

PUBLIC INTEREST REVIEW FOR GROUNDWATER APPLICATIONS

TO: Water Rights Section Date 06/18/2015
 FROM: Groundwater Section Phillip I. Marcy / Ivan K. Gall
Reviewer's Name
 SUBJECT: Application G- 18005 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: Vaughn Schulthies County: Malheur

A1. Applicant(s) seek(s) 1.677 cfs from 1 well(s) in the Owyhee Basin,
 _____ subbasin

A2. Proposed use: Irrigation (5.7 acres), Supplemental Irrigation (83.7 acres) Seasonality: March 1st-October 31st

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	MALH 54137	1	Alluvium	1.677	20S/46E-13 SE-NE	1925'S, 1290'W fr NE cor S 13
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	24041	220	12	06/09/2014	389	2-180	+2-295	+1.5-185	225-245, 255-275, 295-320, 369-384	500	NA	Air

Use data from application for proposed wells.

A4. **Comments:** Well is completed into Glens Ferry Formation, which Ferns and others (1993) map as Lacustrine sediments (Tig). This formation is composed primarily of reworked tuffaceous material, forming fine-grained sandstone and siltstone, with gravel and sand lenses of variable thickness and depth.

The application requests 1.677 cfs. The driller notes the well can produce only 500 gpm (1.11 cfs).

A5. **Provisions of the Owyhee (OAR 690-511)** _____ 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: _____

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

B1. Based upon available data, I have determined that groundwater* for the proposed use:

- a. is over appropriated, is not over appropriated, or cannot be determined to be over appropriated during any period of the proposed use. * This finding is limited to the groundwater portion of the over-appropriation determination as prescribed in OAR 690-310-130;
- b. will not or will likely be available in the amounts requested without injury to prior water rights. * This finding is limited to the groundwater portion of the injury determination as prescribed in OAR 690-310-130;
- c. will not or will likely to be available within the capacity of the groundwater resource; or
- d. will, if properly conditioned, avoid injury to existing groundwater rights or to the groundwater resource:
 - i. The permit should contain condition #(s) 7T-measuring tube; "Large water use reporting";
 - 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 groundwater production from no deeper than _____ ft. below land surface;
- b. Condition to allow groundwater production from no shallower than _____ ft. below land surface;
- c. Condition to allow groundwater production only from the _____ groundwater reservoir between approximately _____ ft. and _____ ft. below land surface;
- d. Well reconstruction is necessary to accomplish one or more of the above conditions. The problems that are likely to occur with this use and without reconstructing are cited below. Without reconstruction, I recommend withholding issuance of the permit until evidence of well reconstruction is filed with the Department and approved by the Groundwater Section.

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. **Groundwater availability remarks:** Water level measurements taken during 2014 on several wells (including the proposed POA on this application) permitted for emergency drought use showed little change between July and November (see attached hydrograph).

Little long-term data is available on groundwater elevations and availability in this area, particularly from the Glenns Ferry Formation. Past studies have focused on the shallower sand and gravel aquifer system overlying the Glenns Ferry, allowing the development of a basic conceptual model. In this model, a significant fraction of recharge comes from surplus irrigation water and canal leakage (Gannett, 1990). The reduction of surface water allocated for irrigation during recent drought years may have considerable impacts on groundwater recharge in the area. This, in addition to increased rates of withdrawal, creates the potential for overdraft. Until more data is collected, development should be approached with caution. Therefore, if a permit is issued, the following special condition should be applied:

Modified Condition 7N – The water user shall discontinue the use of, or reduce the rate or volume of withdrawal from, the well(s) if any of the following events occur:

- A. Annual water-level measurements reveal an average water-level decline of two or more feet per year for three consecutive years; or
- B. Annual water-level measurements reveal a water level decline of 6 or more feet in fewer than five consecutive years; or
- C. Annual water-level measurements reveal a water-level decline of 10 or more feet; or
- D. Hydraulic interference leads to a decline of 10 or more feet in any neighboring well with senior priority.

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	Sand and Gravel lenses within Glenns Ferry Fmn.	<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 logs in the area indicate that sand and gravel deposits within the Glenns Ferry Formation are likely discontinuous, providing a connection, albeit inefficient, to surface waters. Our conceptual model of this area includes the upward movement of groundwater from the Glenns Ferry Formation into the overlying gravels (Gannett, 1990) which, in turn, contribute to surface water in nearby streams. No springs were identified in the area.

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	Owyhee River	2394	2223	19,000	<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"/>

Basis for aquifer hydraulic connection evaluation: Water levels measured in adjacent wells completed solely within Glenns Ferry Formation or the shallow sand and gravel aquifer have shown nearly identical water levels. Groundwater elevations within the Glenns Ferry Formation are also shown to decline considerably within the river valleys when compared to nearby uplands to the west. Together, these factors indicate the movement of groundwater from the uplands to the valley, from the Glenns Ferry into the overlying sand and gravel aquifer, and inevitably discharging to local streams (Gannett, 1990).

Water Availability Basin the well(s) are located within: Owyhee R > Snake R – At Mouth (31111001)

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?
		<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: Cow Hollow drainage becomes perennial below the point at which it crosses the North Canal, and is primarily used as a conveyance for irrigation water (personal communication with Ron Jacobs, 2015). Therefore, the impacts of pumping at the proposed POA location to Cow Hollow drainage will not be evaluated in this review.

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	%	%	0.0 %	0.0 %	0.0 %	0.0 %	0.08%	0.38%	0.80%	1.33%	2.25%	2.92%
Well Q as CFS				0.828	0.828	0.828	0.828	0.828	0.828	0.828	0.828		
Interference CFS				0.000	0.000	0.000	0.000	0.001	0.003	0.007	0.011	0.024	0.030
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													
(A) = Total Interf.				0.000	0.000	0.000	0.000	0.001	0.003	0.007	0.011	0.024	0.030
(B) = 80 % Nat. Q		264.0	636.0	736.0	1360	1190	518.0	298.0	230.0	170.0	156.0	232.0	303.0
(C) = 1 % Nat. Q		2.64	6.36	7.36	13.6	11.9	5.18	2.98	2.30	1.70	1.56	2.32	3.03

(D) = (A) > (C)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
(E) = (A / B) x 100	-- %	-- %	-- %	-- %	-- %	-- %	-- %	.001%	.004%	.007%	.010%	.010%

(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 Hunt (2003) model was utilized to estimate the impact of pumping from the proposed POA to the Owyhee River. A rate of 0.828 cfs was used as the basis for interference calculations, prorated in order to reflect the constant pumping rate required to reach the maximum duty during the course of the irrigation season. Values for transmissivity of the aquifer and the aquitard are likely overestimated when compared to table values for silty sand and gravel. This allows for the possibility of a more efficient connection to the stream than exists in our current conceptual model. Local pump tests in wells completed into Glens Ferry Formation show much lower transmissivity (about 60 ft²/day) and hydraulic conductivity (less than 20 ft/day). Therefore, the likelihood of impacts to the Owyhee River being larger than the calculated model result are minimized.

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 groundwater 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:** Due to the distance between the proposed POA and perennial surface waters, there is expected to be little interference at the Owyhee River.

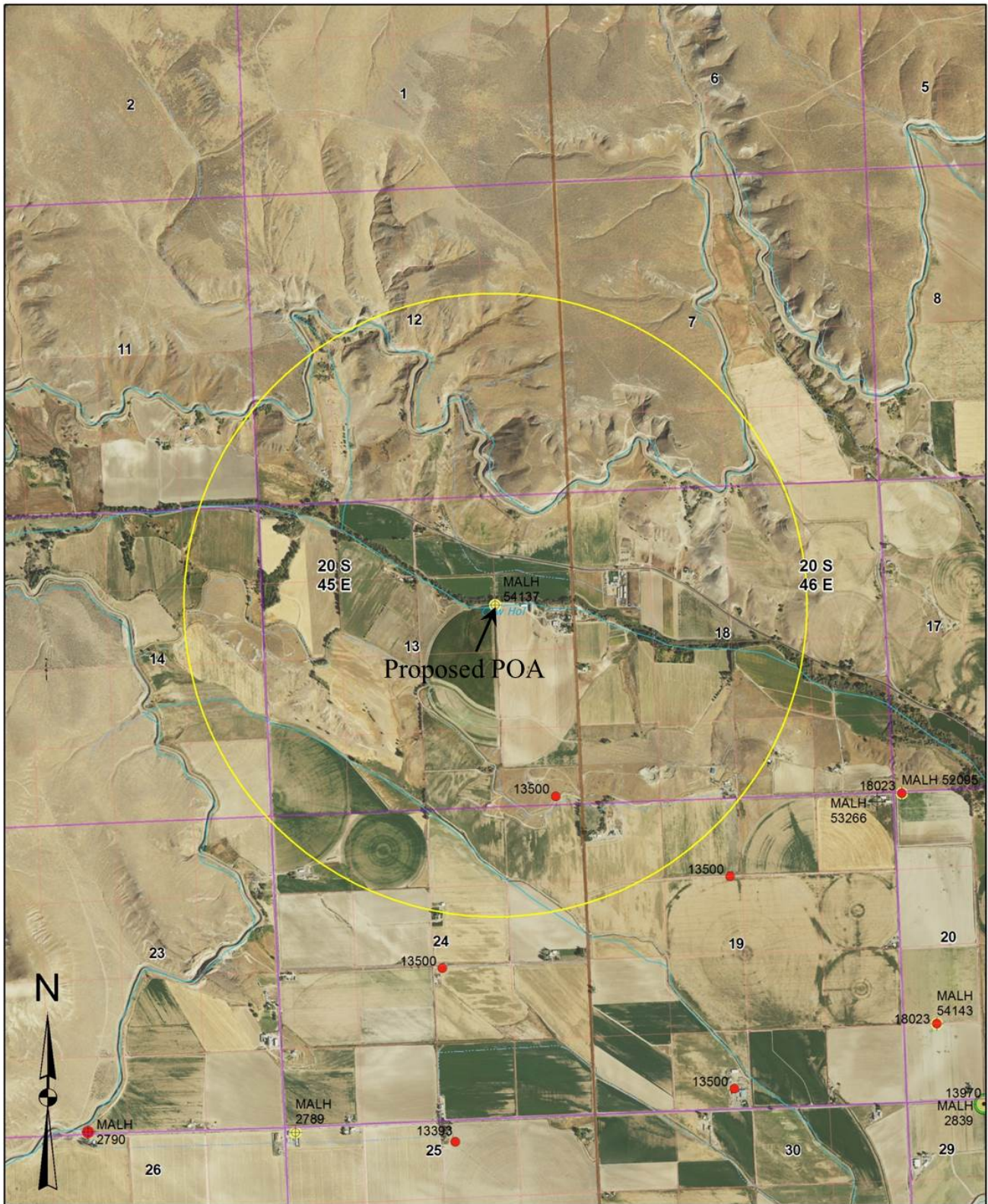
References Used:

Ferns, M.L., H.C. Brooks, J.G. Evans, M.L. Cummings. 1993. Geologic map of the Vale 30x60 minute quadrangle, Malheur County, Oregon and Owyhee County, Idaho. Oregon Dept. of Geology and Mineral Industries Geological Map Series 77.

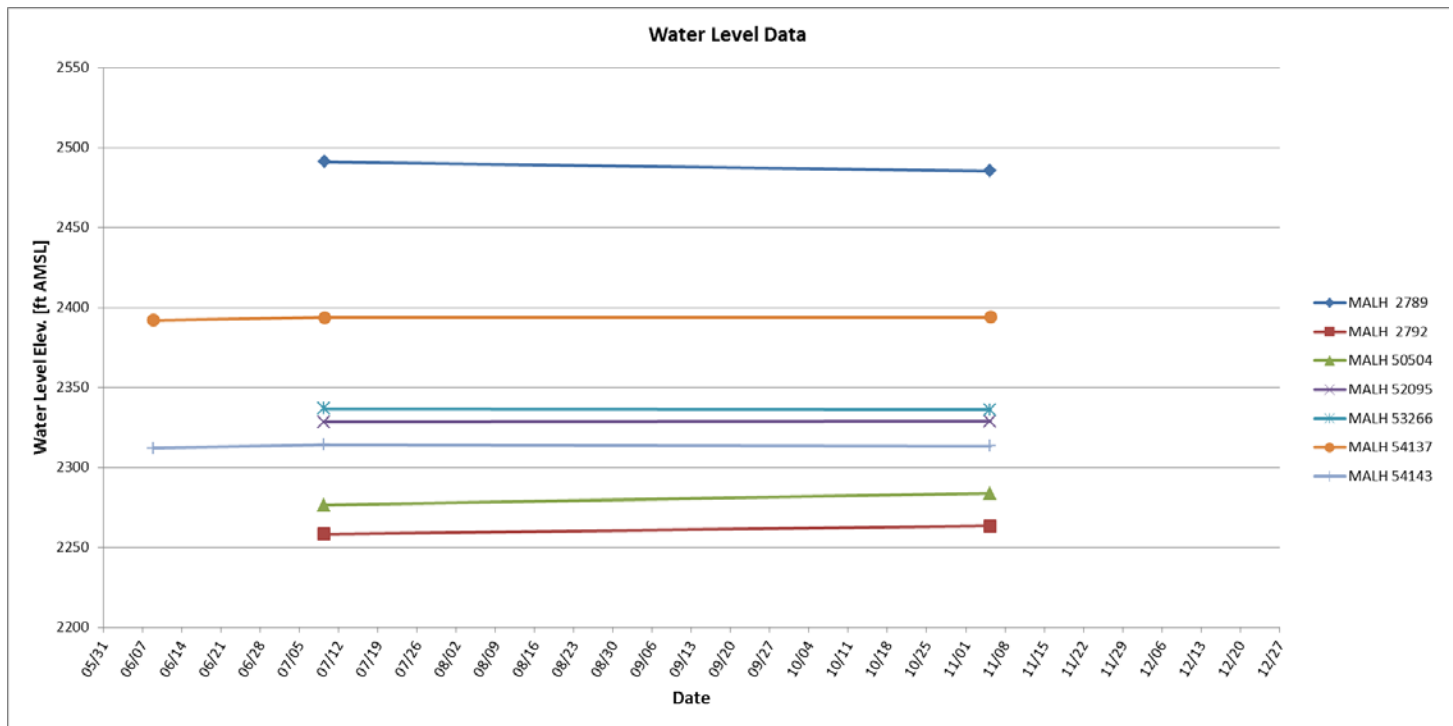
Gannett, M. W. 1990. Hydrogeology of the Ontario Area Malheur County, Oregon. Oregon Water Resources Dept. Ground Water Report No. 34. 39p.

Local well logs, application file G-18005, Local pump test data.

Well Location Map



Water-Level Trends in Nearby Wells



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

MALH 54137

WELL I.D. LABEL# L 114801
START CARD # 1023009
ORIGINAL LOG #

6/9/2014

(1) LAND OWNER
Owner Well I.D.
First Name WESTON Last Name
Company MOUNTAIN VALLEY ENTERPRISES
Address 2857 HERITAGE
City NYSSA State OR Zip 97913

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

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

(3) DRILL METHOD
[] Rotary Air [X] Rotary Mud [] Cable [] Auger [] Cable Mud
[] Reverse Rotary [] Other

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

(5) BORE HOLE CONSTRUCTION
Special Standard [] (Attach copy)
Depth of Completed Well 389.00 ft.

Table with columns: Dia, From, To, Material, SEAL, Amt, sacks/lbs. Rows include Cement, 2, 180, 283, S.

How was seal placed: Method [] A [] B [X] C [] D [] E
Backfill placed from 389 ft. to 400 ft. Material 3/8 PEA GRAVEL
Filter pack from 180 ft. to 389 ft. Material PEA GRAV size pea gravel

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

(6) CASING/LINER
Table with columns: Casing, Liner, Dia, +, From, To, Gauge, Std, Plstc, Wld, Thrd. Includes rows for 12, 4, 12, 12, 12, 12 diameters.

(7) PERFORATIONS/SCREENS
Perforations Method
Screens Type 100 slot Johnson Material stainless

Table with columns: Perf/Screen, Casing/Liner, Dia, From, To, Scrm/slot width, Slot length, # of slots, Tele/pipe size. Rows for Screen Casing at various depths.

(8) WELL TESTS: Minimum testing time is 1 hour
[] Pump [] Bailer [X] Air [] Flowing Artesian
Yield gal/min Drawdown Drill stem/Pump depth Duration (hr)

Table for well test results: Yield 500, Drawdown, Drill stem/Pump depth 389, Duration 1.

(9) LOCATION OF WELL (legal description)
County MALHEUR Twp 20.00 S N/S Range 45.00 E E/W WM
Sec 13 SE 1/4 of the NE 1/4 Tax Lot 200
Tax Map Number Lot
Lat " or 43.83279900 DMS or DD
Long " or -117.16042600 DMS or DD
[] Street address of well [X] Nearest address
ON THE NW CORNER OF THE PIVOT BEHIND 2727 TWILIGHT

(10) STATIC WATER LEVEL
Date SWL(psi) + SWL(ft)
Existing Well / Pre-Alteration
Completed Well 6/9/2014 12
Flowing Artesian? [] Dry Hole? []

WATER BEARING ZONES
Depth water was first found 20.00
SWL Date From To Est Flow SWL(psi) + SWL(ft)
5/9/2014 220 400 500 12

(11) WELL LOG
Ground Elevation
Material From To
clay 0 3
gravel 3 29
burnt/brittle brown clay 29 85
pea gravel and sands 85 125
fine sands 125 135
pea gravel and sands 135 140
blue clay 140 160
siltstone (hard) 160 161
blue clay 161 194
blue clay and siltstone layers 194 209
fine sand 209 218
blue clay 218 220
sand and pea gravel 220 224
fine sand 224 231
coarse sand and pea gravels 231 245
sandy blue clay or sandy shale 245 252
sand and pea gravel 252 275
blue clay 275 282
coarse sand and pea gravels 282 284

Date Started 5/8/2014 Complete 6/9/2014

(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 1818 Date 6/9/2014
Signed DANIEL MCLERAN (E-filed)
Contact Info (optional) 208-941-0647

