Memorandum of Understanding

Date: November 10, 2014
To: Dean Phillips, PLS
From: Joseph L. Castaneda, P.E.
Re: Vista Del Agua - Project Impacts associated with Offsite Runoff

The Vista Del Agua project is located in the Coachella Valley and is roughly bounded by Interstate 10 to the north, All-American Canal to the east, Tyler Street to the West and Avenue 48th to the south. JLC was requested by UEG to assess the offsite and onsite drainage impacts to the proposed project. As a result, this memorandum was developed to discuss the following:

1. Regional Offsite watershed tributary to the project and existing facilities.
2. Local offsite watershed tributary to the project site.
3. Onsite watershed and required drainage infrastructure to resolve localized flooding.

REGIONAL OFFSITE DRAINAGE

Based on the existing terrain, the upstream watershed is comprised of large alluvial fans that sheet flow across the watershed area. These large offsite watershed areas are located east of the All-American Canal. As part of the All-American Canal, the Bureau of Reclamation constructed a series of dikes that would collect and discharge the runoff, emanating from the offsite watershed, to the White Water River. Exhibit A has been prepared to show the boundary of the project site and the existing facilities that protect the project from offsite flooding. A brief description of the facilities has been provided:

1. Detention Dike No. 1 is an existing facility that collects 268.1 square miles of offsite watershed area. See Excerpt 1 narrative and Plate 3. Detention Dike No. 1 extends from Interstate 10 to the Salton Sea. Detention Dike No. 1 system has two facilities that regulate the outflow collected by the dike. These two facilities are defined as Wasteway No. 1 and Wasteway No. 2. It should be noted, that the offsite area upstream of the project is 51.8 square miles of the total area of 268.1 square miles. Excerpt 1 defines the offsite watershed upstream of the project as Area D. Area D is collected and discharged directly into Wasteway No. 2.

2. Wasteway No. 2 is an existing channel and inlet system that regulates the runoff collected by Detention Dike No. 1, which emanates from Area D. The Wasteway No. 2 channel conveys the regional offsite watershed areas directly into White Water River.

3. Detention Dike No. 3 is an existing facility that collects 145.7 square miles of offsite watershed area. See Excerpt 1 narrative and Plate 3. The Detention Dike No. 3 system implement the use of Wasteway No. 3 to regulate the outflow collected by the dike. Detention Dike No. 3 diverts runoff upstream of the project site to the west and towards Wasteway No. 3.

4. Wasteway No. 3 is an existing channel and inlet system that regulates the runoff collected by Detention Dike No. 2, which emanates from Area E, F, and G. The
Wasteway No. 3 channel conveys the regional offsite watershed areas directly into White Water River.

Based on the research conducted the project is not impacted by any large regional watershed areas. The existing facilities discussed provide flood protection to the project site by diverting upstream watershed areas to the White Water River.

**Local Offsite Watershed Areas**

The local offsite area was evaluated using the topographic mapping provided by UEG and the USGS map. Based on the project site location and the existing topography the project has the following offsite watersheds that contribute runoff to the project site:

1. Area A, located north of the project, is a 60 acre drainage area. The area runoff flows in a southerly direction. The project will be required to construct channels or storm drain systems to intercept the flows along Street “A” and the northerly and easterly boundary of Planning Area 3. The intercepted flows would be conveyed to the southwesterly corner of the project site.

2. Area B, located east of the project, is a 20 acre drainage area. The area runoff flows in a southwesterly direction. The project will be required to construct a channel or storm drain system to intercept the flows along Polk Street. The intercepted flows would be conveyed to the southwesterly corner of the project site.

The local offsite drainage area is minimal and typical storm drain solution will be used to provide flood protection for the project area.

**Onsite Watershed Areas**

Based on the topographic mapping, the entire project flows towards the southerly boundary of the project site. The major project challenge will be to intercept and collect the offsite and onsite runoff without developing a diversion of flows. The project will be required to construct storm drains, open space/earthen channel systems and retention basins to mitigate and flood protect the project site.