

PUBLIC INTEREST REVIEW FOR GROUNDWATER APPLICATIONS

TO: Water Rights Section Date 11/23/2015
 FROM: Groundwater Section Phillip I. Marcy / Ivan K. Gall
Reviewer's Name
 SUBJECT: Application G- 18107 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: Brent Freese County: Baker

A1. Applicant(s) seek(s) 0.32 cfs from 1 well(s) in the Powder Basin,
 _____ subbasin

A2. Proposed use Primary Irrigation of 19.17 acres Seasonality: March 1st – October 31st (245 days)

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	BAKE 52397	1	Alluvium	0.32	9S/40E-2 SE-NE	1935'S, 615'W fr NE cor S 2
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	3400	120	33	02/04/2015	185	0-19	+2-139	-	-	115	-	Air

Use data from application for proposed wells.

A4. **Comments:** Well completed into claystone and gravels and log states a yield of 115 GPM (0.26 CFS), significantly less than the requested pumping rate.

A5. **Provisions of the** Powder (690-509) 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: _____

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	Silts and gravels (likely unit Qtg of Brooks, 1976)	<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"/>

Basis for aquifer confinement evaluation: Well is likely completed into alluvial fan and terrace deposits (Qtg of Brooks, et al., 1976) that are composed of laterally discontinuous facies of units of varying permeability. Therefore, isolation of one water-bearing strata from another is unlikely, even at depth within the alluvial sequence.

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	Baldock Slough	3367	3379	3650	<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"/>

Basis for aquifer hydraulic connection evaluation: The terrace and alluvial fan deposits within the Baker Valley contain no laterally continuous barrier that would inhibit the vertical flow migration of groundwater. There is likely an inefficient hydraulic connection between lenses of relatively high permeability materials and surface waters. This connection likely becomes less efficient with depth, however, as the tortuosity of the path groundwater must travel to reach the surface increases.

Water Availability Basin the well(s) are located within: Baldock Slough > Powder River – At Mouth (30920330)

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	<input type="checkbox"/>	<input type="checkbox"/>	-	-	<input type="checkbox"/>	.06	<input checked="" type="checkbox"/>	12.53	<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"/>

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: Analytical model of Hunt (1999) predicts 0.097 CFS of interference to Baldock Slough at 240 days of pumping. Parameters for the model run include local pump tests, showing transmissivity values of 5,000 ft²/day to 10,000 ft²/day, a storativity of 0.01, commonly used for unconfined aquifers, in addition to empirical data relating to water table elevations and horizontal distance between the well and Baldock Slough.

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		%	%	%	%	%	%	%	%	%	%	%	%

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.**

Water Availability Tables

DETAILED REPORT ON THE WATER AVAILABILITY CALCULATION

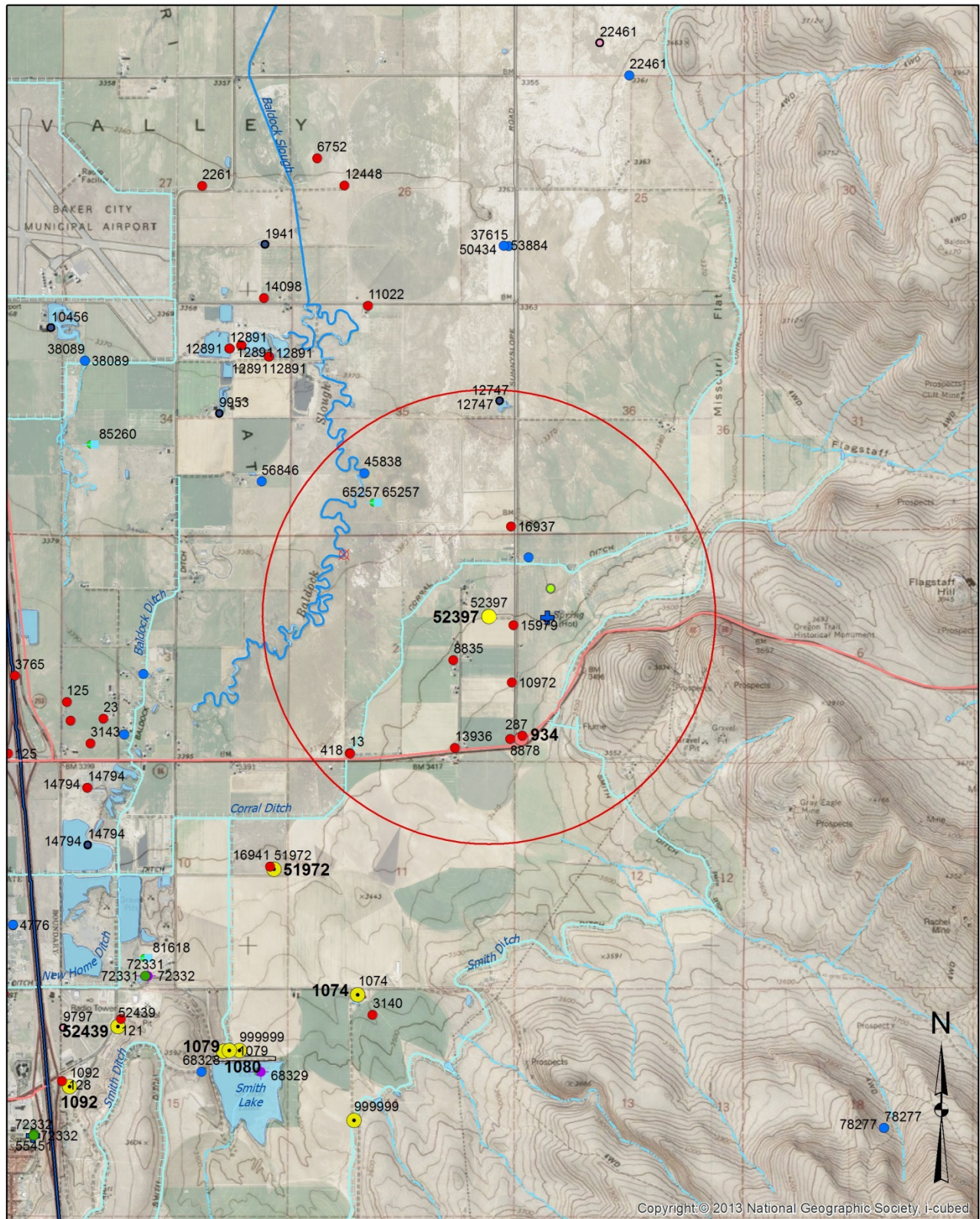
watershed ID #: 30920330
Time: 10:33 AM

BALDOCK SL > POWDER R - AT MOUTH
Basin: POWDER

Exceedance Level: 80
Date: 11/23/2015

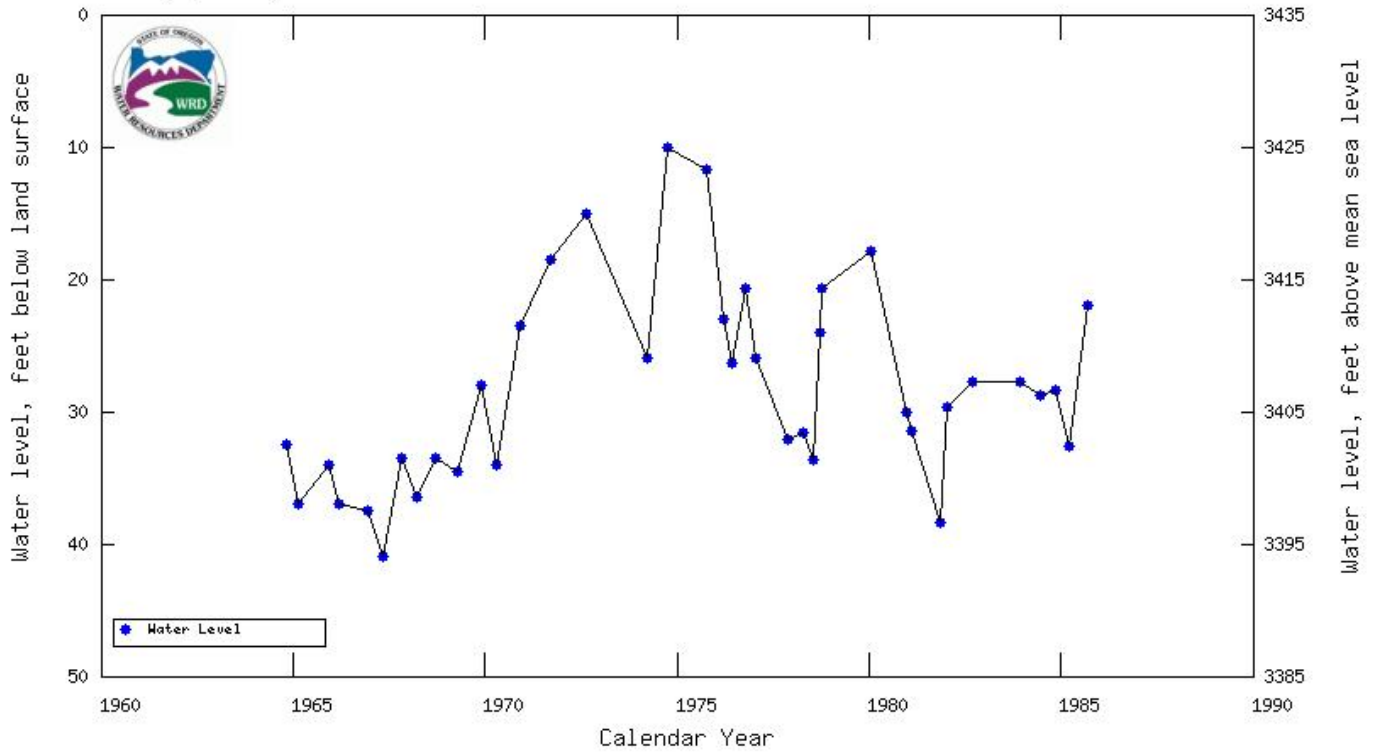
Month	Natural Stream Flow	Consumptive Use and Storage	Expected Stream Flow	Reserved Stream Flow	Instream Requirements	Net Water Available
Monthly values are in cfs. Storage is the annual amount at 50% exceedance in ac-ft.						
JAN	0.58	0.24	0.34	0.00	0.00	0.34
FEB	2.18	0.24	1.94	0.00	0.00	1.94
MAR	4.32	0.28	4.04	0.00	0.00	4.04
APR	10.90	1.53	9.37	0.00	0.00	9.37
MAY	3.49	4.70	-1.21	0.00	0.00	-1.21
JUN	0.75	5.31	-4.56	0.00	0.00	-4.56
JUL	0.17	3.02	-2.85	0.00	0.00	-2.85
AUG	0.07	1.30	-1.23	0.00	0.00	-1.23
SEP	0.06	0.83	-0.77	0.00	0.00	-0.77
OCT	0.06	0.49	-0.43	0.00	0.00	-0.43
NOV	0.17	0.24	-0.07	0.00	0.00	-0.07
DEC	0.35	0.24	0.11	0.00	0.00	0.11
ANN	3,770	1,120	3,180	0	0	3,180

Well Location Map

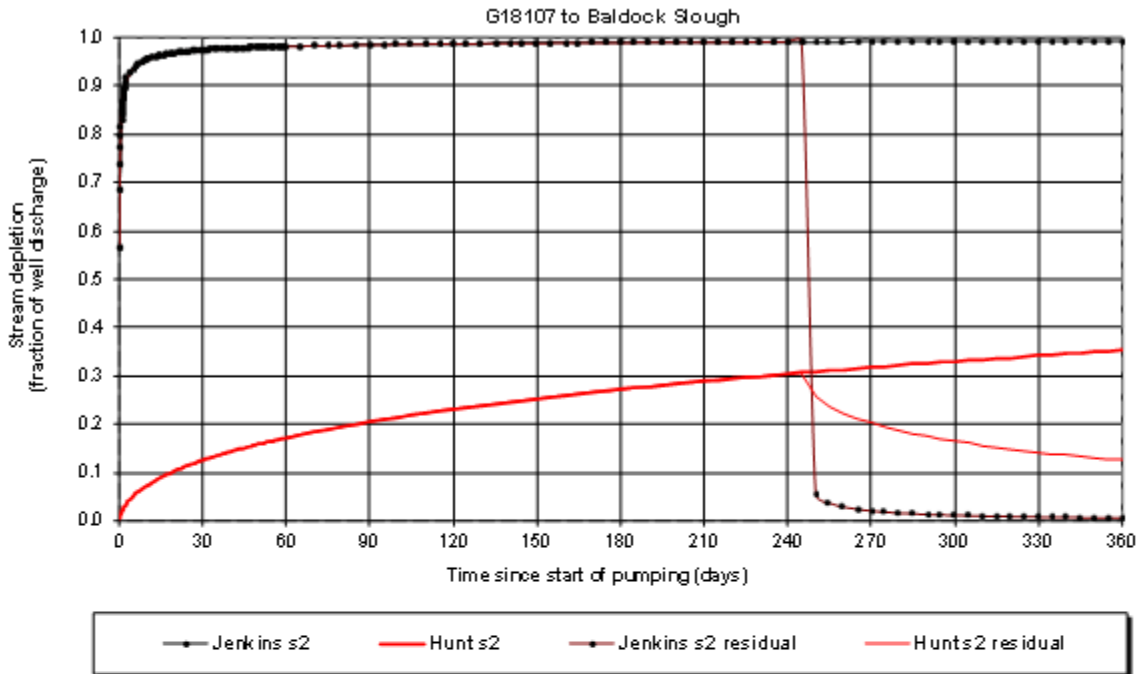


Water-Level Trends in Nearby Wells

Oregon Water Resources Department (OWRD) Well Location	9.00S/40.00E-1CCB
OWRD Logid	BAKE 934
OWRD Well Tag (Well ID)	----
OWRD State Observation Well Number	8
Total well depth (feet below land surface)	----
Land surface elevation (feet above mean sea level)	3435
Primary use of well	----
Primary aquifer system	----



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



Output for Hunt Stream Depletion, Scenario 2 (s2): Time pump on = 245 days

Days	30	60	90	120	150	180	210	240	270	300	330	360
Qw, cfs	0.320	0.320	0.320	0.320	0.320	0.320	0.320	0.320	0.320	0.320	0.320	0.320
Jenk SD s2 %	97.34	98.12	98.47	98.67	98.81	98.91	99.00	99.06	2.03	1.12	0.78	0.59
Jen SD s2 cfs	0.311	0.314	0.315	0.316	0.316	0.317	0.317	0.317	0.008	0.004	0.002	0.002
Hunt SD s2 %	12.53	17.18	20.48	23.11	25.31	27.20	28.88	30.39	20.26	16.47	14.17	12.53
Hunt SD s2 cfs	0.040	0.055	0.066	0.074	0.081	0.087	0.092	0.097	0.065	0.053	0.045	0.040

Parameters:		Scenario 1	Scenario 2	Scenario 3	Units
Net steady pumping rate	Qw	0.32	0.32	0.32	cfs
Distance to stream	a	3650	3650	3650	ft
Aquifer hydraulic conductivity	K	5000	10000	15000	ft/day
Aquifer thickness	b	200	200	200	ft
Aquifer transmissivity	T	1000000	2000000	3000000	ft ² /day
Aquifer storage coefficient	S	0.01	0.01	0.01	
Stream width	ws	20	20	20	ft
Streambed hydraulic conductivity	Ks	1	1	1	ft/day
Streambed thickness	bs	3	3	3	ft
Streambed conductance	sbc	6.66666667	6.66666667	6.66666667	ft/day
Stream depletion factor (Jenkins)	sdf	0.133225	0.0666125	0.044408333	days
Streambed factor (Hunt)	sbf	0.024333333	0.012166667	0.008111111	

STATE OF OREGON
WATER SUPPLY WELL REPORT
(as required by ORS 537.765 & OAR 690-205-0210)

BAKE 52397

WELL I.D. LABEL# L 116485
START CARD # 1025510
2/25/2015 ORIGINAL LOG #

(1) LAND OWNER
Owner Well ID. _____
First Name BRENT & TERESA Last Name FREESE
Company _____
Address PO BOX 1122
City BAKER CITY State OR Zip 97814

(2) TYPE OF WORK New Well Deepening Conversion
 Alteration (complete 2a & 10) Abandonment (complete 5a)

(2a) PRE-ALTERATION
Dia + From To Gauge Stl Plstc Wld Thrd
Casing: _____
Material From To Amt sacks/lbs
Seal: _____

(3) DRILL METHOD
 Rotary Air Rotary Mud Cable Auger Cable Mud
 Reverse Rotary Other _____

(4) PROPOSED USE Domestic Irrigation Community
 Industrial/ Commercial Livestock Dewatering
 Thermal Injection Other _____

(5) BORE HOLE CONSTRUCTION Special Standard (Attach copy)
Depth of Completed Well 185.00 ft.

BORE HOLE SEAL sacks/lbs

Dia	From	To	Material	From	To	Amt	Seal
12	0	19	Bentonite Chips	0	19	16	S
8	19	185				Calculated 10.77	
						Calculated	

How was seal placed: Method A B C D E
 Other POURED DRY
Backfill placed from _____ ft. to _____ ft. Material _____
Filter pack from _____ ft. to _____ ft. Material _____ Size _____
Explosives used: Yes Type _____ Amount _____

(5a) ABANDONMENT USING UNHYDRATED BENTONITE
Proposed Amount _____ Actual Amount _____

(6) CASING/LINER
Casing Liner Dia + From To Gauge Stl Plstc Wld Thrd
 8 2 139 250
Shoe Inside Outside Other Location of shoe(s) 138
Temp casing Yes Dia _____ From _____ To _____

(7) PERFORATIONS/SCREENS
Perforations Method _____
Screens Type _____ Material _____
Perf/ Casing/Screen Dia From To Scrm/slot Slot # of Tele/ Screen Liner Dia From To width length slots pipe size

(8) WELL TESTS: Minimum testing time is 1 hour
 Pump Bailor Air Flowing Artesian
Yield gal/min Drawdown Drill stem/Pump depth Duration (hr)
115 _____ 185 _____ 1.5 _____

Temperature 55 °F Lab analysis Yes By _____
Water quality concerns? Yes (describe below) TDS amount

From	To	Description	Amount	Units

(9) LOCATION OF WELL (legal description)
County BAKER Twp 9.00 S N/S Range 40.00 E E/W WM
Sec 2 NE 1/4 of the NE 1/4 Tax Lot 400
Tax Map Number _____ Lot _____
Lat _____ or _____ DMS or DD
Long _____ or _____ DMS or DD
 Street address of well Nearest address
42940 SUNNYSLOPE RD
BAKER CITY, OR 97814

(10) STATIC WATER LEVEL

Existing Well / Pre-Alteration Completed Well	Date	SWL (psi)	+ SWL (ft)
	2/4/2015		33

Flowing Artesian? Dry Hole?

WATER BEARING ZONES Depth water was first found 5.00

SWL Date	From	To	Est Flow	SWL (psi)	+ SWL (ft)
2/3/2015	5	6	3		4
2/4/2015	120	185	115		33

(11) WELL LOG

Material	From	To
CLAY	0	5
SAND, CLAY	5	6
CLAY	6	10
HARD CLAYSTONE	10	120
CLAYSTONE, CEMENTED GRAVELS	120	185

Ground Elevation _____

DRAFT

Date Started 2/3/2015 Completed 2/4/2015

(unbonded) Water Well Constructor Certification
I certify that the work I performed on the construction, deepening, alteration, or abandonment of this well is in compliance with Oregon water supply well construction standards. Materials used and information reported above are true to the best of my knowledge and belief.
License Number _____ Date _____
Signed _____

(bonded) Water Well Constructor Certification
I accept responsibility for the construction, deepening, alteration, or abandonment work performed on this well during the construction dates reported above. All work performed during this time is in compliance with Oregon water supply well construction standards. This report is true to the best of my knowledge and belief.
License Number 1816 Date 2/25/2015
Signed STEVEN J COLEY (E-filed)
Contact Info (optional) 541-519-0618