

Water Right Conditions Tracking Slip

Groundwater/Hydrology Section

FILE # # G-17065 Re-Review

ROUTED TO: Water Rights

TOWNSHIP/

RANGE-SECTION: 20S/17E 19430

CONDITIONS ATTACHED?: ☒ yes ☐ no

REMARKS OR FURTHER INSTRUCTIONS:

see conditions on p 2 & 3.

Reviewer: J. Hackett

MEMO

February 2, 2010

FROM: GW: J. Hackett
(Reviewer's Name)

SUBJECT: Scenic Waterway Interference Evaluation

☒ YES

The source of appropriation is within or above a Scenic Waterway

 NO

☒ YES

Use the Scenic Waterway condition (Condition 7J)

NO

✓ Per ORS 390.835, the Ground Water Section is **unable** to calculate ground water interference with surface water that contributes to a scenic waterway; **therefore, the Department is unable to find that there is a preponderance of evidence that the proposed use will measurably reduce the surface water flows necessary to maintain the free-flowing character of a scenic waterway.**

Calculate the percentage of consumptive use by month and fill in the table below. If interference cannot be calculated, per criteria in 390.835, do not fill in the table but check the “unable” option above, thus informing Water Rights that the Department is unable to make a Preponderance of Evidence finding.

[illegible]

PUBLIC INTEREST REVIEW FOR GROUND WATER APPLICATIONS

TO: Water Rights Section Date 02/02/2010

FROM: Ground Water/Hydrology Section J. Hackett
Reviewer's Name

SUBJECT: Application G- 17065 Re-Review Supersedes review of 09/22/2008
Date of Review(s)

PUBLIC INTEREST PRESUMPTION; GROUNDWATER

OAR 690-310-130 (1) *The Department shall presume that a proposed groundwater use will ensure the preservation of the public welfare, safety and health as described in ORS 537.525.* Department staff review ground water applications under OAR 690-310-140 to determine whether the presumption is established. OAR 690-310-140 allows the proposed use be modified or conditioned to meet the presumption criteria. **This review is based upon available information and agency policies in place at the time of evaluation.**

A. **GENERAL INFORMATION:** Applicant's Name: Burbank and Cramer County: Deschutes

A1. Applicant(s) seek(s) 2.67 cfs from 4 well(s) in the Deschutes Basin,
Dry River subbasin Quad Map: Millican SE

A2. Proposed use: Irrigation Seasonality: March 1 – October 31

A3. Well and aquifer data (attach and number logs for existing wells; mark proposed wells as such under logid):

Well	Logid	Applicant's Well #	Proposed Aquifer*	Proposed Rate(cfs)	Location (T/R-S QQ-Q)	Location, metes and bounds, e.g. 2250' N, 1200' E fr NW cor S 36
1	Proposed	1	Tertiary Lava	1.34	20S/17E-19BCB	3211' N, 635' E fr SW cor, S19
2	Proposed	2	Tertiary Lava	1.34	20S/17E-19CCB	627' N, 620' E fr SW cor, S19
3	Proposed	3	Tertiary Lava	1.34	20S/17E-30BCB	1996' S, 628' E fr NW cor, S30
4	Proposed	4	Tertiary Lava	1.34	20S/17E-30CCB	671' N, 624' E fr SW cor, S30
5						

* Alluvium, CRB, Bedrock

Well	Well Elev ft msl	First Water ft bls	SWL ft bls	SWL Date	Well Depth (ft)	Seal Interval (ft)	Casing Intervals (ft)	Liner Intervals (ft)	Perforations Or Screens (ft)	Well Yield (gpm)	Draw Down (ft)	Test Type
1	4430				Est 600	Est 20	Est 20					
2	4400				Est 600	Est 20	Est 20					
3	4430				Est 600	Est 20	Est 20					
4	4410				Est 600	Est 20	Est 20					

Use data from application for proposed wells.

A4. Comments: **THE WELLS WILL LIKELY BE CONSTRUCTED INTO LAVA UNDERLYING BASIN FILL SEDIMENT. REGIONAL GROUNDWATER FLOW IS TOWARDS THE NORTHWEST, WITH THE NEAREST LIKELY DOWN-GRADIENT DISCHARGE AREA (GAINING REACH OF THE CROOKED RIVER) ABOUT 40 MILES DISTANCE.**

A5. ☒ **Provisions of the Deschutes** Basin rules relative to the development, classification and/or management of ground water hydraulically connected to surface water ☐ are, or ☒ are not, activated by this application.
(Not all basin rules contain such provisions.)
Comments: **WELLS WILL BE LOCATED OUTSIDE THE USGS DESCHUTES GROUND WATER STUDY AREA.**

A6. ☐ Well(s) # _____, _____, _____, _____, _____, tap(s) an aquifer limited by an administrative restriction.
Name of administrative area: _____
Comments: _____

B. GROUND WATER AVAILABILITY CONSIDERATIONS, OAR 690-310-130, 400-010, 410-0070

B1. **Based upon available data**, I have determined that ground water* for the proposed use:

- a. ☐ is over appropriated, ☐ is not over appropriated, or ☒ cannot be determined to be over appropriated during any period of the proposed use. * This finding is limited to the ground water portion of the over-appropriation determination as prescribed in OAR 690-310-130;
- b. ☐ will not or ☐ will likely be available in the amounts requested without injury to prior water rights. * This finding is limited to the ground water portion of the injury determination as prescribed in OAR 690-310-130;
- c. ☐ will not or ☐ will likely to be available within the capacity of the ground water resource; or
- d. ☒ will, if properly conditioned, avoid injury to existing ground water rights or to the ground water resource:
 - i. ☒ The permit should contain condition #(s) 7B, 7N;
 - ii. ☐ The permit should be conditioned as indicated in item 2 below.
 - iii. ☒ The permit should contain special condition(s) as indicated in item 3 below;

- B2. a. ☐ Condition to allow ground water production from no deeper than _____ ft. below land surface;
- b. ☐ Condition to allow ground water production from no shallower than _____ ft. below land surface;
- c. ☐ Condition to allow ground water production only from the _____ ground water reservoir between approximately _____ ft. and _____ ft. below land surface;
- d. ☐ Well reconstruction is necessary to accomplish one or more of the above conditions. The problems that are likely to occur with this use and without reconstructing are cited below. Without reconstruction, I recommend withholding issuance of the permit until evidence of well reconstruction is filed with the Department and approved by the Ground Water Section.

Describe injury –as related to water availability– that is likely to occur without well reconstruction (interference w/ senior water rights, not within the capacity of the resource, etc): _____

- B3. **Ground water availability remarks:** The proposed POAs are located very near early to middle Tertiary rocks (the geometry of which is uncertain) that are typically low permeability and tend to form boundaries to regional groundwater flow. How the proximity to the older rocks will influence the long-term water supply to the POAs is unknown. Regionally, the groundwater resource appears to be in dynamic equilibrium. The nearest State Observation well (State Obs. well 1324) is constructed into late Tertiary units. State Obs. well 1324 (DESC 53516) is located about 25 miles to the South-Southeast. It has been monitored periodically since 1993. State Obs well 1324 shows a slightly undulating, but overall downward trend throughout the period of record. This trend is consistent with climate cycles. Since 1995, the water level has dropped about 3.25 feet, most likely a result of decreased recharge (see attached hydrograph).

The applicant is requesting a maximum pumping rate of 600 gpm from any single well. A review of well logs in T20S/R16E indicates the highest reported yield is 35 gpm (DESC 58210) and the lowest yield is 0 gpm (DESC 58566, see attached table). The lack of nearby high-yield wells raises some questions about the sustainability of pumping at the requested rate at the POAs. Also, because the geometry of low permeability boundaries is unknown, the degree of interference with nearby groundwater users is uncertain.

In general, local hydrologic and geologic data are sparse; available data suggest the groundwater resource may have difficulty providing the requested amount. If a permit is issued it should include the following special conditions which are intended to assess the capacity of the resource and provide subsurface geologic information.

SPECIAL CONDITION 1) Each well with a pump shall be equipped with a dedicated 3/4-inch diameter (minimum) water-level measurement tube, separate from other methods of measuring the water level such as airlines or transducers. The annual water level measurement required in the permit (condition 7N) shall be measured through the measuring tube.

Data Collection

For special conditions 2 and 3, data collection shall be supervised by an Oregon registered geologist

SPECIAL CONDITION 2) Drill cuttings shall be collected at the permitted wells and any test holes. Samples shall be collected at ten-foot intervals and at changes in lithology.

SPECIAL CONDITION 3) At least one long-term aquifer test shall be conducted to examine interference with nearby users, aquifer boundaries, the ability of the wells to supply the requested amount, and aquifer properties. A data collection plan shall be submitted for Department approval before testing. The test shall be conducted at a constant rate for a minimum of 72 hours. Water level drawdown and recovery measurements shall be made in the pumped well and ~~should be made~~ in at least one additional well. if available. The aquifer test shall be completed no later than six months after the first well is drilled. Jan 2/18/2010

C. GROUND WATER/SURFACE WATER CONSIDERATIONS, OAR 690-09-040**C1. 690-09-040 (1):** Evaluation of aquifer confinement:

Well	Aquifer or Proposed Aquifer	Confined	Unconfined
1	Tertiary volcanics	☐	☒
2	Tertiary volcanics	☐	☒
3	Tertiary volcanics	☐	☒
4	Tertiary volcanics	☐	☒
		☐	☐

Basis for aquifer confinement evaluation: The water-bearing zones may be locally semi-confined because of the spatial variability in permeability inherent to the lava flows.

C2. 690-09-040 (2) (3): Evaluation of distance to, and hydraulic connection with, surface water sources. All wells located a horizontal distance less than ¼ mile from a surface water source that produce water from an unconfined aquifer shall be assumed to be hydraulically connected to the surface water source. Include in this table any streams located beyond one mile that are evaluated for PSI.

Well	SW #	Surface Water Name	GW Elev ft msl	SW Elev ft msl	Distance (ft)	Hydraulically Connected?			Potential for Subst. Interfer. Assumed?	
						YES	NO	ASSUMED	YES	NO
1	1	Dry River	4000	4310	13000	☐	☒	☐	☐	☒
2	1	Dry River	4000	4310	15500	☐	☒	☐	☐	☒
3	1	Dry River	4000	4310	17500	☐	☒	☐	☐	☒
4	1	Dry River	4000	4310	20000	☐	☒	☐	☐	☒
						☐	☐	☐	☐	☐
						☐	☐	☐	☐	☐
						☐	☐	☐	☐	☐
						☐	☐	☐	☐	☐
						☐	☐	☐	☐	☐
						☐	☐	☐	☐	☐

Basis for aquifer hydraulic connection evaluation: Groundwater levels are below the elevation of the nearest reach of Dry River.

Water Availability Basin the well(s) are located within: 30530501; DRY RIVER

C3a. 690-09-040 (4): Evaluation of stream impacts for each well that has been determined or assumed to be **hydraulically connected and less than 1 mile** from a surface water source. Limit evaluation to instream rights and minimum stream flows that are pertinent to that surface water source, and not lower SW sources to which the stream under evaluation is tributary. Compare the requested rate against the 1% of 80% *natural* flow for the pertinent Water Availability Basin (WAB). If Q is not distributed by well, use full rate for each well. Any checked ☒ box indicates the well is assumed to have the potential to cause PSI.

Well	SW #	Well < ¼ mile?	Qw > 5 cfs?	Instream Water Right ID	Instream Water Right Q (cfs)	Qw > 1% ISWR?	80% Natural Flow (cfs)	Qw > 1% of 80% Natural Flow?	Interference @ 30 days (%)	Potential for Subst. Interfer. Assumed?
		☐	☐			☐		☐		☐
		☐	☐			☐		☐		☐
		☐	☐			☐		☐		☐
		☐	☐			☐		☐		☐
		☐	☐			☐		☐		☐
		☐	☐			☐		☐		☐
		☐	☐			☐		☐		☐
		☐	☐			☐		☐		☐
		☐	☐			☐		☐		☐
		☐	☐			☐		☐		☐

C3b. **690-09-040 (4):** Evaluation of stream impacts by total appropriation for all wells determined or assumed to be **hydraulically connected and less than 1 mile** from a surface water source. **Complete only if Q is distributed among wells.** Otherwise same evaluation and limitations apply as in C3a above.

	SW #		Qw > 5 cfs?	Instream Water Right ID	Instream Water Right Q (cfs)	Qw > 1% ISWR?	80% Natural Flow (cfs)	Qw > 1% of 80% Natural Flow?	Interference @ 30 days (%)	Potential for Subst. Interfer. Assumed?
			☐			☐		☐		☐
			☐			☐		☐		☐
			☐			☐		☐		☐
			☐			☐		☐		☐

Comments: _____

C4a. **690-09-040 (5):** Estimated impacts on **hydraulically connected surface water sources greater than one mile** as a percentage of the proposed pumping rate. Limit evaluation to the effects that will occur up to one year after pumping begins. This table encompasses the considerations required by 09-040 (5)(a), (b), (c) and (d), which are not included on this form. Use additional sheets if calculated flows from more than one WAB are required.

Non-Distributed Wells													
Well	SW#	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
		%	%	%	%	%	%	%	%	%	%	%	%
Well Q as CFS													
Interference CFS													
Distributed Wells													
Well	SW#	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
		%	%	%	%	%	%	%	%	%	%	%	%
Well Q as CFS													
Interference CFS													
		%	%	%	%	%	%	%	%	%	%	%	%
Well Q as CFS													
Interference CFS													
		%	%	%	%	%	%	%	%	%	%	%	%
Well Q as CFS													
Interference CFS													
		%	%	%	%	%	%	%	%	%	%	%	%
Well Q as CFS													
Interference CFS													
		%	%	%	%	%	%	%	%	%	%	%	%
Well Q as CFS													
Interference CFS													
(A) = Total Interf.													
(B) = 80 % Nat. Q													
(C) = 1 % Nat. Q													
(D) = (A) > (C)		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
(E) = (A / B) x 100		%	%	%	%	%	%	%	%	%	%	%	%

(A) = total interference as CFS; (B) = WAB calculated natural flow at 80% exceed. as CFS; (C) = 1% of calculated natural flow at 80% exceed. as CFS; (D) = highlight the checkmark for each month where (A) is greater than (C); (E) = total interference divided by 80% flow as percentage.

C4b. **690-09-040 (5) (b)** The potential to impair or detrimentally affect the public interest is to be determined by the Water Rights Section.

C6. SW / GW Remarks and Conditions

Version: 08/15/2003

D1. Well #: _____ Logid: _____

a. ☐ review of the well log;

b. ☐ field inspection by _____;

c. ☐ report of CWRE _____;

d. ☐ other: (specify) _____

a. ☐ constitutes a health threat under Division 200 rules;

b. ☐ commingles water from more than one ground water reservoir;

c. ☐ permits the loss of artesian head;

d. ☐ permits the de-watering of one or more ground water reservoirs;

e. ☐ other: (specify) _____

b. ☐ I don't know if it met standards at the time of construction.

THIS SECTION TO BE COMPLETED BY ENFORCEMENT PERSONNEL

[illegible]

D8. ☐ **Route to Water Rights Section (attach well reconstruction logs to this page).**

Water Availability Tables**DRY R > CROOKED R - AT MOUTH DESCHUTES BASIN Water Availability as of 1/6/2010**Watershed ID #: 30530501 Exceedance Level: Date: 1/6/2010 Time: 11:37 AM**Water Availability Calculation**

Monthly Streamflows in Cubic Feet per Second Storage at 50% Exceedance in Acre-Feet

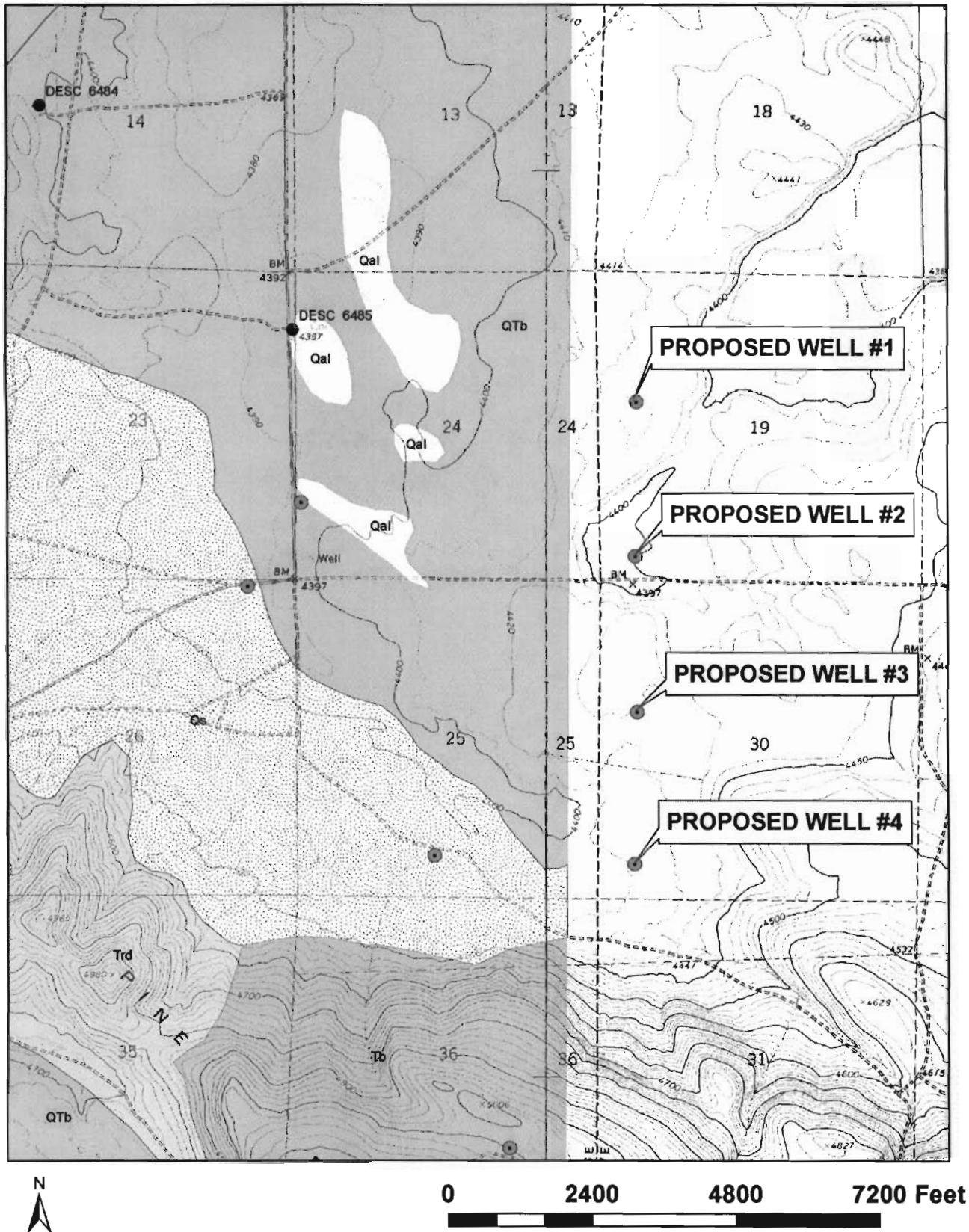
Month	Natural Stream Flow	Consumptive Uses and Storages	Expected Stream Flow	Reserved Stream Flow	Instream Flow Requirement	Net Water Available
JAN	0.00	1.22	-1.22	0.00	0.00	-1.22
FEB	0.00	1.34	-1.34	0.00	0.00	-1.34
MAR	0.00	1.22	-1.22	0.00	0.00	-1.22
APR	0.00	3.31	-3.31	0.00	0.00	-3.31
MAY	0.00	5.47	-5.47	0.00	0.00	-5.47
JUN	0.00	6.52	-6.52	0.00	0.00	-6.52
JUL	0.00	6.59	-6.59	0.00	0.00	-6.59
AUG	0.00	6.59	-6.59	0.00	0.00	-6.59
SEP	0.00	5.94	-5.94	0.00	0.00	-5.94
OCT	0.00	2.65	-2.65	0.00	0.00	-2.65
NOV	0.00	1.26	-1.26	0.00	0.00	-1.26
DEC	0.00	1.22	-1.22	0.00	0.00	-1.22

WATER LEVELS IN STATE OBSERVATION WELL 1324 (DESC 53516)



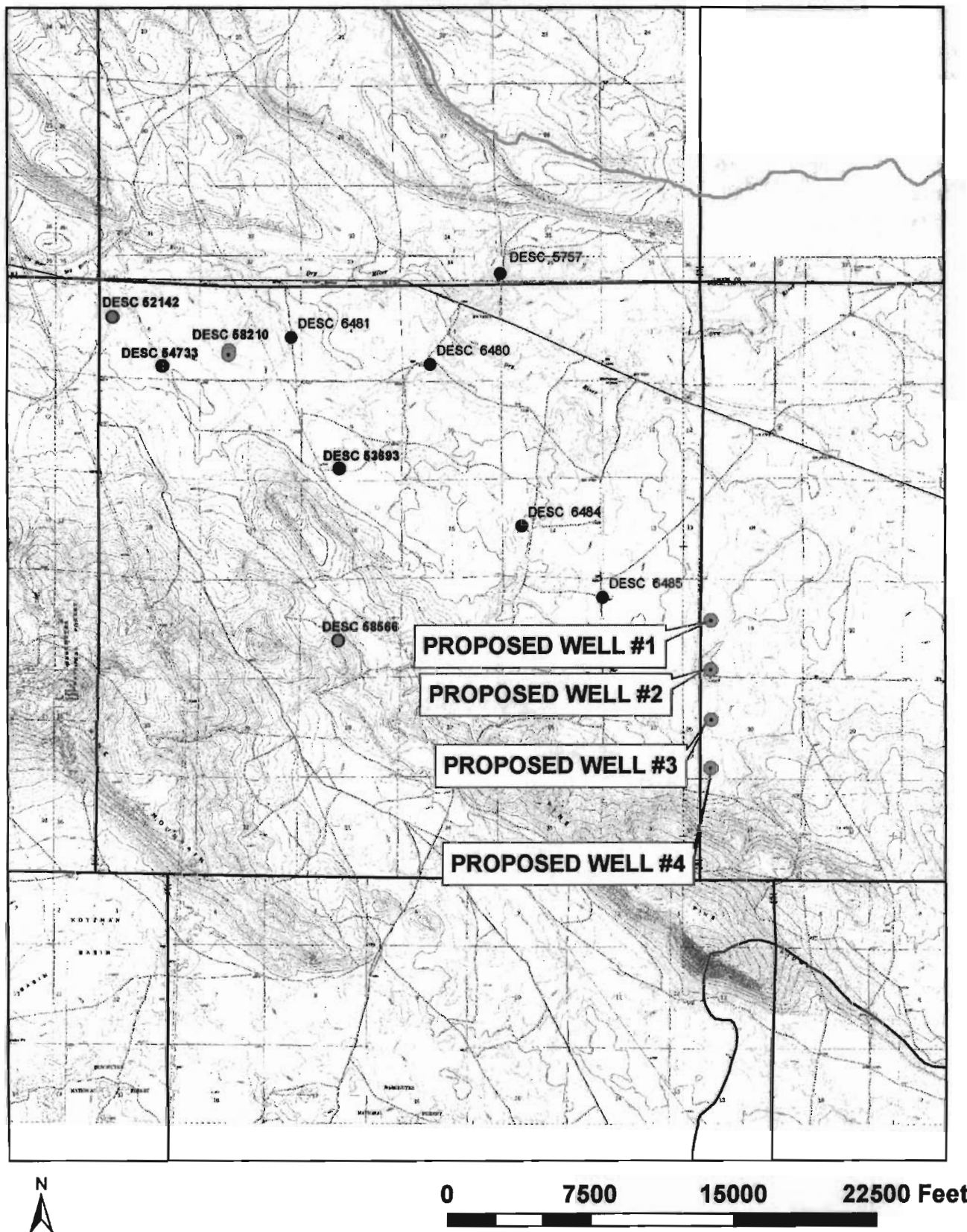
Well Location Map

G-17065: Millican SE and Brothers SW Quadrangles



Nearby Wells Location Map

G-17065: Millican SE and Brothers SW Quadrangles



Well Log Information

			yield	drawdown	test length	well depth
	test type		(gpm)	(feet)	(hours)	(feet)
DESC 6480	bailer		3	0	2	442
DESC 6481	bailer		5	0	2	445
DESC 6482	bailer		5	0	2	445
DESC 6483						507
DESC 6484	pump		5			274
DESC 6485	pump		16	0	4	540
DESC 52142	air		20		1	610
DESC 53693	air		16		1	600
DESC 54733	air		15		1	545
DESC 58210	air		35		1	565
DESC 58566	air		0		1	800