Groundwater Application Review Summary Form

Application # G- 19482

GW Reviewer Gabriela Ferreira Date Review Completed: March 13, 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 **_March 13, 2025_**

TO: **Application** G-**_19482_**

FROM: **GW: _Gabriela Ferreira_**
(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 ____ 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 3/13/2025
FROM: Groundwater Section Gabriela Ferreira
Reviewer's Name
SUBJECT: Application G- **19482** 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: **Francisco Javier Barajas and Maria Barajas**
County: **Clackamas**

A1. Applicant(s) seek(s) 0.50 cfs from 2 well(s) in the Willamette Basin, subbasin

A2. Proposed use Irrigation (113.8 acres) Seasonality: March 1 through 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	PROPOSED	1	Volcanics	0.50	T5S/ R2E – 25 SW-NE	1535' N 2700' E fr SW cor S 25
2	PROPOSED	2	Volcanics	0.50	T5S/ R2E – 25 SW-NE	1520' N 1575' E fr SW cor S 25

* 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	300	0 – 30	0 – 300	TBD	TBD	TBD	TBD	TBD
2	300	0 – 30	0 – 300	TBD	TBD	TBD	TBD	TBD

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	640[a]	TBD	TBD	TBD	TBD	TBD
2	560[a]	TBD	TBD	TBD	TBD	TBD

Use data from application for proposed wells.

A4. **Comments:** The proposed POAs/POU are located approximately 4 miles southeast of Molalla. The applicant proposes irrigation use on 113.8 acres by two wells to be constructed, for a maximum instantaneous rate of 0.50 cfs (~225 gpm) and maximum annual volume of 243.0 acre-feet.

[a] Land surface elevation from LIDAR at the proposed well location (OLC, 2016).

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: The proposed POAs will produce from a confined aquifer; therefore, the relevant Willamette Basin rules (OAR 690-502-0240) do not apply.

A6. ☒ **Well(s) #** **1** , **2** , _____ , _____ , _____ , tap(s) an aquifer limited by an administrative restriction.
Name of administrative area: **N/A**
Comments: N/A

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**;

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 **Little Butte Volcanics** 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 POA/POU is located on the western margin of volcanics associated with Mount Hood, in the transition zone between Mount Hood uplift and the Portland Basin. The surrounding area is characterized by steep topographic relief and variable geology from overlapping alluvial and volcanic deposits. The proposed POAs would produce water from the Molalla Formation, comprised of lower Miocene andesitic lava flows, volcanic conglomerates, tuffaceous paleosols, and marine tuffs, within the upper part of the Little Butte Volcanics Series. The Molalla Formation is exposed along the Molalla River, approximately 0.4 mile southwest of the POAs and ~250 feet lower in elevation, and is known to be up to 1,000 feet thick; older basalts of Little Butte Volcanics Series underlie the Molalla Formation (Hampton, 1972; Miller and Orr, 1984; Gannett and Caldwell, 1998). The Molalla Formation is considered part of the basement confining unit within Willamette Basin hydrogeologic units as described by Conlon and others (2005) and is characterized by low permeability and low porosity.

Within approximately two miles of the proposed POA locations, eleven groundwater rights are present for nursery and, along with several exempt domestic wells. The nearby wells appear to produce from the Little Butte Volcanics Series or overlying alluvium and have somewhat low yields, with most less than 60 gpm, although two wells reported yields of 175 and 250 gpm (see attached well statistics). The requested rate (~225 gpm) is within the upper range of reported yields for similarly constructed wells.

Injury was evaluated against the nearest identified well, identified as CLAC 67959. Despite not fully penetrating the Molalla Formation aquifer system, potential impacts on a potential well were modeled using the attached Theis drawdown analysis

and assuming the full duty and rate of the proposed POA. Transmissivity values are based on published values (Freeze and Cherry 1979; Conlon and others, 2005). Under conservative modeled parameters, acute drawdown in excess of typical permit conditions may occur; therefore, Condition 7RLN is recommended to assess potential future injury concerns.

Water level data from three wells were selected for evaluation based on location and aquifer system. Two wells, CLAC 65759 (~5 miles northeast) and CLAC 11435 (~2 miles north), are near the western margin of the Sardine Formation (hydrogeologically similar to the Molalla Formation) and may be interlayered with the Troutdale Formation. The third well, CLAC 10479 likely produces from the Molalla Formation, although the Troutdale Formation is present at surface. The three wells have relatively stable water levels, with 10 to 15 feet of variability observed over the available record. Although somewhat limited, the available groundwater level data suggests that groundwater for the proposed use is not over appropriated.

Permit condition 7RLN is recommended to assess potential future injury concerns, and as a means to monitor long-term groundwater conditions in this area.

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	**Volcanics**	☒	☐
2	**Volcanics**	☒	☐

Basis for aquifer confinement evaluation: The proposed wells would produce from the Molalla Formation, comprised of volcanic lavas and conglomerates. Water levels for nearby similarly constructed wells typically report static water levels above water bearing zone(s), indicating a confined aquifer or series of aquifers.

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**	**Unnamed Tributary to Dickey Creek**	**590 – 610**	**460 - 1,110**	**1,420**	☒	☐	☐	☐	☒
2	**1**	**Unnamed Tributary to Dickey Creek**	**510 – 530**	**450 - 1,110**	**1,630**	☒	☐	☐	☐	☒
1	**2**	**Molalla River**	**590 – 610**	**455 - 500**	**2,490**	☒	☐	☐	☐	☒
2	**2**	**Molalla River**	**510 – 530**	**500- 440**	**1,650**	☒	☐	☐	☐	☒
1	**3**	**Dickey Creek**	**590 – 610**	**520 - 875**	**3,240**	☒	☐	☐	☐	☒
2	**3**	**Dickey Creek**	**510 – 530**	**500 – 815**	**3,430**	☒	☐	☐	☐	☒

Basis for aquifer hydraulic connection evaluation: [1] Estimated groundwater elevation is based on reported static water levels in nearby similarly constructed wells that produce from the Molalla Formation (CLAC 67959 and CLAC 66204).

[2] Estimated surface water elevation and distance is provided for the nearest perennial reach for the surface water body (OLC, 2016; USGS 2014).

Because the estimated groundwater elevations for the POAs are coincident with the estimated elevation ranges for the listed surface water sources, the aquifer system proposed to be accessed by the POA is efficiently hydraulically connected to those stream reaches. Additionally, the surface water sources have incised into reported water-bearing zones within the Molalla Formation, at which elevation several spring rights are also identified (Certificates 21619 and 40754). These observations also support the reported hydraulic connection from local groundwater systems to springs providing base flow to nearby streams (Hampton, 1972).

Water Availability Basin the well(s) are located within: #70747: Molalla River > Willamette River – Above Milk Creek

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?
1	**1**	☐	☐	**N/A**	**N/A**	☐	**54.50**	☐	**N/A**	☐
2	**1**	☐	☐	**N/A**	**N/A**	☐	**54.50**	☐	**N/A**	☐
1	**2**	☐	☐	**IS89606A**	**0.44**	☒	**54.50**	☐	**N/A**	☒
2	**2**	☐	☐	**IS89606A**	**0.44**	☒	**54.50**	☐	**N/A**	☒
1	**3**	☐	☐	**N/A**	**N/A**	☐	**54.50**	☐	**N/A**	☐

2	**3**	☐	☐	**N/A**	**N/A**	☐	**54.50**	☐	**N/A**	☐

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: C3a: PSI is found with SW 3, because the proposed rate (0.50 cfs) exceeds 1% of the respective ISWR (0.0044 cfs for IS89606A) If the requested rate is reduced to or below 0.0044 cfs, the PSI finding would not apply.

Analytical models typically used to estimate stream interference/depletion (Hunt 1999, Hunt 2003) are not appropriate for this particular hydrogeologic setting within a volcanic formation and given the locality's high local topographic relief and correspondingly great variability in surface water and groundwater levels.

C3b: Not applicable.

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: Application File G-19482

Water well reports and data CLAC 65759, CLAC 11435, CLAC 10479, CLAC 66204

Barlow, P.M., and Leake, S.A., 2012, *Streamflow depletion by wells—Understanding and managing the effects of groundwater pumping on streamflow*, Circular 1376: U.S. Geological Survey, Reston, VA.

Bredehoeft J., 2011, Hydrologic trade-offs in conjunctive use management: Ground Water, July/August, Vol 49(4), p. 468-475.

Conlon, T.D., Lee, K.K., and Risley, J.R., 2003, Heat tracing in streams in the central Willamette Basin, Oregon, in Stonestrom, D.A. and Constantz, Jim, eds., Heat as a tool for studying the movement of groundwater near streams: U.S. Geological Survey Circular 1260, chapter 5, p. 29-34.

Freeze, R.A. and Cherry, J.A., 1979, Groundwater, Prentice Hall, Englewood Cliffs, New Jersey, 604 p.

Gannett, M.W. and Caldwell, R., 1998, *Geologic framework of the Willamette Lowland aquifer system, Oregon and Washington*, Professional Paper 1424-A, 32 p: U. S. Geological Survey, Reston, VA.

Hampton, E. R., 1972, *Geology and Ground Water of the Molalla-Salem Slope Area, Northern Willamette Valley, Oregon*, Water-Supply Paper 1997: U. S. Geological Survey, Reston, VA.

Hunt, B., 2003, Unsteady stream depletion when pumping from semiconfined aquifer: Journal of Hydrologic Engineering, January/February, Vol 8, p. 12-19.

Miller and Orr, 1984, *Geologic Map of the Wilhoit Quadrangle*, Oregon Department of Geology & Mineral Industries, GMS-32. https://pubs.oregon.gov/dogami/gms/GMS-032.pdf

Oregon Lidar Consortium (OLC), 2016, OLC metro 2014 lidar project, Oregon Department of Geology & Mineral Industries, Portland, OR, November 30.

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.

United States Geological Survey, 2014, National Hydrography Dataset (NHD), 1:24,000, U. S. Department of the Interior, Reston, VA.

Wells, R., 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.

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:** _____

_____

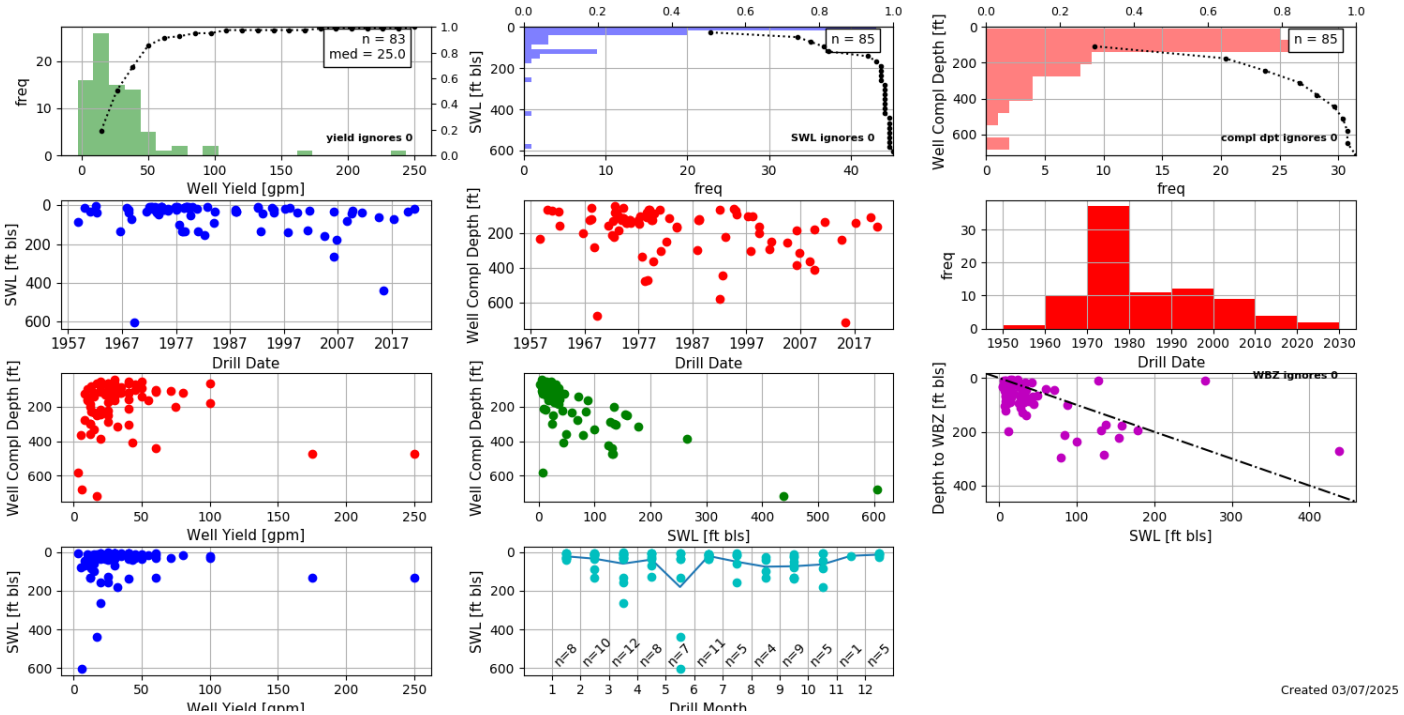
_____

_____

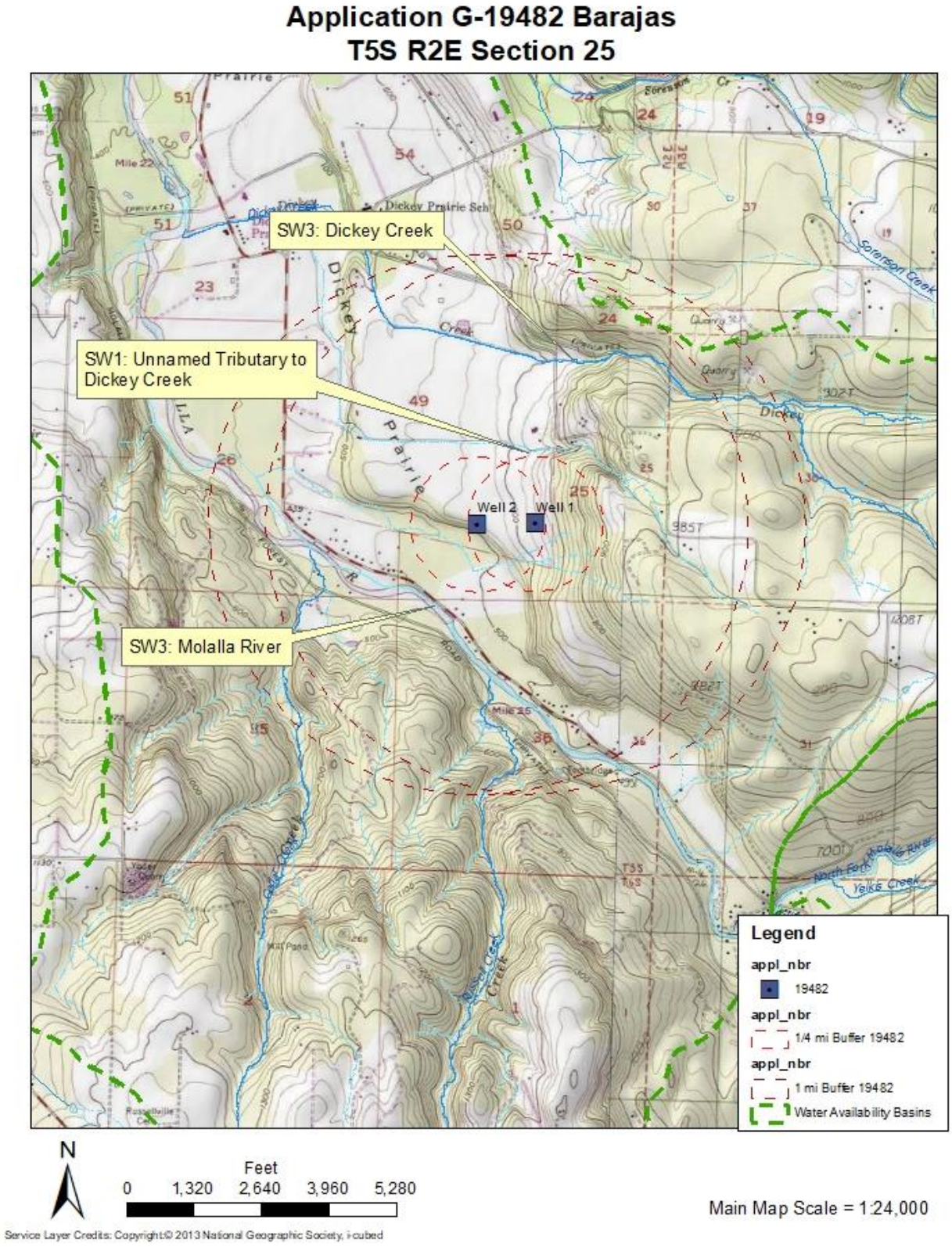
_____

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

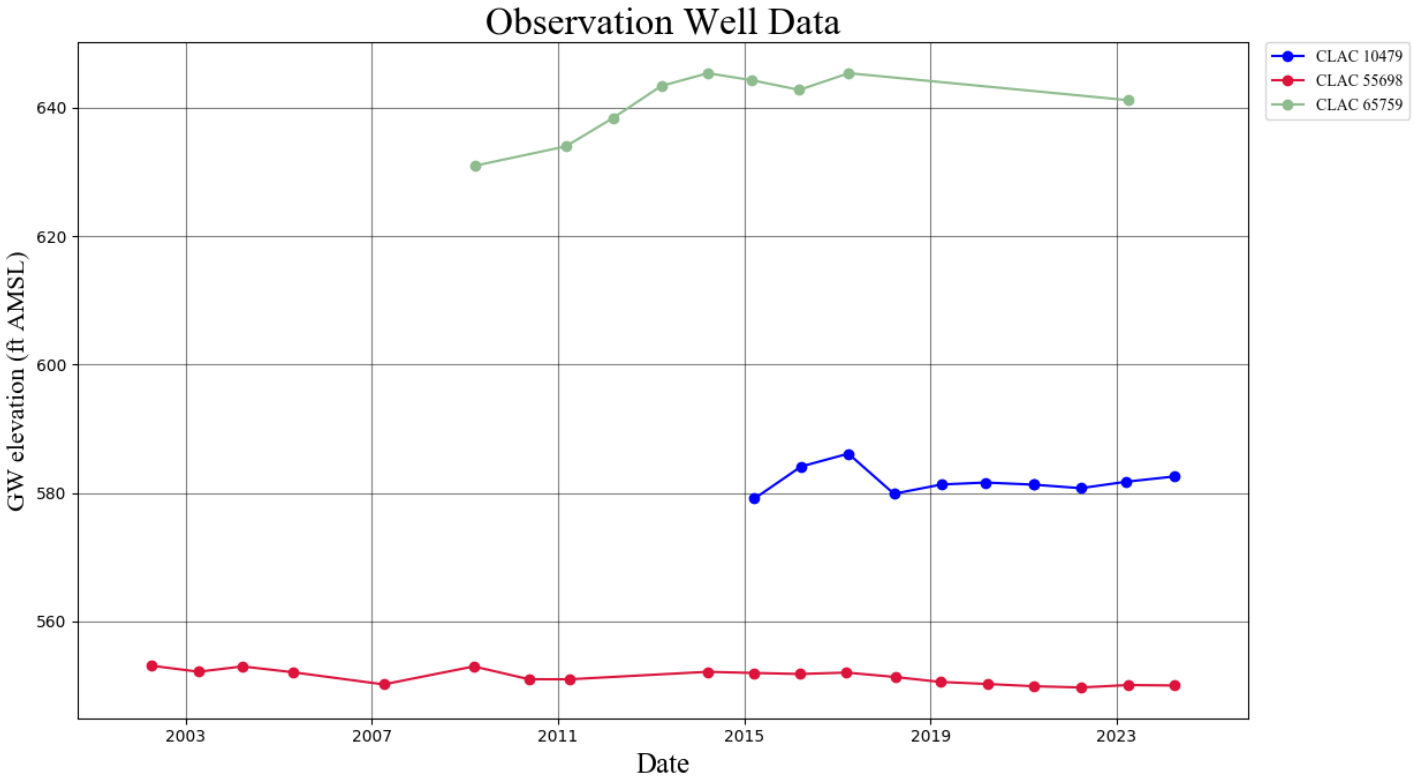
Well Statistics



Well Location Map



Water-Level Measurements in Nearby Wells

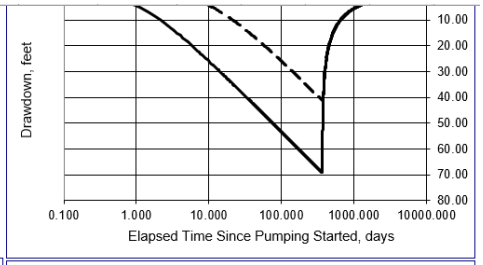


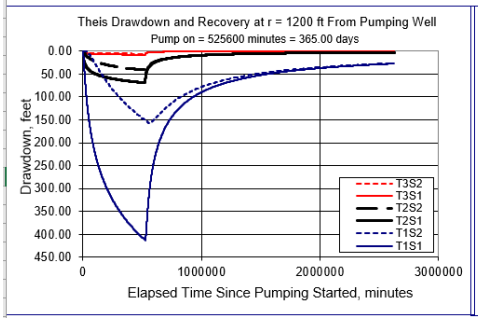
Theis Interference Analysis

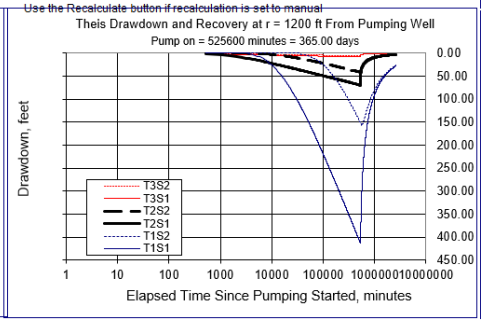
Written by Karl C. Wozniak September 1992. Last modified December 17, 2019

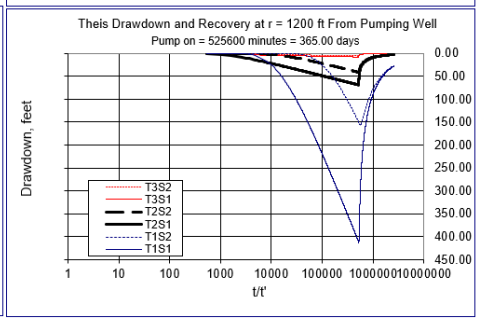
Input Data:	Var Name	Scenario 1	Scenario 2	Scenario 3	Units	
Total pumping time	t		365		d	
Radial distance from pumped well:	r		1200		ft	**Q conversions**
Pumping rate	Q		0.089		cfs	39.94 gpm
Hydraulic conductivity	K	0.2	2	25	ft/day	0.09 cfs
Aquifer thickness	b		25		ft	5.34 cfm
Storativity	S_1		0.0001			7,689.60 cfd
	S_2		0.001			0.18 af/d
Transmissivity Conversions	T_f2pd	5	50	625	ft2/day	
	T_ft2pm	0.00347222	0.03472222	0.43402778	ft2/min	Recalculate
	T_gpdpft	37.4	374	4675	gpd/ft	

Use the Recalculate button if recalculation is set to manual









Water Availability Tables

MOLALLA R > WILLAMETTE R - AB MILK CR
WILLAMETTE BASIN

Water Availability as of 3/28/2025

Watershed ID #: 70747 (Map)
Date: 3/28/2025

Exceedance Level: 80%
Time: 11:25 AM

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	531.00	1.33	530.00	0.00	300.00	230.00
FEB	541.00	1.32	540.00	0.00	300.00	240.00
MAR	569.00	1.35	568.00	0.00	300.00	268.00
APR	591.00	1.64	589.00	0.00	300.00	289.00
MAY	466.00	5.15	461.00	0.00	300.00	161.00
JUN	207.00	7.28	200.00	0.00	200.00	-0.28
JUL	85.90	12.80	73.10	0.00	100.00	-26.90
AUG	55.70	10.40	45.30	0.00	78.70	-33.40
SEP	54.50	4.24	50.30	0.00	88.90	-38.60
OCT	90.40	1.45	89.00	0.00	166.00	-77.00
NOV	273.00	1.30	272.00	0.00	300.00	-28.30
DEC	560.00	1.34	559.00	0.00	300.00	259.00
ANN	454,000.00	3,020.00	451,000.00	0.00	165,000.00	287,000.00