



**STATE OF NEW MEXICO**  
**OFFICE OF THE STATE ENGINEER**  
**Santa Fe**

John R. D'Antonio Jr., P.E.  
State Engineer

September 28, 2005

BATAAN MEMORIAL BUILDING, ROOM 102  
SANTA FE, NEW MEXICO 87504-5102  
(505) 827-6120  
FAX: (505) 827-6682

Mr. Curt Temple  
Planning Director  
Lincoln County  
P.O. Box 711  
Carrizozo, NM 88301

**CERTIFIED MAIL**  
**RETURN RECEIPT**  
**REQUEST**

**Re: Lincoln Hills subdivision and golf course**

Dear Mr. Temple:

On August 29, 2005, the Office of the State Engineer (OSE) received new and amended documents regarding the water supply for "Lincoln Hills". The proposal is a request to develop 682.35 acres of land into 237 residential lots and a golf course. The proposed development is 2 ½ miles north-east of Alto Lake, within Section 25, Township 10 South, Range 13 East, and within Sections 29 and 30, Township 10 South, Range 14 East, NMPM. Water will be provided by a community system designed and built for this subdivision and for the golf course. This submittal was reviewed pursuant to the Lincoln County Land Subdivision Regulations and the New Mexico Subdivision Act.

This office issued a positive opinion on the subdivision on July 29, 2005. However, this office was later advised that a golf course will be built in the same area and that it will be supplied with water from the same community water system. In view of the fact that the water budget provided in the original proposal did not account for the golf course water demand, this office withdrew the positive opinion with a letter dated August 18, 2005.

It must be noted that the first proposal did not include a water demand analysis for the golf course, but did include a single statement on the golf course acreage (under Item D of the Disclosure Statement). However, this statement should have initiated inquiries in our July letter. We apologize for this overlook.

The developer has now quantified the maximum annual water requirements for the golf course and demonstrated water availability. Therefore, a positive opinion is issued for this proposal based on the terms submitted.

## **WATER AVAILABILITY ASSESSMENT**

The geohydrological analysis states that the developer has 193.2 acre-feet per year of water rights for subdivision and golf course purposes, under permit H-694 and H-694-S. It is not completely accurate.

A review of the OSE records show that under adjudication order OSE file H-694, Lincoln Hills was recognized as having the right, with a priority date of June 28, 1968, to use 193.2 acre-feet of water from well H-694 for subdivision and golf course use within Pt. S  $\frac{1}{2}$  SE  $\frac{1}{4}$  of Section 25, Township 10 South, Range 13 East, Pt W  $\frac{1}{2}$  of Section 29, and Pt. S  $\frac{1}{2}$  S  $\frac{1}{2}$  NE  $\frac{1}{4}$  of Section 30, both in Township 10 South, Range 14 East, NMPM.

Permits for supplemental wells H-694-S and H-694-S-2 were subsequently approved by the OSE. A change of ownership for 193.2 acre-feet per year to Hunter's Draw LLC is on file with the OSE. A permit to change the place of use of the water right has been approved by the OSE in May 2005. The approved place of use encompasses Lincoln Hills.

Section 17.4 of the Lincoln County Subdivision Regulations requires a geohydrologic report to demonstrate that groundwater sufficient to meet the maximum annual water requirement of the subdivision is physically available to sustain the development for a continuous period of 40 years. The documentation must also contain information showing the volume and peak rate of production of water required in each month to supply each use at full development of the subdivision.

The OSE Hydrology Bureau provided the review of the geohydrological analysis for this opinion. They reached the conclusion that wells H-694 and H-694-S will be able to sustain a production of 193 acre-feet per year for the prescribed 40 years. A copy of the Hydrology Bureau memorandum, dated September 27, 2005 is attached (Attachment 1).

Since the two (2) wells will supply irrigation water to a golf course and part-time residents, there will likely be periods of peak water demand associated with seasonal demand. The timing and extent of peak use is uncertain, but it may result in temporary overdraft of water from either well, necessitating curtailment of peak-demand pumping. However, the developer is holder of a OSE permit to drill a third well (H-694-S-2), and the three (3) wells combined would be able to produce the peak rate demand.

## **WATER DEMAND ANALYSIS**

The developer had provided, with the previous proposal, a water demand analysis for the 237 residential lots, pursuant to Section 18.2.B of the County Subdivision Regulations. This office found the estimate of 59.3 acre-feet per year to be reasonable (see letter dated July 29, 2005).

Since the current proposal does not amend the residential water budget, the July 2005 comments remain valid.

The current proposal provides the water budget for the golf course, as required by Section 18.2.C of the County Subdivision Regulations. Page 13 of the geohydrological analysis states that the golf course planned as part of the Lincoln Hills development is still to be designed, but that the total irrigated acreage will be 45.4 acres, that the irrigated turf will consist of Kentucky blue grass, and that it will not include a clubhouse. Therefore, the developer has provided the quantification of the water requirement only for the irrigation of 45.4 acres of Kentucky blue grass.

The consultant derived the field delivery requirement for Kentucky blue grass from Appendix C of OSE Technical Report 48 (Wilson, 1996). Wilson calculated the irrigation water requirement for cool season and warm season turf grasses for various locales in New Mexico using the Original Blaney Criddle method, long-term weather data, and assuming an application efficiency of 50%. Based upon this data the consultant quantified the annual field delivery requirement at 109 acre-feet.

The following omissions and discrepancies were found in the current proposal:

- Page 13 of the geohydrological analysis states that the golf course irrigated acreage is 45.4, while page 3 of the developer's Disclosure Statement states that the golf course acreage is 224.714.
- The proposal is silent on the surface area (and associated evaporative losses) of any man-made water features associated with the golf course.
- Page 13 of the geohydrological analysis states that a clubhouse is not planned for the golf course and that golfers will use a nearby non-Lincoln Hills facility, while page 5 of the document entitled "*Domestic Water Demands, Water Distribution System and Water Quality Information, June 2005*" specifies that the subdivision well is located near the proposed clubhouse.

Following telephone inquiries from the developer's consultant, the following information and calculations were submitted to the OSE:

1. The golf course will include two (2) lined ponds with a surface area of 0.79 acres each. The evaporative losses would amount to 1.975 acre-feet per year (see Attachment 2 and 3).

*Mr. Curt Temple  
September 28, 2005  
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*Lincoln Hills*

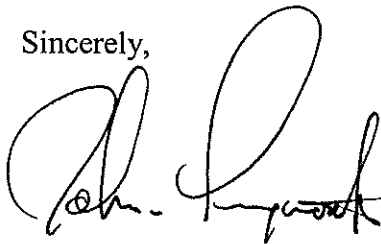
3. There will be a small satellite clubhouse on site with restrooms and a snack bar. Showers and restaurant will not be included in the facility. The developer has estimated the maximum water demand at 1.1 acre-feet per year (see Attachment 5).

The water demand for the golf course would amount to 112.1 acre-feet per annum, which would bring the total water use for Lincoln Hills to 171.38 acre-feet per year. This amount is well within the developer's water right of 193.2 acre-feet per year.

It is the opinion of this office that the water requirement has been calculated properly, with the exception of the clubhouse, which could require more than 0.5 acre-feet, depending on the number of customers and the kitchen operation, but it is reasonable to assume that it would not require the remaining 21.8 acre-feet per year the developer is entitled to use.

If you have any questions, please call me at (505) 827-6121.

Sincerely,



John W. Longworth, P.E.  
OSE Water Use and Conservation Bureau Chief

Attachments: Four (4)

**MEMORANDUM**  
**OFFICE OF THE STATE ENGINEER**  
*Hydrology Bureau*

**DATE:** September 27, 2005

**TO:** Mara Smith, Water Use Bureau

**THROUGH:** Tom Morrison, P.E., Chief, Hydrology Bureau *TM*

**FROM:** Douglas Rappuhn, Hydrology Bureau *DR*

**SUBJECT:** Proposed Lincoln Hills Subdivision near Alto, Lincoln County; Evaluation of 40-year water supply from Wells H-694 and H-694-S

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Applicant's consultant Daniel B. Stephens & Associates, Inc. (DBSA) submitted a revised "*Geohydrologic Analysis of Water Supply for the Proposed Lincoln Hills Subdivision*" (DBSA Geohydrologic Analysis), dated August 29, 2005, directly to the NMOSE in response to a recently-rescinded positive opinion on the project from the Water Use Bureau. Rescission of NMOSE opinion occurred when it was discovered that the applicant had not presented detail on a planned golf course to be built within the proposed subdivision, and to be supplied by the subdivision's wells.

The DBSA Geohydrologic Analysis states a maximum water demand for the subdivision of 168.25 AFY, based on a projected 59.25 AFY demand for general subdivision use, and 109 AFY golf course demand. The NMOSE Water Use Bureau has requested that the Hydrology Bureau evaluate 40-year supply of the applicant's water right of 193.2 AFY from existing applicant wells H-694 and H-694-S. The wells were simulated to remain viable sources of the supply of the 193.2 AFY right over the 40-year planning period when pumped at constant rates of 50 gpm (H-694) and 70 gpm (H-694-S).

**Aquifer systems within the Applicant tract**

As evidenced by the Applicant's current two wells, at least two aquifer systems are found below Applicant land. The shallow aquifer is comprised of water-bearing beds of Cretaceous sediments west of the Ruidoso Fault Zone and water-bearing beds of Cretaceous, Triassic, and upper Permian sediments in and immediately east of the Ruidoso Fault Zone. The shallow aquifer demonstrates unconfined to semi-confined response based on information contained in local Well Records.

The deeper aquifer is found within the Permian San Andres / Glorieta Formations below the shallower units on both sides of the fault zone. It becomes the semi-confined to unconfined upper regional aquifer further east where the overlying bedrock deposits

pinch-out due to faulting/folding and erosion. The deeper aquifer demonstrates a confined response in the area of the applicant tract based on information contained in applicant and local Well Records.

### **Applicant wells**

The Applicant currently maintains two wells, H-694 and H-694-S. Well Records, identifying production beds, are attached in Appendix 1. Well H-694 was drilled (T10N-R14E-Sec 30.14122) to a total depth of 425' bgl, penetrating beds of Cretaceous limestone, shale, and sandstone. Initial static water level was 150' bgl, in November 1966. Static water level at time of June 2004 test-pumping was approximately 121' bgl.

Current Well H-694-S (T10N-R14E-Sec30.32211) replaces former Well H-694-S. Well Records for the original 198' well, which was deepened twice (to 702' bgl, August 1986; and to 800' bgl, November 1990) and the 1580' replacement well, completed April 2005, are also attached in Appendix 1. Static water level in H-694-S has been recorded as 127' bgl when the well was 198' deep; 455' bgl when the well was 702' deep, and 500' bgl when the well was 800' deep. The current well H-694-S, drilled April 2005, is 1580' deep, with a recorded static water level of 1,029' bgl. The current H-694-S was constructed with 180' of casing, and was drilled at approximately the same location as the former H-694-S, but penetrates the shallower and a deeper sequence of clays, shales, sandstones, and limestones that represent the San Andres and Glorieta units at depth.

### **Onsite test-pumping, and evaluation**

Test-pumping was conducted at both of the current applicant wells. Well H-694 was test-pumped by Atkins Engineering, in June 2004, and H-694-S was test-pumped by DBSA in May 2005. Test data and water level plots are contained within the DBSA Geohydrologic Analysis. NMOSE evaluation of the test-pumping data relies on a conservative approach in estimating aquifer parameters to incorporate uncertainty in estimating effects when actual aquifer boundaries and properties may be incompletely characterized.

#### **H-694 (shallow aquifer)**

NMOSE review of the H-694 test recovery data plot estimates a transmissivity of 1,025 gpd/ft, in general concurrence with the DBSA-calculated value of 1,183 gpd/ft. NMOSE calculates a drawdown-phase transmissivity of 890 gpd/ft. Static water level in the completed well indicates an unconfined aquifer response, although the uppermost production zone tapped by the well lies below a 151' sequence of bedded clays and shale from that depth back to land surface. An average transmissivity of 960 gpd/ft, and conservative semi-confined storage coefficient of 0.005 was used in NMOSE simulations of 40-year sustainability of water supply and well viability.

#### **H-694-S (deep aquifer)**

NMOSE review of H-694 test data, test data plots, and well response leads to somewhat different conclusions than the DBSA-calculated 1,518 gpd/ft value of transmissivity and suggested storage coefficient range of 0.01 to 0.10. Pumping rate inconsistencies were

commonplace in the Applicant's 5-day constant-rate test. The recovery test data curve may be used to estimate transmissivity, although the drawdown curve shows the effects of a decreasing pumping rate over at least the last two days of pumping, leading to speculation regarding appropriate pumping rate to use for analysis. Limited portions of the drawdown curve appear to reflect a drawdown trend likely associated with a fairly constant, although poorly documented, pumping rate. NMOSE review of the data plots suggests conservative transmissivity estimates as low as 600 gpd/ft based on recovery data and a pumping rate of 270 gpm, and 870 gpd/ft based on drawdown data and same pumping rate. An average transmissivity value of 735 gpd/ft, and confined storage coefficient of 0.0001 were used in NMOSE simulations of 40-year sustainability of water supply and well viability.

### **Estimation of 40-year diversion effects from Applicant wells**

The DBSA Hydrogeologic Analysis notes that the Applicant wells will be used to divert equal amounts of the subdivision demand of 168.25 AFY. Diversion of the Applicant right of 193.2 AFY, rather than stated maximum demand of 168.25 AFY, was simulated as a conservative evaluation case. The NMOSE Theis Program was used in the analysis. The Theis program assumes no recharge to the pumped aquifer over the course of the 40-year simulation, as well as homogeneity and infinite extent of the aquifer.

Two scenarios were run to estimate effects associated with the diversion of the full Applicant right (193.2 AFY, which is equivalent to 120 gpm pumped constantly). Simulation of a 120 gpm diversion was undertaken via 60 gpm per well in Scenario 1, and via 50 gpm from H-694 and 70 gpm from H-694-S in Scenario 2.

In the simulations, different aquifer characteristics were employed per aquifer. Head level differences and lack of response between aquifers during test-pumping suggest the effects may be simulated independently. Estimates of well efficiency, based on designs of the applicant wells, were applied to calculated 40-year drawdowns to incorporate elements of uncertainty in the drawdown estimates related specifically to the applicant's pumped wells.

### **Results**

The results of the NMOSE simulations, by Scenario, are presented below, in Table 1.

#### **Scenario 1**

Scenario 1 resulted in a 53' remaining water column in H-694, and a 252' water column remaining in H-694-S after 40 years. While the 53' column retained water in the deep production bed in H-694, an upper production bed at 320 – 442' bgl was found to dewater. The Well Record does not differentiate the amount the different production beds contribute to total yield, and it is uncertain whether this may represent an inability for the well to adequately supply 60 gpm for 40 years. The uppermost production bed at 151 – 159' bgl was also simulated to dewater, although this occurred within the first 30

minutes of the June 2004 test-pumping, without harming the well's ability to pump 130 gpm for the entire test.

Well H-694-S was found to retain water above its uppermost production beds throughout the 40-year Scenario 1 simulation.

### **Scenario 2**

Scenario 2 resulted in production capabilities of both Applicant wells retaining water column above production beds for the 40-year simulation by shifting a small amount of total production from H-694 to H-694-S. At the end of the simulated pumping, H-694 was found to retain a 90' water column (12' of water above the top of the middle production bed).

Well H-694-S was found to retain a 208' water column (38' of water above the top of the upper production bed) after simulated pumping of 70 gpm for 40 years.

The two scenarios were run at a constant rate of pumping for the simulated 40-year planning period, and under Scenario 2, were found to retain viability of their entire production zones. Since the wells will supply irrigation water to a golf course, there will likely be periods of peak water use associated with seasonal irrigation demand. The timing and extent of peak use is uncertain, but may result in temporary overdraft of water from either well, necessitating curtailment of peak-demand irrigation pumping.

Additionally, the design of Well H-694-S appears problematic, and capable of generating undue effects, as it's upper, open annulus may allow the gravitational discharge of shallow aquifer water into the deep aquifer, given the head differential between aquifers.

DHR:dr



Table 1. Well construction information, yield, and NMOSE-simulated parameters and results for Lincoln Hills Subdivision wells.

A	B	C	D	E	F	G	H	I	J	K	L	M	N
Well / aquifer	Well depth (feet)	Top of well production zone (feet bgl)	Bottom of production zone (feet bgl)	Static water level (feet bgl)	Productive water column (feet)	Applicant-tested yield (gpm)	NMOSE simulated yield (gpm)	NMOSE simulated transmissivity (gpd/ft)	NMOSE simulated storage coefficient	NMOSE simulated 40-year drawdown (feet)	NMOSE simulated 40-year drawdown at noted well efficiency(*) (feet)	Depth to water at end of 40-year simulation at noted well efficiency (feet bgl)	Productive water column remaining after 40-year simulation at noted well efficiency (feet)
Scenario 1					[D-E]						[K/efficiency]	[E+L]	[D-M]
H-694 Shallow	425	151	398	121	277	130	60	960	0.005	157	224	345	53
H-694-S Deep	1580	1377	1547	1029	518	240 – 300+	60	735	0.0001	239	266	1295	252
Totals						370 – 430+	120						
Scenario 2													
H-694 Shallow	425	151	398	121	277	130	50	960	0.005	131	187	308	90
H-694-S Deep	1580	1377	1547	1029	518	240 – 300+	70	735	0.0001	279	310	1339	208
Totals						370 – 430+	120						

(\*): Well efficiency for H-694 was estimated at 70% (0.7); well efficiency for H-694-S was estimated at 90% (0.9), based on well design.

## **APPENDIX 1**

### Well Records, current wells:

H-694 (File No. 14 (Misc Lincoln)) [Driller: McClendon Drilling; completed 11/5/1966, to 425']  
H-694-S [Driller: K.D. Huey Company; completed 4/4/2005, to 1580']

### Well Records, original H-694-S and deepenings:

H-694-Expl [Driller: Hydro-Tech Drilling; completed 12/7/1985, to 198']  
H-694-S [Driller: RWS Drilling; completed 8/26/1986, deepened above well to 702']  
H-694-S [Driller: RWS Drilling; completed 11/26/1990, deepened above well to 800']

WELL RECORD

INSTRUCTIONS: This form should be executed in triplicate, preferably typewritten, and submitted to the nearest district office of the State Engineer. All sections, except Section 5, shall be answered as completely and accurately as possible when any well is drilled, repaired or deepened. When this form is used as a plugging record, only Section 1A and Section 5 need be completed.

Section 1

(A) Owner of well LINCOLN HILLS, INC., a New Mexico corporation

	Y		

Street and Number \_\_\_\_\_  
 City Ruidoso State New Mexico  
 Well was drilled under Permit No. None and is located in the  
SE 1/4 N 10 W 1/4 of Section 30 Twp. 10S Rge. 14E  
 (B) Drilling Contractor McLendon Drilling Ser. License No. 746  
 Street and Number 2922 Combalde St.  
 City Alamogordo State New Mexico  
 Drilling was commenced Sept. 8, 1966  
 Drilling was completed Nov. 5, 1966

(Plat of 640 acres)

Elevation at top of casing in feet above sea level 6730 Total depth of well 425'  
 State whether well is shallow or artesian Shallow Depth to water upon completion 190'

Section 2

PRINCIPAL WATER-BEARING STRATA

No.	Depth in Feet		Thickness in Feet	Description of Water-Bearing Formation
	From	To		
1	151	159	8	Line Stone
2	320	342	22	Sandstone Blue
3	387	398	21	Sandstone Blue
4				
5				

Section 3

RECORD OF CASING

Dia in.	Pounds ft.	Threads in	Depth		Feet	Type Shoe	Perforations	
			Top	Bottom			From	To
123/4" O	30	Welded	0	425	425		278'	425'

Section 4

RECORD OF MUDDING AND CEMENTING

Depth in Feet		Diameter Hole in in.	Tons Clay	No. Sacks of Cement	Methods Used
From	To				

Section 5

PLUGGING RECORD

Name of Plugging Contractor \_\_\_\_\_ License No. \_\_\_\_\_  
 Street and Number \_\_\_\_\_ City \_\_\_\_\_ State \_\_\_\_\_  
 Tons of Clay used \_\_\_\_\_ Tons of Roughage used \_\_\_\_\_ Type of roughage \_\_\_\_\_  
 Plugging method used \_\_\_\_\_ Date Plugged \_\_\_\_\_ 19 \_\_\_\_\_  
 Plugging approved by: \_\_\_\_\_

Cement Plugs were placed as follows:

No.	Depth of Plug		No. of Sacks Used
	From	To	

Basin Supervisor \_\_\_\_\_  
 FOR USE OF STATE ENGINEER ONLY  
 Date Received \_\_\_\_\_  
 NOV 10 AM 8:25

File Number: H-694-S

NEW MEXICO OFFICE OF THE STATE ENGINEER  
WELL RECORD

1. OWNER OF WELL

Name: Hunter's Draw LLC Work Phone: \_\_\_\_\_  
Contact: Randy Price Home Phone: \_\_\_\_\_  
Address: PO BOX 1101  
City: ALTO State: NM Zip: 88312

2. LOCATION OF WELL (A, B, C, or D requires, E or F if known)

A. NE 1/4 NE 1/4 SW 1/4 Section: 30 Township 10S Range: 14E N.M.P.M.  
in LINCOLN County.

B. X = \_\_\_\_\_ Feet, Y = \_\_\_\_\_ feet, N.M. Coordinate System  
Zone in the \_\_\_\_\_ Grant.  
U.S.G.S. Quad Map \_\_\_\_\_

C. Latitude: \_\_\_\_\_ d \_\_\_\_\_ m \_\_\_\_\_ s Longitude: \_\_\_\_\_ d \_\_\_\_\_ m \_\_\_\_\_ s

D. East \_\_\_\_\_ (m), north \_\_\_\_\_ (m), UTM Zone 13, NAD \_\_\_\_\_ (27 or 83)

E. Tract No. \_\_\_\_\_ Map No. \_\_\_\_\_ of the \_\_\_\_\_ hydrographic survey

F. Lot No. \_\_\_\_\_, Block No. \_\_\_\_\_ of Unit/Tract \_\_\_\_\_ of the  
\_\_\_\_\_ Subdivision recorded in \_\_\_\_\_ County.

G. Other: \_\_\_\_\_

H. Give State Engineer File Number if existing well: \_\_\_\_\_

I. On land owned by (required): Hunter's Draw LLC

3. DRILLING CONTRACTOR

License Number: WD-68 Work Phone: (505) 354-2246  
Name: K.D. HUEY COMPANY  
Agent: Kenneth D. or Heath N. Huey  
Mailing Address: PO box 488 State: NM Zip: 88316  
City: Capitan

4. DRILLING RECORD

Drilling began: 12-27-04; Completed: 04-04-05 Type Tools: air rotary  
Size of Hole: 12 in.; Total Depth of Well: 1580 ft.;  
Completed well is: SHALLOW (shallow; Artesian);  
Depth to water upon completion of well: 1029 ft.

File Number: H-694-S  
form: wr-20

Tm Number: \_\_\_\_\_



STATE ENGINEER OFFICE  
WELL RECORD

Revised June 1972

145575  
5

Section 1. GENERAL INFORMATION

(A) Owner of well Theodore R. Johnson Owner's Well No. \_\_\_\_\_  
Street or Post Office Address P.O. Box 1948  
City and State Hobbs, NM 88240

Well was drilled under Permit No. H-694-Expl. and is located in the:  
a. 1/4 NE 1/4 NE 1/4 SW of Section 30 Township 10 South Range 14 East N.M.P.M.  
b. Tract No. \_\_\_\_\_ of Map No. \_\_\_\_\_ of the \_\_\_\_\_  
c. Lot No. \_\_\_\_\_ of Block No. \_\_\_\_\_ of the \_\_\_\_\_  
Subdivision, recorded in \_\_\_\_\_ County.  
d. X= \_\_\_\_\_ feet, Y= \_\_\_\_\_ feet, N.M. Coordinate System \_\_\_\_\_ Zone in  
the \_\_\_\_\_ Grant.

(B) Drilling Contractor Hydro-Tech Drilling License No. WW-1119  
Address P.O. Box 2820, Roswell, NM 88202-2820

Drilling Began Nov. 12, 1985 Completed Dec. 7, 1985 Type tools Rotary Size of hole 10 in.  
Elevation of land surface or \_\_\_\_\_ at well is 7245 ft. Total depth of well 198 ft.  
Completed well is  shallow  artesian. Depth to water upon completion of well 127 ft.

Section 2. PRINCIPAL WATER-BEARING STRATA

Depth in Feet		Thickness in Feet	Description of Water-Bearing Formation	Estimated Yield (gallons per minute)
From	To			
146	147	1	Grey limestone	5
158	159	1	Grey limestone	5
184	196	12	Grey limestone (fractured)	250

Section 3. RECORD OF CASING

Diameter (inches)	Pounds per foot	Threads per in.	Depth in Feet		Length (feet)	Type of Shoe	Perforations	
			Top	Bottom			From	To
8 5/8	16.9	welded	0	170	170	standard	155	170

*day by attempted pump test (AE)*

Section 4. RECORD OF MUDDING AND CEMENTING

Depth in Feet		Hole Diameter	Sacks of Mud	Cubic Feet of Cement	Method of Placement
From	To				

Section 5. PLUGGING RECORD

Plugging Contractor \_\_\_\_\_  
Address \_\_\_\_\_  
Plugging Method \_\_\_\_\_  
Date Well Plugged \_\_\_\_\_  
Plugging approved by: \_\_\_\_\_

No.	Depth in Feet		Cubic Feet of Cement
	Top	Bottom	
1			
2			
3			
4			

State Engineer Representative

FOR USE OF STATE ENGINEER ONLY

Date Received December 13, 1985

Quad \_\_\_\_\_ FWL \_\_\_\_\_ FSL \_\_\_\_\_

File No H-694-Expl Use Exploratory Location No. 10-14-30-22

32322 (AE)

STATE ENGINEER OFFICE  
WELL RECORD

Revised June 1972

Section 1. GENERAL INFORMATION

(A) Owner of well Sun Mountain Inc.  
Street or Post Office Address P.O. Box 1948 Owner's Well No. H-694-S  
City and State Hobbs, NM 88241

Well was drilled under Permit No. H-694-S and is located in the:

a. 1/4 NE 1/4 NE 1/4 SW of Section 30 Township 10S Range 14E N.M.P.M.

b. Tract No. \_\_\_\_\_ of Map No. \_\_\_\_\_ of the \_\_\_\_\_

c. Lot No. \_\_\_\_\_ of Block No. \_\_\_\_\_ of the \_\_\_\_\_  
Subdivision, recorded in \_\_\_\_\_ County.

d. X= \_\_\_\_\_ feet, Y= \_\_\_\_\_ feet, N.M. Coordinate System \_\_\_\_\_ Zone in  
the \_\_\_\_\_ Grant.

(B) Drilling Contractor R W S Drilling License No. \_\_\_\_\_

Address 1012 E. Second Street, Roswell, NM 88201

Drilling Began June 30, 1986 Completed Aug. 26, 1986 Type tools cable-tool Size of hole 8 in.

Elevation of land surface or \_\_\_\_\_ at well is 7245 ft. Total depth of well 702 ft.

Completed well is  shallow  artesian. Depth to water upon completion of well 455 ft.

Section 2. PRINCIPAL WATER-BEARING STRATA

Depth in Feet		Thickness in Feet	Description of Water-Bearing Formation	Estimated Yield (gallons per minute)
From	To			

Section 3. RECORD OF CASING

Diameter (inches)	Pounds per foot	Threads per in.	Depth in Feet		Length (feet)	Type of Shoe	Perforations	
			Top	Bottom			From	To
<u>6-5/8</u>	<u>---</u>	<u>welded</u>	<u>+2</u>	<u>702</u>	<u>704</u>	<u>None</u>	<u>462</u>	<u>702</u>

Section 4. RECORD OF MUDDING AND CEMENTING

Depth in Feet		Hole Diameter	Sacks of Mud	Cubic Feet of Cement	Method of Placement
From	To				
<u>None</u>					

Section 5. PLUGGING RECORD

Plugging Contractor n/a

Address \_\_\_\_\_

Plugging Method \_\_\_\_\_

Date Well Plugged \_\_\_\_\_

Plugging approved by: \_\_\_\_\_

State Engineer Representative

No.	Depth in Feet		Cubic Feet of Cement
	Top	Bottom	
<u>1</u>			
<u>2</u>			
<u>3</u>			
<u>4</u>			

Date Received September 9, 1986

FOR USE OF STATE ENGINEER ONLY

Quad \_\_\_\_\_ FWL \_\_\_\_\_ FSL \_\_\_\_\_

File No. H-694-S

Subdivision \_\_\_\_\_ Location No. 10.14.30.32211

27.37.2 DEB

STATE ENGINEER OFFICE  
WELL RECORD

Revised June 1977

Section 1. GENERAL INFORMATION

(A) Owner of well SUN Mountain Inc. Owner's Well No. 1  
Street or Post Office Address P.O. Box 1948  
City and State Hobbs New Mexico 88241

Well was drilled under Permit No. H-694-S and is located in the:  
a.  $\frac{1}{4}$  NE  $\frac{1}{4}$  NE  $\frac{1}{4}$  SW of Section 30 Township 10S Range 14E N.M.P.M.  
b. Tract No. \_\_\_\_\_ of Map No. \_\_\_\_\_ of the \_\_\_\_\_  
c. Lot No. \_\_\_\_\_ of Block No. \_\_\_\_\_ of the \_\_\_\_\_  
Subdivision, recorded in \_\_\_\_\_ County.  
d. X= \_\_\_\_\_ feet, Y= \_\_\_\_\_ feet, N.M. Coordinate System \_\_\_\_\_ Zone in \_\_\_\_\_ Grant.

(B) Drilling Contractor Russ D. Hill License No. W-D 1053  
Address 1012 E 5th Roswell N.M. 88201  
Drilling Began 11-1-90 Completed 11-26-90 Type tools Cable Size of hole 6" in.  
Elevation of land surface or 7248 at well is 7248 ft. Total depth of well 800 ft.  
Completed well is  shallow  artesian. Depth to water upon completion of well 500 ft.

Section 2. PRINCIPAL WATER-BEARING STRATA

Depth in Feet		Thickness in Feet	Description of Water-Bearing Formation	Estimated Yield (gallons per minute)
From	To			
468	480	12	Yellow clay with Gravel	25 GPM
According to old logs				

Section 3. RECORD OF CASING

Diameter (inches)	Pounds per foot	Threads per in.	Depth in Feet		Length (feet)	Type of Shoe	Perforations	
			Top	Bottom			From	To
6 $\frac{5}{8}$	2800 all	weld	0	704	704		465	704
According to old logs								

Section 4. RECORD OF MUDDING AND CEMENTING

Depth in Feet		Hole Diameter	Sacks of Mud	Cubic Feet of Cement	Method of Placement
From	To				

Section 5. PLUGGING RECORD

Plugging Contractor \_\_\_\_\_  
Address \_\_\_\_\_  
Plugging Method \_\_\_\_\_  
Date Well Plugged \_\_\_\_\_  
Plugging approved by: \_\_\_\_\_  
State Engineer Representative

No.	Depth in Feet		Cubic Feet of Cement
	Top	Bottom	
1			
2			
3			
4			

Date Received DECEMBER 3, 1990

FOR USE OF STATE ENGINEER ONLY

Quad \_\_\_\_\_ FWL \_\_\_\_\_ FSL \_\_\_\_\_

Permit No. H-694-S

The DOM. SUBD. 10.14.30.3221  
Deeper 32322 (AEA)



**Hunter's Draw, L.L.C.**

ATTACHMENT 2

September 21, 2005

Neil Blandford, P.G.  
Daniel B. Stephens & Associates, Inc.  
6020 Academy, NE, Suite 100  
Albuquerque, NM 87103

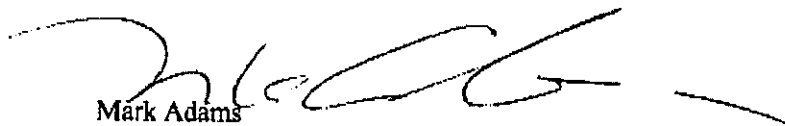
RE: Lincoln Hills Golf Course Surface Water Features

Dear Neil,

It is my understanding that the New Mexico Office of the State Engineer has requested Hunter's Draw to address the potential surface water features that will be incorporated into the design of the Lincoln Hills golf course. As you know the final layout of the course has not been completed at this time; however, I can confirm that this course will have no other man-made water features which require any water usage except for the two existing small golf course irrigation ponds as shown on the preliminary plat.

If you have any additional questions, please do not hesitate to call me.

Sincerely,

  
Mark Adams

cc. Mr. Thomas Stewart, Lincoln County  
Mr. John Longworth, NM OSE

6225  
-469

ATTACHMENT 3

**Smith, Mara, OSE**


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**From:** Longworth, John W., OSE  
**Sent:** Tuesday, September 20, 2005 3:55 PM  
**To:** Smith, Mara, OSE  
**Subject:** FW: Lincoln Hills Golf Course Ponds

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**From:** Blandford, Neil [mailto:nblandford@dbstephens.com]  
**Sent:** Tuesday, September 20, 2005 3:01 PM  
**To:** Longworth, John W., OSE  
**Cc:** Blandford, Neil; markadams333@earthlink.net  
**Subject:** Lincoln Hills Golf Course Ponds

John,

The attached figure shows the locations and acreage of the 2 lined ponds that will be used as part of the Lincoln Hills golf course irrigation system (each pond is 0.79 acres). A letter is forthcoming from the developer (Hunters Draw LLC) that there will be no other surface water hazards or features associated with the course. Note on the figure that there are 2 additional light blue areas present on the topo map background – these are drainage depressions and not ponds that are part of the proposed subdivision.

The attached figure also shows the general golf course layout, as does Figure 1 of the geohydrology report. In addition, the Lincoln Hills golf course will use an irrigation system that is more efficient than the one installed at Alto Lakes Golf and Country Club (an adjoining property) several years ago as discussed in the geohydrology report.

#### **Water Use Computation for Ponds**

Plate 7 of the New Mexico Water Resource Atlas (December 2002), Net Lake Evaporation, shows Ruidoso in the middle of the 10 to 20 inches per year zone. Since the Lincoln Hills property is slightly higher than Ruidoso in elevation, it seems reasonable to use 15 inches per year as a net lake evaporation at Lincoln Hills.

Water use by the ponds is computed as follows:

$(15 \text{ in/yr}) \times (1 \text{ ft} / 12 \text{ in}) \times (0.79 \text{ ac} \times 2 \text{ ponds}) = 1.975 \text{ ac-ft/yr} = \text{net depletion due to 2 ponds. This is equal to } 1.22 \text{ gpm. If } 20 \text{ in/yr is used, the net depletion would be } 2.63 \text{ ac-ft/yr (1.63 gpm).}$

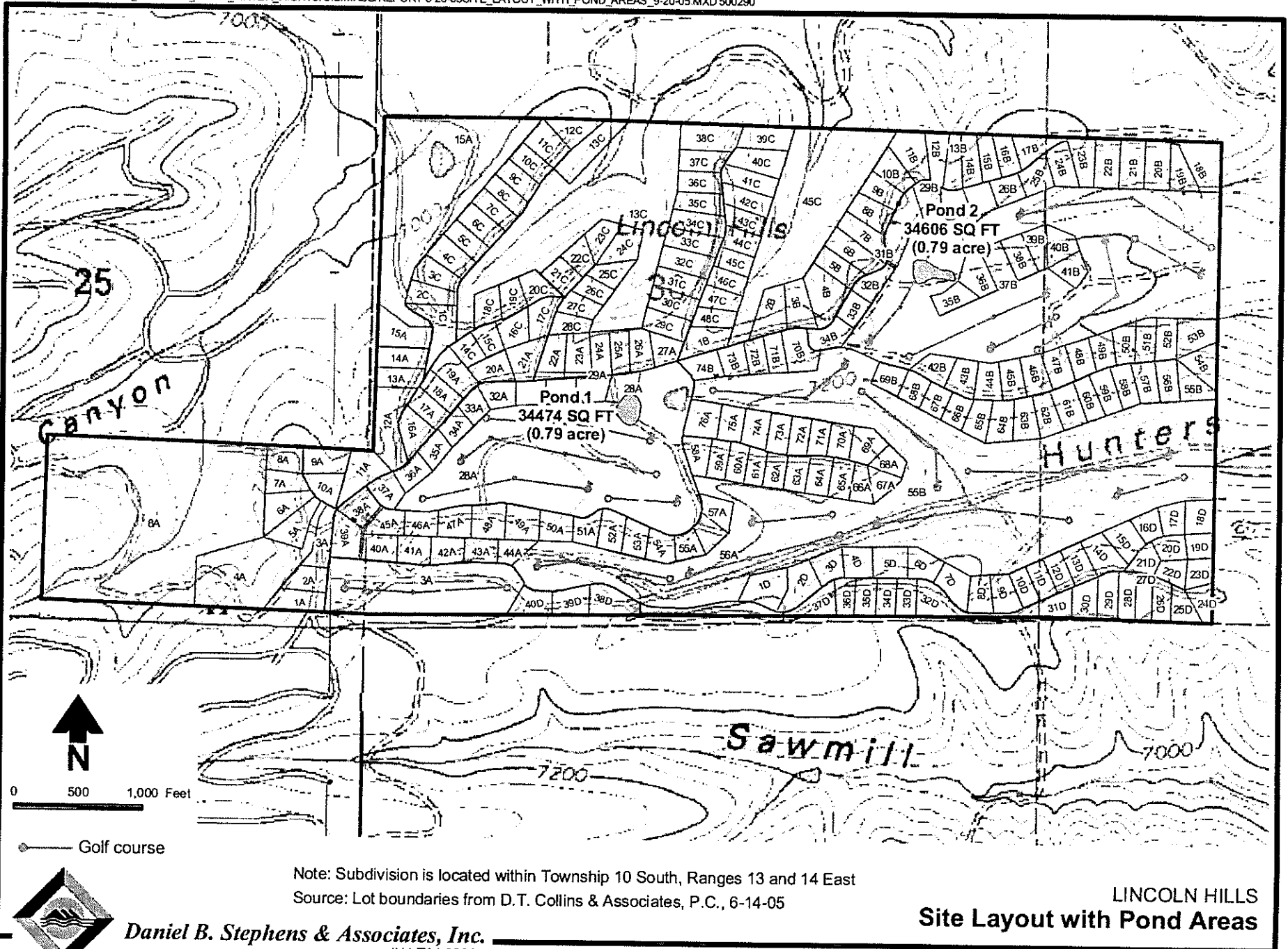
Since the drawdown computations are directly proportional to pumping, this depletion would lead to approximately 1.2 % greater drawdown than provided in the geohydrology report (i.e. the maximum computed demand is 168.25 ac-ft/yr, and  $1.975/168.25 \times 100 = 1.2\%$ )

Let me know if you have any more questions, and I would appreciate a quick acknowledgment that this came through OK.

Thanks

Neil Blandford  
 Vice President/Senior Hydrologist  
 Daniel B. Stephens & Associates, Inc.  
 (505) 822-9400  
[www.dbstephens.com](http://www.dbstephens.com)

9/21/2005



Note: Subdivision is located within Township 10 South, Ranges 13 and 14 East  
Source: Lot boundaries from D.T. Collins & Associates, P.C., 6-14-05

LINCOLN HILLS  
Site Layout with Pond Areas

ATTACHMENT 4

Hunter's Draw, L.L.C.

September 27, 2005

Mr. Thomas Stewart  
County Manager  
300 Central Avenue  
Carrizozo, NM 88301-0711

RE: Additional Lincoln Hills Subdivision and Golf Course Clarifications  
Requested by the Office of the State Engineer

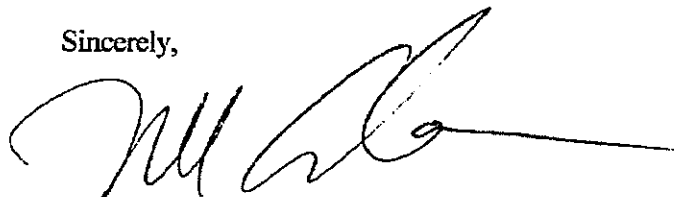
Dear Tom,

It is my understanding that the New Mexico Office of the State Engineer has requested Hunter's Draw to address several additional points of possible confusion regarding our submittal. Each of these points are addressed below for your files:

1. With regard to a club house, there will be a small satellite club house on site with restrooms and a snack bar. Main club house activities will occur at a nearby facility (not supplied by Lincoln Hills water rights), which has a restaurant, showers, etc. Mr. Neil Blandford of Daniel B. Stephens & Associates, Inc. has estimated the water use of this facility to be approximately 0.5 ac-ft/yr or less.
2. With regard to the application for extension of time of water right H-694-S, there is a statement that says, "irrigation has been developed in the subdivision golf course area". That statement included information on the H-694 well as well. It is my understanding that the irrigation system was abandoned. Regardless, the irrigation system for the Lincoln Hills golf course that would be built as part of this project will be an entirely new, state of the art system, and any existing systems (if present) will not be part of the development.
3. Although the total golf course acreage will be 224.714 acres or less, the irrigated acreage will only be 45.4 acres or less as documented in the geohydrology report.

If you have any questions, please do not hesitate to call me.

Sincerely,



Mark Adams

cc. Mr. Neil Blandford, Daniel B. Stephens & Associates, Inc.  
Mr. John Longworth, NM OSE



September 28, 2005

ATTACHMENT 5

Mr. John Longworth  
Office of the State Engineer  
Bataan Memorial Building  
P.O. Box 25102  
Santa Fe, New Mexico 87504-5102

Re: Lincoln Hills Golf Course Satellite Club House Estimated Water Demand

Dear Mr. Longworth:

The purpose of this letter is to provide an estimated water use for the subject facility. The details provided below are based on conversations with the developers of the Lincoln Hills property and Mr. Jim Lorah, the General Manager of the Alto Lakes Golf and Country Club (Alto Lakes).

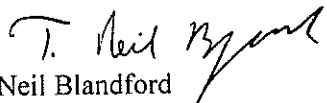
The satellite club house is planned to be 2,400 square feet in size with a snack bar that will use plasticware. The facility will include male (2 urinals, 1 commode) and female (2 commodes) restrooms and a basic maintenance facility for 50 golf carts and general golf course maintenance equipment. At this time, the course is planned to be open for six months of the year; this plan could change, but the course will not be operated all year.

Water demand for this facility was estimated using water demand information from the adjacent Alto Lakes club house. The Alto Lakes club house is 45,000 square feet and has a full service restaurant (serving 70,000 meals per year) with dishwashers, as well as an adjoining golf course maintenance facility with over 60 carts. This facility uses about 92,000 gallons of water per month during slower periods (personal communication, Mr. Jim Lorah). Water demand for the Lincoln Hills satellite club house was estimated to be one-quarter of the water use at the substantially larger Alto Lakes club house, or 23,000 gallons per month. This computation yields a water demand of 0.42 acre-feet per year (ac-ft/yr) if the course is open six months, or 0.55 ac-ft/yr if the Lincoln Hills course is open eight months. Even using a highly conservative computation where it is assumed that the Lincoln Hills satellite club house would use one-half of the water that the Alto Lakes club house does, and remain open for eight months during the year, the computed water demand would still only be 1.1 ac-ft/yr, or about 0.7 gallons per minute on average.

Please call me at (505) 822-9400 if you have any questions or require additional information.

Sincerely,

DANIEL B. STEPHENS & ASSOCIATES, INC.

  
T. Neil Blandford  
Vice President/Senior Hydrologist

TNB/rpf  
cc: Mr. Mark Adams, Hunters Draw LLC  
Mr. Thomas Stewart, Lincoln County  
Mr. John Burkstaller, P.E., DBS&A

*Daniel B. Stephens & Associates, Inc.*

6020 Academy NE, Suite 100

Albuquerque, NM 87109

505-822-9400

FAX 505-822-8877