

Groundwater Application Review Summary Form

Application # G- 18779

GW Reviewer J Woody Date Review Completed: 10-10-2019

Summary of GW Availability and Injury Review:

[] Groundwater for the proposed use is either over appropriated, will not likely be available in the amounts requested without injury to prior water rights, OR will not likely be available within the capacity of the groundwater resource per Section B of the attached review form.

Summary of Potential for Substantial Interference Review:

There is the potential for substantial interference per Section C of the attached review form.

Summary of Well Construction Assessment:

[] The well does not appear to meet current well construction standards per Section D of the attached review form. Route through Well Construction and Compliance Section.

This is only a summary. Documentation is attached and should be read thoroughly to understand the basis for determinations and for conditions that may be necessary for a permit (if one is issued).

PUBLIC INTEREST REVIEW FOR GROUNDWATER APPLICATIONS

TO: Water Rights Section Date 10/10/2019
 FROM: Groundwater Section Jen Woody
 Reviewer's Name
 SUBJECT: Application G- 18779 Supersedes review of 8/21/2019
 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: Michael Bernards County: Yamhill

A1. Applicant(s) seek(s) 0.0525 cfs from 2 well(s) in the Willamette Basin,
Coast Range subbasin

A2. Proposed use nursery use: 25 acres Seasonality: year-round

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	YAMH 54039	1	Marine Sedimentary Rock Aquifer	0.0525	5S/5W-21 NW SE	2370' N, 1950' W fr SE cor S 21
2	proposed	2	Marine Sedimentary Rock Aquifer	0.0525	5S/5W-21 SW NE	2795' N, 1760' W fr SE cor S 21
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	178	105	9	02/23/2005	140	0-43	0-43	2-128	88-108, 118-128	100		air
2	178	*	*	*	140	0-43	0-43	2-128				

Use data from application for proposed wells.

A4. **Comments:** *Well 2 is not yet drilled, but the application proposes construction similar to well 1/YAMH 54039.

A5. **Provisions of the** Willamette 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: 690-502-0240 classifies use from unconfined alluvial aquifers. This application proposes use from a confined aquifer, so this rule is not activated.

A6. **Well(s) #** _____, _____, _____, _____, _____, tap(s) an aquifer limited by an administrative restriction.

Name of administrative area: N/A

Comments: N/A

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) Medium water use reporting, 7C;
 - 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 applicant proposes to develop 0.0525 cfs (approximately 24 gpm) from 2 wells completed in the Tertiary marine volcanic and sedimentary rock aquifer, specifically the Nestucca Formation (Yeats et al., 1996). These marine sedimentary rocks are generally fine-grained, well cemented and provide low well yields (Gannett and Caldwell, 1998). Approximately 40 feet of Willamette silt overlie the marine sedimentary rock, and the water table resides in the silt. Groundwater flow in the marine sedimentary rock aquifers is predominantly through fractures with variable connectivity.

There are no nearby, long-term static water level data available in the subject aquifer. Therefore, the groundwater resource cannot be determined to be over-appropriated. There are a total of 15 new water well logs on file within Sections 21, 22, 27, 28, indicating low-density groundwater development. These wells describe sandstone, claystone, shale and occasionally basalt. The median reported yield is 10 gpm, which suggests that the requested rate of 12 gpm (total of 24 gpm) per well is feasible.

Well-to-well interference is unpredictable in fractured rock aquifers because fractures are not continuous or consistently connected. The nearest home sites with exempt wells appear to be approximately ¼ mile from the proposed POAs. The proximity to neighboring wells raises the potential for interference and injury to senior groundwater users. Water use and water level monitoring and reporting conditions are recommended to assess the project’s long-term impact to the resource.

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	Marine Sedimentary Rock Aquifer	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2	Marine Sedimentary Rock Aquifer	<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"/>

Basis for aquifer confinement evaluation: Nearby well logs of similar depth report static water levels that rise tens of feet above water-bearing zones, indicating the aquifer is more confined than unconfined.

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	Muddy Creek	169	150	2200	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2	1	Muddy Creek	169	150	1750	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
1	2	Unnamed tributary to Deer Cr	169	155	1200	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2	2	Unnamed tributary to Deer Cr	169	155	1680	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
1	3	Deer Creek	169	150	3500	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2	3	Deer Creek	169	150	4350	<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"/>
						<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: Muddy Creek has incised through approximately 200 feet of marine sedimentary rocks. The subject wells have or are proposed to have a shallow seal (0-43 feet below land surface). Therefore, the potential for hydraulic connection is examined at the elevation of the estimated static groundwater level. The groundwater level is coincident with or above perennial reaches of nearby creeks within one mile, indicating hydraulic connection.

Water Availability Basin the well(s) are located within: Watershed ID #91: DEER CR > S YAMHILL R - AT MOUTH

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"/>	MF91A	6.0	<input type="checkbox"/>	5.25	<input type="checkbox"/>	*	<input type="checkbox"/>
2	1	<input type="checkbox"/>	<input type="checkbox"/>	MF91A	6.0	<input type="checkbox"/>	5.25	<input type="checkbox"/>	*	<input type="checkbox"/>
1	2	<input checked="" type="checkbox"/>	<input type="checkbox"/>	MF91A	6.0	<input type="checkbox"/>	5.25	<input type="checkbox"/>	*	<input checked="" type="checkbox"/>
2	2	<input type="checkbox"/>	<input type="checkbox"/>	MF91A	6.0	<input type="checkbox"/>	5.25	<input type="checkbox"/>	*	<input type="checkbox"/>
1	3	<input type="checkbox"/>	<input type="checkbox"/>	MF91A	6.0	<input type="checkbox"/>	5.25	<input type="checkbox"/>	*	<input type="checkbox"/>
2	3	<input type="checkbox"/>	<input type="checkbox"/>	MF91A	6.0	<input type="checkbox"/>	5.25	<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: Well 1 is less than ¼ mile and hydraulically connected to an unnamed tributary to Deer Creek, which triggers PSI.

* Interference at 30 days could not be estimated because the terrain (high-relief slopes) and geology (fractured bedrock aquifer) do not meet model assumptions of the widely accepted technique for determining stream depletion (i.e. Hunt 1999, 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-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		%	%	%	%	%	%	%	%	%	%	%	%

(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: N/A

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:** Under OAR 690-009 the proposed use produces the finding of potential for substantial interference with nearby surface water.

References Used: Conlon, Terrence D., Wozniak, Karl C., Woodcock, Douglas, Herrera, Nora B., Fisher, Bruce J., Morgan, David S., Lee, Karl K., and Hinkle, Stephen R., 2005, Ground-Water Hydrology of the Willamette Basin, Oregon: U.S. Geological Survey Scientific Investigations Report 2005-5168.

Gannett, Marshall W., and Caldwell, Rodney R., 1998, Geologic Framework of the Willamette Lowland Aquifer System, Oregon and Washington: U.S. Geological Survey Professional Paper 1424-A.

OWRD groundwater level database, accessed 8/22/2019.

US Geologic Survey Topographic maps, Muddy Valley and Ballston Quadrangles.

Yeats, R.S., Werner, K.S., Popowski, T.A., 1996, Geologic map of the northern Willamette Valley, Clackamas, Marion, Multnomah, Polk, Tillamook, Washington and Yamhill counties, Oregon: U.S. Geological Survey, Reston, VA., Professional Paper PP-1560, map

D. WELL CONSTRUCTION, OAR 690-200

D1. Well #: _____ Logid: N/A _____

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

DEER CR > S YAMHILL R - AT MOUTH WILLAMETTE BASIN

Water Availability as of 8/20/2019

Watershed ID #: 91 ([Map](#))

Exceedance Level:

Date: 8/20/2019

Time: 2:32 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	104.00	2.55	101.00	0.00	80.00	21.40
FEB	125.00	2.53	122.00	0.00	80.00	42.50
MAR	101.00	2.48	98.50	0.00	80.00	18.50
APR	60.90	2.49	58.40	0.00	80.00	-21.60
MAY	31.40	3.61	27.80	0.00	80.00	-52.20
JUN	15.60	4.96	10.60	0.00	25.00	-14.40
JUL	8.47	6.96	1.51	0.00	15.00	-13.50
AUG	6.06	6.00	0.06	0.00	8.00	-7.94
SEP	5.25	4.10	1.15	0.00	6.00	-4.85
OCT	5.36	2.42	2.94	0.00	40.00	-37.10
NOV	16.20	2.29	13.90	0.00	80.00	-66.10
DEC	77.70	2.41	75.30	0.00	80.00	-4.71
ANN	62,400.00	2,590.00	59,800.00	0.00	39,400.00	28,700.00

Well Location Map

G-18779 Bernards 5S/5W- Section 21

