Groundwater Application Review Summary Form

Application # LL- _1966_

GW Reviewer _Aaron Orr / Travis Brown_ Date Review Completed: _8/21/2024_

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 **_August 21, 2024_**

TO: **Application** LL-**_1966_**

FROM: **GW:** **_Aaron Orr / Travis Brown_**
(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 8/21/2024
FROM: Groundwater Section Aaron Orr / Travis Brown
Reviewer's Name
SUBJECT: Application LL- **1966** 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: **Brian Kramer** County: **Yamhill**

A1. Applicant(s) seek(s) 0.027 cfs from 1 well(s) in the Willamette Basin, Main Stem Willamette subbasin

A2. Proposed use Irrigation (0.5 AF, 4.5 ac) Seasonality: Irrigation Season (4/1 – 9/30), expected 7/1 – 10/31

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	Proposed POA 1	1A	CRB	0.027	T3S/R2W-5 SW-SE	961'N, 1705'W ft SE cor S 5
2	Proposed POA 2	1B	CRB	0.027	T3S/R2W-5 SW-SE	961'N, 1375'W ft SE cor S 5

* 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	250	0 - 100	TBD	N/A	150 – 250	12	N/A	N/A
2	250	0 - 100	TBD	N/A	150 – 250	12	N/A	N/A

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	589	N/A	N/A	N/A	N/A	N/A
2	576	N/A	N/A	N/A	N/A	N/A

Use data from application for proposed wells.

A4. **Comments:** Proposed POAs are approximately ½-mile north of the City of Newberg. The POAs are 65-75 feet NE of applicant's reported metes and bounds.

A5. ☐ **Provisions of the** Willamette 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: Proposed POAs are within ¼ mile of the nearest surface water body, but the proposed POAs are likely to be completed within a confined (CRBG) aquifer. Although the wells may be completed in a confined CRBG aquifer, there is potential for connection with surface water due to the incising of streams through the target aquifer.

A6. ☒ **Well(s) # 1A , 1B , , , , ,** tap(s) an aquifer limited by an administrative restriction.
Name of administrative area: **Chehalem Mountain Groundwater Limited Area (OAR 690-502-0200)**
Comments: Groundwater in the basalt aquifers in the Chehalem Mountain Groundwater Limited Area is classified for exempt uses, irrigation, and rural residential fire protection systems only. Permits may be issued, for a period not to exceed five years, for fire protection and for drip or equally efficient irrigation provided the Director finds the proposed use and amount do not pose a threat to the groundwater resource or existing permit holders. The amount of water used for irrigation shall be further limited to one acre-foot- per acre per year. Within two years of permit issuance, the applicant is required to submit a plan for obtaining an alternative long-term water supply.

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) 7RLN, Large Water Use Reporting ;

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 **Basaltic megalandslide complex** 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 proposed POAs develop a basaltic megalandslide complex aquifer system on the southwest side of the Chehalem Mountains (Wells et al., 2018; Wells et al., 2020). The proposed POAs are located in the Willamette Basin within the Chehalem Mountain Groundwater Limited Area (GWLA). The contact between the tertiary marine volcanic and sedimentary (TMVS) unit and basalt on the southwest side of the Chehalem Mountain crest is between 350 and 450 feet amsl based on nearby well logs within ¼-mile of the proposed POAs, with bottom-of-basalt becoming shallower downhill. Surficial geology in the area consists primarily of landslide deposits containing CRB fragments; the resulting CRB stratigraphy is out of chronological order (Wells et al., 2020). These deposits have been mapped as the "Chehalem Bench," which contains basalt blocks as large as 1-mile across that have been deposited by an ancient megalandslide (Wells et al., 2018). This aquifer system differs from the CRB systems described in other reports as the original basalt emplacement—and resulting discreet confined water bearing zones—has been disturbed (Gannett and Caldwell, 1998; Conlon et al., 2005). Varying head by depth at some wells within ¼-mile of the proposed POAs that are drilled in the landslide deposits suggest sections of the landslide deposits under confined conditions (YAMH 2934, YAMH 58126). Other wells within ¼-mile of the proposed POAs show thinner layers of basaltic landslide deposits in unconfined or semi-confined conditions (YAMH 1835), or only TMVS (YAMH 54988). Based on limited well location data and the prevalence of megalandslide deposits in the area, it cannot be determined if the proposed POAs will be completed under typical CRB confined conditions. Because these findings are predicated on the POAs being completed in the megalandslide complex aquifer under confined conditions, the analyses rely on this assumption.

The nearest streams are Hess Creek to the East, Baker Creek and Heaton Creek to the Northeast, and an unnamed Creek to the West that feeds into Lockhart Reservoir. Water generally flows south. Recharge in the Willamette Basin is predominantly from the infiltration of precipitation into the groundwater system (Conlon et al., 2005). The Columbia River Basalt Aquifer is mostly recharged through precipitation and infiltration where the hydrostratigraphic unit is exposed at land surface (Woodward et al., 1998).

There are 182 wells completed within approximately 1 mile of the proposed POAs. Most of these wells are exempt or domestic use, except for five existing irrigation groundwater rights in the area. The median reported yield for wells completed within 1 mile of the proposed POAs is 18.5 gpm, with a maximum of ~150 gpm. Most of these wells appear to be completed in confined or semi-confined aquifers.

Given a rate of 0.027 cfs for either POA 1 or POA 2, nearby wells are estimated to experience less than 3 feet of drawdown over a 244-day (irrigation) pumping period. The nearest known wells completed in the same aquifer as the proposed POAs are YAMH 54988, at least ~400 feet southwest of POA 1 and YAMH 2098, at least ~518 feet north of POA 2. Breakdowns of each parameter are described in the **Theis Interference Analysis** section of the appendix.

Basalt wells with water level data within 3 miles of the proposed POAs show varying water level trends. These data are from wells that are both on the northeast and southwest side of the Chehalem Mountain Ridge. The well that is the closest comparison for the proposed POAs is YAMH 52040 (southwest of the ridge), which was drilled in the landslide complex and is completed in CRB. WASH 817 (northeast of the ridge) and YAMH 52040 both show relatively stable water levels. YAMH 56904 and YAMH 57902—which are closer to the POAs but drilled northeast of the Chehalem Mountain ridge—show substantial decline between 2017 and 2021 and appear to have slightly recovered in the past four years. Water levels in 56904 have tripped declined excessively conditions (52 feet of decline between 2017 and 2020). Water levels in YAMH 57902 declined 29 feet between 2018 and 2021. Though closer wells exhibit signs of declining water level conditions, the aquifer system(s) on the northeast side of the Chehalem Mountain ridge likely do not have good hydraulic connection with the POAs on the southwest side of the ridge that is completed in the "Chehalem Bench." Furthermore, wells greater than 3 miles from the POAs but completed in the "Chehalem Bench" show generally stable trends. Therefore, water levels in the area of the POAs completed on the southwest side of the Chehalem Mountains are likely stable.

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	**Megalandslide Complex**	☒	☐
2	**Megalandslide Complex**	☒	☐

Basis for aquifer confinement evaluation: The POAs are likely confined, as water level data from nearby wells suggest confined conditions, where the static water level ranges from 10 to 100 feet above the depth at which water was found.

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**	**Hess Creek**	**505 – 508[a]**	**190 - 580**	**940**	☒	☐	☐	☒	☐
2	**1**	**Hess Creek**	**505 – 508[a]**	**190 - 580**	**625**	☒	☐	☐	☒	☐
1	**2**	**Unnamed Tributary to Chehalem Creek**	**505 – 508[a]**	**305 - 920**	**4,050**	☒	☐	☐	☐	☒
2	**2**	**Unnamed Tributary to Chehalem Creek**	**505 – 508[a]**	**330 - 920**	**4,300**	☒	☐	☐	☐	☒
1	**3**	**Baker Creek**	**505 – 508[a]**	**950 – 1,060**	**4,000**	☐	☒	☐	☐	☒
2	**3**	**Baker Creek**	**505 – 508[a]**	**930 – 1,060**	**3,700**	☐	☒	☐	☐	☒
1	**4**	**Heaton Creek**	**505 – 508[a]**	**920 – 1,000**	**4,000**	☐	☒	☐	☐	☒
2	**4**	**Heaton Creek**	**505 – 508[a]**	**905 – 1,000**	**3,850**	☐	☒	☐	☐	☒
2	**5**	**Unnamed Tributary to Spiring Brook**	**505 – 508[a]**	**305 – 310**	**5,200**	☒	☐	☐	☐	☒

Basis for aquifer hydraulic connection evaluation: [a.] Water levels from YAMH 2934 and YAMH 2935, October 1993: similar elevations to proposed POA options (approximately 575 and 600 feet bgs, respectively).

The confined aquifer(s) in the vicinity of the proposed POAs are likely truncated by local stream drainages (Hess Creek) which erode through localized confining units of the megalandslide complex. Perennial streams, as shown on USGS 7.5-minute topographic maps, have their headwaters in the area of landslide deposits—it is likely that basalt outcrops where springs are identified. Mapped springs occur within the stream drainages, commonly at the head of perennial reaches. Perennial reach elevations within 1 mile of the proposed well coincide with the elevations of water-bearing zones and water levels reported on nearby well logs. These facts indicate that ground water discharges from the basalt aquifers to support local stream flow; **therefore, the streams and the aquifers are hydraulically connected**. The distances between the well and perennial streams listed in table 690-09-040 (2) (3) are based on the nearest perennial reach as shown on USGS 7.5-minute topographic maps.

Water Availability Basin the well(s) are located within: SW #1 and SW #5: Willamette R > Columbia R – AB Molalla R WAB (WID #182) **AND** SW #2: Chehalem Creek > Willamette R – AT MOUTH (WID #30200707)

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 eval uation 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?
1	**1**	☒	☐			☐	**3,830**	☐		☒
2	**1**	☒	☐			☐	**3,830**	☐		☒
1	**2**	☐	☐			☐	**0.39**	☒		☒
2	**2**	☐	☐			☐	**0.39**	☒		☒
2	**5**	☐	☐			☐	**3,830**	☐		☐

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:
Interference at 30 days was not evaluated due to the lack of a stream depletion model that would represent a geometrically complex aquifer system.
PSI was found with SW #1 because (1) it is within ¼-mile of the POAs, and (2) while it is likely under confined conditions, it will be in hydraulic connection with Hess Creek, which incises through the confined aquifer.
PSI was found with SW #2 because the proposed rate is grater than 1% of the 80% natural flow in Chehalem Creek. Hydraulic connection is based on the incising of streams through the confined aquifer and the prevalence of springs along the southwestern flank of the Chehalem Mountains.

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: Given the requested rate relative to the 80%-exceedance natural stream flow for Chehalem Creek, the proposed use is expected to substantially deplete the flow of Chehalem Creek, which is already over-appropriated with net negative water available (< -2 cfs) between the months of July and September. This finding would be reversed if the proposed rate is reduced to 1% of the 80% natural flow of Chehalem Creek (0.0039 cfs).

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:** N/A

References Used:

Application file: LL-1966, G-18843, G-18137

Conlon, T D, K. C. Wozniak, D. Woodcock, N. B. Herrera, B. J. Fisher, D. S. Morgan, K. K. Lee, S. R. Hinkle, Ground-Water Hydrology of the Willamette Basin, Oregon, Scientific Report 2005-5168, USGS.

Gannett and Caldwell, 1998, Geologic Framework of the Willamette Lowland Aquifer System, Oregon and Washington, USGS Professional Paper 1424-A.

Jenkins, C. T., 1968, Techniques for Computing Rate and Volume of Stream Depletion by Wells: Groundwater, v. 6, no. 2, p. 37–46.

Wells, R. E., Haugerud, R., Niem, A., Niem, W., Ma, L., Madin, I., Evarts., R, New Geologic Mapping of the Northwestern Willamette Valley, Oregon, and its American Viticultural Areas (AVAs)—A Foundation for Understanding Their Terroir, U.S. Geological Survey Open-File Report 2018-1044, https://doi.org/10.3133/ofr20181044

Wells, R.E., Haugerud, R.A., Niem, A.R., Niem, W.A., Ma, L., Evarts, R.C., O'Connor, J.E., Madin, I.P., Sherrod, D.R., Beeson, M.H., Tolan, T.L., Wheeler, K.L., Hanson, W.B., and Sawlan, M.G., 2020, Geologic map of the greater Portland metropolitan area and surrounding region, Oregon and Washington: U.S. Geological Survey Scientific Investigations Map 3443, pamphlet 55 p., 2 sheets, scale 1:63,360, https://doi.org/10.3133/sim3443.

Woodward, D. G., M. W. Gannett, J. J. Vaccaro, Hydrogeologic Framework of the Willamette Lowland Aquifer System, Oregon and Washinton, USGS Professional Paper 1424-B.

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.**

Water Availability Tables

DETAILED REPORT ON THE WATER AVAILABILITY CALCULATION
Water Availability as of 1/7/2020 for
CHEHALEM CR > WILLAMETTE R - AT MOUTH

Watershed ID #: 30200707 Basin: WILLAMETTE Exceedance Level: 80
Time: 12:00 Date: 01/07/2020

Month	Natural Stream Flow	CU + Stor Prior to 1/1/93	CU + Stor After 1/1/93	Expected Stream Flow	Reserved Stream Flow	Instream Water Rights	Net Water Available
1	101.00	3.77	0.00	97.23	0.00	0.00	97.23
2	115.00	3.55	0.00	111.45	0.00	0.00	111.45
3	80.60	2.72	0.00	77.88	0.00	0.00	77.88
4	33.00	1.78	0.00	31.22	0.00	0.00	31.22
5	14.90	2.50	0.00	12.40	0.00	0.00	12.40
6	8.48	3.88	0.00	4.60	0.00	0.00	4.60
7	2.13	5.20	0.00	-3.07	0.00	0.00	-3.07
8	0.59	4.28	0.00	-3.69	0.00	0.00	-3.69
9	0.39	2.47	0.00	-2.08	0.00	0.00	-2.08
10	3.05	0.65	0.00	2.40	0.00	0.00	2.40
11	11.50	1.31	0.00	10.19	0.00	0.00	10.19
12	66.20	3.15	0.00	63.06	0.00	0.00	63.06
Stor	48900	2130	0	46770	0	0	46770

Water Availability Analysis
Detailed Reports

WILLAMETTE R > COLUMBIA R - AB MOLALLA R
WILLAMETTE BASIN
Water Availability as of 7/10/2024

Watershed ID #: 182 (Map)
Date: 7/10/2024

Exceedance Level: 80%
Time: 2:39 PM

Water Availability Calculation | Consumptive Uses and Storages | Instream Flow Requirements | Reservations | Water Rights | Watershed Characteristics

Water Availability Calculation

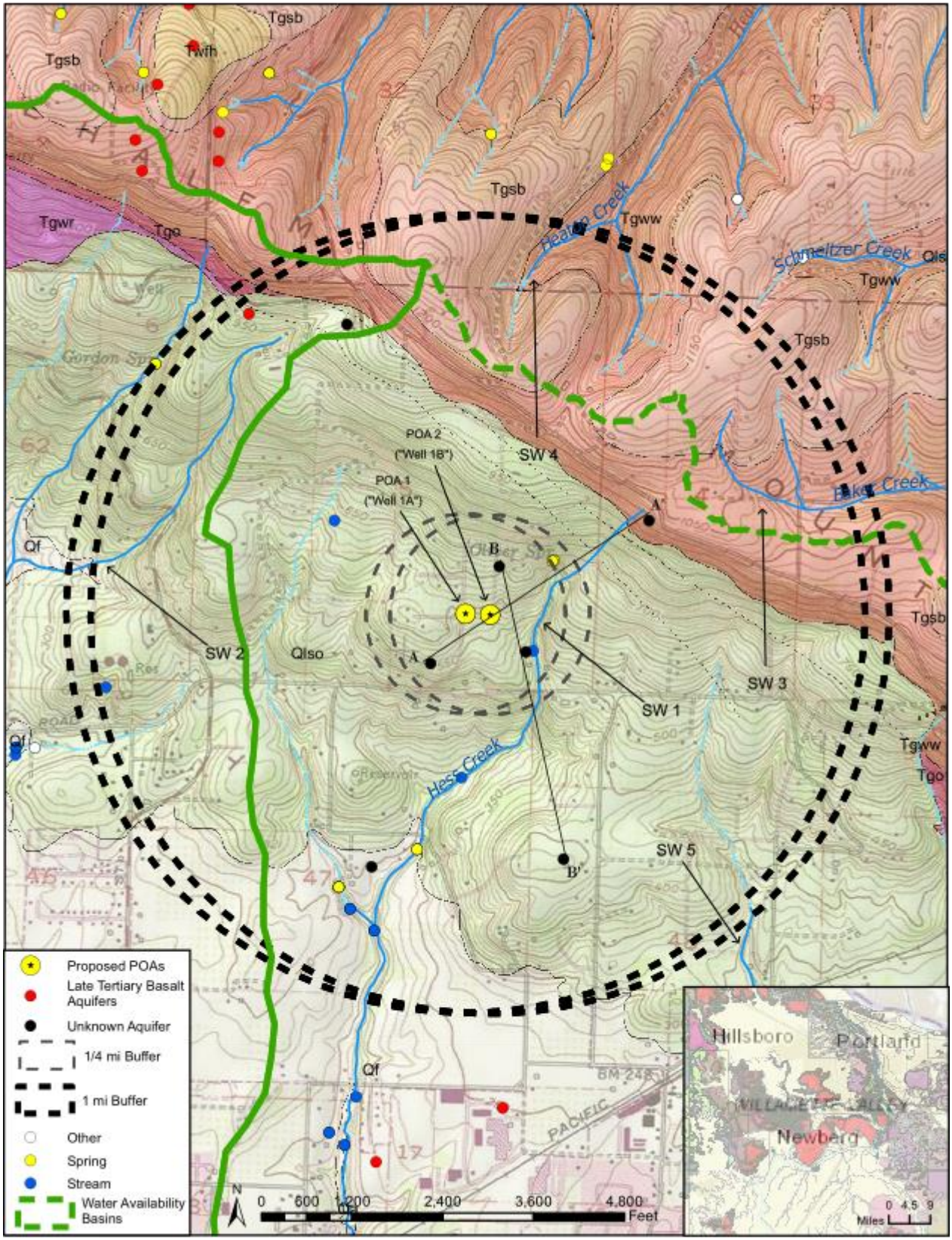
Monthly Streamflow in Cubic Feet per Second
Annual Volume at 50% Exceedance in Acre-Feet

Month	Natural Stream Flow	Consumptive Uses and Storages	Expected Stream Flow	Reserved Stream Flow	Instream Flow Requirement	Net Water Available
JAN	21,400.00	2,300.00	19,100.00	0.00	1,500.00	17,600.00
FEB	23,200.00	7,490.00	15,700.00	0.00	1,500.00	14,200.00
MAR	22,400.00	7,260.00	15,100.00	0.00	1,500.00	13,600.00
APR	19,900.00	6,910.00	13,000.00	0.00	1,500.00	11,500.00
MAY	16,600.00	4,250.00	12,300.00	0.00	1,500.00	10,800.00
JUN	8,740.00	1,980.00	6,760.00	0.00	1,500.00	5,260.00
JUL	4,980.00	1,810.00	3,170.00	0.00	1,500.00	1,670.00
AUG	3,830.00	1,650.00	2,180.00	0.00	1,500.00	681.00
SEP	3,890.00	1,390.00	2,500.00	0.00	1,500.00	997.00
OCT	4,850.00	753.00	4,100.00	0.00	1,500.00	2,600.00
NOV	10,200.00	887.00	9,310.00	0.00	1,500.00	7,810.00
DEC	19,300.00	975.00	18,300.00	0.00	1,500.00	16,800.00
ANN	15,200,000.00	2,250,000.00	13,000,000.00	0.00	1,090,000.00	11,900,000.00

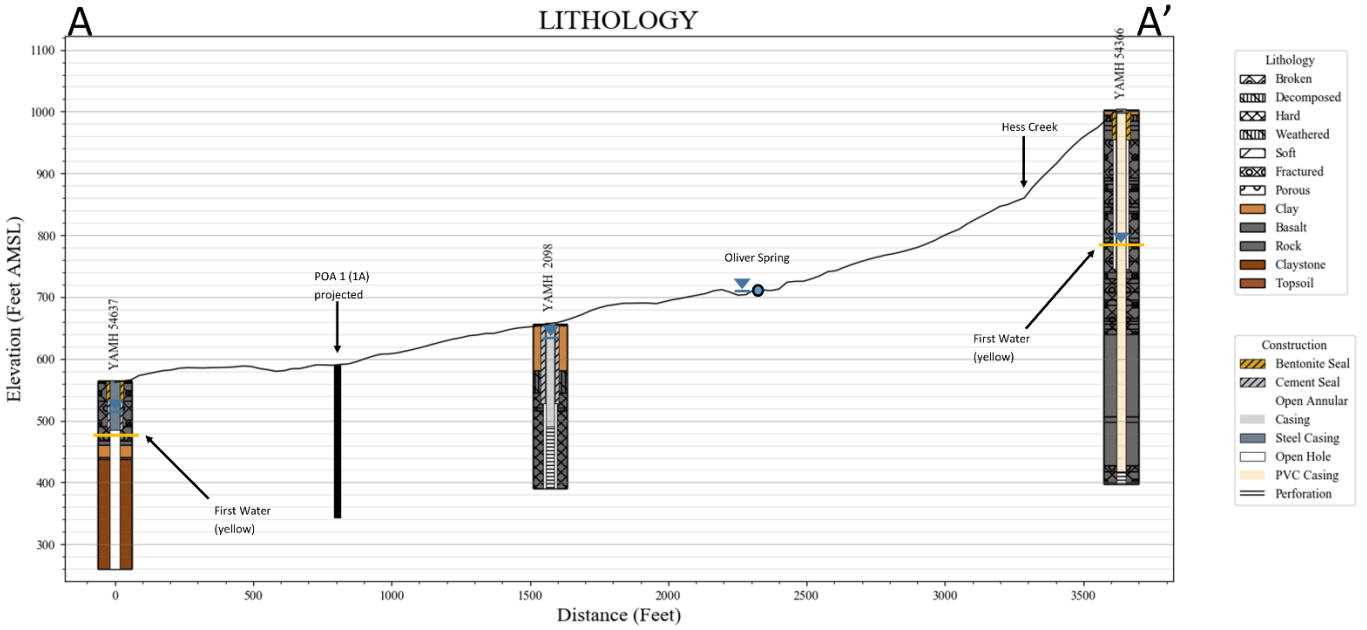
Download Data (Text - Formatted , Text - Tab Delimited , Excel)

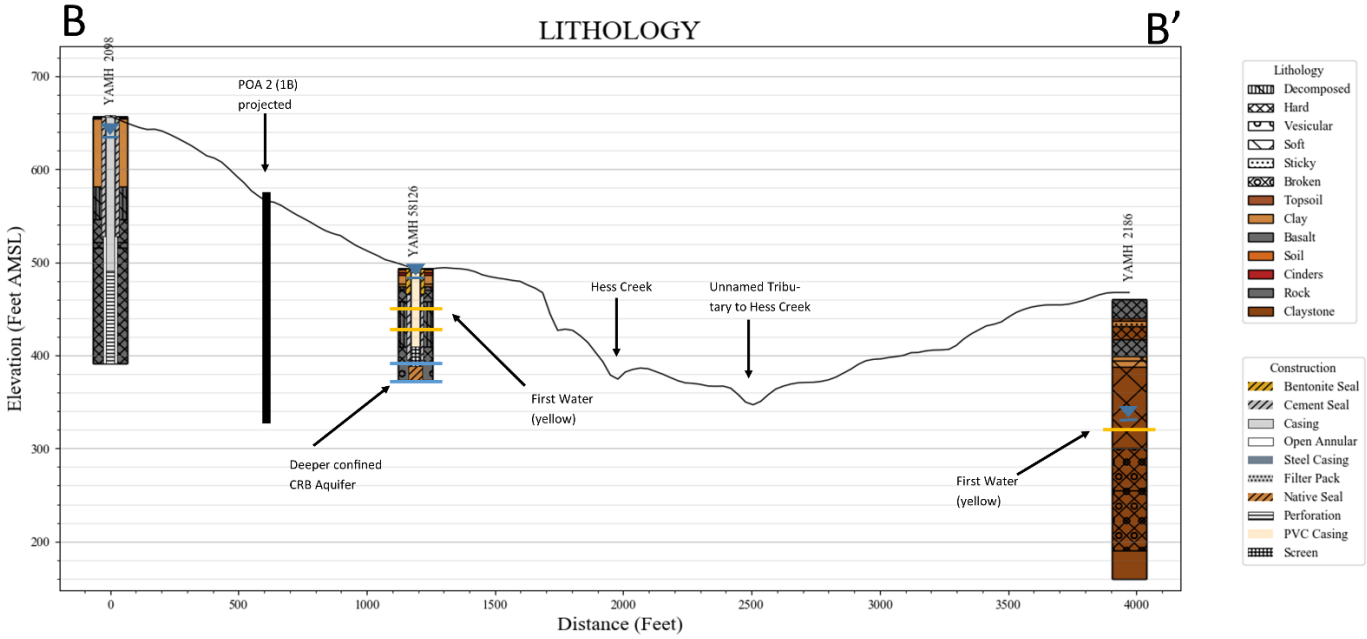
Well Location Map

Application LL-1966

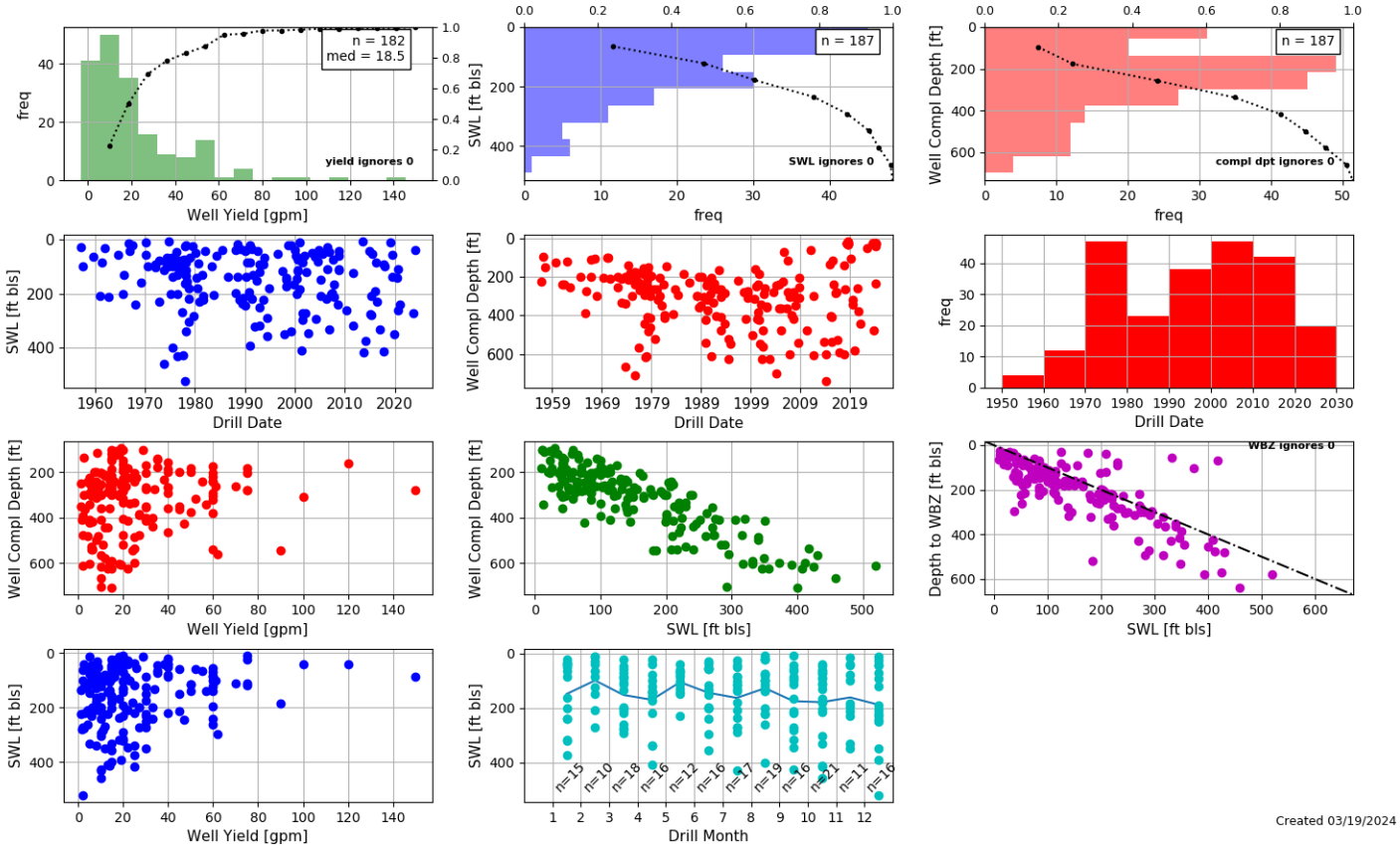


Cross-Sections





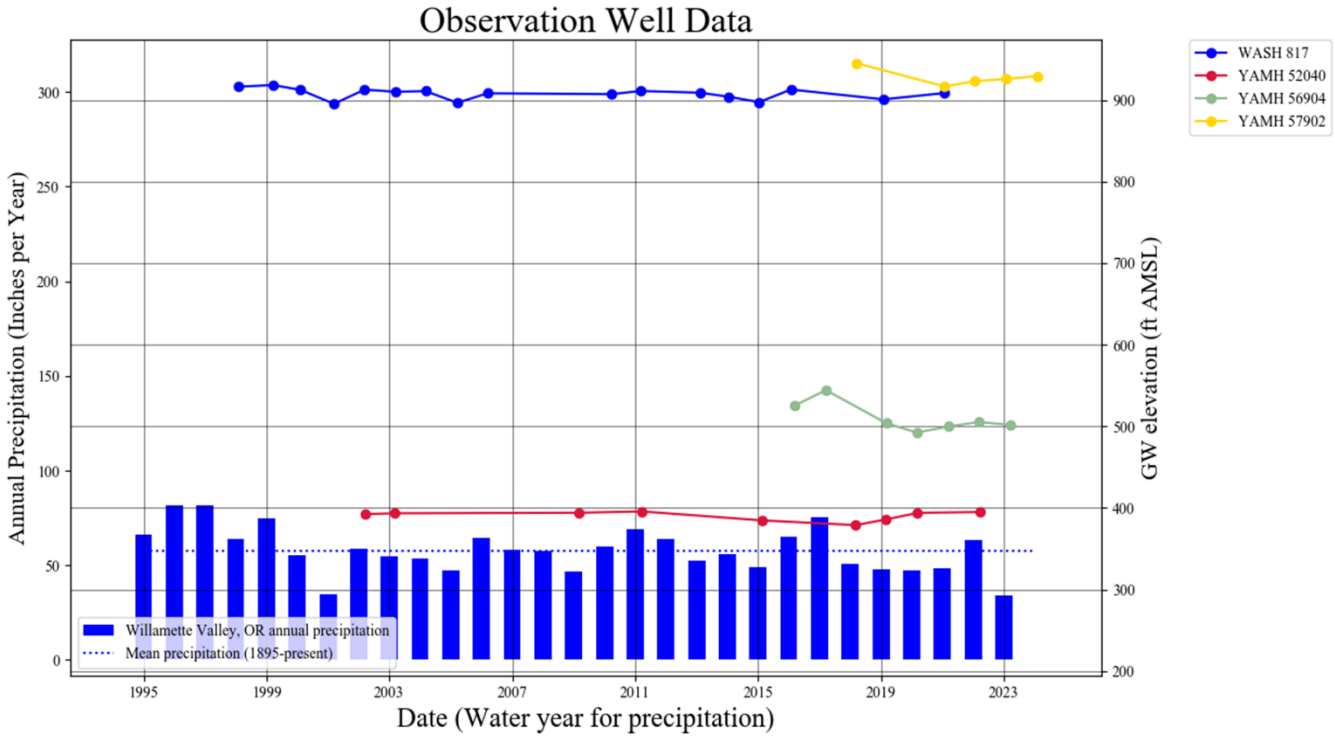
Well Statistics (T3S/R2W, Sections 5, 6, 7, and 8)



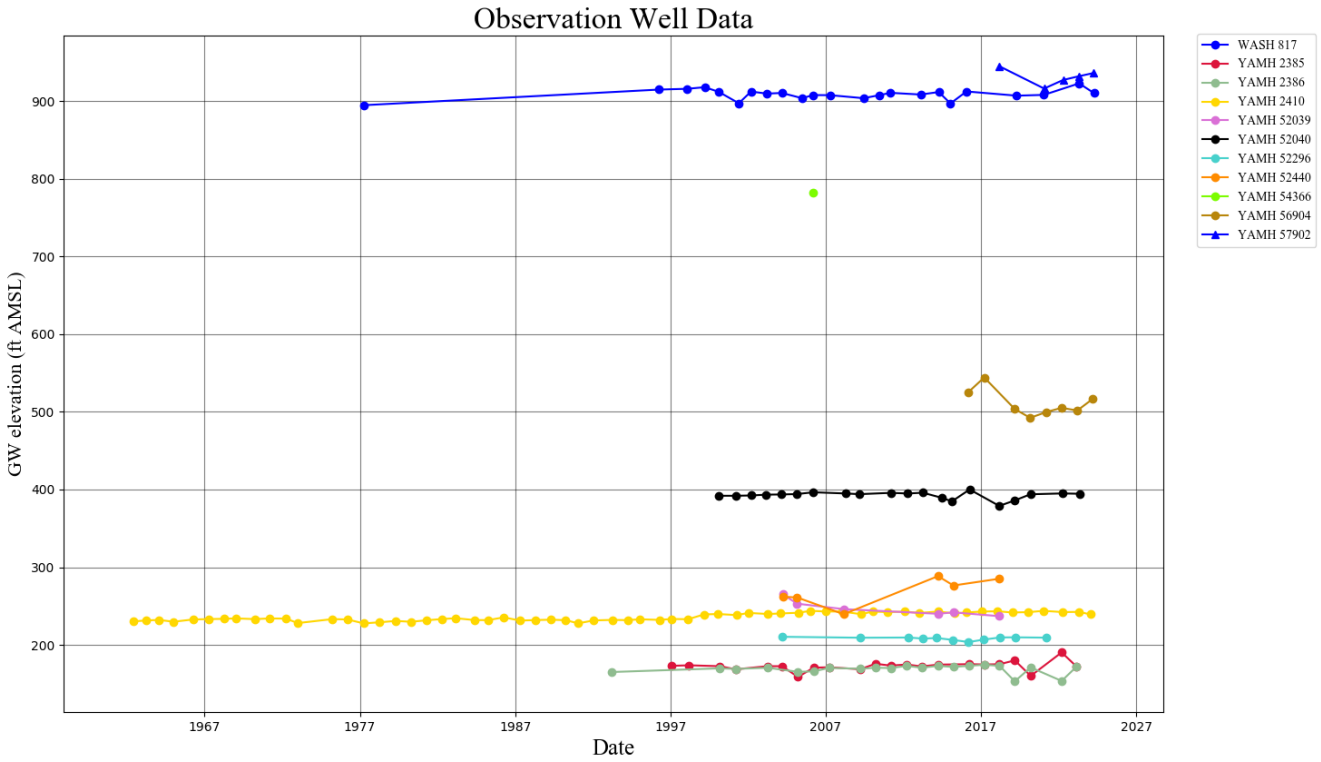
Created 03/19/2024

Water-Level Measurements in Nearby Wells

CRB wells within 3-miles of the POA:



Previous wells + wells completed in or near the "Chehalem Bench:"



Theis Interference Analysis

Transmissivity: Values ranged from 350 ft^2/day to 700 ft^2/day based on three basalt aquifer pump tests within 3 miles of the well. The highest quality aquifer test (YAMH 2231; 380 ft^2/day) was also the closest to the proposed POAs, approximately 1 mile southeast of the site(s).

Storativity: 0.0001 to 0.001 (basalt wells in Marion County, Conlon et al. 2005, Table 2).

Time: 180 days.

Rate: 0.027 cfs for POA 1 and POA 2

Distance: 518 feet from POA 1 to YAMH 2098, 410 feet from POA 2 to YAMH 54988.

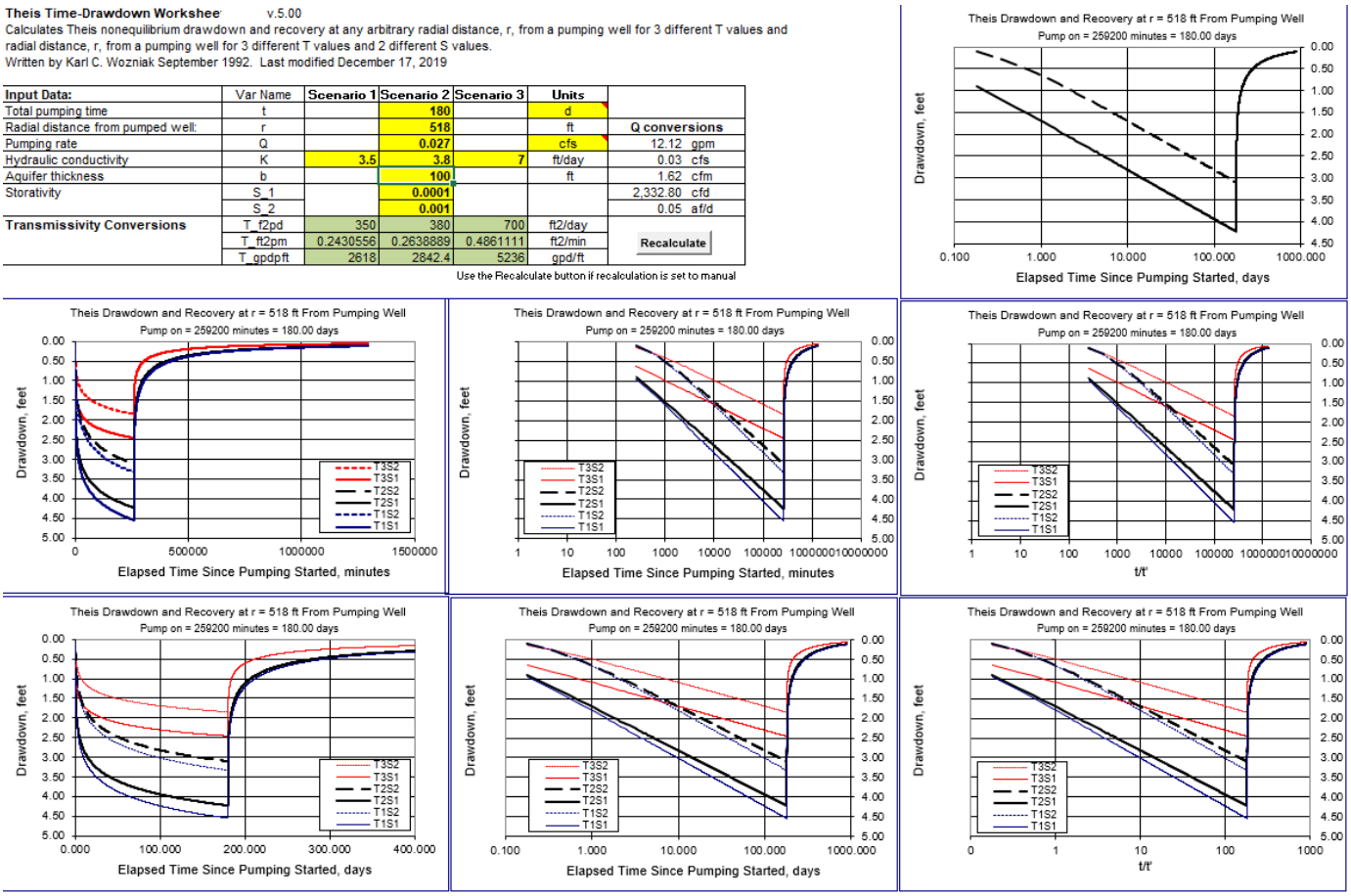


Figure 1: POA 1 (Well 1A)

POA 2:

Theis Time-Drawdown Workshee v.5.00

Calculates Theis nonequilibrium drawdown and recovery at any arbitrary radial distance, r, from a pumping well for 3 different T values and radial distance, r, from a pumping well for 3 different T values and 2 different S values.
Written by Karl C. Wozniak September 1992. Last modified December 17, 2019

Input Data:	Var Name	Scenario 1	Scenario 2	Scenario 3	Units	
Total pumping time	t		180		d	
Radial distance from pumped well:	r		400		ft	Q conversions
Pumping rate	Q		0.027		cfs	12.12 gpm
Hydraulic conductivity	K	3.5	3.8	7	ft/day	0.03 cfs
Aquifer thickness	b		100		ft	1.62 cfm
Storativity	S_1		0.0001			2,332.80 cfd
	S_2		0.001			0.05 af/d
Transmissivity Conversions	T_f2pd	350	380	700	ft2/day	
	T_ft2pm	0.2430556	0.2638889	0.4861111	ft2/min	Recalculate
	T_gpdpft	2618	2842.4	5236	gpd/ft	

Use the Recalculate button if recalculation is set to manual

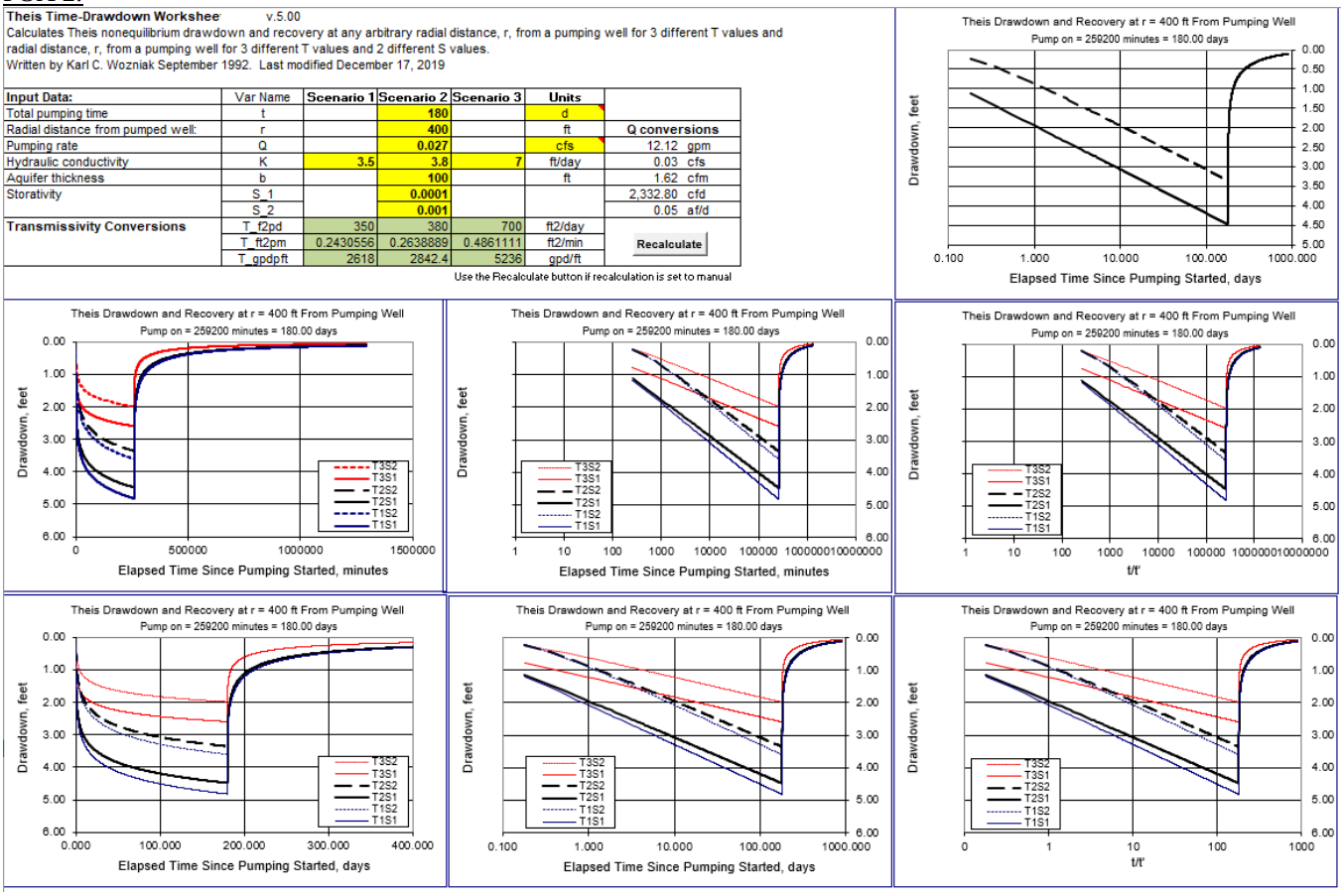


Figure 2: POA 2 (Well 1B)