PUBLIC INTEREST REVIEW FOR GROUNDWATER APPLICATIONS

TO: Water Rights Section Date **February 1, 2016**

FROM: Groundwater Section **Aurora C Bouchier**
Reviewer's Name

SUBJECT: Application G- **18185** 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: **Craig & Cheryl Collins** County: **Clackamas**

A1. Applicant(s) seek(s) **0.375** cfs from **3** well(s) in the **Willamette** Basin, **Middle Willamette** subbasin

A2. Proposed use **Irrigation (30 acres primary)** Seasonality: **March 1 – 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**	1	Alluvium	0.375	3S/1E-24 SE-SW	50' N, 1545' E fr NW cor S 25
2	CLAC 51243/53399***	2	Alluvium	0.375	3S/1E-25 NW-NW	520' S, 755' E fr NW cor S 25
3	CLAC 69332	3	Alluvium	0.375	3S/1E-25 NE-NW	175' S, 2490' E fr NW cor S 25

* 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	195	65**	25**	3/12/2014**	Est 200	Est 0-130	Est 0-100		TBD	36**		
2	179	258	58.50	3/12/2014	270	0-20, 188-196	+1-197	5-112		35	40	B
3	224	128	58	3/12/2014	250	0-37	+2-137.83, 116.66-138.37, 148.75-181.56, 186.89-205	138.37-148.75, 181.56-186.89	138.37-148.75, 181.56-186.89	38	55	P

Use data from application for proposed wells.

A4. **Comments:** **At the approximate location of proposed Well 1is an existing well (CLAC 9599, Well 1 on Application G-17369, Permit G-16875). Based on existing well CLAC 9599, it is likely that water will first be encountered at around 65 feet below land surface.
***Construction information based primarily on alteration/deepening log for this well.

The applicant intends to cancel Permit G-16875 once this groundwater application has been approved.

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: The applicant's wells produce from a confined aquifer, 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) **7N**;
   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 _____ 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's wells are located in an area that contains mostly fine grained alluvial sediments that encase thin beds of sand and gravels from land surface to a depth of 400-600 feet (Gannett et al., 1998). Wells in the area produce from the thin sand and gravel beds. These water-bearing zones are not likely to have extensive lateral continuity. The median yield for nearby alluvial wells is approximately 35 gpm. This suggests the possibility that the applicant may not be able to obtain the requested 168 gpm from three wells.

No local data is available to evaluate water-level trends over time in this area. This indicates a need for water-level monitoring to assess the ongoing health of the groundwater system.

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	**Alluvial**	☒	☐
2	**Alluvial**	☒	☐
3	**Alluvial**	☒	☐

Basis for aquifer confinement evaluation: The well logs for the CLAC 51243/53399 (applicant's Well 2), CLAC 69332 (applicant's Well 3), and CLAC 9599 (approximate location as applicant's proposed Well 1) all list a thick sequence of silt and clay above the water bearing zones, and the groundwater rose 40-70 feet above the water bearing zone at which water was first encountered,

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? YES	NO	ASSUMED	Potential for Subst. Interfer. Assumed? YES	NO
1	**1**	**Parrott Creek**	**170**	**80-130**	**3000**	☒	☐	☐	☐	☒
2	**1**	**Parrott Creek**	**120**	**80-130**	**2500**	☒	☐	☐	☐	☒
3	**1**	**Parrott Creek**	**170**	**80-130**	**2800**	☒	☐	☐	☐	☒
1	**2**	**Unnamed trib. to Parrott Creek**	**170**	**120-250**	**2400**	☒	☐	☐	☐	☒
2	**2**	**Unnamed trib. to Parrott Creek**	**120**	**120-250**	**3300**	☒	☐	☐	☐	☒
3	**2**	**Unnamed trib. to Parrott Creek**	**170**	**120-250**	**1500**	☒	☐	☐	☐	☒

Basis for aquifer hydraulic connection evaluation: The perennial nature of Parrott Creek and its local tributary indicate a component of groundwater discharge that sustains surface water flows. Also, heads in nearby wells are coincident with or above the elevation of local streams. These facts indicate that the alluvial groundwater system is hydraulically connected to local streams. However, the high proportion of clay and silt in the alluvial sediments should reduce the efficiency of the connection.

Water Availability Basin the well(s) are located within: 181: WILLAMETTE R> COLUMBIA 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**	☐	☐	-	-	☐	**4890.00**	☐	**<<25%**	☐
2	**1**	☐	☐	-	-	☐	**4890.00**	☐	**<<25%**	☐
3	**1**	☐	☐	-	-	☐	**4890.00**	☐	**<<25%**	☐
1	**2**	☐	☐	-	-	☐	**4890.00**	☐	**<<25%**	☐
2	**2**	☐	☐	-	-	☐	**4890.00**	☐	**<<25%**	☐
3	**2**	☐	☐	-	-	☐	**4890.00**	☐	**<<25%**	☐
		☐	☐			☐		☐		☐
		☐	☐			☐		☐		☐

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: Because of uncertainty regarding the spatial distribution and occurrence of productive water-bearing zones, a model was not used to estimate the interference at 30 days. However, the well logs indicate that productive water-bearing zones are generally thin beds of sand and gravel that are encased in a thick sequence of silt and clays. These water-bearing zones are not likely to have extensive lateral continuity. Therefore, any given productive zone is likely to be vertically separated from nearby streams by many feet of clay or silt over most stream reaches. Models run in similar scenarios indicate impacts that are much less than 25% after 30 days.

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													

(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:**

References Used:

Application file: G-18185, and nearby G-17369, and G-17727.

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.

Well logs and water level data : CLAC 9599, CLAC 51243/53399, CLAC 96332

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

WILLAMETTE R > COLUMBIA R - AT MOUTH

Watershed ID #: 181 Basin: WILLAMETTE Exceedance Level: 80
Time: 1:07 PM Date: 02/01/2016

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	27,500.00	2,750.00	24,800.00	0.00	1,500.00	23,300.00
FEB	30,000.00	8,020.00	22,000.00	0.00	1,500.00	20,500.00
MAR	28,500.00	7,580.00	20,900.00	0.00	1,500.00	19,400.00
APR	25,400.00	7,190.00	18,200.00	0.00	1,500.00	16,700.00
MAY	20,700.00	4,440.00	16,300.00	0.00	1,500.00	14,800.00
JUN	11,000.00	2,410.00	8,590.00	0.00	1,500.00	7,090.00
JUL	6,280.00	2,360.00	3,920.00	0.00	1,500.00	2,420.00
AUG	4,890.00	2,110.00	2,780.00	0.00	1,500.00	1,280.00
SEP	4,930.00	1,750.00	3,180.00	0.00	1,500.00	1,680.00
OCT	5,990.00	722.00	5,270.00	0.00	1,500.00	3,770.00
NOV	12,700.00	1,010.00	11,700.00	0.00	1,500.00	10,200.00
DEC	24,800.00	1,400.00	23,400.00	0.00	1,500.00	21,900.00
ANN	19,700,000	2,500,000	17,200,000	0	1,090,000	16,100,000

DETAILED REPORT OF INSTREAM REQUIREMENTS

WILLAMETTE R > COLUMBIA R - AT MOUTH

Watershed ID #: 181 Basin: WILLAMETTE
Time: 1:07 PM Date: 02/01/2016

Application Number	Status	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
		Monthly values are in cfs.											
MF181A	APPLICATION	1500.0	1500.0	1500.0	1500.0	1500.0	1500.0	1500.0	1500.0	1500.0	1500.0	1500.0	1500.0
MAXIMUM		1500.0	1500.0	1500.0	1500.0	1500.0	1500.0	1500.0	1500.0	1500.0	1500.0	1500.0	1500.0

Well Location Map