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MEMO

To: Kristopher Byrd, Well Construction and Compliance Section Manager
From: Joel Jeffery, Well Construction Program Coordinator
Subject: Review of Water Right Application G-18519
Date: July 25, 2018

The attached application was forwarded to the Well Construction and Compliance Section by Water Rights. Joe Kemper reviewed the application. Please see Joe's Groundwater Review and the Well Logs.

Applicant's Well #1 (JACK 62699): Based on a review of the Well Report, Applicant's Well #1 seems to protect the groundwater resource.

The construction of Applicant's Well #1 may not satisfy hydraulic connection issues.

Applicant's Well #2 (JACK 62698): Based on a review of the Well Report, Applicant's Well #2 seems to protect the groundwater resource.

The construction of Applicant's Well #2 may not satisfy hydraulic connection issues.

WATER SUPPLY WELL REPORT -
continuation page

JACK 62698

WELL I.D. LABEL# L123392

START CARD # 1031685

ORIGINAL LOG #

123392

1031685

8/26/2016

(2a) PRE-ALTERATION

Dia	+	From	To	Gauge	Stl	Plstc	Wld	Thrd
								
								
								
								
								
								
								
								
								
								
								
								
								
								
								
								
								
								
								
								
								
								

Material
From
To
Amt
sacks/lbs

(5) BORE HOLE CONSTRUCTION

BORE HOLE			SEAL				sacks/ lbs
Dia	From	To	Material	From	To	Amt	
					Calculated		
					Calculated		
					Calculated		
					Calculated		

FILTER PACK

From	To	Material	Size

(6) CASING/LINER

Casing	Liner	Dia	+	From	To	Gauge	Stl	Plstc	Wld	Thrd
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(7) PERFORATIONS/SCREENS

Perf/	Casing/	Screen			Scrn/slot	Slot	# of	Tele/
Screen	Liner	Dia	From	To	width	length	slots	pipe size

[illegible]

(8) WELL TESTS: Minimum testing time is 1 hour

Yield gal/min	Drawdown	Drill stem/Pump depth	Duration (hr)
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Water Quality Concerns

From	To	Description	Amount	Units

(10) STATIC WATER LEVEL

[illegible]

(11) WELL LOG

[illegible]

Comments/Remarks

GREG ELLIS, TRAINEE

STATE OF OREGON
WELL LOCATION MAP

This map is supplemental to the WATER SUPPLY WELL REPORT

Oregon Water Resources Department

725 Summer St NE, Salem OR 97301
(503)986-0900



LOCATION OF WELL

Latitude: 42.535

Datum: WGS84

Longitude: -122.9029

Township/Range/Section/Quarter-Quarter Section:

WM 35S 2W 11 SWSE

Address of Well:

5128 BEAGLE RD. WHITE CITY, OR 97503

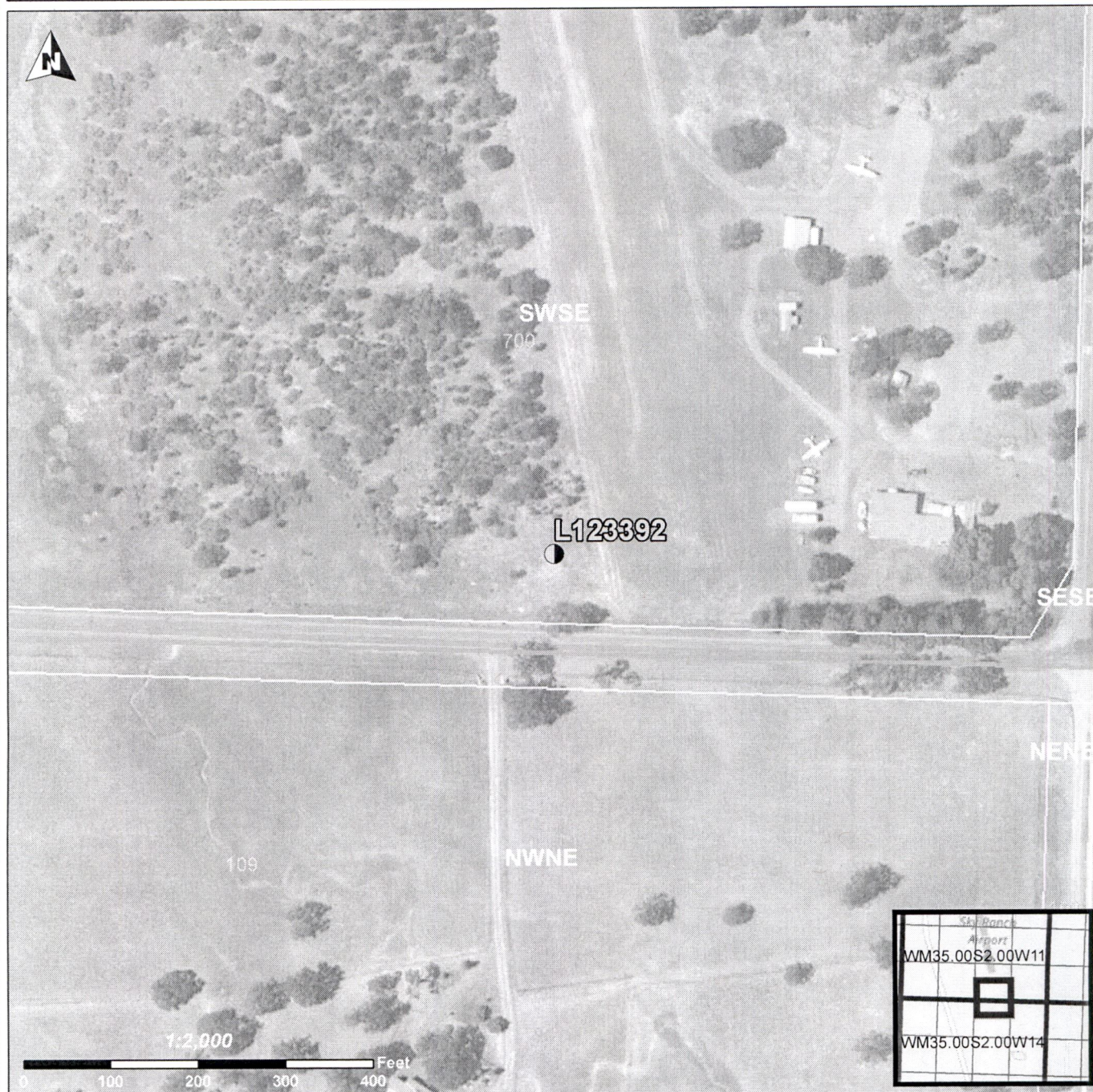
Well Label: L123392

Well Log: JACK 62698

Printed: April 19, 2017

DISCLAIMER: This map is intended to represent the approximate location of the exempt use well provided by the land owner. It is not intended to be construed as survey accurate in any manner.

Generated by OWRD



WATER SUPPLY WELL REPORT -
continuation page

JACK 62699

WELL I.D. LABEL# L123394

123394

START CARD # 1031702

1031702

ORIGINAL LOG #

8/26/2016

(2a) PRE-ALTERATION

[illegible]

(5) BORE HOLE CONSTRUCTION

BORE HOLE			SEAL				sacks/
Dia	From	To	Material	From	To	Amt	lbs
					Calculated		
					Calculated		
					Calculated		
					Calculated		
					Calculated		

FILTER PACK

From	To	Material	Size

(6) CASING/LINER

Casing	Liner	Dia	+	From	To	Gauge	Stl	Plstc	Wld	Thrd
--------	-------	-----	---	------	----	-------	-----	-------	-----	------

(7) PERFORATIONS/SCREENS

[illegible]

(8) WELL TESTS: Minimum testing time is 1 hour

Yield gal/min	Drawdown	Drill stem/Pump depth	Duration (hr)
---------------	----------	-----------------------	---------------

Water Quality Concerns

From	To	Description	Amount	Units

(10) STATIC WATER LEVEL

[illegible]

(11) WELL LOG

[illegible]

Comments/Remarks

SHAWN PETERSON- TRAINEE

Groundwater Application Review Summary Form

Application # G- 18519

GW Reviewer Joe Kemper

Date Review Completed: 7/17/2018

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.
on 7/16/18

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

7/17/2018

FROM: GW: Joe Kemper
(Reviewer's Name)

☒ YES☐ NO☒ YES☐ NO

□ 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.

[illegible]

PUBLIC INTEREST REVIEW FOR GROUNDWATER APPLICATIONS

TO: Water Rights Section Date 7/17/2018
 FROM: Groundwater Section Joe Kemper
 SUBJECT: Application G- 18519 Supersedes review of NA
 Reviewer's Name
 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: David Duddy County: Jackson

A1. Applicant(s) seek(s) 0.29 cfs from 3 well(s) in the Rogue Basin,
Upper Rogue subbasin

A2. Proposed use Nursery (37.7 acres) 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	JACK 62699	1	Bedrock	0.10	35S/2W-11 SW-SE	622' N, 1622' W fr SE cor S 11
2	JACK 62698	2	Bedrock	0.089	35S/2W-11 SW-SE	113' N, 1990' W fr SE cor S 11
3	Proposed	3	Bedrock	0.10	35S/2W-11 SW-SE	1165' N, 2502' W fr SE cor S 11
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	1413	212	40	8/10/2018	240	0-18	0-38	0-240	220-240	45		Air
2	1400	67	26	8/9/2018	200	0-20	0-38.5	0-200	180-200	40		Air
3	1408	NA	NA	NA	NA	NA	NA	NA	NA	NA		

Use data from application for proposed wells.

A4. **Comments:** The reviewer assumes that proposed Well 3 will encounter similar geologic and hydraulic conditions as Wells 1 and 2 because the geology of the area is fairly uniform laterally and with depth.

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: The Rogue Basin rules contain no such provision.

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-yr SWL); 7J; 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:** The applicant's proposed POA will be producing from fractured bedrock of the Payne Cliffs Formation. Wells in this aquifer system typically produce less than 50 gpm. There are no current OWRD observation well data within 1 mile of the proposed POA so aquifer over-appropriation cannot be determined. However, a cluster of observation wells accessing the Payne Cliffs Formation 1-2 miles to the east shows relatively stable water levels over the previous 10-20 years (see Figure 3).

There are several valid POAs within 0.5 miles of the applicant's wells, posing the risk of injury to senior water rights. However, adjacent taxlot density (as a proxy for well development) is moderate and the Department is unaware of any historic interference problems. Similarly, the above mentioned cluster of observation wells has similar development density, and water levels do not show systemic decline. As such, it is unlikely that the proposed use at the rate requested will cause injury to adjacent senior users.

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	Bedrock of Payne Cliffs Fm.	☒	☐
2	Bedrock of Payne Cliffs Fm.	☒	☐
3	Bedrock of Payne Cliffs Fm.	☒	☐

Basis for aquifer confinement evaluation: The well logs for the applicant's wells report "First Water" at 212 feet BLS and 67 feet and a SWL of 40 feet and 26 feet BLS, respectively. Adjacent well logs report similar confined conditions. The reviewer assumes that Well 3, when drilled, will encounter similar hydraulic conditions.

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	Snider Creek	1373	1355	4990	☒	☐	☐	☐	☒
2	1	Snider Creek	1374	1355	4530	☒	☐	☐	☐	☒
3	1	Snider Creek	**	1355	4300	☒	☐	☐	☐	☒
1	2	Constance Creek	1373	1330	~10000*	☒	☐	☐	☐	☒
2	2	Constance Creek	1374	1330	~10000*	☒	☐	☐	☐	☒
3	2	Constance Creek	**	1330	~11000*	☒	☐	☐	☐	☒

Basis for aquifer hydraulic connection evaluation: Observed SWL elevations are higher than perennial stream elevations, indicating that groundwater flows towards and discharges to surface water.

*Distance measured to Constance Creek is to the nearest point where the creek is assumed to be hydraulically connected to the groundwater system based on aerial imagery and OWRD staff site visits.

**Well 3 is proposed. The reviewer assumes that Well 3, when drilled, will encounter similar hydraulic conditions.

Water Availability Basin the well(s) are located within: ROGUE R > PACIFIC OCEAN - AB CURRY G AT GAGE 14359000 #270; **PSI also evaluated for** SNIDER CR > ROGUE R - AT MOUTH #71626

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	☐	☐	IS71626A	0.96	☒	0.90	☒	<1%	☒
2	1	☐	☐	IS71626A	0.96	☒	0.90	☒	<1%	☒
3	1	☐	☐	IS71626A	0.96	☒	0.90	☒	<1%	☒
		☐	☐			☐		☐		☐
		☐	☐			☐		☐		☐
		☐	☐			☐		☐		☐

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?
	1		☐	IS71626A	0.96	☒	0.90	☒		☒
			☐			☐		☐		☐
			☐			☐		☐		☐

Comments: Pumping effects on adjacent surface water sources are evaluated using the Hunt (2003) stream depletion model with aquifer parameters representative of the local geology. Model parameters and results for the closest well-surface water source combination are presented in Figure 4.

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#	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb
1	2												
Well Q as CFS		0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29
Interference CFS													
(A) = Total Interf.													
(B) = 80 % Nat. Q		1130	1130	1130	1130	1130	1130	1130	1130	1130	1130	1130	1130
(C) = 1 % Nat. Q		11	11	11	11	11	11	11	11	11	11	11	11
(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: Impacts on hydraulically connected streams greater than 1 mile (Constance Creek) from the applicant's POAs are not calculated because they would be compared with expected flows calculated from the WAB ROGUE R > PACIFIC OCEAN - AB CURRY G AT GAGE. The 80% exceedance flow minimum is 1130 cfs. The total proposed rate (0.29 cfs) is much less than 1% of natural flows (12 cfs). 100% streamflow capture would not trigger an assumption of PSI as per OAR 690-009

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 POA would produce from an aquifer that has been determined to be hydraulically connected to surface water. The total and individual proposed rate of 0.29 cfs is larger than 1% of the instream water right (1% of 0.96 cfs) and 1% of the expected natural flows (1% of 0.90 cfs) in Snider Creek, thus triggering an assumption of PSI per OAR 690-0040(4). The applicant would need to reduce their **total** proposed rate to < 0.009 cfs to avoid triggering an assumption of PSI.

References Used: Hunt, B. 2003. *Unsteady Stream Depletion when Pumping from a Semiconfined Aquifer*. Journal of Hydrologic Engineering. Vol 8(1), pp 12-19

OWRD Groundwater Site Information System Database – Accessed 7/17/2018.

Wiley, T. J., and Hladky, F. R. , 1991, Geology and mineral resources of the Boswell Mountain quadrangle, Jackson County, Oregon: Oregon Department of Geology and Mineral Industries Geologic Map Series GMS-70, scale 1:24,000.

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.**

Figure 1. Water Availability Tables

DETAILED REPORT ON THE WATER AVAILABILITY CALCULATION

Watershed ID #: 270 ROGUE R > PACIFIC OCEAN - AB CURRY G AT GAGE 14359000 Exceedance Level: 80
 Time: 3:43 PM Basin: ROGUE Date: 04/12/2018

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	2,180.00	1,130.00	1,050.00	0.00	1,200.00	-148.00
FEB	2,710.00	2,050.00	665.00	0.00	1,200.00	-535.00
MAR	2,750.00	1,820.00	933.00	0.00	1,200.00	-267.00
APR	2,810.00	1,040.00	1,770.00	0.00	1,200.00	574.00
MAY	2,750.00	368.00	2,380.00	0.00	1,200.00	1,180.00
JUN	1,760.00	343.00	1,420.00	0.00	1,200.00	217.00
JUL	1,330.00	368.00	962.00	0.00	1,200.00	-238.00
AUG	1,160.00	330.00	830.00	0.00	1,200.00	-370.00
SEP	1,130.00	275.00	855.00	0.00	1,200.00	-345.00
OCT	1,160.00	227.00	933.00	0.00	1,200.00	-267.00
NOV	1,370.00	344.00	1,030.00	0.00	1,200.00	-174.00
DEC	1,810.00	562.00	1,250.00	0.00	1,200.00	48.40
ANN	1,900,000	529,000	1,370,000	0	869,000	532,000

DETAILED REPORT ON THE WATER AVAILABILITY CALCULATION

Watershed ID #: 71626 SNIDER CR > ROGUE R - AT MOUTH Exceedance Level: 80
 Time: 3:54 PM Basin: ROGUE Date: 04/12/2018

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	8.40	1.80	6.60	0.00	26.00	-19.40
FEB	17.20	2.13	15.10	0.00	26.00	-10.90
MAR	12.40	1.39	11.00	0.00	26.00	-15.00
APR	8.61	0.51	8.10	0.00	11.80	-3.70
MAY	4.44	0.81	3.63	0.00	4.98	-1.35
JUN	2.07	1.13	0.94	0.00	4.92	-3.98
JUL	1.23	1.51	-0.28	0.00	2.58	-2.86
AUG	1.04	1.25	-0.21	0.00	1.60	-1.81
SEP	0.94	0.82	0.12	0.00	0.96	-0.84
OCT	0.90	0.27	0.63	0.00	1.00	-0.37
NOV	1.01	0.18	0.83	0.00	2.55	-1.72
DEC	4.33	0.91	3.42	0.00	14.70	-11.30
ANN	7,760	765	6,990	0	7,390	352

Figure 2. Well Location Map

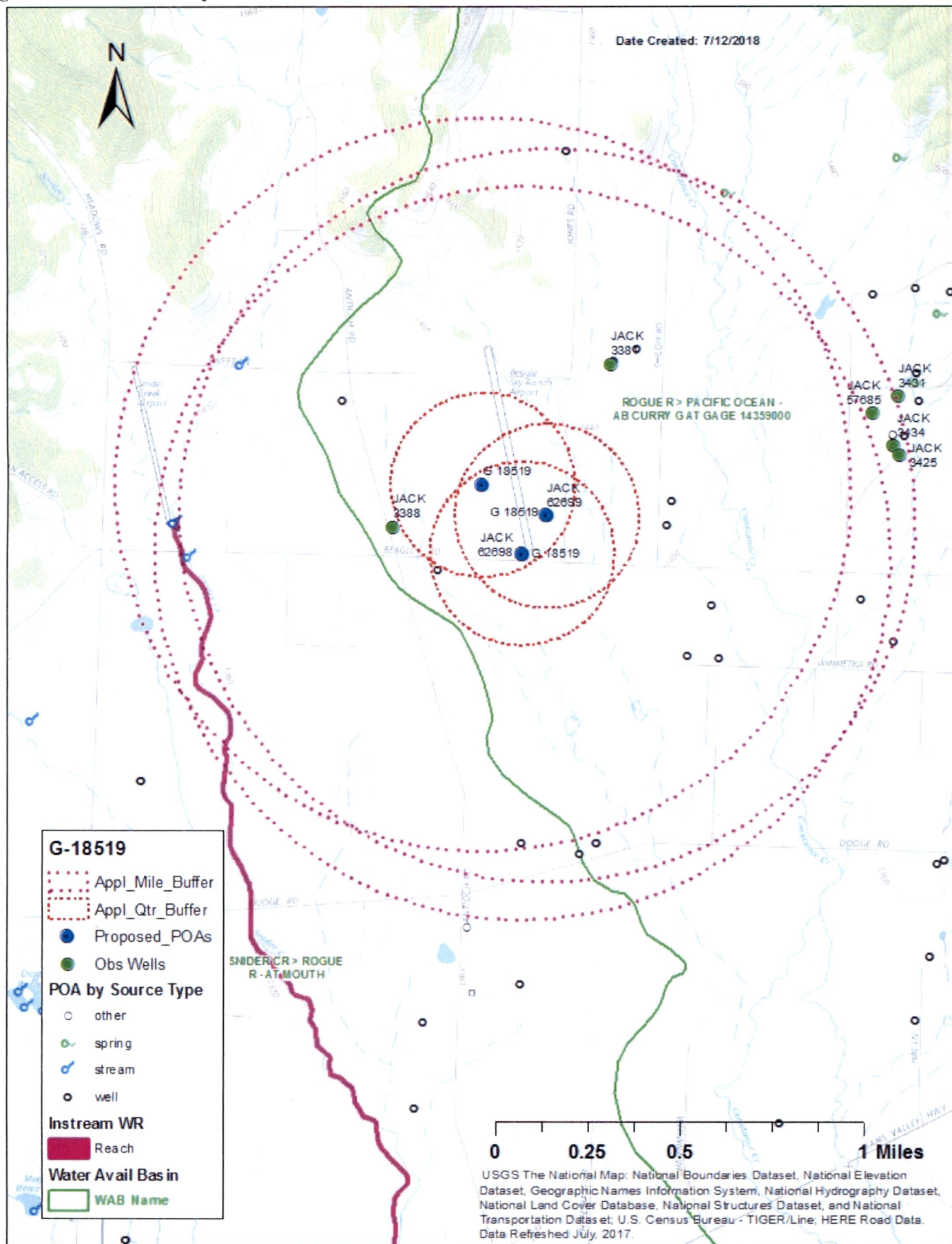


Figure 3. Water-Level Trends in Nearby Wells

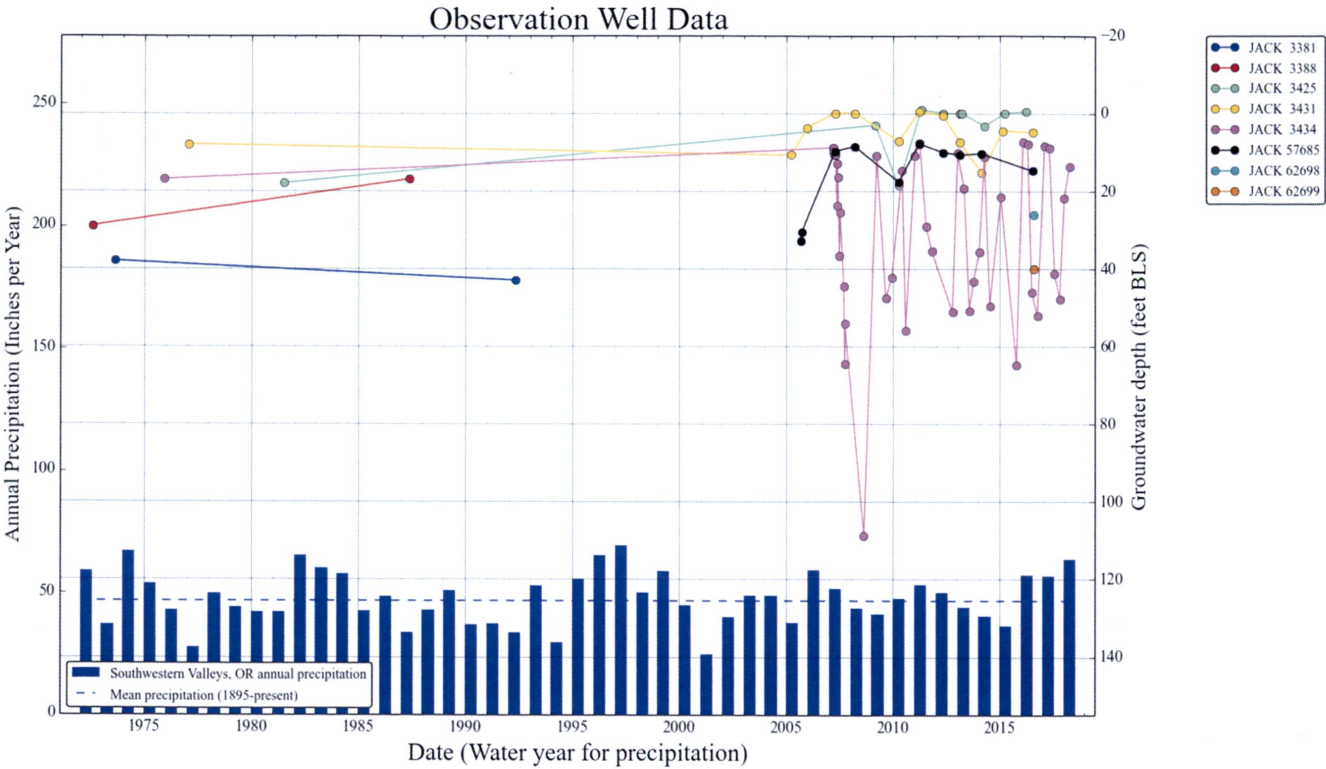


Figure 4. Stream Depletion Model

Application type:	G
Application number:	18519
Well number:	3
Stream Number:	1
Pumping rate (cfs):	0.1
Pumping duration (days):	365

Parameter	Symbol	Scenario 1	Scenario 2	Scenario 3	Units
Distance from well to stream	a	4300	4300	4300	ft
Aquifer transmissivity	T	1000	2500	5000	ft ² /day
Aquifer storativity	S	0.1	.05	0.01	-
Aquitard vertical hydraulic conductivity	Kva	0.01	0.05	0.1	ft/day
Aquitard saturated thickness	ba	10.0	15	20	ft
Aquitard thickness below stream	babs	4.0	3	2	ft
Aquitard specific yield	Sya	0.2	0.2	0.2	-
Stream width	ws	10	10	10	ft

Stream depletion for Scenario 2:

Days	10	30	60	90	120	150	180	210	240	270	300	330	360
Depletion (%)	0	0	0	0	0	0	0	0	0	0	0	1	1
Depletion (cfs)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

