

Groundwater Application Review Summary Form

Application # G- 19299

GW Reviewer Stacey Garrison/Travis Brown Date Review Completed: 9/13/2023

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

September 13 2023

TO: Application G- 19299

FROM: GW: Stacey Garrison/Travis Brown
(Reviewer's Name)

SUBJECT: Scenic Waterway Interference Evaluation

☐ YES The source of appropriation is hydraulically connected to a State Scenic
☒ NO 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 9/13/2023
 FROM: Groundwater Section Stacey Garrison/Travis Brown
 Reviewer's Name
 SUBJECT: Application G- 19299 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: OR-CAL, INC County: Lane

A1. Applicant(s) seek(s) 0.323 cfs from 1 well(s) in the Willamette Basin,
Mainstem Willamette River subbasin

A2. Proposed use Industrial Seasonality: Year-round

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

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 73442	1	alluvium	0.323	16S/4W-29	2500' N, 315' W fr SE cor S 29 ^a

* Alluvium, CRB, Bedrock

Well	Well Elev ft msl	First Water ft bls	SWL ft bls	SWL Date	Well Depth (ft)	Seal Interval (ft)	Casing Intervals (ft)	Liner Intervals (ft)	Perforations Or Screens (ft)	Well Yield (gpm)	Draw Down (ft)	Test Type
1	359 ^b	22	9	10/10/2014	78	19	78			300		Air

Use data from application for proposed wells.

A4. **Comments:** The POA is located 2.3 miles from Eugene, Oregon. Applicant proposes to irrigate at 0.323 cfs (145 gpm) for Industrial Use year-round.

^a There appears to be a discrepancy in the Public Lands Survey System (PLSS) projection used in the application map and that used by Department. The "metes-and-bounds" location descriptions provided in the application for POA 1 is 60 ft southwest of the mapped locations; the Department's well inspection database indicates a GPS coordinate location that is 97 ft northeast of the mapped location. The Department's GPS coordinate location is used for this review.

^b Well head elevation estimated based on LIDAR measurements at well locations (Watershed Sciences, 2009).

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 POA likely develops an unconfined aquifer, however, there are no surface water sources within 0.25 miles. Therefore, per OAR 690-502-0240 the relevant Willamette Basin Rules (OAR 690-502-0050) do not apply.

A6. ☐ **Well(s) #** _____, _____, _____, _____, _____, tap(s) an aquifer limited by an administrative restriction.
 Name of administrative area: _____
 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) 7c (7-yrs measurement), medium 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 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 is on pre-Missoula Flood sands and gravels and is part of the Upper Sedimentary Unit with high permeability and high porosity, making it a highly productive aquifer (Conlon et al 2005, O'Connor et al 2001, Herrera et al 2014, McClaughry et al 2010). Most of the wells in this area utilize the unconfined aquifer. The well log of the POA (LANE 73442) describes sand, clay, and gravel in the water bearing zone (WBZ); this well utilizes the Quaternary Late Tertiary Sediment (QLTS) aquifer system of the Willamette Basin. A review of statistics for nearby well records was completed and compared with the proposed rate of 0.323 cfs (145 gpm) for this application (see Well Statistics). Median reported well yield is 50 gpm and the maximum reported well yield is 900 gpm. The proposed rate for this application is 290% of the median and 16% of the maximum reported yield. The proposed rate of use of 0.323 cfs (145 gpm) is likely within the capacity of the groundwater resource. Water levels are stable (see Water Level Measurements in Nearby Wells). For the 11 QLTS-observation wells within 3 miles of the proposed POA: 2 have recent records of less than 5 years (LANE 7824, LANE 8066); the remaining 9 wells show steady water level trends. While there are some recent declines of 3 to 8 ft (LANE 72529, LANE 69951, LANE 8214, LANE 8089, LANE 8029), the long-term trend is steady in these wells. LANE 8029 has an extended record of 58 years with no change in water level in the last 20 years and an increase of 4 ft from the start of the record in 1965. There are 23 POAs for 17 groundwater rights within 1 mile of the POA, however, the unconfined aquifer utilized is anticipated to have strong hydraulic connection with surrounding surface water, indicating a low likelihood of interference with other groundwater users. The groundwater resource is not likely over-appropriated. The nearest groundwater user to POA 1 is the exempt domestic use well that serves tax lot 2500 at 29420 Meadowview Rd, ~ 263 ft west of the POA at an elevation of 359 ft msl. Based on the development date of 1944 in the county tax lot records, it is unlikely a well log was generated at the time. A domestic well is likely, based on the domestic wells serving the residential and industrial properties in the vicinity (LANE 8237, LANE 8247, LANE 8223, LANE 8213, LANE 8249). It is likely the proposed use would cause some degree of well-to-well interference with the well that serves tax lot 2500. To assess the degree of drawdown, a Theis drawdown analysis was conducted for the proposed use (see attached Theis Drawdown

Analysis). Results indicate that the proposed use is not likely to cause well-to-well interference with the well that serves tax lot 2500 that exceeds the threshold under the standard condition for alluvial aquifers in the Willamette Basin. Based on this analysis of the available data and under the assumptions previously identified, groundwater for the proposed use is likely within the capacity of the resource; if a permit is issued for this application, the conditions in B1(d)(i) and B2(c) are recommended to protect senior users and the groundwater resource.

NOTE: This evaluation considers a conservative scenario for the nearest authorized POA not owned by the applicant. Other authorized POAs in the area may also experience an increase in interference as a result of this application, although to a lesser extent than the scenario evaluated here.

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	Alluvium	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Basis for aquifer confinement evaluation: The POA (LANE 73442) utilizes sands, gravels, and clays of the unconfined QLTS aquifer exposed at the surface. Wells in the area report shallow SWLs regardless of depth indicating a single, unconfined aquifer.

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?			Potential for Subst. Interfer. Assumed?	
						YES	NO	ASSUMED	YES	NO
1	1	Flat Creek	340-360	350	5,021.5	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
1	2	Spring Creek	340-360	356	10,915	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
1	3	Amazon Creek	340-360	339	12,201	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Basis for aquifer hydraulic connection evaluation: The POA (LANE 73442) is sealed continuously to 19 ft bls [340 ft msl] and cased continuously to 78 ft bls [281 ft msl]. The SWL for the POA was recorded as 350 ft msl, and the regional water table is between 340 and 360 ft msl (Gannet and Caldwell 1998). Groundwater elevations are coincident with or above surface water elevations for SW 1 (Flat Creek), SW 2 (Spring Creek), and SW 3 (Amazon Creek), indicating groundwater discharges to surface water, consistent with Woodward et al (1998) findings that groundwater discharges to surface water. The local streambeds have not incised into the QLTS aquifer but are flowing on Holocene floodplain deposits (McClaghry et al 2010). Based on well logs recording SWLs coincident with nearby streambed elevations, there is a single, unconfined alluvial aquifer. Hydraulic connection to nearby streams is likely and expected to be efficient.

Water Availability Basin the well(s) are located within: WILLAMETTE R>COLUMBIA R-AB PERIWINKLW 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	<input type="checkbox"/>	<input type="checkbox"/>	NA		<input type="checkbox"/>	2540	<input type="checkbox"/>	<<25%	<input type="checkbox"/>

Comments: POA 1 is anticipated to develop the unconfined alluvial aquifer, but is greater than 0.25 miles from the nearest surface water source. Potential depletion (interference with) SW 1 (Flat Creek) by proposed pumping at proposed POA 1 was estimated using Hunt 1999 analytical model. Hydraulic parameters used for the model were derived from regional data or studies of the hydrogeologic regime (OWRD Well Log Query Report; Conlon et al., 2003, 2005; Iverson 2002) or are within a typical range of values for the parameter within the hydrogeologic regime (Freeze and Cherry, 1979; Morris and Johnson 1967; Heath 1983). See attached "Stream Depletion Analysis – SW 1" for the specific parameters used in the analysis. The Hunt 1999 analytical model results indicate that depletion of (interference with) SW 1 due to pumping of the proposed POA is anticipated to be much less than 25 percent of the well discharge at 30 days of continuous pumping.

Because only the distance is expected to vary between the POA and surface water sources, only the POA-SW pair with the shortest distance (in this case, POA 1 and SW 1) was analyzed quantitatively for interference (stream depletion). All other POA-SW pairs would presumably result in less interference due to their greater separation relative to POA 1 and SW 1. Therefore, the interference of both proposed POA with all surface water sources within 1 mile are anticipated to result in much less than 25 percent of the well discharge at 30 days of continuous pumping.

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?
			<input type="checkbox"/>			<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>
			<input type="checkbox"/>			<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>

Comments: NA-Q is not distributed

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: NA-streams within 1 mile evaluated above.

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:
- ☐ The permit should contain condition #(s) _____;
 - ☐ The permit should contain special condition(s) as indicated in "Remarks" below;

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

References Used:

Application File: G-19299

Pumping Test Files: LANE 63753, LANE 8039, LANE 8061, LANE 64556, LANE 72693

Well Reports: LANE 73442, LANE 63753, LANE 8039, LANE 8061, LANE 64556, LANE 72693, LANE 8213

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

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.

Heath, R.C., 1983. Basic ground-water hydrology, U.S. Geological Survey Water-Supply Paper 2220, 86p.

Herrera, N.B., Burns, E.R., and Conlon, T.D., 2014, *Simulation of groundwater flow and the interaction of groundwater and surface water in the Willamette Basin and Central Willamette subbasin, Oregon*: U.S. Geological Survey Scientific Investigations Report 2014-5136, 152 p

Hunt, B., 1999, Unsteady stream depletion from ground water pumping: Ground Water, v. 37, no. 1, p. 98-102.

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.

McClaghry, J. D., T. J. Wiley, M. L. Ferns, and I. P. Madin. 2010. Digital Geologic Map of the Southern Willamette Valley, Benton, Lane, Linn, Marion, and Polk Counties, Oregon. Oregon Dept. of Geology and Mineral Industries. Open File Report O-10-13.

Morris, D.A. and A.I. Johnson, 1967. Summary of hydrologic and physical properties of rock and soil materials as analyzed by the Hydrologic Laboratory of the U.S. Geological Survey, U.S. Geological Survey Water-Supply Paper 1839-D, 42p

Theis, C.V., 1935, The relation between the lowering of the piezometric surface and the rate and duration of discharge of a well using ground-water storage: American Geophysical Union transactions, v. 16, p. 519-524.

United States Geological Survey, 2013, National Elevation Dataset (NED) [DEM geospatial data]. 1/9th arc-second, updated 2013.

Watershed Sciences, 2009, LIDAR remote sensing data collection, Department of Geology and Mineral Industries, Willamette Valley Phase I, Oregon: Portland, OR, December 21.

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.


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**

 Oregon Water Resources Department
Water Availability Analysis

[Main](#) [Help](#)
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Water Availability Analysis
Detailed ReportsWILLAMETTE R > COLUMBIA R - AB PERIWINKLE CR AT GAGE 14174
WILLAMETTE BASINWatershed ID #: 30200321 ([Map](#))
Date: 8/22/2023

Water Availability as of 8/22/2023

Exceedance Level: 80% [v](#)
Time: 12:15 PM

Water Availability Calculation

Water Rights

Consumptive Uses and Storages

Instream Flow Requirements

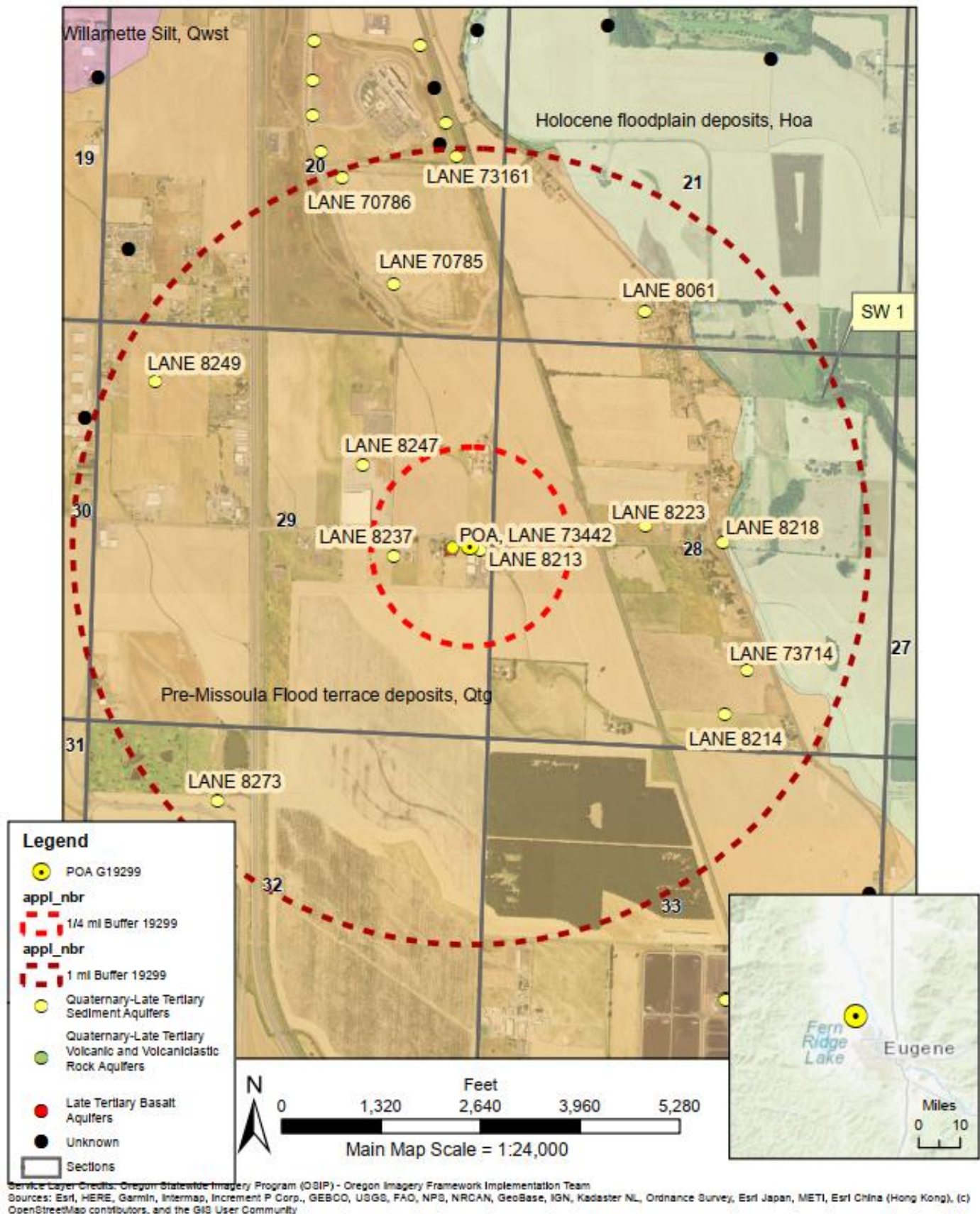
Watershed Characteristics

Reservations

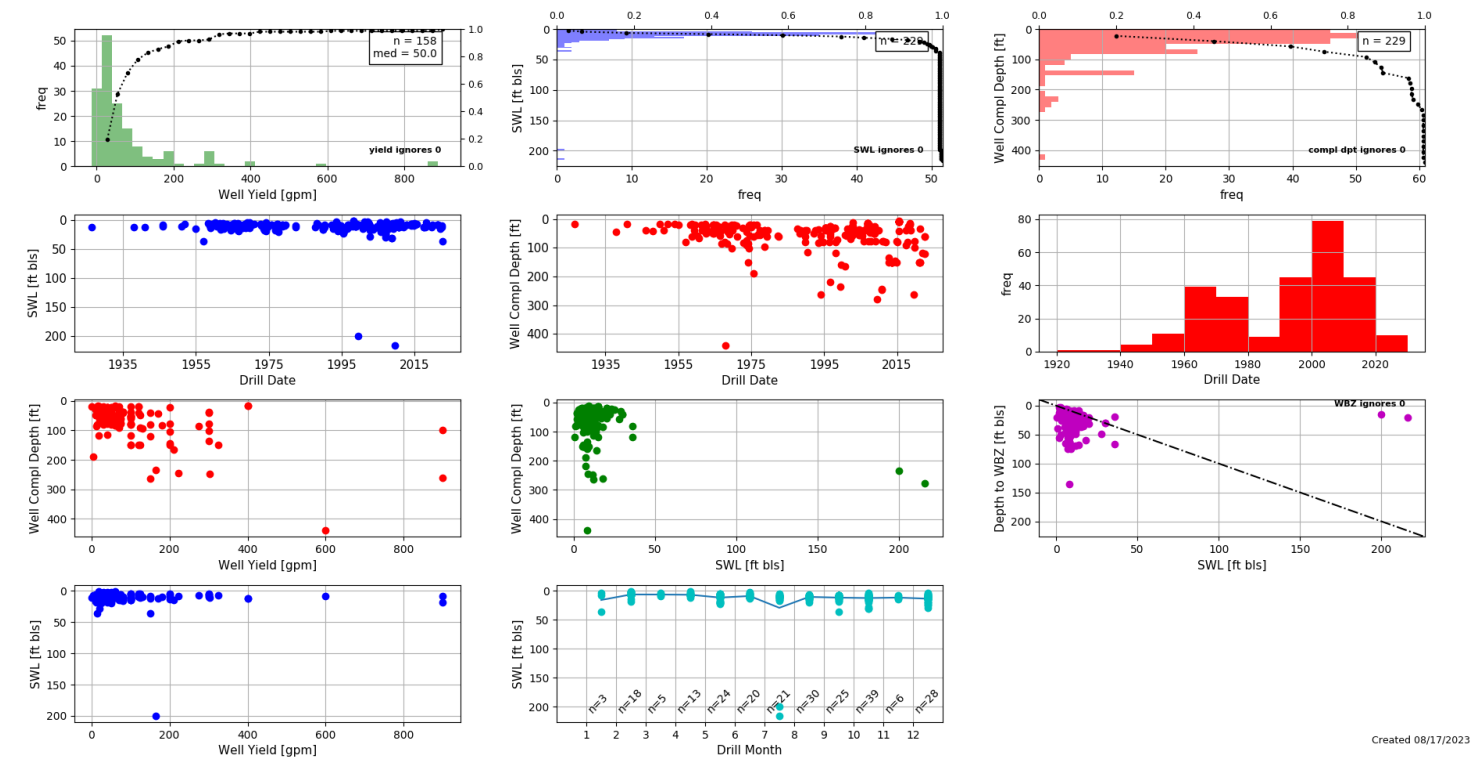
Water Availability Calculation
Monthly Streamflow in Cubic Feet per Second
Annual Volume at 50% Exceedance in Acre-FeetDownload Data ([Text - Formatted](#), [Text - Tab Delimited](#), [Excel](#))

Well Location Map

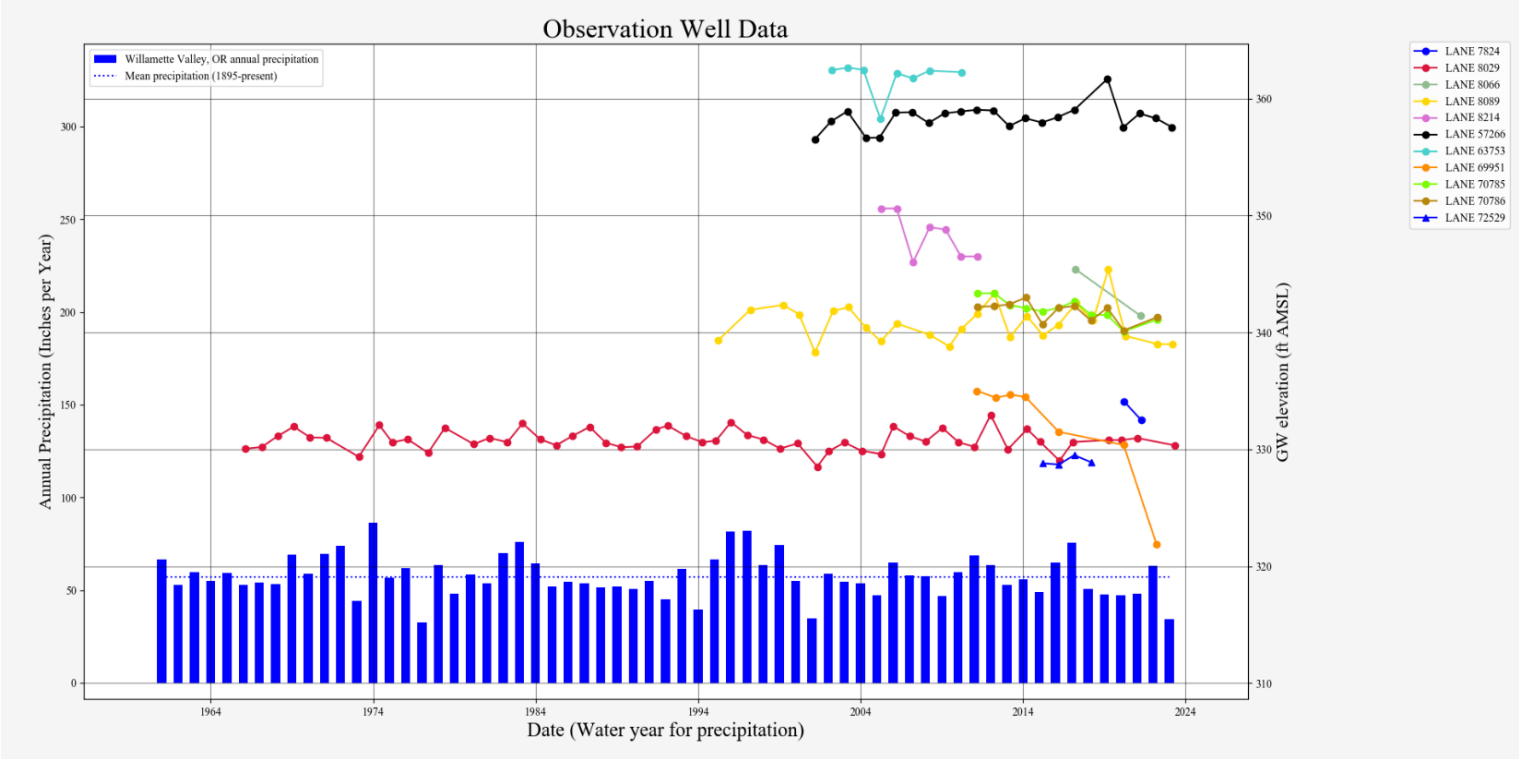
G19299 OR-CAL, INC

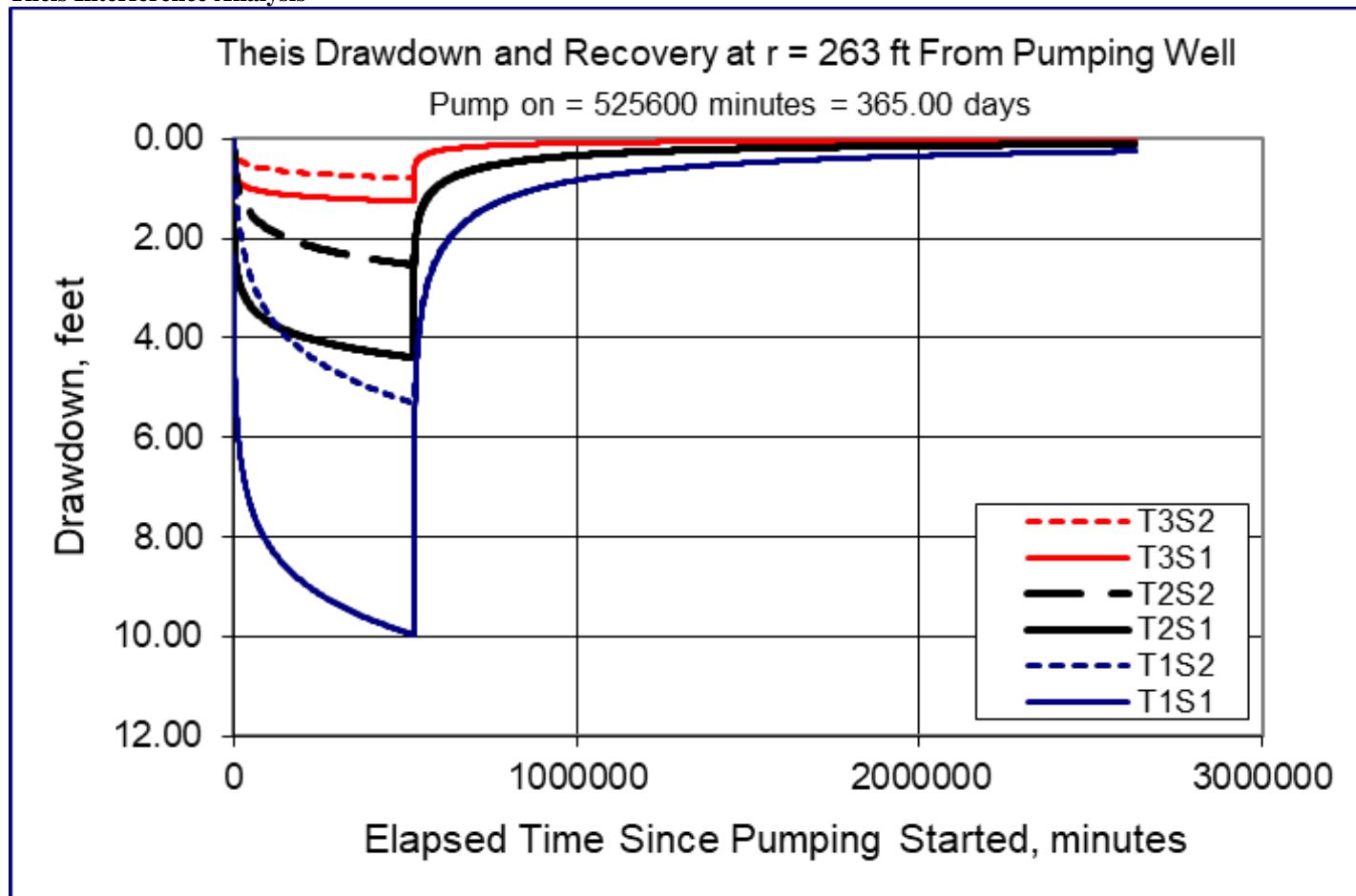


Well Statistics



Water-Level Measurements in Nearby Wells



Theis Interference Analysis

Radial distance from pumping well (r)=263 ft [estimated radial distance to nearest user, tax lot 2500]

Pumping Rate (Q)= 0.323 cfs (145 gpm)

Aquifer Transmissivity ($T1$)= 14,960 gpd/ft (2,000 ft²/day), ($T2$)= 37,400 gpd/ft (5,000 ft²/day), ($T3$)= 149,600 gpd/ft (20,000 ft²/day)

Storativity ($s1$) = 0.003, ($s2$) = 0.2 [Conlon et al 2005, Table 1 values for Upper Sedimentary Unit, USU]

Total pumping time=365

Stream Depletion (Hunt) Model Analysis

Application type:	G
Application number:	19299
Well number:	1
Stream Number:	1
Pumping rate (cfs):	0.323062
Pumping duration (days):	365
Pumping start month number (3=March)	1

Parameter	Symbol	Scenario 1	Scenario 2	Scenario 3	Units
Distance from well to stream	a	5021.5	5021.5	5021.5	ft
Aquifer transmissivity	T	2000.0	5000.0	20000.0	ft ² /day
Aquifer storativity	S	0.003	0.115	0.2	-
Aquitard vertical hydraulic conductivity	Kva	0.01	0.05	0.1	ft/day
Not used		20.0	20.0	20.0	
Aquitard thickness below stream	babs	10.0	10.0	10.0	ft
Not used		0.2	0.2	0.2	
Stream width	ws	70.0	70.0	70.0	ft

Stream depletion for Scenario 2:

Days	10	30	60	90	120	150	180	210	240	270	300	330	360
Depletion (%)	0	0	0	0	1	1	1	2	2	2	3	3	4
Depletion (cfs)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01

Hunt (1999) transient stream depletion model