



**GEO TEK ENGINEERING
& TESTING SERVICES, INC.**
909 East 50th Street North
Sioux Falls, South Dakota 57104
605-335-5512 • FAX 605-335-0773
1-800-354-5512 www.geotekeng.com

April 7, 2009

Banner Associates
409 22nd Avenue South
PO Box 298
Brookings, SD 57006

Attn: Mr. Timothy Conner, PE

Subj: Supplemental Report
Additional Geotechnical Engineering Analysis
Proposed Ground Storage Water Reservoirs
Lewis & Clark Regional Water System
Near Tea, South Dakota
GeoTek #09-227

The purpose of this report is to present our supplemental geotechnical engineering opinions and recommendations for the referenced project. Our work was performed in accordance with your written authorization dated April 1, 2009.

The project site is located southwest of the intersection of 270th Street and 467th Avenue, approximately one mile west and two miles north of Tea, South Dakota. We understand that the project will consist of constructing two new ground storage water reservoirs for Lewis and Clark Regional Water System. We previously performed thirty-nine (39) soil test borings and presented the results in our geotechnical exploration report dated September 21, 2007. At the time of our report, the reservoir tanks were planned to have diameters of 226 feet and capacities of 15 million gallons each. We understand the diameters of the two tanks have been reduced to 164 feet and the capacities of the tanks have also been reduced to 7.5 million gallons each. The design water depth inside the tanks will remain at 48 feet. Correspondingly, the footing pressure with a full tank has been reduced from 4500 psf to 4200 psf and the floor pressure with a full tank has been reduced from 3170 psf to 3050 psf. The finish floor elevation of the tanks will remain at 1522.0 feet.

Based on our review and geotechnical engineering analysis of the revised tank information, we recommend that the excavation and filling procedures for the two tanks remain the same as previously described in our original report dated September 21, 2007. This involves excavating to elevation 1505.0 feet for the east tank and excavating to elevation 1508.0 feet for the west tank, followed by placing a layered system of granular fill up to the bottom of footing and floor elevations.

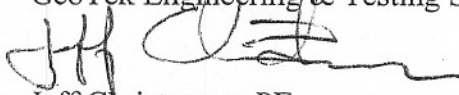
Due to the reduced diameter of the tanks and the slight reduction in the contact pressures, it is our opinion the expected settlements will also be slightly reduced. Using the 4200 psf footing

pressure and the 3050 psf uniform floor pressure, we estimate the total settlement to be 4 ½ to 5 inches for the east tank and 4 to 4 ½ inches for the west tank. We estimate differential tilting at the base of the tanks to be less than 2 inches and differential settlement between the ring footing and the floor to be less than ½ inch.

In our original report, we recommended a drainage system be provided for below-grade structures to collect and remove water. As a point of clarification, these recommendations apply to "basement-type" structures that will have a floor slab elevation that is below the existing ground surface elevation. The floor elevation of the two water storage reservoir tanks will be raised up above the existing ground surface. Therefore, it is our opinion that a drainage system is not necessary beneath the footings and floor of the two reservoir tanks. In the same manner, hydrostatic uplift is not a design consideration for the two reservoir tanks.

The other information and recommendations will remain unchanged as presented in our original report. If you have any questions regarding this supplement, please contact our office at (605) 335-5512.

Respectfully Submitted,
GeoTek Engineering & Testing Services, Inc.



Jeff Christensen, PE
Geotechnical Manager

Cc: Banner Associates (Rapid City), Attn: Dave LaFrance, PE

