus broad-footed mole

## LEPORIDAE – RABBITS AND HARES

+ Lepus californicus bennettii

San Diego black-tailed jackrabbit

+ Sylvilagus audubonii

desert cottontail

+ Sylvilagus bachmani

brush rabbit

# SCIURIDAE – SQUIRRELS

\* Spermophilus beecheyi

California ground squirrel

## **GEOMYIDAE – POCKET GOPHERS**

+ Thomomys bottae

Botta's pocket gopher

## HETEROMYIDAE – POCKET MICE AND KANGAROO RATS

+ Chaetodipus fallax fallax

Northwestern San Diego pocket mouse

+ Dipodomys simulans

Dulzura (San Diego) kangaroo rat

+ Dipodomys stephensii

Stephens' kangaroo rat

## MURIDAE – MICE, RATS, AND VOLES

+ Mus musculus

house mouse

+ Peromyscus boylii

brush mouse

+ Peromyscus californicus

California mouse

+ Peromyscus eremicus

cactus mouse

+ Peromyscus maniculatus

deer mouse

+ Rattus norvegicus

Norway rat

+ Rattus rattus

black rat

+ Reithrodontomys megalotis

#### western harvest mouse

# **CANIDAE – FOXES, WOLVES, AND RELATIVES**

+ Canis familiaris feral dog + Canis latrans coyote

## **PROCYONIDAE – RACCOONS**

+ Procyon lotor raccoon

## **MUSTELIDAE – WEASELS AND RELATIVES**

+ *Mustela frenata* long-tailed weasel

# **MEPHITIDAE – SKUNKS**

+ Mephitis mephitis striped skunk + Spilogale gracilis western spotted skunk

# FELIDAE – CATS

+ Felis catus feral cat + Lynx rufus bobcat



September 28, 2017

Stacey Love U.S. Fish and Wildlife Service 2177 Salk Avenue, Suite 250 Carlsbad, California 92008

SUBJECT: Submittal Requirements for 2017 Dry Season Survey for Listed Branchiopods

Conducted for the Fleming Ranch Property, Located in the City of Menifee,

County of Riverside, California

Dear Ms. Love:

The following letter report documents the results of a dry season survey conducted by Glenn Lukos Associates, Inc. (GLA) for two seasonally ponded features at the above-referenced property in order to determine the presence/absence of branchiopod cysts. GLA biologists Kevin Livergood (TE-172638-2) and David Moskovitz (TE-084606-3) performed the soil collection from the features and biologist Jason Kurnow (TE-778195) of HELIX Environmental Planning, Inc. (HELIX) processed the soil samples to determine cyst presence/absence. A 15-day notification was submitted to the U.S. Fish and Wildlife Service (USFWS) on June 27, 2017, notifying of the intent to conduct a dry season survey. Authorization to commence surveys was received from USFWS on June 28, 2017 and soil samples were collected from the site on July 26, 2017. A report from HELIX summarizing the results of soil analysis was completed on August 21, 2017 (Appendix A). No cysts of the genus *Branchinecta* or *Streptocephalus* were identified in Feature 1 and medium density of cysts of the genus *Branchinecta* were detected in Feature 2. No cysts of the genus *Streptocephalus* were detected in Feature 2.

#### I. SITE LOCATION

The Fleming Ranch Property (Project Site) is located in the City of Menifee in the County of Riverside, California [Exhibit 1 – Regional Map]. The dry season survey included two seasonally ponded features located in the northeast quadrant of the Project Site. The Project Site is located east of Interstate 215 and Encanto Road, south of Rouse Road, west of Antelope Road, and north of McCall Boulevard. The Project Site can be found on the U.S. Geological Survey 7.5' Romoland, California Quadrangle [dated 1953 and photorevised in 1979]) in Section 22, Township 5 South, Range 3 West [Exhibit 2 – Vicinity Map]. The Universal Transverse Mercator (UTM) coordinates approximately corresponding to the site are 483268 mE and 3731652 mN (Zone 11S).

29 Orchard • Lake Forest • California 92630-8300 Telephone: (949) 837-0404 • Facsimile: (949) 837-5834 Stacey Love U.S. Fish and Wildlife Service September 28, 2017 Page 2

The location of the features was collected with a handheld GPS device (Trimble Geo7x) at the time of dry season soil collection. Coordinates of the sampled features are as follows:

Feature 1: 33.728356°, -117.175367°
Feature 2: 33.728099°, -117.175280°

#### II. METHODOLOGY

#### A. Soil Collection

Soil sample collection and processing followed the USFWS *Survey Guidelines for the Listed Large Branchiopods* (May 31, 2015). Soil sample collection was conducted by GLA biologists Kevin Livergood (Permit TE-172638-1) and David Moskovitz (TE-084606-3) on July 26, 2017.

In accordance with the survey protocol, the number of soil/substrate samples and the amount of soil/substrate collected was proportional to the size of the feature. For Feature 1, a total of ten (10) samples were collected and for Feature 2 a total of twenty-five (25) samples were collected. To determine the soil sample collection points, two perpendicular transects that crossed the deepest and widest parts of the feature were established in the field and collection points were identified in a grid ensuring the lowest topographic areas were sampled. Soil samples of approximately 100 milliliters (ml) each were removed at each sub-sample location using a hand trowel and transferred to individually labeled bags for processing. An aerial photograph depicting the location of the sampled features is attached as Exhibit 3, site photographs are provided in Exhibit 4, and a completed datasheet is provided as Appendix B of this report.

#### B. Soil Analysis

Soil processing and examination was conducted by biologist Jason Kurnow (TE-778195) of HELIX. As stated in the attached HELIX report of findings (Appendix A), samples were prepared for analysis by dissolving the collected soil in water and sequentially sieving the material through 710- and 75 micrometer (µm) pore size screens. The small size of these screens ensures that cysts from the target fairy shrimp species are retained. The portion of each sample retained in the screen was dispersed in a brine solution to separate the organic from the inorganic material. The organic fraction was decanted, dried, and examined under a microscope. Cysts were identified to genus level based on surface characteristics. Multiple species of the genus *Branchinecta* can occur in Riverside County, but cannot be identified past genus level based on cyst characteristics. All cysts detected during soil analysis are submitted to the collection of the Natural History Museum of Los Angeles by the firm or biologist that conducted the analysis.

Stacey Love U.S. Fish and Wildlife Service September 28, 2017 Page 3

#### III. FEATURE DESCRIPTION

Following are descriptions of each feature including estimated dimensions as determined at the time of dry season soil collection.

#### **FEATURE 1**

The feature is in an undeveloped area of open space that is adjacent to a previously graded, but undeveloped space. The feature exhibits a significant amount of disturbance including signs of off-road vehicle traffic as well as pedestrian and pet traffic. The feature is sparsely vegetated with native and non-native species including: hooked pincushionplant (*Navarretia hamata*), vinegarweed (*Trichostema lanceolatum*), doveweed (*Croton setiger*), spotted spurge (*Euphorbia maculata*), stinknet (*Oncosiphon piluliferum*), foxtail brome (*bromus rubens*), and fescue grass (*Vulpia* sp.).

The feature measured approximately 3.6 meters (m) in width by 5.8 m in length for a total area of 0.005 acre.

A completed Dry Season Survey Datasheet is provided in Appendix B.

#### **FEATURE 2**

The feature is located approximately 50 to 75 feet south of Feature 1 and exhibits similar characteristics of disturbance including signs of off-road vehicle traffic as well as pedestrian and pet traffic. There is also evidence of dirt and debris dumping in and near the feature. The feature is sparsely vegetated with native and non-native species including: woolly marbles (*Psilocarphus brevissimus*), hooked pincushionplant (*Navarretia hamata*), graceful tarplant (*Holocarpha virgata* ssp. *elongate*), doveweed (*Croton setiger*), rattlesnake spurge (*Euphorbia albomarginata*), and stinknet (*Oncosiphon piluliferum*).

The feature measured approximately 10.7 meters (m) in width by 13.4 m in length for a total area of 0.035 acre.

A completed Dry Season Survey Datasheet is provided in Appendix B.

## IV. RESULTS OF DRY SEASON SURVEY

The survey area occurs within the known range of the common versatile fairy shrimp (*Branchinecta lindahli*) and the following listed species: Vernal Pool fairy shrimp (*Branchinecta* 

Stacey Love U.S. Fish and Wildlife Service September 28, 2017 Page 4

*lynchi*) and Riverside fairy shrimp (*Streptocephalus woottoni*). San Diego fairy shrimp (*Branchinecta sandiegonensis*), also a listed species, was recently identified in Riverside County. The species is not expected to occur at this location, but a wet season survey will confirm the species of *Branchinecta* detected during dry season sampling.

No fairy shrimp cysts were detected in Feature 1. A medium density of cysts of the genus *Branchinecta* were detected in Feature 2. No cysts of the genus *Streptocephalus* were detected in either of the sampled features.

Wet season surveys are expected to be conducted at the Fleming Ranch Property during the 2017-2018 wet season to confirm the species of fairy shrimp present. Completion of the wet season survey will complete the survey protocol, if completed in a three-year period.

I certify that the information in this survey report and attached exhibits fully and accurately represent my work. If you have any questions regarding this letter report, please contact me at klivergood@wetlandpermitting.com.

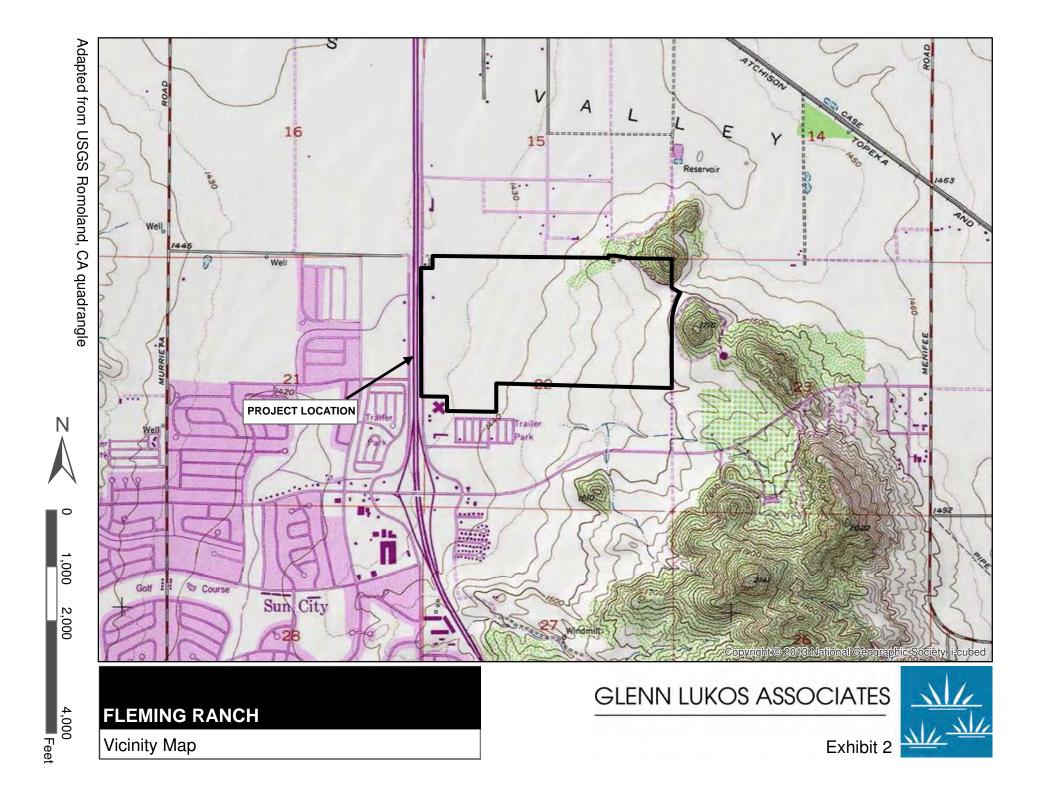
Sincerely,

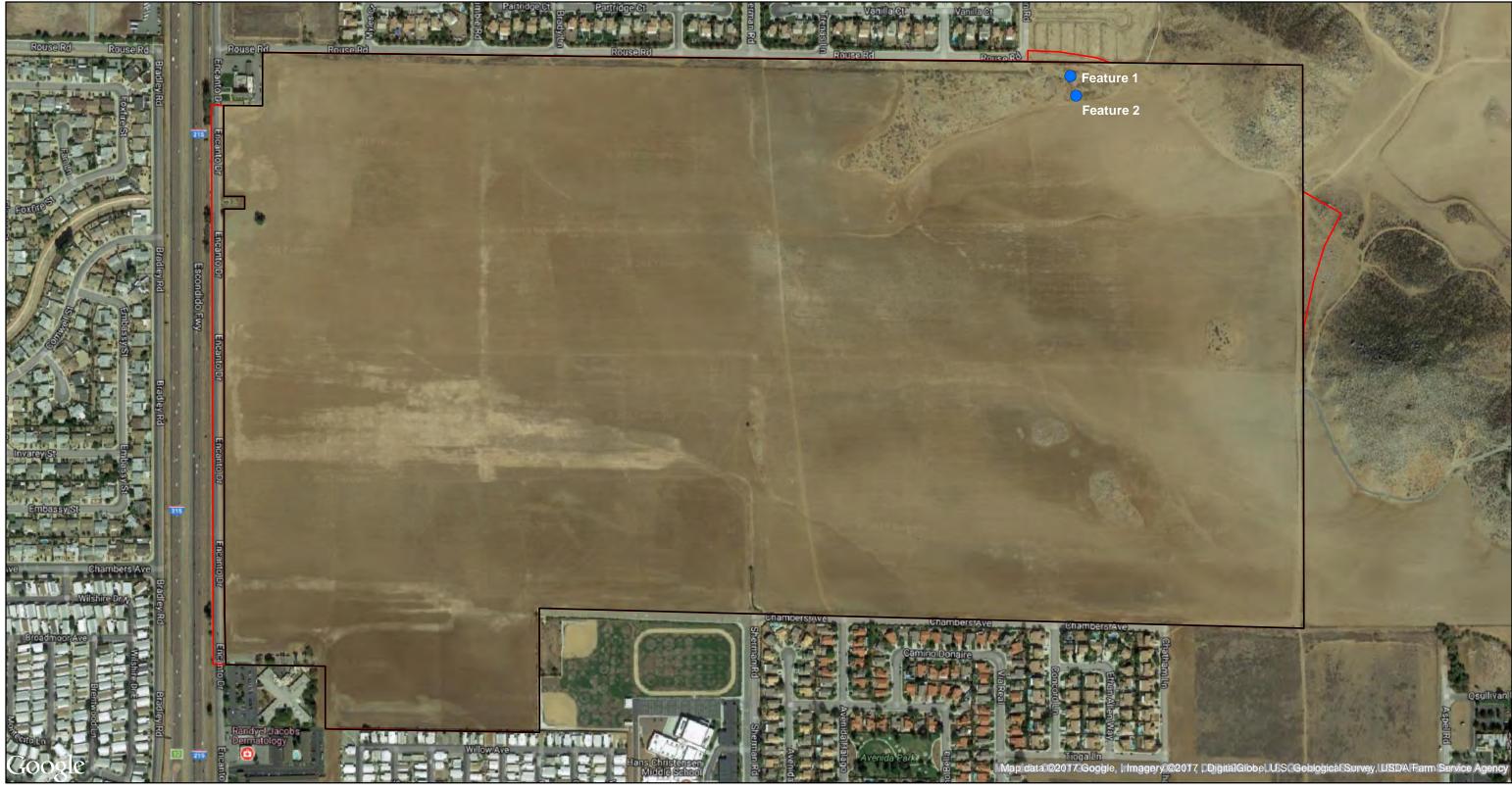
GLENN LUKOS ASSOCIATES, INC.

Kevin Livergood

Biologist/Regulatory Specialist

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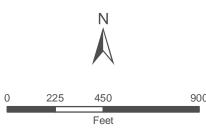






Offsite Impact Areas

Seasonal Pool





2017 Dry Season Survey Area Map

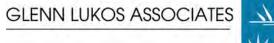
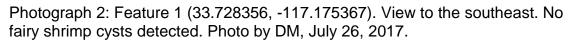


Exhibit 3





Photograph 4: Feature 1 (33.728356, -117.175367). View to the northwest. No fairy shrimp cysts detected. Photo by DM, July 26, 2017.



Photograph 1: Feature 1 (33.728356, -117.175367). View to the south. No fairy shrimp cysts detected. Photo by DM, July 26, 2017.



Photograph 3: Feature 1 (33.728356, -117.175367). View to the east. No fairy shrimp cysts detected. Photo by DM, July 26, 2017.



FLEMING RANCH
Site Photographs



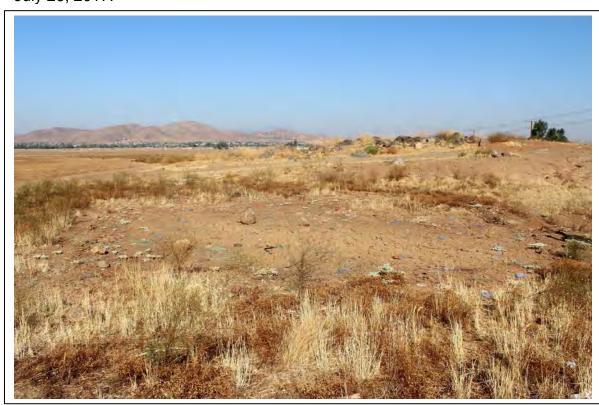
Photograph 6: Feature 2 (33.728099, -117.175280). View to the northwest. Medium densities of fairy shrimp cysts detected (Branchinecta sp.). Photo by DM,



Photograph 8: Feature 2 (33.728099, -117.175280). View to the southwest. Medium densities of fairy shrimp cysts detected (Branchinecta sp.). Photo by DM, July 26, 2017.



Photograph 5: Feature 2 (33.728099, -117.175280). View to the southwest. Medium densities of fairy shrimp cysts detected (Branchinecta sp.). Photo by DM, July 26, 2017.



Photograph 7: Feature 2 (33.728099, -117.175280). View to the west. Medium densities of fairy shrimp cysts detected (Branchinecta sp.). Photo by DM, July 26, 2017.



GLENN LUKOS ASSOCIATES

FLEMING RANCH
Site Photographs

**HELIX Environmental Planning, Inc.** 

7578 El Cajon Boulevard Suite 200 La Mesa, CA 91942 619.462.1515 tel 619.462.0552 fax www.helixepi.com



August 21, 2017

Mr. Kevin Livergood Glenn Lukos Associates 29 Orchard Lake Forest, CA 92630

Subject: Dry Season Fairy Shrimp Soil Processing and Examination Report for the Fleming

Ranch Project

Dear Mr. Livergood:

This report presents the findings of the 2017 dry season fairy shrimp sampling for the Fleming Ranch Project. Information provided in this report will be incorporated into the dry season fairy shrimp report which will be written and provided to the U.S. Fish and Wildlife Service (USFWS) by Glen Lukos Associates. Soil samples from two features were collected by Glenn Lukos Associates biologist Kevin Livergood and sent to HELIX Environmental Planning, Inc. (HELIX) for processing and examination.

#### **METHODS**

HELIX permitted biologist Jason Kurnow (Permit TE778195) oversaw the dry season soil processing and examination according to USFWS 2015 protocol.

Mr. Kurnow received soil samples sent by Glenn Lukos Associates for analysis in the HELIX lab on August 3, 2017. Samples were prepared by dissolving the soil samples in water and sequentially sieving the material through 710- and 75 µm pore size screens. The small size of these screens ensures that cysts from the target fairy shrimp species are retained. The portion of each sample retained in the screen was dispersed in a brine solution to separate the organic from the inorganic material. The organic fraction was decanted, dried, and examined under a microscope by Mr. Kurnow. Cysts were identified to genus level based on surface characteristics. Multiple species of the *Branchinecta* genus can occur in Riverside County, but cannot be identified past genus level based on cyst characteristics.

# **RESULTS**

Two features were sampled for the presence of fairy shrimp cysts. *Branchinecta* cysts were present in one feature (Appendix A; Table 1). The following feature contains *Branchinecta* cysts: Feature 2. *Streptocephalus* cysts were not observed in any of the sampled features.

	DR	Table 1 Y SEASON RESU	LTS	
Feature	Branchinecta sp. Present	Abundance*	Streptocephalus sp. Present	Abundance*
1	No		No	
2	Yes	Medium	No	

<sup>\*</sup>Based on abundance categories found within the 2015 USFWS Survey Guidelines for the Listed Large Branchiopods

I certify that the information in this survey report and attached exhibit fully and accurately represent my work.

Sincerely,

Jason Kurnow Senior Scientist

# **Enclosures**:

Attachment A Dry Season Fairy Shrimp Sampling Results



# **REFERENCES**

U.S. Fish and Wildlife Service (USFWS). 2015. Survey Guidelines for the Listed Large Branchiopods. May 31.



# Attachment A DRY SEASON FAIRY SHRIMP SAMPLING RESULTS

DRY SEASON FAIRY SHRIMP SAMPLING RESULTS

**SAMPLE** 

#### FLEMING RANCH PROJECT **BRANCHINECTA STREPTOCEPHALUS** Feature 2 Feature 1 Feature 2 Feature 1 ---------------------------

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			Append	dix 2. U.S	S. Fish an	d Wildlife Se	ervice – Da	ta Sheet for	Dry Season	Sample An	alysis for l	_isted Large	Branch	iopods		
			P	roject Infor								Biologist	Informatio	n		
Project Name:						Quad:				Name of	Person(2) Who	Conducted th	<u>e Following</u>	Tasks and F	Permit Number(s):	
USFWS Proje	ct Number:					Township:			Soil Collection							
County:						Range:			Soil Processin							
Lat:						Section:			Soil Analysis/0	Cysts ID:						
Long:									Soil Collection	Date:						
								Invertbrates Pi	resent (X)							
	Insect	Micro-		Ostracods			Nur	mber of Large Bi		sts					Other Species	
Pool/ Habitat/	Exo-		Cladocera	Live/Cvsts/	Copenads	Branchinecta	Lepidurus	Streptocephalus	Linderiella	Lynceus	Cyzicus	Hydracarina				
Basin No.	Skeletons	Cysts	Ephippia	Carapaces	Live/Cysts	sp.	packardi	wootoni	occidentalis	brachyurus	californicus	Live	Nematoda	Collembola		Comments
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July 30, 2019

Stacey Love U.S. Fish and Wildlife Service 2177 Salk Avenue, Suite 250 Carlsbad, California 92008

SUBJECT: Submittal Requirements for 2018-2019 Wet Season Survey for Listed

Branchiopods Conducted for the Fleming Ranch Property, Located in the City of

Menifee, County of Riverside, California

Dear Ms. Love:

The following letter report documents the results of a wet season survey conducted by Glenn Lukos Associates, Inc. (GLA) for five seasonally ponded features at the above-referenced property in order to determine the presence/absence of listed large branchiopods. GLA biologist Kevin Livergood (TE-172638-2) conducted the wet season surveys. The surveys focused on the determination of presence/absence for the federally-listed Riverside fairy shrimp (Streptocephalus woottoni), San Diego fairy shrimp (Branchinecta sandiegonensis), and vernal pool fairy shrimp (Branchinecta lynchi). No federally-listed fairy shrimp were detected during the wet season survey. The survey conducted in 2018-2019 is the second consecutive year of protocol surveys; however, there was inadequate rainfall during the 2017-2018 wet season to produce ponding suitable for the emergence of large branchiopods. Therefore, results were inconclusive in 2017-2018. Rainfall amounts were above-average during the 2018-2019 wet season and resulted in ponding within the study area. The common versatile fairy shrimp (Branchinecta lindahli) was detected in three of the five identified features. Due to a lack of hydrology, exceptionally short hydroperiod, and overall insufficient ponding during a year of above-average rainfall, it is recommended that Features 1a and 1b no longer be classified as seasonally-ponded features.

Hydrology monitoring was initiated on December 7, 2018. On December 13, 2018, common versatile fairy shrimp were detected in one of the study-area features.

#### I. SITE LOCATION AND DESCRIPTION

The Fleming Ranch Property (Project Site) is located in the City of Menifee in the County of Riverside, California [Exhibit 1 – Regional Map]. The wet season survey included five depressional features located near the northern boundary of the Project Site. The Project Site is

29 Orchard • Lake Forest • California 92630-8300 Telephone: (949) 837-0404 • Facsimile: (949) 837-5834 Stacey Love U.S. Fish and Wildlife Service July 30, 2019 Page 2 of 7

located east of Interstate 215 and Encanto Road, south of Rouse Road, west of Antelope Road, and north of McCall Boulevard. The Project Site can be found on the U.S. Geological Survey 7.5' Romoland, California Quadrangle [dated 1953 and photorevised in 1979]) in Section 22, Township 5 South, Range 3 West [Exhibit 2 – Vicinity Map]. The Universal Transverse Mercator (UTM) coordinates approximately corresponding to the site are 3731652 mN and 483268 mE (Zone 11N).

The location of the features was collected with a handheld GPS device (Trimble Geo7x) during periods of inundation. As specified on the corresponding datasheets (Appendix A), following are the approximate UTM coordinates for the surveyed features:

- Feature 1a: Zone 11 north; 3732061.17 mN and 483728.94 mE
- Feature 1b: Zone 11 north; 3732051.09 mN and 483753.88 mE
- Feature 2: Zone 11 north; 3732022.58 mN and 483761.91 mE
- Feature 3: Zone 11 north; 3732075.64 mN and 482603.14 mE
- Feature 4: Zone 11 north; 3731922.93 mN and 483539.82 mE

#### II. METHODOLOGY

GLA biologist David Moskovitz (TE-084606-3) submitted a request for authorization to conduct wet season surveys to the United States Fish and Wildlife Service (USFWS) Carlsbad office on December 6, 2018. The notification indicated sampling would be conducted by GLA biologists Kevin Livergood (TE-172638-2) and/or David Moskovitz (TE-084606-3). On December 6, 2018, the USFWS responded with authorization to proceed with sampling utilizing methods prescribed in the USFWS *Survey Guidelines for the Listed Large Branchiopods* (Survey Guidelines) dated November 13, 2017<sup>1</sup>. In accordance with the Survey Guidelines site visits were conducted within 24 hours of initial storm events to determine whether features contained a minimum of three centimeters (cm) of ponding. Once a feature was determined to be sufficiently ponded, follow up surveys were conducted within seven days in order to sample for fairy shrimp.

When suitable conditions are present, sampling for the presence of fairy shrimp is performed using a dip net within representative portions of the depression bottom, edges, and vertical water column when there is adequate ponding. In the field, specimens are collected and immediately transferred to a vial containing a 95% ethanol solution. Each sample is labeled according to the depression from which the sample was collected. For species identification, each specimen is inspected in the lab using a dissecting microscope and the "Key to California Fairy Shrimps"

<sup>&</sup>lt;sup>1</sup> USFWS. Survey Guidelines for the Listed Large Branchiopods, Revised: November 13, 2017.

Stacey Love U.S. Fish and Wildlife Service July 30, 2019 Page 3 of 7

found in Eriksen and Belk (1999)<sup>2</sup>. Information pertaining to each pool is recorded on vernal pool data sheets [Appendix A].

Per the Survey Guidelines, when suitable conditions are present each feature is sampled once every seven days, beginning within seven days of initial inundation and continuing until the feature is no longer inundated, or until it has experienced 120 days of continuous ponding. In cases where features dry and refill during the same wet season, sampling is reinitiated within seven days of refilling upon meeting the three cm standing water criteria and continues until the feature is no longer inundated.

During site visits, ponded features were inspected for level of inundation, surface area of ponding, and level of disturbance. A Trimble Geo7x sub-meter GPS device was used to map and calculate the surface area of ponding. Photographs were taken of ponded areas during site visits [Exhibit 4].

#### III. DESCRIPTION OF THE DEPRESSIONAL FEATURE

Following are descriptions of each depressional feature including estimated dimensions as determined at the time of sampling.

#### **FEATURE 1a**

The feature is in an undeveloped, but disturbed area of open space that is adjacent to a graded parcel. The depressional feature exhibits a significant amount of disturbance including signs of off-road vehicle traffic, trash disposal, as well as pedestrian and pet traffic. The feature is sparsely vegetated but is surrounded by non-native ruderal species. Predominant species observed during the wet season survey included foxtail chess (*Bromus madritensis* subsp. *rubens*), stinknet (*Oncosiphon piluliferum*), red-stemmed filaree (*Erodium cicutarium*) and common cryptantha (*Cryptantha intermedia*).

The surface area of typical ponding measured approximately 1.5 meters in width by 4.9 meters in length for a total area of 0.002 acre. However, the feature did not sustain ponding for longer than seven days, unless a significant rain event occurred within the seven-day period to refill the depression. In the absence of recurring rainfall totaling nearly two inches, the feature did not sustain ponding for more than seven days.

<sup>&</sup>lt;sup>2</sup> Eriksen, C. and D. Belk. 1999. *Fairy Shrimps of California's Puddles, Pools, and Playas*. Mad River Press, Inc. Eureka, California.

Stacey Love U.S. Fish and Wildlife Service July 30, 2019 Page 4 of 7

#### **FEATURE 1b**

The feature exhibits characteristics that are very similar to Feature 1a but is smaller and tends to support two low points as it dries. Based on conditions observed during the 2019 wet season, the feature does not sustain ponding for more than seven days in the absence of extraordinary amounts of continuous rainfall.

Feature 1b is in an undeveloped area of open space that is adjacent to a graded parcel. The depressional feature exhibits a significant amount of disturbance including signs of off-road vehicle traffic, trash disposal, as well as pedestrian and pet traffic. The feature is sparsely vegetated but is surrounded by non-native ruderal species. Predominant species observed during the wet season survey included foxtail chess (*Bromus madritensis* subsp. *rubens*), stinknet (*Oncosiphon piluliferum*), red-stemmed filaree (*Erodium cicutarium*) and common cryptantha (*Cryptantha intermedia*). Observations of a low density of wooly marbles (*Psilocarphus brevissimus*), a plant associated with vernal pools, have been recorded at this location in prior years. However, during the 2018-2019 wet season, wooly marbles were not observed at this feature.

The surface area of typical ponding measured approximately 1.5 meters in width by 2.0 meters in length for a total area of 0.0007 acre. The feature did not sustain ponding for longer than seven days, unless a significant rain event occurred within the seven-day period to refill the depression. In the absence of recurring rainfall totaling nearly two inches, the feature did not sustain ponding for more than seven days.

#### **FEATURE 2**

The feature is located south of Feature 1b and exhibits similar characteristics of disturbance including signs of off-road vehicle traffic, trash disposal, and pedestrian and pet traffic. In addition to refuse disposal, dirt and debris disposal also occurs in or near the feature. Based on surrounding topography, the site is believed to have been created as a soil borrow site, but the origin of the current topography is unknown. The feature is sparsely vegetated with native and non-native species. Predominant species include (*Bromus madritensis* subsp. *rubens*), stinknet (*Oncosiphon piluliferum*), red-stemmed filaree (*Erodium cicutarium*). As the feature began to dry, wooly marbles (*Psilocarphus brevissimus*) formed a prominent ring around the formerly ponded area.

The surface area of typical ponding measured approximately 18.9 meters in width by 25.6 meters in length for a total area of approximately 0.12 acre.

Stacey Love U.S. Fish and Wildlife Service July 30, 2019 Page 5 of 7

#### **FEATURE 3**

Feature 3 is adjacent to Rouse Road in the northwest corner of the Property. The depressional feature is the result of street runoff and exhibits significant disturbance from vehicles and trash disposal. Due to the road ruts and microtopography of the area; which contribute to runoff and ponding, the area supports levels of inundation that are suitable for fairy shrimp.

The depressional area is predominantly unvegetated, but surrounding vegetation is composed of ruderal species including cheeseweed (*Malva parviflora*), black mustard (*Brassica nigra*), and foxtail barley (*Hordeum murinum*).

The surface area of typical ponding measured approximately 2.7 meters in width by 23.5 meters in length for a total area of approximately 0.15 acre.

#### **FEATURE 4**

Feature 4 is located in the north-central portion of the Property. The road rut feature is the result of off-road vehicle traffic and fills only as a result of vertical rainfall. The feature occurs in compact, unvegetated soils within a dirt road. Directly south of the feature top soil is disced regularly to control the homogenous ruderal vegetation community which was composed of cheeseweed during the 2019 wet season. Stinknet is also dominant in the area and grows along the edges and within the dirt road.

The surface area of typical ponding measured approximately 2.1 meters in width by 2.7 meters in length for a total area of 0.001 acre.

## IV. RESULTS OF WET SEASON SURVEY

During the 2018-2019 wet season, ponding was first observed on site on December 7, 2018 following a multi-day storm event that resulted in 1.3 inches of rain. This was the second significant rain event within six days and resulted in the first signs of sustained ponding at the Property for the season. Sampling commenced on December 7, 2018 and continued at seven-day intervals while ponding persisted. During that time, multiple cohorts of the common versatile fairy shrimp (*Branchinecta lindahli*) were observed in three of the sampled features. In May 2019, multiple late-season storms passed through the area which resulted in renewed short-term ponding at Feature 4. Sampling continued at this feature through June 5, 2019, at which time it no longer exhibited ponding. Fairy shrimp were not detected during the late-season ponding. No listed fairy shrimp were detected during the 2018-2019 wet season survey at any of the sampled features.

Stacey Love U.S. Fish and Wildlife Service July 30, 2019 Page 6 of 7

Table 1 indicates when site visits were conducted during the 2018-2019 wet season survey. Once ponding was observed on December 7, 2018 site visits were conducted weekly for fairy shrimp sampling and hydrology monitoring. During each ponding assessment levels of inundation, surface area of ponding, and level of disturbance were recorded on wet season data sheets [Appendix A]. Representative photographs were taken of the depressional features during the survey [Exhibit 4 – Site Photographs].

**Table 1: Wet Season Survey Dates and Results** 

Survey		F	eature Na	me	
Date	1a	1b	2	3	4
Dec-7	None	None	None	Dry	Dry
Dec-13	Dry	Dry	None	BRLI	None
Dec-20	Dry	Dry	BRLI	BRLI	Dry
Dec-27	Dry	Dry	BRLI	BRLI	Dry
Jan-3	Dry	Dry	Dry	Dry	Dry
Jan-10	Dry	Dry	None	None	None
Jan-17	None	None	BRLI	None	None
Jan-24	Dry	Dry	BRLI	BRLI	None
Jan-31	Dry	Dry	BRLI	BRLI	BRLI
Feb-6	None	None	BRLI	BRLI	None
Feb-14	None	None	BRLI	BRLI	None
Feb-21	None	None	BRLI	BRLI	BRLI
Feb-28	Dry	Dry	BRLI	BRLI	BRLI
Mar-7	None	None	BRLI	BRLI	BRLI
Mar-14	Dry	Dry	BRLI	None	BRLI
Mar-21	None	None	None	None	BRLI
Mar-27	Dry	Dry	None	None	None
Apr-4	Dry	Dry	None	Dry	BRLI
Apr-11	Dry	Dry	Dry	Dry	Dry
May-24	Dry	Dry	Dry	Dry	None
May-30	Dry	Dry	Dry	Dry	None
Jun-5	Dry	Dry	Dry	Dry	Dry

During 2018-2019 wet season protocol surveys, Features 2, 3 and 4 exhibited suitable ponding (3 cm or greater) and supported common versatile fairy shrimp. Features 2 and 3 both supported

Stacey Love U.S. Fish and Wildlife Service July 30, 2019 Page 7 of 7

high densities (1,000's) of fairy shrimp at each population's peak. Feature 4 supported a low-density population (<10). Fairy shrimp persisted in Features 2, 3, and 4 for multiple weeks and multiple cohorts were observed while fairy shrimp persisted.

Based on the above-average rainfall during the 2018-2019 wet season and the duration of ponding observed at each of the features, it is determined that no listed large branchiopods occur in the sampled features. These results corroborate the results of dry season surveys conducted in 2017 in which no cysts were detected in Features 1a/1b and cysts of the genus *Branchinecta* were detected in Feature 2. Ponding at Features 3 and 4 had previously not been detected but were included as a result of the extraordinary rainfall of the 2018-2019 season. Dry season sampling of Features 3 and 4 is expected to occur during the 2019 dry season.

I certify that the information in this survey report and the attached exhibits fully and accurately represent my work. If you have any questions regarding this letter report, please contact me at klivergood@wetlandpermitting.com.

Sincerely,

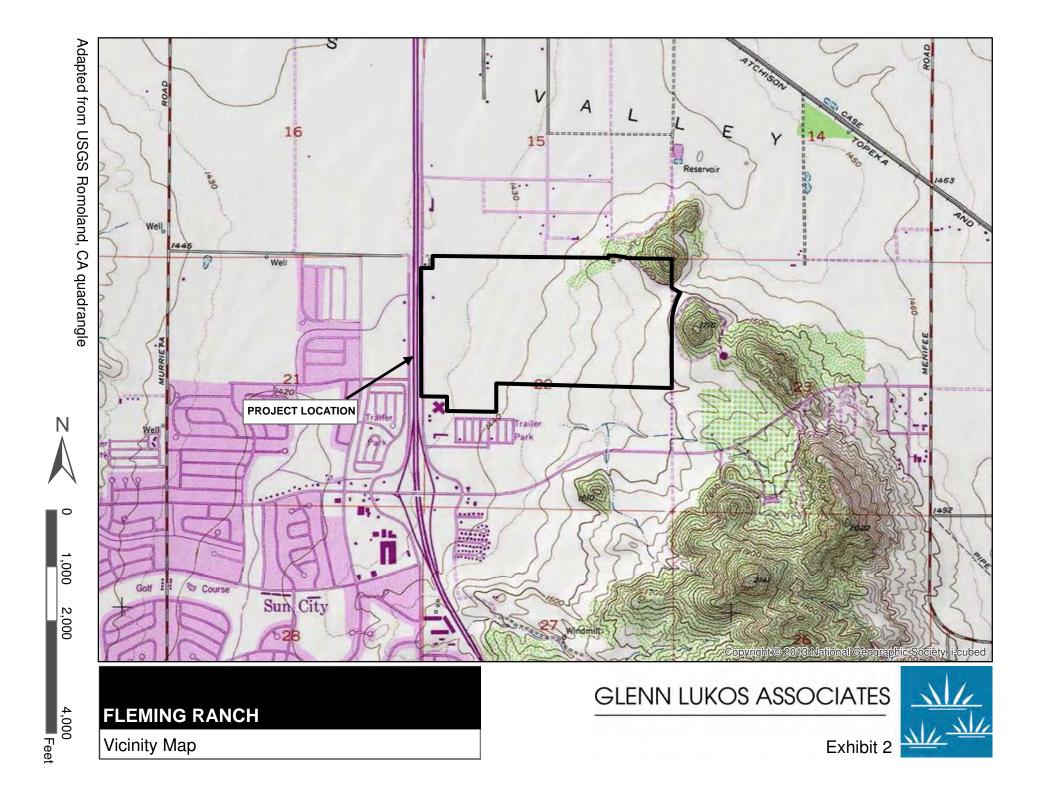
GLENN LUKOS ASSOCIATES, INC.

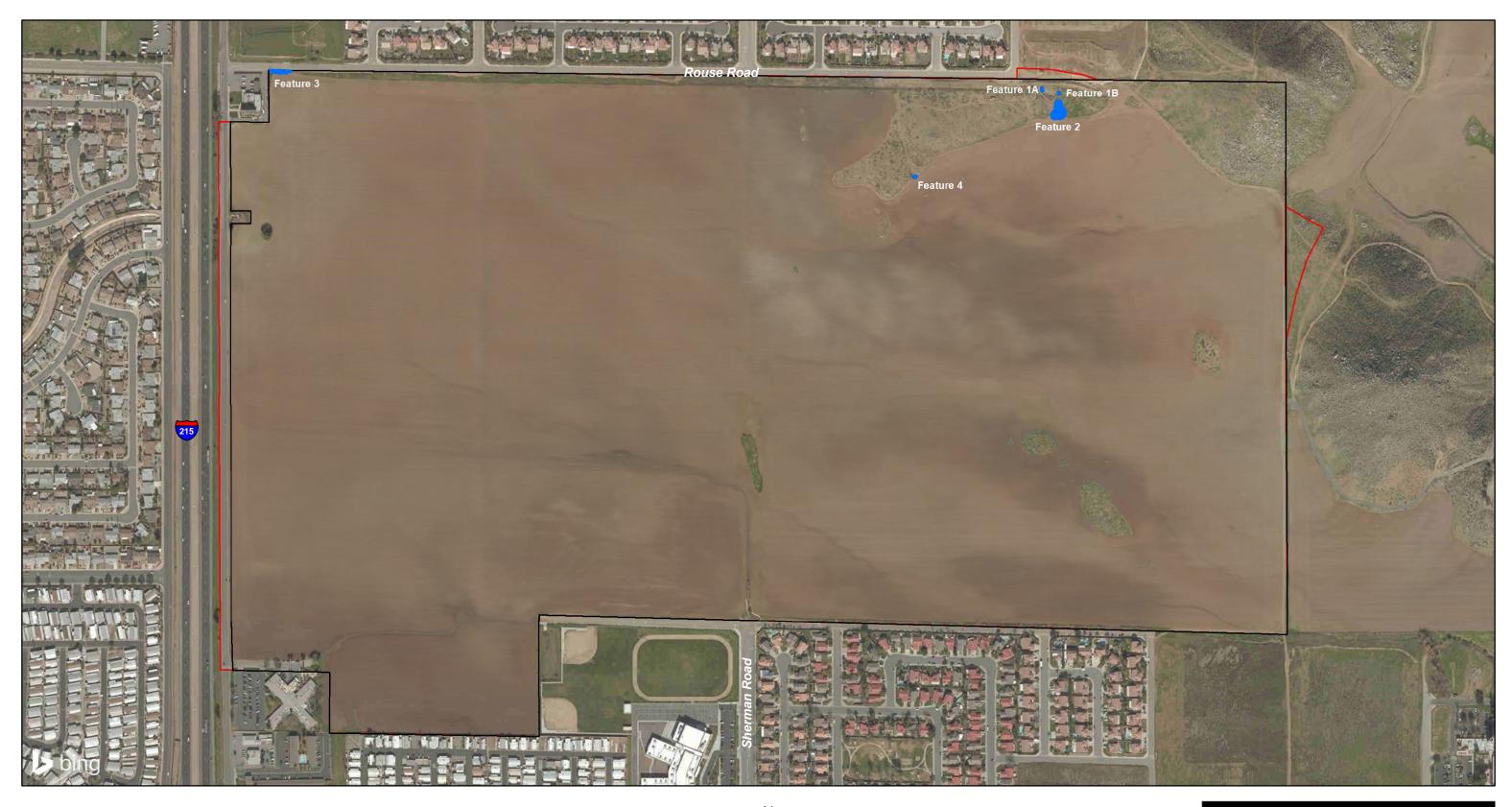
Kevin Livergood

Biologist/Regulatory Specialist

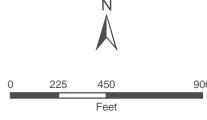
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2018-2019 Wet Season Survey Area Map

GLENN LUKOS ASSOCIATES



Exhibit 4



Photograph 1: Feature 1a. View to the south. No fairy shrimp detected. (UTM: 3732061.17N, 483728.94E; Date: 12/7/2018; K. Livergood)



Photograph 3: Feature 1b. View to the southwest. No fairy shrimp detected. (UTM: 3732051.09N, 483753.88E; Date: 2/6/2019, K. Livergood)



Photograph 2: Feature 1a. View to the south. Photo depicts short hydroperiod of the feature. Photo was taken 6 days after Photo 1. No fairy shrimp detected. (Date: 12/13/2018, K. Livergood)



Photograph 4: Feature 1b. View to the west. Photo depicts typical ponding. No fairy shrimp detected. (Date: 12/7/2018, K. Livergood)

Exhibit 4

Site Photographs



Photograph 5: Feature 2. View to the north. Photo depicts near maximum ponding. Multiple cohorts of versatile fairy shrimp (*Branchinecta lindahli*) detected. (UTM: 3732022.58N, 483761.91E; Date: 2/6/2019, K. Livergood)



Photograph 7: Feature 3. View to the west. Photo depicts near maximum ponding. Multiple cohorts of versatile fairy shrimp (*Branchinecta lindahli*) detected. (UTM: 3732075.64N, 482603.14E; Date: 1/17/2019, K. Livergood)



Photograph 6: Feature 2. View to the north. Photo depicts typical ponding. Multiple cohorts of versatile fairy shrimp (*Branchinecta lindahli*) detected. (Date: 1/24/2019, K. Livergood)



Photograph 8: Feature 4. View to the southwest. Photo depicts typical ponding. Multiple cohorts of versatile fairy shrimp (*Branchinecta lindahli*) detected. (UTM: 3731922.93N, 483539.82E; Date: 1/24/2019, K. Livergood)

Appe	Appendix 1. U.	S. Fish	n and	U.S. Fish and Wildlife Service -	Servic		ta Sh	Data Sheet for Wet Season	Wet \$	Seas	on Su	Irvey	s Fo	r List	ed La	rge B	Surveys For Listed Large Branchiopods	spode
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SURVEYOR / Permit Number: David Moskovitz (TE-084606-3)/Kevin Livergood (TE-172638-2)	Permit Num	ıber: ವೀ	avid Mos	skovitz (TE-0	84606-3	/Kevin L	ivergoo	d (TE-17	2638-2)									**************************************
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Notes: Fill in abbreviated names of Anostracans and Notostracans, (e.g., LIOC = Linderiella occidentalis, BRLI = Branchinecta lindahil)	ed names of Ano: la occidentalis, BI	stracans a RLI = <i>Bran</i>	nd Notos chinecta	tracans, for all lindahli).	others in	dicate pre	sence wi	th a check	с mark. A	nostrac	an and	Notostr	scan Al	breviatio	ns: Use	first two	letters of ge	Notes: Fill in abbreviated names of Anostracans and Notostracans, for all others indicate presence with a check mark. Anostracan and Notostracan Species of genus and species name (e.g., LIOC = Linderiella occidentalis, BRLI = Branchinecta lindahli).
For habitat conditions use two letter abbreviation as follows: NP = Natural Pool, CF by: C = cattle, H = horses, S = sheep; AB = Algal blooms present.	use two letter abb ses, S = sheep; A	reviation a B = Algal I	as follows plooms pi	: NP ≕ Natura resent.	al Pool, Cl	o = Const	ructed Po	ool; UD = I	undisturb	ed, D ==	disturbe	d: with	∐ ≍ ∰	e tracks,	T = trasl	), P ≂ pl	owed; G ≖ g	For habitat conditions use two letter abbreviation as follows: NP = Natural Pool, CP = Constructed Pool; UD = undisturbed; D = disturbed: with TT = tire tracks, T = trash, P = plowed; G = grazed, UG = ungrazed by: C = cattle, H = horses, S = sheep; AB = Atgal blooms present.
(Estimate grazing regi	ne by height of gr	asses and	forbs an	d density of ho	oof prints)		nt grazing	LG = light grazing, MG = moderate grazing, HG = heavy grazing	oderate g	razing,	HG = h	eavy gr	izing.					

Apper	Appendix 1. U.	S. Fish	) and	U.S. Fish and Wildlife Servi	Service	e – Da	ita Sh	eet for	Wet S	easc	N Si	nrve.	/s Fc	r List	ed La	rde	ce - Data Sheet for Wet Season Surveys For Listed Large Branchiopods	spode
Site or Project Name: Fleming Ranch (849-20FLEM)	Name: Flemi	ng Ranch	(849-201	FLEM) Co	County: Riverside	Rivers	ide	Quad: Romoland	Romol	and			Township:	15S		Range:	e: R3W	Section: 22
SURVEYOR / Permit Number: David Moskovitz (TE-084606-3)/Kevin Livergood (TE-172638-2)	Permit Num	ber: Da	Nid Mos	kovitz (TE-0	84606-3	//Kevin I	-ivergoo	d (TE-17.	2638-2)	-		Assessanderness						
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(e.g., LIOU ≅ <i>Lingelielia occidentalis</i> , BRLI ≅ <i>Branchinecia linganii).</i> For habitat conditions use two letter abbreviation as follows: NP = Natural Pool,	<i>la occioentalis</i> , br ise two letter abbi	t∟l ≃ <i>bran</i> reviation a	cninecia i is follows:	iindanii). NP = Natura		D = Const	inucted Po	ool: UD = u	Indisturbe	d. D = (	disturb	ed: with	===	re tracks.	T = tras	h. P = p	lowed; G = g	CP = Constructed Pool; UD = undisturbed. D = disturbed: with TT = tire tracks, T = trash, P = plowed: G = grazed, UG = ungrazed

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<b>\</b>	Appendix 1.		S. Fis	h and	U.S. Fish and Wildlife Service – Data Sheet for Wet Season Surveys For Listed Large Branchiopods	Servic	e – Da	ıta Sh	leet fo	r Wet	Seas	on S	urve	ys F	or Lis	ted	Large	Bran	chiop	spoo	
Site or Project Name: Fleming Ranch (849-20FLEM)	oject l	Vame: Flem	ing Ranch	. (849-20	FLEM) Co	County: Riverside	Rivers	ide	Quad: Romoland	Romc	land			Town	Township: T5S	ဟ	Ra	Range: R3W	<b></b>	Section: 22	22
SURVEYOR / Permit Number: David Moskovitz (TE-084606-3)/Kevin Livergood (TE-172638-2)	R / Pe	ermit Num	ıber: Dε	avid Mos	kovitz (TE-0	84606-3	//Kevin	ivergoc	nd (TE-17	72638-2)											
<b>Date</b> : 12 (20 )18	0/18	Time: 0900	2,	We	Weather Conditions:	nditior	18: 53ºF		mustlu son	Sunay											
		MTO	Tem	Temp (°C)	Depth (cm)	(cm)	Sur Ar	Surface Area (m x m)	0	<i>⊍</i> Crust≀	∉ Crustaceans	(n)			Insects				Jarion	Notes / Voucher information	cher
Feature ID #	#	(Northing, Easting, Datum)	ліА	Water	Average	Est. Max.	Present	Est. Max.	ensostracanA	Notostracans	Copepods	Ostracods	Cladocera	Coleoptera	Hemiptera Diptera Culicidae	Diptera	Chironomidae Platyhelm	nowtelt)	noO itatidaH	12 cont now	
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For habitat conditions use two letter abbreviation as follows: NP = Natural Pool, CP = Constructed Pool; UD = undisturbed, D = disturbed: with TT = tire tracks, T = trash, P = plowed; G = grazed, UG = ungrazed by: C = cattle, H = horses, S = sheep; AB = Algal blooms present.

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Apper	Appendix 1. U.	S. Fist	hand	U.S. Fish and Wildlife Service	Servic	e – Dž	ata Sh	ce - Data Sheet for Wet Season	r Wet	Seas	on S	urve	/s Fc	<b>Surveys For Listed</b>		rge	Large Branchiopods	spode
Site or Project Name: Fleming Ranch (849-20FLEM)	Name: Flem	ing Ranch	. (849-20)	1		Riverside	ide	Quad	Quad: Romoland	land			ownsł	Township: T5S	(0)	Rang	Range: R3W	Section: 22
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Date: 12/27/18	Time: 👸	0630	We	Weather Conditions:	nditior		48,6	Mostly	claudy								2	AMERICAN
	ΔTO	Tem	Temp (°C)	Depth (cm)	(cm)	Sur A	Surface Area (m x m)			ر Crustaceans			:	Insects				Notes / Voucher information
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Site or Project Name: Fleming Ranch (849-20FLEM)	Name: Flemi	ing Ranch (	(849-20F	LEM) Co	County:	Riverside	ide	Quad: Romoland	Romc	land			Towns	Township: T5S	(0	Rang	Range: R3W	Section: 22	22
SURVEYOR / Permit Number: David Moskovitz (TE-084606-3)/Kevin Livergood (TE-172638-2)	ermit Num	ber: Dav	vid Mos	covitz (TE-0	84606-3	/Kevin L	ivergoo.	d (TE-17	72638-2)										
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Feature ID #	(Northing, Easting, Datum)	ηίΑ	vater	Average	Est. Max.	Present	Est. Max.	Anostracans	Notostracans	Copepods	Ostracods	Cladocera	Coleoptera Remiptera	Diptera Diptera	Diptera Chironomidae	mlatyhel¶ nowisli)	noO tetideH		
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(e.g., LIOC = *Lindertella occidentals*. BRLI = *Branchinecta lindahil*).

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Site or Project Name: Fleming Ranch (849-20FLEM)	Name: Flem	ing Ranch	1 (849-20	FLEM) Co	County: Riverside	Rivers	ide	Quad: Romoland	Romol	and		_	ownsh	Township: T5S	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	Rang	Range: R3W	Section: 22
SURVEYOR / Permit Number: David Moskovitz (TE-084606-3)/Kevin Livergood (TE-172638-2)	ermit Nun	n <b>ber:</b> D₂	avid Mos	kovitz (TE-0	84606-3	/Kevin I	-ivergoc	d (TE-17)	2638-2)									
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Feature ID #	(Northing, Easting, Datum)	ліА	Water	әбвтәvА	Est. Max.	Present	Est. Max.	Anostracans	Notostracans	Copepods	Ostracods	Cladocera Coleoptera	Bretquera	Diptera Gulicidae	Diptera Chironomidae	mləfyhel nowisli)	noO tstidsH	Last rain. Significant rain foncast frain
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Appendix 1.		S. Fish	l and	U.S. Fish and Wildlife Service -	Servic	e – Da	ta Sh	eet fol	r Wet	Seas	on S	urve	ys F(	or Lis	ted L	arge l	Data Sheet for Wet Season Surveys For Listed Large Branchiopods	
Site or Project Name: Fleming Ranch (849-20FLEM)	Name: Flemi	ng Ranch	(849-20F	i	County:	Riverside		Quad: Romoland	Romo	yland			Towns	Township: T5S	S	Rang	Range: R3W	Section: 22
SURVEYOR / Permit Number: David Moskovitz (TE-084606-3)/Kevin Livergood (TE-172638-2)	ermit Num	ber: Da	ivid Mos	kovitz (TE-0)	84606-3	//Kevin L	ivergoo	d (TE-17	72638-2)					***************************************				
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Feature ID #	(Northing, Easting, Datum)	ліА	191sW	эрвтэvА	Est. Max.	Present	Est. Max.	Anostracans	Notostracans	Copepods	Ostracods	Cladocera	Coleoptera Hemiptera	Diptera Spioilu	Diptera Chironomidae	mlatyhelq nowisit)	noO fistidsH	flair 15 angoing 1/12-1/17: 2.1"
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Site or Project Name: Fleming Ranch (849-20FLEM)	Name: Flemi	ing Ranch	1 (849-20]	1	County: Riverside	Rivers		Quad:	Quad: Romoland	land			ownsh	Township: T5S		Range	Range: R3W	Section: 22
SURVEYOR / Permit Number: David Moskovitz (TE-084606-3)/Kevin Livergood (TE-172638-2)	ermit Num	ber: De	Now Mos	kovitz (TE-0	84606-3	/Kevin L	ivergoo	d (TE-17	2638-2)									_
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by: C = cattle, H = horses, S = sheep; AB = Algal blooms present.

(Estimate grazing, MG = moderate grazing, HG = heavy grazing.)

Appendix 1.		S. FISI	า สกน	U.S. FISH and Wildlife Servic	אור ואכ	ה של ו	ב כ	ישנו יכו	1011	ממטר	5 5	i ve	2		ב ב ב	ב ב	e - Data Sileet for Wet Season Surveys For Listed Large Braillothous	spods
Site or Project Name: Fleming Ranch (849-20FLEM) County:	Name: Flem	ing Ranch	າ (849-20	FLEM) Co		Riverside	Je (	Quad: Romoland	Romo	land			ownsh	Township: T5S		Range	Range: R3W	Section: 22
SURVEYOR / Permit Number: David Moskovitz (TE-084606-3)/Kevin Livergood (TE-172638-2)	ermit Nun	ıber: D≀	avid Mos	kovitz (TE-0	84606-3	)/Kevin Liv	ergooc	1 (TE-17.	2638-2)									
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(e.g., LIOC = *Linderiella occidentalis*, BRLI = *Branchinecta lindahij*.

For habitat conditions use two letter abbreviation as follows: NP = Natural Pool, CP = Constructed Pool; UD = undisturbed, D = disturbed: with TT = tire tracks, T = trash, P = plowed; G = grazed, UG = ungrazed by: C = cattle, H = horses, S = sheep; AB = Algal blooms present.

(Estimate grazing regime by height of grasses and forbs and density of hoof prints) LG = light grazing, MG = moderate grazing, HG = heavy grazing.

Apper	Appendix 1. U.	S. Fish	and	U.S. Fish and Wildlife Service – Data Sheet for Wet Season Surveys For Listed Large Branchiopods	Servic	e – Da	ıta Sh	eet for	· Wet 9	Seas	S K	Irvey	s Fol	·Liste	d Lar	ge Bi	ranchio	spode
Site or Project Name: Fleming Ranch (849-20FLEM)	Name: Flemi	ing Ranch	(849-20	FLEM) Co	County:	Riverside	ide	Quad: Romoland	Romo	land	***************************************	<u> </u>	wnshi	Township: T5S		Range:	Range: R3W	Section: 22
SURVEYOR / Permit Number: David Moskovitz (TE-084606-3)/Kevin Livergood (TE-172638-2)	ermit Num	ber: Da	wid Mos	kovitz (TE-08	84606-3	//Kevin I	ivergoo-	d (TE-17	2638-2)						-			Ì
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SURVEYOR / Permit Number: David Moskovitz (TE-084606-3)/Kevin Livergood (TE-172638-2)	ermit Num	ber: Da	lsoM bive	kovitz (TE-0)	84606-3	/Kevin L	ivergood	d (TE-17)	2638-2)		and of the office of the office of				,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	diritabele de la companie de polonie de la companie de particione de la companie de particione de la companie d	Material de la faction de la f	
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For habitat conditions use two letter abbreviation as follows: NP = Natural Pool, CP = Constructed Pool; UD = undisturbed, D = disturbed: with TT = tire tracks, T = trash, P = plowed; G = grazed, UG = ungrazed by: C = cattle, H = horses, S = sheep; AB = Agal blooms present.
(Estimate grazing regime by height of grasses and forbs and density of hoof prints) LG = light grazing, MG = moderate grazing, HG = heavy grazing.

TE-084606-3)/Kevin Livergoon Conditions: 47°F, 184°E Surface apth (cm) Area (m x m) (m	Note   Volume   Time	Site or Project Name: Fleming Ranch (849-20FLEM)	Name: Flem	ing Ranct	n <b>and</b> h (849-20		County:		ide	Quad: Romoland	Romc	Jand	5		Towns	Township: T5S	3S	2 2 2 2 2 2 3	erside Quad: Romoland Township: T5S Range: R3W	2 3	Section: 22
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SURVEYOR   Permit Number David Mosevorite   All County; Riverside   Quadi; Romoland   Township; 15.5   Mines R334   Section 23   SURVEYOR   Permit Number David Mosevorite (15-051065-3)Revin Liverpoor (TE-1728882)   Date: A f. 57   Amines R344   Amines	Арреі	Appendix 1. U.	S. Fis	h and	U.S. Fish and Wildlife Service	Servic	e – D;	ata Sh	neet fo	r Wet	Seas	on S	urve	ys F	or L	sted L	arge	Branch	<ul> <li>Data Sheet for Wet Season Surveys For Listed Large Branchiopods</li> </ul>	S
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Date: 1/29   19   Time: 1/20   Weather Conditions: 1/21   1/24	SURVEYOR / F	Permit Nun	ber: D	avid Mos	kovitz (TE-C	384606-3	}/Kevin	Livergoo	od (TE-1	72638-2)							_			
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Appendix 1.	ıdix 1. U.	S. Fisl	h and	U.S. Fish and Wildlife Service - Data Sheet for Wet Season Surveys For Listed	Servic	e – Da	ıta Sh	eet for	Wet S	eas	on S	urve	ys F	or List	ed L	arge l	Large Branchiopods	spodo
Site or Project Name: Fleming Ranch (849-20FLEM)	Name: Flemi	ing Ranch	849-20 ر	FLEM) CC	County:	Riverside		Quad: Romoland	Romo	land			Fowns	Township: T5S		Rang	Range: R3W	Section: 22
SURVEYOR / Permit Number: David Moskovitz (TE-084606-3)/Kevin Livergood (TE-172638-2)	ermit Num	ıber: ⊵	avid Mos	kovitz (TE-0	184606-3	/Kevin	ivergoo.	d (TE-17	2638-2)									
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Appendix 1.	dix 1. U.	S. Fisl	h and	Wildlife	Servic	U.S. Fish and Wildlife Service – Data Sheet for Wet Season Surveys For Listed Large Branchiopods	heet fo	r Wet	Seas	S uo	<b>urve</b> y	's Fo	r Liste	d Lar	ge B	ranchio	spod
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SURVEYOR / Permit Number: David Moskovitz (TE-084606-3)/Kevin Livergood (TE-172638-2)	ermit Num	ber: D	avid Mos	kovitz (TE-(	384606-3	)/Kevin Livergo	ood (TE-1	72638-2)									-
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(Estimate grazing regime by height of grasses and forbs and density of hoof prints) LG = light grazing, MG = moderate grazing, HG = heavy grazing.

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(Estimate grazing regime by height of grasses and forbs and density of hoof prints) LG = light grazing, MG = moderate grazing, HG = heavy grazing.

Pool 2 Tadpols: Motter's color. Explosion whereal position

Appe	Appendix 1. U	S. Fisl	h and	U.S. Fish and Wildlife Servi	Servic	e – Da	ta Sh	eet for	r Wet	Seas	on S	urve	ys F	or List	ed La	rge	ce - Data Sheet for Wet Season Surveys For Listed Large Branchiopods	spode
Site or Project Name: Fleming Ranch (849-20FLEM)	Name: Flerr	ing Ranch	ι (849-20F	ŀ	County:	Riverside	ide	Quad: Romoland	Romo	land		<u> </u>	Towns	Township: T5S	,,	Rang	Range: R3W	Section: 22
SURVEYOR / Permit Number: David Moskovitz (TE-084606-3)/Kevin Livergood (TE-172638-2)	Permit Nun	n <b>ber:</b> D≀	avid Mosl	kovitz (TE-C	84606-3	/Kevin I	-ivergoo	d (TE-17	2638-2)									
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Site or Project Name: Fleming Ranch (849-20FLEM)	Name: Flemi	ing Ranch	(849-20)	ı	unty:	County: Riverside		Quad: Romoland	Romo	land			ownsi	Township: T5S		Ranç	Range: R3W	Section: 22
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(e.g., LIOC – Linderlena Occidentalis, DNLI – Distributioned mindring.  For habitat conditions use two letter abbreviation as follows: NP = Natural Pool.	se two letter abbi	reviation a	s follows:	NP = Natura		P = Const	ructed Po	ool: UD = 1	undisturbe	<u>d</u> .	disturbe	ed: with	  -  -	re tracks.	T = tras	h. P = r	plowed: G = a	CP = Constructed Pool; UD = undisturbed. D = disturbed: with TT = tire tracks. T = trash. P = plowed: G = grazed. UG = ungrazed

For habitat conditions use two letter abbreviation as follows: NP = Natural Pool, CP = Constructed Pool; UD = undisturbed, D = disturbed: with TT = tire tracks, T = trash, P = plowed; G = grazed, UG = ungrazed by: C = cattle, H = horses, S = sheep; AB = Algal blooms present.
(Estimate grazing regime by height of grasses and forbs and density of hoof prints) LG = light grazing, MG = moderate grazing, HG = heavy grazing.

Site or Project Name:		849.2051EM	_	ပိ	County:			Quad:	***************************************		***************************************		Township:	ship:		Ran	Quad: Township: Range:	Section:
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(e.g., LIOC = Linderiella occidentalis, BRLI = Branchinecta lindahi).

For habitat conditions use two letter abbreviation as follows: NP = Natural Pool, CP = Constructed Pool; UD = undisturbed, D = disturbed: with TT = tire tracks, T = trash, P = plowed; G = grazed, UG = ungrazed by: C = cattle, H = horses, S = sheep; AB = Algal blooms present.

(Estimate grazing regime by height of grasses and forbs and density of hoof prints). LG = light grazing, MG = moderate grazing, HG = heavy grazing.



July 30, 2019

Stacey Love U.S. Fish and Wildlife Service 2177 Salk Avenue, Suite 250 Carlsbad, California 92008

SUBJECT: Submittal Requirements for 2019 Dry Season Survey for Listed Branchiopods

Conducted for the Fleming Ranch Property, Located in the City of Menifee,

County of Riverside, California

Dear Ms. Love:

The following letter report documents the results of a dry season survey conducted by Glenn Lukos Associates, Inc. (GLA) for two seasonally ponded features at the above-referenced property in order to determine the presence/absence of branchiopod cysts. GLA biologist Kevin Livergood (TE-172638-2) performed the soil collection from the features and biologist Jason Kurnow (TE-778195) of HELIX Environmental Planning, Inc. (HELIX) processed the soil samples to determine cyst presence/absence. A 15-day notification was submitted to the U.S. Fish and Wildlife Service (USFWS) on June 17, 2019, notifying of the intent to conduct a dry season survey. Soil sampling was conducted on July 2, 2019. A report from HELIX summarizing the results of soil analysis was completed on July 25, 2019 (Appendix A). Cysts of the genus Branchinecta were identified in both sampled features, with a high density of cysts detected in Feature 3 and a medium density of cysts detected in Feature 4. No cysts of the genus Streptocephalus were detected in either feature. The 2019 dry season survey completes the survey protocol for the Fleming Ranch Property. Dry season surveys were initially conducted at Features 1 and 2 in 2017 followed by wet season surveys of Features 1, 2, 3 and 4. This report addresses dry season survey results for Features 3 and 4 which were identified during the wet 2018-2019 wet season. All survey results corroborate the presence of the versatile fairy shrimp (Branchinecta lindahli) in Features 2, 3, and 4.

29 Orchard • Lake Forest • California 92630-8300 Telephone: (949) 837-0404 • Facsimile: (949) 837-5834

#### I. SITE LOCATION

The Fleming Ranch Property (Project Site) is located in the City of Menifee in the County of Riverside, California [Exhibit 1 – Regional Map]. The Project Site is located east of Interstate 215 and Encanto Road, south of Rouse Road, west of Antelope Road, and north of McCall Boulevard. The Project Site can be found on the U.S. Geological Survey 7.5' Romoland, California Quadrangle [dated 1953 and photorevised in 1979]) in Section 22, Township 5 South, Range 3 West [Exhibit 2 – Vicinity Map]. The Universal Transverse Mercator (UTM) coordinates approximately corresponding to the site are 483268 mE and 3731652 mN (Zone 11S).

The location of the features was collected with a handheld GPS device and the ArcGIS Collector application at the time of dry season soil collection. UTM coordinates of the sampled features are as follows:

- Feature 3: Zone 11 north; 3732075.64 mN and 482603.14 mE
- Feature 4: Zone 11 north; 3731922.93 mN and 483539.82 mE

#### II. METHODOLOGY

#### A. <u>Soil Collection</u>

Soil sample collection and processing followed the USFWS *Survey Guidelines for the Listed Large Branchiopods* (November 13, 2017). Soil sample collection was conducted by GLA biologist Kevin Livergood (Permit TE-172638-2) on July 2, 2019.

In accordance with the survey protocol, the number of soil/substrate samples and the amount of soil/substrate collected was proportional to the size of the feature. For Feature 3 a total of twenty-five (25) samples were collected and for Feature 4 a total of ten (10) samples were collected. To determine the soil sample collection points, two perpendicular transects that crossed the deepest and widest parts of the feature were established in the field and collection points were identified in a grid ensuring the lowest topographic areas were sampled. Soil samples of approximately 100 milliliters (ml) each were removed at each sub-sample location using a hand trowel and transferred to individually labeled bags for processing. An aerial photograph depicting the location of the sampled features is attached as Exhibit 3, site photographs are provided in Exhibit 4, and a completed datasheet is provided as Appendix B of this report.

#### B. Soil Analysis

Soil processing and examination was conducted by biologist Jason Kurnow (TE-778195) of HELIX. As stated in the attached HELIX report of findings (Appendix A), samples were prepared for analysis by dissolving the collected soil in water and sequentially sieving the material through 710- and 75 micrometer (µm) pore size screens. The small size of these screens ensures that cysts from the target fairy shrimp species are retained. The portion of each sample retained in the screen was dispersed in a brine solution to separate the organic from the inorganic material. The organic fraction was decanted, dried, and examined under a microscope. Cysts were identified to genus level based on surface characteristics. Multiple species of the genus *Branchinecta* can occur in Riverside County but cannot be identified past genus level based on cyst characteristics alone. All cysts detected during soil analysis are submitted to the collection of the Natural History Museum of Los Angeles by the firm or biologist that conducted the analysis.

#### III. FEATURE DESCRIPTION

Following are descriptions of each depressional feature including estimated dimensions.

#### **FEATURE 3**

Feature 3 is adjacent to Rouse Road in the northwest corner of the Property. The depressional feature is the result of street runoff and exhibits significant disturbance from vehicles and trash disposal. Due to the road ruts and microtopography of the area; which contribute to runoff and ponding, the area supports levels of inundation that are suitable for fairy shrimp.

The depressional area is predominantly unvegetated, but surrounding vegetation is composed of ruderal species including cheeseweed (*Malva parviflora*), black mustard (*Brassica nigra*), and foxtail barley (*Hordeum murinum*).

The surface area of typical ponding measured approximately 2.7 meters in width by 23.5 meters in length for a total area of approximately 63.5 square meters (0.15 acre).

#### **FEATURE 4**

Feature 4 is located in the north-central portion of the Property. The road rut feature is the result of off-road vehicle traffic and fills only as a result of vertical rainfall. The feature occurs in compact, unvegetated soils within a dirt road. Directly south of the feature top soil is disced regularly to control the homogenous ruderal vegetation community which was composed of

cheeseweed during the 2019 wet season. Stinknet is also predominant on the site, particularly in and near the dirt road.

The surface area of typical ponding measured approximately 2.1 meters in width by 2.7 meters in length for a total area of 5.7 square meters (0.001 acre).

#### IV. RESULTS OF DRY SEASON SURVEY

The survey area occurs within the known range of the common versatile fairy shrimp (*Branchinecta lindahli*) and the following listed species: San Diego fairy shrimp (*Branchinecta sandiegonensis*), Vernal Pool fairy shrimp (*Branchinecta lynchi*), and Riverside fairy shrimp (*Streptocephalus woottoni*). Due to morphological similarities among *Branchinecta* cysts, the results of the 2018-2019 wet season survey results are used to confirm the species of *Branchinecta* detected during dry season sampling.

Cysts of the genus *Branchinecta* were identified in both sampled features. A high density of cysts was detected in Feature 3 and a medium density of cysts was detected in Feature 4. No cysts of the genus *Streptocephalus* were detected in either feature. During the 2018-2019 wet season survey, common versatile fairy shrimp were detected in Features 3 and 4.

The 2019 dry season survey completes the survey protocol for the Fleming Ranch Property. Dry season surveys were initially conducted at Features 1 and 2 in 2017, followed by wet season surveys of Features 1, 2, 3 and 4 in 2018-2019. This report addresses dry season survey results for Features 3 and 4, which were identified during the 2018-2019 wet season. All survey results corroborate the presence of the versatile fairy shrimp (*Branchinecta lindahli*) in Features 2, 3, and 4.

I certify that the information in this survey report and attached exhibits fully and accurately represent my work. If you have any questions regarding this letter report, please contact me at klivergood@wetlandpermitting.com.

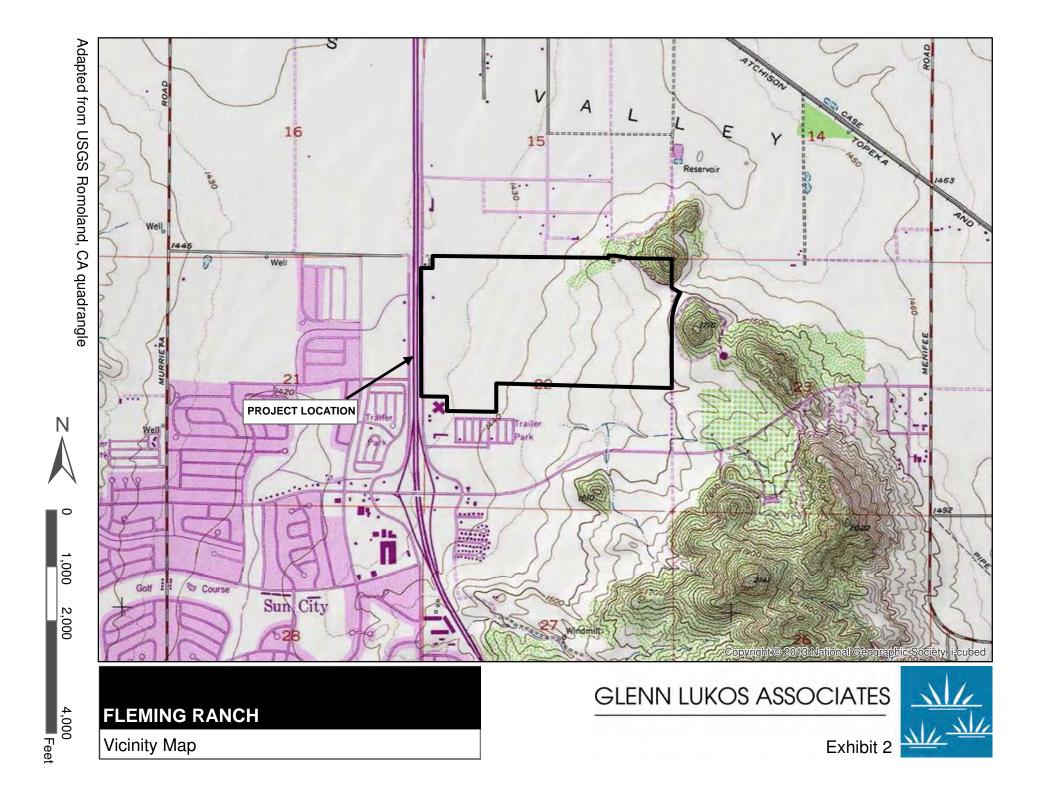
Sincerely,

GLENN LUKOS ASSOCIATES, INC.

Kevin Livergood

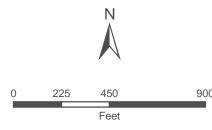
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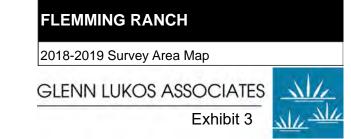


Exhibit 4



Photograph 1: Feature 3. View to the west. Branchinecta cysts detected. (UTM: 3732075.64 mN, 482603.14 mE; Date: 7/2/2019; K. Livergood)



Photograph 3: Feature 3. View to the northwest. Branchinecta cysts detected. (UTM: 3732075.64 mN, 482603.14 mE; Date: 7/2/2019; K. Livergood)



Photograph 2: Feature 3. View to the southwest. Branchinecta cysts detected. (UTM: 3732075.64 mN, 482603.14 mE; Date: 7/2/2019; K. Livergood)



Photograph 4: Feature 3. View to the west. Branchinecta cysts detected. (UTM: 3732075.64 mN, 482603.14 mE; Date: 7/2/2019; K. Livergood)

Exhibit 4

Site Photographs



Photograph 5: Feature 4. View to the southwest. Branchinecta cysts detected. (UTM: 3731922.93 mN, 483539.82.14 mE; Date: 7/2/2019; K. Livergood)



Photograph 7: Feature 4. View to the northeast. Branchinecta cysts detected. (UTM: 3731922.93 mN, 483539.82.14 mE; Date: 7/2/2019; K. Livergood)



Photograph 6: Feature 4. View to the south. Branchinecta cysts detected. (UTM: 3731922.93 mN, 483539.82.14 mE; Date: 7/2/2019; K. Livergood)



Photograph 8: Feature 4. View to the southwest. Branchinecta cysts detected. (UTM: 3731922.93 mN, 483539.82.14 mE; Date: 7/2/2019; K. Livergood)

**HELIX Environmental Planning, Inc.** 

7578 El Cajon Boulevard Suite 200 La Mesa, CA 91942 619.462.1515 tel 619.462.0552 fax www.helixepi.com



July 25, 2019

Mr. Kevin Livergood Glenn Lukos Associates 29 Orchard Lake Forest, CA 92630

Subject: Dry Season Fairy Shrimp Soil Processing and Examination Report for the Fleming Ranch

Project

Dear Mr. Livergood:

This report presents the findings of the 2019 dry season fairy shrimp sampling for the Fleming Ranch Project. Information provided in this report will be incorporated into the dry season fairy shrimp report which will be written and provided to the U.S. Fish and Wildlife Service (USFWS) by Glenn Lukos Associates. Soil samples from two features were collected by Glenn Lukos Associates biologist Kevin Livergood and sent to HELIX Environmental Planning, Inc. (HELIX) for processing and examination.

#### **METHODS**

HELIX permitted biologist Jason Kurnow (Permit TE778195) oversaw the dry season soil processing and examination according to USFWS 2015 protocol.

Mr. Kurnow received soil samples sent by Glenn Lukos Associates for analysis in the HELIX lab on July 3, 2019. Samples were prepared by dissolving the soil samples in water and sequentially sieving the material through 710- and 75  $\mu$ m pore size screens. The small size of these screens ensures that cysts from the target fairy shrimp species are retained. The portion of each sample retained in the screen was dispersed in a brine solution to separate the organic from the inorganic material. The organic fraction was decanted, dried, and examined under a microscope by Mr. Kurnow. Cysts were identified to genus level based on surface characteristics. Multiple species of the *Branchinecta* genus can occur in Riverside County, but cannot be identified past genus level based on cyst characteristics.

#### **RESULTS**

Two features were sampled for the presence of fairy shrimp cysts. *Branchinecta* cysts were present in both features (Appendix A; Table 1). *Streptocephalus* cysts were not observed in any of the sampled features.

	DRY S	Table 1 EASON/HATCHING R	ESULTS	
Feature	Branchinecta sp. Present	Abundance*	Streptocephalus sp. Present	Abundance*
3	Yes	High	No	
4	Yes	Medium	No	

<sup>\*</sup>Based on abundance categories found within the 2015 USFWS Survey Guidelines for the Listed Large Branchiopods

I certify that the information in this survey report and attached exhibit fully and accurately represent my work.

Sincerely,

Jason Kurnow Senior Scientist

#### **Enclosures**:

Attachment A Dry Season Fairy Shrimp Sampling Results



### **REFERENCES**

U.S. Fish and Wildlife Service (USFWS). 2015. Survey Guidelines for the Listed Large Branchiopods. May 31.



# Attachment A DRY SEASON FAIRY SHRIMP SAMPLING RESULTS

## DRY SEASON FAIRY SHRIMP SAMPLING RESULTS FLEMING RANCH PROJECT

CANADIE	BRANCE	HINECTA cysts	STREPTOC	EPHALUS cysts
SAMPLE	Feature 3	Feature 4	Feature 3	Feature 4
1	24	22		
2	9	14		
3	5	31		
4	5	4		
5	7	10		
6	10	9		
7	11	14		
8	106	27		
9	30	18		
10	22	22		
11	21			
12	18			
13	15			
14	18			
15	43			
16	7			
17	205			
18	35			
19	26			
20	50			
21	52			
22	80			
23	64			
24	7			
25	410			

Appendix 2. U.S. Fish a	nd Wildlife Service – Data Sheet for	Dry Season Sample Analysis for Listed Large Branchiopods
Project Information		Biologist Information
Project Name:	Quad:	Name of Person(2) Who Conducted the Following Tasks and Permit Number(s):
USFWS Project Number:	Township:_T5S	Soil Collection: Kevin Livergood (TE-172638-2)
County:	Range:	Soil Processing:
Lat:	Section:	Soil Analysis/Cysts ID:
Long:		Soil Collection Date: _July 2, 2019

Long.								Invertbrates P	rocont (Y)							
	Insect	Micro-		Ostracods			Nur	mber of Large B	ranchiopod Cvs	sts					Other Species	·
Pool/ Habitat/	Exo-	Turbellaria	Cladocera	Live/Cysts/	Copepods	Branchinecta sp.	Lepidurus	Streptocephalus wootoni	Linderiella	Lynceus	Cyzicus	Hydracarina				į
Basin No.	Skeletons	Cysts	Ephippia	Carapaces	Live/Cysts	sp.	packardi	wootoni	occidentalis	brachyurus	californicus	Live	Nematoda	Collembola		Comments
3																BRLI - Wet 2019
4																BRLI - Wet 2019
4																
				ļ	ļ											