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Attn.: Mr. Juan Ayguabibas, P.E.

Subject: Addendum No. 1 - Preliminary Subsurface Exploration and Geotechnical Engineering Assessments for the Proposed Monte Elvira Development at San Ildefonzo Ward, Coamo, Puerto Rico; Reference No. DA/11S3302

Gentlemen:

As requested, following submittal of the report on the preliminary geotechnical and subsoil exploration at the site of the Proposed Monte Elvira Development, we have been requested to comment on the slope stability conditions at the project lands.

1. Available Technical Documents – Based on the US Soil Conservation Service Manual the surface soils at the site the surface soils are moderately steep soil on side slopes, foot slopes, and rounded hilltops, where their susceptibility to erosion is of concern. At sectors where the runoff is rapid, the thin surface clayey soils and the erosion is a hazard. However, the substratum, and underlying material consist saprolitic material weathered from volcanic rocks.

   Based on the US Geological Survey of the zone, the Colluvium and Terraced alluvial soils correspond to the units which may be considered susceptible to erosion.

If slopes are steep enough, movements can occur on any land form. However, on land forms susceptible to landslides, other factors being equal, the steepest slopes are the most vulnerable locations. The most common cause of a large number of slides that occur on steep slopes is in residual or colluvial soils sliding on a weathered bedrock surface. The loose, unconsolidated soils cannot maintain as steep a slope as that which can be imparted to the underlying rock surface, and are, consequently, in a delicate balance.

Based on the site reconnaissance and subsurface soil data at the project under the prevailing topographic conditions no evidence of slope stability problems was disclosed. Considering the subsurface data secured in the exploration and geotechnical evaluations, except at the more steeper sloping terrain and at some small areas of soils that are close to gullies is where the erosion is a hazard during heavy rains. However, the occurrences of

slope stability problems are not foreseeable in the completely and moderately weathered materials of the tuff-breccia, tuffaceous conglomerate, and lapilli which are the volcanic rock units at the site.

In any event, the specification for construction earthwork are contained in Section 4.6 - General Earthwork and Site Improvement Recommendations contained in the original report provide the necessary construction requirements for cut and fill sector for the different projects being considered at this stage of planning. In addition, Section 4.7 - Storm Water Run-off Control for each construction phase also provide adequate assessments for the planning phase to render further assurance that no unstable slope stability conditions are created. To cope with undisclosed soil and steep sloping condition due to topographic conditions, several retaining structure solutions are available, which can be used where design requirements so require. At this stage such conditions are not foreseeable.

The recommendations contained in the original preliminary report, where applicable, shall be considered. Furthermore, the monitoring and inspection of earthwork related construction procedures, as well as the supervision of the implementation of the given recommendations shall be provided.

Respectfully Submitted,

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