

Groundwater Transfer Review Summary Form

Transfer/PA # T- 13777 Re-Review

GW Reviewer James Hootsmans/Steve Ahlquist Date Review Completed: December 10, 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 Water Level Decline Condition Review:

☐ Water levels at the original point(s) of appropriation have exceeded the allowed decline threshold defined by conditions in the originating water right.

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 Re-Review

Applicant Name: Amazon

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

Reviewer(s): James Hootsmans/Steve Ahlquist

Date of Review: 12/10/2024

Date Reviewed by GW Mgr. and Returned to WRSD: JTI 1/21/25

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: On July 29, 2024, the application for T-13777 was further amended to alter the depth of the proposed POA. The applicant proposes to change the authorized POA for Groundwater Certificates 53193 and 53194.

The applicant also proposes to change the place of use and character of use (irrigation to industrial) for all of Certificate 53194 and portions of Certificate 53193. 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 (PROP 367)	Supp Irrigation to Industrial
53194	UMAT 3388	Proposed Well 1 (PROP 367)	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 interior 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 revised application, Proposed Well 1 will be drilled to a total depth of 100' bgs and will be cased and sealed to 60' bgs.

The revised well construction for the proposed POA targets the same source as the existing authorized POA. The authorized POA (UMAT 3388) develops the WBZ in the flowtop of the Pomona member. For this transfer to be completed, the proposed POA (Proposed Well 1) must also be completed in the flowtop of the Pomona member. **Construction conditions for this transfer are included in Section 8 below.**

3. a) Is the existing authorized POA subject to a water level decline condition?
☐ Yes ☒ No Comments: There are no water level decline conditions associated with Certificates 53193 and 53194.
b) If yes, for each POA identify the reference level, most recent spring-high water level, and whether an applicable permit decline condition has been exceeded: _____
4. a) Is there more than one source developed under the right (e.g., basalt and alluvium)?
☐ Yes ☒ No Comments: 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.): _____

5. 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: The proposed To-POA (Proposed Well 1) is closer to several neighboring wells than the authorized From-POA (UMAT 3388). The reduced intervening distance will likely result in an increase in interference with these wells. The closest groundwater well is domestic well UMAT 3379, which is on the taxlot owned by the applicant. The next closest groundwater well is domestic well UMAT 58619, approximately 2500 feet southwest of the proposed POA.

- 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 potential interference with UMAT 58619 resulting from the proposed change was estimated using the Theis (1935) solution (see attached Well Interference Analysis). Results of the analysis indicate the proposed change is not likely to result in injury of UMAT 58619.

For the purposes of the analysis, the total combined rate from Certificate 53193 (0.53 cfs) and Certificate 53194 (0.30 cfs) was used, 0.83 cfs (as the conservative approach). In the 2023 amendments to the original application, the applicant indicated they wished to change 77.6 acres (0.41 cfs) of Certificate 53193, however, the total combined rates were used as a conservative approach. In addition, the length of the irrigation season, March 1 to October 31, was used as the number of days of pumping.

6. 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: NA

☐ Minimal ☐ Significant

Stream: NA

☐ Minimal ☐ Significant

Provide context for minimal/significant impact: _____

7. 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: _____

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

Construction Conditions:

A) Proposed Well 1 must be completed within 0 to 40 feet from the top of the Pomona Member to be same source as authorized POA. The applicant shall coordinate with the driller to ensure that drill cuttings are collected at 10 ft intervals and at changes in formation in Proposed Well 1. A split of each sampled interval shall be provided to the Department.

B) Certificates 53193 and 53194 states well shall not appropriate water from an aquifer below 100 feet in depth. Should the flowtop of the Pomona Member be at a greater depth than the authorized POA during drilling, Condition A supersedes this condition.

Reporting Conditions:

UMAT 3388 is located within the physical boundary of the Butter Creek Critical Groundwater Area (CGWA) but is not subject to restrictions of the CGWA. Proposed Well 1 will be located within the boundary of the Section 21 subarea of the Butter Creek CGWA. Therefore, as part of this transfer, annual water level measurements and water use reporting conditions are recommended to protect the groundwater resource.

9. Any additional comments: N/A

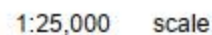
References:

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.

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.

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.

T-13777 Amazon



T-13777, Amazon

Legend

- Quaternary-Late Tertiary Sediment Aquifers
- Late Tertiary Basalt Aquifers
- <Null>

umat_basin_g_map_unit

UnitOWRD

- QTes
- Qal
- Qmf
- Pomona
- Umatilla

Umatilla_Basin_Fold_Axes_polyline

TypeOwrd

- Anticline
- Syncline

Restricted areas

Status

- Critical
- Restricted area sub-units

Map Labels:

- LAKE UMATILLA RIVER
- COLUMBIA RIVER
- DISTRICT 5
- Butter Creek North Subarea
- Butter Creek Section 21 Subarea
- Service Anticline
- Proposed POA Proposed Well 1
- Authorized POA UMAT 3388
- Wells: 58178, 50633, 53535, 53534, 3373, 3374, 3388, 3379, 58897, 3384, 51968, 58144, 5610, 57618, 5906, 5904, 5905, 58316, 57981, 55843, 3365, 3361, 3358, 3397, 5274, 53192, 54728, 3381, 3446, 3434, 3435, 50664, 6328, 6583, 3595, 51968, 58144, 5610, 57618, 5906, 5904, 5905, 58316, 57981, 55843, 3365, 3361, 3358, 3397, 5274, 53192, 54728, 3381, 3446, 3434, 3435, 50664, 6328, 6583, 3595.

Scale: 0 750 1,500 3,000 4,500 6,000 Feet

Theis Interference Analysis

