Groundwater Transfer Review Summary Form

Transfer/PA # T- **14371**

GW Reviewer **Stacey Garrison/Travis Brown** **Date Review Completed:** **9/13/2024**

Summary of Same Source Review:

☐ The proposed change in point of appropriation is not within the same aquifer as per OAR 690-380-2110(2).

Summary of Injury Review:

☐ The proposed transfer will result in another, existing water right not receiving previously available water to which it is legally entitled or result in significant interference with a surface water source as per 690-380-0100(3).

Summary of GW-SW Transfer Similarity Review:

☐ The proposed SW-GW transfer doesn't meet the definition of "similarly" as per OAR 690-380-2130.

This is only a summary. Documentation is attached and should be read thoroughly to understand the basis for determinations.

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Ground Water Review Form:

☒ **Water Right Transfer**
☐ **Permit Amendment**
☐ **GR Modification**
☐ **Other**

Application: T-14371 Applicant Name: David and Kaitlyn Braun

Proposed Changes: ☐ POA ☐ APOA ☒ SW→GW ☐ RA
☐ USE ☐ POU ☐ OTHER

Reviewer(s): Stacey Garrison/Travis Brown Date of Review: 9/13/2024

Date Returned to WRSD: 9/13/2024

The information provided in the application is insufficient to evaluate whether the proposed transfer may be approved because:

☐ The water well reports provided with the application do not correspond to the water rights affected by the transfer.

☐ The application does not include water well reports or a description of the well construction details sufficient to establish the ground water body developed or proposed to be developed.

☐ Other _____

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1. Basic description of the changes proposed in this transfer: Applicant proposes to transfer six surface water points of diversion, PODs, authorized under Certificate 97291 to a new well. The PODs are POD A, POD B, POD C, POD D, APOD 1, and APOD 2. The well is Well 1/PROP 517.

2. Will the proposed POA develop the same aquifer (source) as the existing authorized POA?
   ☐ Yes ☐ No Comments: The existing POD are surface water points of diversion which divert water from the Willamette River. The proposed groundwater POA (Well 1 / PROP 517) is anticipated to produce groundwater from Holocene floodplain deposits of the Willamette River and underlying Pleistocene sand and gravel (O'Connor et al., 2001). These coarse-grained deposits have a very efficient hydraulic connection to the Willamette River, which is typically gaining (i.e. receiving groundwater discharge) at this location (Woodward et al. 1998; Herrera et al., 2014).

3. a) Is there more than one source developed under the right (e.g., basalt and alluvium)?
   ☐ Yes ☒ No The subject Certificate 97291 has only developed a surface water source (the Willamette River).

   b) If yes, estimate the portion of the right supplied by each of the sources and describe any limitations that will need to be placed on the proposed change (rate, duty, etc.): N/A

4. a) Will this proposed change, at its maximum allowed rate of use, likely result in an increase in interference with **another ground water right**?

☒ Yes ☐ No Comments: Interference with nearby irrigation well BENT 4709 will increase as a result of the proposed transfer, since the subject PODs divert directly from surface water and the proposed groundwater POA (Well 1/PROP 517) will produce groundwater near BENT 4709.

b) If yes, would this proposed change, at its maximum allowed rate of use, likely result in another groundwater right not receiving the water to which it is legally entitled?

☐ Yes ☒ No If yes, explain: The proposed groundwater POA (Well 1/PROP 517) is anticipated to produce groundwater from the alluvial aquifer system which has an efficient hydraulic connection with the Willamette River ~ 425 ft to the east. The efficient hydraulic connection with the Willamette River will substantially limit drawdown due to pumping the proposed groundwater POA. Therefore, the proposed change is unlikely to result in BENT 4709 not receiving water to which it is legally entitled.

5. a) Will this proposed change, at its maximum allowed rate of use, likely result in an increase in interference with **another surface water source**?

☐ Yes ☒ No Comments: The proposed transfer is a surface water to groundwater transfer. While the timing of depletion of the surface water source (the Willamette River) would be altered by the proposed change, no overall increase in interference with the surface water source is likely.

b) If yes, at its maximum allowed rate of use, what is the expected change in degree of interference with any **surface water sources** resulting from the proposed change?

Stream: _____ ☐ Minimal ☐ Significant

Provide context for minimal/significant impact: _____

6. For SW-GW transfers, will the proposed change in point of diversion affect the surface water source similarly (as per OAR 690-380-2130) to the authorized point of diversion specified in the water use subject to transfer?

☒ Yes ☐ No Comments: The Hunt (1999) model was used to assess whether the proposed groundwater POA (Well 1/PROP 517) would meet the definition of "similarly" per OAR 690-380-2130 (see attached Stream Depletion Analysis); this definition requires that greater than 50 percent of the groundwater POA pumping rate be derived from stream depletion within 10 days of continuous pumping. The Hunt (1999) model was selected due to the apparent unconfined nature of the aquifer anticipated to be developed by the proposed POA. Parameters used in the Hunt (1999) model were derived from regional data and studies (Pumping Test Reports; Conlon et al., 201; Herrera et al., 2014) or are within a typical range of values for the given parameter within the hydrogeologic regime (Morris and Johnson, 1967; Heath, 1983). The nearby reach of the Willamette River is anticipated to be gaining (i.e., receiving groundwater discharge) based on potentiometric mapping by Woodward et al. (1998) and numerical modeling by Herrera et al. (2014). The vertical conductivity value used in the Hunt (1999) model is the "Kv drain bed" parameter from Herrera et al., (2014).

Results of the analysis indicate that the proposed groundwater POA will likely derive greater than 50 percent of its pumping rate from stream depletion within 10 days of continuous pumping (see attached Stream Depletion Analysis). The proposed change in point of diversion will likely affect the Willamette River "similarly" (per OAR 690-380-2130) to the authorized points of diversion in Certificate 97291.

7. What conditions or other changes in the application are necessary to address any potential issues identified above: _____

8. Any additional comments:_____

References

Application File: T-14371

Pumping Test Reports: LINN 8670, LINN 10585, LINN 8694

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, Scientific Investigations Report 2005-5168: U. S. Geological Survey, Reston, VA.

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

Heath, R.C., 1983, Basic ground-water hydrology, Water Supply Paper 2220, 86 p: U.S. Geological Survey, Reston, Va.

Herrera, N. B., Burns, E. R., Conlon, T. D., 2014, Simulation of groundwater flow and the interaction of groundwater and surface water in the Willamette Basin and Central Willamette Subbasin, Oregon, Scientific Investigations Report 2014-5136: U. S. Geological Survey, Reston, VA.

Hunt, B., 1999, Unsteady Stream Depletion from Ground Water Pumping: Ground Water, January-February, Vol 37, p 98-102.

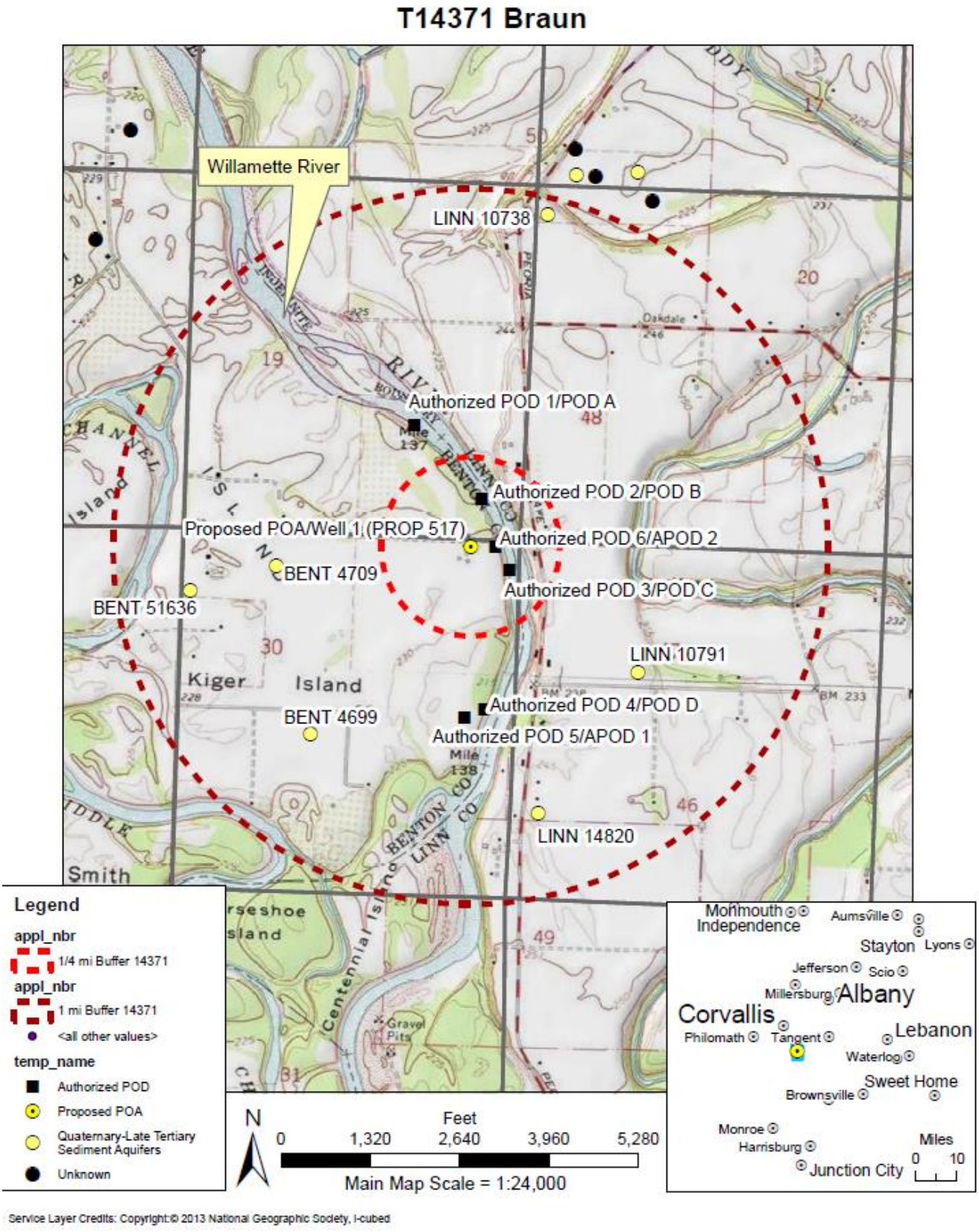
Hunt, B., 2008, Stream Depletion for Streams and Aquifers with Finite Widths: Journal of Hydrologic Engineering, Vol 13, p 80-89.

Johnson, A.I., 1967, Specific yield-compilation of specific yields for various materials: U.S. Geological Survey Water-Supply Paper 1662-D.

O'Connor, J. E., Sarna-Wojcicki, A., Wozniak, K. C., Polette, D. J., Fleck, R. J., 2001, Origin, Extent, and Thickness of Quaternary Units in the Willamette Valley, Oregon, Professional Paper 1620: U. S. Geological Survey, Reston, VA.

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.

Map


T14371 Braun
Willamette River
LINN 10738
Authorized POD 1/POD A
Authorized POD 2/POD B
Proposed POA/Well 1 (PROP 517)
Authorized POD 6/APOD 2
BENT 4709
Authorized POD 3/POD C
BENT 51636
LINN 10791
Kiger Island
BENT 4699
Authorized POD 4/POD D
Authorized POD 5/APOD 1
LINN 14820
Smith
Legend
appl_nbr
1/4 mi Buffer 14371
appl_nbr
1 mi Buffer 14371
<all other values>
temp_name
Authorized POD
Proposed POA
Quaternary-Late Tertiary Sediment Aquifers
Unknown
N
Feet
0 1,320 2,640 3,960 5,280
Main Map Scale = 1:24,000
Monmouth
Independence
Aumsville
Stayton
Lyons
Jefferson
Scio
Millersburg
Albany
Corvallis
Philomath
Tangent
Lebanon
Waterloog
Sweet Home
Brownsville
Monroe
Harrisburg
Junction City
Miles
0 10
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Stream Depletion Analysis

Stream Number:	1
Pumping rate (cfs):	0.43
Pumping duration (days):	245
Pumping start month number (3=March)	3.0
Plotting duration (days)	365

Parameter	Symbol	Scenario 1	Scenario 2	Scenario 3	Units
Distance from well to stream	a	415	415	415	ft
Aquifer transmissivity	T	1700	11800	31000	ft2/day
Aquifer storativity	S	0.3	0.2	0.1	-
Aquitard vertical hydraulic conductivity	Kva	0.02	0.2	0.6	ft/day
Not used		0	0	0	
Aquitard thickness below stream	babs	1	1	1	ft
Not used		0	0	0	
Stream width	ws	320	320	320	ft

Stream depletion for Scenario 2:

Days	10	330	360	30	60	90	120	150	180	210	240	270	300
Depletion (%)	50	9	7	68	77	81	83	85	86	87	88	23	13
Depletion (cfs)	0.21	0.04	0.03	0.29	0.33	0.35	0.36	0.37	0.37	0.38	0.38	0.10	0.06