

MEMO

AUGUST 31, 2016

FROM: GW: Sen Woody
(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.**

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 Rogue 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 8/31/2016

FROM: Groundwater Section Jen Woody
Reviewer's Name

SUBJECT: Application G- 18335 Supersedes review of n/a
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: Michael LeBlanc, Ground Up Farms LLC
County: Josephine

A1. Applicant(s) seek(s) 0.022 cfs from 1 well(s) in the Rogue Basin,
Applegate River subbasin

A2. Proposed use Nursery 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	PROP 999999	1	Alluvium	0.022	T37S/R6W-16 NW ¼ SW ¼	*
2						
3						
4						
5						

* 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	1000	*	10	*	140	0-20	0-100	n/a	n/a	n/a	n/a	n/a

Use data from application for proposed wells.

A4. **Comments:** *The metes and bounds provided on the application do not agree with the mapped location and taxlot information. This review references the mapped well location, not the metes and bounds. Nearby well logs indicate the sediments are greater than the proposed well's depth, but they likely pinch out less than ½ mile south of the subject well site, where metamorphic rocks of the Applegate Group are mapped at the surface. JOSE 53382 is referenced to estimate expected static water level at the proposed well, because it is located in the same quarter-quarter and is 140 feet deep.

A5. ☐ **Provisions of the** Rogue 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: N/A

A6. ☐ **Well(s) #** _____, _____, _____, _____, _____, tap(s) an aquifer limited by an administrative restriction.
Name of administrative area: _____
Comments: N/A

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 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) 7J, Medium Water Use Reporting Condition;

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;

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): **N/A**

B3. **Groundwater availability remarks:** The application proposes to develop about 10 gallons per minute (gpm) from the alluvial and terrace deposits. The aquifer is characterized by alluvial sands and gravels, with significant clay deposits reported in the upper 100 feet. Well logs in this section report yields ranging from 0 to 60 gpm, with a median yield of 8 gpm. To date, groundwater development is minimal in the vicinity of the proposed wells, with no nearby groundwater points of appropriation (POAs). Groundwater level data are sparse, but indicate general stability within a mile of the proposed development(see attached hydrograph). The groundwater resource cannot be determined to be over-appropriated.

C1. 690-09-040 (1): Evaluation of aquifer confinement:

Well	Aquifer or Proposed Aquifer	Confined	Unconfined
1	Alluvial sediments and terrace deposits	☒	☐
		☐	☐
		☐	☐
		☐	☐
		☐	☐

Basis for aquifer confinement evaluation: Nearby well logs describe tens of feet of clay between the land surface and the water bearing zone. Static water levels are reported 50 or more feet above the productive water-bearing zone(s). The aquifer is likely more confined than unconfined.

[illegible]

Basis for aquifer hydraulic connection evaluation: The static groundwater level is coincident or above nearby surface water, indicating groundwater discharges to surface water and is therefore hydraulically connected.

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.

[illegible]

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: Stream depletion at 30 days is estimated at much less than 25% of the proposed pumping rate (Hunt 2003). See attached model parameters and results.

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													
		%	%	%	%	%	%	%	%	%	%	%	%
Well Q as CFS													
Interference CFS													
		%	%	%	%	%	%	%	%	%	%	%	%
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: N/A

U.S. Geological Survey topographic map, Murphy Mountain Quadrangle.

D. WELL CONSTRUCTION, OAR 690-200

D1. Well #: _____ Logid: this section does not apply

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 Analysis Detailed Reports

APPLEGATE R > ROGUE R - AT MOUTH ROGUE BASIN

Water Availability as of 8/31/2016

Watershed ID #: 249 ([Map](#))

Exceedance Level: 80%

Date: 8/31/2016

Time: 12:02 PM

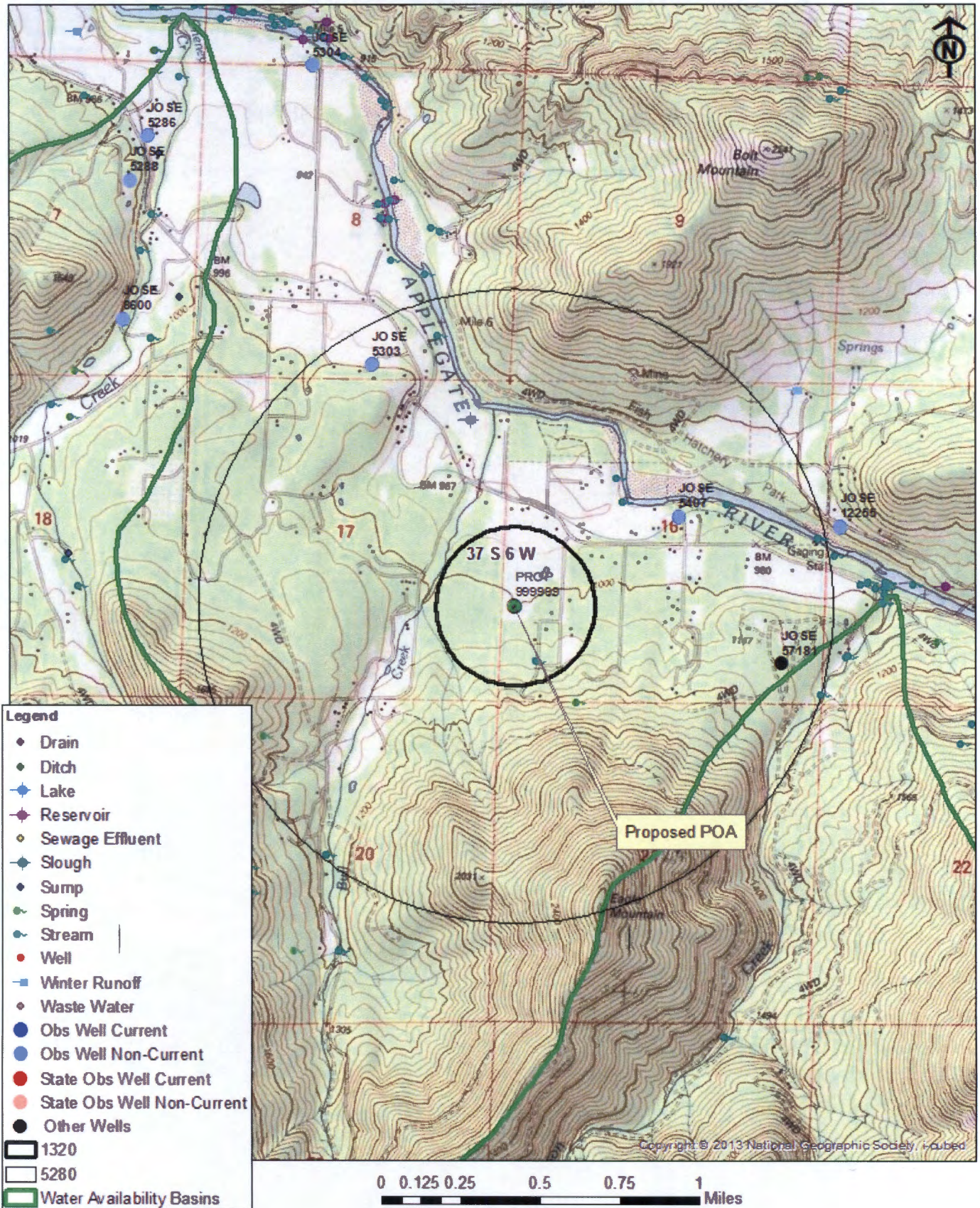
Water Availability Calculation

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

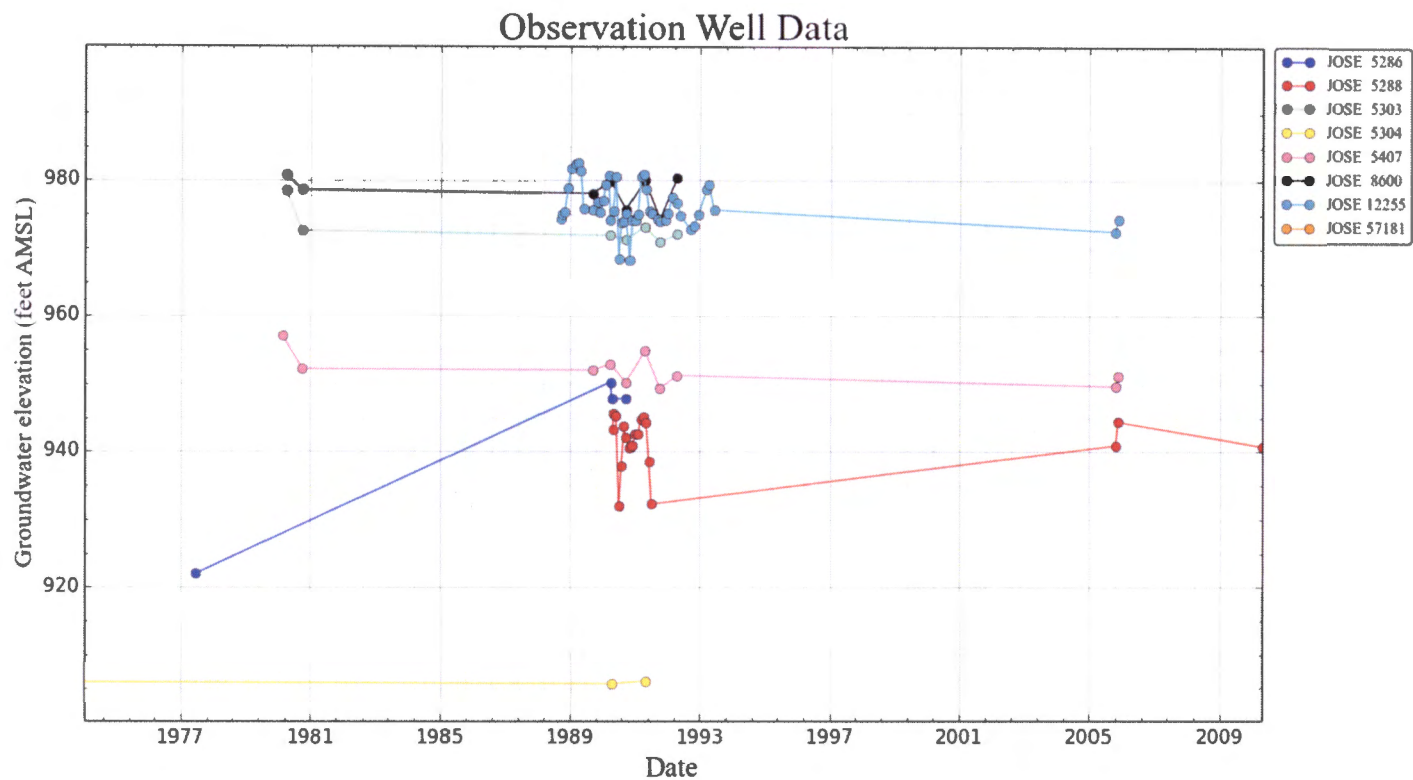
Month	Natural Stream Flow	Consumptive Uses and Storages	Expected Stream Flow	Reserved Stream Flow	Instream Flow Requirement	Net Water Available
JAN	373.00	5.54	367.00	0.00	300.00	67.50
FEB	674.00	439.00	235.00	0.00	300.00	-64.70
MAR	792.00	438.00	354.00	0.00	340.00	14.00
APR	662.00	460.00	202.00	0.00	340.00	-138.00
MAY	591.00	42.10	549.00	0.00	360.00	189.00
JUN	222.00	57.20	165.00	0.00	360.00	-195.00
JUL	91.80	75.80	16.00	0.00	120.00	-104.00
AUG	59.00	63.00	-3.97	0.00	120.00	-124.00
SEP	45.80	42.10	3.69	0.00	120.00	-116.00
OCT	56.00	15.40	40.60	0.00	360.00	-319.00
NOV	146.00	3.54	142.00	0.00	360.00	-218.00
DEC	244.00	4.59	239.00	0.00	300.00	-60.60
ANN	421,000.00	97,700.00	323,000.00	0.00	204,000.00	160,000.00

Well Location Map

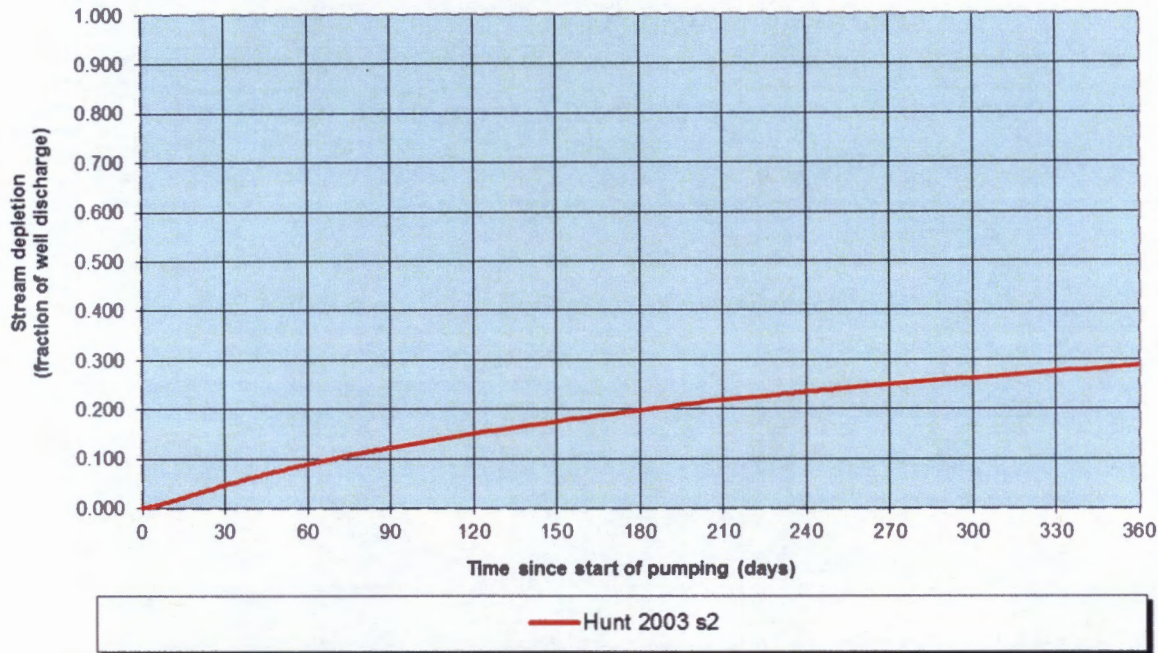
G-18335 Ground Up Farms LLC T37 S/R6W-Section 16



Water-Level Trends in Nearby Wells



Transient Stream Depletion (Hunt, 2003)



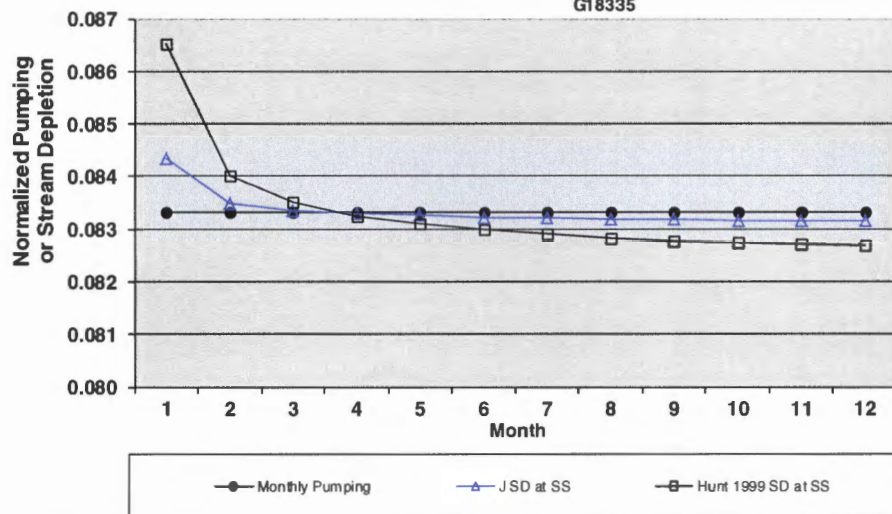
Output for Stream Depletion, Scenerio 2 (s2):						Time pump on (pumping duration) = 365 days						
Days	30	60	90	120	150	180	210	240	270	300	330	360
J SD	95.7%	96.9%	97.5%	97.8%	98.1%	98.2%	98.4%	98.5%	98.6%	98.6%	98.7%	98.7%
H SD 1999	69.8%	77.6%	81.3%	83.7%	85.3%	86.5%	87.4%	88.2%	88.8%	89.4%	89.8%	90.3%
H SD 2003	4.67%	8.87%	12.22%	15.04%	17.53%	19.78%	21.77%	23.44%	24.95%	26.31%	27.62%	28.78%
Qw, cfs	0.022	0.022	0.022	0.022	0.022	0.022	0.022	0.022	0.022	0.022	0.022	0.022
H SD 99, cfs	0.016	0.017	0.018	0.019	0.019	0.019	0.019	0.020	0.020	0.020	0.020	0.020
H SD 03, cfs	0.001	0.002	0.003	0.003	0.004	0.004	0.005	0.005	0.006	0.006	0.006	0.006

Parameters:		Scenario 1	Scenario 2	Scenario 3	Units
Net steady pumping rate of well	Qw	10.00	10.00	10.00	gpm
Time pump on (pumping duration)	tpon	365	365	365	days
Perpendicular from well to stream	a	1330	1330	1330	ft
Well depth	d	140	140	140	ft
Aquifer hydraulic conductivity	K	10	100	1000	ft/day
Aquifer saturated thickness	b	100	100	100	ft
Aquifer transmissivity	T	1000	10000	100000	ft*ft/day
Aquifer storativity or specific yield	S	0.001	0.001	0.001	
Aquitard vertical hydraulic conductivity	Kva	1	1	1	ft/day
Aquitard saturated thickness	ba	10	10	10	ft
Aquitard thickness below stream	babs	9	9	9	ft
Aquitard porosity	n	0.2	0.2	0.2	
Stream width	ws	20	20	20	ft

Scenic Waterway Interference

Scenic Water Way Stream Depletion

G18335



Region	28	Steady state stream depletion as a fraction of pumping normalized to crop water use consumption.											
Month	Jan	Feb	Mar	Apr	May	Jun	July	Aug	Sept	Oct	Nov	Dec	Resid
Qw	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.00
J SD SS	0.084	0.083	0.083	0.083	0.083	0.083	0.083	0.083	0.083	0.083	0.083	0.083	0.000
H99 SD SS	0.087	0.084	0.084	0.083	0.083	0.083	0.083	0.083	0.083	0.083	0.083	0.083	0.000

<== Jenkins Stream Depletion at Steady State

<== Hunt 1999 Stream Depletion at Steady State

Parameters:	Values	Units
Maximum number of years pumped	yrmax	25 years
Days pumped each month	tpoff	30.4375 days/month
Perpendicular from well to stream	a	1330 ft
Well depth	d	140 ft
Aquifer hydraulic conductivity	K	100 ft/day
Aquifer saturated thickness	b	100 ft
Aquifer transmissivity	T_ft	10,000 ft ² /day = K*b
Aquifer transmissivity	T_gal	74,800 gpd/ft = K*b
Aquifer storativity or specific yield	S	0.001
Streambed conductivity (Hunt 1999)	Ks	1 ft/day
Streambed thickness, Hunt 1999	bs	3 ft
Stream width (Hunt 1999)	ws	20 ft
Streambed conductance (lambda)	sbc	6.6667 ft/day = Ks*ws/bs
Stream depletion factor	sdf	0.1769 days = (a ² *S)/(T)
Streambed factor	sbf	0.8867 = sbc*a/T