Application G-17861 continued Date 9/4/2014

PUBLIC INTEREST REVIEW FOR GROUND WATER APPLICATIONS

TO: Water Rights Section Date 9/4/2014

FROM: Ground Water/Hydrology Section Darrick E Boschmann/Gerald H. Grondin
Reviewer's Name

SUBJECT: Application G-17861 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: Roaring Springs Ranch Inc. County: Harney

A1. Applicant(s) seek(s) 3.09 cfs from one well(s) in the Malheur Lake Basin, Catlow Valley subbasin Quad Map: Blitzen

A2. Proposed use: Primary Irrigation, 246.83 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 1704	1	Black/grey rock, sandstone	3.09	34S/31E-23dbb	2553.3' N, 9.96' E fr S ¼cor S23
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	4552	?	54.71	03/01/68	1000	0-25	0-660	NA	NA	600	150	P
1										1500	150	P
1										2200	150	P
1										1700	100	P

Use data from application for proposed wells.

A4. **Comments:**

The application requests a total maximum pumping rate of 3.09 cfs (1,386.8gpm) and a total annual volume of 740.49 acre-feet from a single well to irrigate 246.83 acres (3 acre-feet per acre). The maximum pumping rate and maximum annual volume are what is typically allowed for 246.83 acres.

The application proposes to obtain groundwater from "Black/grey rock, sandstone". This appears to be part of a predominantly basalt/volcanic unit below a predominantly basin-fill sediment unit found in the basin valleys.

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) #** N.A. _____, _____, _____, _____, __, tap(s) an aquifer limited by an administrative restriction.
Name of administrative area: _____
Comments: _____
Currently there is 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, 7N, 7P, 7T
   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:** _____

There are two state observation wells in the general vicinity of the proposed POA well. The state observation well with long term data (1987-2008) closest to the proposed POA well is state observation well 1150 (HARN 1683) located in T33S/R31E-sec 31ddc about 5 miles northwest from the proposed POA well. The other is state observation well 1151 (HARN 900) located in T33S/R31E-sec 8ac about 8.5 miles from the proposed POA well which has a period of record from 1987-2014 (Figures 1 & 2). Water level trends in these wells indicate some level of decline over the period of record (Figure 2), however the relative contribution of climate and groundwater withdrawals to this decline cannot be determined. Notably, state observation well 1150 (HARN 900) is in proximity to an area of relatively higher groundwater pumpage, and records a somewhat greater overall decline.

If a permit is issued, the following conditions should be included: 7B, 7N, 7P, 7T and

The "large" water use condition: (require a totalizing flow meter at each well. Each flow meter shall be located within 50 feet of the wellhead and adjacent to each flow meter shall be a clearly visible monument with a sign noting the flow meter. Lastly, require for every flow meter the reading, recording (monthly at minimum), and annual reporting of the flow meter data, all flow meters).

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	Interbedded clay, sand, sandstone, and basalt	☐	☒
		☐	☐
		☐	☐
		☐	☐
		☐	☐

Basis for aquifer confinement evaluation: The well log for HARN 1704 (Figure 3) indicates first water was encountered in the interval 62-130 feet with a static water level of 59 feet. Water was again picked up from 440 feet with a static level remaining at 59 feet until 852 feet when the static water level rose to 54.71 feet. It is unknown how continuous the overlying fine grained material is, and given the minimal head difference between the upper and lower water bearing zones (4.29 feet) it is possible that a vertical connection with an upward gradient exists.

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**	**Roaring Springs**	**4,497**	**4,685**	**22,820**	☐	☒	☐	☐	☒
						☐	☐	☐	☐	☐
						☐	☐	☐	☐	☐
						☐	☐	☐	☐	☐
						☐	☐	☐	☐	☐
						☐	☐	☐	☐	☐
						☐	☐	☐	☐	☐
						☐	☐	☐	☐	☐
						☐	☐	☐	☐	☐

Basis for aquifer hydraulic connection evaluation: The groundwater elevation in the well at the time of construction (1968) was about 188 feet below the elevation of the lowest mapped spring at Roaring Springs. Water level data from State of Oregon Observation well 1150 (HARN 1683) located in T33s/R31E-sec 31ddc indicate that the current water level in HARN 1704 is likely at or slightly below the level at the time of construction. According to Waring (1909) the springs "come forth well up on the face of the scarp, not from the edge of the valley alluvium as they would if they rose along fault fissures." Further, Waring notes that these springs "issue from a coarse tuffaceous bed". These observations suggest that the source water for these springs is likely from recharge on the slopes of Steens Mountain to the east, rather than from groundwater flow from the Catlow Valley.

Water Availability Basin the well(s) are located within: No WAB data in this area.

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: No analysis. There is no surface water located less than 1 mile from the proposed well.

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:

No analysis. There is no WAB. Additionally, available data indicate that Roaring Springs do not appear to be hydraulically connected to groundwater at the proposed POA well. Further, other surface water bodies in the vicinity of the proposed POA well are intermittent, and lie at elevations well above the groundwater elevation in this area.

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**_____

If a permit is issued, the following conditions should be included: 7B, 7N, 7P, 7T and

The "large" water use condition: (require a totalizing flow meter at each well. Each flow meter shall be located within 50 feet of the wellhead and adjacent to each flow meter shall be a clearly visible monument with a sign noting the flow meter. Lastly, require for every flow meter the reading, recording (monthly at minimum), and annual reporting of the flow meter data, all flow meters).

References Used: Review of file G-17228, regional geologic mapping, local well logs, State Observation Well records.

Waring, G.A., 1909. Geology and water resources of the Harney Basin region, Oregon. USGS Water Supply Paper: 231.

D. WELL CONSTRUCTION, OAR 690-200

D1. **Well #:** 1 **Logid:** HARN 1704

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:** _____

Use of puddled clay for well seal does not meet well construction standards. Additionally, the seal depth is inadequate. Either abandon the well from 847 feet depth to well bottom or seal off everything above 857 feet.

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).**

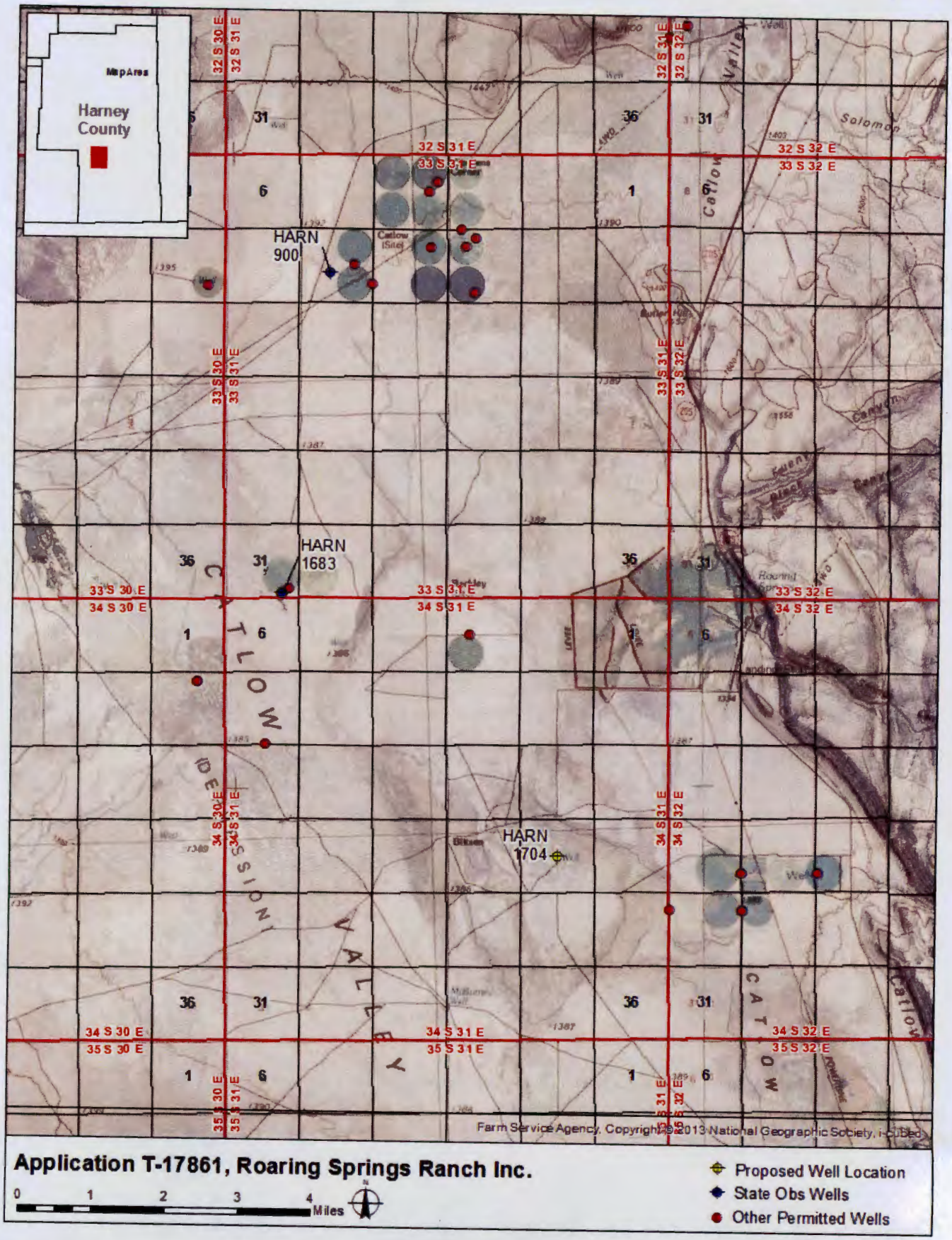

Figure 1: Area wide map with well locations.

State Observation Well 1151 (HARN 900)
TD = 450' BLS
Land Surface Elev. = 4566' AMSL

State Observation Well 1150 (HARN 1683)
TD = 610' BLS
Land Surface Elev. = 4572' AMSL

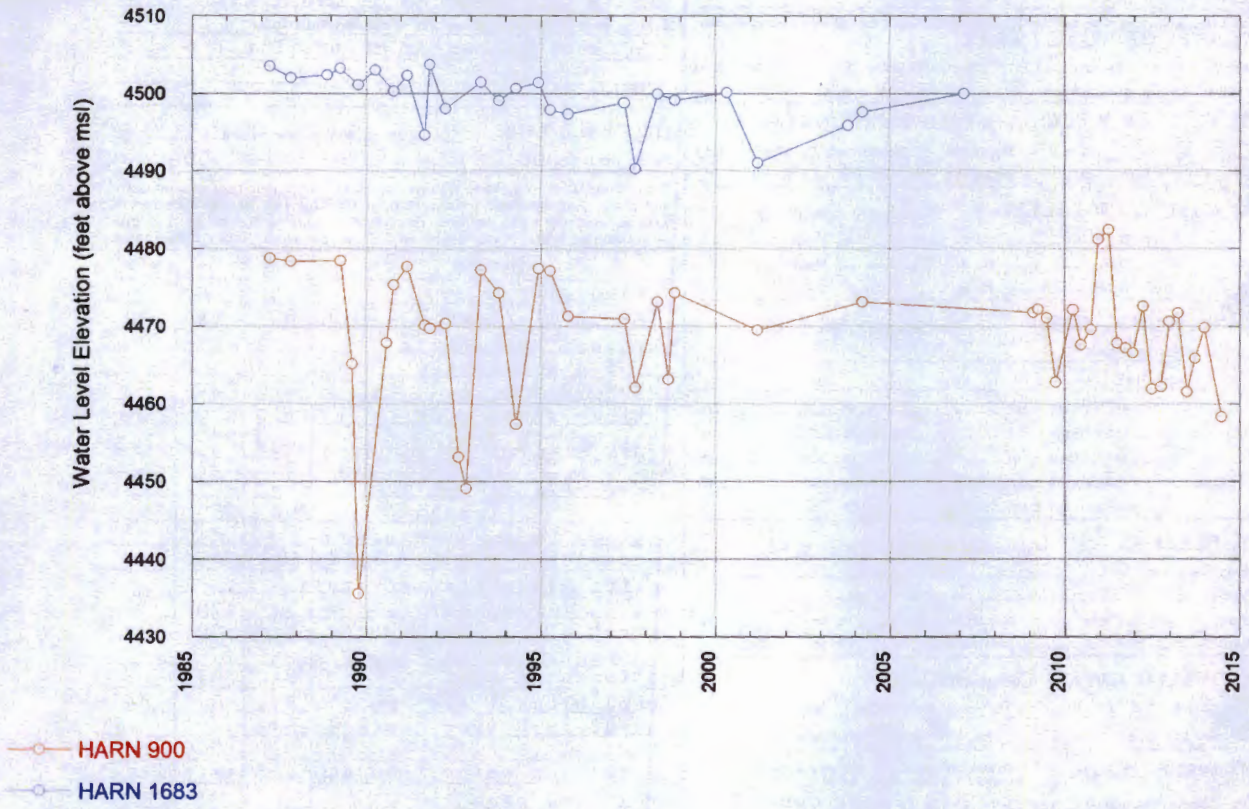

Figure 2: Hydrograph of State Observation Wells 1151 (red) and 1150 (blue).

NOTICE TO WATER WELL CONTRACTOR
The original and first copy of this report are to be filed with the STATE ENGINEER, SALEM, OREGON 97310 within 30 days from the date of well completion.

Harn 1704

RECEIVED
MAR 22 1968
STATE ENGINEER.
OREGON

WATER WELL REPORT
STATE OF OREGON
(Please type or print) (Do not write above this line)

State Well No. 34/31-23
State Permit No.

(1) OWNER:
Name Derrill Morger
Address 234 Mt. Vernon Ave.
Bakersfield, California

(2) TYPE OF WORK (check):
New Well ☐ Deepening ☐ Reconditioning ☐ Abandon ☐
If abandonment, describe material and procedure in Item 12.

(3) TYPE OF WELL:
Rotary ☐ Driven ☐
Cable ☒ Jetted ☐
Bored ☐

(4) PROPOSED USE (check):
Domestic ☐ Industrial ☐ Municipal ☐
Irrigation ☒ Test Well ☐ Other ☐

(5) CASING INSTALLED:
Threaded ☐ Welded ☒
16" Diam. from 0 ft. to 660 ft. Gage .250
" Diam. from ft. to ft. Gage
" Diam. from ft. to ft. Gage

(6) PERFORATIONS:
Perforated? ☐ Yes ☒ No.
Type of perforator used
Size of perforations in. by in.
perforations from ft. to ft.
perforations from ft. to ft.
perforations from ft. to ft.
perforations from ft. to ft.
perforations from ft. to ft.

(7) SCREENS:
Well screen installed? ☐ Yes ☒ No
Manufacturer's Name
Type Model No.
Diam. Slot size Set from ft. to ft.
Diam. Slot size Set from ft. to ft.

(8) WATER LEVEL: Completed well.
level 54'8½" ft. below land surface Date 3-1-68
Artesian pressure lbs. per square inch Date

(9) WELL TESTS:
Drawdown is amount water level is lowered below static level
pump test made? ☒ Yes ☐ No If yes, by whom? owner
600 gal./min. with 120 ft. drawdown after 4 hrs.
1500 " 150 " 12 "
2200 1700 " 150 100 " 10 12 "
Bailer test gal./min. with ft. drawdown after hrs.
Artesian flow g.p.m. Date
Temperature of water Was a chemical analysis made? ☐ Yes ☒ No

(10) CONSTRUCTION:
Well seal—Material used Puddled clay
Depth of seal 25 ft.
Diameter of well bore to bottom of seal 36 in.
Were any loose strata cemented off? ☐ Yes ☒ No Depth
Was a drive shoe used? ☒ Yes ☐ No
Did any strata contain unusable water? ☐ Yes ☒ No
Type of water? depth of strata
Method of sealing strata off
Was well gravel packed? ☐ Yes ☒ No Size of gravel:
Gravel placed from ft. to ft.

(11) LOCATION OF WELL:
County Harney Driller's well number
¼ ¼ Section 23 T. 34S R. 31E W.M.
Bearing and distance from section or subdivision corner
Located in center of section

(12) WELL LOG:
Diameter of well below casing 16"
Depth drilled 1000 ft. Depth of completed well 1000 ft.

Formation: Describe color, texture, grain size and structure of materials; and show thickness and nature of each stratum and aquifer penetrated, with at least one entry for each change of formation. Report each change in position of Static Water Level as drilling proceeds. Note drilling rates.

MATERIAL	From	To	SWL
brown soil	0	62	
tan clay w/sand & water	62	130	59
brown clay--gritty	130	166	
blue clay--gritty	166	206	
brown clay	206	222	
sticky green clay	222	249	
sticky red clay	249	250	
sticky brown clay	250	254	
grey clay w/fine to med sand	254	260	
sticky brown clay w/ occasional streaks sand	260	445	
olive green clay w/ streaks of sandstone	445	470	
green clay	470	540	
various colored clay w/ streaks of sand	540	852	
hard black & grey rock	852	875	54'8½
hard, dark grey sandstone	875	990	
hard black rock	990	1000	
Picked up water from 440'. Static level remained same to 852'			

Work started 10-10- 1967 Completed 2-25 1968
Date well drilling machine moved off of well 3-6 1968

Drilling Machine Operator's Certification:
This well was constructed under my direct supervision. Materials used and information reported above are true to my best knowledge and belief.
[Signed] Forrest Skinner Date 3-20, 1968
(Drilling Machine Operator)
Drilling Machine Operator's License No. 10

Water Well Contractor's Certification:
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.
NAME Skinner & Sons (Person, firm or corporation) (Type or print)
Address Crane, Oregon 97732
[Signed] Catherine Skinner (Water Well Contractor)
Contractor's License No. 312 Date 3-20-68, 19

(USE ADDITIONAL SHEETS IF NECESSARY)

Figure 3: Well log for proposed POA well HARN 1704.