Groundwater Application Review Summary Form

Application # G- 19362

GW Reviewer Travis Brown Date Review Completed: 10/15/2024

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 **_10/15/2024_**

TO: **Application** G-**_19362_**

FROM: **GW:** **_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 10/15/2024
FROM: Groundwater Section Travis Brown
Reviewer's Name
SUBJECT: Application G- **19362** 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: **Kenneth Glenn** County: **LANE**

A1. Applicant(s) seek(s) 0.75 cfs from 1 well(s) in the Willamette Basin, Mainstem Willamette subbasin

A2. Proposed use Nursery Use (150 af; 30 ac) Seasonality: Year-round

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	LANE 71633	Well G	Alluvium	0.75	16S/4W-34 NE-SW	1400' N, 220' W fr S ¼ cor S 34

* 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	79	0-18	0-75		75-78	"150+"	Unknown	Air

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	374	24	5	3/27/2012	5.00	3/27/2012

Use data from application for proposed wells.

A4. **Comments:** The proposed POA is ~0.5 mile northwest of the City of Eugene, OR.

The proposed POA ("Well G" / LANE 71633) is also a proposed To-POA per Temporary Transfer T-14289 for 3.8 acres of Irrigation under Cert 38463. The temporary transfer is authorized through the 2028 irrigation season.

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 POA is greater than ¼ mile from the nearest surface water source and is in confined alluvium; therefore, the relevant basin rules (OAR 690-502-0240) do not apply.

A6. ☐ **Well(s) #** _____ , _____ , _____ , _____ , _____ , 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) **7RLA (25 ft), large water use**;

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 **alluvial** 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 develops the shallow Willamette alluvial aquifer system (Gannett and Caldwell, 1998).

Nearby water levels are not excessively declined or declining (see attached Hydrograph). The requested groundwater source is not over-appropriated.

The applicant has requested a maximum rate of 0.75 cfs (~337 gpm); this is more than double the reported yield (~0.334 cfs [150 gpm]) of the proposed POA (LANE 71633, Yield = "150+" gpm from well air test on 3/27/2012). Other alluvial wells in T16S/R4W-34 have reported higher yields that would be sufficient to supply the requested rate (see attached Well Statistics). The application notes that the existing 2 HP submersible pump is "undersized for the requested rate." Given the available evidence, either the requested POA would need modification/deepening or an additional POA would be needed to achieve the requested rate. **Therefore, the proposed use is not within the capacity of the groundwater resource. If the application is amended to reduce the requested rate to the reported yield of the well (0.334 cfs or 150 gpm) and thereby overcome the finding that the proposed use is not within the capacity of the groundwater resource, a re-review is not necessary.**

The nearest neighboring alluvial well (presumed to be LANE 8316) is on Tax Lot 1202, ~1,550 ft east of the proposed POA. Well-to-well interference at this distance was analyzed using the Theis (1935) solution for drawdown in a confined aquifer (see attached Well-to-Well Interference Analysis). Results of the analysis indicate that interference from the proposed use is unlikely to exceed 25 ft of drawdown at the location of Tax Lot 1202.

To protect senior users and the groundwater resource, the conditions in B1(d)(i) and B2(c) are recommended for any permit issued pursuant to this application. The reference level for the proposed POA is listed in Table A3.

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	**LANE 71633**	☒	☐

Basis for aquifer confinement evaluation: The POA has a likely confining unit of clay and cemented gravel 2-22 ft bls; the reported static water level (5 ft bls) was above the noted water-bearing zone (24-79 ft bls). Other wells in the area indicate SWLs above reported water-bearing zones, indicating confined conditions (see attached Well Statistics). Therefore, the target aquifer appears to be at least weakly confined.

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**	**Flat Creek**	**350-370[a]**	**360-374[b]**	**1650**	☒	☐	☐	☐	☒
1	**2**	**Spring Creek**	**350-370[a]**	**360-373[b]**	**4180**	☒	☐	☐	☐	☒

Basis for aquifer hydraulic connection evaluation: Groundwater elevations are coincident with or above the elevation of SW 1 and SW 2. The water table is near land surface, so nearby streams only have to be moderately incised to intercept the water table. The proposed POA is hydraulically connected to SW 1 and SW 2.
[a] Based on water levels reported for the POA and nearby wells.
[b] Surface water elevation within 1 mile of POA (LIDAR).
Water Availability Basin the well(s) are located within: WID #30200321, WILLAMETTE R > COLUMBIA R – AB PERIWINKLE CR AT GAGE 14174

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**	☐	☐	**NA**		☐	**2540**	☐	**<<25**	☐
1	**2**	☐	☐	**NA**		☐	**2540**	☐	**<<25**	☐

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: Potential interference with SW 1 was analyzed using the Hunt (2003) analytical model (see attached Surface Water Interference Analysis). Results of the analysis indicate that interference with SW 1 within the first 30 days of continuous pumping is anticipated to be much less than 25 percent of the rate of withdrawal. SW 2 is further from the POA than SW 1; the greater distance will further delay depletion of SW 2, along with recharge boundary effect of SW 1. As a result, interference with SW 2 is anticipated to be less than for SW 1. Therefore, PSI is not assumed for either SW 1 or SW 2.

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													
(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:** _____

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.**

References Used:

Application File: G-19362

Pumping Test Reports: LANE 8061, 8214, 63753, 64556, 72693

Conlon, T.D., Wozniak, K.C., Woodcock, D., Herrera, N.B., Fisher, B.J., Morgan, D.S., Lee, K.K., and Hinkle, S.R., 2005, Ground-water hydrology of the Willamette Basin, Oregon, Scientific Investigations Report 2005-5168: U. S. Geological Survey, Reston, VA.

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.

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

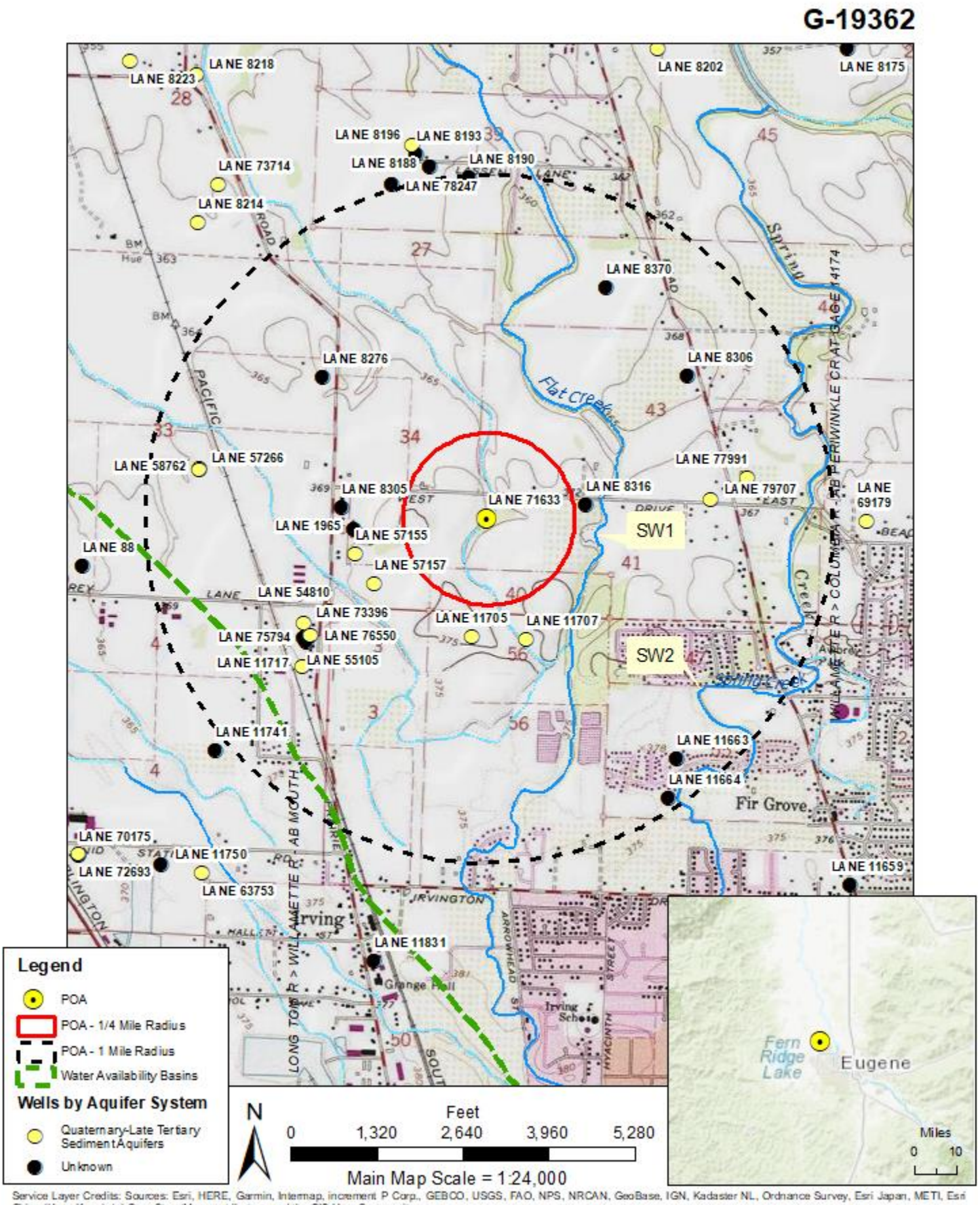
Iverson, J., 2002, Investigation of the hydraulic, physical, and chemical buffering capacity of Missoula flood deposits for water quality and supply in the Willamette Valley of Oregon: Unpublished M.S. thesis, Oregon State University, 147 p.

Oregon Statewide Imagery Program, 2022: https://imagery.oregonexplorer.info/arcgis/rest/services/OSIP_2022/OSIP_2022_WM/ImageServer, Accessed 10/15/2024.

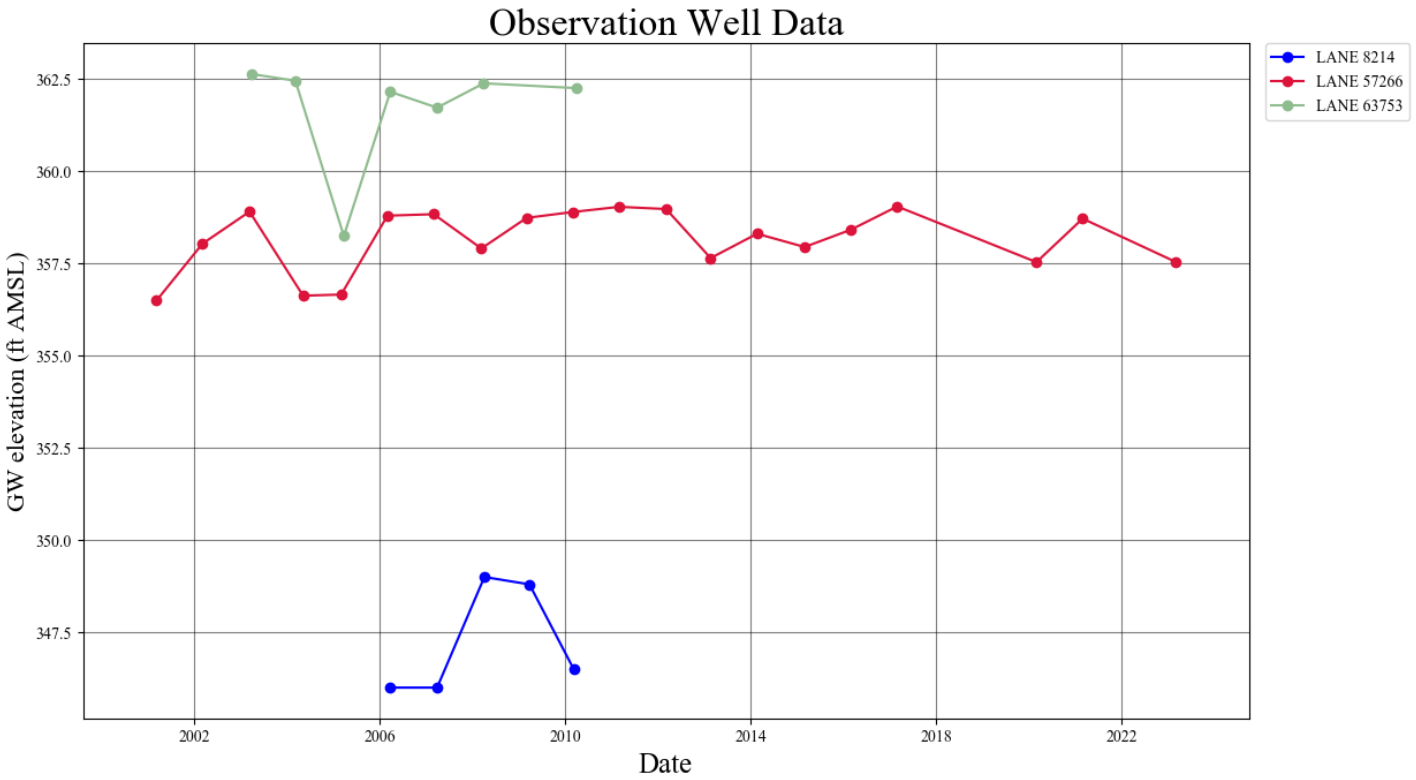
Theis, C.V., 1935, The relation between the lowering of the piezometric surface and the rate and duration of discharge of a well using groundwater storage, American Geophysical Union Transactions, vol. 16, p. 519-524.

Woodward, D.G., Gannett, M.W., and Vaccaro, J.J., 1998, Hydrogeologic framework of the Willamette Lowland aquifer system, Oregon and Washington: U.S. Geological Survey Professional Paper 1424-B, 82 p.

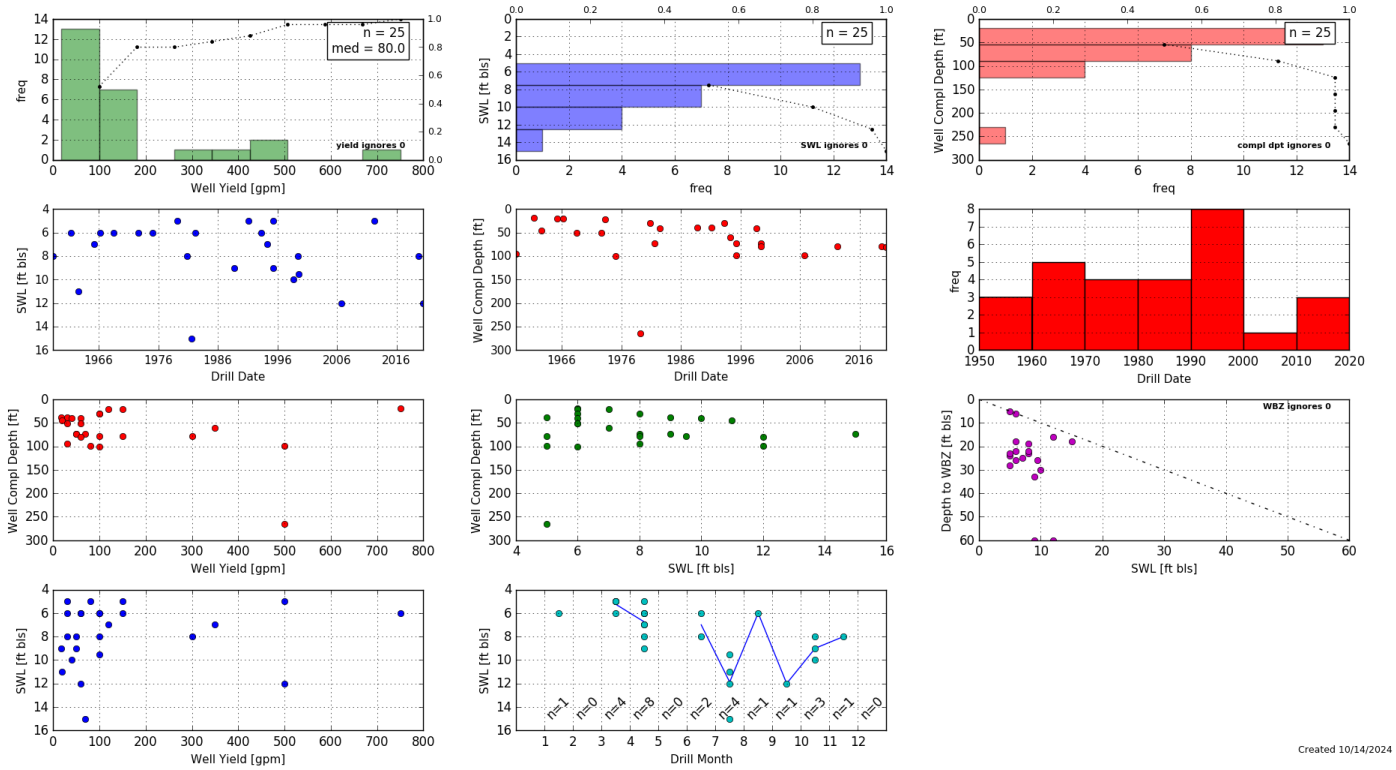
Well Location Map



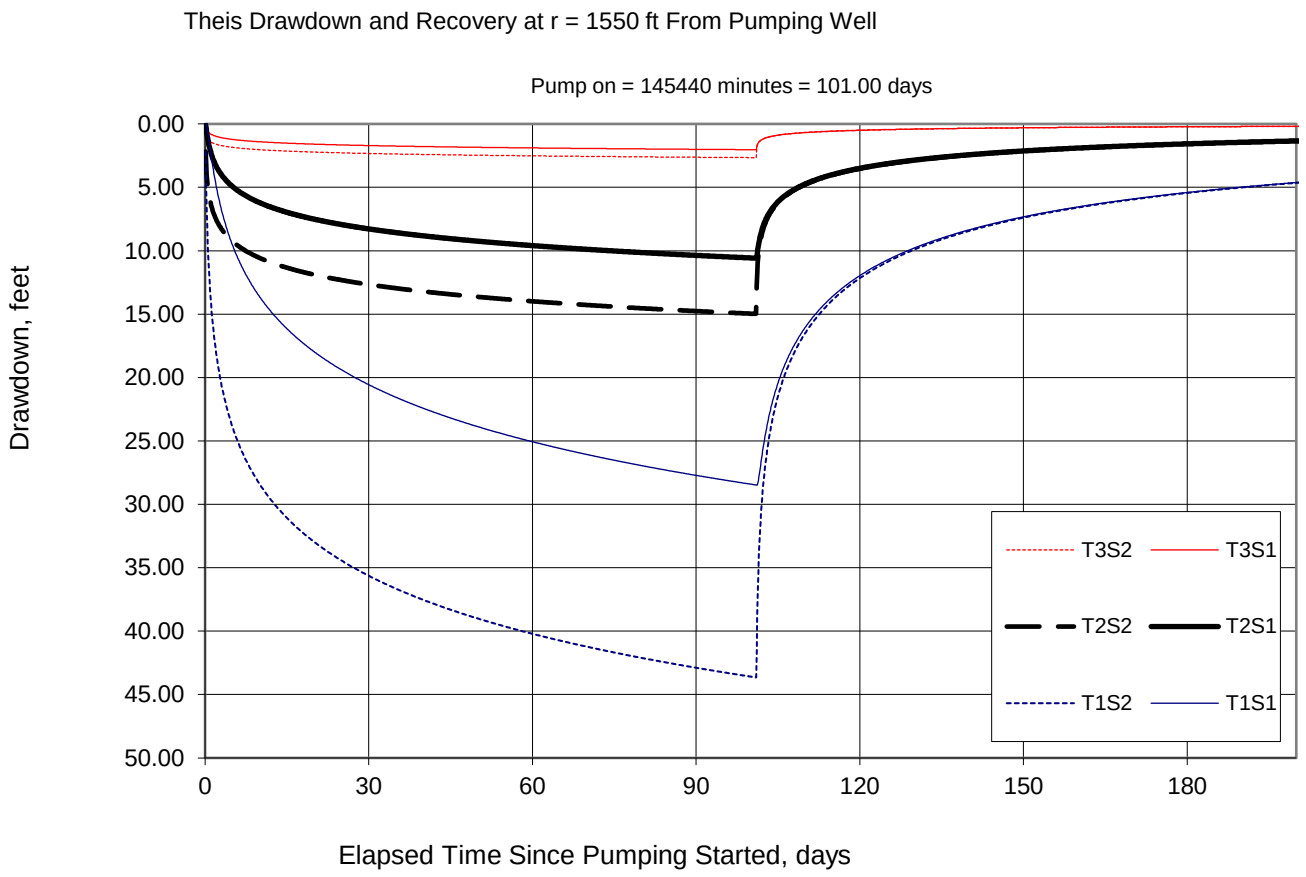
Hydrograph



Well Statistics – T16S/R4W-34



Well-to-Well Interference Analysis
Theis (1935)



Radial distance, r = 1,550 ft [approximate distance from POA to TL 1202]

Pumping rate, Q = 0.75 cfs [maximum requested rate]

Pumping time, t_{pump} = 101 days [approximate time to exhaust fully duty at maximum rate]

Transmissivity, T: T1 = 780 ft^2/day | T2 = 2,700 ft^2/day | T3 = 19,000 ft^2/day [Pumping Test Reports]

Storativity, S: S1 = 0.001 | S2 = 0.0001 [Conlon et al., 2005]

Water Availability Tables

Water Availability Analysis
Detailed Reports

WILLAMETTE R > COLUMBIA R - AB PERIWINKLE CR AT GAGE 14174
WILLAMETTE BASIN

Water Availability as of 10/15/2024

Watershed ID #: 30200321 (Map) Exceedance Level: 80%
Date: 10/15/2024 Time: 11:33 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	10,100.00	1,370.00	8,730.00	0.00	1,750.00	6,980.00
FEB	11,600.00	4,290.00	7,310.00	0.00	1,750.00	5,560.00
MAR	11,000.00	4,560.00	6,440.00	0.00	1,750.00	4,690.00
APR	9,760.00	4,260.00	5,500.00	0.00	1,750.00	3,750.00
MAY	8,430.00	2,560.00	5,870.00	0.00	1,750.00	4,120.00
JUN	5,360.00	856.00	4,500.00	0.00	1,750.00	2,750.00
JUL	3,270.00	666.00	2,600.00	0.00	1,750.00	854.00
AUG	2,560.00	604.00	1,960.00	0.00	1,750.00	206.00
SEP	2,540.00	517.00	2,020.00	0.00	1,750.00	273.00
OCT	2,860.00	269.00	2,590.00	0.00	1,750.00	841.00
NOV	4,170.00	355.00	3,820.00	0.00	1,750.00	2,070.00
DEC	8,150.00	381.00	7,770.00	0.00	1,750.00	6,020.00
ANN	7,460,000.00	1,240,000.00	6,230,000.00	0.00	1,270,000.00	4,960,000.00

Surface Water Interference Analysis
Hunt (2003)

Application type:	G
Application number:	19362
Well number:	1
Stream Number:	1
Pumping rate (cfs):	0.75
Pumping duration (days):	101
Pumping start month number (3=March)	3.0
Plotting duration (days)	365

Parameter	Symbol	Scenario 1	Scenario 2	Scenario 3	Units	Source
Distance from well to stream	a	1650	1650	1650	ft	Application; OSIP, 2022
Aquifer transmissivity	T	780	2700	19000	ft2/day	Pumping Test Reports
Aquifer storativity	S	0.001	0.0005	0.0001	-	Conlon et al., 2005
Aquitard vertical hydraulic conductivity	Kva	0.001	0.005	0.01	ft/day	Iverson, 2002
Aquitard saturated thickness	ba	0.01	5	15	ft	Well logs
Aquitard thickness below stream	babs	0.01	5	10	ft	Well logs; LIDAR
Aquitard specific yield	Sya	0.2	0.2	0.2	-	Freeze and Cherry, 1979
Stream width	ws	10	10	10	ft	OSIP, 2022

Stream depletion for Scenario 2:

Days	10	330	360	30	60	90	120	150	180	210	240	270	300
Depletion (%)	0	0	0	0	0	0	0	0	0	0	0	0	0
Depletion (cfs)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00