Groundwater Application Review Summary Form

Application # G- 18629

GW Reviewer Ben Scandella, Dennis Orlowski **Date Review Completed:** 6/28/18

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 6/28/2018
FROM: Groundwater Section Benjamin Scandella, Dennis Orlowski
Reviewer's Name
SUBJECT: Application G- 18629 Supersedes review of ____________
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: Columbia Holdings LLC c/o Peter Stott. County: Multnomah

A1. Applicant(s) seek(s) 0.32 cfs from 2 well(s) in the Willamette Basin, Lower Willamette subbasin.

A2. Proposed use Irrigation (25.2 acres) Seasonality: March 1 through 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	**MULT 1580**	**1**	**Alluvial**	**0.32**	**2N/1W-4 NE-SE**	**1830' N, 740' W fr SE cor S4**
2	**Proposed**	**2**	**Alluvial**	**0.32**	**2N/1W-4 NE-SE**	**1980' N, 400' W fr SE cor S4**

* 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	**10**	**Not specified**	**10**	**4/24/1968**	**100**	**0-25**	**0-75**	**None**	**None**	**300**	**30**	**Bailer**
2	**20**		**N/A**	**N/A**	**100**	**0-25**	**0-100**	**None**	**None**			

Use data from application for proposed wells.

A4. **Comments:** The applicant's wells are located near the center of Sauvie Island, just south of the southern tip of Sturgeon Lake. The applicant states, "For Proposed Well 2, the well specification provided in the table below are estimates and subject to change based on actual conditions encountered in the field. The objective will be to construct the well to develop water from the alluvial aquifer."

A5. ☒ **Provisions of the** Willamette (OAR 690-502) 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 proposed wells are located farther than ¼ mile from both the Willamette River and Multnomah Channel, so the pertinent basin rules do not apply (OAR 690-502-0240).

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 (annual meas.), medium water-used 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____________ 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:** Wells #1 obtains and #2 will obtain groundwater from water-bearing sand and gravel deposits of the Unconsolidated Sedimentary Aquifer (USA), which in this area has a total cumulative thickness of 200-300 feet (Swanson and others, 1993; Conlon and others, 2005). The general coincidence of local groundwater and surface water levels indicates hydraulic connection between the USA and the Columbia River system in this area.

Within approximately 2 miles of the proposed POA location there are about 10 wells completed in the alluvial aquifer with mostly irrigation and nursery groundwater rights, as well as a large municipal right, and several more exempt (domestic) wells also in the area. Reported maximum yields in the nearby alluvial wells range up to ~600 gpm, but are more typically on the order of 20-100 gpm.

Groundwater is likely available and not over-appropriated in this area due to the large storage capacity and permeability of the aquifer materials (primarily sand and gravel) and the high rate of recharge (Conlon and others, 2005). Recharge in this unconfined USA system comes from both precipitation and nearby surface water, especially due to the proximity and efficient hydraulic connection to the Multnomah Channel. While groundwater level data for aquifer wells in the area is not available over long periods to definitively determine the current state of the groundwater resource, the nearest well showing long-term data in the sedimentary aquifer system (COLU 3379, more than 10 miles to the north) is also probably hydraulically well-connected with local surface water and shows relative long-term stability for the past 50 years. Despite this conclusion, and because local groundwater data is nearly non-existent, the permit conditions noted in B1(d)(i) are recommended to provide additional information to support future understanding and management of the groundwater resource in this area. If the applicants provide the well log or a well inspection report for Well #2 confirming that it is open to the same aquifer system as Well #1 (pending approval from an OWRD hydrogeologist), then due to the high transmissivity of the aquifer system and the close proximity and similar completion of all the wells, it would be sufficient to provide annual water level measurements from either of the 2 wells.

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**	☐	☒
2	**Alluvium**	☐	☒

Basis for aquifer confinement evaluation: The well log for Well #1, as well as for nearby wells, shows water-bearing sand and gravel deposits overlain by 60-80 of low-permeability silt and clay. Locally, the aquifer tapped by some of these wells might be under semi-confined conditions. However, on Sauvie Island the overlying low-permeability deposits are not laterally extensive (Swanson and others, 1993; Conlon and others, 2005; Gannett and Caldwell, 1998). This characteristic, coupled with the efficient hydraulic connection between the USA and the Columbia River system, suggests that the USA is generally 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? **YES**	**NO**	**ASSUMED**	Potential for Subst. Interfer. Assumed? **YES**	**NO**
1	**1**	**Mud Slough**	**0-10**	**5-20**	**1,900**	☒	☐	☐	☐	☒
1	**2**	**Dairy Creek**	**0-10**	**10-20**	**4,200**	☒	☐	☐	☐	☒
2	**1**	**Mud Slough**	**0-10**	**5-20**	**2,100**	☒	☐	☐	☐	☒
2	**2**	**Dairy Creek**	**0-10**	**10-20**	**3,800**	☒	☐	☐	☐	☒

Basis for aquifer hydraulic connection evaluation: Groundwater elevations were estimated using static water levels in the well log and land surface elevations for Well #1, and ranges of likely elevations were assumed based on those for Well #2. The similarity of elevations between groundwater and surface water, combined with the discontinuous nature of the low-permeability deposits overlying the USA, suggest that the alluvial aquifer is hydraulically connected to SW #1 and SW#2.

Water Availability Basin the well(s) are located within: None established

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**	☐	☐			☐		☐		☐
1	**2**	☐	☐			☐		☐		☐
2	**1**	☐	☐			☐		☐		☐
2	**2**	☐	☐			☐		☐		☐

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: No WAB applies to the location of the applicant's wells, so they were not evaluated for potential for substantial interference.

C3b: Not applicable because well-specific rates were not specified.

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-18629

Conlon, T.D., Wozniak, K.C., Woodcock, D., Herrera, N.B., Fisher, B.J., Morgan, D.S., Lee, K.K., and Hinkle, S.R., 2005, Ground-water hydrology of the Willamette Basin, Oregon: U.S. Geological Survey Scientific Investigations Report 2005-5168.

Gannett, M.W. and Caldwell, R., 1998, Geologic framework of the Willamette Lowland aquifer system, Oregon and Washington: U.S. Geological Survey Professional Paper 1424-A, 32 p.

Hunt, B., 1999, Unsteady stream depletion from ground water pumping: Ground Water, v. 37, no. 1, p. 89-102.

Iverson, J., 2002, Investigation of the hydraulic, physical, and chemical buffering capacity of Missoula flood deposits for water quality and supply in the Willamette Valley of Oregon: Unpublished M.S. thesis, Oregon State University, 147 p.

Swanson, R.D., McFarland, W.D., Gonthier, J.B., and Wilkinson, J.M., 1993, A description of hydrogeologic units in the Portland basin, Oregon and Washington: U.S.Geological Survey Water-Resources Investigations Report 90-4196, 56p.

Woodward, D.G., Gannett, M.W., and Vaccaro, J.J., 1998, Hydrogeologic framework of the Willamette Lowland aquifer system, Oregon and Washington: U.S. Geological Survey Professional Paper 1424-B, 82 p.

D. WELL CONSTRUCTION, OAR 690-200

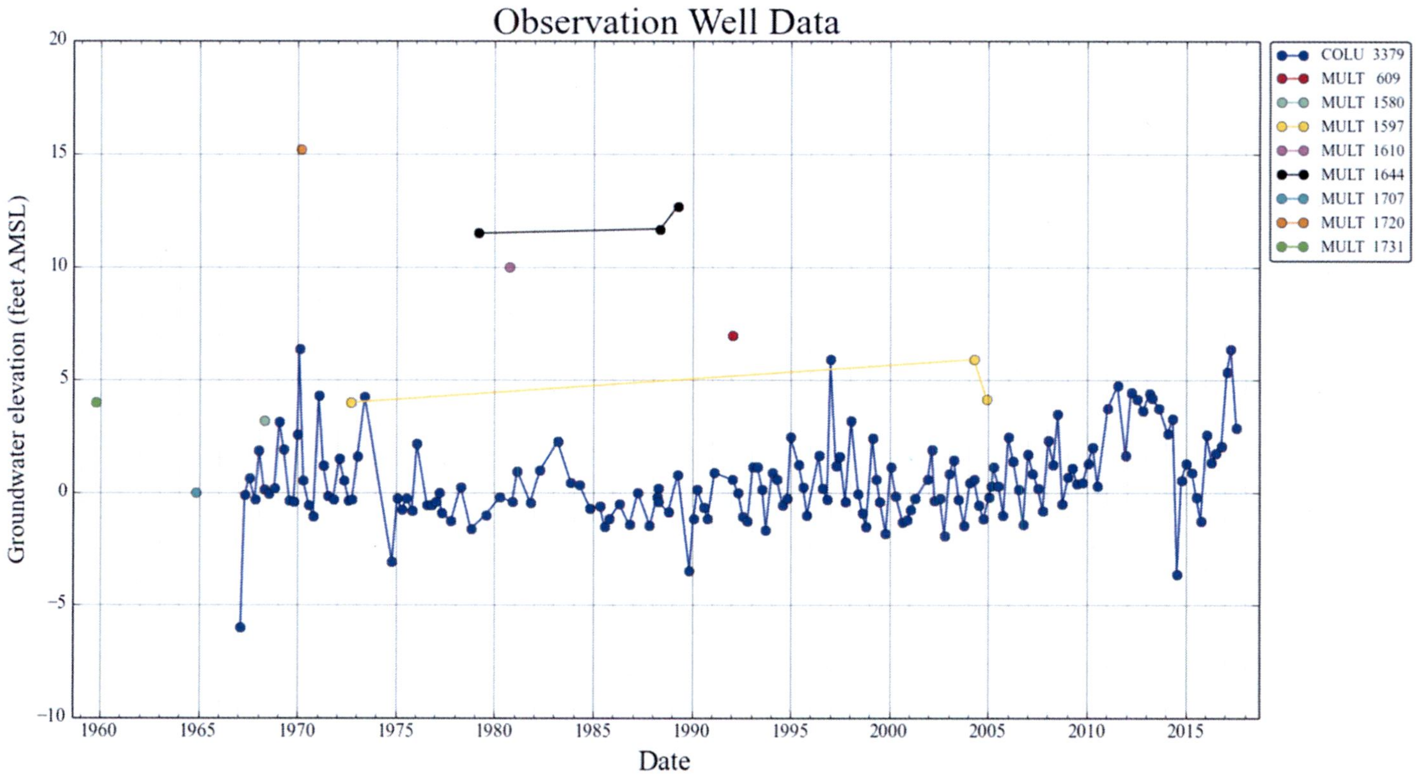
D1. **Well #:** ______________ **Logid:** ______________________________

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 level trends from wells within approximately 2.5 miles of the applicant's well that obtain water from the sedimentary aquifer system, as well as the nearest sedimentary well with a long-term continuing trend (COLU 3379, over 10 miles north).



G-18629: Columbia Holdings, LLC. T2N/R1W-S4