PUBLIC INTEREST REVIEW FOR GROUND WATER APPLICATIONS

TO: Water Rights Section Date **September 30, 2005**

FROM: Ground Water/Hydrology Section **Michael Zwart**
Reviewer's Name

SUBJECT: Application G- **16484** 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: **Randy Marshall** County: **Wasco**

A1. Applicant(s) seek(s) **1.0** cfs from **one** well(s) in the **Deschutes** Basin, **White River** subbasin Quad Map: **Wamic**

A2. Proposed use: **Irrigation, 281.3 acres** Seasonality: **March 1 to October 31**

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	**WASC 51293**	1	**Dalles Fm.**	**1.0**	**4S/12E-33 NW-SE**	**2037' W, 1984' N fr SE cor S 33**
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	**2005**	**610**	**530**	**8/25/04**	**918**	**0-20**	**0-20**	**None**	**None**	**280**	**387**	**Air**

Use data from application for proposed wells.

A4. **Comments:** **Drawdown estimated from air test.**

A5. ☒ **Provisions of the Deschutes** 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) _____;
   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:** _____

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	**The Dalles Fm. (Td) of Waters, 1968.**	☒	☐
		☐	☐
		☐	☐
		☐	☐
		☐	☐

Basis for aquifer confinement evaluation: **The static water level is above the level that water was first encountered in the well bore.**

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	**Gate Creek**	**1475**	**1840**	**1000**	☐	☒	☐	☐	☒
1	2	**Rock Creek**	**1475**	**1800**	**5100**	☐	☒	☐	☐	☒
1	3	**White River**	**1475**	**1375**	**7400**	☒	☐	☐	☐	☒
						☐	☐	☐	☐	☐
						☐	☐	☐	☐	☐
						☐	☐	☐	☐	☐
						☐	☐	☐	☐	☐
						☐	☐	☐	☐	☐

Basis for aquifer hydraulic connection evaluation: **The White River is deeply incised into the Dalles Formation, likely below the water-bearing zone at the indicated reach. Also, the head relationship suggests that ground water discharges to the river.**

Water Availability Basin the well(s) are located within: **White R > Deschutes R at mouth (70088).**

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?
		☐	☐			☐		☐		☐
		☐	☐			☐		☐		☐
		☐	☐			☐		☐		☐
		☐	☐			☐		☐		☐
		☐	☐			☐		☐		☐
		☐	☐			☐		☐		☐
		☐	☐			☐		☐		☐

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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: This section does not apply.

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
1	3	16.9%	14.8%	10.4%	16.3%	20.6%	23.9%	26.7%	29.0%	31.1%	32.9%	24.2%	19.8%
Well Q as CFS				1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		
Interference CFS		.169	.148	.104	.163	.206	.239	.267	.29	.311	.329	.242	.198

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													
		%	%	%	%	%	%	%	%	%	%	%	%
Well Q as CFS													
Interference CFS													

(A) = Total Interf.	.169	.148	.104	.163	.206	.239	.267	.29	.311	.329	.242	.198
(B) = 80 % Nat. Q	250	366	376	452	477	290	192	159	148	149	151	211
(C) = 1 % Nat. Q	2.5	3.66	3.76	4.52	4.77	2.9	1.92	1.59	1.48	1.49	1.51	2.11
(D) = (A) > (C)												
(E) = (A / B) x 100	.068%	.04%	.028%	.036%	.043%	.082%	.139%	.182%	.21%	.221%	.16%	.094%

(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: Used Wozniak modification of the Hunt (1999) stream depletion model.

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) 7J ;

ii. ☐ The permit should contain special condition(s) as indicated in "Remarks" below;

C6. **SW / GW Remarks and Conditions**

References Used: Local well logs; Geologic map of the Dufur Quad. (I-556) by A. C. Waters, 1968.

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D. WELL CONSTRUCTION, OAR 690-200

D1. **Well #:** 1 **Logid:** WASC 51293

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 Resources Department

MEMO September 30, 2005

TO **Application G-** 16484

FROM **GW:** Michael Zwart
(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).

PREPONDERANCE OF EVIDENCE FINDING: (Check box only if statement is true)

☐ At this time the Department is unable to find that there is a preponderance of evidence that the proposed use of ground water will measurably reduce the surface water flows necessary to maintain the free-flowing character of a scenic waterway in quantities necessary for recreation, fish and wildlife.

FLOW REDUCTION: *(To be filled out only if Preponderance of Evidence box is not checked)*

Exercise of this permit is calculated to reduce monthly flows in Deschutes 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

To be calculated upon update of scenic waterway stream depletion model.

12	146.00	37.60	4.80	61.30	147.00	27.90	25.00	450.00

DETAILED REPORT OF INSTREAM REQUIREMENTS
Water Availability as of 9/29/2005 for
DESCHUTES R > COLUMBIA R - AT MOUTH

Watershed ID #: 70087 Basin: DESCHUTES Exceedance Level: 80
Time: 09:29 Date: 09/29/2005

			ISWRs				
APP #	TY-70501	SY-90506	IS 70087	IS 71194	0	0	0	MAXIMUM
Status	Treaty	SWW	Cert.	Cert.				
1	3000.00	4500.00	3000.00	4500.00	0.00	0.00	0.00	4500.00
2	3000.00	4500.00	3000.00	4500.00	0.00	0.00	0.00	4500.00
3	3500.00	4500.00	3500.00	4500.00	0.00	0.00	0.00	4500.00
4	3500.00	4000.00	3500.00	4000.00	0.00	0.00	0.00	4000.00
5	3500.00	4000.00	3500.00	4000.00	0.00	0.00	0.00	4000.00
6	3500.00	4000.00	3500.00	4000.00	0.00	0.00	0.00	4000.00
7	3000.00	4000.00	3000.00	4000.00	0.00	0.00	0.00	4000.00
8	3000.00	3500.00	3000.00	3500.00	0.00	0.00	0.00	3500.00
9	3000.00	3800.00	3000.00	3800.00	0.00	0.00	0.00	3800.00
10	3000.00	3800.00	3000.00	3800.00	0.00	0.00	0.00	3800.00
11	3000.00	3800.00	3000.00	3800.00	0.00	0.00	0.00	3800.00
12	3000.00	4500.00	3000.00	4500.00	0.00	0.00	0.00	4500.00

DETAILED REPORT ON THE WATER AVAILABILITY CALCULATION
Water Availability as of 9/29/2005 for
WHITE R > DESCHUTES R - AT MOUTH

Watershed ID #: 70088 Basin: DESCHUTES Exceedance Level: 80
Time: 09:29 Date: 09/29/2005

Month	Natural Stream Flow	CU + Stor Prior to 1/1/93	CU + Stor After 1/1/93	Expected Stream Flow	Reserved Stream Flow	Instream Water Rights	Net Water Available
1	250.00	10.70	8.83	230.00	0.00	60.00	170.00
2	366.00	14.30	17.90	334.00	0.00	100.00	234.00
3	376.00	22.10	14.30	340.00	0.00	145.00	195.00
4	452.00	42.00	18.60	391.00	0.00	145.00	246.00
5	477.00	105.00	13.40	358.00	0.00	145.00	213.00
6	290.00	112.00	15.40	163.00	0.00	100.00	62.60
7	192.00	77.50	10.70	104.00	0.00	60.00	43.80
8	159.00	62.70	8.28	88.00	0.00	60.00	28.00
9	148.00	55.20	7.87	84.90	0.00	60.00	24.90
10	149.00	44.80	0.00	104.00	0.00	60.00	44.20
11	151.00	5.07	0.00	146.00	0.00	60.00	85.90
12	211.00	7.93	0.00	203.00	0.00	60.00	143.00
Stor	276000	33900	6910	236000	0	63600	172000

DETAILED REPORT OF CONSUMPTIVE USES AND STORAGES
Water Availability as of 9/29/2005 for
WHITE R > DESCHUTES R - AT MOUTH

Watershed ID #: 70088 Basin: DESCHUTES Exceedance Level: 80
Time: 09:29 Date: 09/29/2005

Mo	Storage	Irrig	Munic	Ind/Man	Commer	Domest	Agricul	Other	Total
1	19.00	0.00	0.00	0.25	0.00	0.08	0.29	0.00	19.60
2	31.70	0.00	0.00	0.25	0.00	0.08	0.29	0.00	32.30
3	26.90	8.87	0.00	0.25	0.00	0.08	0.29	0.00	36.40
4	28.20	31.80	0.00	0.25	0.00	0.08	0.29	0.00	60.60

5	14.90	103.00	0.00	0.25	0.00	0.08	0.29	0.00	119.00
6	9.62	117.00	0.00	0.25	0.00	0.08	0.29	0.00	127.00
7	5.03	82.60	0.00	0.25	0.00	0.08	0.29	0.00	88.20
8	4.00	66.40	0.00	0.25	0.00	0.08	0.29	0.00	71.00
9	3.71	58.80	0.00	0.25	0.00	0.08	0.29	0.00	63.10
10	3.78	40.40	0.00	0.25	0.00	0.08	0.29	0.00	44.80
11	4.45	0.00	0.00	0.25	0.00	0.08	0.29	0.00	5.07
12	7.31	0.00	0.00	0.25	0.00	0.08	0.29	0.00	7.93

DETAILED REPORT OF RESERVATIONS FOR CONSUMPTIVE USE
Water Availability as of 9/29/2005 for
WHITE R > DESCHUTES R - AT MOUTH

Watershed ID #: 70088 Basin: DESCHUTES Exceedance Level: 80
Time: 09:29 Date: 09/29/2005

	Reservations							
APP #	0	0	0	0	0	0	0	TOTAL
Status Use								
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

DETAILED REPORT OF INSTREAM REQUIREMENTS
Water Availability as of 9/29/2005 for
WHITE R > DESCHUTES R - AT MOUTH

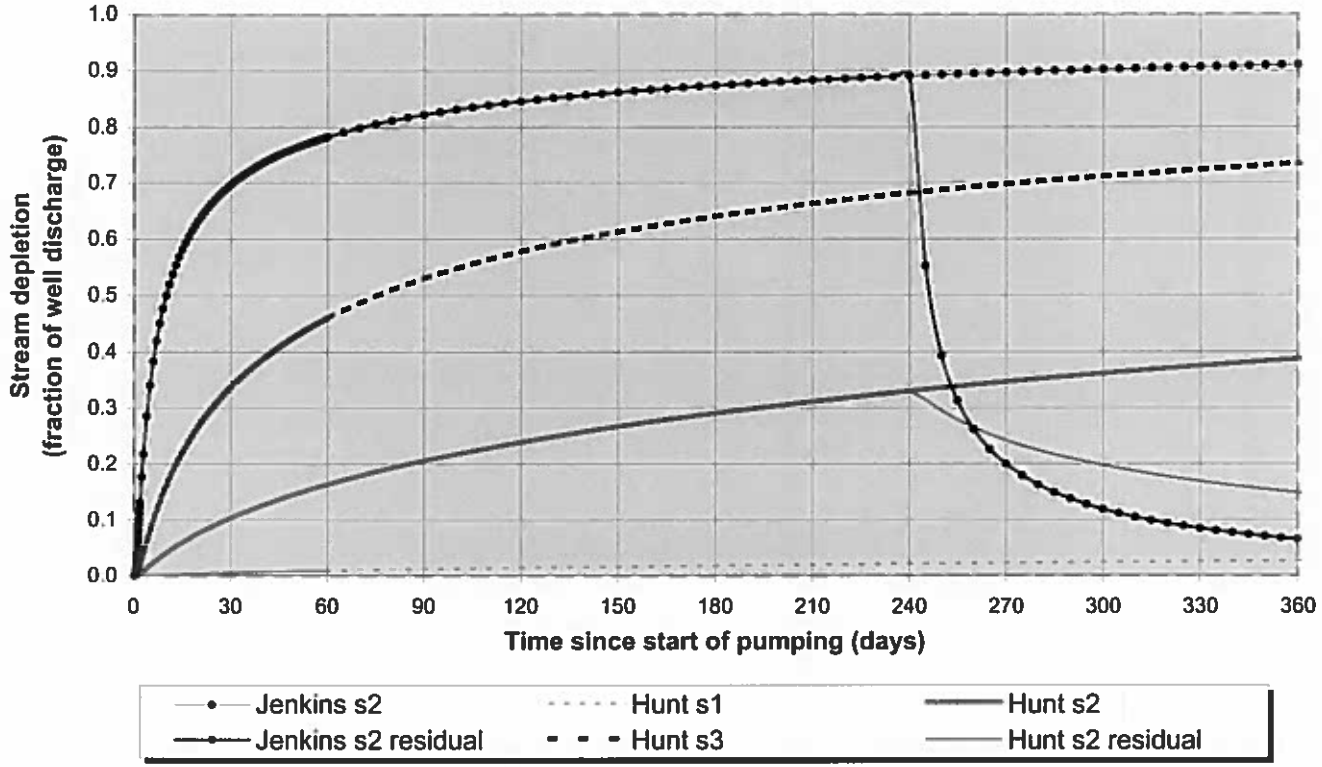
Watershed ID #: 70088 Basin: DESCHUTES Exceedance Level: 80
Time: 09:29 Date: 09/29/2005

	ISWRs							
APP #	MF 201	MF 202	IS 70088	0	0	0	0	MAXIMUM
Status	Cert.	Cert.	Cert.					
1	60.00	60.00	60.00	0.00	0.00	0.00	0.00	60.00
2	95.00	100.00	100.00	0.00	0.00	0.00	0.00	100.00
3	95.00	145.00	145.00	0.00	0.00	0.00	0.00	145.00
4	95.00	145.00	145.00	0.00	0.00	0.00	0.00	145.00
5	95.00	145.00	145.00	0.00	0.00	0.00	0.00	145.00
6	95.00	100.00	100.00	0.00	0.00	0.00	0.00	100.00
7	60.00	60.00	60.00	0.00	0.00	0.00	0.00	60.00
8	60.00	60.00	60.00	0.00	0.00	0.00	0.00	60.00
9	60.00	60.00	60.00	0.00	0.00	0.00	0.00	60.00
10	60.00	60.00	60.00	0.00	0.00	0.00	0.00	60.00
11	60.00	60.00	60.00	0.00	0.00	0.00	0.00	60.00
12	60.00	60.00	60.00	0.00	0.00	0.00	0.00	60.00

1

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

G-16484

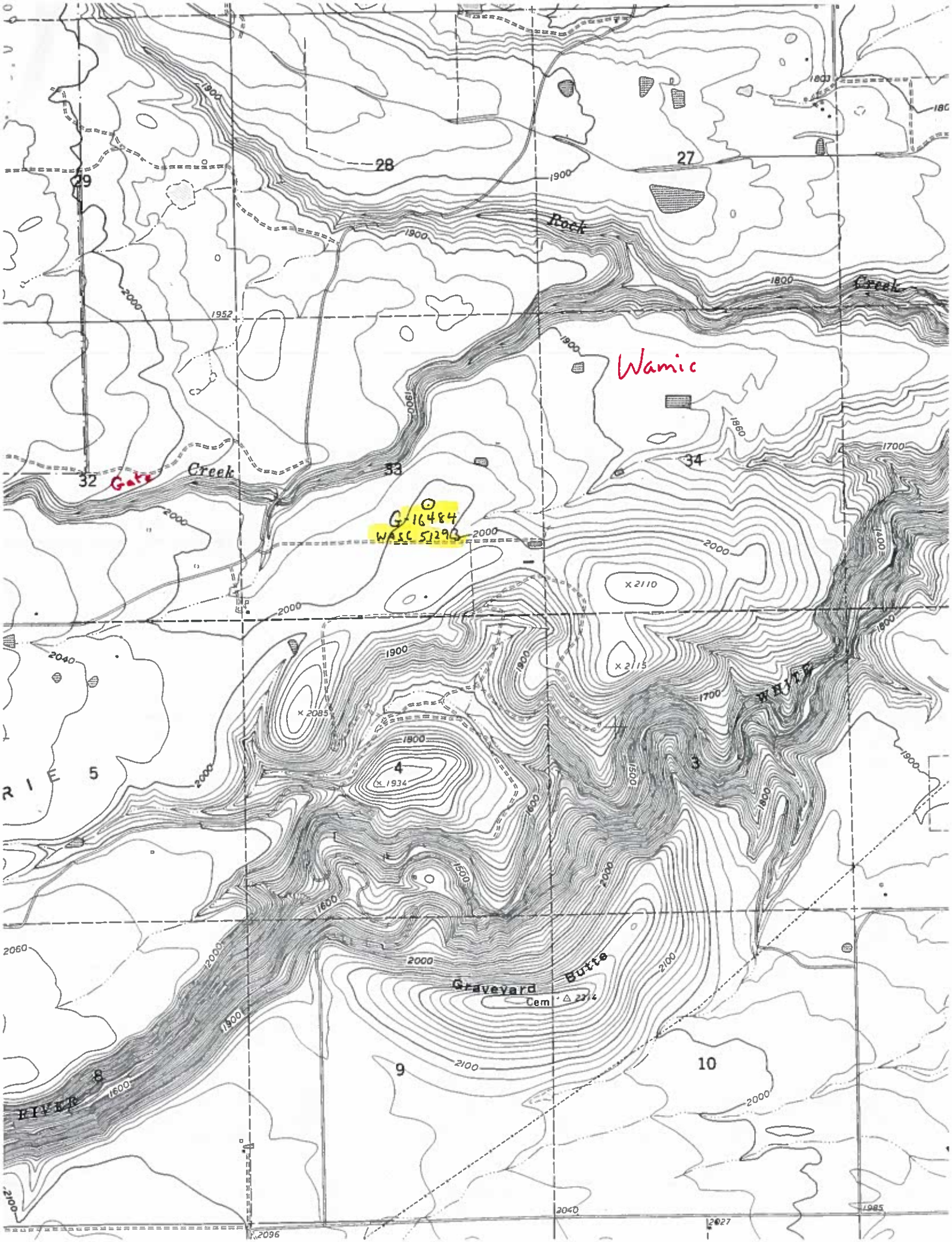


Output for Hunt Stream Depletion, Scenerio 2 (s2): **Time pump on = 240 days**

Days	30	60	90	120	150	180	210	240	270	300	330	360
Hunt SD s2	0.104	0.163	0.206	0.239	0.267	0.290	0.311	0.329	0.242	0.198	0.169	0.148
Qw, cfs	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
H SD s2, cfs	0.104	0.163	0.206	0.239	0.267	0.290	0.311	0.329	0.242	0.198	0.169	0.148

Parameters:		Scenario 1	Scenario 2	Scenario 3	Units
Net steady pumping rate	Qw	1	1	1	cfs
Distance to stream	a	7400	7400	7400	ft
Aquifer hydraulic conductivity	K	50	40	50	ft/day
Aquifer thickness	b	1500	1500	1500	ft
Aquifer transmissivity	T	75000	60000	75000	ft*ft/day
Aquifer storage coefficient	S	0.01	0.01	0.01	
Stream width	ws	40	40	40	ft

Streambed hydraulic conductivity	Ks	0.01	0.2	1	ft/day
Streambed thickness	bs	5	5	5	ft
Streambed conductance	sbc	0.08	1.6	8	ft/day
Stream depletion factor (Jenkins)	sdf	7.301333333	9.126666667	7.301333333	days
Streambed factor (Hunt)	sbf	0.007893333	0.197333333	0.789333333	


Wamic
Rock Creek
Gate Creek
G-16484
WASC 51290
Graveyard Cem
Butte
WHITE RIVER
28
27
29
32
33
34
4
3
9
10
8
R 1 E
5
x 2110
x 2115
x 2085
x 1934
x 2214