

Groundwater Review Summary Form

Application # G- 18391

GW Reviewer Thomas Date Review Completed: 12-21-16

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).

PUBLIC INTEREST REVIEW FOR GROUNDWATER APPLICATIONS

TO: Water Rights Section Date December 21, 2016
 FROM: Groundwater Section Michael J Thoma
 Reviewer's Name
 SUBJECT: Application G- 18391 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: Erich Mead Thalmayer County: Lane

A1. Applicant(s) seek(s) 0.01 cfs from 1 well(s) in the Willamette Basin,
Long Tom subbasin

A2. Proposed use Irrigation (0.5 ac) Seasonality: May – September (154 d)

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 74689	1	Alluvium	0.01	17S/05W-25 NWNW	239'S, 324'E of NW cor S25
2						

* 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	385	*	15-20 [†]		65	*	*	*	*	*		

Use data from application for proposed wells.

A4. **Comments:** *There is no well log for the applicant's proposed POA, only a Well ID Application form which reports a total well depth of 65 ft but no other information

[†] SWL is estimated from other well logs for the area (e.g., LANE 63610).

A5. **Provisions of the Willamette (OAR 690-502)** 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: _____

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) 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 _____ 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 is an OWRD State Observation Well (LANE 13051) located approx. 1.5 miles to the north of the proposed POA that has water-level data from 1960s to Present and shows no water-level declines. This well is likely completed into the same aquifer system as the applicant’s well and the data imply that groundwater is not over-appropriated in the area. There is a second OWRD Observation Well (LANE 63542) approx. ½ mile to the south but this well only has two water-level measurements.

There are a few permitted groundwater POAs in Section 25 to the south of the proposed POA (the nearest being ¼ mile away). Groundwater likely flows northwest across the site toward Fern Ridge Reservoir, putting the proposed POA down-gradient from the existing groundwater POAs and in a position unlikely to cause significant injury to the existing users. Additionally, at 65 ft depth, the proposed POA is likely producing primarily from shallow alluvial material, which pinches out to the southeast toward Oak Hill, and not the underlying bedrock which is mapped at the surface where the existing groundwater POAs are located.

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

Basis for aquifer confinement evaluation: With no well log information for the proposed POA, the reviewer assumes a minimum case and seal depth (18 ft) and primary production from shallow alluvial sediments which are likely unconfined

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	Fern Ridge Reservoir	~ 370	374	2450	<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"/>
						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Basis for aquifer hydraulic connection evaluation: GW elevations are estimated to be similar to SW elevations suggesting groundwater is flowing towards and discharging to surface water

Water Availability Basin the well(s) are located within: Long Tom R > Willamette R – AB Mouth (ID# 114)

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?
1	1	<input type="checkbox"/>	<input type="checkbox"/>	None	-	<input type="checkbox"/>	32.1	<input type="checkbox"/>	< 1%	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>			<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: Interference @ 30 d was calculated using the Hunt (1999) stream-depletion model and aquifer parameter values typical of alluvial material. The unconfined nature of the aquifer and presence of low-conductivity streambed (lakebed) material drastically reduces potential impacts.

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.

Well	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: _____

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	No surface water sources beyond 1 mile were evaluated												
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:** The applicant's proposed well would be producing from an aquifer that has been found to be hydraulically connected to surface water at a distance of < 1 mile. However, the reviewer is unable to find a preponderance of evidence that the proposed use will have the Potential for Substantial Interference (PSI) with surface water.

References Used:

Hunt, B. 1999. *Unsteady Stream Depletion from Ground Water Pumping*. Journal of Hydrologic Engineering, Vol 8(1), pp 12-19

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.

Murray, R. B. and I. P. Madin. 2006. *Preliminary Geologic Map of the Veneta 7.5' Quadrangle, Lane County, Oregon*. Oregon Dept. of Geol. and Mineral Industries. OFR O-06-13.

OWRD Well Log Database – Accessed 12/21/2016.

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

Water Availability Analysis

Detailed Reports

LONG TOM R > WILLAMETTE R - AB MOUTH
 WILLAMETTE BASIN

Water Availability as of 12/21/2016

Watershed ID #: 114 ([Map](#))

Exceedance Level:

Date: 12/21/2016

Time: 11:59 AM

Water Availability Calculation
Consumptive Uses and Storages
Instream Flow Requirements
Reservations

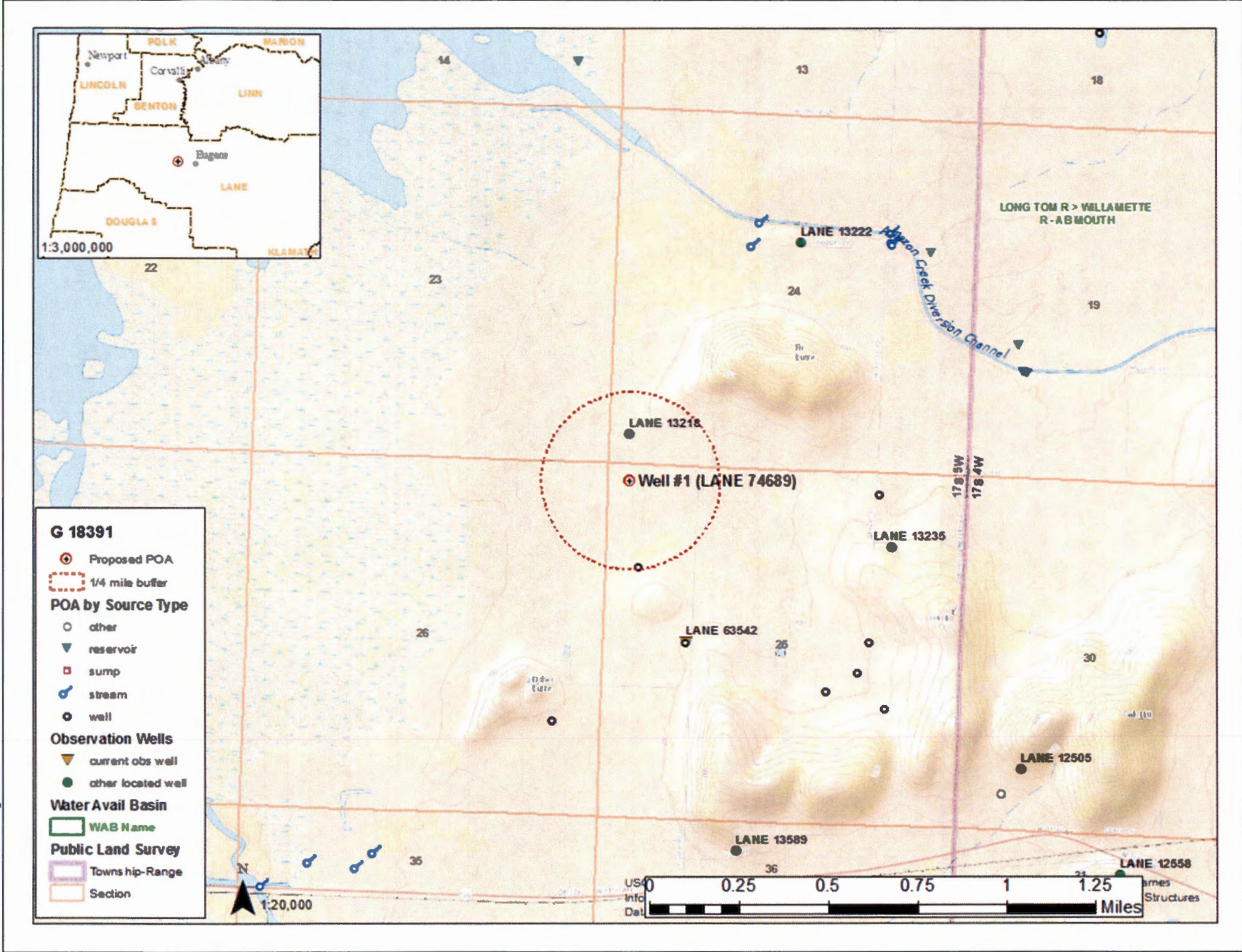
Water Rights
Watershed Characteristics

Water Availability Calculation

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

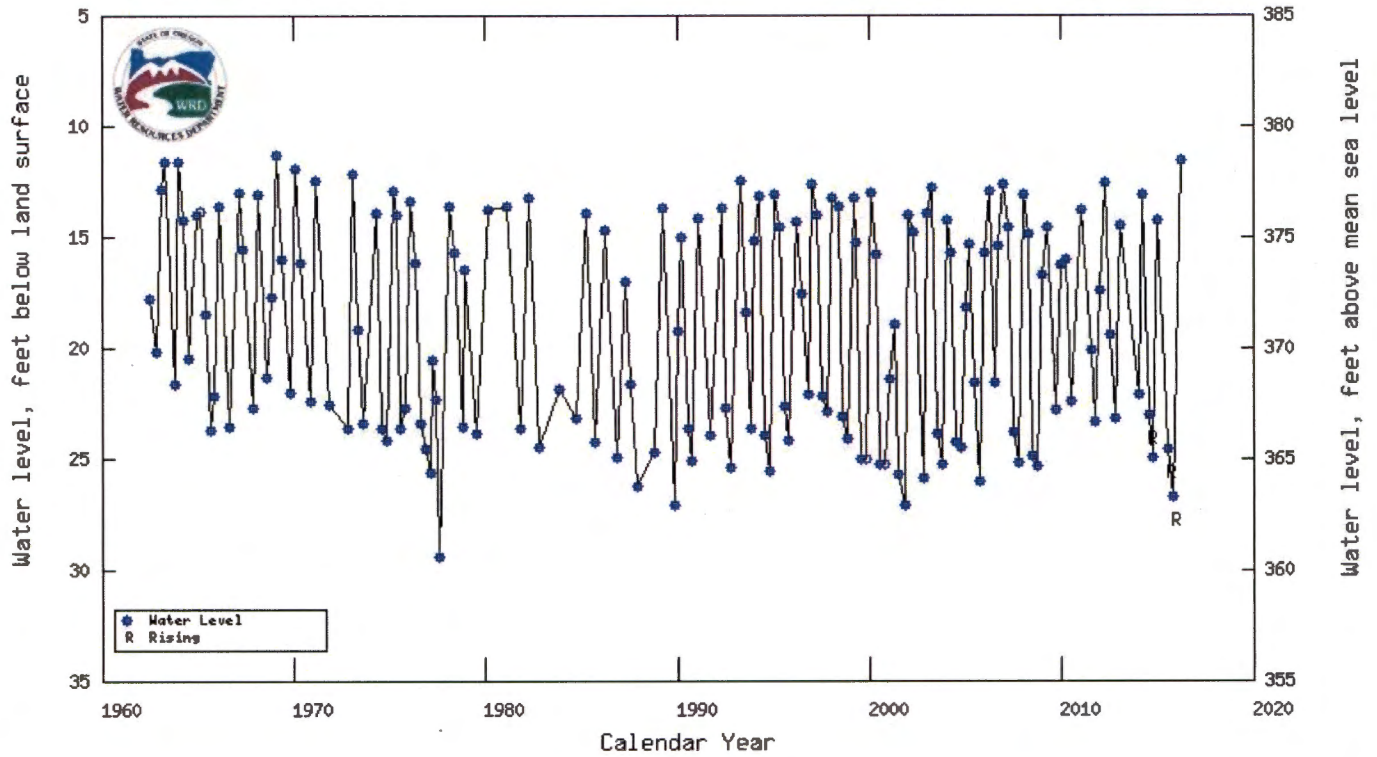
Month	Natural Stream Flow	Consumptive Uses and Storages	Expected Stream Flow	Reserved Stream Flow	Instream Flow Requirement	Net Water Available
JAN	568.00	150.00	418.00	0.00	0.00	418.00
FEB	697.00	389.00	308.00	0.00	0.00	308.00
MAR	596.00	556.00	40.20	0.00	0.00	40.20
APR	373.00	250.00	123.00	0.00	0.00	123.00
MAY	215.00	64.60	150.00	0.00	0.00	150.00
JUN	105.00	30.10	74.90	0.00	0.00	74.90
JUL	50.60	47.30	3.27	0.00	0.00	3.27
AUG	35.40	38.40	-2.97	0.00	0.00	-2.97
SEP	32.10	22.10	10.00	0.00	0.00	10.00
OCT	35.30	6.49	28.80	0.00	0.00	28.80
NOV	82.50	6.22	76.30	0.00	0.00	76.30
DEC	364.00	106.00	258.00	0.00	0.00	258.00
ANN	362,000.00	99,700.00	262,000.00	0.00	0.00	262,000.00

Well Location Map

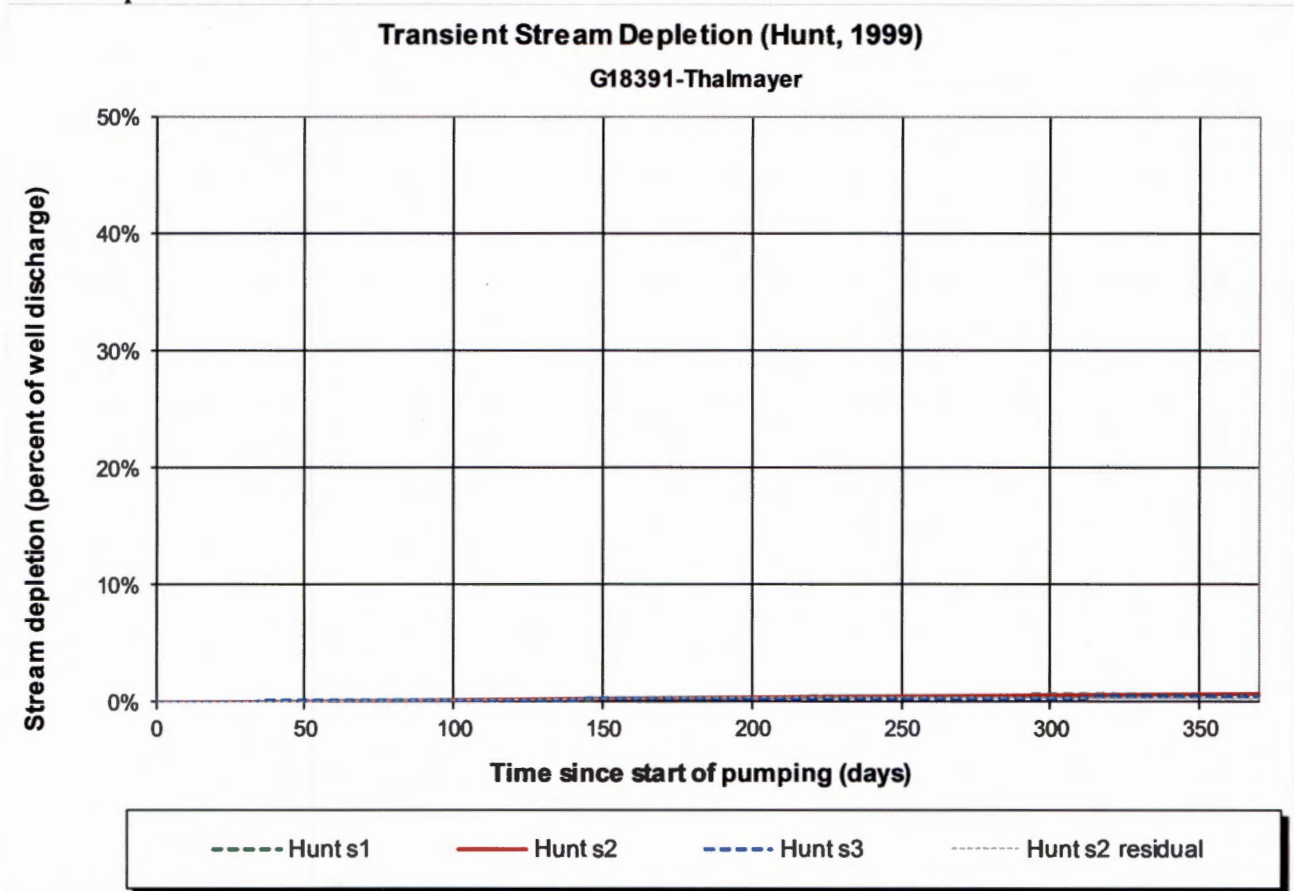


Water-Level Trends in Nearby Wells

Oregon Water Resources Department (OWRD) Well Location 17.00S/5.00W-13BDD
OWRD Logid LANE 13051
OWRD Well Tag (Well ID) ---
OWRD State Observation Well Number ---
Total well depth (feet below land surface) 97
Land surface elevation (feet above mean sea level) 390
Primary use of well IRRIGATION
Primary aquifer system Quaternary-Late Tertiary Sediment Aquifers



Stream-depletion Model Results



Output for Hunt Stream Depletion, Scenerio 2 (s2): Time pump on = 183 days

Days	30	60	90	120	150	180	210	240	270	300	330	360
Qw, cfs	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010
Jenk SD s2 %	11.38	26.35	36.12	42.91	47.94	51.85	45.45	32.48	24.50	19.38	15.85	13.30
Jen SD s2 cfs	0.001	0.003	0.004	0.004	0.005	0.005	0.005	0.003	0.002	0.002	0.002	0.001
Hunt SD s2 %	0.02	0.09	0.16	0.24	0.30	0.37	0.41	0.41	0.39	0.37	0.36	0.34
Hunt SD s2 cfs	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Parameters:		Scenario 1	Scenario 2	Scenario 3	Units
Net steady pumping rate	Qw	0.01	0.01	0.01	cfs
Distance to stream	a	2450	2450	2450	ft
Aquifer hydraulic conductivity	K	50	100	500	ft/day
Aquifer thickness	b	80	80	80	ft
Aquifer transmissivity	T	4000	8000	40000	ft*ft/day
Aquifer storage coefficient	S	0.2	0.2	0.2	
Stream width	ws	500	500	500	ft
Streambed hydraulic conductivity	Ks	0.001	0.001	0.001	ft/day
Streambed thickness	bs	10	10	10	ft
Streambed conductance	sbc	0.05	0.05	0.05	ft/day
Stream depletion factor (Jenkins)	sdf	300.1	150.1	30.0	days
Streambed factor (Hunt)	sbf	0.0	0.0	0.0	