

Water Right Conditions Tracking Slip

Groundwater/Hydrology Section

FILE # # G 17603

ROUTED TO: Jeanne Eastman

TOWNSHIP/

RANGE-SECTION: 36S/1W-22

CONDITIONS ATTACHED?: yes no

REMARKS OR FURTHER INSTRUCTIONS:

Reviewer: Ken Woody

WATER RESOURCES DEPARTMENT

MEMO

12/28/2012, 200

TO: Application G- 17603
FROM: GW: Jen Wood
(Reviewer's Name)
SUBJECT: Scenic Waterway Interference Evaluation

YES
 NO

The source of appropriation is within or above a Scenic Waterway

YES
 NO

Use the Scenic Waterway condition (Condition 7J)

Per ORS 390.835, the Ground Water 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 Ground Water 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
0.111	0.097	0.090	0.085	0.082	0.080	0.078	0.077	0.076	0.075	0.075	0.074

PUBLIC INTEREST REVIEW FOR GROUND WATER APPLICATIONS

TO: Water Rights Section Date 12/28/2012

FROM: Ground Water/Hydrology Section Jen Woody
Reviewer's Name

SUBJECT: Application G- 17603 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 ground water 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: Robert Russell County: Jackson

A1. Applicant(s) seek(s) 0.1 cfs from 1 well(s) in the Rogue Basin,
Little Butte Creek subbasin Quad Map: Eagle Point

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		Sandstone/claystone	0.1	36S/1W-22 SENW	900'N, 130'W fr center cor S 22
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	1390	About 60'	Approx 27'	10/17/2012	Approx 75'							

Use data from application for proposed wells.

A4. **Comments:** Although the well hasn't been drilled yet, the application references JACK 6284, which is located on the same taxlot. JACK 6284 doesn't describe a surface seal. The new well must be constructed to meet current well construction standards. The application is reviewed assuming the new well will be approximately 75 feet deep and encounter similar hydrogeology as JACK 6284. Nearby well logs report water bearing zones from 60 to about 120 feet below land surface, in sandstone or claystone, probably of the Payne Cliffs Formation.

A5. **Provisions of the Rogue** _____ Basin rules relative to the development, classification and/or management of ground water 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. GROUND WATER AVAILABILITY CONSIDERATIONS, OAR 690-310-130, 400-010, 410-0070

B1. Based upon available data, I have determined that ground water* 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 ground water 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 ground water 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 ground water resource; or
- d. will, if properly conditioned, avoid injury to existing ground water rights or to the ground water resource:
 - i. The permit should contain condition #(s) 7C, 7J, 7P;
 - 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 ground water production from no deeper than _____ ft. below land surface;
- b. Condition to allow ground water production from no shallower than _____ ft. below land surface;
- c. Condition to allow ground water production only from the _____ ground water 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 Ground Water 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. **Ground water availability remarks:** JACK 5899 is the nearest located well with water level data on file (see hydrograph); it does not show long term decline, but there are no recent data. Given the available information, the groundwater resource cannot be determined to be over appropriated. T36S/R1W-22 has 85 well logs in WRD’s database. Median yield is 25 gpm, median depth is 100 feet. Wells logs report 5 to 20 feet of clay at the surface, underlain by conglomerate and/or sandstone and claystone. Water-bearing zones are likely in the conglomerate or sandstone of the Payne Cliffs Formation.

C. GROUND WATER/SURFACE WATER CONSIDERATIONS, OAR 690-09-040

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

Well	Aquifer or Proposed Aquifer	Confined	Unconfined
1	Sandstone	<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"/>

Basis for aquifer confinement evaluation: Nearby well logs show water levels rise tens of feet above the water-bearing zone, indicating the aquifer is more confined than 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 1/4 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	Dry Creek	1360	1350	3580	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
1	2	Hoover Ponds	1360	1370	3250	<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"/>
						<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"/>	<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: Given the uncertainties in estimated elevations (plus or minus 10-20 feet) and well construction, surface water and groundwater are coincident which suggests some level of hydraulic connection. However, clay and claystone overlying the water-bearing zones likely create an inefficient connection.

Water Availability Basin the well(s) are located within: WELL IS LOCATED IN ROGUE R > PACIFIC OCEAN - AB CURRY G AT GAGE 14359000; well is hydraulically connected to Dry Creek, which is in ANTELOPE CR > LITTLE BUTTE CR - AT MOUTH .

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 < 1/4 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"/>	MF248A	20.00	<input type="checkbox"/>	1.06	<input checked="" type="checkbox"/>	<25%	<input checked="" type="checkbox"/>
1	2	<input type="checkbox"/>	<input type="checkbox"/>	MF270A	1200	<input type="checkbox"/>	1130	<input type="checkbox"/>	<25%	<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"/>
		<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"/>

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"/>
		<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: There are no site-specific aquifer parameters available, but testing a range of reasonable values with Hunt 2003 showed impacts much less than 25% at 30 days. PSI is triggered because 0.1 cfs is > 1% of 80% natural flow in the antelope creek WAB.

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: _____

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 ground water 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** _____

References Used:

Hunt, Bruce. 2003. Unsteady Stream Depletion when pumping from semiconfined aquifer. Journal of Hydrologic Engineering. p. 12-19.

Wiley, Thomas J., McClaughry, Jason D., D'Allura, Jad A. 2011. Geologic Database and Generalized Geologic Map of Bear Creek Valley, Jackson County, Oregon. Oregon Department of Geology and Mineral Industries, Open File Report O-11-11.

D. WELL CONSTRUCTION, OAR 690-200

D1. Well #: _____ Logid: _____

D2. **THE WELL does not 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:**

- a. constitutes a health threat under Division 200 rules;
- b. commingles water from more than one ground water reservoir;
- c. permits the loss of artesian head;
- d. permits the de-watering of one or more ground water reservoirs;
- e. other: (specify) _____

D4. **THE WELL construction deficiency is described as follows:** _____

D5. **THE WELL** a. was, or was not constructed according to the standards in effect at the time of original construction or most recent modification.

b. I don't know if it met standards at the time of construction.

D6. **Route to the Enforcement Section.** I recommend withholding issuance of the permit until evidence of well reconstruction is filed with the Department and approved by the Enforcement Section and the Ground Water Section.

THIS SECTION TO BE COMPLETED BY ENFORCEMENT PERSONNEL

D7. Well construction deficiency has been corrected by the following actions: _____

_____, 200_____
(Enforcement Section Signature)

D8. **Route to Water Rights Section (attach well reconstruction logs to this page).**

Water Availability Tables

DETAILED REPORT ON THE WATER AVAILABILITY CALCULATION

ANTELOPE CR > LITTLE BUTTE CR - AT MOUTH

Watershed ID #: 248
Time: 2:07 PM

Basin: ROGUE

Exceedance Level: 80

Date: 12/26/2012

Month	Natural Stream Flow	Consumptive Use and Storage	Expected Stream Flow	Reserved Stream Flow	Instream Requirements	Net Water Available
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Monthly values are in cfs.

Storage is the annual amount at 50% exceedance in ac-ft.

JAN	17.50	4.92	12.60	0.00	25.00	-12.40
FEB	29.00	6.18	22.80	0.00	25.00	-2.18
MAR	31.70	5.91	25.80	0.00	25.00	0.79
APR	34.70	0.65	34.00	0.00	25.00	9.05
MAY	11.70	1.36	10.30	0.00	10.00	0.34
JUN	6.62	2.11	4.51	0.00	5.00	-0.49
JUL	5.74	3.00	2.74	0.00	5.00	-2.26
AUG	5.92	2.44	3.48	0.00	5.00	-1.52
SEP	3.31	1.54	1.77	0.00	20.00	-18.20
OCT	1.06	0.23	0.83	0.00	20.00	-19.20
NOV	2.21	0.50	1.71	0.00	25.00	-23.30
DEC	5.47	3.08	2.39	0.00	25.00	-22.60
ANN	19,100	1,920	17,100	0	12,900	8,040

DETAILED REPORT ON THE WATER AVAILABILITY CALCULATION

ROGUE R > PACIFIC OCEAN - AB CURRY G AT GAGE 14359000

Watershed ID #: 270
Time: 3:13 PM

Basin: ROGUE

Exceedance Level: 80

Date: 12/26/2012

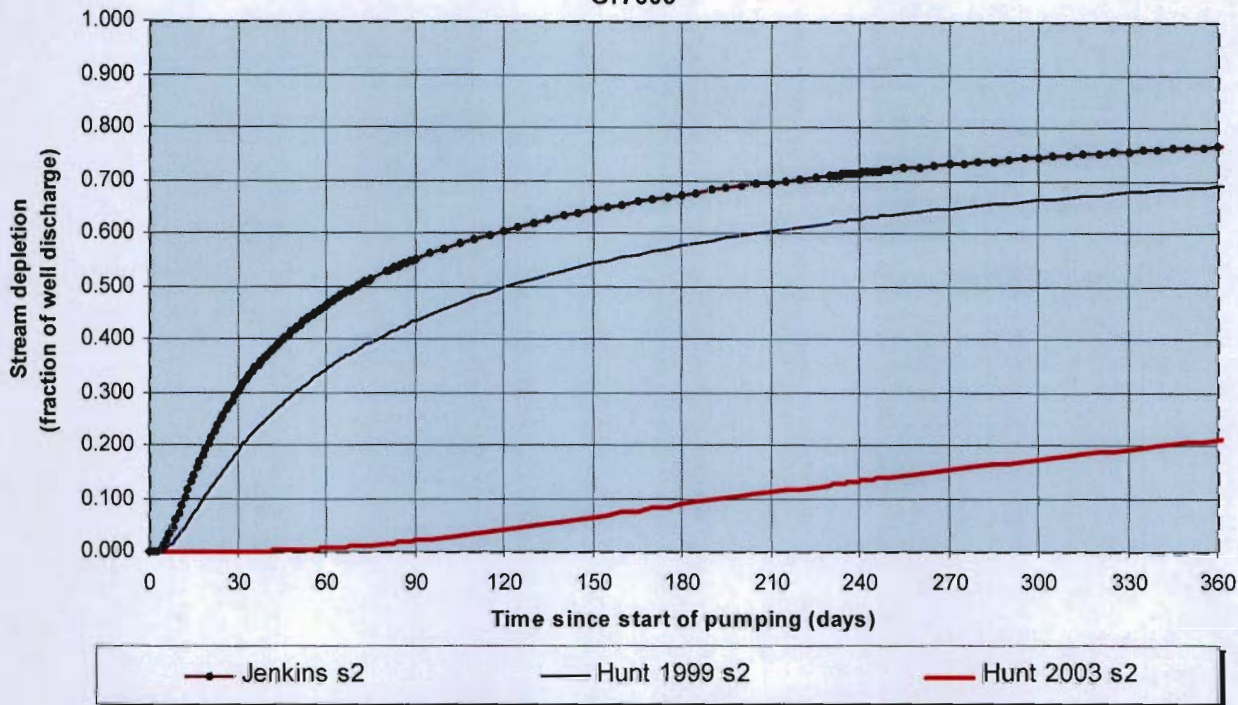
Month	Natural Stream Flow	Consumptive Use and Storage	Expected Stream Flow	Reserved Stream Flow	Instream Requirements	Net Water Available
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Monthly values are in cfs.

Storage is the annual amount at 50% exceedance in ac-ft.

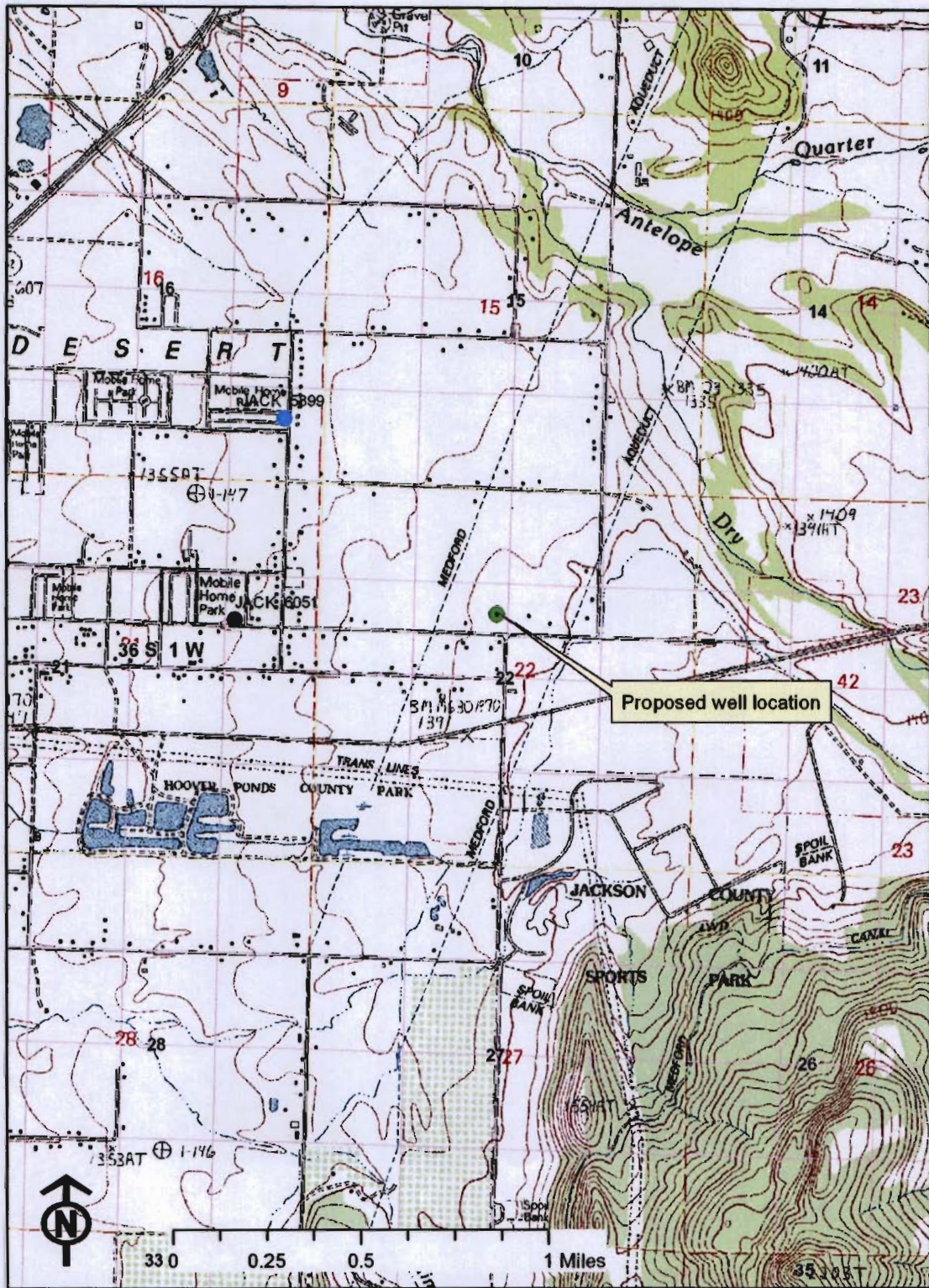
JAN	2,180.00	1,200.00	985.00	0.00	1,200.00	-215.00
FEB	2,710.00	2,110.00	600.00	0.00	1,200.00	-600.00
MAR	2,750.00	1,880.00	868.00	0.00	1,200.00	-332.00
APR	2,810.00	1,100.00	1,710.00	0.00	1,200.00	509.00
MAY	2,750.00	434.00	2,320.00	0.00	1,200.00	1,120.00
JUN	1,760.00	421.00	1,340.00	0.00	1,200.00	139.00
JUL	1,330.00	445.00	885.00	0.00	1,200.00	-315.00
AUG	1,160.00	408.00	752.00	0.00	1,200.00	-448.00
SEP	1,130.00	352.00	778.00	0.00	1,200.00	-422.00
OCT	1,160.00	292.00	868.00	0.00	1,200.00	-332.00
NOV	1,370.00	409.00	961.00	0.00	1,200.00	-239.00
DEC	1,810.00	627.00	1,180.00	0.00	1,200.00	-17.50
ANN	1,900,000	579,000	1,320,000	0	869,000	500,000

Transient Stream Depletion (Jenkins, 1970; Hunt, 1999, 2003)
G17603



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	30.1	46.5	55.1	60.5%	64.4	67.3	69.6%	71.5%	73.0%	74.4%	75.5%	76.5%
H SD	18.9	34.3	43.5	49.6%	54.2	57.7	60.4%	62.7%	64.7%	66.3%	67.8%	69.0%
H SD	0.05	0.65	2.08	4.13%	6.54	8.88	11.14	13.36	15.46	17.46	19.37	21.17
2003	%	%	%	%	%	%	%	%	%	%	%	%
Qw, cfs	0.100	0.100	0.100	0.100	0.100	0.100	0.100	0.100	0.100	0.100	0.100	0.100
H SD 99, cfs	0.019	0.034	0.043	0.050	0.054	0.058	0.060	0.063	0.065	0.066	0.068	0.069
H SD 03, cfs	0.000	0.001	0.002	0.004	0.007	0.009	0.011	0.013	0.015	0.017	0.019	0.021

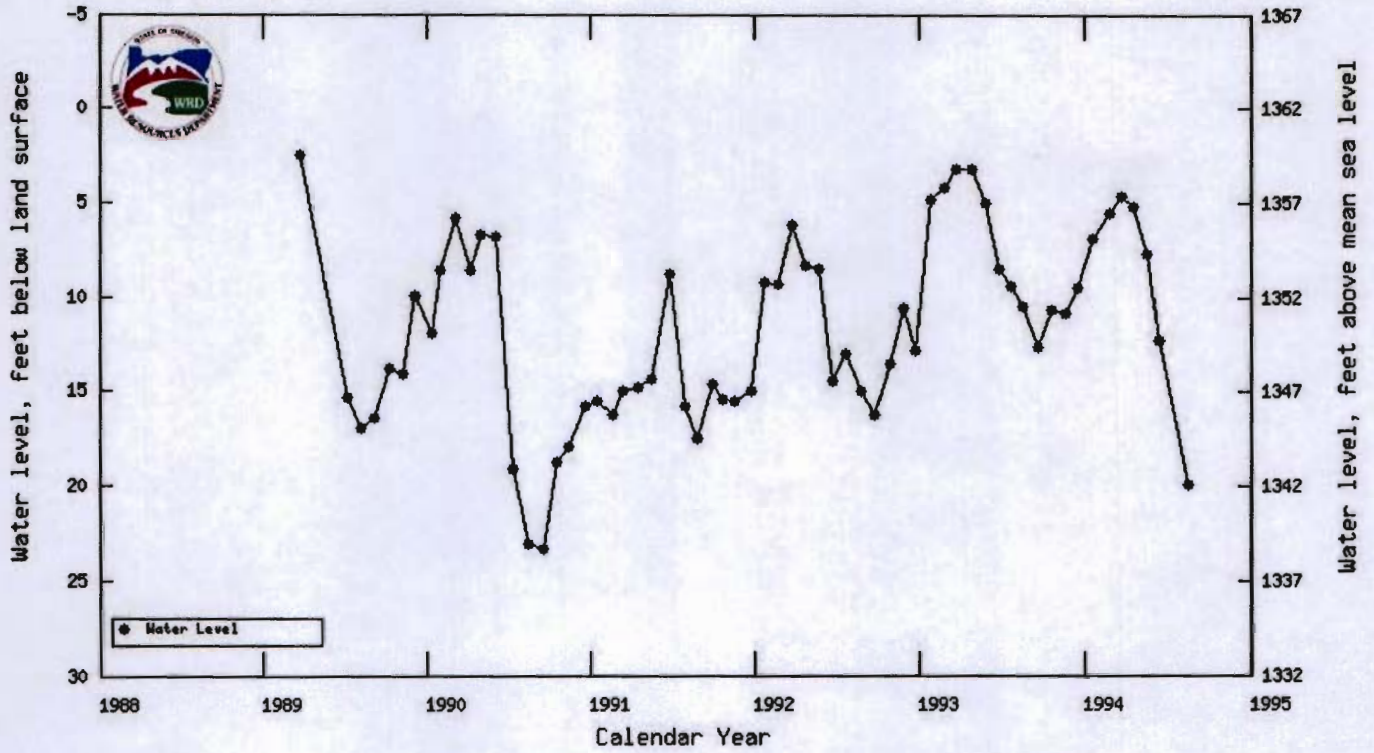
Parameters:		Scenario 1	Scenario 2	Scenario 3	Units
Net steady pumping rate of well	Qw	44.88	44.88	44.88	gpm
Time pump on (pumping duration)	tpon	365	365	365	days
Perpendicular from well to stream	a	3580	3580	3580	ft
Well depth	d	100	100	100	ft
Aquifer hydraulic conductivity	K	1	25	100	ft/day
Aquifer saturated thickness	b	80	80	80	ft
Aquifer transmissivity	T	80	2000	8000	ft*ft/day
Aquifer storativity or specific yield	S	0.01	0.01	0.01	
Aquitard vertical hydraulic conductivity	Kva	1	1	1	ft/day
Aquitard saturated thickness	ba	20	20	20	ft
Aquitard thickness below stream	babs	3	3	3	ft
Aquitard porosity	n	0.1	0.1	0.1	
Stream width	ws	10	10	10	ft
Streambed conductance (lambda)	sbc	3.333333	3.333333	3.333333	ft/day
Stream depletion factor	sdf	1602.050000	64.082000	16.020500	days
Streambed factor	sbf	149.166667	5.966667	1.491667	
input #1 for Hunt's Q 4 function	t'	0.000624	0.015605	0.062420	
input #2 for Hunt's Q 4 function	K'	8010.250000	320.410000	80.102500	
input #3 for Hunt's Q 4 function	epsilon	0.100000	0.100000	0.100000	
input #4 for Hunt's Q 4 function	lamda'	149.166667	5.966667	1.491667	

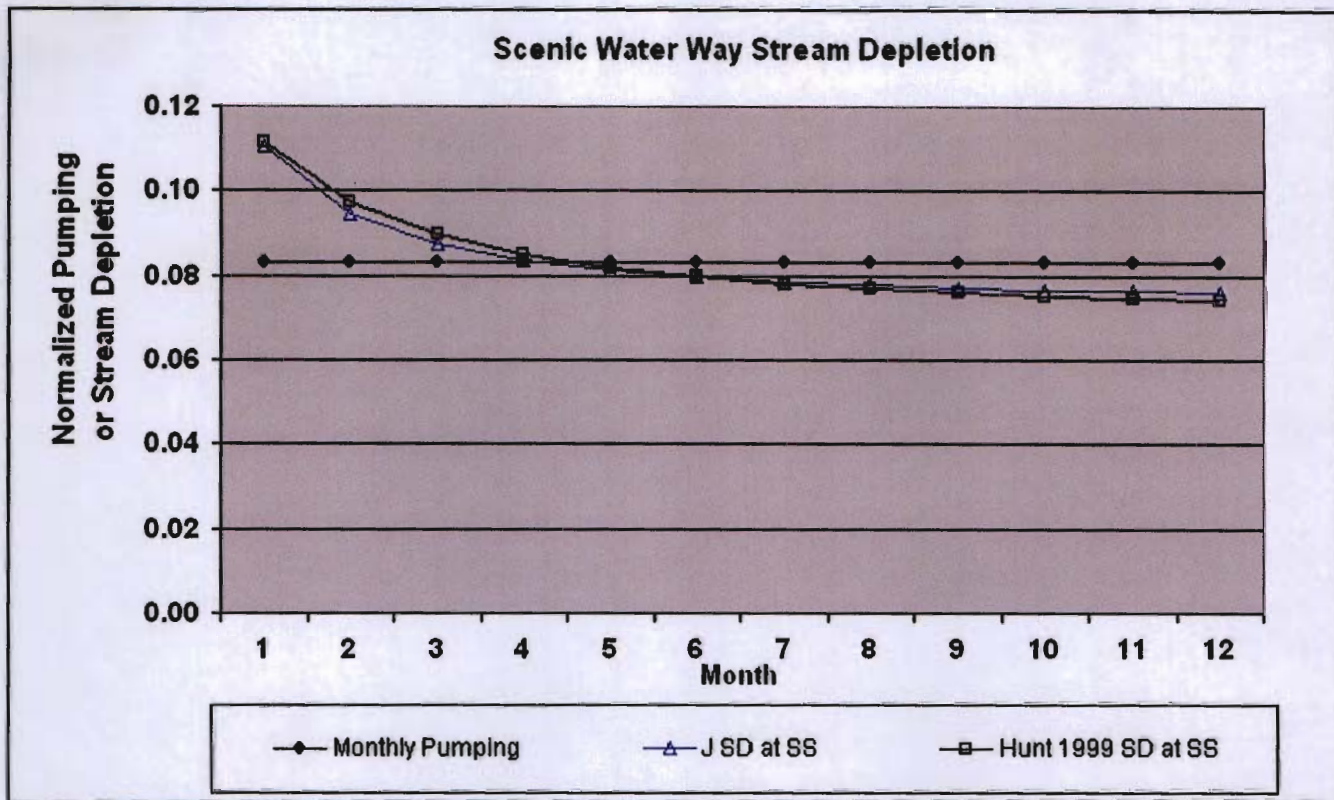


Oregon Water Resources Department (OWRD) Well Location
 OWRD Logid
 OWRD Well Tag (Well ID)
 OWRD State Observation Well Number
 Total well depth (feet below land surface)
 Land surface elevation (feet above mean sea level)
 Primary use of well
 Primary aquifer system

36.00S/1.00W-16DDA2
 JACK 5899

 1362





Region	Steady state stream depletion as a fraction of pumping normalized to crop water consumption.												
28	Jan	Feb	Mar	Apr	May	Jun	July	Aug	Sept	Oct	Nov	Dec	Resid
Month	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
Qw	0.110	0.094	0.087	0.084	0.081	0.080	0.079	0.078	0.077	0.077	0.076	0.076	0.000
J SD SS	0.111	0.097	0.090	0.085	0.082	0.080	0.078	0.077	0.076	0.075	0.075	0.074	0.000
H99 SD SS													

Parameters:		Values	Units	
Maximum number of years pumped	yymax	3	years	
Days pumped each month	tpoff	30.4375	days/month	
Perpendicular from well to stream	a	3580	ft	
Well depth	d	100	ft	
Aquifer hydraulic conductivity	K	25	ft/day	
Aquifer saturated thickness	b	80	ft	
Aquifer transmissivity	T _{ft}	2,000	ft*ft/day	= K*b
Aquifer transmissivity	T _{gal}	14,960	gpd/ft	= K*b
Aquifer storativity or specific yield	S	0.01		
Streambed conductivity (Hunt 1999)	Ks	1	ft/day	
Streambed thickness, Hunt 1999	bs	3	ft	
Stream width (Hunt 1999)	ws	10	ft	
Streambed conductance (lambda)	sbc	3.3333	ft/day	= Ks*ws/bs
Stream depletion factor	sdf	64.0820	days	= (a^2*S)/(T)
Streambed factor	sbfc	5.9667		= sbc*a/T