

PUBLIC INTEREST REVIEW FOR GROUNDWATER APPLICATIONS

TO: Water Rights Section Date 5/15/2015

FROM: Groundwater Section Gerald H. Grondin (Darrick E. Boschmann)
Reviewer's Name

SUBJECT: Application G- 17943 Supersedes review of N.A.
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: Joe E. Miller County: Harney

A1. Applicant(s) seek(s) 2 cfs from 1 well(s) in the Malheur Lake Basin,
Catlow Valley subbasin Quad Map: Blitzen NW

A2. Proposed use: Irrigation (160 acres primary) Seasonality: *April 1 to October 31

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	3	basin fill <u>OR</u> bedrock	2	33/30-12 NE-NE	1326'S, 734'W fr NE cor s 12
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	4575	?	?	?	500	0-20	?	?	?	?	?	?

Use data from application for proposed wells.

A4. **Comments:** _____

The proposed well is in Harney County in the northern Catlow Valley, about 13 miles southwest of the town of Frenchglen. The area is surficially mapped as QTs (lacustrine, fluvialite, and aeolian sedimentary rocks...) by Walker and Reppening (1965). Underlying the Quaternary deposits at an unknown depth are Tertiary welded tuffs and basalt bedrock. Based on local well logs it is possible that the proposed well will penetrate through the predominantly basin fill unit into the underlying predominantly volcanic/basalt bedrock unit.

***Note:** The period of use requested on the application is April 1st to October 31st (214 days), which is not the typical irrigation season for this area of March 1st to October 31st (245 days). This review assumes the period of use requested in the application was the intent of the applicant.

- A5. ☒ **Provisions of the** Malheur Lake 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: _____

OAR 690-512-0040

The rule states: “(1) Except as provided in section (3) of this rule, the Department shall not accept an application for permit, or issue a permit, for any use of surface water, or of groundwater the use of which has the potential to substantially interfere with surface water, in the Malheur Lake Basin unless the applicant shows, by a preponderance of evidence, that unappropriated water is available to supply the proposed use at the times and in the amounts requested. The evidence provided shall be prepared by a qualified hydrologist or other water resources specialist and shall include:

(a) Streamflow measurements of gage records from the source or, for use of groundwater, the stream in hydraulic connection with the source; or

(b) An estimate of water availability from the source or, for use of groundwater, the stream in hydraulic connection with the source which includes correlations with streamflow measurements or gage records on other, similar streams and considers current demands for water affecting the streamflows.”

This review does not find a potential for substantial interference with surface water.

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

Name of administrative area: _____

Comments: _____

Currently no administrative 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) 7B, 7E, 7N, 7P, 7T, 7K;
 - 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:** _____

There are two State Observation Wells in the Catlow Valley. The state observation well with long term data closest to the proposed wells is State Observation Well 1151 (HARN 900) located in T33S/R31E-sec 8ac; about 1.5 miles from the proposed well; which has a period of record from 1987-2014. The other is State Observation Well 1150 (HARN 1683) located in T33S/R31E-sec 31ddc; about 5 miles from the proposed well; which has a period of record from 1987-2008. Water level trends in both wells indicate some level of decline over the period of record (see attachment); however the relative contribution of climate and groundwater withdrawals to this decline cannot be determined. Notably however, state observation well 1151 (HARN 900) is in proximity to an area of relatively higher groundwater pumpage, and records a somewhat greater overall decline.

If a permit is issued, the following conditions are recommended:

7B: Interference Condition

7E: Proposed Well location Condition

7N: Annual Measurement and Decline Condition

7P: Well Tag Condition

7T: Dedicated Measuring Tube Condition for all POA wells

Flow meter condition: Use the water rights “large” permit condition requiring a totalizing flow meter and reporting

7K: The proposed well shall be constructed to develop groundwater from either the predominantly basin fill unit or the underlying predominantly volcanic/basalt bedrock unit, but not both.

If the well is to develop groundwater from the predominantly volcanic/basalt bedrock unit, the well shall be continuously cased and continuously sealed a minimum of five (5) feet into the predominantly volcanic/basalt bedrock beneath the predominantly basin fill unit. The well may not be completed in such a manner that it allows ground water to be developed from the overlying basin fill. If during well construction, it becomes apparent that the well can be constructed to eliminate interference with nearby shallow wells or hydraulically connected streams in a manner other than specified in this permit, the permittee can contact the Department Hydrogeologist for this permit or the Ground Water/Hydrology Section Manager to request approval of such construction. The request shall be in writing, and shall include a rough well log and a proposed construction design for approval by the Department. The request can be approved only if it is received and reviewed prior to placement of any permanent casing and sealing material. If the well is constructed first and then the request made, requested modification will not be approved. The new well depth and construction specifications will be incorporated into any certificate issued for this permit.

If the well is to develop groundwater from the predominantly basin fill unit, it may not be completed in such a manner that it allows groundwater to be developed from the underlying predominantly volcanic/basalt bedrock unit. If, during the course of drilling, the well penetrates through the predominantly basin fill unit into the predominantly volcanic/basalt bedrock unit, the lower part of the well below the basin fill shall be properly abandoned (sealed).

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	basin fill OR bedrock	☐	☒
		☐	☐
		☐	☐
		☐	☐
		☐	☐

Basis for aquifer confinement evaluation: _____

Some local well logs report static water levels that are somewhat above the depth that groundwater was first encountered. It is unknown however how continuous any overlying fine grained material is, and given the minimal head difference reported in local well logs it is likely that the regional aquifer is unconfined to weakly semiconfined.

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	Rock Creek	4465	4588	31000	☐	☒	☐	☐	☒
1	2	Roaring Springs	4465	4635	42000	☐	☒	☐	☐	☒
						☐	☐	☐	☐	☐
						☐	☐	☐	☐	☐
						☐	☐	☐	☐	☐
						☐	☐	☐	☐	☐
						☐	☐	☐	☐	☐
						☐	☐	☐	☐	☐

Basis for aquifer hydraulic connection evaluation: _____

This evaluation considers perennial reaches of surface water only (see memo by Ivan Gall, 1/15/2008).

The groundwater elevation cited above is derived from the 9/19/2004 static water level reported on the water well report for HARN 51091 located in 33S/30E-12 SE-NE.

According to Waring (1909) Roaring Springs “come forth well up on the face of the scarp, not from the edge of the valley alluvium as they would if they rose along fault fissures.” Further, Waring notes that these springs “issue from a coarse tuffaceous bed”. These observations suggest that the source water for these springs is likely from recharge on the slopes of Steens Mountain to the east, rather than from groundwater flow from within the Catlow Valley.

The nearest perennial reach of Rock Creek is the sink of this stream located ~11 miles to the west. At this location the elevation of Rock Creek is well above the estimated groundwater elevation at the location of the proposed wells. Groundwater at the proposed locations does not appear to provide baseflow to this reach of Rock Creek.

Water Availability Basin the well(s) are located within: No WAB data available.

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: _____

C3a./C3b. No analysis here. All wells are more than 1 mile from perennial reaches of hydraulically connected surface water.

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													
		%	%	%	%	%	%	%	%	%	%	%	%
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: _____

No analysis. There is no WAB data available. Additionally, available data indicate that Roaring Springs and Rock Creek do not appear to be hydraulically connected to groundwater at the proposed well. Further, other surface water bodies in the vicinity of the proposed POA well are intermittent, and lie at elevations well above the groundwater elevation in this area.

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 ground water 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** _____

C1. 690-09-040 (1)

It is determined that all wells will produce water from an unconfined aquifer.

C2. 690-09-040 (2) (3)

It is determined that all wells are not hydraulically connected to Roaring Springs and Rock Creek.

C3a./C3b. No analysis here. All wells are more than 1-mile from perennial reaches of hydraulically connected surface water.

C4a. 690-09-040 (5)

No analysis. There is no WAB data available. Additionally, available data indicate that Roaring Springs and Rock Creek do not appear to be hydraulically connected to groundwater at the proposed well. Further, other surface water bodies in the vicinity of the proposed POA well are intermittent, and lie at elevations well above the groundwater elevation in this area.

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References Used:

OWRD water well reports, water level data, and/or hydrographs

Walker, G.W., and Repenning, C.A., 1965, Reconnaissance geologic map of the Adel quadrangle, Lake, Harney, and Malheur Counties, Oregon: U.S. Geological Survey, Miscellaneous Geologic Investigations Map I-446, scale 1:250,000

Waring, Gerald Ashley, 1909, Geology and water resources of the Harney Basin region, Oregon: Govt. Print. Off., Water Supply Paper 231, 93 p.

Memo by Ivan Gall, 1/15, 2008

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** – No WAB data available.

State Observation Well 1151 (HARN 900)
 TD = 450' BLS
 Land Surface Elev. = 4566' AMSL

Catlow Valley State Observation Wells

State Observation Well 1150 (HARN 1683)
 TD = 610' BLS
 Land Surface Elev. = 4572' AMSL



