A. TOBLIN STAFF EXHIBIT 7

NIRS/PC EC-1



HYDROGEOLOGIC INVESTIGATION SECTION 32; TOWNSHIP 21 RANGE 38 Eunice, New Mexico

19 NOVEMBER 2003

Prepared for:

Lockwood Greene Engineering & Construction 1500 International Drive Spartanburg, South Carolina 29304

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2.2 SHALLOW SUBSURFACE INVESTIGATION

Prior to mobilizing to the site, nine proposed boring locations based on a 1,00-foot center grid pattern were overlain on an USGS-based site map (see Figure 3) and the associated coordinates for each of these boring locations was ascertained. On 25 August 2003, CJI personnel conducted a walking survey of the majority of the site while the predetermined boring locations were staked. Boring locations were located using a hand-held GPS unit. With the exception of B-1, each boring location was staked as close to the predetermined coordinates as possible. Due to the presence of sand dunes, it was necessary to field-locate B-1 about 75' northwest of its mapped location.

Nine borings, B-1 through B-9, were installed and geologically logged to the geological contact of the "redbeds". The borings were drilled using solid and holiow stem augers and the borings were geologically logged from the cuttings. The boring logs are presented in Appendix A. The borings ranged in depth from 35 feet to 60 feet. The depth and elevation of the redbed in each of the borings is shown in Table 1. Once the borings were advanced to the contact, the boreholes were then allowed to remain open for a minimum of 24 hours to determine if shallow groundwater was present.

The upper unit was typically described as a dry, red and gray, silty sand with some gravel and gravel layers present. The borings were gauged for a minimum period of 24 hours and groundwater was not identified in any of the nine borings. Following the gauging period, the borings were backfilled with cuttings from the drilling operations.

2.3 DEEP SUBSURFACE INVESTIGATION

Upon completion of the shallow subsurface investigation, an investigation of the underlying strata was conducted for the purpose of identifying the uppermost water-bearing zone at the expected depth of 230 feet bgl. This portion of the investigation consisted of the Installation of three test borings to define the interval of the suspected 230-foot uppermost groundwater-bearing zone. Once the subsurface geologic data were obtained through geophysical logs, these data were used to design three monitor wells (MWs) near B-1, B-7, and B-9. A summary of the field activities is presented in Appendix B.

3.0 DATA ANALYSIS

The data collected from the field investigation activities and from past investigations on the WCS property to the east have been used to develop a general model of the site characteristics. The model includes a top of redbed contour map, a hydraulic gradient map of groundwater in the 230-foot zone, and a hydraulic conductivity calculation of the 230-foot zone.

The top of redbed structure map is presented as Figure 4. The top of red bed represents the paleogeographic surface of this unit prior to being covered by the overburden sand and silt material that extends to the current land surface. Based on the structure map there is a northwest-southeast trending ridge in the redbed that is located to the northeast of the subject site. Along the southwest toe of this ridge appears to be a top of redbed drainage that slopes to the south. To the east of the subject site in Section 33, the redbeds generally slope towards this drainage feature. Beneath the site, the drainage feature generally slopes to the southwest corner of the property in an east to west drainage feature. This drainage feature has relief of approximately 40 feet.

A groundwater gradient map from wells completed in the 230-foot zone on the WCS site has been extended to include the groundwater elevation data from Monitor Well MW-2. The groundwater gradient map is presented as Figure 6. The gradient is shown to be in a south-southwesterly direction on the WCS site and appears to be in a south-southeasterly direction in the area of MW-2 on the LES property. The gradient in the area of MW-2 is approximately 0.011 feet per foot.

Based on recovery rates of groundwater in Monitor Well MW-2, the hydraulic conductivity of the 230-foot zone has been calculated at 3.7×10^{-6} cm/sec (3.8 feet/year). The hydraulic conductivity was calculated using Hvorslev's rising head slug test method. The hydraulic conductivity calculations are presented in Appendix E.

Using the calculated groundwater gradient and the hydraulic conductivity value, the groundwater velocity has been calculated to be 0.3 feet per year. The calculation of groundwater velocity is presented in Appendix F. It should be noted that the porosity value used in the calculation was developed from laboratory analysis of soil samples collected from this zone from the WCS site.

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APPENDIX A

LITHOLOGIC LOGS

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LOG OF BORING NO. B-2 Lockwood Greene Engineering and Construction

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				Entry Texas 78701-2000								
			(512)47	4-8097 FAX (512)474-8463								

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LOG OF BORING NO. B-5 Lockwood Greene Engineering and Construction

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	9	AUS (512)47	ITIN, TEXAS 78701-2000 4-0097 FAX (512)474-8463					

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