Approved:

Мемо

To:	Kristopher Byrd, Well Construction Manager
From:	Tommy Laird, Well Construction Program Coordinator
Subject:	Review of Water Right Application G-18002
Date:	February 5, 2024

The attached application was forwarded to the Well Construction Section by the Groundwater Section. Phillip Marcy reviewed the application. Please see Phillip's Groundwater Review and the Well Reports.

Applicant's Well #1 (MALH 723): Based on a review of the Well Report, Applicant's Well #1 does not appear to comply with current minimum well construction standards (See OAR 690 Division 210). The problem is that according to the Water Supply Well Report, the well is not sealed to the proper depth. In addition, the 14 inch casing that is installed in the well does not meet the casing wall thickness requirements in OAR 690-210-0190. In order to meet minimum construction standards, the well must be resealed with an approved grout to a minimum depth of 225 feet and the casing must meet the casing requirements in OAR 690 Division 210.

My recommendation is that the Department not issue a permit for Applicant's Well #1 unless it is brought into compliance with current well construction standards or information is provided showing that it is constructed to meet current minimum well construction standards.

The repair of Applicant's Well #1 may not satisfy hydraulic connection issues.

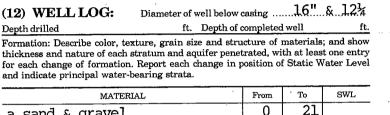
Applicant's Well #2 (MALH 53231): Based on a review of the Well Report, Applicant's Well #2 seems to protect the groundwater resource.

The construction of Applicant's Well #2 may not satisfy hydraulic connection issues.

WATER WELL REPORT FOR THE CENTED STATE OF OREGON

JUN 1 - 1987 PLEASE TYPE or PRINT IN INK

	WATER RESOURCES DEPT.
(1) OWNER:	SALEM, OREGON
Name B.N.GLANVILLE	
Address P.O.BOXXX 12	23
City WESTFALL	State ORECON
(2) TYPE OF WORK	(cneck):
New Well X Deepening \Box	Reconditioning \Box Abandon \Box
If abandonment, describe materia	al and procedure in Item 12.
	(4) PROPOSED USE (check):
(3) TYPE OF WELL:	(4) PROPOSED USE (CHeck):
Rotary Air XI Driven	Domestic I Industrial I Municipal I Irrigation I Test Well I Other I
Rotary Mud 🗆 Dug 🗆	Irrigation 🗗 Test Well 🗌 Other 🔲 . Thermal: Withdrawal 🗆 Reinjection
) CASING INSTAL	
16" Diam. from +18"	•
14" Diam. from110 i	ft. to 250 ft. Gauge
LINER INSTALL	ED: none
(6) PERFORATIONS	
Type of perforator used Fac	
Size of perforations 3	in. by 1/8 in.
.2926	perforations from 130 ft. to 240 ft.
	perforations from ft. to ft.
	perforations from ft. to ft.
(7) SCREENS: Well	l screen installed? 🗀 Yes 🛛 No
Manufacturer's Name	· · · · · · · · · · · · · · · · · · ·
Туре	Model No.
	Model No Size
Diam	Size Set from ft. to ft.
DiamSlot : DiamSlot :	Size
Diam	Size Set from ft. to ft.
Diam. Slot 3 Diam. Slot 3 (8) WELL TESTS:	Size
Diam	Size
Diam. Slot 3 Diam. Slot 3 (8) WELL TESTS: Was a pump test made? XYes 1. 1320 gg	Size
Diam. Slot 3 Diam. Slot 3 (8) WELL TESTS: Was a pump test made? XYes 1: 1320 g 	Size
DiamSlot 3 Diam. Slot 3 (8) WELL TESTS: Was a pump test made? XYes 1: 1320 g Air test Bailer test	Size
Diam. Slot 3 Diam. Slot 3 Diam. Slot 4 (8) WELL TESTS: Was a pump test made? XYes 1: 1320 g Air test Bailer test Artesian flow perature of water	Size
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Diam. Slot 3 Diam. Slot 3 Diam. Slot 3 (8) WELL TESTS: Was a pump test made? Yess 1: 1320 g 1: 1320 g 1	SizeSet fromft. toft. ft. SizeSet fromft. toft. Drawdown is amount water level is lowered below static level □ No If yes, by whom? OWNEY al./min. with 5 ft. drawdown after 3 hrs. """"""""""""""""""""""""""""""""""""
Diam. Slot 3 Diam. Slot 3 Diam. Slot 3 (8) WELL TESTS: Was a pump test made? Yess 1: 1320 g 1: 1320 g 1	SizeSet fromft. toft. ft. SizeSet fromft. toft. Drawdown is amount water level is lowered below static level □ No If yes, by whom? OWNEY al./min. with 5 ft. drawdown after 3 hrs. """"""""""""""""""""""""""""""""""""
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ft. below land surface. Date

lbs. per square inch. Date

••••••••••••••••••••••••••••••••••••••	1		
a sand & gravel	0	21	
sand & gravel	21	31	
brown clay	31	100	
volcanic ash	100	184	
volcanic ash	184	220	x180
basalt	220_	230	180
light gray volcanic ash	230	240	1.80
light blue volcanic ash	240	250	180
light blue volcanic ash	250	255	180
light brown volcanic ash	255_	270	180
black basalt	270	280	180
light blue volcanic ash	280	340	180
volcanic ash	340	420	180
fractured basalt	420	-590	180
Work started 4/27 1987 Comple	ted 5/	27	1987
Date well drilling machine moved off of well	5/	27	1987

(unbonded) Water Well Constructor Certification (if applicable): This well was constructed under my direct supervision. Materials used and information reported above are true to my best knowledge and belief. [Signed], 19......

Bonded Water Well Constructor Certification: Issued by ALLIED INS. GROUP/NEAL GOFF BoBD7900512644 Surety Company Name (number) This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief. NamBILL DOTY DRILLING CO. Type or print) (Person, firm or corporatio 83605 311 Caldwell Address ROUTE [Signed] 5/28 1987 Date

State Permit No.

26

Lot

(10) LOCATION OF WELL:

1/4 Section

(11) WATER LEVEL: Completed well.

180

Malheur

1/4

Address at well location:

SE

Depth at which water was first found

County

NW

Tax Lot #

Static level

Depth drilled

Artesian pressure

Q

Own.

Driller's well number

Blk

т. 18 N в. 41Е

]

Subdivision

220

IE-26

W.M

ft 4/30

SP*45292-690

MALH 53231

STATE OF OREGON

WATER SUPPLY WELL REPORT

(as required by ORS 537.765)

8 - - - - - -

WELL I.D. # L	91014
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START CARD # 1000 743

Instructions for completing this report are on the last page of this form.			
(1) LAND OWNER Well Number	(9) LOCATION OF WELL (legal	description)	
Address 16301 NOVTH WEST O'NICL HWY	Tax Lot _2600	Lot	
City REOMOND State OR Zip 97756	Township N or S	Range <u> </u>	E or W WM
(2) TYPE OF WORK		<u></u>	
Deepening Alteration (repair/recondition) Abandonment Conversion	Lat <u><u>43°58'39</u>" or Long <u>117°38'39</u>" or</u>	(degr	ees or decimal)
(3) DRILL METHOD	-		
Rotary Air Rotary Mud Cable Auger Cable Mud	Street Address of Well (or nearest addre	ss) <u>500 YD EAST</u> D	-01-
(4) PROPOSED USE	(10) STATIC WATER LEVEL ft. below land surfa	ace. Date 10-2	0-07
Domestic Community Industrial Trigation Thermal Injection Livestock Other			
	Artesian pressure lb. per squ		
(5) BORE HOLE CONSTRUCTION Special Construction: Yes No			
Depth of Completed Well fr. Explosives used: Yes Two Type Amount Amount	(11) WATER BEARING ZONES Depth at which water was first found		
BORE HOLE SEAL	From To	Estimated Flow Rate	SWL
Diameter From To Material From To Sacks or Dunda <u>20</u> 0176 CCMENT 0176 15.000			
20 0 176 CEMENT 0 176 15,000 14 176 350	2 60	300	2
10 350 450	820 40	3000+	168
How was seal placed: Method $\Box A \Box B$ $\Box C \Box D \Box E$			
	(12) WELL LOG Grou	nd Elevation	
Backfill placed from ft. to ft. Material	Material	From To	SWL
Gravel placed from ft. to ft. Size of gravel		0 60	æ
	gravel	0 60	<u> </u>
(6) CASING/LINER Diameter From To Gauge Steel Plastic Welded Threaded	Clay Drx brain	60 83	
Casing: $14 + 2 + 176 + 14 = -$			
	Clay green W/carse	83 152	
Liner:	ASCONIA	152 166	
	BASALT	166 220	
Drive Shoe used 🔲 Inside 🖉 Outside 🗌 None	ENALTUNES BASALT	220 440	168
Final location of shoe(s)			
(7) PERFORATIONS/SCREENS	BASMT	440 450	
Perforations Method			
Screens Type Material	Date Started 3-20-07 Co	$\frac{10-20-1}{20}$	57
From To Slot Number Diameter Tele/pipe Casing Liner			
Size size	(unbonded) Water Well Constructor (I certify that the work I performed or		g. alteration, or
	abandonment of this well is in compliant		
	construction standards. Materials used a	and information reported abo	we are true to
	the best of my knowledge and belief.		
	WWC Number	Date	
(8) WELL TESTS: Minimum testing time is 1 hour	Signed		
Yield gal/min Drawdown Drill stem at Time	(bonded) Water Well Constructor Cer	rtification	
	I accept responsibility for the constru-	uction, deepening, alteration	
1550 O 260 6Hr	abandonment work performed on this we above. All work performed during this t		
	supply well construction standards. This		
Temperature of water Depth Artesian Flow Found	and belief.	-	
Was a water analysis done? Yes By whom Did any strata contain water not suitable the former of the strate of the second strate of the s	WWC Number 1867	Date 11-1-07	
Salty Muddy Odor Colored Other	WWC Number _ 1867 Signed		
	Signed Olan Wind	in	
NOV 0 5 2007			_
WATED DECAUDATO DEDT			

ORIGINAL - WATER NEEDURGES DEPT SALEM OREGON

PUBLIC INTEREST REVIEW FOR GROUNDWATER APPLICATIONS

TO:	Water Rights Section	Date	11/17/2022
FROM:	Groundwater Section	Phillip I. Marcy	
		Reviewer's Name	
SUBJECT:	Application G- <u>18002</u>	Supersedes review of	015
	•••	- · · -	Date of Review(s)
PUBLIC INT	FEREST PRESUMPTION; GROUN	<u>DWATER</u>	
OAR 690-310-	$\cdot 130(1)$ The Department shall presume tha	t a proposed groundwater use will ensure	the preservation of the public
welfare, safety	and health as described in ORS 537.525. D	Department staff review groundwater appl	ications under OAR 690-310-140
	hether the presumption is established. OAR	1 0 11	

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: William L. and Cindy R. Romans County: Malheur

A1. Applicant(s) seek(s) 4.16 cfs from 2 well(s) in the Malheur Basin, Bully Creek subbasin

Proposed use: <u>Supplemental Irrigation (534.2 acres); Primary Irrigation (14.3 acres)</u> A2. Seasonality: March 1st to October 31st (245 days)

Well and aquifer data (attach and number logs for existing wells; mark proposed wells as such under logid): A3.

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 723	1	Basalt and ash	3.11	18S/41E-26 NW-SE	1740'N, 2360'W fr SE cor S 26
2	MALH 53231	2	Basalt	3.11	18S/41E-25 SW-SW	3340'N, 850'E fr SW cor S 25
3						

* 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	2903	220	180	04/30/1987	590	0-36	+1.5-250	None	130-240	1320	5	?
2	2889	220	168	10/20/2007	450	0-176	+2-176	None	None	1550	Na	Air

Use data from application for proposed wells.

A4. **Comments:** Both wells are located within ¹/₄ mile of Bully Creek and are subject to Division 9 rules. Well 1 (MALH 723) has been cased to 250 feet into a thick sequence of volcanic ash, with perforations located within a basalt flow and upper volcanic ash deposit. Well 2 (MALH 53231) is continuously cased and sealed into the upper 10 feet of an unfractured basalt flow. The applicant wishes to have the option to produce water from either well, therefore the full requested rate will be used to evaluate both proposed POAs.

This re-review addresses the finding of over-appropriation in Section B1 of the review form.

management of groundwater hydraulically connected to surface water \Box are, or \boxtimes 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:

Page

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

- B1. **Based upon available data**, I have determined that <u>groundwater</u>* 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) Modified 7N (see language in sectionC6)
 - ii. \square 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 220 ft. and 440 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): <u>MALH 723 is not properly sealed into a confining</u> unit, and has the potential to comingle waters from the shallow alluvial aquifer and the deeper basalt aquifer system. The shallow alluvial aquifer system is likely in good hydraulic connection to nearby Bully Creek, and would trigger PSI according to Division 9 rules. Therefore, if a permit is issued, MALH 723 would require reconstruction in order to be used for production of groundwater. Required changes to the current construction include a seal depth at least 5 feet into unfractured basalt overlying the designated fractured basalt production zone, and replacing the existing length of 14" casing with unperforated casing having a thickness of at least 0.250 inches (currently 0.219).

B3. **Groundwater availability remarks:** <u>Groundwater elevation data from nearby State Observation Well 573 (MALH 711)</u> shows fluctuations of less than 7 feet through the past 40 years. This is a shallow well, reported at only 49 feet in depth, and may not represent the deeper aquifer system the applicant is proposing to produce groundwater from. Groundwater levels in the applicant's well 1 (MALH 723) are very near their original elevation upon completion of the well in 1987 (see attached).

Local geologic maps (Ferns and others, 1993) place the applicant's wells in Quaternary alluvium, with outcrops of two separate basalt units nearby. Well logs for the applicant's wells show a thick sequence of ash above water-bearing basalts in each well that is most likely Bully Creek Formation (Tsbc) and/or Tuff of Bully Creek (Ttbl). In this context, the fractured basalt at depth is probably the Hunter Creek Basalt (Tbhc) of Miocene age.

At this time, there does not exist sufficient evidence of over-appropriation in the area surrounding the proposed POA wells. Updated hydrographs below do not indicate excessive declines based upon available data.

3

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	Basalt	\boxtimes	
2	Basalt	\boxtimes	

Basis for aquifer confinement evaluation: Well logs for both wells show head elevations significantly higher than the elevations of their respective water-bearing zones. Groundwater elevations in both wells are vastly different than those at nearby MALH 711 (see attached), which likely reflect the shallow alluvial aquifer system in connection with local surface waters with similar head elevations. The evaluation of aquifer confinement in well 1 (MALH 723) relies on well reconstruction as described in Section D. Without this reconstruction, this well shall not be used for production of groundwater.

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 ¹/₄ 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	Bully Creek	2727	2894	120		
2	1	Bully Creek	2708	2887	420		

Basis for aquifer hydraulic connection evaluation: <u>Head elevations in wells are much lower (>150 feet) than surface waters</u> within 1 mile. If a hydraulic connection to Bully Creek from the proposed groundwater source exists, it is likely greater than 25,000 feet away, where the surface water elevation in the creek corresponds to the groundwater elevation in the applicant's well. No springs were located nearby. Note that the evaluation of hydraulic connection for the applicant's well 1 (MALH 723) relies on well reconstruction described in Section D.

Water Availability Basin the well(s) are located within: <u>Bully Cr > Malheur R - AB Unn Stream</u>

C3a. **690-09-040** (4): Evaluation of stream impacts for <u>each well</u> 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.

	istributed	Wells											
Well	SW#	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
		%	%	%	%	%	%	%	%	%	%	%	%
Well Q	Q as CFS												
Interfer	rence CFS												
Distrib	outed Well	s											
Well	SW#	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
		%	%	%	%	%	%	%	%	%	%	%	%
Well Q	Q as CFS												
	ence CFS												
		%	%	%	%	%	%	%	%	%	%	%	%
Well Q	as CFS												
Interfer	rence CFS												
		%	%	%	%	%	%	%	%	%	%	%	%
Well Q) as CFS												
Interfer	ence CFS												
		%	%	%	%	%	%	%	%	%	%	%	%
Well Q) as CFS												
	ence CFS												
		%	%	%	%	%	%	%	%	%	%	%	%
Well Q	Q as CFS												
	ence CFS												
		%	%	%	%	%	%	%	%	%	%	%	%
Well Q	Q as CFS												
Interfer	rence CFS												
$(\mathbf{A}) - \mathbf{T}_{\mathbf{C}}$	otal Interf.			[
	% Nat. Q												
	% Nat. Q												
	-												
	$(\mathbf{A}) > (\mathbf{C})$	\checkmark											
$(\mathbf{E}) = (\mathbf{A}$	/ 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 section does not apply.

- 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: Little data is available pertaining to the capacity of the aquifer system developed by the applicant's wells. Due to the increased demand on this system imposed by recent drought conditions, additional caution should be taken when approving new rights. Therefore, if a permit is issued, the following 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. <u>Annual water-level measurements reveal a water level decline of 6 or more feet</u> in fewer than five consecutive years; or
- C. <u>Annual water-level measurements reveal a water-level decline of 10 or more feet; or</u>
- D. <u>Hydraulic interference leads to a decline of **10 or more feet** in any neighboring well with senior priority.</u>

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-18002, Water level measurements from applicant's wells.

D. WELL CONSTRUCTION, OAR 690-200

D1. Well #: 85261 Logid: MALH 723

D2. THE WELL does not appear to meet current well construction standards based upon:

- \boxtimes review of the well log; a.
- field inspection by ______
 report of CWRE ______ b.
- c.
- d. other: (specify)

D3. THE WELL construction deficiency or other comment is described as follows: The seal depth is not adequate to prevent production from shallower zones within the well, and also has the potential to comingle groundwater from multiple aquifer systems. In order to correct this deficiency, the well shall be continuously cased and sealed to a depth at least 5 feet into the consolidated bedrock above the water-bearing zone within the well. In addition, the entire length of 14" casing shall be replaced with unperforated casing having a thickness of at least 0.250 inches, in accordance with current well construction standards.

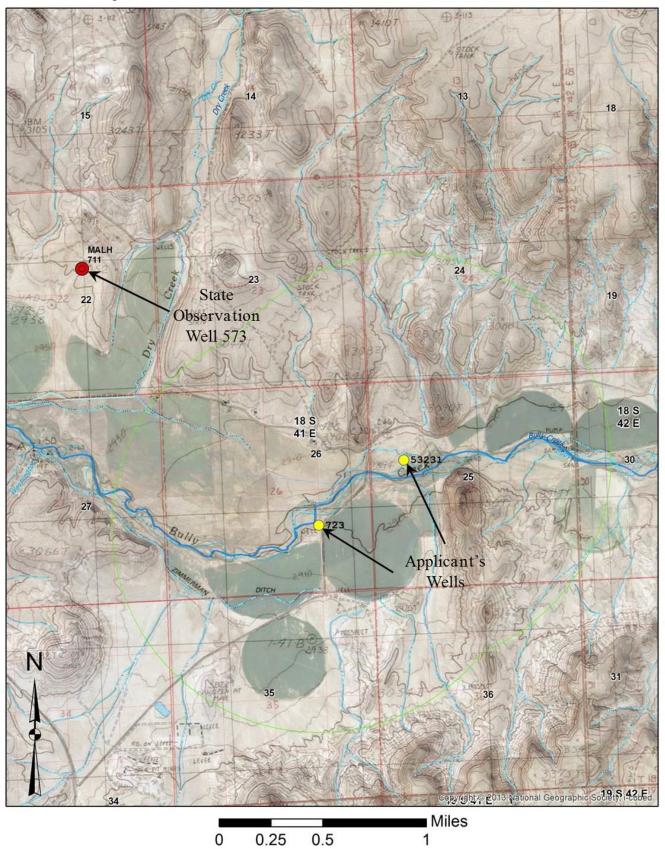
D4. X Route to the Well Construction and Compliance Section for a review of existing well construction.

Water Availability Tables

BULLY CR > MALHEUR R - AB UNN STR Basin: MALHEUR Exceedance Level: 80 Date: 06/11/2015 Month Natural Stream Consumptive Use and Stream Expected Stream Reserved Flow Instream Net Water Month Natural Stream Consumptive Use and Stream Expected Stream Reserved Flow Instream Net Month Natural Stream Stream Stream Stream Net Month Natural Consumptive Storage Expected Reserved Instream Net Month Natural Storage Flow Flow Values Natural Natural Month 9.41 1.31 8.10 0.00 10.00 -1.90 FEB 21.20 5.31 15.90 0.00 10.00 13.80 APR 51.70 38.30 13.40 0.00 12.00 -56.70 JUN 26.70 64.60 -37.90 0.00 12.00 -24.10 AUG 4.10 8.74 -4.64 0.00			DETAILED REPORT O	N THE WATER AVAILA	ABILITY CALCULATION				
Stream Flow Use and Storage Stream Flow Stream Flow Requirements Flow Water Available Monthly values are in cfs. Storage is the annual amount at 50% exceedance in ac-ft. JAN 9.41 1.31 8.10 0.00 10.00 -1.90 FEB 21.20 5.31 15.90 0.00 10.00 5.89 MAR 37.40 14.30 23.10 0.00 10.00 13.10 APR 51.70 38.30 13.40 0.00 12.00 1.38 MAY 35.60 80.30 -44.70 0.00 12.00 -56.70 JUN 26.70 64.60 -37.90 0.00 12.00 -56.70 JUL 9.60 21.70 -12.10 0.00 12.00 -44.90 JUL 9.60 21.70 -12.10 0.00 12.00 -24.10 AUG 4.10 8.74 -4.64 0.00 8.83 -13.50 SEP 2.90 4.65 -1.75 0.00 6.02 -7.77 OCT 3.90 2.55 1.35 0.00 6.32 -4.97 NOV 4.70 0.76 3.94 0.00 8.83 -4.89		71451	BULLY C						
Storage is the annual amount at 50% exceedance in ac-ft. JAN 9.41 1.31 8.10 0.00 10.00 -1.90 FEB 21.20 5.31 15.90 0.00 10.00 5.89 MAR 37.40 14.30 23.10 0.00 10.00 1.31 APR 51.70 38.30 13.40 0.00 12.00 1.38 MAY 35.60 80.30 -44.70 0.00 12.00 -56.70 JUL 9.60 21.70 -12.10 0.00 12.00 -24.10 AUG 4.10 8.74 -4.64 0.00 8.83 -13.50 SEP 2.90 4.65 -1.75 0.00 6.02 -7.77 OCT 3.90 2.55 1.35 0.00 6.32 -4.89 NOV 4.70 0.76 3.94 0.00 8.83 -4.89	Month	Stream	Use and	Stream	Stream		Water		
FEB21.205.3115.900.0010.005.89MAR37.4014.3023.100.0010.0013.10APR51.7038.3013.400.0012.001.38MAY35.6080.30-44.700.0012.00-56.70JUN26.7064.60-37.900.0012.00-49.90JUL9.6021.70-12.100.0012.00-24.10AUG4.108.74-4.640.008.83-13.50SEP2.904.65-1.750.006.02-7.77OCT3.902.551.350.006.32-4.97NOV4.700.763.940.008.83-4.89		Monthly values are in cfs. Storage is the annual amount at 50% exceedance in ac-ft.							
ANN 23,400 14,700 13,800 0 7,120 10,100	FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC	21.20 37.40 51.70 35.60 26.70 9.60 4.10 2.90 3.90 4.70 6.20	5.31 14.30 38.30 80.30 64.60 21.70 8.74 4.65 2.55 0.76 0.91	15.9023.1013.40-44.70-37.90-12.10-4.64-1.751.353.945.29	$\begin{array}{c} 0.00\\$	10.00 10.00 12.00 12.00 12.00 12.00 8.83 6.02 6.32 8.83 10.00	5.89 13.10 1.38 -56.70 -49.90 -24.10 -13.50 -7.77 -4.97 -4.89 -4.71		

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Well Location Map



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Water-Level Trends in Nearby Wells

