

Groundwater Transfer Review Summary Form

Transfer/PA # T- 13777

GW Reviewer James Hootsmans/Josh Hackett Date Review Completed: April 8, 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-13777

Applicant Name: Amazon

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

Reviewer(s): J. Hootsmans/J. Hackett

Date of Review: April 8, 2024

Date Reviewed by GW Mgr. and Returned to WRSD: JTI 4/11/24

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: The applicant proposes to change the place of use and character of use (irrigation to industrial) for all of Certificates 53194 and 53196 and portions of Certificates 53193, 53195, and 53560. The applicant also proposes to change the authorized POA for Certificates 53193 and 53194. The authorized and proposed POAs associated with these water rights are displayed in Table 1.

Table 1:

| Certificate | Authorized POAs/PODs | Proposed POAs/PODs | Proposed Character of Use Changes |
|-------------|------------------------|--------------------|-----------------------------------|
| 53193 | UMAT 3388 | Proposed Well 1 | Supp Irrigation to Industrial |
| 53194 | UMAT 3388 | Proposed Well 1 | Supp Irrigation to Industrial |
| 53195 | POD 1 (Pond) | NA | Irrigation to Industrial |
| 53196 | POD 1 (Pond) | NA | Irrigation to Industrial |
| 53560 | POD 2 (Umatilla Drain) | NA | Supp Irrigation to Industrial |

2. Will the proposed POA develop the same aquifer (source) as the existing authorized POA?

☐ Yes ☒ No Comments:

Background:

The area surrounding the applicant's property is underlain by lava flows of the Columbia River Basalt Group (CRBG). Locally, the CRBG is composed of dozens of individual basalt flows and has a composite thickness of several thousand feet. Although unconfined groundwater occurs near the surface of the basalts, most water occurs in confined aquifers that occupy thin rubble zones (interflow zones) at the contacts between lava flows. The interiors of the basalt flows generally have low porosity and permeability and act as confining beds. This geometry generally produces a stack of thin aquifers (interflow zones) separated by thick confining beds (flow interiors). Local CRBG stratigraphy from shallow to deep includes Pomona member of Saddle Mountains formation, Umatilla member of Saddle Mountains formation, and Frenchman Springs member of Wanapum formation. Local CRBG wells typically produce from water-bearing zones (WBZs) in one, two, or all three of these members. WBZs pertinent to this proposed transfer are found in 1) the upper part of the Pomona (typically 0 to 40 feet below the top of the unit), 2) at or near the interflow zone between the base of the Pomona, the Selah interbed, and the top of the Umatilla member, and 3) in the interflow zone at the base of the Umatilla. Historical well construction practices have contributed to a commingling problem locally and in many areas where CRBG aquifers are developed. Prior to development, individual WBZs were typically isolated and had distinct hydraulic heads (water levels). The practice of developing multiple WBZs in a single well has led to a reduction of hydraulic head in the higher-pressure zone and an increase in head in the lower pressure zone. Many nearby wells were drilled decades ago and commingle, so it is difficult to determine if individual WBZs maintain a degree of isolation. However, nearby well UMAT 57981 (5N/28E-29) penetrated two WBZs with distinct heads (44' below ground surface (bgs) in upper WBZ, 112' bgs in lower WBZ), suggesting some degree of isolation still exists (upper WBZ near base of Pomona and lower WBZ at base of Umatilla).

Geologic structures also influence the occurrence and movement of groundwater. Faults and folds can act as barriers or conduits for groundwater flow. The principal local geologic structure is the Service Anticline, a north-south trending fold and fault complex which is aligned with Umatilla, Hermiston, and Emigrant Buttes. Locally, the axis of the Service Anticline trends approximately 750' east of the authorized POA (UMAT 3388), and 1000' east of Proposed Well 1 (see attached maps). While offset along the entire length of the anticline is uncertain, Grondin and others (1995) noted that outcrop and well log data suggest faulting has produced at least 250 feet of vertical structural relief on the west side of Hermiston Butte (4 miles south of subject property). The degree to which the Service Anticline impedes groundwater flow is uncertain. However, any significant vertical offset of thin permeable zones is likely to produce some degree of isolation between equivalent WBZs across the structure.

Aquifer Determinations:

Authorized POA 1 (UMAT 3388) is completed to 100 feet bgs and produces from a single water-bearing zone (WBZ) in the Columbia River Basalt Group (CRBG) aquifer system. The WBZ in UMAT 3388 occurs from 85-100 feet bgs. The well penetrates post-CRBG sediments from ground surface to a depth of 69 feet. Below the sediments, the well penetrates basalt from 69-100 feet bgs. Geologic maps and geochemically analyzed drill cuttings from nearby wells suggest the WBZ occurs near the top (15' below top) of the Pomona member of the Saddle Mountains formation of the CRBG (Madin and Geitgy, 2007).

UMAT 3388 is located within the physical boundary of the Butter Creek Critical Groundwater Area (CGWA) (Figure 2) but is not subject to restrictions of the CGWA. However, UMAT 3388 likely produces from the same aquifer as UMAT 51968, a well in the Section 21 Subarea of the Butter Creek CGWA. UMAT 51968 was drilled to a total depth of 70 feet and likely also produces from a WBZ near the top of the Pomona member.

The applicant has proposed a change in the authorized POA, from UMAT 3388 to Proposed Well 1. Proposed Well 1 will be located within the boundary of the Section 21 subarea of the Butter Creek CGWA and will be approximately 1200' south of the authorized POA. According to the application, Proposed Well 1 will be drilled to a total depth of 250' bgs and will be cased and sealed to 75' bgs. The proposed POA will be 150' deeper than the authorized POA and will likely produce from a different aquifer.

The technical memorandum provided with the updated application documents (received May 19, 2023) indicates that Proposed Well 1 will be constructed in the Pomona member. However, geologic cross sections provided in the memo show the authorized POA (UMAT 3388) develops the WBZ in the flowtop of the Pomona member, whereas the Proposed POA (Proposed Well 1) will develop the WBZ at or near the interflow zone between the base of the Pomona, the Selah interbed, and the top of the Umatilla member. These WBZs are separated by over 100 feet of dense, low-permeability flow interior that likely limits hydraulic connection between them.

3. a) Is there more than one source developed under the right (e.g., basalt and alluvium)?
☐ Yes ☒ No Authorized POA (UMAT 3388) produces from a single WBZ approximately 15 to 30 feet below the top of the Pomona member.
 - 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.): _____
4. a) Will this proposed change, at its maximum allowed rate of use, likely result in an increase in interference with **another groundwater right**?
☐ Yes ☐ No Comments: N/A: OWRD Water Right Transfers rules (OAR 690-380) restricts proposed POAs to the same aquifer as the authorized POA. As described in section 2 (see above), the proposed POA will not produce from the same aquifer as the authorized POA, so this section is not applicable.

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: _____

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 authorized and proposed POAs will be located similar distances from nearby surface water sources, so interference is not expected to increase.

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: _____

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: _____

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

8. Any additional comments: _____

References:

Madin, Ian P., and Geitgey, R.P., 2007. Preliminary geologic map of the Umatilla Basin, Morrow and Umatilla counties, Oregon. Oregon Department of Geology and Mineral Industries, Open File Report O-07-15, 23 p., 1 Plate.

Grondin, G.H., Wozniak, K.C., and Camacho, I.C., 1995. Hydrogeology, groundwater chemistry, and land uses in the Lower Umatilla Basin Groundwater Management Area, Oregon Department of Environmental Quality, 956 p.

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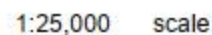


Figure 2. Well location map with geology and Critical Groundwater Area boundaries.

