Groundwater Application Review Summary Form

Application # G- 19353

GW Reviewer J. Hackett Date Review Completed: April 1, 2025

Summary of GW Availability and Injury Review:

☒ Groundwater for the proposed use is either over appropriated, will not likely be available in the amounts requested without injury to prior water rights, OR will not likely be available within the capacity of the groundwater resource per Section B of the attached review form.

Summary of Potential for Substantial Interference Review:

☐ There is the potential for substantial interference per Section C of the attached review form.

Summary of Well Construction Assessment:

☐ The well does not appear to meet current well construction standards per Section D of the attached review form. Route through Well Construction and Compliance Section.

This is only a summary. Documentation is attached and should be read thoroughly to understand the basis for determinations and for conditions that may be necessary for a permit (if one is issued).

WATER RESOURCES DEPARTMENT

MEMO **_April 1, 2025_**

TO: **Application** G-**_19353_**

FROM: **GW:** **_J. Hackett_**
(Reviewer's Name)

SUBJECT: Scenic Waterway Interference Evaluation

☐ **YES**
☒ **NO** The source of appropriation is hydraulically connected to a State Scenic Waterway or its tributaries

☐ **YES**
☒ **NO** Use the Scenic Waterway Condition (Condition 7J)

☐ Per ORS 390.835, the Groundwater Section is **able** to calculate ground water interference with surface water that contributes to a Scenic Waterway. The calculated interference is distributed below

☐ Per ORS 390.835, the Groundwater Section is **unable** to calculate ground water interference with surface water that contributes to a scenic waterway; **therefore, the Department is unable to find that there is a preponderance of evidence that the proposed use will measurably reduce the surface water flows necessary to maintain the free-flowing character of a scenic waterway**

DISTRIBUTION OF INTERFERENCE

Calculate the percentage of consumptive use by month and fill in the table below. If interference cannot be calculated, per criteria in 390.835, do not fill in the table but check the "unable" option above, thus informing Water Rights that the Department is *unable to make a Preponderance of Evidence finding.*

Exercise of this permit is calculated to reduce monthly flows in _[Enter]_ Scenic Waterway by the following amounts expressed as a proportion of the consumptive use by which surface water flow is reduced.

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

PUBLIC INTEREST REVIEW FOR GROUNDWATER APPLICATIONS

TO: Water Rights Section Date April 1, 2025
FROM: Groundwater Section J. Hackett
Reviewer's Name
SUBJECT: Application G- **19353** Supersedes review of
Date of Review(s)

PUBLIC INTEREST PRESUMPTION; GROUNDWATER

OAR 690-310-130 (1) *The Department shall presume that a proposed groundwater use will ensure the preservation of the public welfare, safety and health as described in ORS 537.525.* Department staff review groundwater applications under OAR 690-310-140 to determine whether the presumption is established. OAR 690-310-140 allows the proposed use be modified or conditioned to meet the presumption criteria. **This review is based upon available information and agency policies in place at the time of evaluation**.

A. GENERAL INFORMATION: Applicant's Name: David Brown, Mitchell Ag. Investments, LLC
County: Wasco

A1. Applicant(s) seek(s) 0.528 cfs from 1 well(s) in the Hood River Basin, subbasin

A2. Proposed use Primary and Supplemental Irrigation Seasonality: April 1 – October 31

A3. Well and aquifer data **(attach and number logs for existing wells; mark proposed wells as such under logid)**:

POA Well	Logid	Applicant's Well #	Proposed Aquifer*	Proposed Rate(cfs)	Location (T/R-S QQ-Q)	Location, metes and bounds, e.g. 2250' N, 1200' E fr NW cor S 36
1	WASC 52949**	1	CRB	0.528	1N/13E-S33 NWNW	900' S, 310' E fr NW cor S 33
2						
3						
4						

* Alluvium, CRB, Bedrock

POA Well	Well Depth (ft)	Seal Interval (ft)	Casing Intervals (ft)	Liner Intervals (ft)	Perforations Or Screens (ft)	Well Yield (gpm)	Drawdown (ft)	Test Type
1	630	0-351	0-351			300		A
2								
3								
4								

POA Well	Land Surface Elevation at Well (ft amsl)	Depth of First Water (ft bls)	SWL (ft bls)	SWL Date	Reference Level (ft bls)	Reference Level Date
1	1302	291	305	6/24/2024		
2						
3						
4						

Use data from application for proposed wells.

A4. **Comments:** **The application was originally submitted with a proposed new (not drilled) production well that would target water-bearing zones (WBZs) in the Grande Ronde Formation of the Columbia River Basalt Group (CRBG). The well was proposed to be drilled to a total depth of 1300 feet below land surface (bls) and cased and sealed to a depth of at least 900 feet bls. WASC 52949 was drilled while this application review was in progress. Department staff has confirmed with the applicant that WASC 52949 is the proposed POA for this water right application.

A5. ☐ **Provisions of the** Hood Basin rules relative to the development, classification and/or management of groundwater hydraulically connected to surface water ☐ **are**, *or* ☒ **are not**, activated by this application. (Not all basin rules contain such provisions.)
Comments:

A6. ☐ **Well(s) #** **1** , , , , , tap(s) an aquifer limited by an administrative restriction.
Name of administrative area: N/A
Comments:

B. GROUNDWATER AVAILABILITY CONSIDERATIONS, OAR 690-310-130, 400-010, 410-0070

B1. **Based upon available data**, I have determined that groundwater* for the proposed use:

a. ☒ **is** over appropriated, ☐ **is not** over appropriated, *or* ☐ **cannot be determined to be** over appropriated during any period of the proposed use. * This finding is limited to the groundwater portion of the over-appropriation determination as prescribed in OAR 690-310-130;

b. ☐ **will not** *or* ☒ **will** likely be available in the amounts requested without injury to prior water rights. * This finding is limited to the groundwater portion of the injury determination as prescribed in OAR 690-310-130;

c. ☒ **will not** *or* ☐ **will** likely to be available within the capacity of the groundwater resource; or

d. ☐ **will, if properly conditioned**, avoid injury to existing groundwater rights or to the groundwater resource:

i. ☐ The permit should contain condition #(s) _____;

ii. ☐ The permit should be conditioned as indicated in item 2 below.

iii. ☐ The permit should contain special condition(s) as indicated in item 3 below;

B2. a. ☐ **Condition** to allow groundwater production from no deeper than _____ ft. below land surface;

b. ☐ **Condition** to allow groundwater production from no shallower than _____ ft. below land surface;

c. ☐ **Condition** to allow groundwater production only from the _____ groundwater reservoir ~~between approximately _____ ft. and _____ ft. below land surface;~~

d. ☐ **Well reconstruction** is necessary to accomplish one or more of the above conditions. The problems that are likely to occur with this use and without reconstructing are cited below. Without reconstruction, I recommend withholding issuance of the permit until evidence of well reconstruction is filed with the Department and approved by the Groundwater Section.

Describe injury –as related to water availability– that is likely to occur without well reconstruction (interference w/ senior water rights, not within the capacity of the resource, etc): _____

B3. **Groundwater availability remarks:** The application proposes POA #1 (WASC 52949) for primary and supplemental irrigation. The well is 630 feet deep and is cased and sealed to a depth of 351 feet below land surface (bls). The well produces from a water-bearing zone (WBZ) in the Columbia River Basalt Group (CRBG) aquifer system, from 415 to 670 feet bls. Within the CRBG, 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). The low permeability of the basalt flow interiors probably limits the natural vertical connection between overlying aquifers. Members of the CRBG exposed locally include (from youngest to oldest): Priest Rapids Member (Lolo and Rosalia flows) and Frenchman Springs Member (Sentinel Gap, Sand Hollow, and Ginkgo flows) of the Wanapum Basalt Formation and Sentinel Bluffs and Winter Water members of the Grande Ronde Basalt Formation. Older Grande Ronde units (lower N2 and R2 magnetostratigraphic units) are exposed south of the immediate area in Butler Canyon and are presumed to be present in the subsurface locally, although they have not been penetrated by any existing wells. Most local CRBG wells produce from shallower WBZs in the Wanapum Formation while only a few wells produce from WBZs in the Grande Ronde Formation. Stratigraphic unit thicknesses in nearby wells WASC 52633 and WASC 2196 suggest that WASC 52949 likely penetrates Priest Rapids and Frenchman Springs members of the Wanapum basalt formation and produces from a WBZ in the Frenchman Springs member (Figure 5).

In addition to stratigraphy (see above), the occurrence and movement of groundwater in CRBG aquifer systems is strongly influenced by geologic structures such as faults and folds. While these structures can act as barriers to, or as conduits for,

groundwater flow, they most commonly act as barriers due to the alteration of fault gouge, created during active faulting, to very-low permeability clay.
The proposed POA is located on the north limb of the Lash Ranch anticline/thrust fault, a south verging Yakima Fold structure associated with north-south compression related to oblique convergence of the Juan de Fuca and Gorda plates with the North American plate along the Cascadia subduction zone. The Lash Ranch structure appears to be a barrier to groundwater flow in the local aquifer system. In addition to the Lash Ranch structure, northwest trending, right lateral strike-slip faults also appear to restrict groundwater flow (see Figure 1 for locations).

Local Groundwater Level Elevations and Trends:

Wells South of Lash Ranch Structure:
Water level elevations and trends in most wells south of the Lash Ranch structure are remarkably similar, regardless of stratigraphic unit of the WBZ (see Figure 2). Water level elevations in these wells have declined from approximately 900 feet above mean sea level (amsl) in early 2000s to less than 800 feet amsl in early 2020s. Wells WASC 3410, WASC 3416, WASC 50850, WASC 51251, and WASC 51343 are open to WBZs in Frenchman Springs units, while WASC 51672 produces from the upper Grande Ronde Basalt. The cause of water level declines is currently uncertain, commingling of WBZs with once distinct hydraulic heads may contribute. While water levels in most wells south of Lash Ranch structure fall into a narrow elevation range, levels in WASC 2668 do not. WASC 2668 is 870 feet deep, develops WBZs in the Grande Ronde Basalt and is located much closer to the axis of Lash Ranch structure. These factors suggest the well may develop WBZs that are not accessed by other wells south of Lash Ranch. Water levels in the well are relatively stable and are at an elevation of approximately 1100 feet amsl; nearly 300 feet higher than other wells south of Lash Ranch structure. In addition to water level elevations greater than 300 feet above those in other wells south of Lash Ranch, the water temperature in WASC 2668 is approximately 90°F. Elevated water level elevations suggest the Lash Ranch structure may act a barrier to groundwater flow as groundwater is dammed in front of the structure. Also, elevated water temperature suggests the Lash Ranch structure may be a deep-seated feature that is allowing vertical migration of heat near the well.

Wells North of Lash Ranch Structure:
The proposed POA (WASC 52949) is located north of the Lash Ranch structure, within 400 feet of the anticlinal axis and within 1000 feet of the exposed thrust fault plane. Water level elevations in wells north of the structure display more variability than wells to the south (see Figure 3); some variability appears to be related to compartmentalization of WBZs across a northwest trending strike-slip fault in 1N/13E-32. Water level elevations are highest in wells west of the fault (WASC 2661, WASC 2662, WASC 50498) while water level elevations in wells east of the fault (WASC 2666, WASC 50496, WASC 51102, WASC 52949) are several hundred feet lower. The proposed POA is located adjacent to WASC 50496, a well in the group east of the strike-slip fault in 1N/13E-32.
As discussed above, the proposed POA develops a WBZ in the Frenchman Springs member of the Wanapum basalt formation. Groundwater level data in the area is limited, however, the static water level in adjacent well WASC 50496 has declined 24 feet since 2013 (average rate of approximately 2.0 feet per year between 2013 and 2025 (Figure 4)). Additionally, the static water level elevation in the proposed POA (WASC 52949) is within 2 feet of the water level elevation in WASC 50496, measured on the same day. The similarity in water level elevations suggest the wells produce from the same aquifer. Long-term water level decline indicates the aquifer is already over-appropriated and cannot support the new groundwater use proposed on this application.

C. GROUNDWATER/SURFACE WATER CONSIDERATIONS, OAR 690-09-040

C1. **690-09-040 (1):** Evaluation of aquifer confinement:

Well	Aquifer or Proposed Aquifer	Confined	Unconfined
1	**CRB**	☒	☐
		☐	☐
		☐	☐
		☐	☐

Basis for aquifer confinement evaluation: Nearby basalt wells have water elevations higher than where water was first encountered.

C2. **690-09-040 (2) (3):** Evaluation of distance to, and hydraulic connection with, surface water sources. All wells located a horizontal distance less than ¼ mile from a surface water source that produce water from an unconfined aquifer shall be assumed to be hydraulically connected to the surface water source. Include in this table any streams located beyond one mile that are evaluated for PSI.

Well	SW #	Surface Water Name	GW Elev ft msl	SW Elev ft msl	Distance (ft)	Hydraulically Connected? YES	NO	ASSUMED	Potential for Subst. Interfer. Assumed? YES	NO
1	**1**	**Threemile Creek**	**1000**	**800**	**2780**	☐	☒	☐	☐	☒
1	**2**	**Fivemile Creek**	**1000**	**1000**	**5500**	☐	☒	☐	☐	☒
						☐	☐	☐	☐	☐
						☐	☐	☐	☐	☐

Basis for aquifer hydraulic connection evaluation: WASC 52949 develops a WBZ that is not exposed in local reaches of Threemile and Fivemile creeks, and as a result, is not hydraulically connected to those streams.

Water Availability Basin the well(s) are located within: THREEMILE CR COLUMBIA R – AT MOUTH

C3a. **690-09-040 (4):** Evaluation of stream impacts for each well that has been determined or assumed to be **hydraulically connected and less than 1 mile** from a surface water (SW) source. Limit evaluation to instream rights and minimum stream flows that are pertinent to that SW source, not lower SW sources to which the stream under evaluation is tributary. Compare the requested rate against the 1% of 80% *natural* flow for the pertinent Water Availability Basin (WAB). If Q is not distributed by well, use full rate for each well. Any checked ☒ box indicates the well is assumed to have the potential to cause PSI.

Well	SW #	Well < ¼ mile?	Qw > 5 cfs?	Instream Water Right ID	Instream Water Right Q (cfs)	Qw > 1% ISWR?	80% Natural Flow (cfs)	Qw > 1% of 80% Natural Flow?	Interference @ 30 days (%)	Potential for Subst. Interfer. Assumed?
		☐	☐			☐		☐		☐
		☐	☐			☐		☐		☐
		☐	☐			☐		☐		☐
		☐	☐			☐		☐		☐

C3b. **690-09-040 (4):** Evaluation of stream impacts by total appropriation for all wells determined or assumed to be **hydraulically connected and less than 1 mile** from a surface water source. **Complete only if Q is distributed among wells**. Otherwise same evaluation and limitations apply as in C3a above.

	SW #		Qw > 5 cfs?	Instream Water Right ID	Instream Water Right Q (cfs)	Qw > 1% ISWR?	80% Natural Flow (cfs)	Qw > 1% of 80% Natural Flow?	Interference @ 30 days (%)	Potential for Subst. Interfer. Assumed?
			☐			☐		☐		☐
			☐			☐		☐		☐

Comments: The well is not hydraulically connected to Threemile Creek or other nearby streams.

C4a. **690-09-040 (5):** Estimated impacts on **hydraulically connected surface water sources greater than one mile** as a percentage of the proposed pumping rate. Limit evaluation to the effects that will occur up to one year after pumping begins. This table encompasses the considerations required by 09-040 (5)(a), (b), (c) and (d), which are not included on this form. Use additional sheets if calculated flows from more than one WAB are required.

Non-Distributed Wells

Well	SW#	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
		%	%	%	%	%	%	%	%	%	%	%	%
Well Q as CFS													
Interference CFS													

Distributed Wells

Well	SW#	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
		%	%	%	%	%	%	%	%	%	%	%	%
Well Q as CFS													
Interference CFS													
		%	%	%	%	%	%	%	%	%	%	%	%
Well Q as CFS													
Interference CFS													
(A) = Total Interf.													
(B) = 80 % Nat. Q													
(C) = 1 % Nat. Q													
(D) = (A) > (C)		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
(E) = (A / B) x 100		%	%	%	%	%	%	%	%	%	%	%	%

(A) = total interference as CFS; (B) = WAB calculated natural flow at 80% exceed. as CFS; (C) = 1% of calculated natural flow at 80% exceed. as CFS; (D) = highlight the checkmark for each month where (A) is greater than (C); (E) = total interference divided by 80% flow as percentage.

Basis for impact evaluation:

C4b. **690-09-040 (5) (b) The potential to impair or detrimentally affect the public interest is to be determined by the Water Rights Section.**

C5. ☐ **If properly conditioned**, the surface water source(s) can be adequately protected from interference, and/or groundwater use under this permit can be regulated if it is found to substantially interfere with surface water:

i. ☐ The permit should contain condition #(s)_____;

ii. ☐ The permit should contain special condition(s) as indicated in "Remarks" below;

C6. **SW / GW Remarks and Conditions:**

References Used: G-19353 Application files

Newcomb, R. C. 1969. Effect of the tectonic structure on the occurrence of ground water in the basalt of the Columbia River Group of The Dalles Area, Oregon and Washington. U.S. Geological Survey Professional Paper 383-C.

D. WELL CONSTRUCTION, OAR 690-200

D1. **Well #**: _____ **Logid:** _____

D2. **THE WELL does not appear to meet current well construction standards based upon:**

a. ☐ review of the well log;

b. ☐ field inspection by _____;

c. ☐ report of CWRE _____;

d. ☐ other: (specify) _____

_____

D3. **THE WELL construction deficiency or other comment is described as follows:** _____

_____

_____

_____

_____

D4. ☐ **Route to the Well Construction and Compliance Section for a review of existing well construction.**

Figure 1. Well Location Map

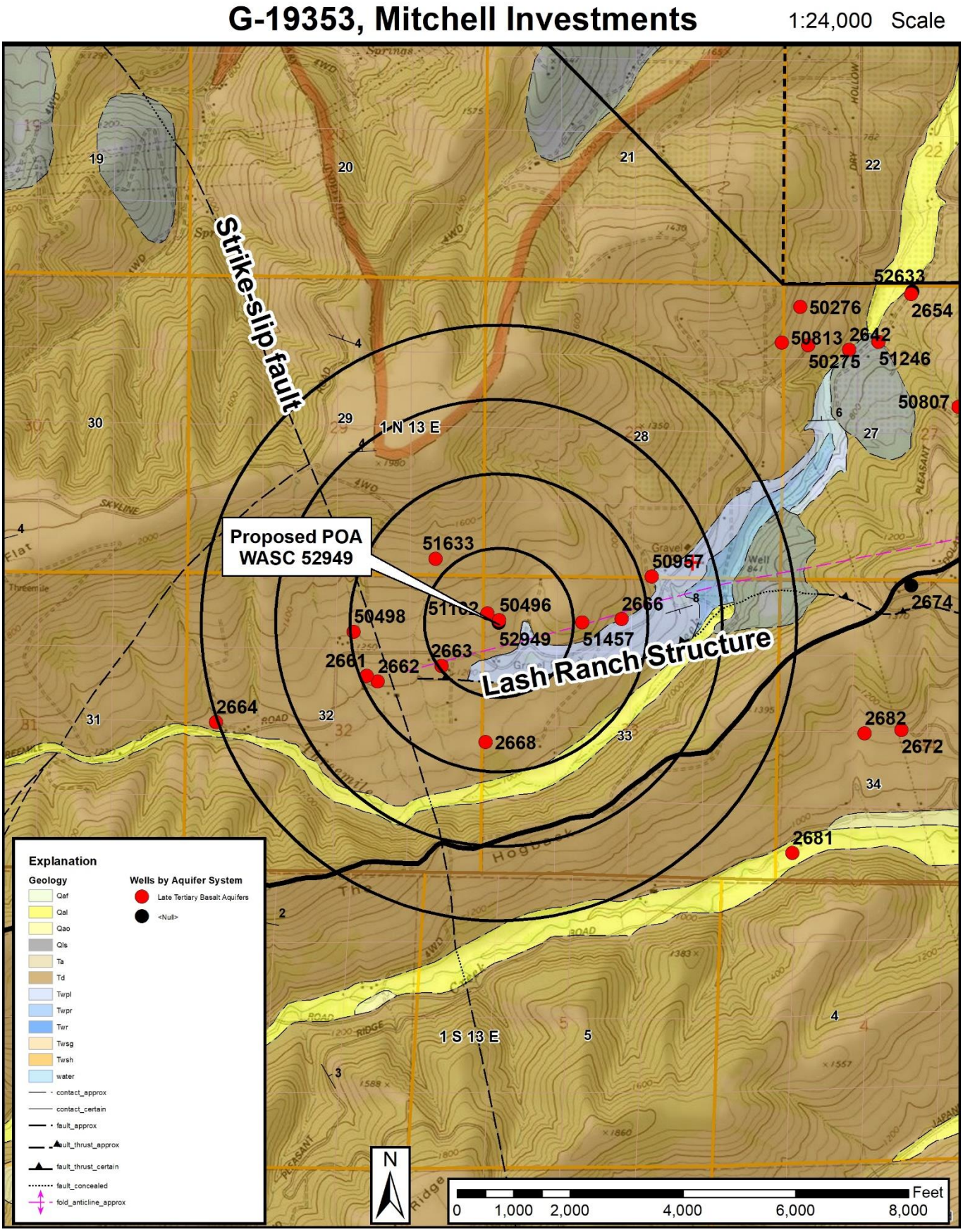

Figure 2. Water levels in wells south of Lash Ranch Anticline / Thrust Fault. WASC 51672 develops WBZs in the older (deeper) Grande Ronde Basalt while all other wells develop younger (shallower) Frenchman Springs units.

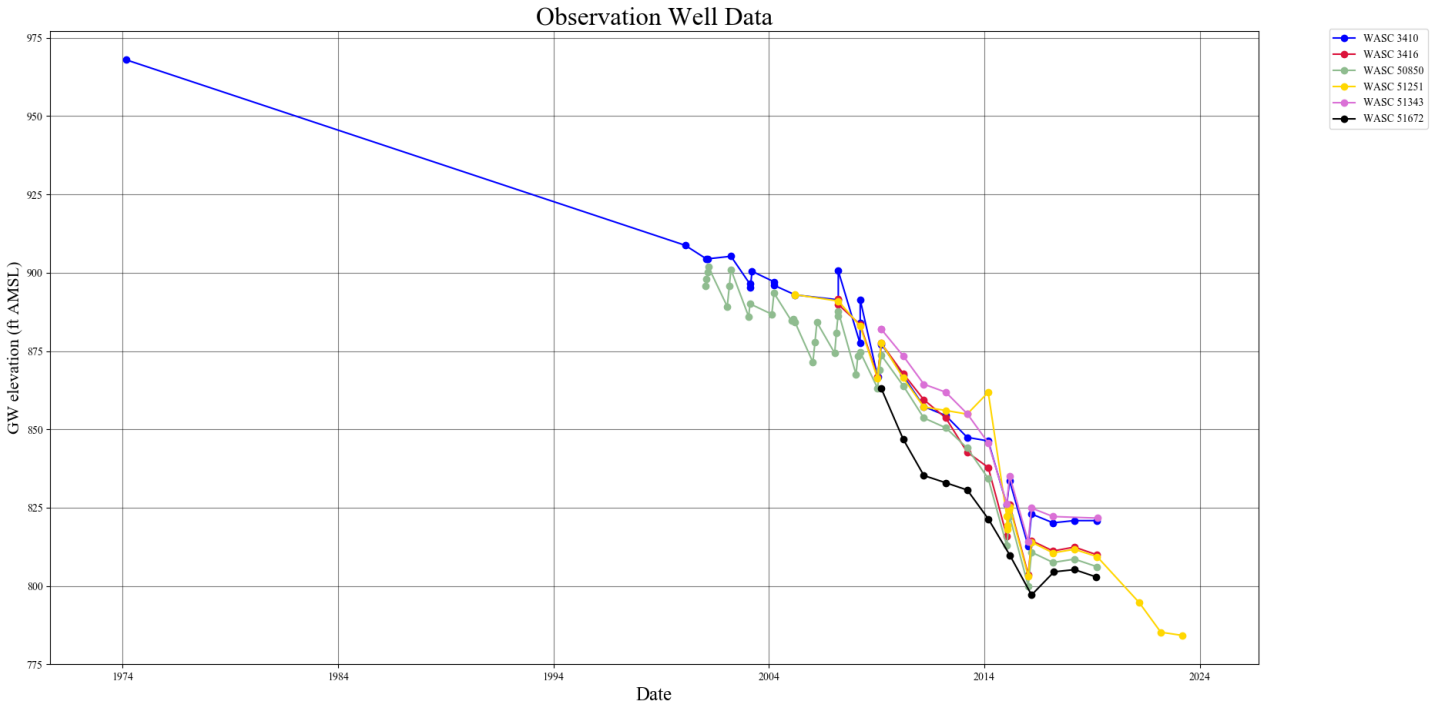

Figure 3. Water levels in wells north of Lash Ranch Anticline / Thrust Fault. Highest water level elevations are found in wells west of northwest trending strike-slip fault in 1N/13E-32 (WASC 2661, WASC 2662, WASC 2664, WASC 50498). Water levels east of the 1N/13E-32 fault are several hundred feet lower (WASC 2666, WASC 50496, 51102, 52949). Water level elevation in WASC 2668 (south of structure and shown for comparison) is 100 feet higher than water level elevations in wells directly across the Lash Ranch structure.

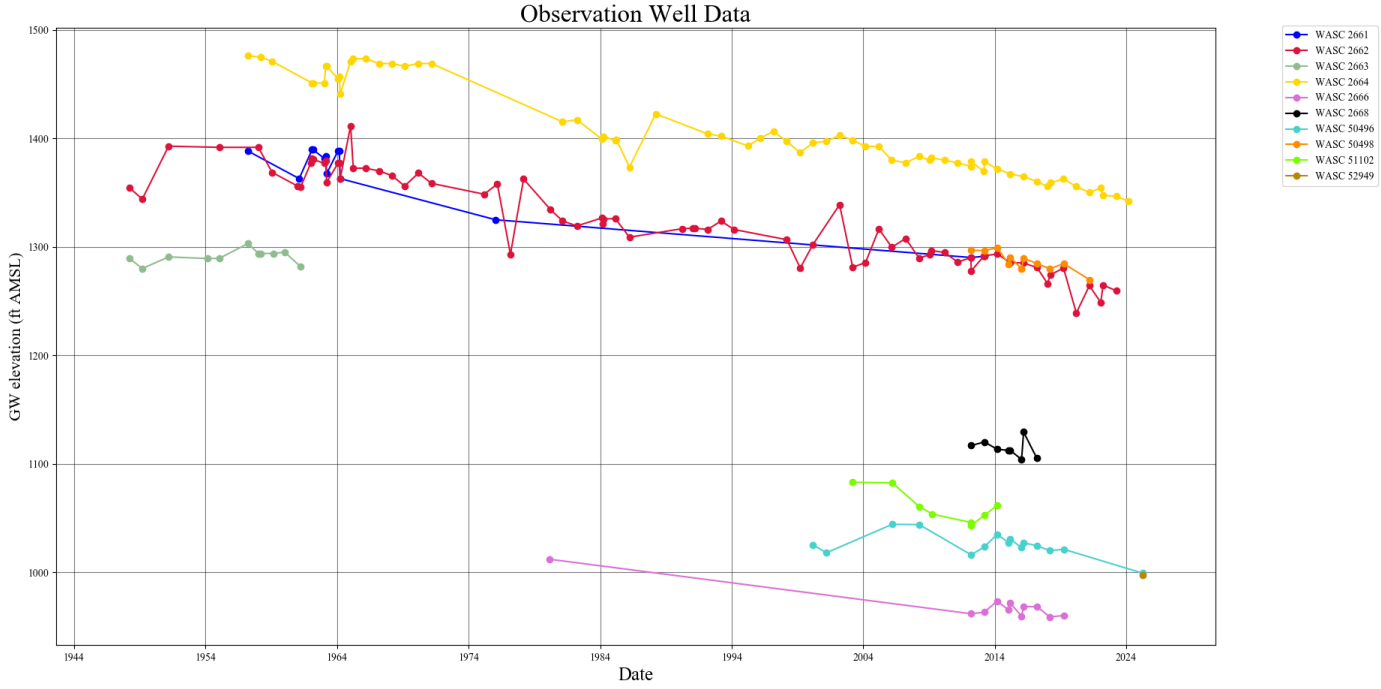

Figure 4. Water levels in proposed POA (WASC 52949) and adjacent wells (WASC 50496 and WASC 51102). Water levels in WASC 50496 have been declining at an average rate of 2.0 feet per year since 2013. Water level elevations in WASC 50496 and WASC 52949 measured on 3/20/2025 are very similar (999.23' amsl and 997.12' amsl).

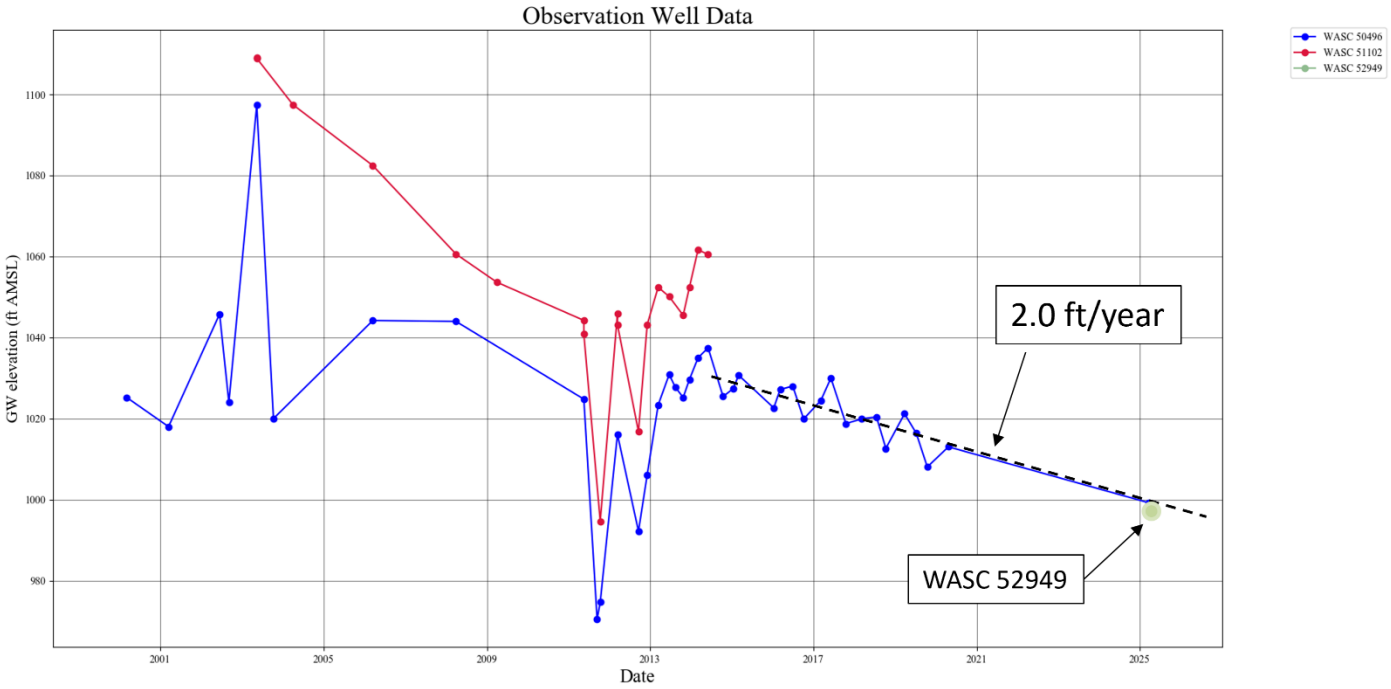

Figure 5. Stratigraphic Section of WASC 52949, WASC 52633 and WASC 2196. Wanapum basalt thickness in WASC 52633 and WASC 2196 is used to display approximate thickness in WASC 52949.