# **Groundwater Application Review Summary Form**

Application # G- 18555
GW Reviewer Phil Marcy Date Review Completed: 5/9/2018
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.
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).

Version: 3/30/17

## WATER RESOURCES DEPARTMENT

MEMO	)						_	May	4	_,20_/	3
TO:			tion G-					,			
FROM	FROM: GW: Pt Marcy (Reviewer's Name)										
SUBJECT: Scenic Waterway Interference Evaluation											
	YES	The sou	uras of a	nnronri	etion is	within a	or above	o Scan	ic Wate	rwow	
	NO	The sou	irce or a	рргорп	ation is	WILIIII	or above	a Scen	ic water	lway	
		Use the Scenic Waterway condition (Condition 7J)									
M	NO										
	Per ORS 390.835, the Groundwater Section is <b>able</b> 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.											
Watery	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
111111111111111111111111111111111111111											

## PUBLIC INTEREST REVIEW FOR GROUNDWATER APPLICATIONS

TO: FROM	;		r Rights S ndwater S	ection		D	I. Marcy		e <u>05/08/</u>				
SUBJE	CT:	Appl	ication G-	18555		Suj	persedes	review of					
		,									Date of Re	view(s)	
OAR 69 welfare, to determ	<b>90-310-1</b> . safety armine whe	<b>30 (1)</b> <i>ind heal</i> ether th	The Departs th as descri e presumpt	ibed in ORS ion is establ	resume that 537.525. D ished. OAR	t a propose epartment . 690-310-	ed ground staff revi 140 allow	lwater use will ew groundwate ts the proposed nd agency pol	er applica use be m	tions us odified	nder OAl l or condi	R 690-31 tioned to	0-140 meet
A. GEN	GENERAL INFORMATION: Applicant's Name: Nathan H. Wilson County: Baker												
A1.	Applica	nt(s) se						Powder		,			_ Basin,
A2.	Propose	d use _		gation (5 ac				March 1 <sup>st</sup> – O	ctober 31	st (245	days)		
A3.	Well an	d aquif	er data (att	ach and nu	mber logs f	for existin	g wells; r	nark proposed	l wells as	such ı	ınder log	gid):	
Well	Logic		Applicant Well #	Propos	sed Aquifer*	Prop Rate	(cfs)	(T/R-S QQ	Location (T/R-S QQ-Q) 8S/39E-19 SW-NE		Location, metes and bounds, e.g. 2250' N, 1200' E fr NW cor S 36 1400'S, 1600'W fr NE cor S 19*		
2	Тторозс				Tru vium	0.17					0 5, 1000		1517
3 4													
5 * Alluviu	ım, CRB,	Bedroc	k										
Well	Well Elev ft msl 3611	First Water ft bls NA	. SWL	SWL Date	Well Depth (ft)	Seal Interval (ft) 0-40	Casing Intervals (ft) 0-40		Perfora Or Scr (ft)	eens	Well Yield (gpm) NA	Draw Down (ft) NA	Test Type NA
Use data	from appl	ication	for proposed	wells.									
A4.	Comme the loca	ents: * tion as	The given i	netes and be	tion corner.	The propo	osed POA	e property bour well is designe n will be condi	ed to prod	luce fro	om alluvi		
A5. 🛛	Provisions of the Powder (690-509-0160)  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. 🗌													

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Date: 05/08/2018

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## B. GROUNDWATER AVAILABILITY CONSIDERATIONS, OAR 690-310-130, 400-010, 410-0070

B1.	Bas	sed 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 a 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.	$\square$ will not or $\square$ will likely to be available within the capacity of the groundwater resource; or							
	d.	<ul> <li>will, if properly conditioned, avoid injury to existing groundwater rights or to the groundwater resource:         <ol> <li>The permit should contain condition #(s) 7N - Annual measurement condition</li> <li>The permit should be conditioned as indicated in item 2 below.</li> </ol> </li> <li>The permit should contain special condition(s) as indicated in item 3 below;</li> </ul>							
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.	<ul> <li>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.</li> <li>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):</li> </ul>							
В3.	how and	bundwater availability remarks: There are four permitted POA wells within ¼ mile of the proposed POA location, ever, interference with these uses is not expected. A combination of low requested rate and relatively high transmissivity storativity within the unconfined alluvium here are anticipated to alleviate the potential for the proposed use to produce ensive drawdown at nearby wells.							
		ter levels in wells to the east and northeast are relatively stable (see attached hydrograph), but declines become more							
	grai	nounced further from the head of the alluvial fan where the proposed POA is located. A greater percentage of fine- ned, low permeability material is encountered downslope as well, leading to the deepening of some nearby irrigation ls. In each case, the pre-deepening and post-deepening static water level is reported as the same, indicating that the							
	aqu	ifer system is well-connected overall and represents a single unconfined aquifer in equilibrium with atmospheric pressure							

#### 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	Alluvial fan and terrace deposits		$\boxtimes$

Basis for aquifer confinement evaluation: Water-bearing zones within alluvial sand and gravel deposits of the Baker Valley are interfingered with lower permeability, fine-grained materials. Based upon the available data, these low permeability zones do not extend for any considerable distance, leading to communication between various sand and gravel deposits encountered within each well. Common head elevations across water-bearing deposits within each well, in addition to common head elevations between wells, as reported on area well logs is evidence for an extensive, interconnected alluvial aquifer system.

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? YES NO ASSUMED	Potential for Subst. Interfer. Assumed? YES NO
1	1	Hunt Creek	~3550	3680	6200		
		*					

Basis for aquifer hydraulic connection evaluation: Local streams, such as Hunt Creek receive their baseflow from discharge of groundwater through the unconfined alluvial aquifer here. This groundwater originates as surface runoff from the hills and mountains to the west of the proposed POA locations, due to the predominance of low permeability bedrock. As the streams reach the valley floor, they often disappear or become intermittent as water travels through the shallow high permeability aquifer, reappearing when the stream channel intercepts the water table. In this type of system, withdrawal of groundwater has a direct impact on streamflow, most notably during the drier parts of the year, when the lowest flows are expected. According to the local Watermaster (pers. comm. with Rick Lusk, 01/15/2016), neither Williams Creek nor Hunt Creek are regulated. Williams Creek will not be evaluated here because it is not a perennial stream.

Water Availability Basin the well(s) are located within: Powder R > Snake R - AB Rock Cr. (ID# 30920327)

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			IS72191B	25		12.60		<<25%	

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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: Interference to Hunt Creek after 30 days is expected to be much less than 25% of the pumping rate, due to its
location being greater than one mile from the proposed POA well.
· ·

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-Di	istributed	Wells	·										
Well	SW#	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
		%	%	%	%	%	%	%	%	%	%	%	%
Well Q	as CFS												
Interfere	ence CFS												
Dietrib	uted Well	c											
Well	SW#	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
		%	%	%	%	%	%	%	%	%	%	%	%
Well Q	as CFS						8						
Interfere	ence CFS												
		%	%	%	%	%	%	%	%	%	%	%	%
Well Q	as CFS												
Interfere	ence CFS												
		%	%	%	%	%	%	%	%	%	%	%	%
Well Q	as CFS												
Interfere	ence CFS												
		%	%	%	%	%	%	%	%	%	%	%	%
Well Q	as CFS												
Interfere	ence CFS												
		%	%	%	%	%	%	%	%	%	%	%	%
	as CFS												
Interfere	ence CFS												
		%	%	%	%	%	%	%	%	%	%	%	%
	as CFS	,											
Interfere	ence CFS							100 000 11 100 0 page 1	Sec. 807 - 20 10 100 100 100 100 100 100 100 100 1				
(A) = To	tal Interf.												
	% Nat. Q												
	% Nat. Q												
		/					700 N 10 10 10 10 10 10 10 10 10 10 10 10 10		7	(	75 - 1898 Service 7		100-400-60
	(A) > (C) / B) x 100	%	%	%	%	%	%	%	%	%	%	V 67	%
$(\mathbf{E}) = (\mathbf{A})$	/ D) X 100	%	%	%	%	%	%	%	%	%	%	%	%

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	pact evaluation: This section does not apply.
690-09-04 Rights S	0(5)(b) The potential to impair or detrimentally affect the public interest is to be determined by the W Section.
under this	y conditioned, the surface water source(s) can be adequately protected from interference, and/or groundwater upermit can be regulated if it is found to substantially interfere with surface water:  The permit should contain condition #(s)
ii.	The permit should contain special condition(s) as indicated in "Remarks" below;
Brooks, et al., ertical ground	ans and glacial erosion, composed of sands, gravels, and cobbles, intermixed with finer grained silts and clays 1976). Map units Qal and Qtg of Brooks, et al. (1976) do not contain any known laterally extensive barriers to lwater movement, and wells constructed within these units will be considered hydraulically connected to surfact case, the POA well is located a significant distance from surface water, and expected to have minimal impacts to the position of the position o
	ed: Brooks, H.C., McIntyre, J.R., and Walker, G.W. Geologic Map of the Oregon Part of the Baker 1 degree Ingle/GMS 7. Scale 1:250,000. State of Oregon Department of Geology and Mineral Industries, 1976.
egree Quadrai	ngle/GMS 7. Scale 1:250,000. State of Oregon Department of Geology and Mineral Industries, 1976.  1951). Ground-Water Resources of Baker Valley, Baker County, Oregon. Portland, Oregon: United States
legree Quadrai Frauger, F.D. ( Geological Sur	ngle/GMS 7. Scale 1:250,000. State of Oregon Department of Geology and Mineral Industries, 1976.  1951). Ground-Water Resources of Baker Valley, Baker County, Oregon. Portland, Oregon: United States

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## D. WELL CONSTRUCTION, OAR 690-200

D1.	Well #:	Logid:
D2.	a. review of the well log; b. field inspection by report of CWRE d. other: (specify)	t current well construction standards based upon:
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.

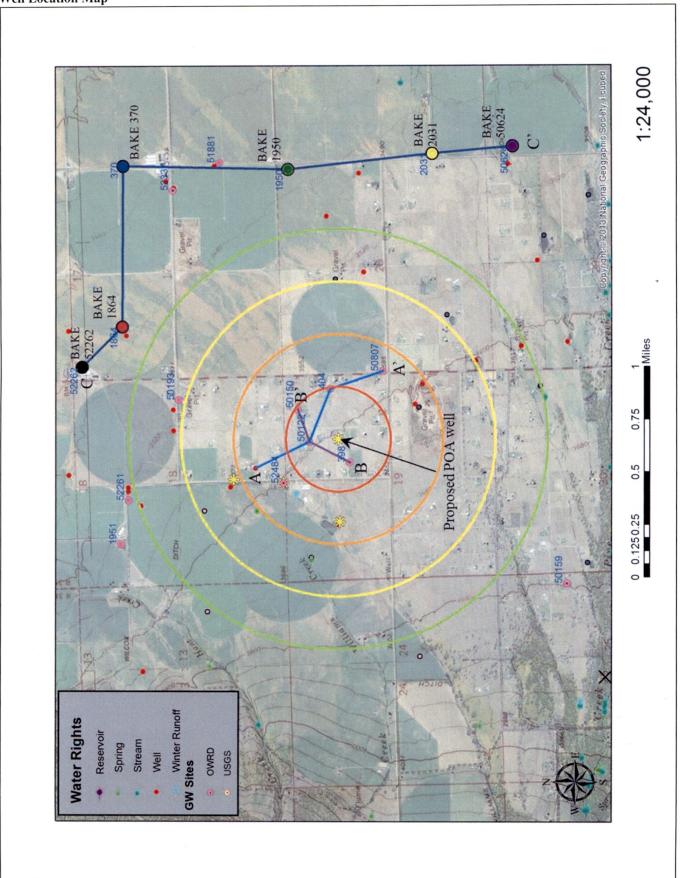
### Water Availability Tables

		DETAILED REPORT	ON THE WATER AVAILA	ABILITY CALCULATIO	N	
Watershed ID #: 30920327 Time: 4:13 PM		POWDER R > SNAKE R - AB ROCK CR Basin: POWDER			Exceedance Level: 80 Date: 05/09/2018	
Month	Natural Stream Flow	Consumptive Use and Storage	Expected Stream Flow	Reserved Stream Flow	Instream Requirements	Net Water Available
		Storage is	Monthly values a the annual amount at	are in cfs. 50% exceedance i	n ac-ft.	
JAN	36.90	79.20	-42.30	0.76	25.00	-68.00
FEB	58.70	94.90	-36.20	1.08	30.00	-67.30
MAR	99.80	168.00	-67.80	2.07	40.00	-110.00
APR	213.00	244.00	-30.90	34.20	40.00	-105.00
MAY	300.00	429.00	-129.00	9.07	40.00	-179.00
JUN	163.00	521.00	-358.00	0.00	40.00	-398.00
JUL	42.00	321.00	-279.00	0.00	25.00	-304.00
AUG	17.60	238.00	-220.00	0.00	25.00	-245.00
SEP	12.60	195.00	-183.00	0.00	25.00	-208.00
OCT	15.40	76.50	-61.10	0.26	25.00	-86.30
NOV	25.20	61.60	-36.40	0.40	25.00	-61.80
DEC	34.90	72.80	-37.90	0.58	25.00	-63.50
ANN	114,000	151,000	18,100	2,900	22,000	7,340

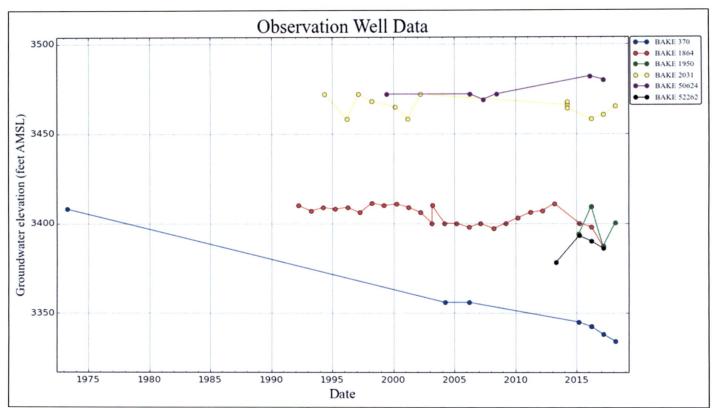
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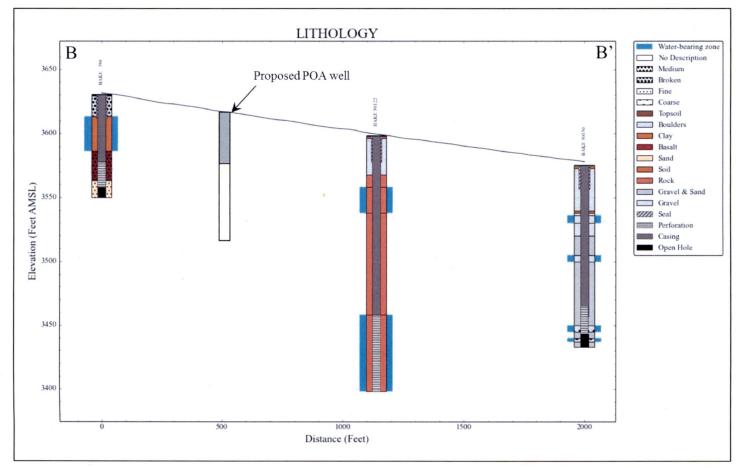
#### Water-Level Trends in Nearby Wells



Water level data from nearby wells (see attached map for locations), unfortunately no observation wells exist within one mile of the proposed POA well. Cross-sections of lithology and construction display that these wells are completed in a similar fashion, though some have been deepened without any significant change in head elevation. In map view, a distinct trend emerges with heads decreasing toward the northeast, away from the head of the alluvial fan that the proposed POA well is located on.

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