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November 29, 2023

Nicholaus Marcotte, PE
Element Engineering, LLC
12687 West Cedar Drive, Suite 300
Lakewood, Colorado 80228

nmarcotte@elementengineering.net

Subject: Addendum to Geotechnical Study for Ramah Wastewater Treatment Plant Improvement Project, Project Number 22-2-102, Dated April 22, 2022.

Project Number 22-2-102

Dear Mr. Marcotte:

At your request, this addendum has been provided to address comments made by El Paso County during their review. Specifically, additional discussion was requested for the following topics as they relate to the construction of the proposed embankment at the evaporative pond:

1. The suitability of the site soils
2. Slope stability
3. Soil settlement

A brief discussion of each topic is presented in the following paragraphs.

As described in the subject geotechnical report, the soils encountered within the borings drilled at the site of the proposed evaporative ponds consisted of clayey sands and lean clays at the anticipated depths of the pond basins. Both soil types should be suitable for the construction of the embankment. The clays in particular are expected to have a low permeability, and will be relatively resistant to erosion. Based on the intended use of the ponds in this area, relatively shallow water depths (less than about 3 feet) are expected, and scour/erosion due to wave action is not likely. The slopes of the embankment should be appropriately protected (for example, by maintaining a vegetive cover).

No formal stability analysis was conducted as part of our study, but well compacted cohesive soils should be stable at the proposed slopes, shown at about 4:1 horizontal to vertical. As noted above, appropriate protection from erosion should be implemented.

The native soils encountered were generally well consolidated, and should not pose a greater risk of settlement than would be considered normal for this type of construction. Some of these soils were expansive, but the proposed earthen embankments should be able to accommodate some

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heave-related movement. Utilities and ancillary infrastructure should also be designed to accommodate some movement.

Please don't hesitate to contact us with any questions or if we can be of additional assistance with this project.

Sincerely,

KUMAR & ASSOCIATES, INC.

By: Arben Kalaveshi, P.E.



AFK:sw
rev by: DPC