

Groundwater Transfer Review Summary Form

Transfer/PA # T- 13432 (RA)

GW Reviewer Travis Brown Date Review Completed: 6/5/2020

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-13432

Applicant Name: Loen Nursery, Inc.

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

Reviewer(s): Travis Brown

Date of Review: 6/5/2020

Date Reviewed by GW Mgr. and Returned to WRSD: JTI 6/11/2020

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 _____

1. Basic description of the changes proposed in this transfer: Applicant proposes to construct and add 2 new APOA to Certificate 56069 and 88308. Certificate 56069 currently authorizes up to 2.23 cfs from 2 POA (MARI 160 and MARI 154), with up to 2.23 cfs for Nursery and Greenhouse Uses and up to 0.65 cfs for Supplemental Irrigation on 52.17 acres. Certificate 88308 currently authorizes up to 1.11 cfs from 1 POA (MARI 160) for Irrigation of 89.0 acres. The 2 proposed APOA include:

<u>POA Name/No.</u>	<u>Well ID</u>	<u>T/R-S QQ-Q</u>	<u>Metes & Bounds Description</u>
"Well 4"	N/A	3S/1W-33 SW-NE	285' N, 1475' W fr E 1/4 cor S33
"Well 5"	N/A	3S/1W-33 SE-NE	295' N, 805' W fr E 1/4 cor S33

2. Will the proposed POA develop the same aquifer (source) as the existing authorized POA?
 Yes No Comments: Based on the proposed construction, both APOA will produce from the alluvial aquifer system at similar depths as the authorized POA.
3. a) Is there more than one source developed under the right (e.g., basalt and alluvium)?
 Yes No Comments: _____
- 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: Proposed APOA Well 4 would be ~390 ft (~21%) closer to neighboring alluvial well MARI 157 than authorized POA Well 2 (MARI 154). APOA Well 4 would be ~610 ft (~29%) closer to MARI 157 than authorized POA Well 1 (MARI 160). The reduced intervening distance would likely increase the interference with MARI 157.

- 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: To quantitatively estimate the potential increase in interference with **MARI 157** or similar neighboring wells due to the proposed change, an interference analysis was conducted using the Theis (1935) solution for drawdown in a confined aquifer. Transmissivity values used in the analysis were derived from nearby pumping test data, including pumping tests conducted on the authorized POA, **MARI 154** and **MARI 160**. Storativity values used in the analysis were derived from regional studies (Conlon et al., 2005; Iverson, 2002; McFarland and Morgan, 1996; Woodward et al., 1998) and are within a typical range of values for the given parameter within the hydrogeologic regime (Domenico and Mifflin, 1965; Freeze and Cherry, 1979; Halford and Kuniansky, 2002). **Certificate 88308** has a volumetric limitation of 222.5 af/year (duty of 2.5 ft and irrigated area of 89.0 acres). At its authorized rate of diversion (1.11 cfs), it would take ~101 days to exhaust its volumetric limit. **Certificate 56069** has a volumetric limitation for the Supplemental Irrigation portion of its use (130.425 af/year [annual duty of 2.5 ft and irrigated area of 52.17 acres]), but it does not have volumetric limitations on its Nursery or Greenhouse Uses. At its authorized rate of diversion for Supplemental Irrigation (0.65 cfs), it would take ~101 days to exhaust its volumetric limit. Therefore, the proposed APOA, under both **Certificates 56069** and **88308** could pump at a combined rate of 3.34 cfs continuously for up to 101 days out of each year and at 2.23 cfs for the remainder of the year (264 days).

Results of the interference analysis indicate that, under the maximum continuous pumping scenario (264 days at 2.23 cfs followed by 101 days at 3.34 cfs), interference with **MARI 157** could exceed 42 ft (see attached Well Interference Analysis). The nearest relatively recent water level observation data (**MARI 55865**, 145.25 ft msl on 3/8/2006) suggests that **MARI 157** should have an available drawdown of ~180 ft during the annual high water level. Long term water level observation data (**MARI 308**) suggests that seasonal water level fluctuations may be ~30 ft or more between the annual high and annual low water level in this aquifer system. As such, at the seasonal low, the available drawdown in **MARI 157** may be only ~150 ft. The anticipated interference with **MARI 157** from proposed APOA Well 4 under the maximum pumping scenario would then represent ~28 percent of the available drawdown in **MARI 157**. **As such, it is not anticipated that the proposed change would deprive MARI 157 or similar neighboring wells of their customary use of groundwater.**

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 APOA are not significantly closer to nearby surface water sources.

- 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: N/A

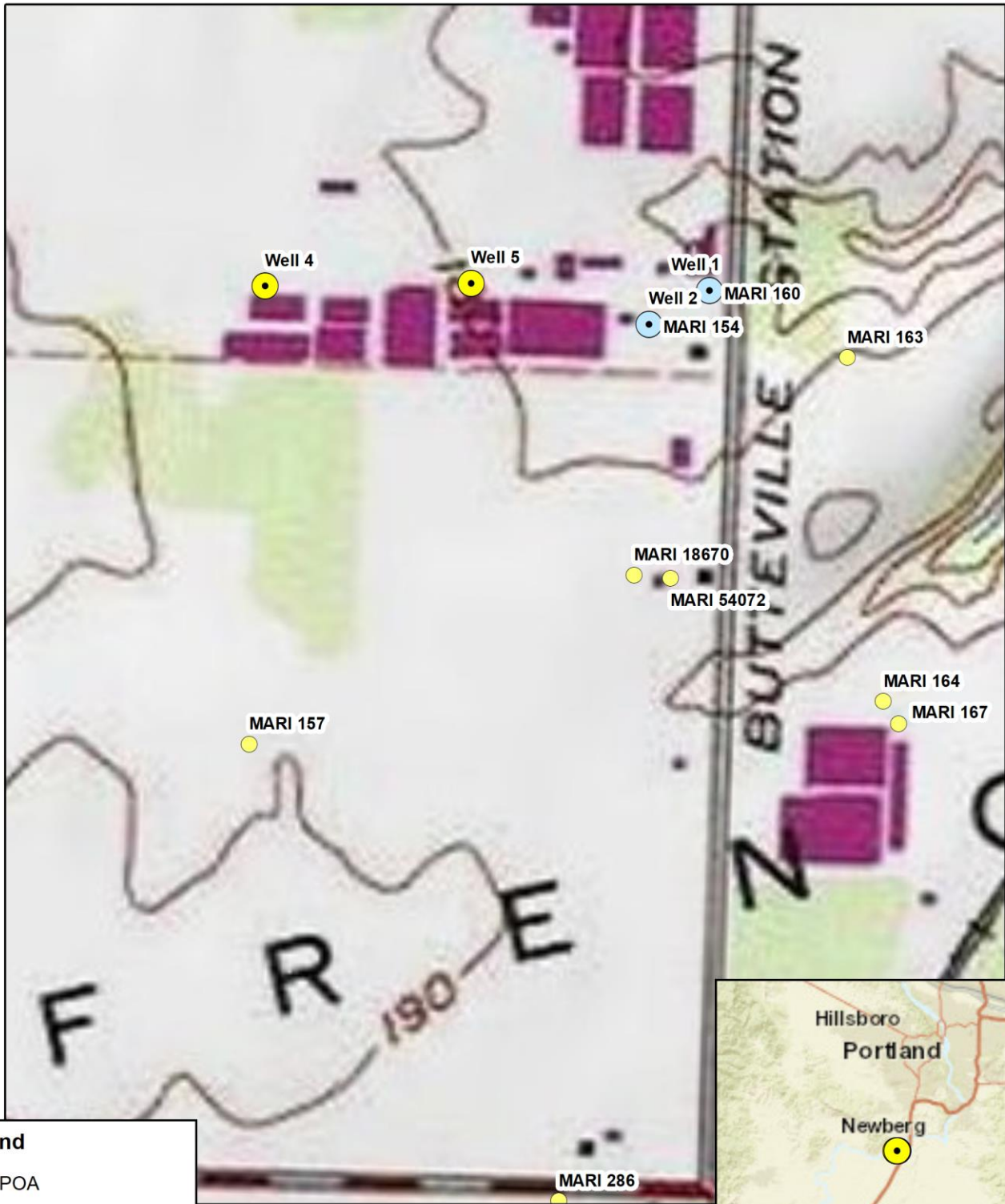
6. For SW-GW transfers, will the proposed change in point of diversion affect the surface water source similarly to the authorized point of diversion specified in the water use subject to transfer?
 Yes No Comments: N/A
7. What conditions or other changes in the application are necessary to address any potential issues identified above: N/A
8. Any additional comments: The applicant should separately meter and report water used for Irrigation Use, Supplemental Irrigation Use, and Nursery and Greenhouse Uses to ensure they are complying with the rate and duty limitations of Certificates 56069 and 88308.

References

- 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.
- Domenico, P.A. and Mifflin, 1965, Water from low-permeability sediments and land subsidence: Water Resource Research, v. 1, no. 4, p. 563-576.
- Freeze, R.A. and Cherry, J.A., 1979, Groundwater, Prentice Hall, Englewood Cliffs, New Jersey, 604 p.
- 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.
- Halford, K.J., and Kuniansky, E.L., 2002, Documentation of Spreadsheets for the Analysis of Aquifer-Test and Slug-Test Data, Open File Report 02-197, 51 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.
- 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.
- McFarland, W.D., and Morgan, D.S., 1996, Description of the Ground-Water Flow System in the Portland Basin, Oregon and Washington, Water Supply Paper 2470-A, 58 p: U. S. Geological Survey, Reston, VA.
- Theis, C.V., 1935, The relation between the lowering of the piezometric surface and the rate and duration of discharge of a well using groundwater storage, American Geophysical Union Transactions, vol. 16, p. 519-524.
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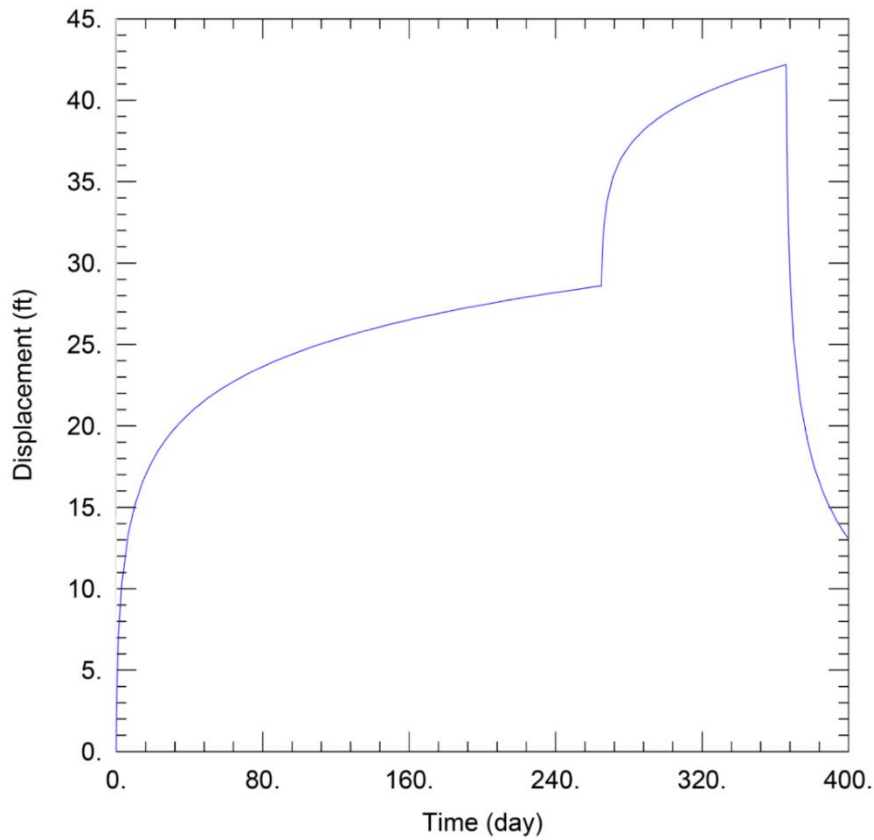
Well Location Map

T-13432 Loen Nursery



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Well Interference Analysis



<u>WELL TEST ANALYSIS</u>					
Data Set: <u>S:\...\Interference_Well4-MARI157_MaxQ.aqt</u>					
Date: <u>06/05/20</u>			Time: <u>13:39:39</u>		
<u>PROJECT INFORMATION</u>					
Company: <u>OWRD</u>					
Client: <u>LoenNursery</u>					
Project: <u>T13432</u>					
Test Well: <u>APOA Well 4</u>					
Test Date: <u>6/5/2020</u>					
<u>WELL DATA</u>					
<u>Pumping Wells</u>			<u>Observation Wells</u>		
Well Name	X (ft)	Y (ft)	Well Name	X (ft)	Y (ft)
APOA Well 4	0	0	□	0	0
			□ <u>MARI 157</u>	1490	0
<u>SOLUTION</u>					
Aquifer Model: <u>Confined</u>			Solution Method: <u>Theis</u>		
T = <u>3700. ft²/day</u>			S = <u>0.001</u>		
Kz/Kr = <u>1.</u>			b = <u>50. ft</u>		

Hydrograph

