

Groundwater Application Review Summary Form

Application # G- 18869 – Rereview

GW Reviewer Michael Thoma Date Review Completed: 06/26/2020

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

06/26/2020

TO: Application G- 18869 - Rereview

FROM: GW: Michael Thoma
(Reviewer's Name)

SUBJECT: Scenic Waterway Interference Evaluation

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

YES Use the Scenic Waterway Condition (Condition 7J)
 NO

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 06/26/2020
FROM: Groundwater Section Michael Thoma Reviewer's Name
SUBJECT: Application G- 18869 Supersedes review of 11/19/2019* Date of Review(s)

*NOTE:

This re-review addresses a change by the applicant on the Well Development section along with a change to the requested rate. The original application proposed an existing well as POA #1, but that well was found to not meet well-construction standards and the applicant is now proposing a new well for POA #1. The updated POA location is 25 ft north of the original location and an updated application review map was not necessary for this re-review. The applicant has also requested well-specific rates for the two POAs of 0.95 cfs from each well to address concerns over interference found in the original review.

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: Ouragon Lands County: Lane

A1. Applicant(s) seek(s) 1.9 cfs from 2 well(s) in the Willamette Basin, Upper Willamette subbasin

A2. Proposed use Irrigation (153.0 acres) Seasonality: Mar 1 - Oct 31 (244 d)

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

Table with 7 columns: 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

* Alluvium, CRB, Bedrock

Table with 13 columns: 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

Use data from application for proposed wells.

A4. Comments: *Both POAs are proposed with the applicant providing a proposed depth of 150 ft but no construction information on the application. This review assumes the well will meet minimum casing and seal depths. †SWL is estimated from well logs for the area.

A5. [X] Provisions of the Willamette (OAR 690-515) Basin rules relative to the development, classification and/or management of groundwater hydraulically connected to surface water [] are, or [X] are not, activated by this application. (Not all basin rules contain such provisions.) Comments:

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-year SWL); 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 _____ 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:** There are limited water-level data in the aquifer and vicinity of the applicant’s proposed POA but two nearby wells (LANE 8029 and LANE 57266) show several years of water-level measurements and a stable trend (likely due to efficient hydraulic connection to surface water). However, a detailed analysis of inflow and outflow to the aquifer system has not been performed so Over-Appropriation cannot be conclusively determined.

There are several permitted groundwater rights within 1 mile of the applicant’s proposed POAs with the nearest ones being 1500 to 2000 ft from the POAs (some of the nearer POAs are on Groundwater Claims which are not part of this analysis). Given the hydraulic properties of the aquifer system (moderate transmissivity and moderate storativity), use of either well at the maximum proposed rate of 0.95 cfs could reasonably produce up to 15 ft of hydraulic interference at nearby, existing POAs. Based on well log data in the vicinity, the productive part of the aquifer system is limited to the first approximately 150 ft and so 15 ft of hydraulic interference (10 % of the saturated aquifer thickness) **would not likely result in injury to existing users.** However, well interference is additive and prolonged use from both wells at their respective maximum rates could exceed drawdown estimates to nearby wells and lead to injury. Therefore, this preliminary finding does not preclude these POAs from causing injury and so standard interference conditions shall be applied.

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 of Willamette Valley	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2	Alluvium of Willamette Valley	<input type="checkbox"/>	<input checked="" type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>

Basis for aquifer confinement evaluation: Wells penetrating shallow alluvial deposits in the Willamette Valley typically encounter unconfined aquifer conditions due to continuous hydraulic continuity with depth despite moderate to low specific storage in fine-grained layers; additionally, well logs for the area generally report similar SWL depths regardless of “First Water” depth implying a single aquifer unit with depth.

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	Willamette River	~350	350	11900	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2	1	Willamette River	~350	350	9030	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Basis for aquifer hydraulic connection evaluation: GW elevations are similar to SW elevations implying that water is moving between the aquifer and surface water; the Willamette River is the likely regional discharge source for the aquifer system in the area.

Nearby Spring Creek was not evaluated for PSI because the likely reach of impact from pumping is downstream from any permitted PODs on Spring Creek.

Water Availability Basin the well(s) are located within: 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 source. Limit evaluation to instream rights and minimum stream flows that are pertinent to that surface water source, and 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?
		<input type="checkbox"/>	<input type="checkbox"/>			<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>

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"/>

Comments: no surface water sources were evaluated within 1 mile of the proposed POAs

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.

Distributed Wells													
Well	SW#	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	1	%	%	%	%	%	%	%	%	%	%	%	%
Well Q as CFS				0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95		
Interference CFS													
(A) = Total Interf.		see row (E)											
(B) = 80 % Nat. Q		10100	11600	11000	9760	8430	5360	3270	2560	2540	2860	4170	8150
(C) = 1 % Nat. Q		101	116	110	97.6	84.6	53.6	32.7	25.6	25.4	28.6	41.7	81.5
(D) = (A) > (C)		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
(E) = (A / B) x 100		Maximum pumping rate is less than 0.5 % of the 80%-Exceedance Natural Flows for all months											

Distributed Wells													
Well	SW#	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2	1	%	%	%	%	%	%	%	%	%	%	%	%
Well Q as CFS				0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95		
Interference CFS													
(A) = Total Interf.		see row (E)											
(B) = 80 % Nat. Q		10100	11600	11000	9760	8430	5360	3270	2560	2540	2860	4170	8150
(C) = 1 % Nat. Q		101	116	110	97.6	84.6	53.6	32.7	25.6	25.4	28.6	41.7	81.5
(D) = (A) > (C)		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
(E) = (A / B) x 100		Maximum pumping rate is less than 0.5 % of the 80%-Exceedance Natural Flows for all months											

(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: the maximum proposed rate for either POA is less than 0.5 % of the 80%-Exceedance Natural Flows for all months for the WAB and so the combined interference will be less than 1% of the 80%-exceedance flows

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:** The applicant’s proposed POAs would be producing from an aquifer that has been found to be hydraulically connected to surface water – specifically the Willamette River at a distance of over 1 mile. The proposed maximum rate of appropriation is less than 1% of the pertinent adopted perennial streamflow so, per OAR 690-009-0040(4), the POAs are assumed to **not** have the Potential for Substantial Interference.

References Used:

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

Herrera, N. B., Burns, E. R., and T. D. Conlon. 2014. *Simulation of Groundwater Flow and the Interaction of Groundwater and Surface Water in the Willamette Basin and Central Willamette Subbasin, Oregon*. USGS Scientific Investigations Report 2014-5136.

McCloughry, 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.

O’Conner, J. E., A. Sarna-Wojcicki, K. C. Wozniak, D. J. Polette, and R. J. Fleck. *Origin, Extent, and Thickness of Quaternary Geologic Units in the Willamette Valley, Oregon*. USGS Professional Paper 1620

OWRD Well Log Database – Accessed 11/18/2019

Theis, C. V. 1941. *The Effect of a well on the Flow of a Nearby Stream*. American Geophysical Union Transactions. v. 22, pt. 3. P 734-738.

Woodward, D. G., M. W. Gannett, and J. J. Vaccaro. 1998. *Hydrogeologic Framework of the Willamette Lowland Aquifer System, Oregon and Washington*. 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) _____

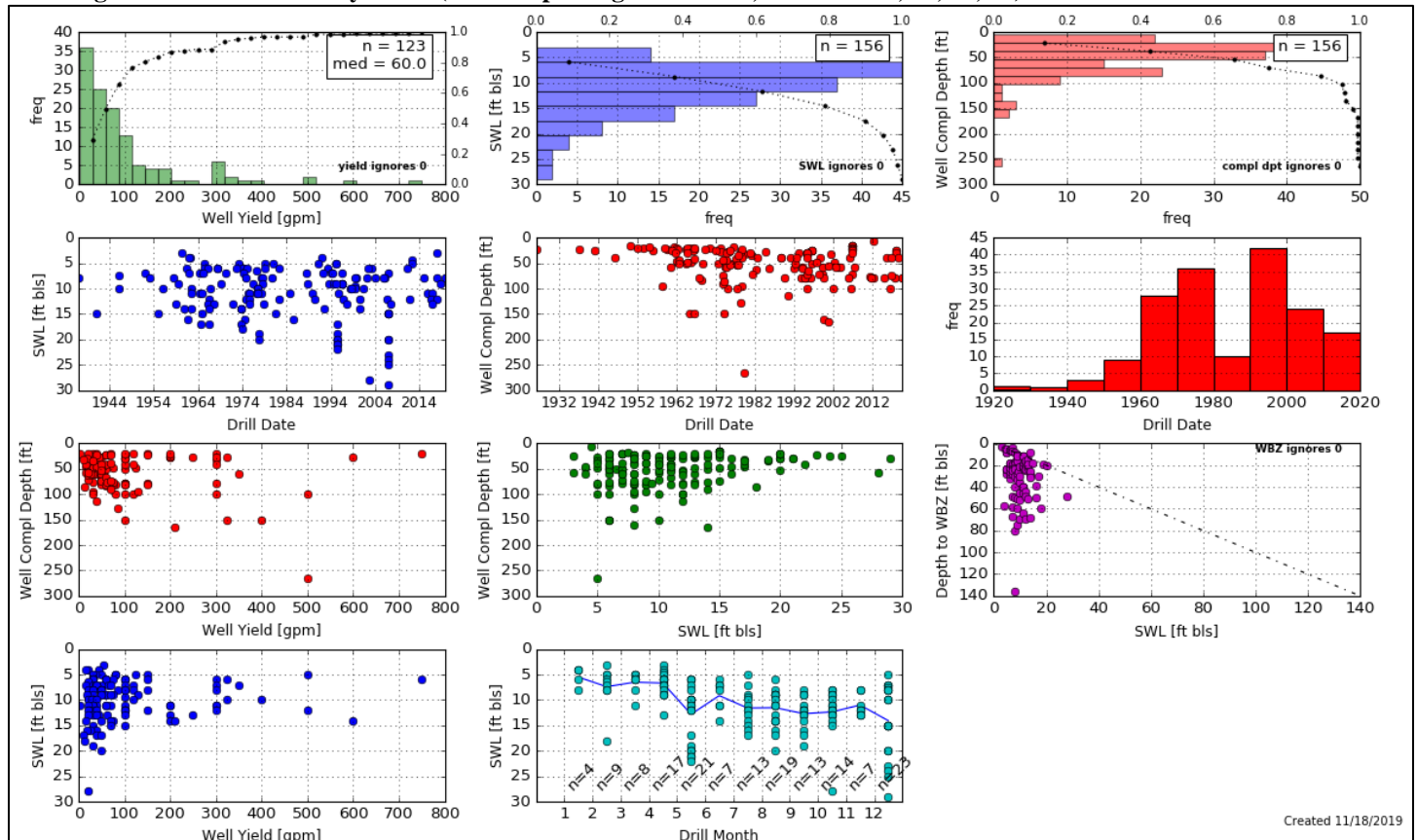
D3. **THE WELL construction deficiency or other comment is described as follows:** The well log for LANE 8188 is a deepening log and does not list well construction information of the original well

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

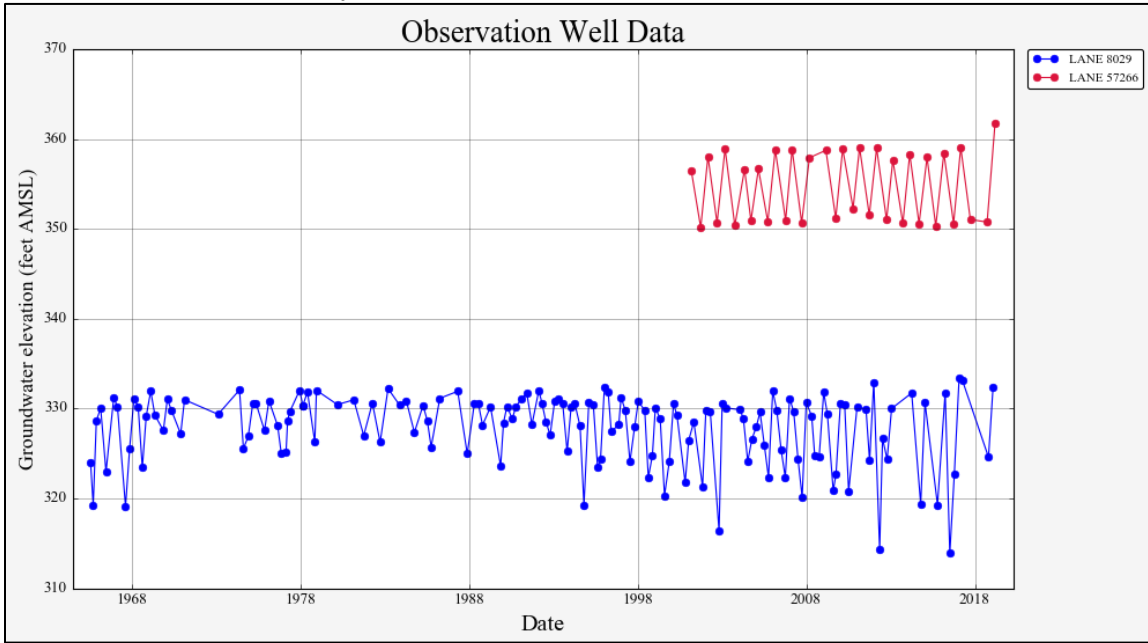
Water Availability Tables

DETAILED REPORT ON THE WATER AVAILABILITY CALCULATION						
WILLAMETTE R > COLUMBIA R - AB PERIWINKLE CR AT GAGE 14174						
Watershed ID #: 30200321	Basin: WILLAMETTE				Exceedance Level: 80	Date: 11/18/2019
Time: 3:31 PM						
Month	Natural Stream Flow	Consumptive Use and Storage	Expected Stream Flow	Reserved Stream Flow	Instream Requirements	Net Water Available
Monthly values are in cfs. Storage is the annual amount at 50% exceedance in ac-ft.						
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	665.00	2,610.00	0.00	1,750.00	855.00
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	354.00	3,820.00	0.00	1,750.00	2,070.00
DEC	8,150.00	379.00	7,770.00	0.00	1,750.00	6,020.00
ANN	7,460,000	1,240,000	6,230,000	0	1,270,000	4,960,000

Well Log Statistics from Nearby Wells (Township-Range: 16S/04W; Sections: 27, 28, 33, 34)



Water-Level Trends in Nearby Wells



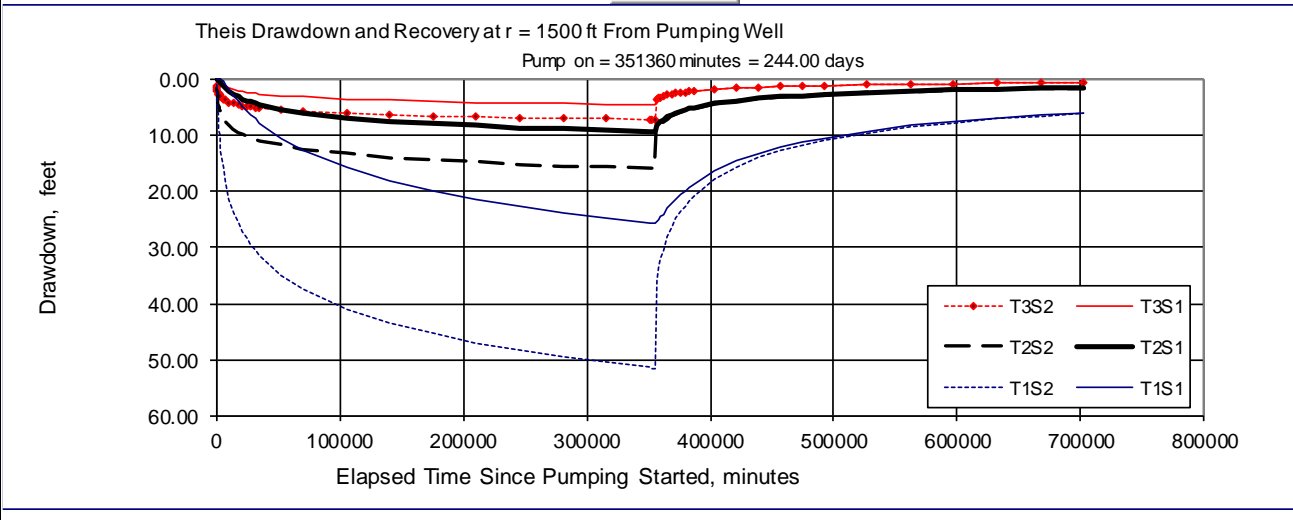
Interference Estimates

Thisis Time-Drawdown Worksheet v.3.00

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 30, 2014

Input Data:	Var Name	Scenario 1	Scenario 2	Scenario 3	Units	
Total pumping time	t		244		d	
Radial distance from pumped well:	r		1500.00		feet	Q conversions
Pumping rate	Q		0.95		cfs	426.36 gpm
Hydraulic conductivity	K	5	20	50	ft/day	0.95 cfs
Aquifer thickness	b		150		ft	57.00 cfm
Storativity	S_1		0.01000			82,080.00 cfd
	S_2		0.00050			1.88 af/d
Transmissivity Conversions	T_f2pd	750	3,000	7,500	ft ² /day	
	T_ft2pm	0.5208	2.0833	5.2083	ft ² /min	
	T_gpdft	5,610	22,440	56,100	gpd/ft	

Recalculate Use the Recalculate button if recalculation is set to manual



Well Location Map

