

PUBLIC INTEREST REVIEW FOR GROUND WATER APPLICATIONS

TO: Water Rights Section Date December 19, 2007

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

SUBJECT: Application G- 16953 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: Thomas R. Davis County: Harney

A1. Applicant(s) seek(s) 2.45 cfs from one well(s) in the Malheur Lake Basin,
Donner und Blitzen subbasin Quad Map: Jackass Butte NE

A2. Proposed use: Irrigation, 195 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	HARN 51387	4	Volcanic Seds.	2.45	27S/31E-24 SW-NE	1712' S, 2785' E fr NW cor S 24
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
4	4120	25.5	25.5	8/14/07	52	0-18	0-20	None	None	800		Air

Use data from application for proposed wells.

A4. **Comments:** *Data entry discovered a discrepancy and it may be only 182.5 acres. The well yield is less than the requested rate here.

A5. ☒ **Provisions of the Malheur Lake** 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: _____

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) 7N_____;
- 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:** Few existing ground-water rights are in the vicinity and these are held by the applicant. Based on the well log, an additional well may be required to produce the 2.45 cfs requested.

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
4	Volcanic sediments and cinders	☐	☒
		☐	☐
		☐	☐
		☐	☐
		☐	☐

Basis for aquifer confinement evaluation: The static water level and depth where ground water was first encountered are the same.

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
4	1	Donner und Blitzen River	4095	4105	10700	☒	☐	☐	☐	☒
						☐	☐	☐	☐	☐
						☐	☐	☐	☐	☐
						☐	☐	☐	☐	☐
						☐	☐	☐	☐	☐
						☐	☐	☐	☐	☐
						☐	☐	☐	☐	☐
						☐	☐	☐	☐	☐

Basis for aquifer hydraulic connection evaluation: The shallow unconfined aquifer penetrated appears to extend to the river without interruption. The head relationship suggests that the river may be losing, but the heads are close in any case.

Water Availability Basin the well(s) are located within: Donner und Blitzen R > Malheur Lake at mouth (31200311).

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

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
		1.1%	1.5%	%	%	%	%	%	%	0.1 %	0.2%	0.4 %	0.7%
Well Q as CFS				2.45	2.45	2.45	2.45	2.45	2.45	2.45	2.45		
Interference CFS		0.027	0.037							.0025	.0049	.0098	0.017
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.		0.027	0.037							.0025	.0049	.0098	0.017
(B) = 80 % Nat. Q		56.3	35.8							26.0	35.7	28.9	50.3
(C) = 1 % Nat. Q		.563	.358							.26	.357	.289	.503
(D) = (A) > (C)		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
(E) = (A / B) x 100		.05%	0.1%	%	%	%	%	%	%	.001%	.01%	.03%	.03%

(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: This section does apply; the Hunt 1999 model is the most appropriate to use and calculated interference is well below 1% of natural flows of the river.

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: Recent application reviews; local well logs; GW Report # 16; WSP #841.

D. WELL CONSTRUCTION, OAR 690-200

- D1. Well #: 4 Logid: HARN 51387
- 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).**

MEMO

December 19, 2007

FROM: GW: Mike Zwart
(Reviewer's Name)

SUBJECT: Scenic Waterway Interference Evaluation

YES

The source of appropriation is within or above a Scenic Waterway

✓ NO

YES

Use the Scenic Waterway condition (Condition 7J)

✓ NO

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.**

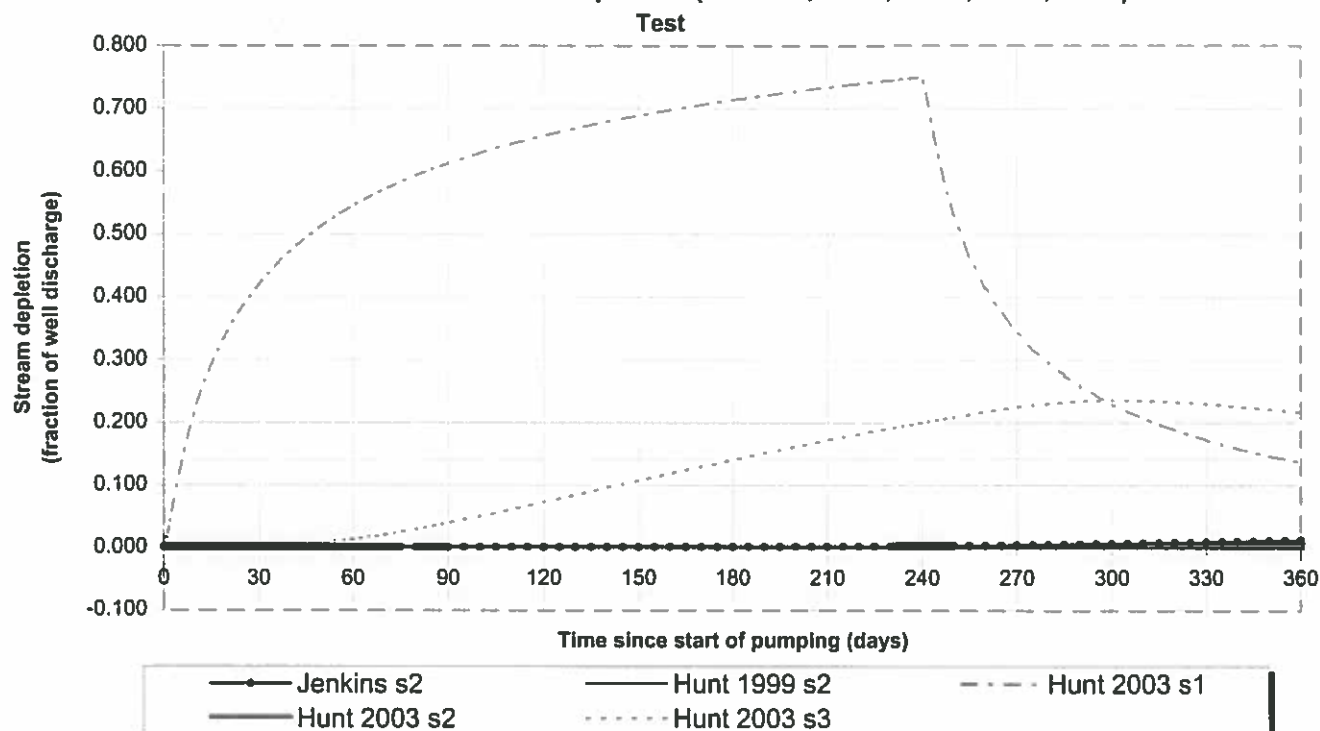
DISTRIBUTION OF INTERFERENCE

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.

[illegible]

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



Output for Stream Depletion, Scenerio 2 (s2):						Time pump on (pumping duration) = 240 days							
Days	30	60	90	120	150	180	210	240	270	300	330	360	
J SD	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.2%	0.4%	0.6%	0.8%	1.2%	
H SD 1999	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.2%	0.3%	0.4%	0.6%	
H SD 2003	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.01%	0.01%	
Qw, cfs	2.451	2.451	2.451	2.451	2.451	2.451	2.451	2.451	2.451	2.451	2.451	2.451	
H SD 99, cfs	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.002	0.004	0.007	0.011	0.015	
H SD 03, cfs	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	

Parameters:		Scenario 1	Scenario 2	Scenario 3	Units
Net steady pumping rate of well	Qw	1100.00	1100.00	1100.00	gpm
Time pump on (pumping duration)	tpon	240	240	240	days
Perpendicular from well to stream	a	200	10700	1900	ft
Well depth	d	52	52	52	ft
Aquifer hydraulic conductivity	K	25	100	25	ft/day
Aquifer saturated thickness	b	100	50	100	ft
Aquifer transmissivity	T	2500	5000	2500	ft*ft/day
Aquifer storativity or specific yield	S	0.2	0.2	0.2	
Aquitard vertical hydraulic conductivity	Kva	1	1	1	ft/day
Aquitard saturated thickness	ba	3	3	3	ft
Aquitard thickness below stream	babs	3	3	3	ft
Aquitard porosity	n	0.2	0.2	0.2	
Stream width	ws	40	25	40	ft
Streambed conductance (lambda)	sbc	13.333333	8.333333	13.333333	ft/day
Stream depletion factor	sdf	3.200000	4579.600000	288.800000	days
Streambed factor	sbfb	1.066667	17.833333	10.133333	
input #1 for Hunt's Q_4 function	t'	0.312500	0.000218	0.003463	
input #2 for Hunt's Q_4 function	K'	5.333333	7632.666667	481.333333	
input #3 for Hunt's Q_4 function	epsilon'	1.000000	1.000000	1.000000	
input #4 for Hunt's Q_4 function	lamda'	1.066667	17.833333	10.133333	

OREGON

Go

Water Resources Department

Water Availability

WATER AVAILABILITY TABLE

Water Availability as of 12/18/2007 for

DONNER UND BLITZEN R > MALHEUR L - AT MOUTH

Watershed ID #: 31200311 Basin: MALHEUR LAKE Exceedance Level: 80
 Time: 14:57 Date: 12/18/2007

Select an Item Number for More Details

Item #	Watershed ID #	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Sto
1	31200311	NO	NO	NO	YES	NO	NO	YES	YES	YES	NO	NO	NO	YES

STREAM NAMES

Water Availability as of 12/18/2007 for

DONNER UND BLITZEN R > MALHEUR L - AT MOUTH

Watershed ID #: 31200311 Basin: MALHEUR LAKE Exceedance Level: 80
 Time: 14:57 Date: 12/18/2007

Item Watershed ID Stream Name

1 31200311 DONNER UND BLITZEN R > MALHEUR L - AT MOUTH

LIMITING WATERSHEDS

Water Availability as of 12/18/2007 for

DONNER UND BLITZEN R > MALHEUR L - AT MOUTH

Watershed ID #: 31200311 Basin: MALHEUR LAKE Exceedance Level: 80
 Time: 14:57 Date: 12/18/2007

Mnth	Limiting Watershed	Stream Name	Water Avail?	Net Water Available
1	31200311	DONNER UND BLITZEN R > MALHEUR L - AT MOUTH	NO	-30.7
2	31200311	DONNER UND BLITZEN R > MALHEUR L - AT MOUTH	NO	-51.6
3	31200311	DONNER UND BLITZEN R > MALHEUR L - AT MOUTH	NO	-60.7
4	31200311	DONNER UND BLITZEN R > MALHEUR L - AT MOUTH	YES	2.4
5	31200311	DONNER UND BLITZEN R > MALHEUR L - AT MOUTH	NO	-3.3
6	31200311	DONNER UND BLITZEN R > MALHEUR L - AT MOUTH	NO	-0.4
7	31200311	DONNER UND BLITZEN R > MALHEUR L - AT MOUTH	YES	5.6
8	31200311	DONNER UND BLITZEN R > MALHEUR L - AT MOUTH	YES	7.8
9	31200311	DONNER UND BLITZEN R > MALHEUR L - AT MOUTH	YES	9.2
10	31200311	DONNER UND BLITZEN R > MALHEUR L - AT MOUTH	NO	-56.7
11	31200311	DONNER UND BLITZEN R > MALHEUR L - AT MOUTH	NO	-56.8
12	31200311	DONNER UND BLITZEN R > MALHEUR L - AT MOUTH	NO	-36.7
Stor	31200311	DONNER UND BLITZEN R > MALHEUR L - AT MOUTH	YES	16400.0

DETAILED REPORT ON THE WATER AVAILABILITY CALCULATION

Water Availability as of 12/18/2007 for

DONNER UND BLITZEN R > MALHEUR L - AT MOUTH

Watershed ID #: 31200311 Basin: MALHEUR LAKE Exceedance Level: 80
 Time: 14:57 Date: 12/18/2007

Month	Natural Stream Flow	Consumptive Use and Storage	Expected Stream Flow	Reserved Stream Flow	Instream Requirements	Net Water Available
1	56.30	87.00	-30.70	0.00	0.00	-30.70
2	35.80	87.30	-51.60	0.00	0.00	-51.60
3	45.80	106.00	-60.70	0.00	0.00	-60.70
4	107.00	105.00	2.36	0.00	0.00	2.36
5	263.00	266.00	-3.28	0.00	0.00	-3.28
6	214.00	214.00	-0.37	0.00	0.00	-0.37
7	77.00	71.40	5.56	0.00	0.00	5.56
8	37.30	29.50	7.77	0.00	0.00	7.77
9	26.00	16.80	9.16	0.00	0.00	9.16

10	35.70	92.40	-56.70	0.00	0.00	-56.70
11	28.90	85.70	-56.80	0.00	0.00	-56.80
12	50.30	87.00	-36.70	0.00	0.00	-36.70
Stor-50%	84700	75500	16400	0	0	16400

DETAILED REPORT OF CONSUMPTIVE USES AND STORAGES

Water Availability as of 12/18/2007 for

DONNER UND BLITZEN R > MALHEUR L - AT MOUTH

Watershed ID #: 31200311

Basin: MALHEUR LAKE

Exceedance Level: 80

Time: 14:57

Date: 12/18/2007

Mo	Storage	Irrig	Munic	Ind/Man	Commer	Domest	Agricul	Other	Total
1	4.92	0.00	0.00	0.00	0.00	0.01	0.05	82.00	87.00
2	5.31	0.00	0.00	0.00	0.00	0.01	0.05	82.00	87.40
3	4.63	19.80	0.00	0.00	0.00	0.01	0.05	82.00	106.00
4	9.26	95.30	0.00	0.00	0.00	0.01	0.05	0.00	105.00
5	22.40	244.00	0.00	0.00	0.00	0.01	0.05	0.00	266.00
6	16.80	197.00	0.00	0.00	0.00	0.01	0.05	0.00	214.00
7	5.49	65.90	0.00	0.00	0.00	0.01	0.05	0.00	71.50
8	3.11	26.40	0.00	0.00	0.00	0.01	0.05	0.00	29.60
9	3.16	13.60	0.00	0.00	0.00	0.01	0.05	0.00	16.80
10	3.77	6.59	0.00	0.00	0.00	0.01	0.05	82.00	92.40
11	3.63	0.00	0.00	0.00	0.00	0.01	0.05	82.00	85.70
12	4.89	0.00	0.00	0.00	0.00	0.01	0.05	82.00	87.00

DETAILED REPORT OF RESERVATIONS FOR CONSUMPTIVE USE

Water Availability as of 12/18/2007 for

DONNER UND BLITZEN R > MALHEUR L - AT MOUTH

Watershed ID #: 31200311

Basin: MALHEUR LAKE

Exceedance Level: 80

Time: 14:57

Date: 12/18/2007

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 12/18/2007 for

DONNER UND BLITZEN R > MALHEUR L - AT MOUTH

Watershed ID #: 31200311

Basin: MALHEUR LAKE

Exceedance Level: 80

Time: 14:57

Date: 12/18/2007

ISWRs								
APP #	0	0	0	0	0	0	0	MAXIMUM
Status								
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

