

MEMO

July 11, 2016

FROM: GW: Phil Marcy
(Reviewer's Name)

☐ YES☒ NO☐ YES☒ NO

☐ Per ORS 390.835, the Groundwater 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.**

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.

[illegible]

PUBLIC INTEREST REVIEW FOR GROUNDWATER APPLICATIONS

TO: Water Rights Section Date 07/11/2016

FROM: Groundwater Section Phillip I. Marcy
Reviewer's Name

SUBJECT: Application G- 18177 Supersedes review of 03/11/2016
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: Jerry A. and Linda K. Miller County: Harney

A1. Applicant(s) seek(s) 1.62 cfs from 3 well(s) in the Malheur Basin,
Crane Creek subbasin

A2. Proposed use Supplemental Irrigation Seasonality: March 1st – October 31st (244 days)

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	Clay	0.67	25S/35E-34 SW-SE	95'N, 1780'W fr SE cor S 34
2	Proposed	2	Clay	0.67	26S/35E-3 NW-NE	765'S, 915'W fr SE cor S 34
3	Proposed	3	Clay	0.67	26S/35E-3 NE-NW	1025'S/1540'W fr SE cor S 34
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	3842	NA	NA	NA	350	0-40	0-350	?	?	?	?	NA
2	3835	NA	NA	NA	350	0-40	0-350	?	?	?	?	NA
3	3834	NA	NA	NA	350	0-40	0-350	?	?	?	?	NA

Use data from application for proposed wells.

A4. **Comments:** The three proposed POA wells will pump water directly to center pivots under normal conditions, but will be pumped to a proposed reservoir during low-water or drought conditions. Application states that proposed wells are to be cased deep to avoid connection with the shallow alluvial aquifer.

A5. ☒ **Provisions of the** Malheur (690-510) 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: _____

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) 7N; 7T; "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 Sedimentary/Volcaniclastic groundwater reservoir between approximately 150 ft. and 250 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:** Little information is available concerning wells producing from other than the shallow alluvium. HARN 1433 is located over one mile to the south of the proposed well locations, and encounters "solid rock" at three feet below land surface, producing water from reported "crevices" in rock. Nearby well HARN 1434 is located more than two miles to the east of the proposed POA wells, and produces from volcanic rock reported at 28 to 90 feet below land surface. The driller's log for this well reports a sustained yield of 550 gallons per minute with 80 feet of drawdown after 2 hours. Geologic maps of the area indicate the proposed POA wells are situated to possibly encounter both Steens basalt and the younger Venator Ranch basalts (Camp, unpublished data), possibly in addition to Devine Canyon tuff and associated tuffaceous sediments. However, due to extensive fault offsets mapped in the region, stratigraphy encountered at the proposed POA locations may not include all local lithologies. Water level data for this area is sparse, and there is no evidence to conclude that the groundwater resource is over-appropriated or cannot sustain the proposed withdrawal rate. Condition 7N (annual measurement condition) is recommended, as well as limiting production to either unconsolidated volcaniclastic materials or fractured rock beneath solid, competent basalt flows likely near the surface at the proposed POA locations.

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	Sedimentary/Volcaniclastic	☒	☐
2	Sedimentary/Volcaniclastic	☒	☐
3	Sedimentary/Volcaniclastic	☒	☐
		☐	☐
		☐	☐

Basis for aquifer confinement evaluation: Driller's logs for nearby wells report lava flows of variable thicknesses in the shallow subsurface, and production of groundwater from beneath these successions. The character of these lava flows is assumed to be coherent and continuous on a local scale, providing a barrier to vertical migration of groundwater toward surface discharge.

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	Crane Creek	~3800	3826	3000	☐	☒	☐	☐	☒
2	1	Crane Creek	~3800	3826	2100	☐	☒	☐	☐	☒
3	1	Crane Creek	~3800	3826	2000	☐	☒	☐	☐	☒
						☐	☐	☐	☐	☐
						☐	☐	☐	☐	☐
						☐	☐	☐	☐	☐

Basis for aquifer hydraulic connection evaluation: Confining bedrock above production zone within proposed POA wells occurs at an elevation not incised by streams within one mile of any of the proposed POA locations. Springs located within one mile to the east are significantly higher in elevation than the expected head elevation within proposed wells.

Water Availability Basin the well(s) are located within: 31011629 (Crane Creek > S Fk Malheur River – Above Beaver Ck)

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?
		☐	☐			☐		☐		☐
		☐	☐			☐		☐		☐
		☐	☐			☐		☐		☐
		☐	☐			☐		☐		☐
		☐	☐			☐		☐		☐
		☐	☐			☐		☐		☐
		☐	☐			☐		☐		☐
		☐	☐			☐		☐		☐

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: This section does not apply.

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													
		%	%	%	%	%	%	%	%	%	%	%	%
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: This section does not apply.

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:**

If a permit is issued, the following special conditions shall apply:

- 1) POA wells shall not be constructed to produce groundwater from shallow alluvium above solid bedrock reported in nearby wells. POA wells shall be constructed from alluvial or volcanoclastic materials beneath solid volcanic rock, requiring continuous case and continuous seal from land surface to no less than five feet into solid rock overlying the production zone.
- 2) For the first well drilled under this permit, drill cuttings shall be collected at 10-foot intervals and at changes in lithology in the well, and a labeled split of each sampled interval shall be provided to the Department.

References Used:

Local Driller's logs, including HARN 1433, HARN 1434, and HARN 1848.

Application G-18177, and included application map.

Greene, R.C., Walker, G.W., and Corcoran, R.E., 1972. Geologic Map of the Burns Quadrangle, Oregon. USGS Miscellaneous Geologic Investigations Map I-680, 1:250,000.

Camp, V.C., Ross, M., Hanson, B., Unpub. mat'l., Geologic map of the Venator and Circle Bar quadrangles, Eastern Oregon, map scale 1:24,000.

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**

DETAILED REPORT ON THE WATER AVAILABILITY CALCULATION

Watershed ID #: 31011629
Time: 9:53 AMCRANE CR > S FK MALHEUR R - AB BEAVER CR
Basin: MALHEURExceedance Level: 80
Date: 07/11/2016

Month	Natural Stream Flow	Consumptive Use and Storage	Expected Stream Flow	Reserved Stream Flow	Instream Requirements	Net water Available
Monthly values are in cfs. Storage is the annual amount at 50% exceedance in ac-ft.						
JAN	0.89	0.31	0.58	0.00	0.00	0.58
FEB	2.70	1.83	0.87	0.00	0.00	0.87
MAR	4.22	2.81	1.41	0.00	0.00	1.41
APR	8.84	5.59	3.25	0.00	0.00	3.25
MAY	3.49	5.73	-2.24	0.00	0.00	-2.24
JUN	2.48	4.45	-1.97	0.00	0.00	-1.97
JUL	1.46	1.65	-0.19	0.00	0.00	-0.19
AUG	0.76	0.72	0.04	0.00	0.00	0.04
SEP	0.86	0.51	0.35	0.00	0.00	0.35
OCT	1.00	0.41	0.59	0.00	0.00	0.59
NOV	0.99	0.34	0.65	0.00	0.00	0.65
DEC	0.77	0.32	0.45	0.00	0.00	0.45
ANN	2,890	1,490	1,610	0	0	1,610

Well Location Map

