WATER RESOURCES DEPARTMENT

MEMO 17 September, 2007

TO: **Application G-** 16851

FROM: **GW:** GERALD H. GRONDIN
(Reviewer's Name)

SUBJECT: **Scenic Waterway Interference Evaluation**

DD ■ YES
DD X NO

The source of appropriation is within or above a Scenic Waterway

_____YES
_____NO

Use the Scenic Waterway condition (Condition 7J)

_____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.

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

PUBLIC INTEREST REVIEW FOR GROUND WATER APPLICATIONS

TO: Water Rights Section Date **17 September 2007**

FROM: Ground Water/Hydrology Section **Gerald H. Grondin**
Reviewer's Name

SUBJECT: Application G- **16851** Supersedes review of **none**
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 Whipple & Jacqueline Yorton** **County:** **Harney**

A1. Applicant(s) seek(s) **(112 gpm) 0.25** cfs from **1** well(s) in the **Malheur Lake** Basin, **Harney-Malhuer Lakes** subbasin Quad Map: **Mahon Creek**

A2. Proposed use: **Irrigation (primary 20 acres)** Seasonality: **1 March – 31 October (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	**Not drilled**	**Well 1**	**"Malheur Lake"**	**0.25**	**24S/33E-sec 12 AAD**	**900'S, 390' W fr NE cor S 12**
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	**4131**		**50+**		**150+/-**	**0 – 18+**	**to 18+**					

Use data from application for proposed wells.

A4. **Comments:**

Well is proposed, yet to be constructed.

The proposed aquifer is not identified. Basin fill is likely. Piper and others (1939), Greene and others (1972), and Walker (1979) maps and water well reports for neighboring wells show basin fill sediment including clay, sand, gravel, pumice, and volcanic ash.

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: **There is a basin rule (see attached OAR 690-512) that applies when there is a finding of PSI. For some review sections, there was no PSI. For other review sections, there was no PSI analysis for reasons noted.**

A6. ☐ **Well(s) #** **N.A.** , _____ , _____ , _____ , _____ , tap(s) an aquifer limited by an administrative restriction.
Name of administrative area:
Comments: **Currently, no administrative area.**

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) **7B, 7F, 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:**

Recommend conditions 7B, 7F, and 7N

The proposed well site is located within Harney Valley in an area east of Burns and north of Crane and Malheur Lake. The well is in the vicinity of Hot Springs Slough and its Crowcamp Creek tributary. The area is surficially mapped as Qal by Piper and others (1939), Qal by Leonard (1970), and Qs by Greene and others (1972). Water well reports for neighboring wells show basin fill sediment including clay, sand, gravel, pumice, and volcanic ash.

Available data, including Piper and others (1939), Leonard (1970), and water well reports indicate ground water in the basin fill is generally unconfined and hydraulically connected to Malheur and Harney Lakes. Some local confinement can occur where discontinuous low permeability layers are present. Leonard (1970) indicates confined ground water occurs at depth in the basin in deep basin fill sediments and underlying Tertiary volcanic and sedimentary rocks. Hubbard (1975) indicates the ground water contribution to flow into Malheur Lake is small with the lake perched above ground water in most areas.

The closest well with ground water level trend data is well HARN 741 in T23S/R34E-sec 31 (about 1.9 miles to the northeast) which is completed in sediments. The ground water level data for HARN 741 is from 1974 to 2006. The ground water level trend at the site shows seasonal and climatic influences. A possible net decline of less than 5 feet may have occurred at the site. Interestingly, no recovery of the annual trend is apparent from 1996 to 1999, a generally wetter than average period in Oregon. Seasonal ground water level fluctuations range from 10 to 40 feet. This could adversely impact the use of shallow wells, but likely not adversely impact the use of deeper wells.

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	**Basin fill sediments**	☐	☒
		☐	☐
		☐	☐
		☐	☐
		☐	☐

Basis for aquifer confinement evaluation:

Available data, including Piper and others (1939), Leonard (1970), and water well reports indicate ground water in the basin fill is generally unconfined and hydraulically connected to surface water including Malheur and Harney Lakes. Some local confinement can occur where discontinuous low permeability layers are present. Leonard (1970) indicates confined ground water occurs at depth in the basin in deep basin fill sediments and underlying Tertiary volcanic and sedimentary rocks. Hubbard (1975) indicates ground water flow into Malheur Lake is small with the lake perched above ground water in most areas.

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	Crowcamp Creek	4130	4125	10,500	☒	☐	☐	☐	☒
1	2	Hot Springs Slough	4130	4120	5,700	☒	☐	☐	☐	☒
1	3	Malheur & Harney Lakes	4130	4098	51,100	☒	☐	☐	☐	☒
						☐	☐	☐	☐	☐
						☐	☐	☐	☐	☐

Basis for aquifer hydraulic connection evaluation:

The ground water elevation is from data for HARN 741 about 1.9 miles to the northeast. Ground water elevation data for the vicinity found in Piper and others (1939), Leonard (1970), and water well reports (well logs) indicate ground water elevations from 4110 to 4130 feet over multiple decades with seasonal fluctuations.

Malheur Lake is the basin outlet for ground water flow (through evaporation). The lake elevation above is for 1983 derived from USGS 1:24,000 quadrangle maps. The distance is to the 1983 shoreline. The shoreline location can significantly vary.

Water Availability Basin the well(s) are located within:

No WAB for Crowcamp Creek
HOT SPRINGS SL > MALHEUR SL - AT MOUTH
No WAB for Harney & Malheur Lakes

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:

The distance from the proposed well to Crowcamp Creek is more than 1 mile.

The distance from the proposed well to Hot Springs Slough Creek is more than 1 mile.

The distance from the proposed well to Malheur Lake is more than 1 mile.

Application: G- 16851 continued Date: 17 September 2007

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

(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 analysis was not done given there is no WAB for Crowcamp Creek.**

Version: 08/15/2003

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	2	10.8%	9.68%	5.92%	9.09%	11.4%	13.3%	15.0%	16.4%	17.7%	18.9%	14.7%	12.3%
Well Q as CFS		0.00	0.00	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.00	0.00
Interference CFS		0.027	0.024	0.015	0.023	0.029	0.033	0.037	0.041	0.044	0.047	0.037	0.031
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	0.024	0.015	0.023	0.029	0.033	0.037	0.041	0.044	0.047	0.037	0.031
(B) = 80 % Nat. Q		0.29	1.14	2.59	2.63	2.77	2.06	0.33	0.09	0.04	0.03	0.08	0.19
(C) = 1 % Nat. Q		0.0029	0.0114	0.0259	0.0263	0.0277	0.0206	0.003	0.001	0.0004	0.0003	0.0008	0.0019
(D) = (A) > (C)		Yes	Yes	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
(E) = (A / B) x 100		9.31%	2.11%	0.58%	0.87%	1.05%	1.60%	11.2%	45.6%	110.%	157.%	46.3%	16.3%

(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:

The well site is more than 1 mile from Hot Springs Slough.

Hunt (1999) was used to calculate the interference at Hot Springs Slough given the well will likely not penetrate the basin fill sediments. The values used for the calculations are conservative and appropriate until better values become available. The calculations used a transmissivity of 7,500 ft2/day which is consistent for Eastern Oregon basin fill transmissivities noted by Gonthier (1985) and transmissivity values derived from specific capacity data from wells HARN 564, HARN 641, HARN 642, HARN 645, HARN 648, HARN 649, HARN 650, HARN 651, HARN 657, HARN 955, HARN 958, HARN 959, HARN 968, HARN 995, HARN 1861, HARN 1870, HARN 2039, HARN 50054, HARN 50057, HARN 50491, HARN 50514, HARN 50585, HARN 51132, HARN 51156, and HARN 51204. Additionally, the calculation used an assumed intermediate storage coefficient (0.001). The hydraulic conductivity assigned to the bed of the drainage is 0.20 feet/day.

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

(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 analysis was not done given there is no WAB for Malheur and Harney Lakes.**

Drawdown at Malheur and Harney Lakes was estimated using the Theis drawdown equation. The calculations used a transmissivity of 7,500 ft2/day which is consistent for Eastern Oregon basin fill transmissivities noted by Gonthier (1985) and transmissivity values derived from specific capacity data from wells HARN 564, HARN 641, HARN 642, HARN 645, HARN 648, HARN 649, HARN 650, HARN 651, HARN 657, HARN 955, HARN 958, HARN 959, HARN 968, HARN 995, HARN 1861, HARN 1870, HARN 2039, HARN 50054, HARN 50057, HARN 50491, HARN 50514, HARN 50585, HARN 51132, HARN 51156, and HARN 51204. Additionally, the calculation used an assumed intermediate storage coefficient (0.001). The estimated drawdown for continuous pumping at the full proposed rate ranged from less than 0.01 feet at the end of 30 days to about 0.18 feet at the end of 245 days. The estimated drawdown for a lower pro-rated pumping rate ranged from less than 0.01 feet at the end of 30 days to about 0.06 feet at the end of 245 days.

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: Recommend conditions 7B, 7F, and 7N if a permit is issued.

The distance from the proposed well to Crowcamp Creek is more than 1 mile. The distance from the proposed well to Hot Springs Slough Creek is more than 1 mile. The distance from the proposed well to Malheur Lake is more than 1 mile.

The proposed well site is located within Harney Valley in an area east of Burns and north of Crane and Malheur Lake. The well is in the vicinity of Hot Springs Slough and its Crowcamp Creek tributary. The proposed well will likely be completed in basin fill sediments.

Available data, including Piper and others (1939), Leonard (1970), and water well reports indicate ground water in the basin fill is generally unconfined and hydraulically connected to Malheur and Harney Lakes. Some local confinement can occur where discontinuous low permeability layers are present. Leonard (1970) indicates confined ground water occurs at depth in the basin in deep basin fill sediments and underlying Tertiary volcanic and sedimentary rocks. Hubbard (1975) indicates the ground water contribution to flow into Malheur Lake is small with the lake perched above ground water in most areas.

There is a general and increasing local concern about ground water availability in the Harney Valley.

The closest well with ground water level trend data is well HARN 741 in T23S/R34E-sec 31 (about 1.9 miles to the northeast) which is completed in sediments. The ground water level data for HARN 741 is from 1974 to 2006. The ground water level trend at the site shows seasonal and climatic influences. A possible net decline of less than 5 feet may have occurred at the site. Interestingly, no recovery of the annual trend is apparent from 1996 to 1999, a generally wetter than average period in Oregon. Seasonal ground water level fluctuations range from 10 to 40 feet. This could adversely impact the use of shallow wells, but likely not adversely impact the use of deeper wells.

References Used:

Oregon Administrative Rules: OAR 690-512

Piper, A.M., Robison, T.W., and Park C.F. 1939. Geology and Ground Water Resources of the Harney Basin, Oregon. USGS Water Supply Paper 841.

Leonard, A.R. 1970. Ground-Water Resources in Harney Valley, Harney County, Oregon. Ground Water Report 16, Oregon Water Resources Department, Salem, Oregon.

Greene, R.C., Walker, G.W., and Corcoran, R.E. 1972. Geologic Map of the Burns Quadrangle, Oregon. USGS Miscellaneous Geologic Investigations Map I-680.

Hubbard, Larry. L. 1975. Hydrology of Malheur Lake, Harney County, Southeastern Oregon. USGS Water Resources Investigation 21-75.

Walker, G.W. 1979. Revisions to the Cenozoic Stratigraphy of Harney Basin, Southeastern Oregon. USGS Bulletin 1475.

Gonthier, J.B. 1985. A Description of Aquifer Units in Eastern Oregon. USGS Water Resources Investigations Report 84-4095.

OWRD water well reports and/or hydrographs: HARN 741, HARN 564, HARN 641, HARN 642, HARN 645, HARN 648, HARN 649, HARN 650, HARN 651, HARN 657, HARN 955, HARN 958, HARN 959, HARN 968, HARN 995, HARN 1861, HARN 1870, HARN 2039, HARN 50054, HARN 50057, HARN 50491, HARN 50514, HARN 50585, HARN 51132, HARN 51156, and HARN 51204

D. WELL CONSTRUCTION, OAR 690-200

D1. Well #: 1 Logid: not yet drilled

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).**

The Oregon Administrative Rules contain OARs filed through August 15, 2007

WATER RESOURCES DEPARTMENT

DIVISION 512

MALHEUR LAKE BASIN PROGRAM PROVISION

690-512-0040

Water Availability

(1) Except as provided in section (3) of this rule, the Department shall not accept an application for permit, or issue a permit, for any use of surface water, or of groundwater the use of which has the potential to substantially interfere with surface water, in the Malheur Lake Basin unless the applicant shows, by a preponderance of evidence, that unappropriated water is available to supply the proposed use at the times and in the amounts requested. The evidence provided shall be prepared by a qualified hydrologist or other water resources specialist and shall include:

(a) Streamflow measurements of gage records from the source or, for use of groundwater, the stream in hydraulic connection with the source; or

(b) An estimate of water availability from the source or, for use of groundwater, the stream in hydraulic connection with the source which includes correlations with streamflow measure-ments or gage records on other, similar streams and considers current demands for water affecting the streamflows.

(2) The criteria used in determining if the use of groundwater has the potential to substantially interfere with surface water shall be those established in OAR Chapter 690, Division 9.

(3) This rule shall not apply to issuance of:

(a) Instream water rights;

(b) Permits for storage of water between March 1 and May 31 if the application is not required to be referred to the Commission under OAR 690-011-0080(2)(a)(C); or

(c) Permits for use of water legally stored.

Stat. Auth.: ORS 536.300 & ORS 536.340

Stats. Implemented:
Hist.: WRD 3-1985, f. & cert. ef. 3-28-85; WRD 23-1990, f. & cert. ef. 12-14-90; Administrative Renumbering 1-1993, Renumbered from 690-080-0120

Alphabetical Index by Agency Name

Numerical Index by OAR Chapter Number

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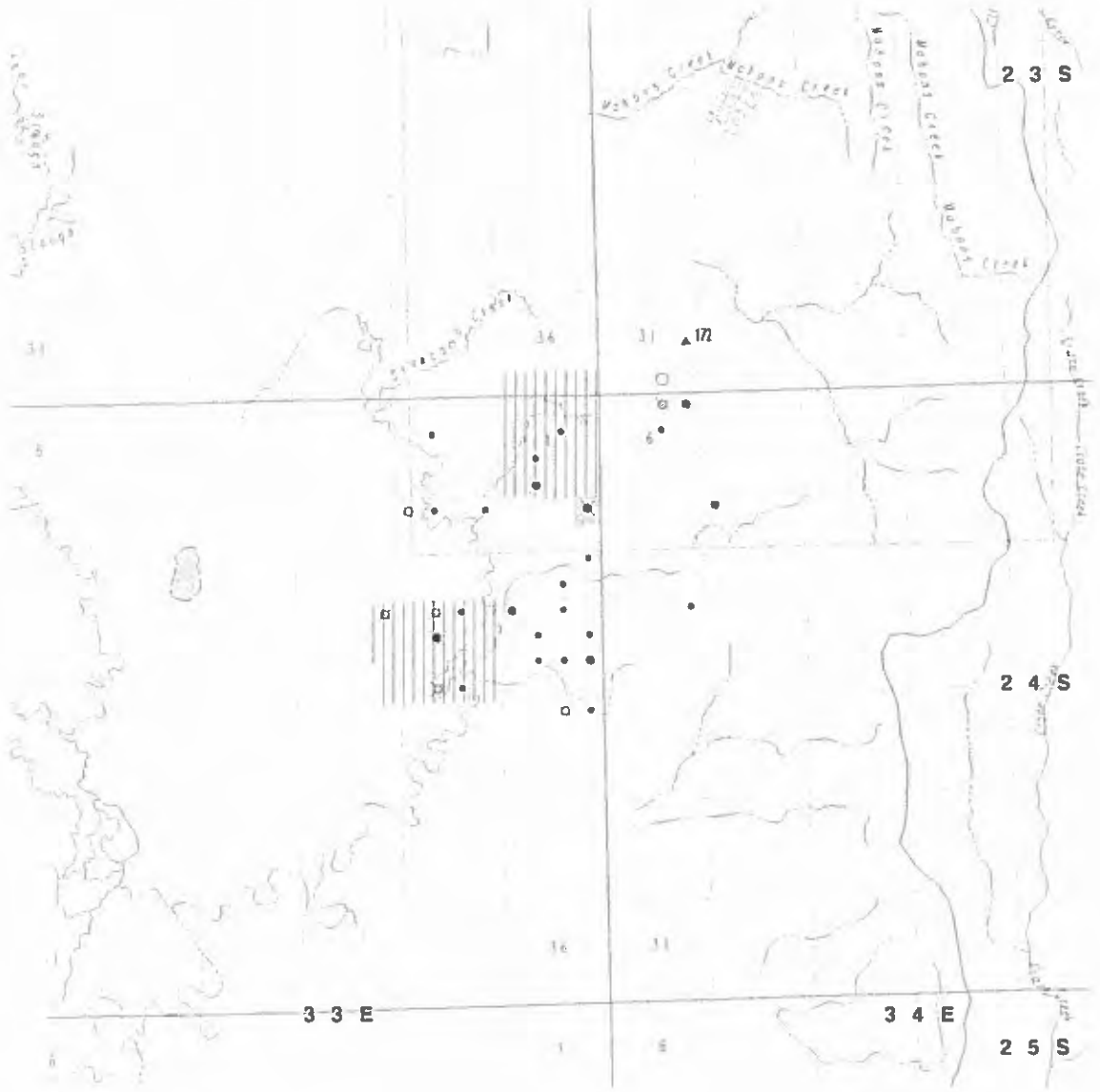
Questions about Administrative Rules?

Link to the Oregon Revised Statutes (ORS)

Return to Oregon State Archives Home Page

Wells in the vicinity of application G 16851

- Application well(s) in this 1/4-1/4 section
- Well(s) identified in this section from OWRD's well log database within 1 mi. radius of application well(s)
- Well(s) identified in this 1/4-1/4 section from OWRD's well log database within 1 mi. radius of application well(s)
- Permitted well(s) in this 1/4-1/4 section within 1 mi. radius of application well(s)
- Conditioned, permitted well(s) in this 1/4-1/4 section within 5 mi. radius of application well(s)
- OWRD Observation well and well-id within 5 mi. radius of application well(s)
- Critical GW Area
- Regulated GW Area



WELL LOGS WITHIN 1 MILE OF APPLICATION G 16851

ABANDON:	1
RECONDITIONED:	0
REPAIRED:	0
CONVERSION:	0
DEEPENINGS:	0
NEW CONSTRUCT:	41
COMMUNITY USE:	0
DOMESTIC USE:	22
INDUSTRIAL USE:	0
INJECTION USE:	0
IRRIGATION USE:	16
THERMAL USE:	0
LIVESTOCK USE:	3

****

PERMITTED WELLS WITHIN 1 MILE OF APPLICATION G 16851

$RECNO	APPLICATION	PERMIT	CLAIM		LOC-QQ	USE_CODE
1					24.00S34.00E 6NENE	
2					24.00S34.00E 6NWNE	
3					24.00S34.00E 8NWNW	
4					24.00S33.00E 1SESW	
5	G	16851	0	0	24.00S33.00E12NENE	IR
6					24.00S33.00E11NWNW	
7					24.00S33.00E13NWNW	
8					24.00S33.00E14NENW	
9					24.00S33.00E15NENE	
10					24.00S33.00E14SENW	
11					24.00S33.00E13NESE	
12					24.00S33.00E14SESW	
13					24.00S33.00E24NWNE	

****

CONDITIONED WELLS WITHIN 5 MILES OF APPLICATION G 16851

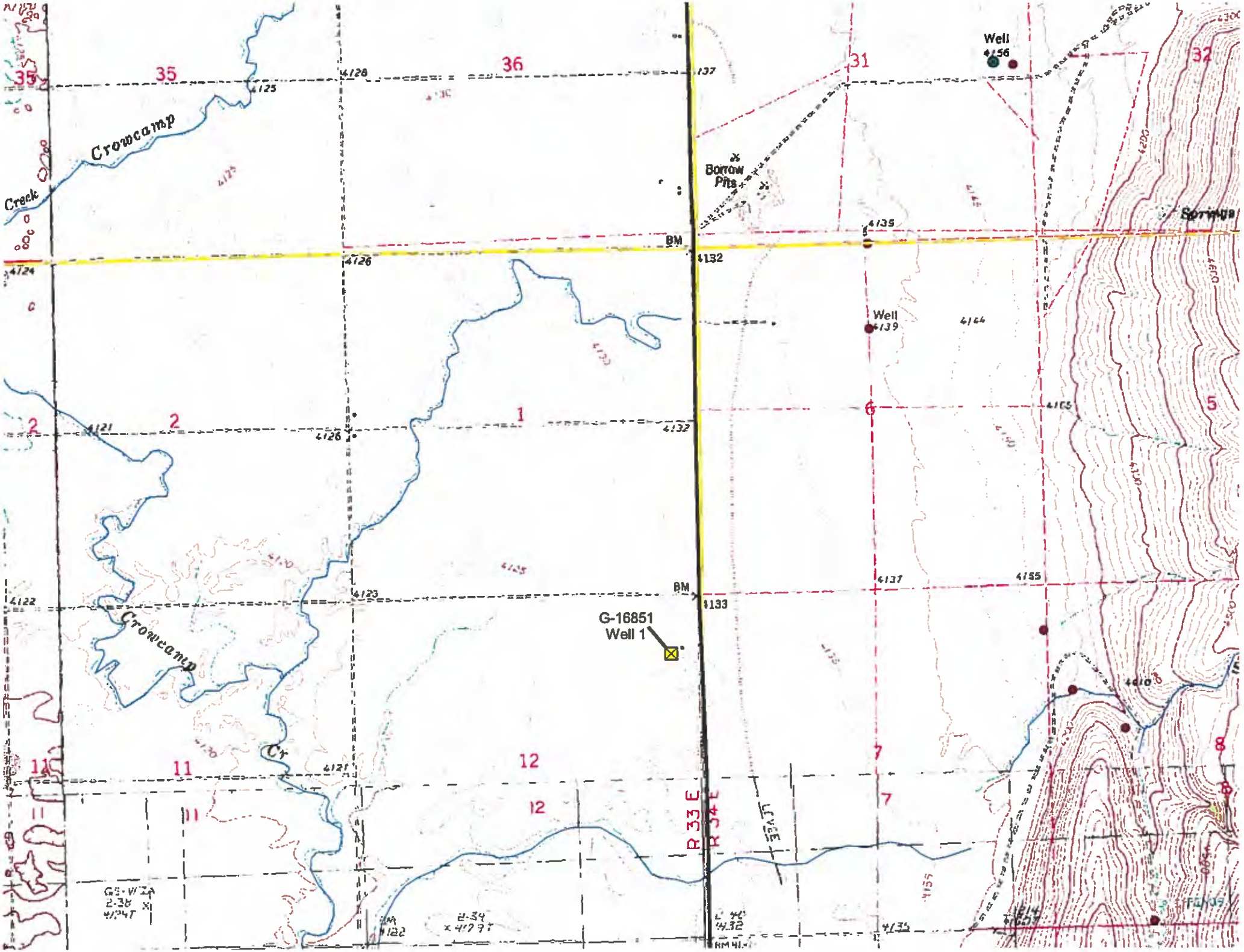
$RECNO	APPLICATION	PERMIT	LOC-QQ	CONDITION-CODE
1	G 13694	G 11968	23.00S34.00E31SWSE	4I

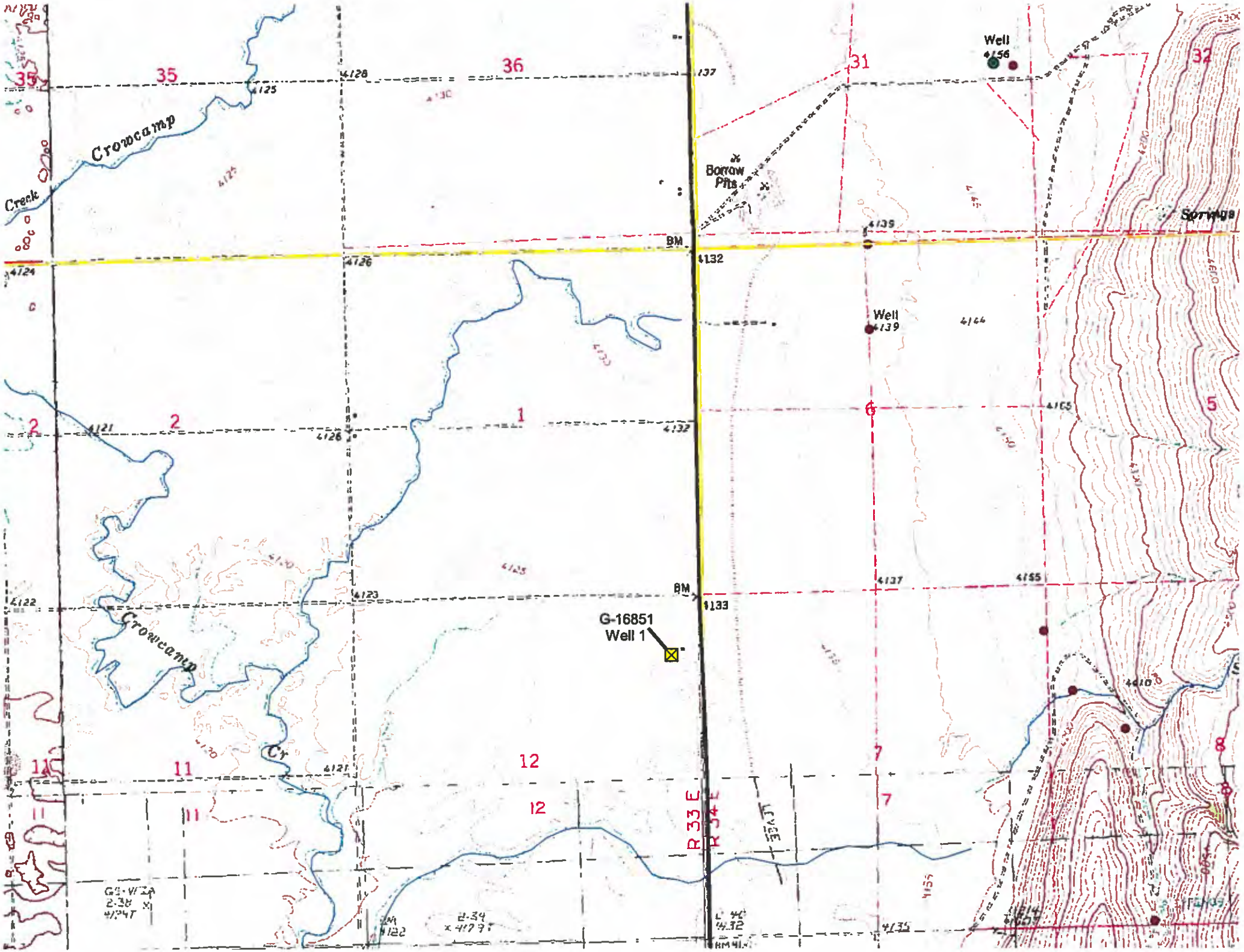
****

APPLICATION G 16851 FALLS WITHIN THESE QUAD(S)

MAHON CREEK

****


Crowcamp Creek
Crowcamp Creek
Crowcamp Cr
Borrow Pits
Well 4156
Well 4139
G-16851 Well 1
R 33 E
R 34 E
LEVEE
BM
BM
35
36
31
32
2
1
6
5
11
12
7
8


Crowcamp Creek
Crowcamp Cr
Borrow Pits
Well 4156
Well 4139
G-16851
Well 1
R 33 E
R 34 E
35
36
31
32
1
2
5
6
7
8
11
12
BM 4132
BM 4133

Well Location	23.00S34.00E31ADD
Oregon Water Resources Department Well Log ID	HARN 741
Oregon Water Resources Department State Observation Well Number	172
Well depth, in feet below land surface	207
Land surface elevation, in feet above mean sea level	
Primary use of well	not determined

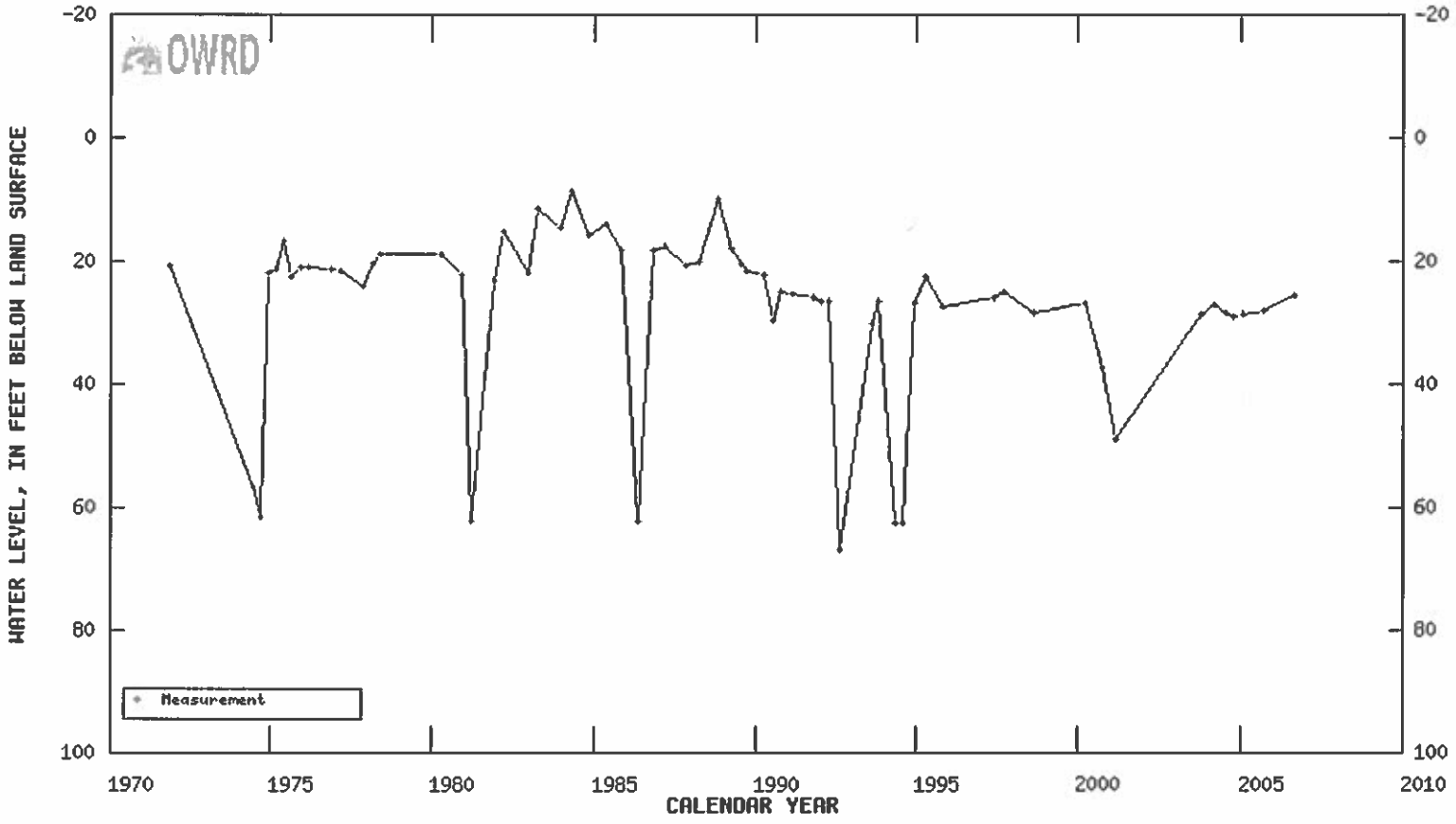
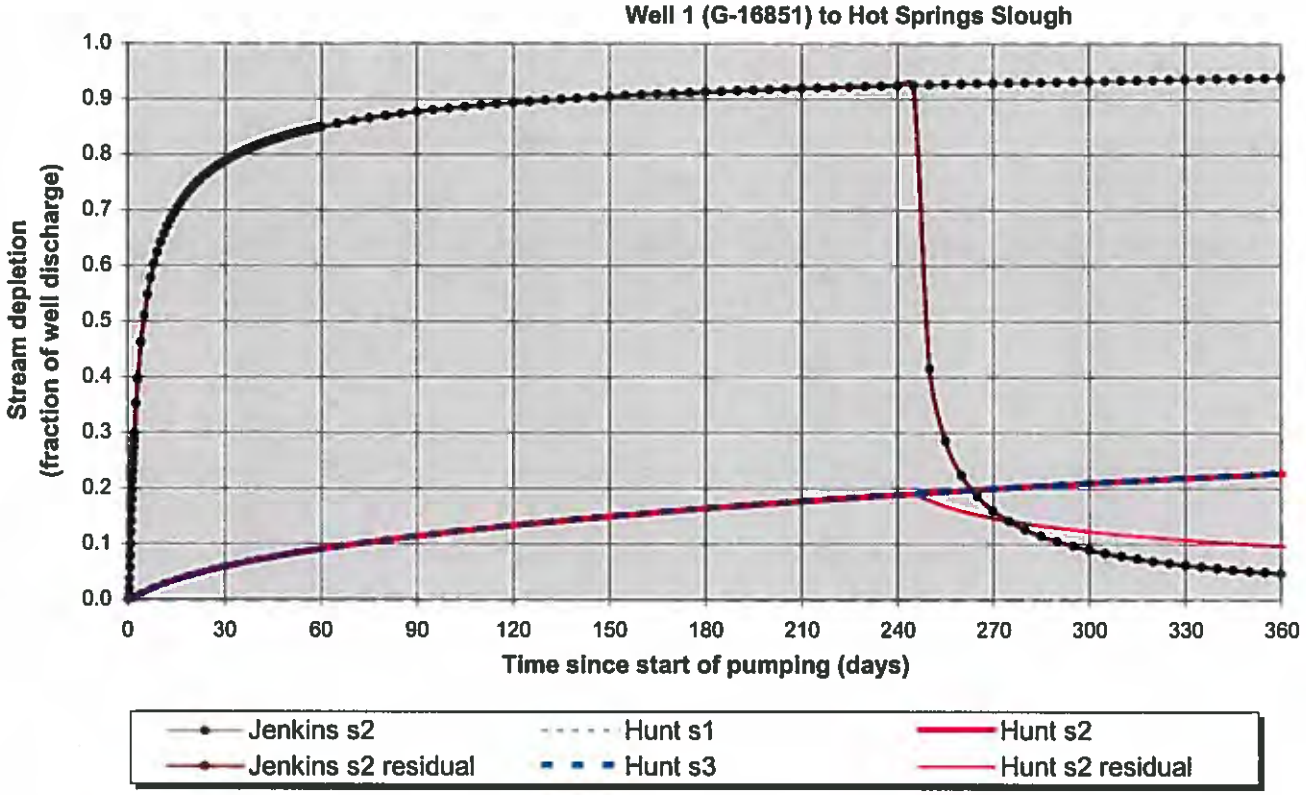


Table showing water-level data for State Well HARN 741, State Observation Well # 172

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



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

Days	30	60	90	120	150	180	210	240	270	300	330	360
Hunt SD s2	0.0592	0.0909	0.1143	0.1334	0.1497	0.1640	0.1768	0.1885	0.1468	0.1228	0.1077	0.0968
Qw, cfs	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250
H SD s2, cfs	0.015	0.023	0.029	0.033	0.037	0.041	0.044	0.047	0.037	0.031	0.027	0.024

Parameters:		Scenario 1	Scenario 2	Scenario 3	Units
Net steady pumping rate	Qw	0.25	0.25	0.25	cfs
Distance to stream	a	5700	5700	5700	ft
Aquifer hydraulic conductivity	K	50	50	50	ft/day
Aquifer thickness	b	150	150	150	ft
Aquifer transmissivity	T	7500	7500	7500	ft*ft/day
Aquifer storage coefficient	S	0.001	0.001	0.001	
Stream width	ws	10	10	10	ft
Streambed hydraulic conductivity	Ks	0.2	0.2	0.2	ft/day
Streambed thickness	bs	25	25	25	ft
Streambed conductance	sbc	0.08	0.08	0.08	ft/day
Stream depletion factor (Jenkins)	sdf	4.332	4.332	4.332	days
Streambed factor (Hunt)	sbf	0.0608	0.0608	0.0608	

Drawdown Calculations Using Theis Equation

Theis Equation: $s = [Q/(4*T*pi)][W(u)]$

$u = (r*r*S)/(4*T*t)$

$W(u) = (-\ln u)-(0.5772157)+(u/1*1!)-(u*u/2*2!)+(u*u*u/3*3!)-(u*u*u*u/4*4!)+\ldots$

s = drawdown (L)
T = transmissivity (L*L/T)
S = storage coefficient (dimensionless)
pi = 3.141592654
r = radial distance (L)
t = time (T)
u = dimensionless
W(u) = well function

Transmissivity T (gpd/ft)	Transmissivity T (ft2/day)	Storage Coefficient S	Pumping Rate Q (gal/min)	Pumping Rate Q (ft3/sec)	Time t (days)	Distance r (feet)	pi	u	W(u)	Drawdown s (feet)	Comments
								Note : W(u) calculation valid when u < 7.1			
Note:	yellow grid areas are where values are calculated							7.0000	1.1545E-04		W(u) calculation test
Application G-16851 owner proposed well 1 (G-16851) to Malheur and Harney Lakes											
56,103.90	7,500.00	0.00100	112.00	0.25	30.00	51,100.00	3.14	2.9013	0.0148	0.0034	Continuous Pumping at Proposed Full Rate
56,103.90	7,500.00	0.00100	112.00	0.25	60.00	51,100.00	3.14	1.4507	0.1077	0.0246	Continuous Pumping at Proposed Full Rate
56,103.90	7,500.00	0.00100	112.00	0.25	90.00	51,100.00	3.14	0.9671	0.2319	0.0530	Continuous Pumping at Proposed Full Rate
56,103.90	7,500.00	0.00100	112.00	0.25	120.00	51,100.00	3.14	0.7253	0.3563	0.0815	Continuous Pumping at Proposed Full Rate
56,103.90	7,500.00	0.00100	112.00	0.25	150.00	51,100.00	3.14	0.5803	0.4729	0.1082	Continuous Pumping at Proposed Full Rate
56,103.90	7,500.00	0.00100	112.00	0.25	180.00	51,100.00	3.14	0.4836	0.5802	0.1327	Continuous Pumping at Proposed Full Rate
56,103.90	7,500.00	0.00100	112.00	0.25	210.00	51,100.00	3.14	0.4145	0.6787	0.1553	Continuous Pumping at Proposed Full Rate
56,103.90	7,500.00	0.00100	112.00	0.25	240.00	51,100.00	3.14	0.3627	0.7693	0.1760	Continuous Pumping at Proposed Full Rate
56,103.90	7,500.00	0.00100	112.00	0.25	245.00	51,100.00	3.14	0.3553	0.7837	0.1793	Continuous Pumping at Proposed Full Rate
56,103.90	7,500.00	0.00100	36.94	0.08	30.00	51,100.00	3.14	2.9013	0.0148	0.0011	Pro-Rated Pumping Rate
56,103.90	7,500.00	0.00100	36.94	0.08	60.00	51,100.00	3.14	1.4507	0.1077	0.0081	Pro-Rated Pumping Rate
56,103.90	7,500.00	0.00100	36.94	0.08	90.00	51,100.00	3.14	0.9671	0.2319	0.0175	Pro-Rated Pumping Rate
56,103.90	7,500.00	0.00100	36.94	0.08	120.00	51,100.00	3.14	0.7253	0.3563	0.0269	Pro-Rated Pumping Rate
56,103.90	7,500.00	0.00100	36.94	0.08	150.00	51,100.00	3.14	0.5803	0.4729	0.0357	Pro-Rated Pumping Rate
56,103.90	7,500.00	0.00100	36.94	0.08	180.00	51,100.00	3.14	0.4836	0.5802	0.0438	Pro-Rated Pumping Rate
56,103.90	7,500.00	0.00100	36.94	0.08	210.00	51,100.00	3.14	0.4145	0.6787	0.0512	Pro-Rated Pumping Rate
56,103.90	7,500.00	0.00100	36.94	0.08	240.00	51,100.00	3.14	0.3627	0.7693	0.0580	Pro-Rated Pumping Rate
56,103.90	7,500.00	0.00100	36.94	0.08	245.00	51,100.00	3.14	0.3553	0.7837	0.0591	Pro-Rated Pumping Rate

Application: G-16851 (Whipple & Yorton)

Log_County	Log_Num	Transmissivity (T) (feet2/day)	Open Interval (feet)	H_Conductivity (K) (feet/day)	Township	Range	Section
HARN	995	1,369.29	5.00	273.86	T24S	R33E	12
HARN	50057	431.09	18.00	23.95	T24S	R33E	12
HARN	50585	402.15	7.00	57.45	T24S	R33E	12
HARN	51132	201.67	39.00	5.17	T24S	R33E	12
HARN	51156	1,772.43	56.00	31.65	T24S	R33E	12
		835.33	Average	78.42			
		431.09	Median	31.65			

Assessment for Nearby Water Rights

Application: G-16908 (Blackburn)

Log_County	Log_Num	Transmissivity (T) (feet2/day)	Open Interval (feet)	H_Conductivity (K) (feet/day)	Township	Range	Section
HARN	1861	2,231.78	138.00	16.17	T24S	R32.5E	30
HARN	2039	207.92	230.00	0.90	T24S	R32.5E	30
HARN	968	548.06	10.00	54.81	T24S	R32.5E	31
		995.92	Average	23.96			
		548.06	Median	16.17			

Log_County	Log_Num	Transmissivity (T) (feet2/day)	Open Interval (feet)	H_Conductivity (K) (feet/day)	Township	Range	Section
HARN	958	2,903.94	347.00	8.37	T24S	R32.5E	16
HARN	959	2,427.10	259.00	9.37	T24S	R32.5E	16
HARN	955	5,407.29	160.00	33.80	T24S	R32.5E	16
		3,579.44	Average	17.18			
		2,903.94	Median	9.37			

Application: G-16819 (Jones)

Log_County	Log_Num	Transmissivity (T) (feet2/day)	Open Interval (feet)	H_Conductivity (K) (feet/day)	Township	Range	Section
HARN	651	3,622.52	200.00	18.11	T23S	R32.5E	14
HARN	50054	1,659.01	55.00	30.16	T23S	R32.5E	14
HARN	50514	2,156.94	32.00	67.40	T23S	R32.5E	14
HARN	50491	381.28	67.00	5.69	T23S	R32.5E	15
HARN	1870	256.96	22.00	11.68	T23S	R32.5E	22
		1,615.34	Average	26.61			
		1,659.01	Median	18.11			

Application: G-16826 (Wilkinson)

Log_County	Log_Num	Transmissivity (T) (feet2/day)	Open Interval (feet)	H_Conductivity (K) (feet/day)	Township	Range	Section
HARN	51204	900.91	63.00	14.30	T23S	R32.5E	13
HARN	650	5,878.09	33.00	178.12	T23S	R32.5E	13
HARN	649	4,035.70	198.00	20.38	T23S	R32.5E	13
HARN	648	233,381.28	199.00	1,172.77	T23S	R32.5E	13
HARN	564	5,487.71	35.00	156.79	T23S	R32.5E	13
HARN	651	3,622.52	200.00	18.11	T23S	R32.5E	14
HARN	50054	1,659.01	60.00	27.65	T23S	R32.5E	14
HARN	50514	2,156.94	32.00	67.40	T23S	R32.5E	14
HARN	657	5,010.39	253.00	19.80	T23S	R32.5E	24
		29,125.84	Average	186.15			
		3,593.91	Adjusted Average	62.82	HARN 648 is excluded from the average		
		4,035.70	Median	27.65			

Application: G-16820 (Nienke)

Log_County	Log_Num	Transmissivity (T) (feet2/day)	Open Interval (feet)	H_Conductivity (K) (feet/day)	Township	Range	Section
HARN	645	8,330.29	115.00	72.44	T23S	R32.5E	10
HARN	642	6,305.96	120.00	52.55	T23S	R32.5E	10
HARN	641	137.01	82.00	1.67	T23S	R32.5E	10
HARN	50491	381.29	7.00	54.47	T23S	R32.5E	15
		3,788.64	Average	45.28			
		5,005.85	Adjusted Average	59.82	HARN 641 is excluded from the average		
		3,343.63	Median	53.51			