

PUBLIC INTEREST REVIEW FOR GROUND WATER APPLICATIONS

TO: Water Rights Section Date April 13, 2012
 FROM: Ground Water/Hydrology Section Karl Wozniak
 Reviewer's Name
 SUBJECT: Application G- 17478 Supersedes review of November 4, 2011
 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: Lowell E. Patton County: Clackamas

- A1. Applicant(s) seek(s) .111 cfs from 1 well(s) in the Willamette Basin,
Clackamas River subbasin Quad Map: Damascus
- A2. Proposed use Primary & Supplemental Irrigation Seasonality: March 1 – October 30
- 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	CLAC 4075	A-1	CRB	0.111	2S/2E-13 SE/NE	1760' S, 225' W fr NE cor, S13
2						
3						
4						
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	168		80	3/5/1970	148	???	0-20 15-141		100-141	45	2	P

Use data from application for proposed wells.

- A4. **Comments:** There is no well log available for the original hole but CLAC 4075, a deepening log, indicates that the original hole had 20 feet of 6-inch casing installed. We have no information about the presence, kind, or depth of seal. This re-review was necessary to meet the requirements of OAR 690-09-040 (4) (d). The only substantive change in the review is in section C3a dealing with the stream depletion at 30 days.

- A5. **Provisions of the Willamette** 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: The well is greater than ¼ mile from a stream so the pertinent rules (OAR 690-502-0240) do not apply.

- A6. **Well(s) #** _____, _____, _____, _____, _____, tap(s) an aquifer limited by an administrative restriction. Name of administrative area: _____
 Comments: The well is about 225 feet west of the Damascus Groundwater Limited Area.

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) 7C, 7F ;
 - 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 well log indicates that the well is completed in soft black basalt. State geologic maps indicate that this is a volcanic sandstone and conglomerate (QTvcs) associated with a Boring Lava flow (Basalt of Carver) that crops out just northeast of the well. The geologic map indicates that the sandstone unit extends down to the level of the Clackamas River in the area due south of the well where it is overlain by, or abuts against, Quaternary alluvium of the Clackamas River floodplain. Geologic map contacts indicate that the unit underlies or is adjacent to alluvium along a narrow reach from Bakers Bridge to about 2000 feet upstream from the bridge. Elsewhere, the river is entrenched in Sandy River Mudstone. This geometry indicates that the sandstone aquifer is hydraulically connected to the river along this reach.

Very little groundwater-level data is available in the area. However, as the well produces from an aquifer that probably has an efficient connection to the river, groundwater withdrawals will be offset by stream depletion. Therefore, groundwater levels in the local aquifer are probably stable and groundwater supply is not likely to be adversely impacted by this new use as all of the use from the well will be buffered by diminished stream flow in the Clackamas River in the vicinity of Bakers Bridge.

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	Volcanic & Sandstone & Conglomerate	<input type="checkbox"/>	<input checked="" type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>

Basis for aquifer confinement evaluation: Geologic maps suggest that there are no confining layers associated with this aquifer.

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	Clackamas River	88	90	1420	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
1	2	Rock Creek			4700	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1	3	Richardson Creek			5400	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Basis for aquifer hydraulic connection evaluation: See Section B3 regarding hydraulic connection with the Clackamas River. The geometry of the local aquifer, the proximity of the well to the Clackamas River, and the likelihood of an efficient connection between the local aquifer and the Clackamas River suggest that all impacts will be to the Clackamas River (the cone of depression is not likely to reach Rock or Richardson Creeks). Therefore, there is no effective hydraulic connection between the aquifer and Rock Creek or Richardson Creek.

Water Availability Basin the well(s) are located within: Clackamas R > Willamette R – At Mouth #80

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?
1	1	<input type="checkbox"/>	<input type="checkbox"/>	SY90206A	1000	<input type="checkbox"/>	822	<input type="checkbox"/>	???	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>			<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>			<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>			<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>			<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>			<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>			<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>

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?
		<input type="checkbox"/>			<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>
		<input type="checkbox"/>			<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>
		<input type="checkbox"/>			<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>
		<input type="checkbox"/>			<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>

Comments: Because of the complex aquifer geometry, there is no readily available model to estimate stream interference. The pertinent rule, OAR 690-09-040 (4) (d) stipulates that the Department shall estimate the impact using a suitable model. In the previous review, the interference at 30 days was assumed to be >25% based on the aquifer geometry. However, there is no way to test this with a readily available analytical model. It is possible, because of the distance of the well from the river, that interference @ 30 days would be <25% but it would be difficult to design a field test to adequately determine the actual interference. Therefore, we cannot readily determine the interference @ 30 days.

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													
(A) = Total Interf.													
(B) = 80 % Nat. Q													
(C) = 1 % Nat. Q													
(D) = (A) > (C)		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
(E) = (A / B) x 100		%	%	%	%	%	%	%	%	%	%	%	%

D. WELL CONSTRUCTION, OAR 690-200

D1. Well #: 1 Logid: CLAC 4075

D2. **THE WELL does not meet current well construction standards based upon:**

- a. review of the well log;
- b. field inspection by _____;
- c. report of CWRE _____;
- d. other: (specify) _____

D3. **THE WELL construction deficiency:**

- 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) _____

D4. **THE WELL construction deficiency is described as follows:** _____

D5. **THE WELL** 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 to the Enforcement Section.** I recommend withholding issuance of the permit until evidence of well reconstruction is filed with the Department and approved by the Enforcement Section and the Ground Water Section.

THIS SECTION TO BE COMPLETED BY ENFORCEMENT PERSONNEL

D7. Well construction deficiency has been corrected by the following actions: _____

_____, 200____.

(Enforcement Section Signature)

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

Water Availability Tables

**CLACKAMAS R > WILLAMETTE R - AT MOUTH
WILLAMETTE BASIN**

Water Availability as of 11/3/2011

Watershed ID #: 80

Exceedance Level: 80%

Date: 11/3/2011

Time: 4:27 PM

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	2,670.00	325.00	2,340.00	0.00	1,000.00	1,340.00
FEB	2,900.00	361.00	2,540.00	0.00	1,000.00	1,540.00
MAR	2,800.00	330.00	2,470.00	0.00	1,000.00	1,470.00
APR	3,010.00	398.00	2,610.00	0.00	1,000.00	1,610.00
MAY	2,740.00	397.00	2,340.00	0.00	1,000.00	1,340.00
JUN	1,620.00	308.00	1,310.00	0.00	1,000.00	312.00
JUL	980.00	308.00	672.00	0.00	1,000.00	-328.00
AUG	822.00	294.00	528.00	0.00	890.00	-362.00
SEP	833.00	282.00	551.00	0.00	890.00	-339.00
OCT	882.00	276.00	606.00	0.00	1,000.00	-394.00
NOV	1,630.00	323.00	1,310.00	0.00	1,000.00	307.00
DEC	2,650.00	328.00	2,320.00	0.00	1,000.00	1,320.00
ANN	2,110,000.00	237,000.00	1,870,000.00	0.00	711,000.00	1,200,000.00

