

PUBLIC INTEREST REVIEW FOR GROUNDWATER APPLICATIONS

TO: Water Rights Section Date January 5, 2016

FROM: Groundwater Section Michael J. Thoma
Reviewer's Name

SUBJECT: Application G- 18153 Supersedes review of _____
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 groundwater 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: Jeff Willemsen County: Jackson

A1. Applicant(s) seek(s) 0.045 cfs from 1 well(s) in the Klamath Basin,
Cottonwood Cr subbasin

A2. Proposed use Irrigation (3.5 ac Primary) Seasonality: March 1 – October 32

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	JACK 61941	1	Bedrock	0.045	41S/02E-08 SENE	268' N, 271' W of E ¼ cor S 8
2						

* 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	3840	226	63	5/9/2014	400	0-22	+2.5-37.5	0-400	360-380	15		A

Use data from application for proposed wells.

A4. **Comments:** The well is likely producing from consolidated rock of the Colestin Fm composed of Early Western Cascades volcanoclastic rocks.

A5. ☐ **Provisions of the** _____ Basin rules relative to the development, classification and/or management of groundwater hydraulically connected to surface water ☐ **are**, or ☐ **are not**, activated by this application. (Not all basin rules contain such provisions.)
Comments: There are no basin rules for the Klamath Basin

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

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

B1. **Based upon available data**, I have determined that groundwater* 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 groundwater 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 groundwater 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 groundwater resource; or
- d. ☒ **will, if properly conditioned**, avoid injury to existing groundwater rights or to the groundwater resource:
 - i. ☒ The permit should contain condition #(s) 'Small' Water Use Reporting;
 - 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 groundwater production from no deeper than _____ ft. below land surface;
 - b. ☐ **Condition** to allow groundwater production from no shallower than _____ ft. below land surface;
 - c. ☐ **Condition** to allow groundwater production only from the _____ groundwater 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 Groundwater 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. **Groundwater availability remarks:** The proposed POA is located in a fairly isolated location between the Siskiyou Summit which forms the divide between the Rogue and Klamath River Basins and the Oregon-California border. There is very little development in the area so well logs are sparse (only 7 in the applicant's section and adjacent section) and the nearest long-term observation well is > 10 miles to the north in the Rogue Basin. Because there are no data on groundwater levels in the area, the department cannot determine over-appropriation. However, given the sparsity and low yields of wells in the area there is little concern that the proposed use will over-stress the aquifer or lead to injury of existing water users (there are no permitted POAs in the same section and no groundwater POAs within several miles).

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

Well	Aquifer or Proposed Aquifer	Confined	Unconfined
1	Bedrock of Colestin Fm	☒	☐
		☐	☐

Basis for aquifer confinement evaluation: The driller's log for the applicant's well reports SWL higher than reported "first water". Additionally, the Colestin Fm is composed of layers of volcanoclastic sediments and lava flows which may act as a layered aquifer-aquitard system.

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	East Fork Cottonwood Cr.	~3775	~3000	9750	☒	☐	☐	☐	☒
						☐	☐	☐	☐	☐
						☐	☐	☐	☐	☐

Basis for aquifer hydraulic connection evaluation: Higher GW elevation than surface water elevation; fractured nature of geology and generalized conceptual model of region

Water Availability Basin the well(s) are located within: E Fk Cottonwood Cr > Cottonwood Cr – At State Line

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?
There are no perennial streams within 1 mile of the proposed POA										

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?
There are no perennial streams within 1 mile of the proposed POA										

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	See comments below												
Interference CFS													
Distributed Wells													
Well	SW#	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
		%	%	%	%	%	%	%	%	%	%	%	%
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.

Comments:

Interference with the nearest perennial stream could not be estimated because the terrain (high-relief slopes) and geology (fractured, layered bedrock aquifer) do not meet model assumptions of the widely accepted techniques for determining stream depletion (e.g., Hunt 1999, 2003).

- 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 groundwater use under this permit can be regulated if it is found to substantially interfere with surface water:
- ☐ The permit should contain condition #(s) _____;
 - ☐ The permit should contain special condition(s) as indicated in "Remarks" below;

- C6. **SW / GW Remarks and Conditions:** There are no perennial surface water sources within 1 mile of the proposed POA and the nearest perennial creek is nearly 2 miles away and over 700 ft lower in elevation. The hydrogeology of the region surrounding the POA is difficult to constrain given the high relief, variable geology, and sparsity of wells.

References Used:

Hunt, B. 1999. *Unsteady Stream Depletion from Ground Water Pumping*. Journal of Hydrologic Engineering, Vol 8(1), pp 12-19

Hunt, B. 2003. *Unsteady Stream Depletion when Pumping from a Semiconfined Aquifer*. Journal of Hydrologic Engineering, Vol 8(1), pp 12-19

Wiley, T. J., J. D. McClaughry, and J. A. D'Allura. 2011. *Geologic Database and Generalized Geologic Map of Bear Creek Valley, Jackson County, Oregon*. Oregon Dept. of Geology and Mineral Industries. OFR O-11-11.

D. WELL CONSTRUCTION, OAR 690-200D1. **Well #:** _____ **Logid:** _____D2. **THE WELL does not appear to 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 or other comment is described as follows:** _____D4. ☐ **Route to the Well Construction and Compliance Section for a review of existing well construction.****Water Availability Tables**

E FK COTTONWOOD CR > COTTONWOOD CR - AT STATE LINE																																																																																																								
KLAMATH BASIN																																																																																																								
Water Availability as of 1/5/2016																																																																																																								
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Water Availability Calculation Monthly Streamflow in Cubic Feet per Second Annual Volume at 50% Exceedance in Acre-Feet <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 8%;">Month</th> <th style="width: 12%;">Natural Stream Flow</th> <th style="width: 12%;">Consumptive Uses and Storages</th> <th style="width: 12%;">Expected Stream Flow</th> <th style="width: 12%;">Reserved Stream Flow</th> <th style="width: 12%;">Instream Flow Requirement</th> <th style="width: 12%;">Net Water Available</th> </tr> </thead> <tbody> <tr><td>JAN</td><td>3.65</td><td>0.06</td><td>3.59</td><td>0.00</td><td>0.00</td><td>3.59</td></tr> <tr><td>FEB</td><td>11.20</td><td>0.07</td><td>11.10</td><td>0.00</td><td>0.00</td><td>11.10</td></tr> <tr><td>MAR</td><td>12.70</td><td>0.10</td><td>12.60</td><td>0.00</td><td>0.00</td><td>12.60</td></tr> <tr><td>APR</td><td>9.15</td><td>0.42</td><td>8.73</td><td>0.00</td><td>0.00</td><td>8.73</td></tr> <tr><td>MAY</td><td>2.90</td><td>0.62</td><td>2.28</td><td>0.00</td><td>0.00</td><td>2.28</td></tr> <tr><td>JUN</td><td>1.42</td><td>0.86</td><td>0.57</td><td>0.00</td><td>0.00</td><td>0.57</td></tr> <tr><td>JUL</td><td>0.47</td><td>1.13</td><td>-0.66</td><td>0.00</td><td>0.00</td><td>-0.66</td></tr> <tr><td>AUG</td><td>0.32</td><td>0.79</td><td>-0.47</td><td>0.00</td><td>0.00</td><td>-0.47</td></tr> <tr><td>SEP</td><td>0.27</td><td>0.63</td><td>-0.36</td><td>0.00</td><td>0.00</td><td>-0.36</td></tr> <tr><td>OCT</td><td>0.31</td><td>0.22</td><td>0.09</td><td>0.00</td><td>0.00</td><td>0.09</td></tr> <tr><td>NOV</td><td>1.74</td><td>0.05</td><td>1.70</td><td>0.00</td><td>0.00</td><td>1.70</td></tr> <tr><td>DEC</td><td>2.10</td><td>0.05</td><td>2.05</td><td>0.00</td><td>0.00</td><td>2.05</td></tr> <tr><td>ANN</td><td>5,130.00</td><td>302.00</td><td>4,890.00</td><td>0.00</td><td>0.00</td><td>4,890.00</td></tr> </tbody> </table>							Month	Natural Stream Flow	Consumptive Uses and Storages	Expected Stream Flow	Reserved Stream Flow	Instream Flow Requirement	Net Water Available	JAN	3.65	0.06	3.59	0.00	0.00	3.59	FEB	11.20	0.07	11.10	0.00	0.00	11.10	MAR	12.70	0.10	12.60	0.00	0.00	12.60	APR	9.15	0.42	8.73	0.00	0.00	8.73	MAY	2.90	0.62	2.28	0.00	0.00	2.28	JUN	1.42	0.86	0.57	0.00	0.00	0.57	JUL	0.47	1.13	-0.66	0.00	0.00	-0.66	AUG	0.32	0.79	-0.47	0.00	0.00	-0.47	SEP	0.27	0.63	-0.36	0.00	0.00	-0.36	OCT	0.31	0.22	0.09	0.00	0.00	0.09	NOV	1.74	0.05	1.70	0.00	0.00	1.70	DEC	2.10	0.05	2.05	0.00	0.00	2.05	ANN	5,130.00	302.00	4,890.00	0.00	0.00	4,890.00
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G18153 - Willemesen

1 G18153 POA

Current Obs Wells

- Other Well

PODs by Source Type

- Spring
- Stream
- Well

Water Availability Basins

Public Land Survey

- Township-R-Range
- Section Lines

Legend

- Spring
- Stream
- Well
- Water Availability Basins
- Public Land Survey
- Township-R-Range
- Section Lines

Map Labels:

- JACKSON CO
- SISKIYOU CO
- TR 37
- TR 38
- TR 39
- TR 40
- TR 41
- TR 42
- TR 43
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