

August 12, 2008

Brad Stebleton
Senior Planner
Sandoval County
P.O. Box 40
Bernalillo, NM 87004

CERTIFIED MAIL
RETURN RECEIPT
REQUESTED

Re: Lands Of Brinkerhoff Subdivision

Dear Mr. Stebleton:

The Water Use & Conservation/Subdivision Review Bureau of the Office of the State Engineer has reviewed the referenced subdivision proposal pursuant to the Sandoval County Subdivision Regulations and the New Mexico Subdivision Act.

Based on the information provided, this office cannot determine that the subdivider can furnish water sufficient in quantity to fulfill the maximum annual water requirements of the subdivision, including water for indoor and outdoor domestic uses, and that the subdivider can fulfill the proposals in his disclosure statement concerning water, excepting water quality. Accordingly, a **negative** opinion is issued.

A staff memorandum providing specific comments is attached for your information. If you have any questions, please call Jerry Keller at 505-827-3845.

Sincerely,

John W. Longworth, P.E.
Water Use & Conservation/Subdivision Review Bureau Chief

Encl.

cc: OSE Water Rights Division, Albuquerque Office

JK:jk

MEMORANDUM
New Mexico Office of the State Engineer
Water Use and Conservation Bureau

DATE: August 11, 2008

TO: John Longworth, P.E. Water Use & Conservation Bureau Chief

FROM: Jerry Keller, Senior Water Resource Specialist

SUBJECT: Lands Of Brinkerhoff Subdivision, Sandoval County

SUMMARY

On July 15, 2008 the Office of the State Engineer (OSE) received a request to review the Preliminary Plat for Lands Of Brinkerhoff, a Type-Three Subdivision. The proposal is a request to subdivide a 5.0-acre parcel into 3 residential lots ranging in size from 1.34 acres to 1.83 acres each. The proposed water supply is by one shared 72-12-1 domestic well. The property is located approximately 1 ½ miles northeast of Placitas on the north side of Camino de la Rosa Casitlla, within projected Sections 27 and 28, Township 13 North, Range 5 East, NMPM.

The proposed subdivision is located within the area subject to the requirements of Appendix "A" of the Sandoval County Subdivision Regulations. Section 10 of Appendix "A" sets out the requirements for Summary Procedure. The geographic area is subject to unique circumstances or conditions that require additional review under the Summary Procedure beyond the provisions for such review under Article 4 of the Sandoval County Subdivision Regulations.

The water supply documents submitted to this office consist of a Disclosure Statement, Shared Well Agreement, Restrictions & Covenants, and a Water Supply Evaluation Report (Geohydrologic Report).

The proposal was reviewed pursuant to the Sandoval County Subdivision Regulations and Appendix "A" of the Sandoval County Subdivision Regulations (Regulations), and the New Mexico Subdivision Act (Act). Based on the information provided, the water supply proposal is not in compliance with the requirements of Sections 4.A and 10.A.F of Appendix "A" of the Regulations and Section 47-6-11-F- (1) the Act. Accordingly, a **negative** opinion should be issued.

WATER DEMAND ANALYSIS AND WATER CONSERVATION

The Disclosure Statement for a subdivision that qualifies for Summary Procedure under Section 4.2.5 of the Regulations only requires the subdivider to state the means of water delivery.

Section 4.A of Appendix "A" requires that the subdivider prove water exists within the boundaries of the subdivision in sufficient quantity to provide 85 gpm per capita per day per dwelling unit plus water needed for landscaping up to a maximum of 0.5 acre-feet per household per year.

The Water Supply Evaluation Report contains a copy of the Wild Horse Mesa Subdivision water demand analysis. The Wild Horse Mesa Subdivision is located approximately 1 ¾ miles northwest of the proposed subdivision. The annual water demand is estimated as 0.30 acre-feet, assuming 2.7 persons per dwelling at 74.6 gallons per person, 400 square feet of turf grass, 500 square feet of drip irrigated trees or shrubs and 150 square feet of drip irrigated garden area.

The Restrictions & Covenants and the Shared Well Agreement do not contain any water use restrictions or conservation measures or any other means of enforcing the water use limits contained in the water demand analysis. The water quantities and conservation measures established in the water demand analysis are the basis for the water availability assessment contained in the Geohydrologic Report.

WATER AVAILABILITY ASSESSMENT

Item No. 7 of the Disclosure Statement and the Geohydrologic Report specifies that the source of water shall be a shared domestic well. However, the Shared Well Agreement does not obligate the owner of any lot to share the existing well.

The subdivider submitted a Geohydrologic Report as required by Section 8.6 and Section 10 of Appendix "A" of the Regulations. The Geohydrologic Report indicates the information is based on the water availability requirements in Section 8.6.4.a through 8.6.4.e of the general Regulations. Section 10.A.F of Appendix "A" specifies that Section 4.A of Appendix "A" shall apply to all Summary Subdivisions of land within the Placitas Area.

OSE Hydrology Bureau, as well as the Water Use and Conservation Bureau, reviewed the Assessment. The Hydrology Bureau's comments are summarized in the attached memorandum.

PROPOSED DOMESTIC WELLS

Domestic wells are permitted under Section 72-12-1.1 NMSA 1978 which states:

A person, firm or corporation desiring to use public underground waters described in this section for irrigation of not to exceed one acre of noncommercial trees, lawn or garden or for household or other domestic use shall make application to the state engineer for a well on a form to be prescribed by the state engineer. Upon the filing of each application describing the use applied for, the state engineer shall issue a permit to the applicant to use the underground waters applied for; provided that permits for domestic water use within municipalities shall be conditioned to require the permittee to comply with all applicable municipal ordinances enacted pursuant to Chapter 3, Article 53 NMSA 1978.

Updated rules and regulations on 72-12-1.1 domestic well permits were adopted on August 15, 2006 and filed under Title 19, Chapter 27, Part 5 of the New Mexico Administrative Code (19.27.5 NMAC). The updated rules and regulations replaced Articles 1-15 through 1-15.5, 1-15.7, 1-15.8,

and 1-16 of the existing Rules and Regulations Governing the Drilling of Wells and the Appropriation and Use of the Ground Water in New Mexico.

On July 10, 2008 a decision issued by Judge J. C. Robinson of the Sixth Judicial District Court in Silver City held that the Domestic Well Statute (72-12-1.1) is unconstitutional, is an impermissible exception to the state doctrine of prior appropriation, and that the State Engineer should be required to administer applications for domestic well permits in the same manner as all other applications to appropriate water.

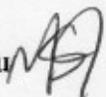
Statutes enacted by the legislature are given the presumption of constitutionality; therefore, the State Engineer has appealed the decision to the New Mexico Court of Appeals. **The appeal stays enforcement of the decision, therefore, the State Engineer will continue to accept and act on domestic well applications pending a ruling by the appellate court.**

MEMORANDUM
OFFICE OF THE STATE ENGINEER
Hydrology Bureau

DATE: August 8, 2008

TO: Jerry Keller, Water Use and Conservation Bureau

FROM: Mike Sully, Hydrology Bureau

THROUGH: Mike Johnson, Chief, Hydrology Bureau 

SUBJECT: *Comments on Water Supply Evaluation Brinkerhoff Land Division Lot 8-A, Lot 8-B, and Lot 8-C, San Antonio De Las Huertas, Placitas, New Mexico by Rocky Mountain Geotech Inc., April, 2008.*

Introduction

This memo provides comments on the report entitled *Water Supply Evaluation Brinkerhoff Land Division Lot 8-A, Lot 8-B, and Lot 8-C, San Antonio De Las Huertas, Placitas, New Mexico* prepared by Rocky Mountain Geotech Inc. dated April 3, 2008. The Brinkerhoff Land Division subdivision is located near Placitas within Sections 27 & 28, Township 13 North, and Range 5 East in the "Appendix A" area of Sandoval County. The subdivision will consist of 3 residential lots on 4.85 acres.

These comments are prepared to fulfill Sections 47-6-11.F(1)a-b NMSA which authorize the State Engineer to determine:

1. Whether the subdivider can furnish sufficient water for the subdivision, and
2. Whether the subdivider can fulfill the proposals in his disclosure statement.

The determination for Item 1 above is made in accordance with Sandoval County regulations 8.6.4, 8.6.7, 8.7.2, and Appendix A to Sandoval County Subdivision Regulations. These regulations generally describe the requirements for demonstrating that sufficient water is available to serve the subdivision. Appendix A contains additional requirements that apply to the portion of the county in which the Brinkerhoff Land Division subdivision lies.

Water Supply

The source of the water for the subdivision is unclear. Testing and calculations in the report suggest that the water will come from a single shared domestic (72-12-1) well. The Shared Well

Agreement, however, provided with the Disclosure Statement states that the Lot Owner is not obliged to use the established well and can establish their own well. The subdivider has drilled and tested the proposed shared supply well. The report states that the withdrawal from each lot will be limited to 0.3 acre-feet/year and that the landowner will impose water use restrictions to insure that individual residential lot usage can be limited to 0.3 acre-feet/year per lot. However, the Restrictive Covenants (CCRs) do not contain provisions for limiting water use as required by Section 3 H. of Appendix A.

The water bearing formation is described as sediments of the upper Santa Fe Group conglomerate and sand deposits. While a depth to water of 119 feet in the test well is provided, there is no information in the report as to the maximum and minimum depths to water in the subdivision as required.

Well RG-89858 was drilled to a total depth of 240 feet bls. The casing size was 4.5-inch diameter, but the casing material was not specified in the report. According to the report perforations were set between 200 and 240 feet bls. The required description of well construction including a description of the emplacement of a 2-foot thick bentonite seal was not included in the report. A description of well development was not included in the report.

Required drilling logs are not included in the report. The report refers to a drilling log in Appendix A and states on page 6 that Rocky Mountain Geotech Inc (RMG) logged the well. The contents of Appendix A indicate that the Murray Well Drilling Logs for RG-89858 are contained in the Appendix. However, there are no drilling logs in Appendix A from either RMG or Murray Well Drilling.

The required step-drawdown aquifer test was not documented in the report and may not have been conducted. The report describes a 30-minute period of static water level measurement prior to the constant-pumping rate test. Documentation of the measurement of static water levels for the required 48 hours prior to hydraulic testing was not included in the report.

A constant-pumping rate test was conducted at a constant discharge of 7 gpm. The location of the pump for the constant-pumping rate test was not described. Both drawdown and recovery data for the pumping well were acquired. No data were obtained from observation wells. Water level readings were recorded using pressure transducers. At this pumping rate a maximum drawdown of approximately 30 feet (Figure 5) was observed. According to the report approximately 12 hours into the constant-pumping rate test power to the pump was cut off. This event allowed a nearly complete recovery of water level before pumping was restarted. From the water level data in Figure 5, at approximately 11.5 hours after pumping was restarted the recorded water levels became erratic and had only just begun to stabilize when the recovery portion of the test was begun. With the interruption to the test and the unexplained noise in the water level data beginning in day 2 of the test, the minimum required duration for the test of 1000 minutes was not achieved.

Drawdown data were analyzed in the report to obtain the transmissivity by plotting the drawdown on a linear scale as a function of time on a linear scale. The recommended procedure for calculating transmissivity from a time-drawdown plot requires plotting points on semi-log axes to define a straight line from which a slope can be determined. This practice was not followed in the data interpretation in the report (Figure 5). For the calculation the change in drawdown with time over 1 log cycle (e.g. 100-1000 minutes) is required, however water levels during the drawdown phase were never stable for a complete log cycle.

For the RMG recovery analysis, water level is plotted on a linear scale as a function of time on a linear scale to determine a change in water level with time. Transmissivity is calculated in the report from the recovery data in the same way that it is calculated from the drawdown data. The equation used is

$$T = \frac{264 Q}{\Delta s}$$

where

T = coefficient of transmissivity [gpd/ft]

Q = pumping rate [gpm]

Δs = slope of the time-drawdown plot

This is not a correct method for analysis of recovery data. While drawdown measurements are required for analysis of a drawdown test, analysis of a recovery test requires measurements of water level based on the pumping water level. Analysis of recovery data relies on linear relationships between calculated recovery and the log of time after pumping has stopped or between residual drawdown and the log of the ratio of time since pumping started and time since pumping stopped.

The flat slopes on both the drawdown and recovery curves as plotted in Figure 5 make the results more difficult to interpret. This problem could have been avoided by using a higher pumping rate. Determining the appropriate pumping rate is the purpose of the step-drawdown test. However, this test was not conducted as required.

In the calculation of transmissivity shown in Figure 5 a value of 9 gpm was used for the discharge rate. In the description of the test on page 6 the discharge rate is specified as 7 gpm. The value of 9 gpm was used to calculate a value of 2,700 gpd/ft for the transmissivity that was used in subsequent calculations. The discrepancy in discharge rate should be resolved. If the discharge rate was in fact 7 gpm as described in the text, subsequent calculations and model results involving transmissivity as a parameter are in error. Given the errors in analysis and calculations the requirement to provide reliable estimates of aquifer transmissivity and hydraulic conductivity have not been met.

Water Availability

Rocky Mountain Geotech (2008) evaluated water availability based on data from constant rate aquifer tests, groundwater models and calculations of groundwater available in storage.

The calculations for groundwater in storage show that the subdivision meets the minimum requirements for Sandoval County. Minimum lot size calculations required by Appendix A were not provided in the report.

No plots or tables were provided in the report describing the location of all known and permitted domestic wells within ½ mile or all known and permitted municipal, industrial and agricultural wells within a 1-mile radius of the proposed development borders as required. A groundwater model was used to evaluate drawdowns at the subdivision well and at a distance of 1000 feet at 1 year and 100 years. Results of the modeling are not reliable as the calculation of the aquifer transmissivity value required by the model is flawed as discussed above. The impacts to surrounding wells were not evaluated in the report.

No quantitative evaluation of the potential effects on surface watercourses is made. Spring locations are not mapped. Local hydrogeologic conditions that may lead to effects on nearby springs are not discussed. The report simply states that there should be no effect.

Disclosure Statement

Calculations contained in the geohydrologic investigation report are based on a limited water use of 0.3 acre-feet/year per lot. However, no such restriction appears in the Disclosure Statement or the Shared Well Agreement. The Disclosure Statement states that the source of water shall be a shared domestic well while the Shared Well Agreement appears to contradict this stating that there is no obligation on any Lot Owner to utilize the established well. The disclosure statement contains no detailed water supply information. The draft CCRs do not describe water use restrictions or penalties for exceeding domestic limits.

Other Comments

This report lacks a number of components required by Sandoval County regulations 8.6.4, 8.6.7, 8.7.2, and Appendix A to Sandoval County Subdivision Regulations. In addition, quality problems with data collection and inappropriate analysis methods render the report conclusions unreliable. Deficiencies include:

- No well log
- Incomplete description of well construction
- No description of well development
- No step-drawdown test
- No minimum 48 hours of static water level measurements prior to pump test
- Poor quality constant-rate test data

- Inappropriate drawdown and recovery test analysis methods
- Error in transmissivity calculation
- No reliable estimates of aquifer parameters
- No minimum lot size calculation
- No listing of nearby wells that may be affected
- Modeling results are unreliable due to problems with aquifer parameter measurements
- No calculation of potential impacts to nearby wells.
- No quantitative evaluation of potential effects on nearby surface watercourses.

Conclusions

- Due to gaps in required information and quality issues with the report, the availability of water has not been demonstrated in accordance with Sandoval County regulations.
- The results of data collection and analysis described in the report indicate that the subdivider will be able to fulfill the proposals in his Disclosure Statement. The disclosure statement does not include specific limits on the amount of water consumed per household plus water needed for outdoor landscaping or a description of penalties imposed for exceeding limits.