Appendix D-6

Vegetation Community Assessment of the Paradise Valley in the Shavers Valley, Riverside County, California, RBF Consulting, November 29, 2011
Subject: Vegetation Community Assessment of the Paradise Valley in the Shavers Valley, Riverside County, California.

Dear Mr. Cullen:

Per your request, RBF Consulting conducted an assessment of the vegetation communities occurring on the proposed Paradise Valley project site located in Shavers Valley, Riverside County, California. The Paradise Valley project site, approximately 5,402-acres, is hereinafter referred to as project site or site. The assessment of the vegetation communities was conducted by RBF biologists Thomas J. McGill, Ph.D. and Travis J. McGill, and RBF regulator specialist Chris Johnson on October 10, 2011 to identify and quantify the various types of plant communities occurring within the boundaries of the project site.

Project Location
The Glorious Land Company, LLC (GLC) proposes to develop the Paradise Valley project site that is generally located in the Shavers Valley, east of the Coachella Valley and south of Joshua Tree National Park in an unincorporated portion of central Riverside County, California. The site is approximately 10 miles east of the City of Coachella (Exhibit 1, Regional Location Map) and is depicted on the Cottonwood United States Geological Survey (USGS) 7.5-minute topographic quadrangle in Sections 1, 9 through 15 and portions Sections 2 and 3 of Township 6 South, Range 10 East (Exhibit 2, Project Vicinity Map). The site is bordered by the Cottonwood Mountains to the north, the Orocopia Mountains to the south and southeast, Mecca Hills to the south and southwest, and Chiriaco Summit to the east. Interstate 10 traverses through the middle of the proposed project site (Exhibit 3, Project Site Map).

Background Information
The Paradise Valley project site is proposed to include a mix of commercial, civic, institutional, retail, residential, and golf course resorts. The Paradise Valley project site approximately consists of 5,402-acres, of which approximately 5,276-acres are owned by Glorious Land Company, LLC (GLC) and 125 acres are owned by others (roads, utilities). Under the proposed specific plan, approximately 3,268-acres of land would be developed and 2,008-acres on the western and northern portions of the development would be left as undisturbed, natural open space. The natural open space would consist of the lower foothills of the Cottonwood Mountains south of Joshua Tree National Park, and a substantial portion of the natural drainage known as Pinkham Wash. The road and utility easements which cross the areas of proposed development and natural open space would remain. The development is proposed to proceed in phases.
Methodology
Prior to conducting the site survey, aerial photographs were used to provide a preliminary determination of the extent of the various types of habitats on the project site. This was generally based on the evidence of flow and the presence of vegetation. Three distinctive habitat types appeared to present: 1) active washes with scattered vegetative components, mostly desert dry wash woodlands (DDWW); 2) low terraces above and adjacent to the active wash systems with what appeared to be a mix of DDWW and Sonoran creosote bush scrub (SCBS) vegetation; and 3) upper terraces with SCBS vegetation. The US Army Corps of Engineers released an Updated Datasheet for the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the United States (July 2010) that provides some insight and a technical discussion on the nature of the fluvial or hydrogeomorphic processes that may be occurring within these three habitat types.

A site survey was then conducted to document the vegetation communities found onsite. The survey was conducted by walking and driving the project site to identify which plant communities were actually present onsite, to identify the dominant plant species within each community, and to record the presence or absence of Ordinary High Water Marks (OHWM) and other signs of water movement through the area. The vegetation communities were classified according to the following features: dominant plant species; soil composition; and evidence of hydrology. The vegetation communities were delineated on an aerial photograph and then digitized into GIS Arcview. Photographs were taken during the survey documenting the vegetation communities occurring onsite.

The results from this study were then compared to the 2009 Biological Resources Report of Paradise Valley (E. Reed and Associates, Inc., 2009) as well as the vegetation communities identified in the 2002 Biological Resources Report of Paradise Valley (PSOMAS) and those listed in the Coachella Valley Multiple Species Habitat Conservation Plan (CVMSHCP) for the project area.

Results
Two distinct vegetation communities were identified within the boundaries of the proposed project site: desert dry wash woodland (DDWW) and Sonoran creosote bush scrub (SCBS). The SCBS was further broken down into two sub-categories or phases: the standard SCBS and a Sonoran creosote bush scrub that is located on low terraces or benches adjacent to the DDWW. Approximately 73 acres of the project site are heavily disturbed by dirt roads and development and does not support any vegetation, the remaining 5,329.8 acres supports one of the three vegetation types described below.

Desert Dry Wash Woodland
The DDWW is found on the alluvial fan between Cottonwood Mountain and Mecca Hills. Approximately 1,649-acres of the project site are made up of DDWW. This plant community occurs in sandy or gravelly washes that cross through the center of the project site. The open wash system supports scattered drought-deciduous, riparian trees that are 8 to 20 feet tall. The dominate species within the project site are blue palo verde (*Cercidium floridum*), ironwood (*Olneya tesota*) and smoke tree (*Psorothamnus spinosus*).

It appears that water flows rapidly through this habitat during flooding events resulting in a dynamic environment that is constantly changing during storm events. An Ordinary High Water Mark (OHWM) is evident along the edges of the washes. The continual shift of the dry wash channels on the alluvial fan creates an interlaced network of small washes and
drainage courses that are in constant flux with the surrounding bench and SCBS habitats, discussed below.

**Sonoran Creosote Bush Scrub**

Sonoran creosote bush scrub is the most widespread vegetation type in the Coachella Valley and is characterized as having a low diversity of plant species with broad spacing of the shrubs exposing bare ground. It is the dominant plant community in the low desert below 2,500 or 3,000 feet mean sea level (msl) on well drained soils of slopes, alluvial fans, and valleys and integrates broadly with Mojave creosote bush scrub in the high desert. This plant community is dominated by Creosote bush (*Larrea tridentata*) and burrobush (*Ambrosia dumosa*) with other commonly found plant species such as cheese bush (*Hymenoclea salsola*), brittlebush (*Encelia farinosa*), crucifixion-thorn (*Canotia holacantha*), ocotillo (*Fouquieria splendens*), and numbers cacti.

The SCBS is primarily found on higher terraces above the dry washes and can be found throughout the foothills of the Cottonwood Mountains to the north and the Mecca Hills to the south and southwest. The SCBS habitat is not subject to the fluvial processes typically occurring within the DDWW, particularly during flood events. There are no OHWMs nor evidence of sheet flooding. Approximately 1,864-acres of the project site are composed of SCBS.

**Sonoran Creosote Bush Scrub Bench**

The SCBS bench habitat is a continuum of the SCBS but shows evidence of hydrologic flows, primarily sheet flooding, during major storm events. During the larger storm events, the dry wash channels fill and overflow onto the lower terraces supporting the SCBS bench habitat, as evidenced by the ubiquitous signs of sheet flooding. As noted above, the bench habitat is interlaced with the braided channels of the DDWW but is located on slightly elevated terraces or benches above the sandy washes.

Vegetation and soils on these benches are generally consistent with the SCBS community but may support some of the DDWW species. The distinguishing feature of the bench habitat is that these slightly elevated terraces convey water via sheet flooding during storm events. However, this bench habitat does not have the sandy soils associated with dry wash systems. Over time and with the cutting action of flood waters, the soils and vegetation may change and gradually transition into DDWW habitat. Similarly, with the loss of fluvial processes, accumulation of alluvial soils water down from the SCBS communities, the DDWW habitat would be expected to convert to SCBS. The SCBS bench habitat, in combination with the DDWW, is in constant flux due to the dynamic nature of their flood plain environment. The extent of each habitat type likely remains proportional. Approximately 1,817-acres of the project site consist of bench habitat.

**Table 1: Vegetation Acreage Comparison**

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<th>E. Read &amp; Associates</th>
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Discussion
The acreage estimates of the vegetation communities were mapped independently of those mapped by CVAG during the preparation of the Coachella Valley MSHCP and by PSOMAS and E. Read and Associates. Table 1 shows the results of comparing these three mapping efforts. The two classifications of SCBS used in this study are suggested here in response to apparent dynamic nature of the fluvial processes that occur onsite, resulting in constant flux between the DDWW and SCBS communities occurring on the alluvial fan that dominates this site. The sandy, braided channels that carry water during storm events are constantly changing due to these fluvial processes, but the underlying vegetation communities are much slower to change. As a result, the SCBS can be broken down into two phases: the typical SCBS habitat that is pervasive in the foothills of the local mountains and extending down onto the alluvial fans but that is not subject to significant fluvial processes associated with storm events, and a SCBS vegetative community that remains intact but displays evidence of periodic sheet flooding associated with its proximity to the DDWW areas. Although there is an ecotonal effect from this dynamic interplay between these two plant communities (SCBS and DDWW), there remain two distinct plant communities with different soil characteristics and vegetation composition.

Sincerely,

[Signature]

Thomas J. McGill, Ph.D.
Vice President, Natural Resources

Attachments:
- Exhibit 1: Regional Location Map
- Exhibit 2: Project Vicinity Map
- Exhibit 3: Project Site Map
- Exhibit 4: Vegetation Map
- Site Photographs
Photograph 1 - DDWW with a visibly sandy channel with an OHWM.

Photograph 2 - DDWW with a sandy channel and visible OHWM. SCBS bench habitat occurs on both sides of the wash above the OWHM.
Photograph 3 - Typical SCBS habitat above the OHWM and the influence of significant fluvial processes.

Photograph 4 - SCBS habitat elevated above the sandy channel seen on the right.
Photograph 5- SCBS bench habitat with evidence of hydrology interlaced with the DDWW.

Photograph 6- SCBS bench habitat on either side of an active wash with little or no vegetation.
Photograph 7- Creosote bush in the middle of a sandy wash showing initial stages of transitioning from SCBS habitat to DDWW.

Photograph 8- Typical dry wash vegetation mixed with SCBS habitat, showing the initial stages of transitioning from DDWW to SCBS bench.