

Groundwater Application Review Summary Form

Application # G- 18443

GW Reviewer M. Thoma Date Review Completed: 07-28-17

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).

MEMO

07-28, 2017

FROM: GW: M. Thoma
(Reviewer's Name)

SUBJECT: Scenic Waterway Interference Evaluation

☒ YES

The source of appropriation is within or above a Scenic Waterway

☐ 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.

[illegible]

PUBLIC INTEREST REVIEW FOR GROUNDWATER APPLICATIONS

TO: Water Rights Section Date 7/28/2017
 FROM: Groundwater Section Michael Thoma
 Reviewer's Name
 SUBJECT: Application G- 18443 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: Joe Gerlach County: Josephine

A1. Applicant(s) seek(s) 0.05 cfs from 5 well(s) in the Rogue Basin,
 _____ subbasin

A2. Proposed use Nursery (14 ac) 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	JOSE 16033	Well #2	bedrock	0.05	34S/06W-28 SWNW	1118'N, 766'E of W cor S28*
2	JOSE 16782	Well #1	bedrock	0.05	34S/06W-28 SWNW	1047'N, 861'E of W cor S28*
3	JOSE 16821	Well #3	bedrock	0.05	34S/06W-28 SENW	616'N, 1665'E of W cor S28*
4	JOSE 50840		bedrock	0.05	34S/06W-28 SENW	791'N, 1479'E of W cor S28*
5	JOSE 50841		bedrock	0.05	34S/06W-28 SENW	816'N, 1731'E of W cor S28*

* 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	1625	120	100	6/30/1992	325	0-25	+2-98			6		A
2	1645	85	65	10/21/1993	500	0-18	+2-46			5		A
3	1490	160	155	11/18/1993	550	0-25	+2-142			7		A
4	1515	167	98	5/7/1997	400	0-38	+2-147			3		A
5	1530	166	69	5/9/1997	400	0-25	+2-140			3.5		A

Use data from application for proposed wells.

A4. **Comments:** _____
 *The application map list the well location directions as "west" when it is meant to be "east" based on the map and well locations that were confirmed in the field by OWRD Staff (M. Thoma, 01/09/2017)

A5. ☒ **Provisions of the Rogue (OAR 690-515)** 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**, the Department has 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-yr SWL from one well only); 7J (Scenic); Medium Water-use Reporting;
 - ii. ☐ The permit should be conditioned as indicated in item B2 below.
 - iii. ☒ The permit should contain special condition(s) as indicated in item B3 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 no OWRD Observation Well data in the area of the proposed POA so groundwater over-appropriation cannot be determined. There are also very few permitted groundwater POAs within 1 mile of the proposed POA and taxlot density is relatively low so injury to existing permitted or exempt groundwater users is unlikely.

Special Condition: This review recommends a 7-year SWL condition for only one of the proposed POAs; the measured well may be determined by the permit holder but the same well must be reported on for all seven consecutive years.

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	Fractured bedrock of Western Klamath Terrane	☒	☐
2	Fractured bedrock of Western Klamath Terrane	☒	☐
3	Fractured bedrock of Grants Pass Batholith	☒	☐
4	Fractured bedrock of Grants Pass Batholith	☒	☐
5	Fractured bedrock of Grants Pass Batholith	☒	☐

Basis for aquifer confinement evaluation: Water-bearing zones in fractured aquifer systems are typically found in limited fractures or fracture-sets that may or may not be well-connected to adjacent sets. This can produce confined aquifer conditions locally (at the well) when a productive fracture is encountered at depths substantially below the overall water level in the fractured-bedrock aquifer but the aquifer system, when taken as a whole, may be more represented as unconfined (i.e., lacks a distinct, low-permeability confining layer)

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	Unnamed Trib to Bummer Cr	1525	1160-1240	2640	☒	☐	☐	☐	☒
1	1	Unnamed Trib to Bummer Cr	1580	1160-1240	2770	☒	☐	☐	☐	☒
1	1	Unnamed Trib to Bummer Cr	1335	1160-1240	1740	☒	☐	☐	☐	☒
1	1	Unnamed Trib to Bummer Cr	1415	1160-1240	1760	☒	☐	☐	☐	☒
1	1	Unnamed Trib to Bummer Cr	1460	1160-1240	1980	☒	☐	☐	☐	☒

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

Water Availability Basin the well(s) are located within: Jumpoff Joe Cr > Rogue R – At Mouth (ID# 70984)

- 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	☐	☐	NA	NA	☐	3.93	☒	< 20 %	☒
2	1	☐	☐	NA	NA	☐	3.93	☒	< 20 %	☒
3	1	☐	☐	NA	NA	☐	3.93	☒	~ 20 %*	☒
4	1	☐	☐	NA	NA	☐	3.93	☒	< 20 %	☒
5	1	☐	☐	NA	NA	☐	3.93	☒	< 20 %	☒

Comments: *Interference @ 30 d was calculated using the Hunt (1999) stream-depletion model and aquifer parameters representative of a fractured aquifer system. Interference was calculated for Well #3 only because it is the closest well to the creek and, assuming aquifer parameters are similar between the five wells, will have the greatest impact. Interference from other wells will therefore be less than for Well #3

- 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: _____

- 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:
- ☐ The permit should contain condition #(s) _____;
 - ☐ 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(s) that has been found to be hydraulically connected to surface water, specifically an unnamed tributary to Bummer Creek, at distances of < 1 mile but > ¼ mile. The proposed rate of appropriation is > 1% of the lowest monthly 80%-exceedance flow for the WAB so the Department assumes that the proposed use will have the Potential for Substantial Interference (PSI) with surface water. If the rate of appropriation were reduced to < 0.039 cfs (17.6 gal/min) the assumption of PSI would no longer be made under this review.

References Used:

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

Oregon Department of Geology and Mineral Industries, *Geologic Map of Oregon*. <http://www.oregongeology.org/geologicmap/>

OWRD Well Log Database – Accessed 7/28/2017.

Ramp, L. and Peterson, N. 2004. *Geologic Map of Josephine County, Oregon*. Oregon Dept. of Geol. and Mineral Industries, OFR O-04-13.

D. WELL CONSTRUCTION, OAR 690-200

D1. Well #: _____ Logid: _____

D2. **THE WELL does not appear to meet current well construction standards based upon:**

- ☐ review of the well log;
- ☐ field inspection by _____;
- ☐ report of CWRE _____;
- ☐ 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.

E. ATTACHMENTS**Water-Level Trends in Nearby Wells***(there are no observation well data in the area)***Water Availability Tables**

Water Availability Analysis

Detailed Reports

JUMPOFF JOE CR > ROGUE R - AT MOUTH

ROGUE BASIN

Water Availability as of 7/28/2017

Watershed ID #: 70984 (Map)

Date: 7/28/2017

Exceedance Level: 80%

Time: 12:26 PM

Water Availability Calculation

Consumptive Uses and Storages

Instream Flow Requirements

Reservations

Water Rights

Watershed Characteristics

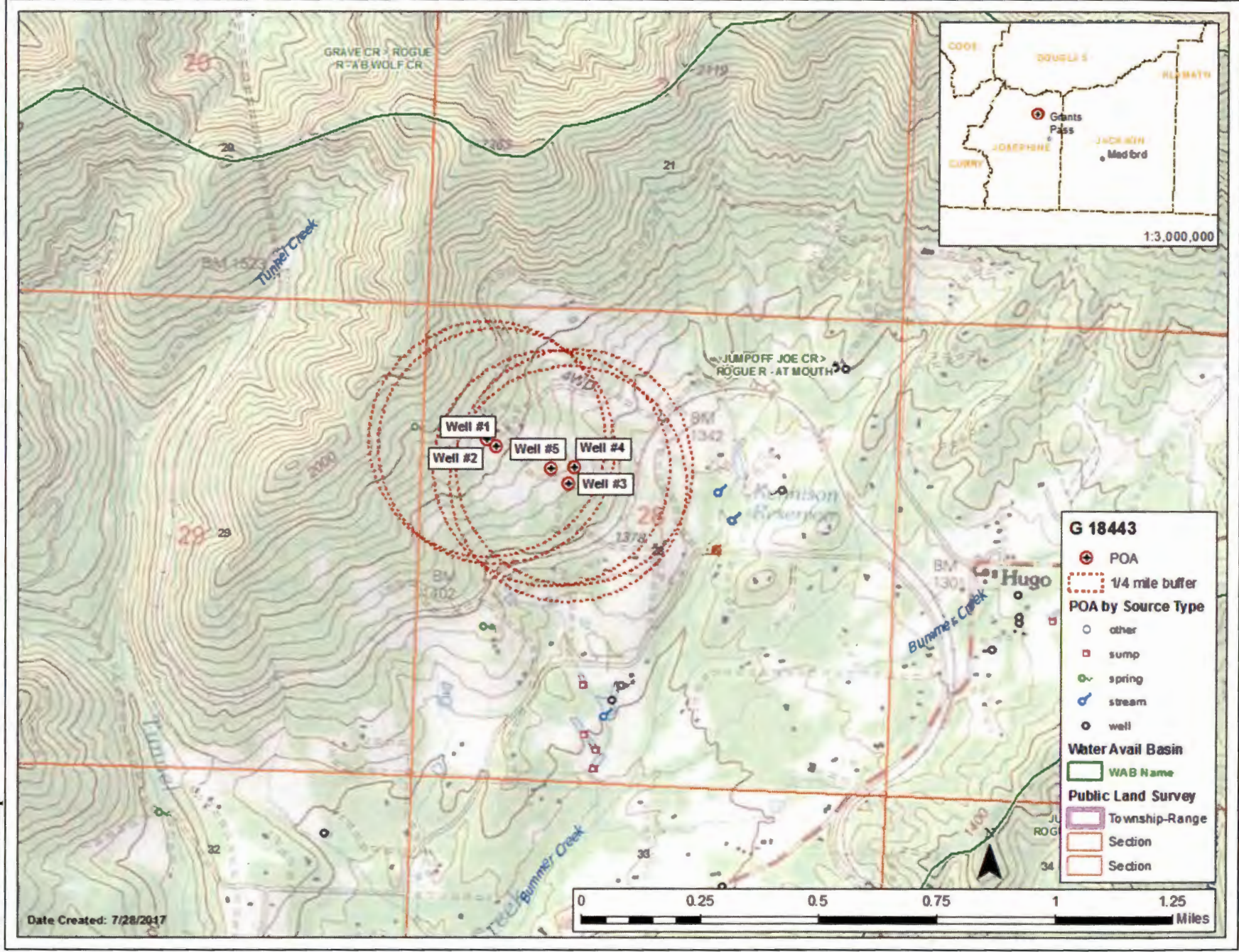
Water Availability Calculation

Monthly Streamflow in Cubic Feet per Second

Annual Volume at 50% Exceedance in Acre-Feet

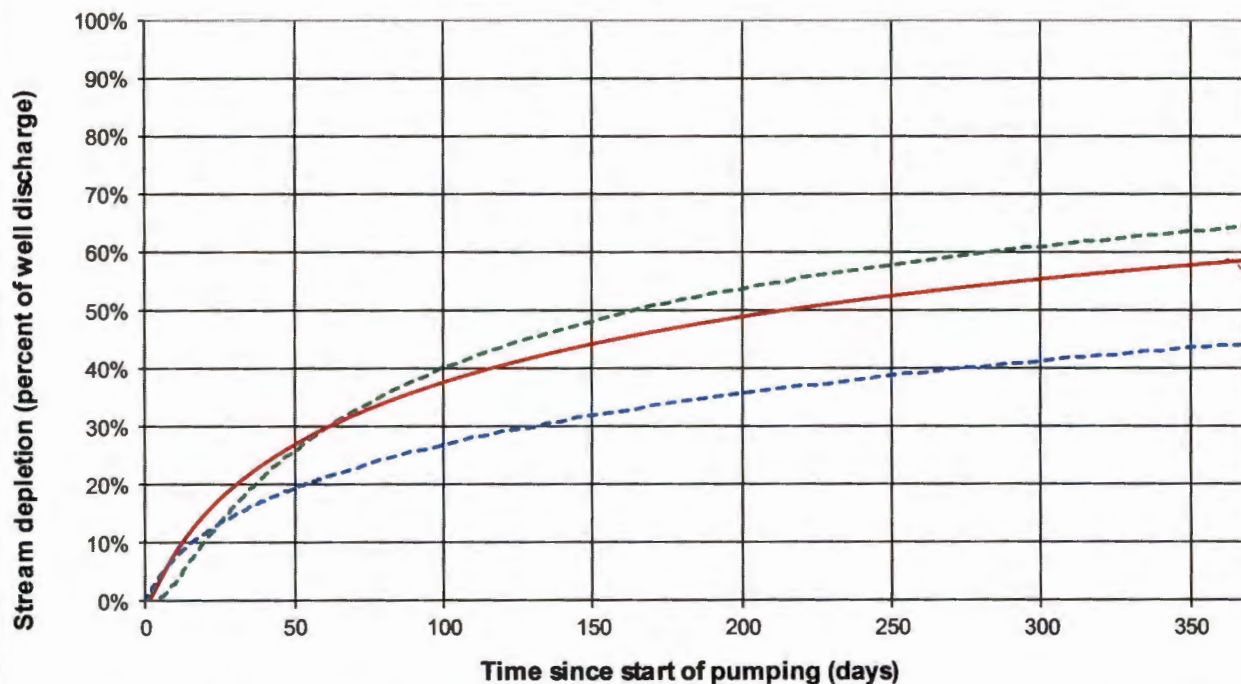
Month	Natural Stream Flow	Consumptive Uses and Storages	Expected Stream Flow	Reserved Stream Flow	Instream Flow Requirement	Net Water Available
JAN	65.20	0.99	64.20	0.00	100.00	-35.80
FEB	114.00	1.87	112.00	0.00	100.00	12.10
MAR	102.00	1.34	101.00	0.00	100.00	0.66
APR	53.30	1.93	51.40	0.00	100.00	-48.60
MAY	25.90	2.81	23.10	0.00	40.00	-16.90
JUN	11.30	3.78	7.52	0.00	30.00	-22.50
JUL	6.49	4.92	1.57	0.00	9.48	-7.91
AUG	5.27	4.13	1.14	0.00	6.72	-5.58
SEP	3.93	2.85	1.08	0.00	20.00	-18.90
OCT	4.77	1.22	3.55	0.00	65.00	-61.50
NOV	11.20	0.51	10.70	0.00	65.00	-54.30
DEC	34.00	0.87	33.10	0.00	100.00	-66.90
ANN	60,800.00	1,650.00	59,200.00	0.00	44,300.00	23,500.00

Well Location Map



Stream-depletion Model Results

(Well #3 only)

Transient Stream Depletion (Hunt, 1999)**G 18443****Output for Hunt Stream Depletion, Scenerio 2 (s2):** Time pump on = 365 days

Days	30	60	90	120	150	180	210	240	270	300	330	360
Qw, cfs	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050
Jenk SD s2 %	69.72	78.32	82.23	84.58	86.19	87.38	88.31	89.06	89.68	90.21	90.66	91.06
Jen SD s2 cfs	0.035	0.039	0.041	0.042	0.043	0.044	0.044	0.045	0.045	0.045	0.045	0.046
Hunt SD s2 %	19.87	29.64	35.96	40.61	44.26	47.24	49.74	51.89	53.77	55.43	56.91	58.25
Hunt SD s2 cfs	0.01	0.01	0.02	0.02	0.02	0.02	0.02	0.03	0.03	0.03	0.03	0.03

Parameters:

		Scenario 1	Scenario 2	Scenario 3	Units
Net steady pumping rate	Qw	0.05	0.05	0.05	cfs
Distance to stream	a	1740	1740	1740	ft
Aquifer hydraulic conductivity	K	10	50	200	ft/day
Aquifer thickness	b	200	200	200	ft
Aquifer transmissivity	T	2000	10000	40000	ft*ft/day
Aquifer storage coefficient	S	0.03	0.03	0.03	
Stream width	ws	5	5	5	ft
Streambed hydraulic conductivity	Ks	1	1	1	ft/day
Streambed thickness	bs	2	2	2	ft
Streambed conductance	sbc	2.500	2.500	2.500	ft/day
Stream depletion factor (Jenkins)	sdf	45.4	9.1	2.3	days
Streambed factor (Hunt)	sbf	2.2	0.4	0.1	