WATER RESOURCES DEPARTMENT

MEMO

NO

November 3, 2009

TO:	Application G- <u>17214</u>
FROM:	GW: <u>K. Lite</u>
SUBJECT:	Scenic Waterway Interference Evaluation

<u>X</u>	_YES	The course of appropriation is within or above a Seconic Weterway
	NO	The source of appropriation is within of above a Scenic waterway
<u>X</u>	_YES	Use the Scenic Waterway condition (Condition 7J)

- Per ORS 390.835, the Ground Water Section is **able** to calculate ground water interference with surface water that contributes to a Scenic Waterway. The calculated interference is distributed below.
- X 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.**

DISTRIBUTION OF INTERFERENCE

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.

Exercise of this permit is calculated to reduce monthly flows in ______Scenic Waterway by the following amounts expressed as a proportion of the consumptive use by which surface water flow is reduced.

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

PUBLIC INTEREST REVIEW FOR GROUND WATER APPLICATIONS

то:		Water	Rights S	ection				Date	e <u> </u>	2 Novem	<u>ıber 200</u>	9	
FRO	M:	Ground	d Water/	Hydrolog	y Section	K. Lite	2						
SUB.	ECT:	Applic	ation G-	17214		Review Sup	wer's Name ersedes re	view of					
DIIDI		DECT	DDECU	ΜΟΤΙΟΝ							Date of Rev	view(s)	
OAR welfar to dete the pro	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. <u>G</u>	A. <u>GENERAL INFORMATION</u> : Applicant's Name <u>John Giorgi</u> County: <u>Crook</u>												
A1.	A1. Applicant(s) seek(s) (489 gpm) 1.09 cfs from 1 well(s) in the Deschutes Basin,												
	S	outh Fo	rk Crook	ed River (Beaver Cree	<u>k)</u> subba	sin Qu	ad Map:	P	aulina			
A2.	Propose	ed use:	1.09 cfs I	rrigation	(87.1 acres p	rimary)	Seasonality	v: <u>15 A</u>	<u>pril –</u>	15 Septe	mber		
A3.	Well an	d aquife	r data (att	ach and n	umber logs f	for existing	g wells; ma	rk proposed	l wells	as such	under lo	gid):	
Wel l	Log	id	Applica s Well #	nt'	Proposed Aquifer*	Propose Rate(cf	posed Location te(cfs) (T/R-S QQ-Q))	Location, metes and bounds, e.g. 2250' N, 1200' E fr NW cor S 36			
1	Not yet	drilled	1		Basalt	1.09	178/2	23E-sec 02 A	DC	590' N,	660' W	fr E1/4 o	cor S 02
* Alluvium, CRB, Bedrock													
					XX 7 11	Seel	Casing	Liner	Perf	orations	Well	Draw	
Well	Well Elev ft msl	First Water ft bls	SWL ft bls	SWL Date	Depth (ft)	Interval (ft)	Intervals (ft)	Intervals (ft)	Or	Screens (ft)	Yield (gpm)	Down (ft)	Test Type

Use data from application for proposed wells.

A4. Comments: <u>The proposed well is located near Alkali Creek, an intermittent tributary to Beaver Creek /Crooked</u> <u>River. The well will likely be constructed into water-bearing zones within basalt. The basalt is likely Picture Gorge</u> <u>Basalt.</u>

A5. A5. Provisions of the <u>Deschutes</u> 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: <u>The well is located outside the USGS Deschutes Ground Water Study Area.</u>

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 <u>ground water</u>* for the proposed use:
 - a. **is** over appropriated, **is not** over appropriated, *or* **is 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 AND 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:

Condition with 7B and 7N

<u>A large amount of groundwater has been, and is being permitted in a relatively small area of the Paulina Basin. The sustainability of the resource in the area, given the new development, is unknown. The groundwater resource is likely relatively small (in area) within the Paulina Basin. There are no State Observation Wells in the vicinity of the new development.</u>

<u>Alluvium, other sediments, and tuffaceous sedimentary rocks overly basalt in the area.</u> The basalt is likely vertically fractured, and ground water in the basalt may be hydraulically connected to the overlying sediments, when saturated, and subsequently to surface water. The canyon of Beaver Creek is locally cut in Picture Gorge Basalt, and likely provides an interconnection with surface water.

C. GROUND WATER/SURFACE WATER CONSIDERATIONS, OAR 690-09-040

C1. 690-09-040 (1): Evaluation of aquifer confi	inement:
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Wel 1	Aquifer or Proposed Aquifer	Confined	Unconfined
1	Basalt		\boxtimes

Basis for aquifer confinement evaluation:

The groundwater flow system is characterized as generally unconfined with discontinuous low permeability layers causing local (discontinuous) confinement. The basalt water-bearing zone in the well is likely vertically fractured as evidenced by discrete water-bearing zones with similar hydraulic head in area wells. Widely-spaced (>100 ft) water-bearing zones in basalt at an area well (CROO 53636) with coincident hydraulic head also indicate vertical connectivity between the zones.

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 ¹/₄ 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?	
						TES NO ASSOMED	YES	NO
1	1	Beaver Creek	3810	3700	5,800			\boxtimes

Basis for aquifer hydraulic connection evaluation: <u>The elevation of the hydraulic head in the well will likely be slightly</u> above the surface water elevation, however, the aquifer unit (Picture Gorge Basalt) is not exposed at the nearest reach.

Water Availability Basin the well(s) are located within: BEAVER CR > CROOKED R - AT MOUTH

C3a. **690-09-040** (4): Evaluation of stream impacts for <u>each well</u> 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 \boxtimes box indicates the well is assumed to have the potential to cause PSI.

Well	SW #	Well < ^{1/4} 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:

Version: 08/15/2003

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-D	istributed	Wells											
Well	SW#	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
		%	%	%	%	%	%	%	%	%	%	%	%
Well Q	as CFS												
Interfer	ence CFS												
		%	%	%	%	%	%	%	%	%	%	%	%
Well Q	as CFS												
Interfer	ence CFS												
		%	%	%	%	%	%	%	%	%	%	%	%
Well Q	as CFS												
Interfer	ence CFS												
		%	%	%	%	%	%	%	%	%	%	%	%
Well Q	as CFS												
Interfer	ence CFS												
		%	%	%	%	%	%	%	%	%	%	%	%
Well Q	Well Q as CFS												
Interfer	ence CFS												
Distrib	outed Well	s											
Well	SW#	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
		%	%	%	%	%	%	%	%	%	%	%	%
Well Q	as CFS												
Interfer	ence CFS												
(4) 75	. 1.7			[1			[[
(A) = 10	tal Interi.												
$(\mathbf{B}) = 80$	% Nat. Q												
(C) = 1	% Nat. Q												
$(\mathbf{D}) = (A$	(C) > (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.

Basis for impact evaluation: _

The well will likely impact surface water somewhere along Beaver Creek. However, the locally confined nature of the aquifer unit and lack of nearby connectivity preclude the use of the available analytical models to evaluate the interference.

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.

C5. If properly conditioned, the surface water source(s) can be adequately protected from interference, and/or ground water use under this permit can be regulated if it is found to substantially interfere with surface water:

- i. \Box The permit should contain condition #(s)_
- ii. The permit should contain special condition(s) as indicated in "Remarks" below;

C6. SW / GW Remarks and Conditions:

If a permit is issued: condition with 7B, 7N, and 7J.

References Used:

Application File: G-17214

Thayer, T. P. 1966. Geologic map of the Canyon City quadrangle, northeastern Oregon: U.S. Geological Survey Miscellaneous Geologic Investigations Map I-447.

Swanson, D.A. 1969. Reconnaissance geologic map of the east half of the Bend quadrangle, Crook, Wheeler, Jefferson, Wasco, and Deschutes Counties, Oregon: U.S. Geological Survey Miscellaneous Geologic Investigations Map I-568.

Gonthier, J.B. 1985. A description of aquifer units in eastern Oregon: U.S. Geological Survey Water Resources Investigations Report 84-4095, 39 p., maps.

Walker, G. W. (editor) 1990. Geology of the Blue Mountains region of Oregon, Idaho, and Washington; Cenozoic geology of the Blue Mountains region: U.S. Geological Survey Professional Paper 1437, 135 p.

Paulina quadrangle map (USGS map, 1:24,000 scale), Dayville quadrangle map (USGS map, 1:100,000 scale).

D. WELL CONSTRUCTION, OAR 690-200

D1.	Well #:	: Logid:	
D2.	THE V a. b. c. d.	VELL does not meet current well construction standards based upon: review of the well log; field inspection by	; ;
D3.	THE V a. □ b. □ c. □ d. □ e. □	VELL construction deficiency: constitutes a health threat under Division 200 rules; commingles water from more than one ground water reservoir; permits the loss of artesian head; permits the de-watering of one or more ground water reservoirs; other: (specify)	
D4.	THE V	WELL construction deficiency is described as follows:	
D5.	THE V	 VELL a. was, or was not constructed according to the standards in effect at the time of original construction or most recent modification. b. I don't know if it met standards at the time of construction. 	
D6.	Route is filed	to the Enforcement Section. I recommend withholding issuance of the permit until evidence of well reconstruction with the Department and approved by the Enforcement Section and the Ground Water Section.	uction
TH	IS SECTIO	ON TO BE COMPLETED BY ENFORCEMENT PERSONNEL	
D7.	Well co	onstruction deficiency has been corrected by the following actions:	
		(Enforcement Section Signature), 200	·

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