

**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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November 15, 2017
[Revised February 15 and September 5, 2018, and August 7, 2019]

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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

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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.

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

| 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 |

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 weed (*Daucus pusillus*), Hartweg's milkvine (*Sarcostemma cychanoides* 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

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 (PIB)
- 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,

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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.

Table 3-1. Summary of MSHCP Riverine Areas

| Drainage | Unvegetated Riverine | MSHCP Riparian | Total MSHCP Riparian/Riverine |
|-----------------|-----------------------------|-----------------------|--------------------------------------|
| A | 0.30 | 0.11 | 0.41 |
| B | 0.07 | 0 | 0.07 |
| C | 0.12 | 0 | 0.12 |
| D | 0.08 | 0 | 0.08 |
| Total | 0.57 | 0.11 | 0.68 |

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, slow-moving 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 foliated, 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

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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 |
| B | Agriculture | 0.07 |
| C | 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

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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 hammondi*) 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.

7.0 REFERENCES

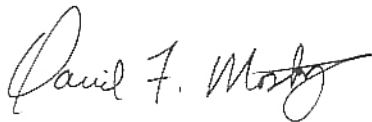
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8.0 CERTIFICATION

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.

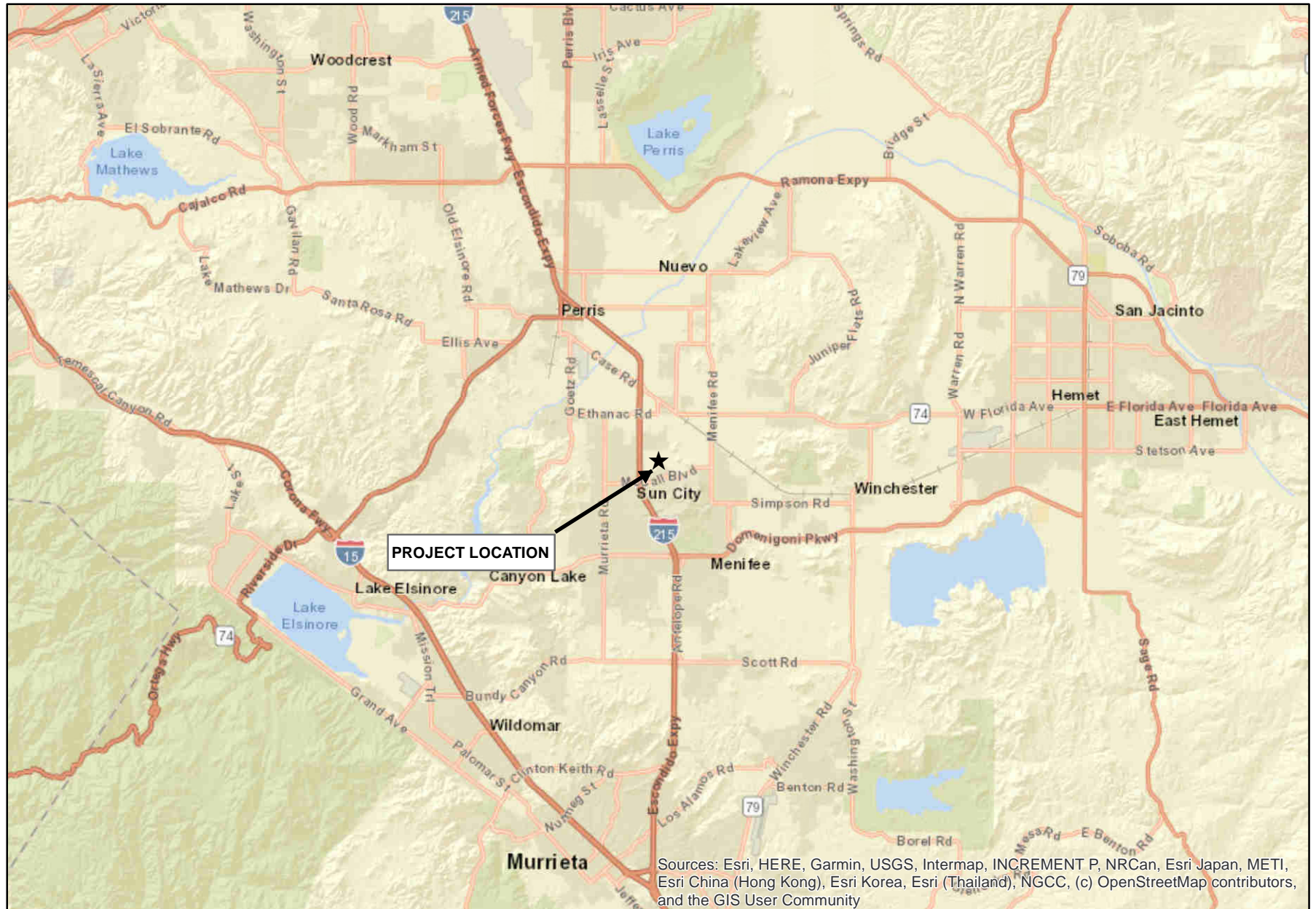


Signed: _____

Date: 8/7/2019

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Source: ESRI World Street Map



LEGADO PROJECT

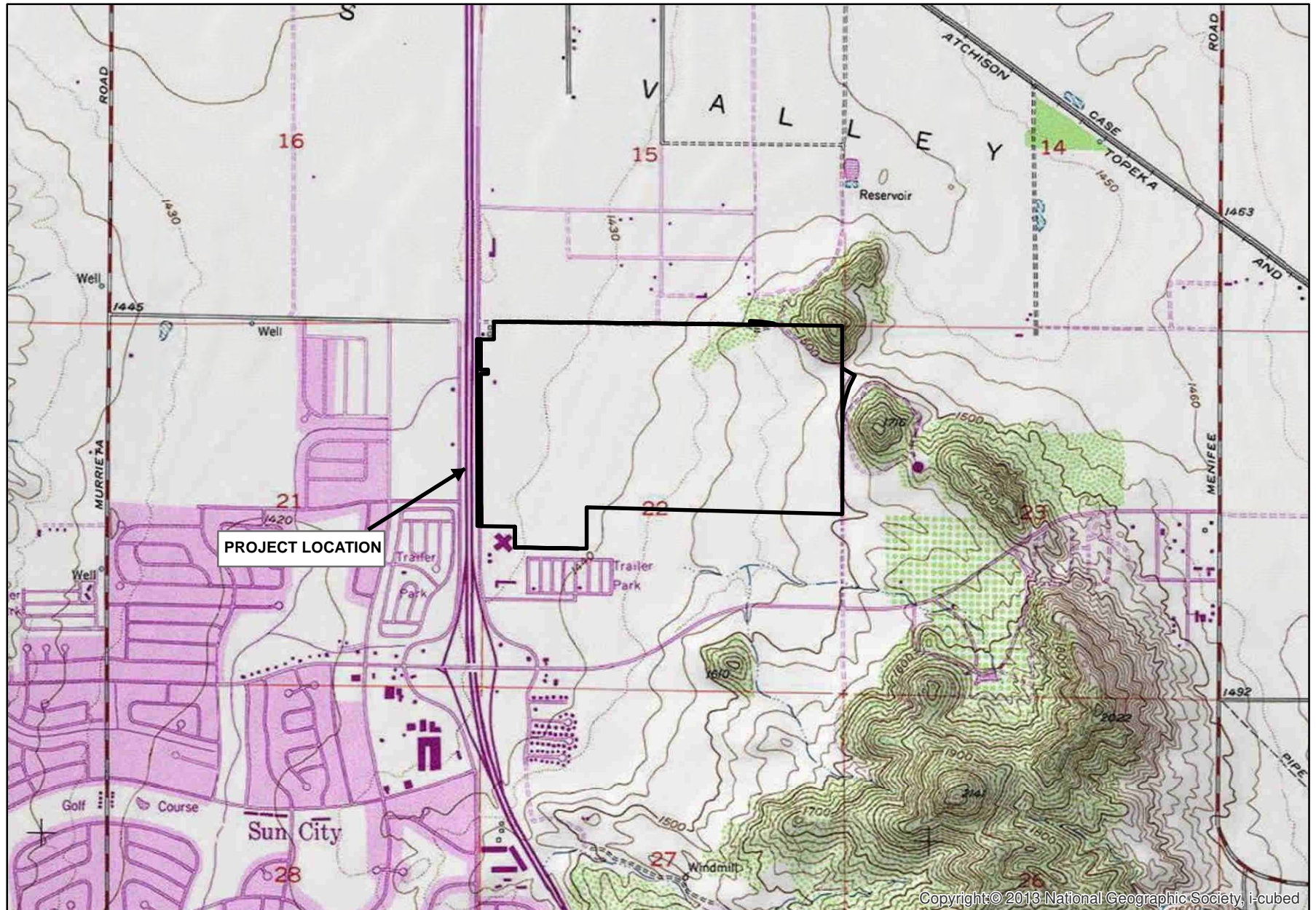
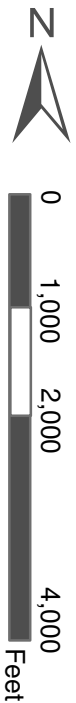
Regional Map

GLENN LUKOS ASSOCIATES

Exhibit 1



Adapted from USGS Romoland, CA quadrangle



LEGADO PROJECT

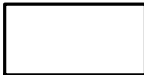

Vicinity Map

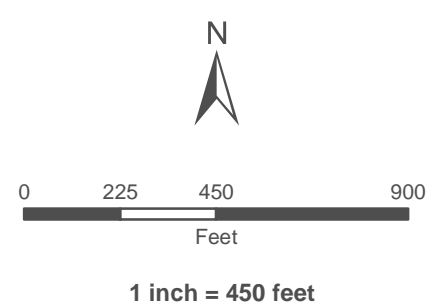
GLENN LUKOS ASSOCIATES

Exhibit 2






 Project Boundary
 Project Site Plan



LEGADO PROJECT
Site Plan

GLENN LUKOS ASSOCIATES

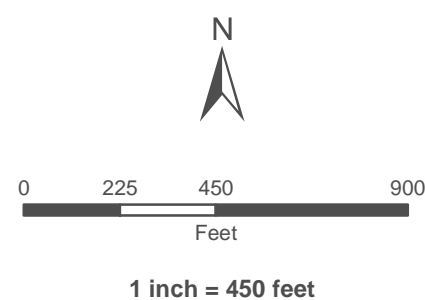
Exhibit 3



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- Project Boundary
- Offsite Impact Areas
- Narrow Endemic Plants Survey Area
- Burrowing Owl Survey Area



LEGADO PROJECT

MSHCP Overlay Map

GLENN LUKOS ASSOCIATES

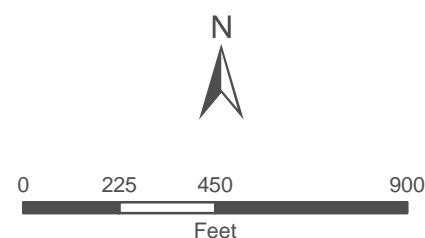


Exhibit 4

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- | | | | |
|--|----------------------|--|------------------------------|
| | Project Boundary | | CS - Cactus Scrub |
| | Project Footprint | | D/D - Disturbed/Developed |
| | Offsite Impact Areas | | EW - Emergent Wetland |
| | Unvegetated Riverine | | R - Ruderal |
| | AG - Agriculture | | RSS - Riversidean Sage Scrub |
| | | | SP - Seasonal Pond |



1 inch = 450 feet

LEGADO PROJECT

Vegetation & MSHCP Riverine Areas Map

GLENN LUKOS ASSOCIATES



Exhibit 5



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



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



GLENN LUKOS ASSOCIATES

Exhibit 6A

LEGADO

Site Photographs



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*).

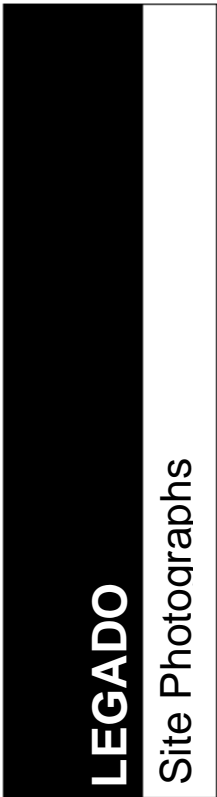


Photograph 8: Aerial view of the Project site from the southwest corner depicting where Drainage D extends from the paved terminus of Chambers Avenue.



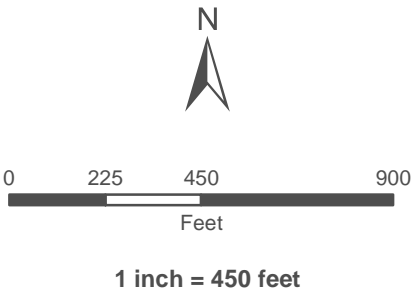
GLENN LUKOS ASSOCIATES

Exhibit 6B





- | | |
|--|--|
| Project Boundary | FfC2 - Fallbrook fine sandy loam, 2 to 8 percent slopes, eroded |
| Offsite Impact Areas | LaC - Las Posas loam, 2 to 8 percent slopes |
| AkD - Arbuckle loam, 8 to 15 percent slopes | LaC2 - Las Posas loam, 5 to 8 percent slopes, eroded |
| BkC2 - Buchenau silt loam, 2 to 8 percent slopes, eroded | MaA - Madera fine sandy loam, 0 to 2 percent slopes |
| CaC2 - Cajalco fine sandy loam, 2 to 8 percent slopes, eroded | MaB2 - Madera fine sandy loam, 2 to 5 percent slopes, eroded |
| CaD2 - Cajalco fine sandy loam, 8 to 15 percent slopes, eroded | PIB - Placentia fine sandy loam, 0 to 5 percent slopes |
| CbD2 - Cajalco rocky fine sandy loam, 5 to 15 percent slopes, eroded | PoC - Porterville clay, 0 to 8 percent slopes |
| CkF2 - Cienega rocky sandy loam, 15 to 50 percent slopes, eroded | VtF2 - Vista rocky coarse sandy loam, 2 to 35 percent slopes, eroded |
| EnC2 - Exeter sandy loam, 2 to 8 percent slopes, eroded | YbC - Yokohl loam, 2 to 8 percent slopes |



LEGADO PROJECT

Soils Map

GLENN LUKOS ASSOCIATES

Exhibit 7

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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

**Amaranthus albus*

AMARANTH FAMILY

tumbling pigweed

APIACEAE

Daucus pusillus

CARROT FAMILY

rattlesnake weed

ASTERACEAE

Baccharis salicifolia

**Cirsium vulgare*

Deinandra fasciculata

Deinandra paniculata

Encelia farinosa

Ericameria pinifolia

Erigeron canadensis

Helianthus annuus

Holocarpha virgata

**Lactuca serriola*

**Logfia gallica*

Psilocarphus brevissimus

Stylocline gnaphaloides

Xanthium strumarium

SUNFLOWER FAMILY

mule fat

bull thistle

fascicled tarweed

paniculate tarplant

desert brittlebush

pine goldenbush

common horseweed

western sunflower

graceful tarplant

prickly lettuce

narrow leaved-filago

wooly marbles

everlasting nest straw

smooth cocklebur

BORAGINACEAE

Amsinckia intermedia

BORAGE FAMILY

common fiddleneck

BRASSICACEAE

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

CACTACEAE

Cylindropuntia californica

CARYOPHYLLACEAE

**Spergularia bocconeii*

CHENOPODIACEAE

**Bassia hyssopifolia*
**Salsola tragus*

CONVOLVULACEAE

Convolvulus arvensis

EUPHORBIACEAE

Eremocarpus setigerus
Chamaesyce albomarginata

FABACEAE

Lotus hamatus
**Melilotus officinalis*

GERANIACEAE

**Erodium cicutarium*

LAMIACEAE

**Marrubium vulgare*
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

MALVACEAE

**Malva parviflora*

ONAGRACEAE

Epilobium ciliatum

POLYGONACEAE

Calandrinia ciliata

Chorizanthe parryi var. *parryi*

Eriogonum fasciculatum

**Polygonum arenastrum*

Polygonum lapathifolium

**Rumex crispus*

SOLANACEAE

Datura wrightii

Solanum xanti

TAMARICACEAE

**Tamarix ramosissima*

MALLOW FAMILY

cheeseweed

EVENING PRIMROSE FAMILY

willow herb

BUCKWHEAT FAMILY

red maids

Parry's spineflower

California buckwheat

common knotweed

willow smartweed

curly dock

NIGHTSHADE FAMILY

Jimsonweed

chaparral nightshade

TAMARISK FAMILY

Tamarisk

MONOCOTS

CYPERACEAE

Cyperus eragrostis

Schoenoplectus americanus

Schoenoplectus robustus

SEDGE FAMILY

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
Mediterranean grass
rattail fescue

CATTAIL FAMILY

southern cattail

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

- * *Psaltiriparus minimus*
bushtit

TROGLODYTIDAE – WRENS

- + *Catherpes mexicanus*
canyon wren
- + *Salpinctes obsoletus*
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

GLENN LUKOS ASSOCIATES

Regulatory Services



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).

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.

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.

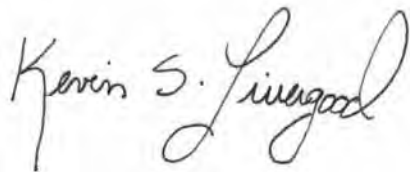
No fairy shrimp cysts were detected in Feature 1. A medium density of cysts of the genus *Branchinecta* were detected in Feature 2. No cysts of the genus *Streptocephalus* were detected in either of the sampled features.

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.

A handwritten signature in black ink that reads "Kevin S. Livergood". The signature is written in a cursive, flowing style.

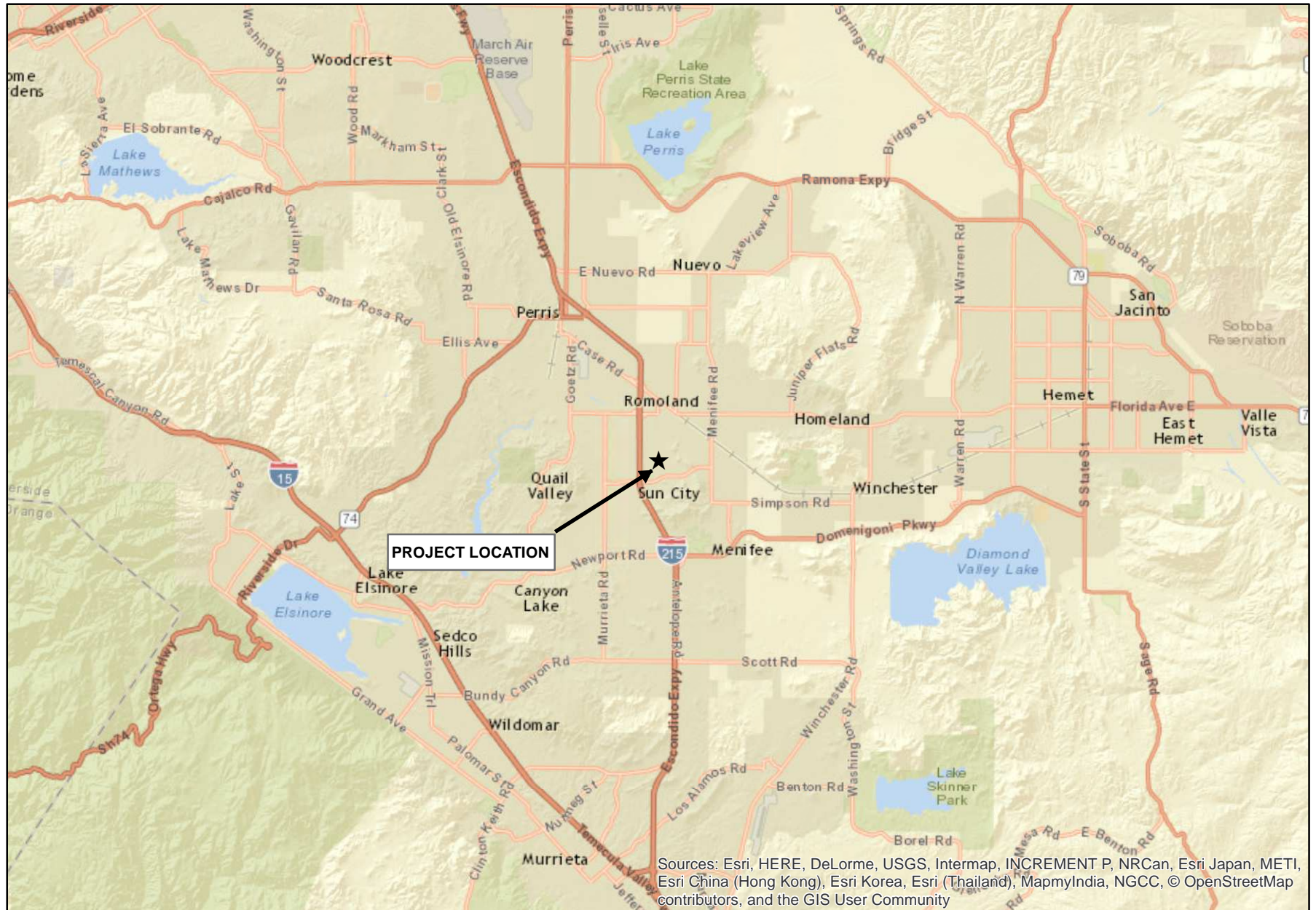
Kevin Livergood
Biologist/Regulatory Specialist

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Source: ESRI World Street Map



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

FLEMING RANCH

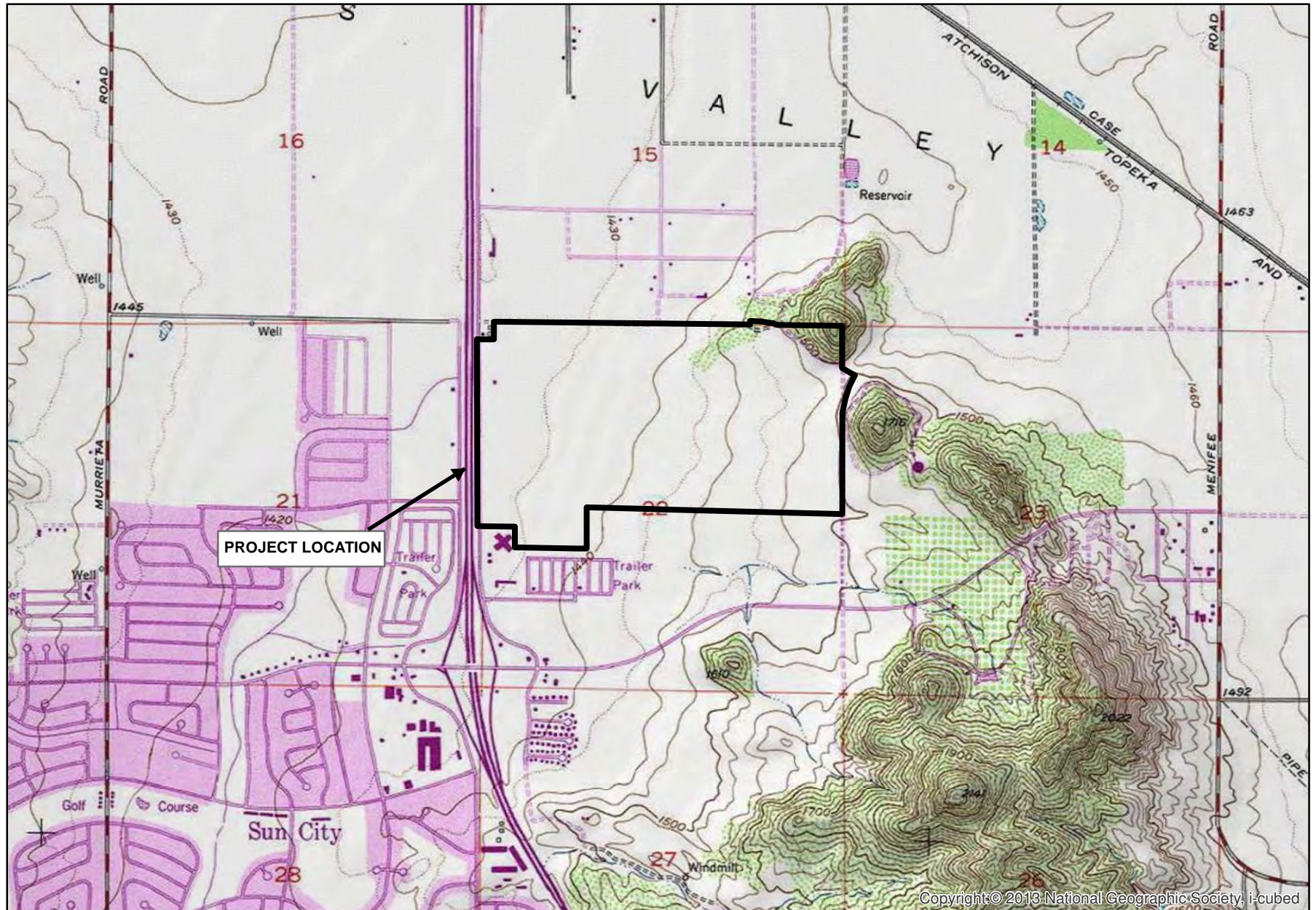
Regional Map

GLENN LUKOS ASSOCIATES

Exhibit 1



Adapted from USGS Romoland, CA quadrangle



FLEMING RANCH




Vicinity Map

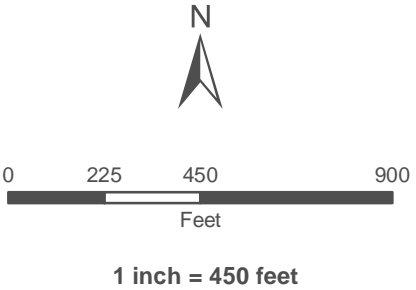
GLENN LUKOS ASSOCIATES

Exhibit 2





-  Project Boundary
-  Offsite Impact Areas
-  Seasonal Pool



FLEMMING RANCH

2017 Dry Season Survey Area Map

GLENN LUKOS ASSOCIATES



Exhibit 3



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



Photograph 2: Feature 1 (33.728356, -117.175367). View to the southeast. 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.



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



GLENN LUKOS ASSOCIATES

Exhibit 4

FLEMING RANCH

Site Photographs



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.



Photograph 6: Feature 2 (33.728099, -117.175280). View to the northwest. Medium densities of fairy shrimp cysts detected (*Branchinecta* sp.). Photo by DM, July 26, 2017.



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.



GLENN LUKOS ASSOCIATES

Exhibit 4

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 μ 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 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.

| Table 1 DRY SEASON RESULTS | | | | |
|---------------------------------------|--|-------------------|---|-------------------|
| Feature | <i>Branchinecta</i> sp. Present | Abundance* | <i>Streptocephalus</i> sp. Present | Abundance* |
| 1 | No | --- | No | --- |
| 2 | Yes | Medium | No | --- |

*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 | | | | |
|---|---------------------|-----------|------------------------|-----------|
| SAMPLE | <i>BRANCHINECTA</i> | | <i>STREPTOCEPHALUS</i> | |
| | Feature 1 | Feature 2 | Feature 1 | Feature 2 |
| 1 | --- | 30 | --- | --- |
| 2 | --- | 9 | --- | --- |
| 3 | --- | 7 | --- | --- |
| 4 | --- | 26 | --- | --- |
| 5 | --- | 12 | --- | --- |
| 6 | --- | 3 | --- | --- |
| 7 | --- | 9 | --- | --- |
| 8 | --- | 152 | --- | --- |
| 9 | --- | 47 | --- | --- |
| 10 | --- | 41 | --- | --- |
| 11 | | 68 | | --- |
| 12 | | 160 | | --- |
| 13 | | 4 | | --- |
| 14 | | 17 | | --- |
| 15 | | 28 | | --- |
| 16 | | 12 | | --- |
| 17 | | 24 | | --- |
| 18 | | 35 | | --- |
| 19 | | 41 | | --- |
| 20 | | 7 | | --- |
| 21 | | 80 | | --- |
| 22 | | 23 | | --- |
| 23 | | 36 | | --- |
| 24 | | 1 | | --- |
| 25 | | 68 | | --- |

Appendix 2. U.S. Fish and 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: _____ | | Soil Collection: _____ | | | |
| County: _____ | | Range: _____ | | Soil Processing: _____ | | | |
| Lat: _____ | | Section: _____ | | Soil Analysis/Cysts ID: _____ | | | |
| Long: _____ | | | | Soil Collection Date: _____ | | | |

| Pool/ Habitat/ Basin No. | Invertebrates Present (X) | | | | | | | | | | | | | | | Comments |
|-----------------------------|-----------------------------|--------------------------------|-----------------------|---------------------------------------|------------------------|-----------------------------------|--------------------------------------|--|--|-------------------------------------|---------------------------------------|---------------------|----------|------------|---------------|----------|
| | Insect Exo- Skeletons | Micro- Turbellaria Cysts | Cladocera Ephippia | Ostracods Live/Cysts/ Carapaces | Copepods Live/Cysts | Number of Large Branchiopod Cysts | | | | | | Hydracarina Live | Nematoda | Collembola | Other Species | |
| | | | | | | <i>Branchinecta</i> sp. | <i>Lepidurus</i> <i>packardii</i> | <i>Streptocephalus</i> <i>wootoni</i> | <i>Lindieriella</i> <i>occidentalis</i> | <i>Lynceus</i> <i>brachyurus</i> | <i>Cyzicus</i> <i>californicus</i> | | | | | |
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GLENN LUKOS ASSOCIATES

Regulatory Services



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

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, 2017¹. 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”

¹ USFWS. *Survey Guidelines for the Listed Large Branchiopods*, Revised: November 13, 2017.

found in Eriksen and Belk (1999)². 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.

² Eriksen, C. and D. Belk. 1999. *Fairy Shrimps of California's Puddles, Pools, and Playas*. Mad River Press, Inc. Eureka, California.

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.

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.

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 | Feature Name | | | | |
|---------------|---------------------|-----------|----------|----------|----------|
| 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

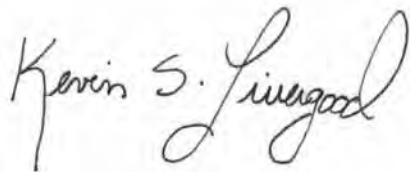
high densities (1,000's) of fairy shrimp at each population's peak. Feature 4 supported a low-density population (<10). Fairy shrimp persisted in Features 2, 3, and 4 for multiple weeks and multiple cohorts were observed while fairy shrimp persisted.

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.

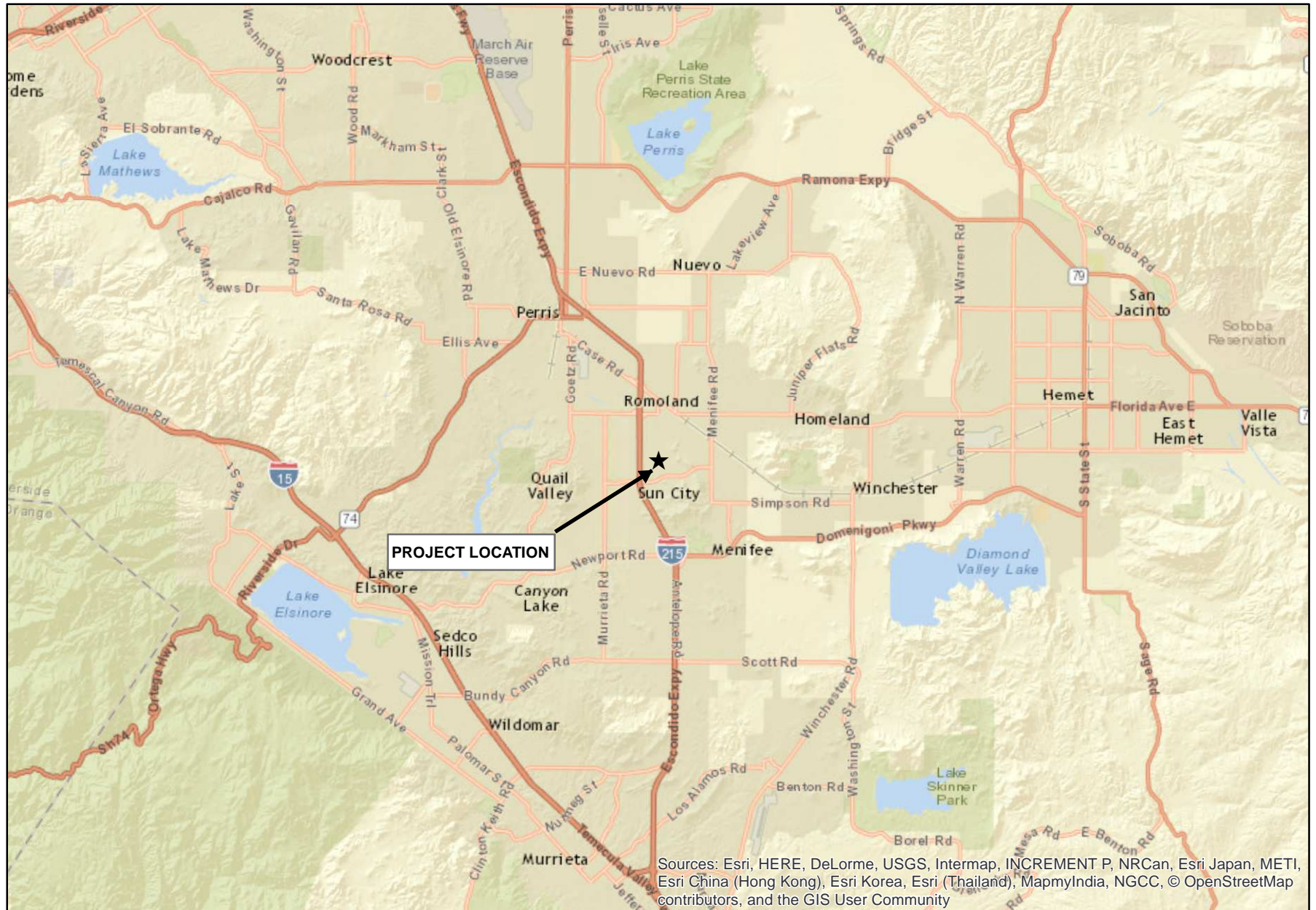
A handwritten signature in black ink that reads "Kevin S. Livergood". The signature is written in a cursive, flowing style.

Kevin Livergood
Biologist/Regulatory Specialist
USFWS Recovery Permit #: TE-172638-2

Source: ESRI World Street Map



0
2
4
8
Miles



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

FLEMING RANCH

Regional Map

GLENN LUKOS ASSOCIATES

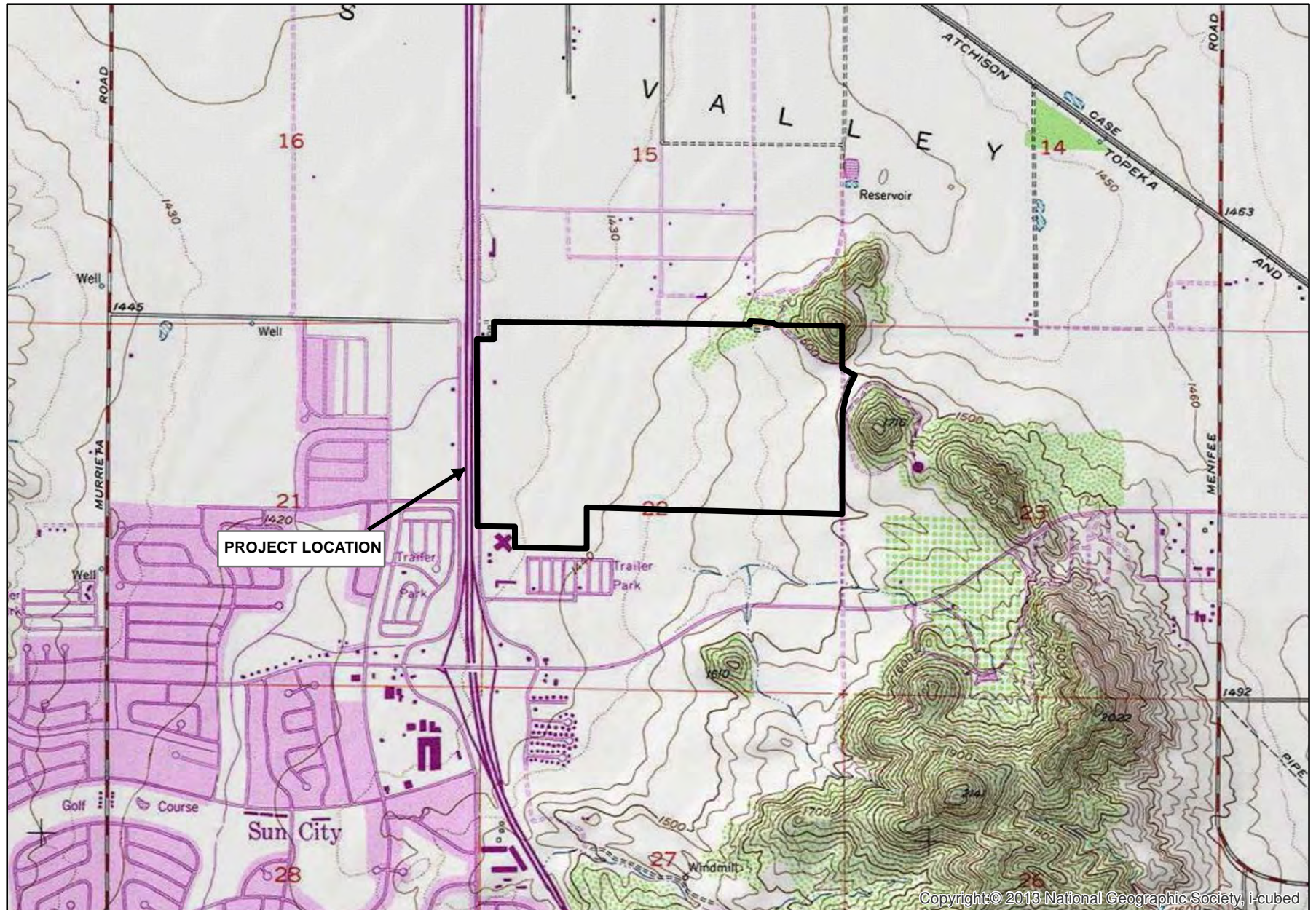


Exhibit 1

Adapted from USGS Romoland, CA quadrangle



0 1,000 2,000 4,000
Feet



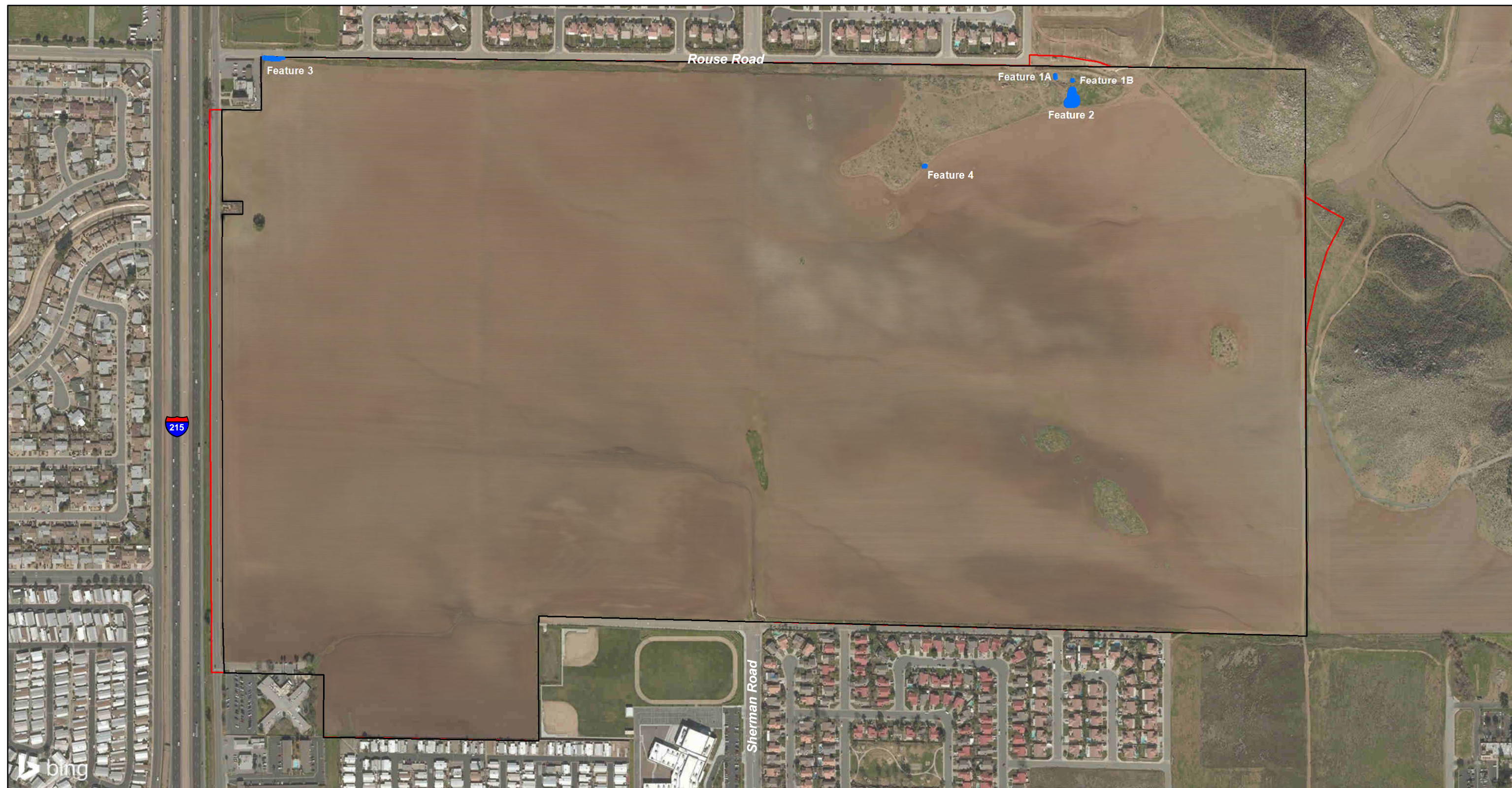
FLEMING RANCH

Vicinity Map

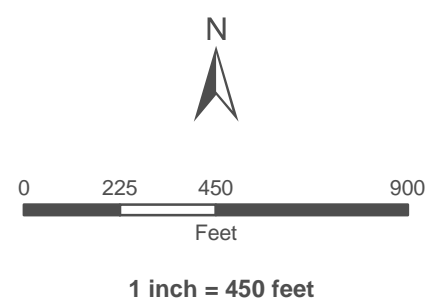
GLENN LUKOS ASSOCIATES



Exhibit 2



- Project Boundary
- Offsite Impact Areas
- Seasonal Pool



FLEMMING RANCH

2018-2019 Wet Season Survey Area Map

GLENN LUKOS ASSOCIATES



Photograph 1: Feature 1a. View to the south. No fairy shrimp detected.
(UTM: 3732061.17N, 483728.94E; Date: 12/7/2018; 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 3: Feature 1b. View to the southwest. No fairy shrimp detected.
(UTM: 3732051.09N, 483753.88E; Date: 2/6/2019, K. Livergood)

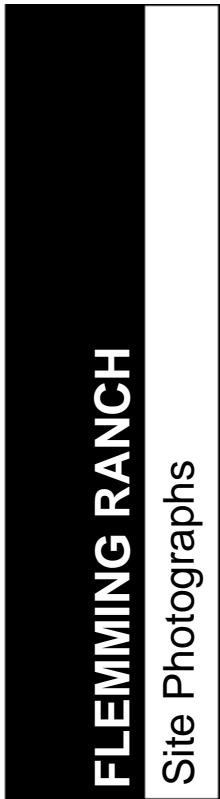


Photograph 4: Feature 1b. View to the west. Photo depicts typical ponding. No fairy shrimp detected. (Date: 12/7/2018, K. Livergood)



GLENN LUKOS ASSOCIATES

Exhibit 4



FLEMMING RANCH

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)



GLENN LUKOS ASSOCIATES

Exhibit 4

FLEMMING RANCH

Site Photographs

GLENN LUKOS ASSOCIATES

Regulatory Services



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.

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. Soil Collection

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.

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

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.

A handwritten signature in black ink that reads "Kevin S. Livergood". The signature is written in a cursive, flowing style.

Kevin Livergood
Biologist/Regulatory Specialist

p:0849-20a.2019_DrySeason.rpt(FINAL).docx

Source: ESRI World Street Map



0
2
4
8
Miles



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

FLEMING RANCH

Regional Map

GLENN LUKOS ASSOCIATES

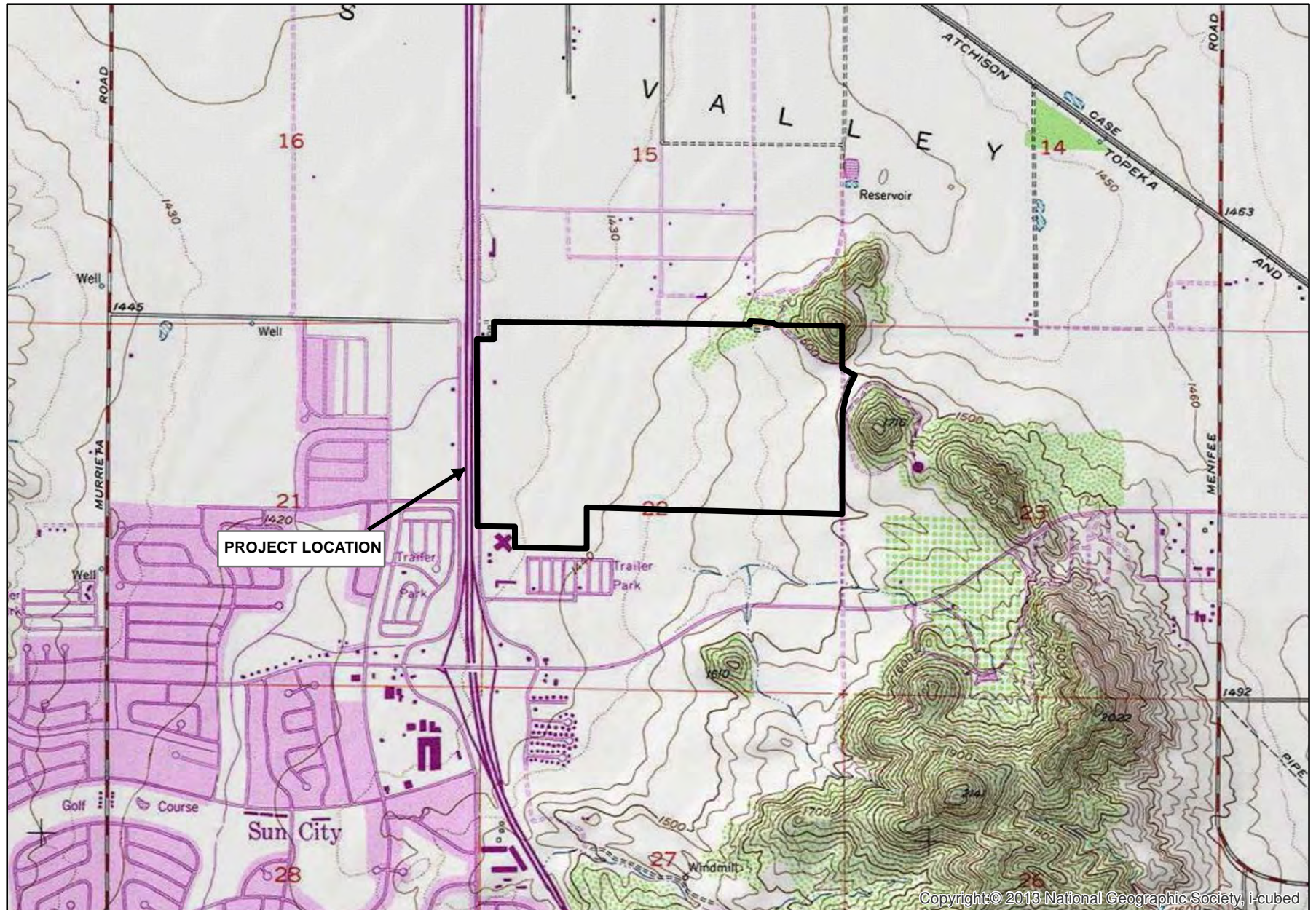


Exhibit 1

Adapted from USGS Romoland, CA quadrangle



0 1,000 2,000 4,000
Feet



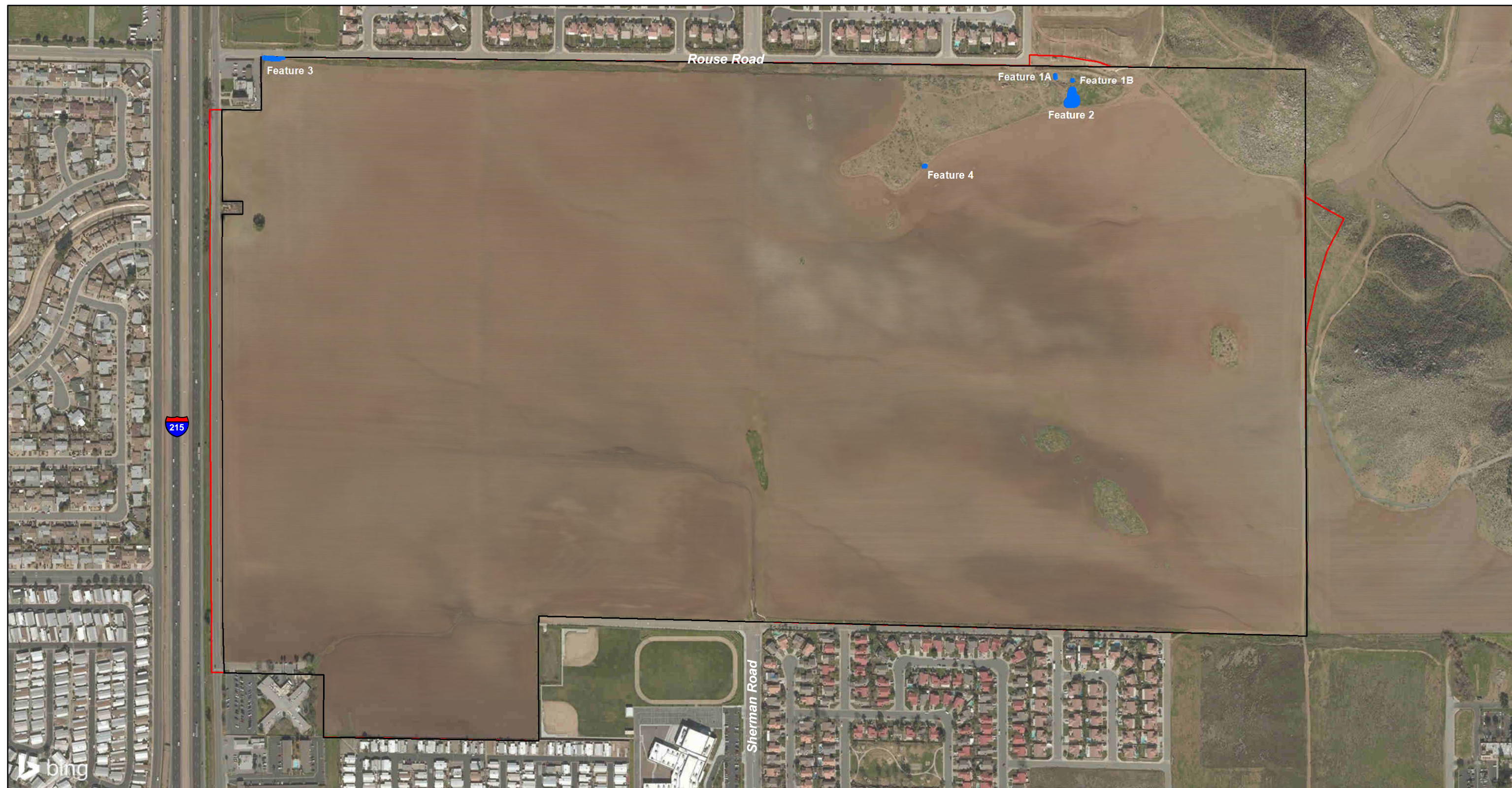
FLEMING RANCH




Vicinity Map

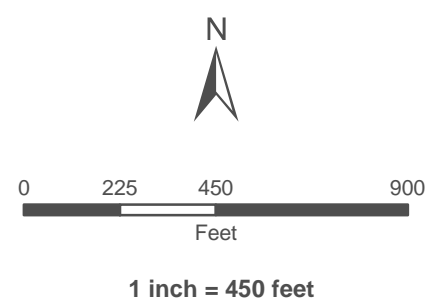
GLENN LUKOS ASSOCIATES

Exhibit 2





-  Project Boundary
-  Offsite Impact Areas
-  Seasonal Pool



FLEMMING RANCH

2018-2019 Survey Area Map

GLENN LUKOS ASSOCIATES

Exhibit 3





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



GLENN LUKOS ASSOCIATES

Exhibit 4

FLEMMING RANCH

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



GLENN LUKOS ASSOCIATES

Exhibit 4

FLEMMING 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



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 μ 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.

| Table 1 DRY SEASON/HATCHING RESULTS | | | | |
|--|--|-------------------|---|-------------------|
| Feature | <i>Branchinecta</i> sp. Present | Abundance* | <i>Streptocephalus</i> sp. Present | Abundance* |
| 3 | Yes | High | No | --- |
| 4 | Yes | Medium | No | --- |

*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 | | | | |
|---|---------------------------|-----------|------------------------------|-----------|
| SAMPLE | <i>BRANCHINECTA</i> cysts | | <i>STREPTOCEPHALUS</i> cysts | |
| | 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 and 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: <u>July 2, 2019</u> _____ |

[illegible]