

Groundwater Application Review Summary Form

Application # G- 18585

GW Reviewer J. Kemper / M. Thome Date Review Completed: 01-29-19

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 1/29/2019
 FROM: Groundwater Section Joe Kemper / Michael Thoma
 Reviewer's Name
 SUBJECT: Application G- 18565 Supersedes review of NA
 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: Marc & Karen Brown County: Josephine

A1. Applicant(s) seek(s) 0.13* cfs from 1 well(s) in the Rogue Basin,
Applegate subbasin

A2. Proposed use Irrigation (10.54 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	PROPOSED	2	Alluvial	0.13*	37S/6W-18 SE-NE	538' N, 844' W fr E1/4 cor, S18
2						
3						

* 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	1120	na	60-80†	na	200‡	18	20	na	na	na	na	na

Use data from application for proposed wells.

A4. **Comments:** *The application did not list a proposed rate so this review assumes the maximum allowed rate for irrigation (1/80 cfs per acre) and a maximum rate of 0.13 cfs (58 gpm). This rate exceeds 90% of the well yields for the area (Figure 2).
 †Static water level is estimated from nearby well logs.

‡The application indicates that the proposed well will target unconsolidated alluvium with a maximum depth of 200 feet. Geologic maps, LIDAR imagery, and well logs for adjacent wells indicate that the proposed well depth and location would likely access between 100 and 200 feet of alluvium. **OAR 690-200-0043 requires that a water supply well shall not be constructed in a manner that allows commingling from one aquifer to another so production from this well under this application is limited to the alluvial aquifer system.**

A5. ☐ **Provisions of the** Rogue (690-515) 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 Rogue Basin rules contain no such provisions.

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-yr SWL); 7J; Medium 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 alluvial groundwater reservoir between approximately 0 ft. and 200 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's proposed POA is intended to produce from alluvial sediments adjacent to the Applegate River and Cheney Creek. There are no OWRD observation well data within 1 mile that access the same aquifer system as the proposed POA so capacity of the resource cannot be determined. There is moderate domestic well development north and west of the proposed POA location but the estimated use rate is not likely to produce injury – however, standard interference conditions should be applied.

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	☐	☒
		☐	☐
		☐	☐

Basis for aquifer confinement evaluation: The proposed aquifer is unconsolidated alluvium and well logs for adjacent wells does not show evidence of a laterally extensive confining unit. Also, the proposed 18 ft seal depth would not likely be sufficient to isolate confined aquifer zones if any were encountered at depth.

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	Little Cheney Creek	1040-1060	1050	1350	☒	☐	☐	☐	☒
1	2	Cheney Creek	1040-1060	995	2015	☒	☐	☐	☐	☒
						☐	☐	☐	☐	☐
						☐	☐	☐	☐	☐

Basis for aquifer hydraulic connection evaluation: The observed groundwater elevation is higher than adjacent streams, indicating that groundwater flows towards and discharges to surface water.

Water Availability Basin the well(s) are located within: CHENEY CR > APPLGATE R - AT MOUTH & APPLGATE R > ROGUE 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	☐	☐	na	na	☐	0.19	☒	< 10%	☒
1	2	☐	☐	IS71016A	0.25	☒	0.19	☒	< 10%	☒
		☐	☐			☐		☐		☐

Comments: Pumping effects on adjacent surface water sources are evaluated using the Hunt (1999) stream depletion model with aquifer parameters representative of the local geology. Model parameters and results are presented in Figure 4.

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?
			☐			☐		☐		☐

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
1	3	%	%	%	%	%	%	%	%	%	%	%	%
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:
- ☐ The permit should contain condition #(s) _____;
 - ☐ The permit should contain special condition(s) as indicated in "Remarks" below;

C6. **SW / GW Remarks and Conditions:** The applicant's proposed POA would be producing from an aquifer that has been found to be hydraulically connected to surface water – specifically Cheney Cr and Little Cheney Creek – at a distance of less than 1 mile. The proposed maximum rate of appropriation is greater than 1% of the pertinent adopted perennial streamflow for Cheney Creek and also greater than 1% of the adopted instream water right IS71016. Per OAR 690-009-0040(4) the POA is assumed to have the Potential for Substantial Interference. Reducing the proposed rate to < 0.0019 cfs (1227 gal/day) would avoid this automatic assumption of PSI per OAR 690-0090-0040(4)(c).

References Used:

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

Oregon Department of Geology and Mineral Industries, *Geologic Map of Oregon*. <http://www.oregongeology.org/geologicmap/>

OWRD Well Log Database – Accessed 1/30/2019.

Ramp, L. and Peterson, N. 2004. *Geologic Map of Josephine County, Oregon*. Oregon Dept. of Geol. and Mineral Industries, OFR O-04-13.

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.
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Figure 1: Water Availability Tables

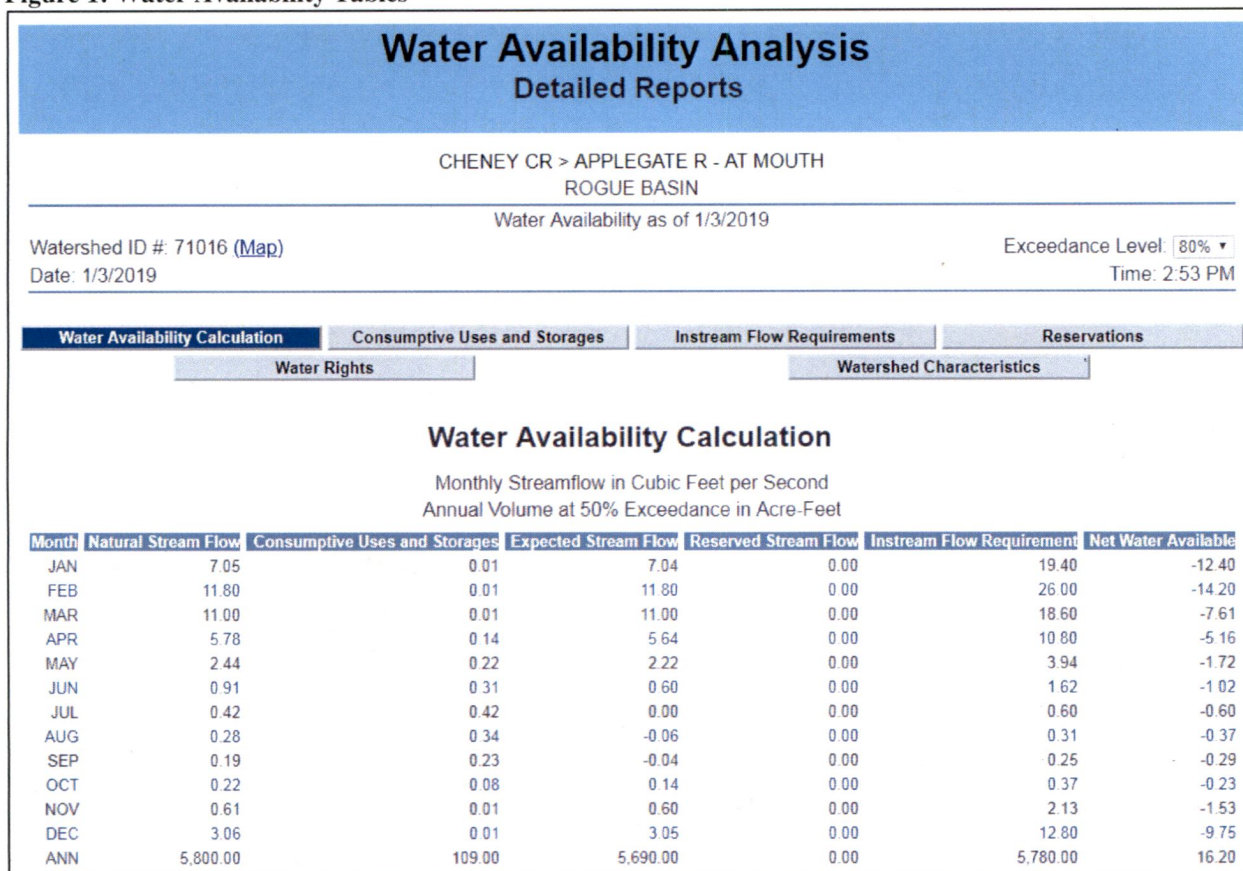


Figure 2: Distribution of Well Log Statistics for Nearby Wells

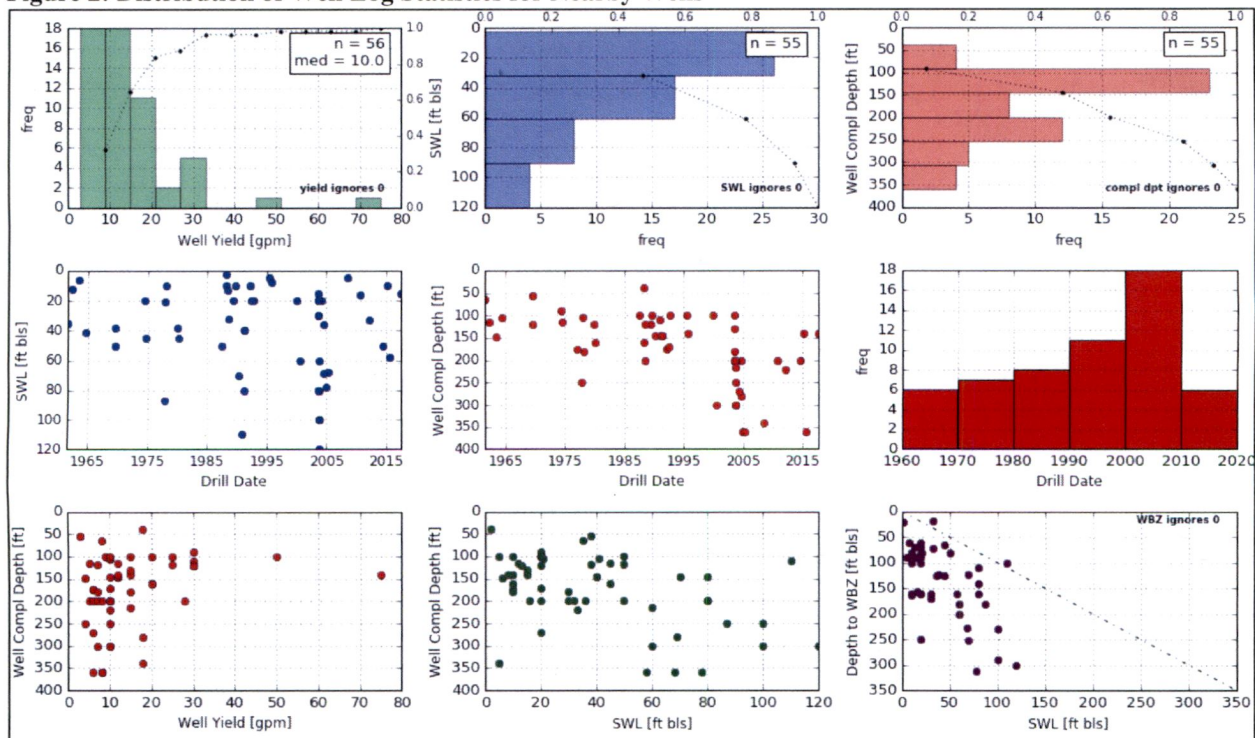


Figure 3: Well Location Map

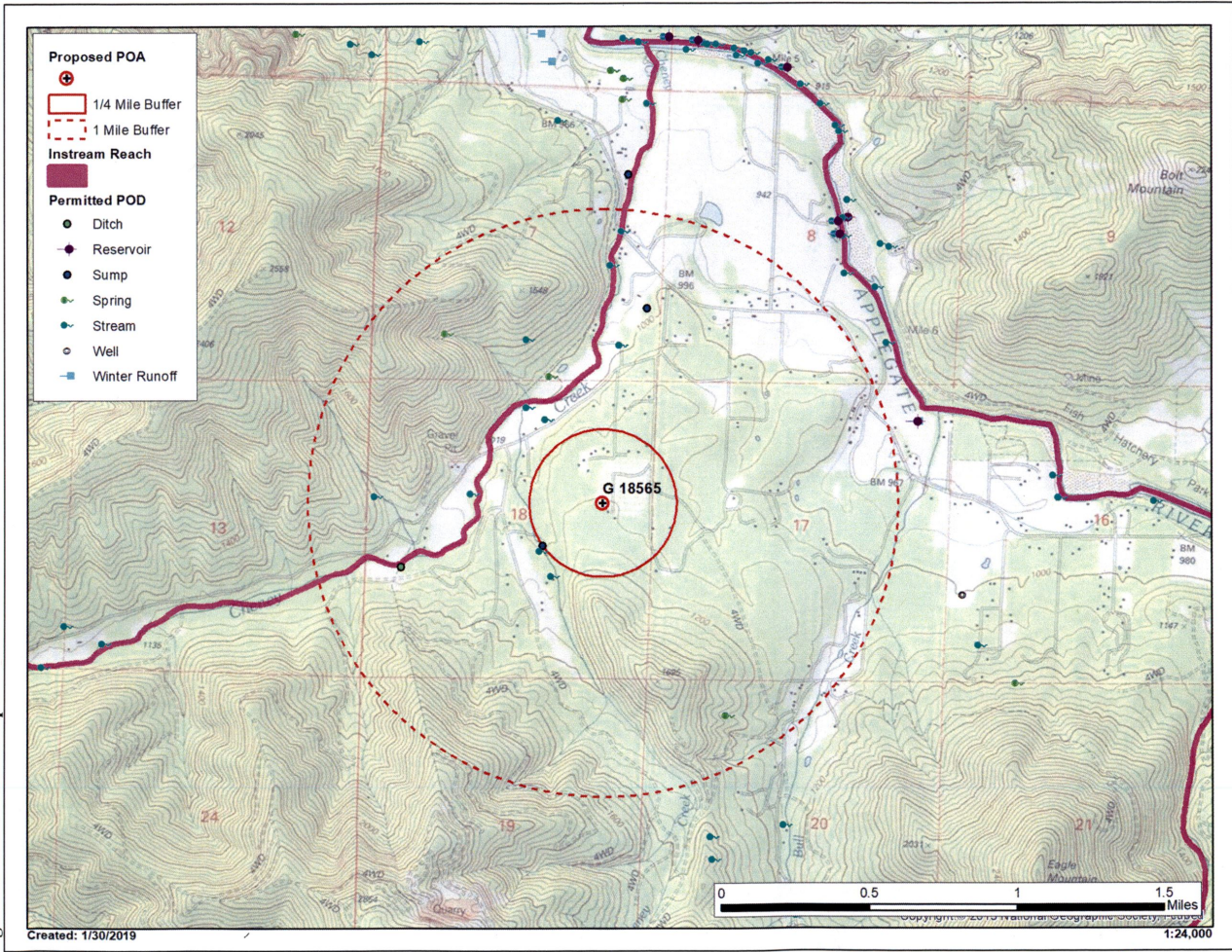


Figure 4: Stream Depletion Model: parameter values represent the range of likely values for the given geology

74 PyHunt stream depletion analysis tool

Application type:	G
Application number:	18565
Well number:	1
Stream Number:	1
Pumping rate (cfs):	0.3
Pumping duration (days):	365

Parameter	Symbol	Scenario 1	Scenario 2	Scenario 3	Units
Distance from well to stream	a	1350	1350	1350	ft
Aquifer transmissivity	T	100	100	100	ft ² /day
Aquifer storativity	S	0.005	0.001	0.0005	-
Aquitard vertical hydraulic conductivity	Kva	0.005	0.01	0.05	ft/day
Not used		20.0	20.0	20.0	
Aquitard thickness below stream	babs	3	3	3	ft
Not used		0.2	0.2	0.2	
Stream width	ws	5	5	5	ft

Stream depletion for Scenario 2:

Days	10	30	60	90	120	150	180	210	240	270	300	330	360
Depletion (%)	2	7	12	15	18	21	23	25	26	28	29	31	32
Depletion (cfs)	0.01	0.02	0.03	0.05	0.05	0.06	0.07	0.07	0.08	0.08	0.09	0.09	0.10

Hunt (1999) transient stream depletion model

