

PUBLIC INTEREST REVIEW FOR GROUNDWATER APPLICATIONS

TO: Water Rights Section Date 11/4/2015
 FROM: Groundwater Section Michael J. Thoma
Reviewer's Name
 SUBJECT: Application G- 18135 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: Clifton L. Eldred County: Marion

A1. Applicant(s) seek(s) 0.12 cfs from 1 well(s) in the Willamette Basin,
Pudding River subbasin

A2. Proposed use Irrigation (9.88 acres – Primary) Seasonality: March 1 – October 31 (244 d)

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 | Alluvium | 0.12 | 07S/02W-16 SWSW | 260 ft N, 630 ft E of SW corner S16 |
| 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 | 200 | | 15 ^a | | 200 ^b | 0-20 ^b | 0-200 ^b | | 100-200 ^b | | | |

Use data from application for proposed wells.

A4. **Comments:** ^aSWL is based on an existing well at the applicant's address which was reconditioned in 2012 (MARI 7126-orig. / MARI 64240-recond.).
^bWell is proposed; information taken from application

A5. **Provisions of the** Willamette (OAR 690-502) 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: The proposed well is not within 1/4 mile of any perennial surface water features so the pertinent basin 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: _____

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) 7c (7-year); Large 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:** Groundwater use in the area of the applicant’s proposed well is primarily limited to small acreage farms and low usage (generally < 1 cfs). There are no reported SWL readings in close proximity of the proposed well but hydrographs from wells within 2 miles and in similar aquifer material show stable SWL trends over the past few decades (see attachment).

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 | Alluvium | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| | | <input type="checkbox"/> | <input type="checkbox"/> |

Basis for aquifer confinement evaluation: Sediments in this portion of the Willamette Valley are capped with ~60 ft of fine-grained silty material that creates a semi-confining layer (Gannett and Caldwell 1998). Most well logs list WBZs with coarse-grained sediments below but SWL depths are often at shallower depths within the overlying silty material.

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 | Fruitland Cr. | 175 | 165 | 2053 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| | | | | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

Basis for aquifer hydraulic connection evaluation: SWL depths are within the fine-grained sediments overlying the productive sands/gravels (i.e., confining layer is saturated) and are similar in elevation Fruitland Cr. and other nearby perennial surface water features (e.g., Little Pudding River).

Water Availability Basin the well(s) are located within: Pudding R > Molalla R – AB Mill Cr (ID# 151)

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"/> | IS73532B | 36 | <input type="checkbox"/> | 67.3 | <input type="checkbox"/> | << 25% ^a | <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"/> |

Comments: ^aFruitland Creek is a small creek underlain by several 10s of feet of fine-grained, low-conductivity material above the underlying productive sediments. These conditions produce minimal stream depletion values when modeled using the Hunt (2003) model.

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 | | | | | | | | | | | | | |
| (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.

Basis for impact evaluation: _____

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:
- i. 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:** The proposed well will likely be producing from coarse sediments (predominately sand/gravel with clay) which lie below a thick series of fine-grained silt (referred to as Willamette Silt Unit by Gannett and Caldwell 1998) which creates confined to semi-confined conditions and minimal interference between production wells in the coarse sediments and surface creeks due to the large lateral extent and low conductivity of the silt unit.

References Used: _____

Herrera, N. B., Burns, E. R., and T. D. Conlon. 2014. *Simulation of Groundwater Flow and the Interaction of Groundwater and Surface Water in the Willamette Basin and Central Willamette Subbasin*, Oregon. USGS Scientific Investigations Report 2014-5136

Gannet, M. W. and R. R. Caldwell. 1998. *Geologic Framework of the Willamette Lowland Aquifer System, Oregon and Washington*. USGS Professional Paper 1424-A.

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

D. WELL CONSTRUCTION, OAR 690-200

D1. 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

Water Availability Analysis

Detailed Reports

PUDDING R > MOLALLA R - AB MILL CR
 WILLAMETTE BASIN

Water Availability as of 11/4/2015

Watershed ID #: 151 ([Map](#))

Exceedance Level: 80%

Date: 11/4/2015

Time: 1:30 PM

Water Availability Calculation

Consumptive Uses and Storages

Instream Flow Requirements

Reservations

Water Rights

Watershed Characteristics

Water Availability Calculation

Monthly Streamflow in Cubic Feet per Second
 Annual Volume 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 | 1,040.00 | 125.00 | 915.00 | 0.00 | 36.00 | 879.00 |
| FEB | 1,180.00 | 115.00 | 1,060.00 | 0.00 | 36.00 | 1,030.00 |
| MAR | 1,010.00 | 80.10 | 930.00 | 0.00 | 36.00 | 894.00 |
| APR | 787.00 | 55.90 | 731.00 | 0.00 | 36.00 | 695.00 |
| MAY | 425.00 | 52.70 | 372.00 | 0.00 | 36.00 | 336.00 |
| JUN | 224.00 | 72.90 | 151.00 | 0.00 | 36.00 | 115.00 |
| JUL | 109.00 | 113.00 | -4.01 | 0.00 | 36.00 | -40.00 |
| AUG | 71.00 | 93.30 | -22.30 | 0.00 | 36.00 | -58.30 |
| SEP | 67.30 | 54.50 | 12.80 | 0.00 | 36.00 | -23.20 |
| OCT | 91.60 | 14.00 | 77.60 | 0.00 | 36.00 | 41.60 |
| NOV | 363.00 | 49.10 | 314.00 | 0.00 | 36.00 | 278.00 |
| DEC | 957.00 | 119.00 | 838.00 | 0.00 | 36.00 | 802.00 |
| ANN | 706,000.00 | 57,000.00 | 649,000.00 | 0.00 | 26,100.00 | 625,000.00 |

Well Location Map



Water-Level Trends in Select Nearby Wells

