Groundwater Transfer Review Summary Form

Transfer/PA # T- _13586_

GW Reviewer _Jen Woody_ Date Review Completed: _2/11/2021_

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-13586 Applicant Name: Robert Curl

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

Reviewer(s): Jen Woody Date of Review: 2/11/2021

Date Reviewed by GW Mgr. and Returned to WRSD: TI 2/26/21

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: T-13586 proposes to change the point of diversion (POD) on Certificate 43636 from a surface water diversion on the East Fork Nehalem River to an 80' deep groundwater point of appropriation (POA), located approximately 350 feet from the river. There is also a proposed change to character of use.

2. Will the proposed POA develop the same aquifer (source) as the existing authorized POA?
☐ Yes ☒ No Comments: This is surface water to groundwater transfer, so feasibility per the rules hinges on source comments in Section 6. The "No" box is checked here to reflect the findings in Section 6. There are very few nearby well logs to reference. COLU 53803, located approximately 1 mile SE of the subject site is the closest. This well is located approximately 300 feet from East Fork Nehalem River and likely accesses similar geologic materials as the proposed well. COLU 53803 describes clay from 2- 27 feet below land surface, then sandstone and claystone. The first water-bearing zone is reported at 52 feet below land surface, with a static water level rising to 27.9 feet below land surface. COLU 54622, located approximately 2 miles to the north and adjacent to the river, reports 40 feet of clay overlying claystone and sandstone with the first water-bearing zone at 60 feet below land surface. This indicates the aquifer at the subject site is confined and likely composed of fractured marine sedimentary rocks of the Scappoose Formation.

3. a) Is there more than one source developed under the right (e.g., basalt and alluvium)?
☐ Yes ☒ No Certificate 43636 is a surface water right.

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: There are no nearby groundwater right POAs with which to interfere.

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: N/A

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: At this location, transferring from a surface water diversion to an aquifer confined by 20- 40 feet of clay will decrease interference with any nearby surface water.

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

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 (as per OAR 690-380-2130) to the authorized point of diversion specified in the water use subject to transfer?

☐ Yes ☒ No Comments: While the best available model for stream depletion is conservative in favor of the applicant, results still show that stream depletion is less than 50% after 10 days of pumping (see Figure 2). Therefore, the proposed use does not affect E Fork Nehalem River similarly to use at the Certificate 43636's authorized POD.

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

8. Any additional comments:_____

References

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

Hunt, B., 2003, Unsteady stream depletion when pumping from semiconfined aquifer: Journal of Hydrologic Engineering, January/February, 2003.

US Geological Survey Topographic maps: Baker Point and Pittsburg Quadrangles.

Figure 1. Well location map

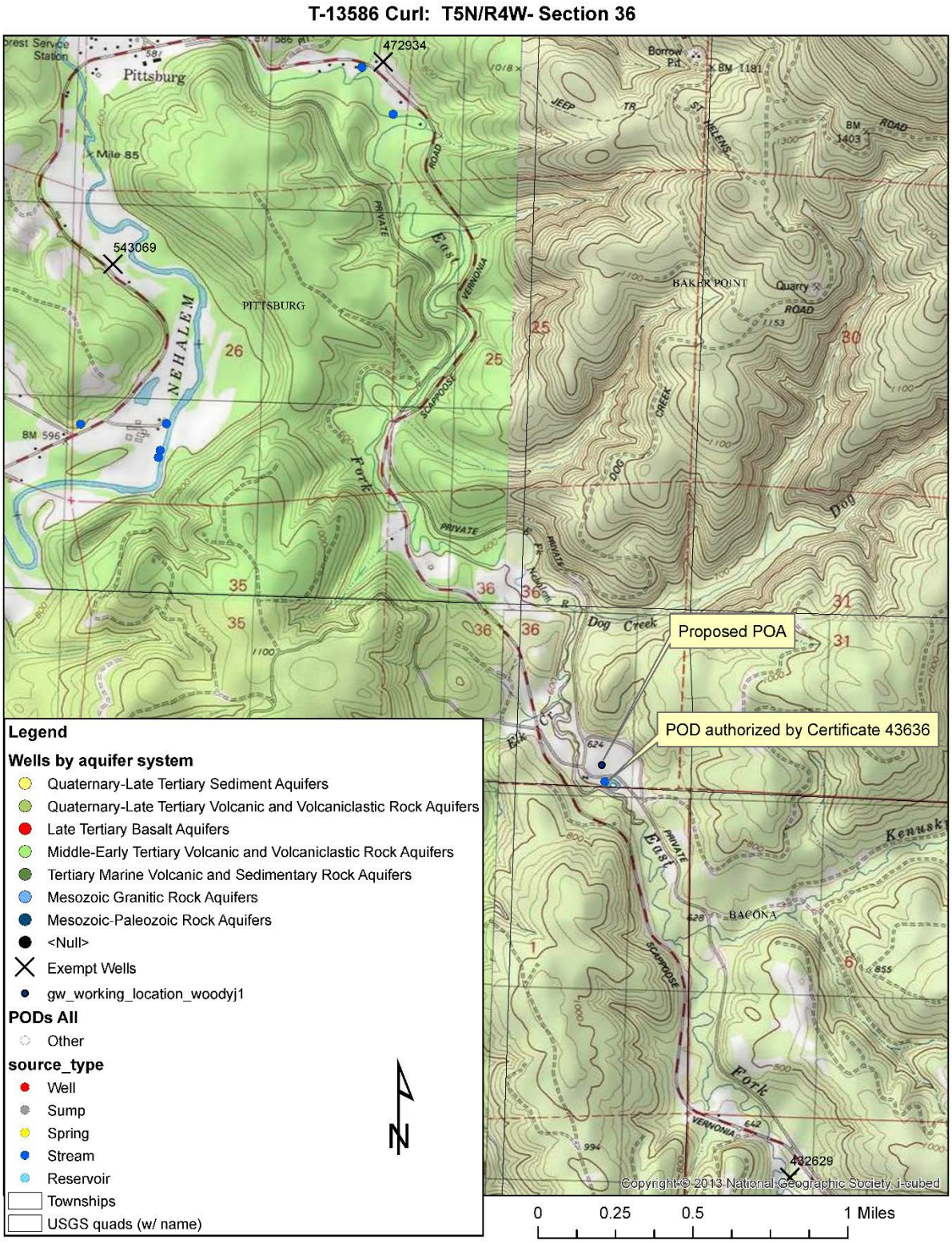
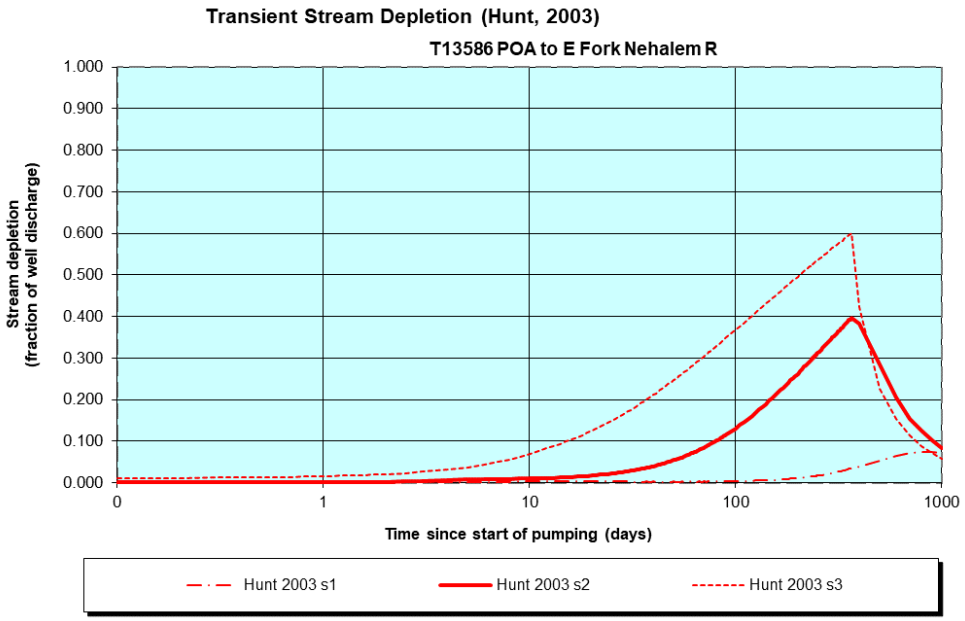


Figure 2. Stream Depletion Estimates



Output for Stream Depletion, Scenerio 2 (s2):						Time pump on (pumping duration) = 365 days						
Days	30	60	90	120	150	180	210	240	270	300	330	360
H SD 2003	2.69%	6.85%	11.54%	16.07%	20.20%	23.99%	27.33%	30.26%	32.84%	35.13%	37.41%	39.23%
Qw, cfs	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010

Parameters:		Scenario 1	Scenario 2	Scenario 3	Units
Net steady pumping rate of well	Qw	0.01	0.01	0.01	cfs
Time pump on (pumping duration)	tpon	365	365	365	days
Perpendicular from well to stream	a	300	300	300	ft
Well depth	d	80	80	80	ft
Aquifer hydraulic conductivity	K	0.1	1	10	ft/day
Aquifer saturated thickness	b	60	60	60	ft
Aquifer transmissivity	T	6	60	600	ft*ft/day
Aquifer storativity or specific yield	S	0.001	0.001	0.001	
Aquitard vertical hydraulic conductivity	Kva	0.1	0.5	1	ft/day
Aquitard saturated thickness	ba	20	20	20	ft
Aquitard thickness below stream	babs	18	18	18	ft
Aquitard porosity	n	0.2	0.2	0.2	
Stream width	ws	40	40	40	ft
Streambed conductance (lambda)	sbc	0.222222	1.111111	2.222222	ft/day
Stream depletion factor	sdf	15.000000	1.500000	0.150000	days
Streambed factor	sbf	11.111111	5.555556	1.111111	
input #1 for Hunt's Q_4 function	t'	0.066667	0.666667	6.666667	
input #2 for Hunt's Q_4 function	K'	75.000000	37.500000	7.500000	
input #3 for Hunt's Q_4 function	epsilon'	0.005000	0.005000	0.005000	
input #4 for Hunt's Q_4 function	lamda'	11.111111	5.555556	1.111111	