February 18, 2015

RBF Consulting  
Attn: Thomas J. McGill, Ph.D.,  
Vice President, Natural Resources  
3300 East Guasti Road, Suite 100  
Ontario, CA 91761

Letter Report of the Focused San Bernardino Kangaroo Rat (*Dipodomys merriami parvus*) Presence or Absence Surveys for the central portion of the Harmony Project Site, City of Highland, San Bernardino County, California

Dear Mr. McGill,

This letter report contains the findings of our January 2015 San Bernardino kangaroo rat (*Dipodomys merriami parvus*) [SBKR] focused surveys on a property known as the Harmony Development Project Site, located in the City of Highland, San Bernardino County, California. At the request of the United States Fish and Wildlife Service (USFWS), additional habitat assessments were conducted by a permitted biologist to identify any potentially suitable habitat for SBKR in the central portion of the site. Permitted biologist Shay Lawrey walked the entire site and found an area potentially suitable for SBKR. Ms. Lawrey conducted presence/absence surveys on February 1 through 5, 2015. **No SBKR** were trapped during the February 2015 survey.

The development site is located in the northeast portion of the San Bernardino Valley, south of the San Bernardino Mountains and in between the historic floodplains of Mill Creek and the Santa Ana River. The federally listed as endangered San Bernardino kangaroo rat (SBKR) [*Dipodomys merriami parvus*], has the potential to occur on site. The property falls within the historic range and is within the vicinity of recent recorded sightings of SBKR. In 2011 and 2012, permitted biologist, Shay Lawrey conducted a total of four protocol focused SBKR trapping surveys on the property. Two sessions (one in 2011 and one in 2012) occurred east of Greenspot Road, within Section 8 of Township 1S and Range 2W (Phase 1) and two sessions (one in 2011 and one in 2012) occurred south of Newport Avenue/Redlands Heights Ranch Road, within Section 15 and 16 of Township 1S and Range 2W (Phase 4) of the U.S. Geological Survey (USGS) – Yucaipa Quadrangle, San Bernardino County, California. Out of these four surveys one (1) adult male SBKR was trapped south of Newport Avenue/Redlands Heights Ranch Road.

**Species Background**

The SBKR is one of several kangaroo rat species within its range. The Dulzura kangaroo rat (*D. simulans*), the Pacific kangaroo rat (*D. agilis*), and the Stephen’s kangaroo rat (*D. stephensi*)
occur in areas occupied by the SBKR, but these other species have a wider habitat range. The habitat of the SBKR is described as being confined to inland valley scrub communities, and more particularly, to scrub communities occurring along rivers, streams, and drainage. Most of these drainages have been historically altered as a result of flood control efforts and the resulting increased use of river resources including mining, off-road vehicle use, and road and housing development. The increased use of river floodplain resources has resulted in a reduction in both the amount and quality of habitat suitable for the SBKR. The past habitat losses and potential future losses prompted the emergency listing of the SBKR as an endangered species (U.S. Fish and Wildlife Service, 1998a). The sites are located within USFWS designated Critical Habitat.

Methods

Ms. Lawrey has over a decade of experience with SBKR and is a biologist permitted (USFWS permit number TE 094308-3) by the USFWS to trap and handle SBKR. One study site was surveyed when appropriate weather conditions presented. Following authorization to proceed from the USFWS, Ms. Lawrey initiated the survey on the evening of Sunday, February 1, 2015 and ended the survey on the morning of Friday, February 5, 2015.

The SBKR study site encompassed an approximately 50-acre area located central portion of the site. A total of 200 traps, 12-inch Sherman live traps (product number SLK; H.B. Sherman Traps, Tallahassee, FL) were set. Traps were set within parallel traplines. The east-west lines consisted of 100 traps set in two parallel traplines of 50 traps each. The sets of north-south lines consisted of 100 traps set in parallel lines of 25 traps each. The spacing between each trap was approximately 10 meters. Each trap was baited after dusk with mixture of rolled oats and commercially-formulated small mammal feed (seed) that included a millet seed. During the final morning (4 am) trap-check, all animals were identified and released unharmed at the point of capture. The survey was conducted when air temperature lows were above 50°F (degrees Fahrenheit). Daily notes included weather conditions such as temperature, wind speed, cloud cover, precipitation and moon phase. Site characteristics such as soils, topography, the condition of the plant communities, and evidence of human use of the site were also noted.

Results

A mosaic of habitats, including coastal sage scrub, chaparral, Riversidian alluvial fan sage scrub (RAFSS), ruderal, and agricultural occur in the vicinity of the study site. Land uses and facilities that surround the development property include rural residential. The local area climate is semi-arid, with an average annual temperature of 67°F and a range from 25-110°F. The rainy season begins in November and continues through March, with the quantity and frequency of rain varying from year to year. The average annual rainfall is approximately 18.1 inches. Elevation within the SBKR study area average approximately 1,400 feet above mean sea level. The subject property is surrounded by rugged foothill topography and alluvial fan.

Surveys were conducted during the appropriate season, in fair weather conditions, by a qualified biologist who followed all pertinent protocols. Weather conditions were clear and cool. Wind speeds were calculated using the Beaufort Scale (BFT) which is an international scale of wind velocity ranging from 0 (calm) to 12 (hurricane). During trapping, BFT averaged 2 but ranged
between 0 and 4. Prior to survey, a Nielsen-Kellerman Kestrel 2000 was used to measure air temperatures. Table 1 below shows the tabulated weather data as it relates to these surveys.

### Table 1. Survey dates of trap night, weather conditions, and moon phases

<table>
<thead>
<tr>
<th>Survey Dates</th>
<th>% Cloud Cover</th>
<th>Wind (BFT)</th>
<th>Overnight Low Temp (°F)</th>
<th>Precipitation</th>
<th>Moon Phase</th>
</tr>
</thead>
<tbody>
<tr>
<td>02/01</td>
<td>30</td>
<td>0 – 2</td>
<td>52</td>
<td>0</td>
<td>Waxing gibbous</td>
</tr>
<tr>
<td>02/02</td>
<td>30</td>
<td>0 – 2</td>
<td>51</td>
<td>0</td>
<td>Waxing gibbous</td>
</tr>
<tr>
<td>02/03</td>
<td>30</td>
<td>0 – 2</td>
<td>50</td>
<td>0</td>
<td>Full moon</td>
</tr>
<tr>
<td>02/04</td>
<td>50</td>
<td>0 – 2</td>
<td>57</td>
<td>0</td>
<td>Waning gibbous</td>
</tr>
<tr>
<td>02/05</td>
<td>50</td>
<td>0 – 2</td>
<td>55</td>
<td>0</td>
<td>Waning gibbous</td>
</tr>
</tbody>
</table>

The soil types on the sites consist of Psamments and Fluvents and Soboba stony loamy sand. Psamments and Fluvents are somewhat excessively drained sandy alluvium that typically occur within drainageways. Soboba stony loamy sand is characteristically excessively drained soil formed in alluvium from predominantly granitic rock sources and is usually found in alluvial fans and flood plains. It primarily consists of gravelly loamy sand.

On the surface, sign typically indicative of kangaroo rat species (tracks, scat, tail drags, sand bath sites, or burrows) was present. Scat and tracks of various other small mammals species was also observed. Five (5) native rodent species were trapped in the survey area (Table 2). No SBKR were trapped during the survey, but many delzura kangaroo rats were. The term “trap night” is used to relay how many individuals, per species were caught over the survey session. Each trap is counted as a trap night, so with 200 traps surveyed over three nights there was a total of 1000 trap nights. The fifth survey night had the highest trapping success with 133 animals being caught; whereas, the first survey night had the lowest trapping success of 51 animals captured.

### Table 2. Species captured

<table>
<thead>
<tr>
<th>Species</th>
<th>Trap Nights</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deer mouse (<em>Peromyscus maniculatus</em>)</td>
<td>210</td>
</tr>
<tr>
<td>San Diego pocket mouse (<em>Chaetodipus fallax</em>)</td>
<td>82</td>
</tr>
<tr>
<td>cactus mouse (<em>P. eremicus</em>)</td>
<td>185</td>
</tr>
<tr>
<td>harvest mouse (<em>Reithrodontomys megalotis</em>)</td>
<td>20</td>
</tr>
<tr>
<td>Dulzura kangaroo rat (<em>Dipodomys simulans</em>)</td>
<td>125</td>
</tr>
</tbody>
</table>

(Phylogenetic listing per Jameson & Peters, California Mammals, 1988)

### Conclusions

The SBKR is a special status, native species that has been afforded special legal protection because of concern for its continued existence. The federal Endangered Species Act (ESA) provides the process of protection for federally listed species such as SBKR. Section 9 of the ESA prohibits "take" of threatened or endangered species. The term "take" under federal law means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to
engage in such conduct. "Take" can include adverse modification of habitats used by a
threatened or endangered species during any portion of its life history. The USFWS administers
the ESA and under the regulations of the ESA, the USFWS may authorize "take" when it is
incidental to, but not the purpose of, an otherwise lawful act. Take authorization can be obtained
under Section 7 or Section 10 of the ESA.

In conclusion, the survey results differ from previous results of trappings conducted for this
project, in that, a high number of delzura kangaroo rats were found, where very few had been
found previously. This survey indicates SBKR are absent from the 45-acre survey area.
Although SBKR were not found during in this survey effort, presence of SBKR was determined
previously at another location within the project boundaries near Mill Creek and portions of the
project fall within Critical habitat designated for SBKR. As such, consultation with the USFWS
will be required to obtain incidental take authority for the loss of individuals and for the loss or
adverse modification of critical habitat.

*Relevant observations made during this survey worth mentioning include presence of spade-
foot toa, a federal and State species of concern, in all pooled areas on site.*

Please do not hesitate to contact at 909-915-5900 should you have any questions or require
further information.

Sincerely,

Shay Lawrey, President
Ecologist/Regulatory Specialist
USFWS permit number TE 094308-3

Attachment 1 – Literature Reviewed
Attachment 2 – Figures
   Figure 1 – Location Map
   Figure 2 – Aerial Photograph of Study Site
   Figure 3 – Trapline Locations
Attachment 3 – Photographs
**Literature Reviewed**


Figure 2. Aerial Photograph of Study Site
Photo 1. Panned out view looking over project toward Mill Creek

2015 SBKR trapping area

Photo 2. Spadefoot toad egg mass

Spadefoot

Photo 3. View looking across trapping site towards south

Photo 4. View looking across trapping site towards northeast
Photo 5. Showing microhabitat conditions on site and plant assemblage, coverage, structure and diversity.

Photo 6. Showing microhabitat and soil conditions.

Photo 7. Trap site conditions