Wm. CURTIS WELLS & CO. / *consulting geologists*
13842 legend way #101 / broomfield, co 80020
telephone (303) 466-3801 / fax 465-5859

See comments on the court decrees and water supply information summary and revise this report to reflect any changes that may need to be made.

May 9, 2006

Mr. Ken Rushing
16865 Bar X Road
Colorado Springs, CO 80908

Re: Ground Water Consultation, 40-Acre Rushing Property, El Paso County, Colorado.
Job No. 64045

Dear Ken:

At your request I have prepared this brief report on your 40-acre property which occupies a part of Section 12, Township 11 South, Range 66 West. The attached Figure-1 illustrates the approximate outline of the property and reportedly you may be developing the property into seven single family homesites. I understand Hank Worley filed applications with the Greeley and Pueblo Water Courts to adjudicate the Denver Basin aquifer ground water beneath this property along with a plan for augmentation to legalize the use of the not non-tributary (NNT) ground water in the Dawson aquifer. The objective of this report is to provide Hank the information necessary to amend the Water Court applications, if necessary.

As you know there are four Denver Basin aquifers beneath this land. In descending stratigraphic order they are the Dawson, Denver, Arapahoe and Laramie Fox Hills formations. The base of these respective aquifers should be at depths of 1,100, 2,000, 2,500 and 3,200 feet below the ground surface. Ground water availability in each aquifer is computed by multiplying the property area by the formation saturated sand thickness, thence by specific yield (drainable porosity). Based on published aquifer information from the Colorado Division of Water Resources, I list on the table below my estimates of ground water beneath this subject parcel.

Aquifer		Sand Thickness (ft.)	Ground Water Storage (af.)
Dawson	NNT	463	3704
Denver	NT	497	3380
Arapahoe	NT	259	1761
Laramie Fox Hills	NT	209	1254

If the future seven homeowners were to use water at a rate of 1.0 acre feet per year per home, the El Paso County, 300-year required water supply would be 2,100 acre feet. This amount of ground water is only about 60 percent of the volume of ground water estimated to be in the Dawson aquifer. This amount of water would satisfy the in-house needs of 0.30 acre feet per year, the irrigation of about 10,000 square-feet of lawn or garden plus the watering of four horses, if desired.

Theoretically, when a Dawson well is pumped on this property, a percentage of the discharge water seeps out of over appropriated nearby streams. To predict the amount, time and place of this stream loss, I have operated the State Engineer's "DA02" computer, ground water flow model to develop stream depletion factors. These factors are listed on Table I and as shown, the maximum stream depletion is about 23 percent if the wells are pumped for 300 years. If the seven homeowners were to pump Dawson aquifer ground water at a rate of 7 acre feet per year, the maximum depletion would be 1.6 acre feet per year. The seven proposed homeowners should annually return 1.9 acre feet per year to the stream through their septic systems, thus during pumping, stream depletion should be adequately augmented.

Once well pumping ceases, theoretically at 300 years, the State Engineer and Water Court believe return flows will also cease. To cover stream depletions that can be computed to continue for centuries, non-tributary (NT) ground water in the Denver aquifer can be reserved. As shown above, the Denver aquifer ground water should equate to 3,380 acre feet or far more ground water than needed to support the post-pumping obligation.

I trust this information satisfies your immediate needs. If you have questions, please call.

Very truly yours,

Wm. Curtis Wells & Co.

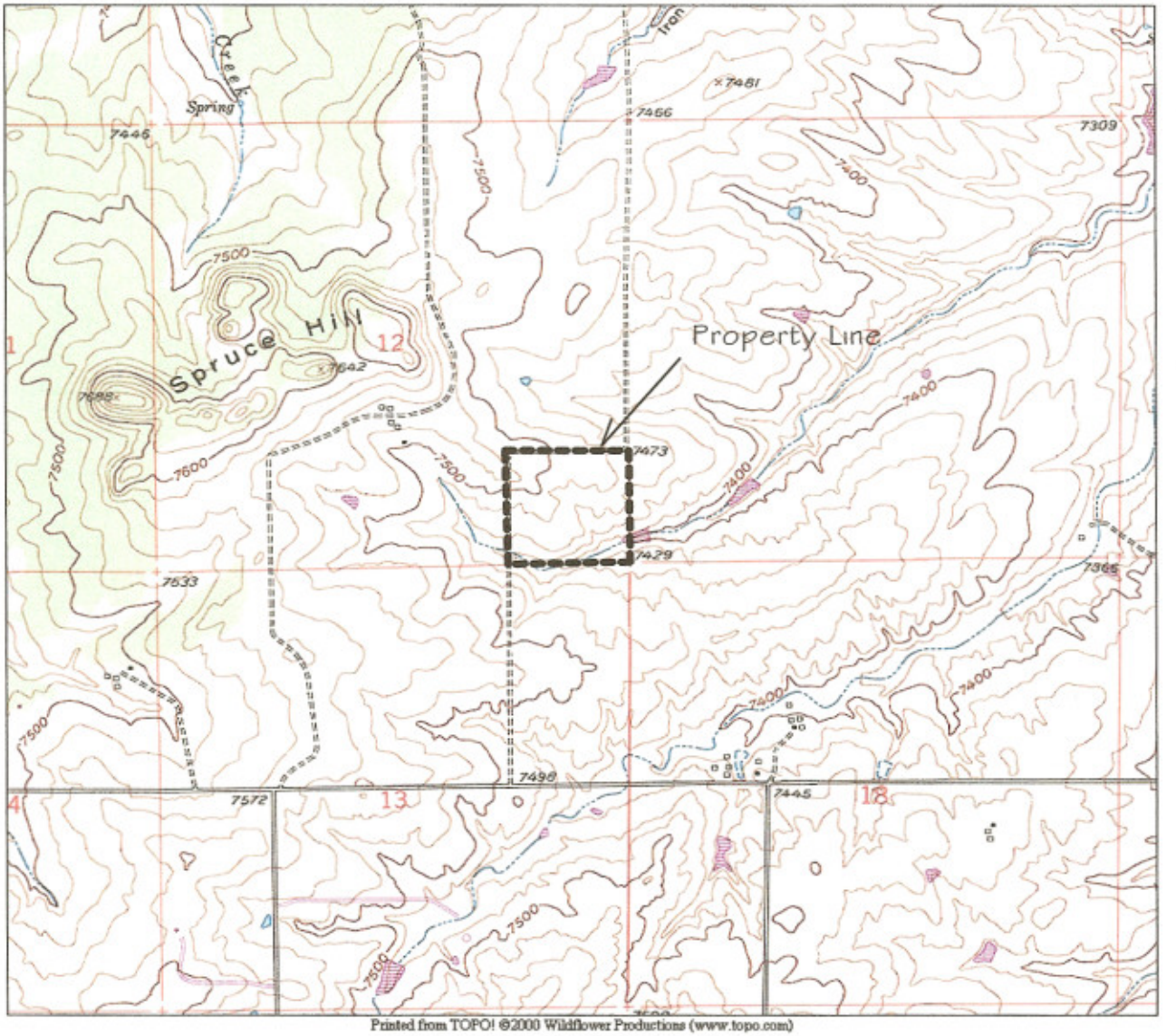
_____

Wm. Curtis Wells CPG
Consulting Ground Water Geologist

cc: Hank Worley

R 66 W R 65 W

T 11 S



Printed from TOPO! ©2000 Wildflower Productions (www.topo.com)

Location Map

Rushing Property

N

Scale 1" = 2000'

Wm Curtis Wells & Co.
consulting ground water geologists

Figure 1

Table I
Dawson Aquifer Stream Depletion Factors
Rushing Property
(as % of pumping)

YRS	South Platte River	Arkansas River	Total	YRS	South Platte River	Arkansas River	Total
10	0.61	0.03	0.64	310	16.05	6.52	22.57
20	1.37	0.10	1.47	320	15.72	6.67	22.39
30	2.14	0.18	2.32	330	15.39	6.79	22.18
40	2.85	0.32	3.17	340	15.08	6.89	21.97
50	3.53	0.47	4.00	350	14.84	6.93	21.77
60	4.18	0.64	4.82	360	14.62	6.96	21.58
70	4.78	0.84	5.62	370	14.41	6.98	21.39
80	5.38	1.03	6.41	380	14.23	6.97	21.20
90	5.95	1.25	7.20	390	14.06	6.95	21.01
100	6.50	1.49	7.99	400	13.90	6.91	20.81
110	7.05	1.72	8.77	410	13.74	6.88	20.62
120	7.58	1.96	9.54	420	13.61	6.81	20.42
130	8.12	2.19	10.31	430	13.46	6.76	20.22
140	8.64	2.44	11.08	440	13.32	6.69	20.01
150	9.15	2.69	11.84	450	13.19	6.61	19.80
160	9.66	2.94	12.60	460	13.05	6.54	19.59
170	10.17	3.18	13.35	470	12.93	6.45	19.38
180	10.65	3.45	14.10	480	12.81	6.37	19.18
190	11.15	3.69	14.84	490	12.70	6.29	18.99
200	11.63	3.95	15.58	500	12.57	6.22	18.79
210	12.09	4.22	16.31	510	12.47	6.12	18.59
220	12.58	4.45	17.03	520	12.35	6.04	18.39
230	13.04	4.70	17.74	530	12.23	5.96	18.19
240	13.52	4.93	18.45	540	12.12	5.86	17.98
250	13.99	5.16	19.15	550	12.02	5.77	17.79
260	14.44	5.41	19.85	560	11.91	5.68	17.59
270	14.89	5.64	20.53	570	11.79	5.60	17.39
280	15.34	5.87	21.21	580	11.67	5.52	17.19
290	15.79	6.10	21.89	590	11.57	5.42	16.99
300	16.24	6.31	22.55	600	11.47	5.33	16.80