

January 7, 2004

Alex Tafoya  
San Miguel County  
500 W. National Suite 104  
Las Vegas, NM 87801

**CERTIFIED MAIL**  
**RETURN RECEIPT**  
**REQUESTED**

Reference: Luz Del Sol II

Dear Mr Tafoya:

The Office of the State Engineer has re-reviewed the water supply proposal for the Luz Del Sol (II) subdivision pursuant to the San Miguel County Subdivision Regulations (SMCSR). It is the opinion of this office that, with minor changes, the subdivider's proposal will comply with the county's subdivision regulations. In accordance, a **conditionally positive** opinion is hereby issued. The conditions are underlined in this letter.

The Luz Del Sol proposal is a request to add five additional lots to the 15-lot Luz del Sol subdivision. The 267-acre lot is located approximately 3 miles southwest of the Village of Pecos, in Section 7 of T15N, R12E, N.M.P.M. The developer proposes that water will be supplied to this development via shared 72-12-1 domestic wells.

The geohydrologic report submitted for the original subdivision was done by Glorieta Geoscience (GGI) in December, 1997. In order to develop the report, GGI pump-tested well UP-2550. Preliminary evaluation of this test revealed that the performance of this well was poor. Later evaluations by GGI and OSE concluded that the consultant did not properly analyze the pump test, invalidating the results. Despite this fact, the OSE offered a positive opinion on the original development.

On July 15, 2003, the OSE offered a negative opinion on the development of the five new lots. The developer subsequently hired GGI to pump test two other wells, UP-02827 and UP-02331. GGI wrote a geohydrology report based on all three pump test results. The report included well logs, pump test evaluation, geologic mapping, and a schedule of effects. The performance of the on-site wells, UP-02827 and UP-2550 performed similarly, drawing down over 250 feet at 4 to 5 gallons per minute after 24 hours.

The consultant attributed the data indicating low transmissivity to be the result of borehole storage effects. The consultant did calculations to attempt to confirm this. The calculations, derived by Papadopoulos and Cooper, are used to indicate whether lower transmissivity is due to recharge or storage effects. Calculations should predict where the change in transmissivity will occur if the change is attributable to storage effects. His calculations predicted changes five to six hours later than when they actually occurred. This is significant when one considers that the test is only a 24-hour test. It is my opinion that the varying transmissivities are due to the multiple thin water bearing strata drilled into having different characteristics, the steady state of the cone of depression, and borehole storage effects.

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Due to the fact that the consultant could not verify the cause of varying transmissivities found in the two on-site pump tests, I requested him to use a very conservative transmissivity. The late time recovery data indicates transmissivities similar to that found in late time drawdown analysis. My analysis indicated that a transmissivity of 5.0 ft<sup>2</sup>/day should be used in order to be conservative.

The consultant has created a model of the area wells. While I have minor issues with the model, I do not believe that they have enough effect to change the overall result. The consultant concludes that water will be available for the forty-year period prescribed by the SMCSR. I concur with this opinion.

The County Commission should require that the language regarding water supply in the original disclosure statement be in this development's disclosure statement. In disclosure statement #19, potential lot purchasers are made aware that the wells that they will be required to drill will be nominal producers and will probably exceed 700 feet in depth. The fact that this type of well could cost up to \$25,000 fully equipped should be added to this statement.

While the wells on-site are poor, they are sufficient for domestic use, provided that water use is kept to a minimum. In order to do this, the County Commission should require the developer to add the water conservation measures listed in Appendix E, Part A of the SMCSR to his disclosure statement and restrictive covenants. In disclosure statement #17, the developer has restricted lots to 500 square feet of lawn area and 5000 square feet of "planted area"; this is inconsistent. The "planted" area should not be allowed. The limit of 500 square feet of lawn area should be added to the restrictive covenants.

Due to the fact that GGI showed water availability for individual domestic wells, the uncertainty involved in predicting the long-term availability in fractured aquifers, the short duration of the tests when one considers the borehole storage, and the poor performance of the wells, it is my opinion that the wells in this subdivision should be shared by no more than two households. This limitation should be included in the disclosure statement.

If you have any questions regarding this opinion, please feel free to call me at (505) 827-6790.

Sincerely,

Patrick J. Romero, P.E.  
Water Resource Engineer  
Cc: Brian C. Wilson, P.E., Water Use and Conservation Bureau