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Project No. 04.6211.0109

County of San Luis Obispo
Department of Public Works
County Government Center, Room 208
San Luis Obispo, California 93408

Attention: Mr. Glenn Marshall

Subject: Geotechnical Report Update for Los Osos Wastewater Project, Tri-W Site Restoration, San Luis Obispo County, California

Dear Mr. Marshall:

Fugro is pleased to submit this update to our Geotechnical Report prepared for the design of the Los Osos Wastewater Project. The purpose of this letter is to provide geotechnical recommendations for the design of the restoration of the former mid-town (Tri-W site) wastewater treatment plant site in Los Osos. This letter was prepared in accordance with the County Blanket Purchase Order No. 22007171 dated September 16, 2011, and our proposal dated May 27, 2011.

Update. The mid-town site is located at the northwest corner of Los Osos Valley Road and Palisades Avenue near the downtown area of Los Osos. Fugro prepared a Geotechnical Report dated March 9, 2004 for the design of the Los Osos Wastewater Project under subcontract to MWH. The report included Volume 2 dated March 4, 2004 that presents supporting field and laboratory test data from previous geotechnical studies performed by Fugro, CFS, and Metcalf & Eddy. The fill placement and grading recommendations of the March 9, 2004 report and supporting data presented in Volume 2 are considered applicable and can be used in the design of the site restoration being designed by Rick Engineering. The recommendations presented in the March 9, 2004 report for the design of the wastewater treatment plant at the mid-town site are no longer considered applicable. A new site has been selected for the wastewater treatment plant that is located behind the cemetery on Los Osos Valley Road (the Giacomazzi site). The design of the new treatment plant site is not a part of our current scope of work or the restoration project, and a geotechnical evaluation has not yet been performed for the design of the new facility.

Background. The mid-town wastewater treatment plant site was partially graded in 2005 by Monarch Mechanical under contract with the Los Osos Community Services District. The construction was subsequently stopped in November 2005 and the site was abandoned. The grading mainly consisted of excavations associated with the MWH design, and placement of the excavated materials as fill over an area of about 1.5 acres[1], generally south of the existing County library. To our knowledge, the fill was not compacted during placement (Fugro

[1] County of San Luis Obispo (2010), *Request for Proposals PS-#1108, Mid-Town Site Restoration Project, Los Osos*, dated December 10.

was under contract with MWH to provide compaction testing for the mid-town wastewater treatment plant site) and no field compaction tests were taken on that material during the 2005 grading.

Erosion to drainages and slopes has occurred since the 2005 grading and has resulted in gullies, areas of deposited sediment, and erosion. The main drainage through the site trends to the northwest and is up to approximately 10 feet with steep to near-vertical banks. The banks are eroded and lack vegetation. Some erosion and gullies have also formed on the pad of existing fill south of the library as evident on the Rick Engineering (2011)[2] conceptual grading plan.

Proposed Improvements. The proposed improvements are shown on the Rick Engineering (2011)[3] conceptual grading plan and generally consist of removing the existing fill materials south of the library, regrading the slopes along the northwest trending drainage to inclinations of 3:1 to 4:1 (horizontal to vertical), and grading approximately 2 acres at the northwest corner of the site to approximately 0.5 to 1.5 percent slope to receive water from the drainage. Approximately 2 to 3 feet of fill will be placed in this area to achieve site grades. A swale approximately 50 to 75 feet wide and having a grade of approximately 3.5 percent will be provided at the northwest corner of the site. Various landscaping and erosion control improvements will also be provided.

Conclusions and Recommendations. The following recommendations are intended to supplement the fill placement and grading recommendations of the Geotechnical Report.

1. Following clearing and grubbing, fill should be compacted to least 90 percent relative compaction and be placed according to the recommendations of the Geotechnical Report.
2. Fill to be placed along the graded drainage swale should be keyed and benched into the existing slope according to the recommendations of the Geotechnical Report. Loose and eroded materials along the existing swale should be removed prior to placing the fill. Compacted fill should be placed in level lifts extending beyond the finished grade of the slope, and then be cut back to expose compacted fill material at the slope face.
3. Based on soil test data presented in the Geotechnical Report, we estimated an earthwork factor using the density measured from native sample of the dune sand taken from a depth of approximately 3 feet. We estimate that native soil when excavated and replaced as compacted fill would have a shrinkage factor in the range of approximately 2 to 8 percent, with an average of about 5 percent. The estimated shrinkage factors do not account for losses due to clearing or grubbing. Earthwork factors will vary from that estimated because of compaction of the soil above the minimum specified, natural variations in soil density, disturbance during soil

[2] Rick Engineering, Inc. (2011), Plans Entitled “Mid-Town Site Restoration Project, Conceptual Grading Plan”, 1 sheet, received August 18.

sampling, and as a result of secondary porosity (rodent burrows, root holes, etc.) that can affect earthwork factors.

Earthwork factors should be reviewed during grading to check volumes and satisfy earthwork balances based on the conditions encountered during construction. We do not have density data for the existing fill material that will be removed as part of the proposed grading; however, the estimated earthwork factors represent loose to medium dense dune sands encountered at the site and can be used to estimate earthwork for the native or fill soils in the absence of having data for the existing fill material.

4. The soils at the site are sandy and will scour and erode at relatively low surface flow velocities of approximately 1.5 to 2.5 feet per second. Erosion control matting, suitable vegetation and control of surface water velocities should be provided to reduce the potential for erosion. Temporary and permanent erosion control matting used to assist in establishing vegetation and to protect sandy soil from erosion should be placed and anchored according to the manufacturer's recommendations. Overlaps between adjacent layers should be placed such that the top layer of the matting is placed above a downslope and downstream layer. Ongoing maintenance to assist in establishing vegetation, repairing areas of gullies or erosion, should be provided as-needed to maintain stable slopes, particularly during the first seasons of rainfall.

This letter was prepared for the County of San Luis Obispo and their authorized agents only. This letter is an addendum to the previous report, and should be used in association with the recommendations and data presented in the March 9, 2004 report as if that report were prepared for the County. The general conditions and limitations of that report also apply to this addendum. We appreciate the opportunity to provide our services on this project. Please contact the undersigned if you have questions regarding this report, or require additional information.

Sincerely,

FUGRO CONSULTANTS, INC.

REGISTERED PROFESSIONAL ENGINEER
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