

MEMO

A handwritten signature in blue ink, appearing to be 'OK' followed by a stylized name or set of initials.

To: Kristopher Byrd, Well Construction and Compliance Section Manager
From: Joel Jeffery, Well Construction Program Coordinator
Subject: Review of Well Repair associated with Application G-18542
Date: June 7, 2019

The attached application was forwarded to the Well Construction and Compliance Section by Water Rights. Aurora Bouchier originally reviewed the application. Please see Aurora's Groundwater Review and the Well Logs.

Applicant's Well 1 (MARI 9193): Based on a review of the Water Supply Well Report, MARI 68554 (the repair of MARI 9193), seems to meet the minimum well construction standards.

Bringing MARI 9193 into compliance with minimum well construction standards may not satisfy hydraulic connection issues.

OK. Kyle

MEMO

To: Kristopher Byrd, Well Construction and Compliance Section Manager
From: Joel Jeffery, Well Construction Program Coordinator
Subject: Review of Water Right Application G-18542
Date: April 5, 2018

The attached application was forwarded to the Well Construction and Compliance Section by Water Rights. Aurora Bouchier reviewed the application. Please see Aurora's Groundwater Review and the Well Log.

Applicant's Well #1 (MARI 9193): 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 well report indicates that the cement grout seal was placed from 25 to 99 feet below ground surface (bgs) by tremie pipe. This portion of the seal was improperly placed. The well log indicates that the borehole diameter from 25 to 99 feet bgs is 12 inches and the casing diameter is 10 inches. In order to use a tremie pipe to place cement grout, the well's borehole diameter shall be a minimum of four inches larger in diameter than the casing. In addition, the well report indicates that the well was cased and sealed to a depth of 99 feet bgs. In order to meet minimum well construction standards, the well must be cased and sealed with an approved grout to a minimum depth of 135 feet bgs.

My recommendation is that the Department **not issue** a permit for Applicant's Well #1 (MARI 9193) unless it is brought into compliance with current minimum well construction standards or information is provided showing that it is in compliance with current minimum well construction standards.

Bringing Applicant's Well #1 into compliance with minimum well construction standards may not satisfy hydraulic connection issues.

WATER WELL REPORT
STATE OF OREGON

RECORDED
MAR 9 1983
AUG 7 1980

MAR 9 1983
State Well No. 85pw-1
State Permit No. _____

WATER RESOURCES DEPT
SALEM, OREGON

(1) OWNER:

Name HENRY FU
Address 912 S.E. EMIGRANT
City PENDLETON State OR 97801

(2) TYPE OF WORK (check):

New Well Deepening Reconditioning Abandon

If abandonment, describe material and procedure in Item 12.

(3) TYPE OF WELL:

Air Driven Domestic Industrial Municipal
Mud Dug Irrigation Test Well Other
Bored Thermal: Withdrawal ReInjection

(4) PROPOSED USE (check):

(5) CASING INSTALLED:

Steel Plastic
Threaded Welded

1" Diam. from +1 ft. to 99 ft. Gauge .250
" Diam. from _____ ft. to _____ ft. Gauge _____

LINER INSTALLED:

" Diam. from _____ ft. to _____ ft. Gauge _____

(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.

(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.

WELL TESTS:

Drawdown is amount water level is lowered below static level

Was a pump test made? Yes No If yes, by whom? _____

Yield: _____ gal./min. with _____ ft. drawdown after _____ hrs.

Air test 300+ gal./min. with drill stem at 385 ft. 1 hrs.

test X gal./min. with _____ ft. drawdown after _____ hrs.

Artesian flow X g.p.m.

Temperature of water 52° Depth artesian flow encountered X ft.

(9) CONSTRUCTION:

Special standards: Yes No

Well seal—Material used CEMENT

Well sealed from land surface to 99'

Diameter of well bore to bottom of seal 14" to 25"; 12" to 99'

Diameter of well bore below seal 10 in.

Number of sacks of cement used in well seal 29 sacks

How was cement grout placed? PUMPED TRAMMEL PIPE

Was pump installed? NO Type _____ HP _____ Depth _____ ft.

Was a drive shoe used? Yes No Plugs NO Size: location _____ ft.

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.

(10) LOCATION OF WELL:

County MARION Driller's well number 1515
1/4 Section 1 T. 85 R. 2W W.M.
Tax Lot # _____ Lot _____ Blk _____ Subdivision _____

Address at well location: _____

(11) WATER LEVEL: Completed well.

Depth at which water was first found 305 ft.

Static level 111 ft. below land surface. Date 7-28-80

Artesian pressure X lbs. per square inch. Date X

(12) WELL LOG:

Diameter of well below casing 10" to 310' - 8" to 395'

Depth drilled 395 ft. Depth of completed well 395 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 and indicate principal water-bearing strata.

MATERIAL	From	To	SWL
RED SOIL	0	2	
YELLOW CLAY	2	15	
BASALT W/CLAY SEAMS	15	130	
HARD BASALT	130	205	
BASALT W/BROWN FRACTURES	205	320	
BLUE UNFRACTURED BASALT	320	341	
BASALT BROWN FRACTURES	341	395	

Work started 7-21 1980 Completed 7-28 1980

Date well drilling machine moved off of well 7-28 1980

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) Paul Jones Date 7-29, 1980
(Drilling Machine Operator)

Drilling Machine Operator's License No. 158

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 JONES DRILLING CO., INC.
(Person, firm, or corporation) _____ (Type or print)

Address 29400 Sammam Hwy.
Lebanon, OR 97355

(Signed) Paul Jones
(Water Well Contractor)

Contractor's License No. 514 Date 7-29, 1980

NOTICE TO WATER WELL CONTRACTOR

The original and first copy of this report must be filed with the _____

WATER RESOURCES DEPARTMENT,
SALEM, OREGON 97310
within 30 days from the date of well completion

SP*12658-690

R. Stadel & Sons

Well & Pump, Inc.

4385 Stadel Lane NE

Silverton, OR 97381

WELL ID. LABEL# L	133601
START CARD #	216541
ORIGINAL LOG #	MARION 9193

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

(1) LAND OWNER
 Owner Well ID. _____
 First Name Gene Last Name Beyer
 Company _____
 Address 10750 Edmunson Dr SE
 City Salem State OR Zip 97317

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

(2a) PRE-ALTERATION
 Dia + From To Gauge Std Plstc Wld Thrd
 Casing: 10 1 99 .250
 Material From To Amt sacks/lbs
 Seal: Cement 0 99 Not on Log

(3) DRILL METHOD
 Rotary Air Rotary Mud Cable Auger Cable Mud
 Reverse Rotary Other _____

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

(5) BORE HOLE CONSTRUCTION Special Standard (Attach copy)
 Depth of Completed Well 395 ft.

BORE HOLE				SEAL			sacks/lbs	
Dia	From	To	Material	From	To	Amt	lbs	
See MARI 9193 for Original			Cement Grout	0	138	22	S	
Information					Calculated	16.5		
					Calculated			

How was seal placed: Method A B C D E
 Other _____
 Backfill placed from _____ ft to _____ ft Material _____
 Filter pack from _____ ft to _____ ft Material _____ Size _____
 Explosives used: Yes Type _____ Amount _____

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

(6) CASING/LINER
 Casing Liner Dia + From To Gauge Std Plstc Wld Thrd
 8 1 138 .250
 Shoe Inside Outside Other Location of shoe(s) 138
 Temp casing Yes Dia _____ From + _____ To _____

(7) PERFORATIONS/SCREENS
 Perforations Method None
 Screens Type _____ Material _____
 Perf/S Casing/ Screen Scrn/slot Slot # of Tele/
 green Liner Dia From To width length slots pipe size

Perf/S green	Casing/ Liner Dia	From	To	Scrn/slot width	Slot length	# of slots	Tele/ pipe size

(8) WELL TESTS: Minimum testing time is 1 hour
 Pump Bailor Air Flowing Artesian
 Yield gal/min Drawdown Drill stem/Pump depth Duration (hr)
 150 - 200 _____ 395 1
 Temperature 56 °F Lab analysis Yes By _____
 Water quality concerns? Yes (describe below) TDS amount 39.7 ppm
 From To Description Amount Units

From	To	Description	Amount	Units

(9) LOCATION OF WELL (legal description)
 County MARION Twp 3 S N/S Range 2 W E/W WM
 Sec 1 NW 1/4 of the SE 1/4 Tax Lot 700
 Tax Map Number _____ Lot _____
 Lat _____ or _____ DMS or DD
 Long _____ or _____ DMS or DD
 Street address of well Nearest address
 Deschutes Dr (No Address)

(10) STATIC WATER LEVEL
 Date SWL (psi) + SWL (ft)
 Existing Well / Pre-Alteration 03-22-2019 _____ 130.7
 Completed Well 05-02-2019 _____ 128.3
 Flowing Artesian? Dry Hole?

WATER BEARING ZONES Depth water was first found Original

SWL Date	From	To	Est Flow	SWL (psi)	+ SWL (ft)
No drilling performed					
See MARI 9193					

(11) WELL LOG
 Ground Elevation _____
 Material From To
 We installed 8" casing inside of the 10" borehole.
 This was to satisfy a well construction condition of the water right. As per Joel Jeffrey email of April 26, 2018, the OWRD wanted 8" casing sealed to 130 ft below ground surface.
 The drive shoe was installed to facilitate the pump removal from catching on bottom of 8" casing.
 Date Started 03-22-2019 Completed 05-02-2019

(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 1688 Date 05-28-2018
 Signed Steve N. Stadel
 Contact Info (optional) _____



Oregon Water Resources Department
725 Summer Street NE, Suite A
Salem Oregon 97301
(503) 986-0900
www.oregon.gov/owrd

Application for
Well ID Number

RECEIVED
FEB 13 2019

Do not complete if the well already has a Well Identification Number.

OWRD

I. OWNER INFORMATION

Current Owner Name (please print): Eugene Beyer and Andrea Beyer
Mailing Address: 10750 Edmunson Dr. SE
City, State, Zip: Salem, OR 97317
Mail Well ID to: [X] SAME AS ABOVE [] In Care Of (C/O)
Name & Address:
City, State, Zip:

II. WELL LOCATION INFORMATION (Please fill out as completely as possible)

Township: 8S (North / South) Range: 2W (East / West) Section: 1 NW 1/4 of the SE 1/4
Tax Lot (usually last 3-5 numbers of Tax Map #): 700 County Marion
GPS Coordinates:
Street Address of Well, City: 9122 Aspen LN SE, Salem, OR 97317
If the property had a different street address in the past: Unknown

III. GENERAL WELL INFORMATION (Please fill out as completely as possible, AND attach copy of Well Report, if available)

Use of Well (domestic, irrigation, commercial, industrial, monitoring): Irrigation
Date Well Constructed (or property built): 7/28/1980 Total Well Depth: 395' Casing Diameter: 10 inch
Owner at time the well was constructed (if known): Henry Fu Well Report # (if known): MARI 9193
Other Information:

SUBMITTED BY (please print): Eugene Beyer
PHONE: 503-510-9823 EMAIL &/or FAX: gbeyerfarms@gmail.com

Send application to: Oregon Water Resources Department 725 Summer St NE, Suite A, Salem, Oregon 97301; or fax to (503) 986-0902.
Applications are processed in the order they are received, and Well ID Numbers are mailed within 4-5 business days.

For Official Use Only by the Oregon Water Resources Department:

Received Date:
2-13-19

Well Report Number:
MARI 9193

Well Identification #:
L-133226

WATER WELL REPORT
STATE OF OREGON

RECORDED
MAR 9 1983
AUG 7 1980
WATER RESOURCES DEPT
SALEM, OREGON

MAR 9 1983

State Well No. 852w-1
State Permit No. _____

(1) OWNER:

Name HENRY FU
Address 912 S.E. EMIGRANT
City PENDLETON State OR 97801

(2) TYPE OF WORK (check):

New Well Deepening Reconditioning Abandon
If abandonment, describe material and procedure in Item 12.

(3) TYPE OF WELL:

Air Mud Cable
Driven Dug Bored

(4) PROPOSED USE (check):

Domestic Industrial Municipal
Irrigation Test Well Other
Thermal: Withdrawal ReInjection

(5) CASING INSTALLED:

Steel Plastic
Threaded Welded
1" Diam. from +1 ft. to 99 ft. Gauge .250
" Diam. from _____ ft. to _____ ft. Gauge _____

LINER INSTALLED:

" Diam. from _____ ft. to _____ ft. Gauge _____

(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.

(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.

WELL TESTS:

Drawdown is amount water level is lowered below static level
Was a pump test made? Yes No If yes, by whom?
Yield: _____ gal./min. with _____ ft. drawdown after _____ hrs.
Air test 300+ gal./min. with drill stem at 385 ft. 1 hrs.
test X gal./min. with _____ ft. drawdown after _____ hrs.
Artesian flow X g.p.m.
Temperature of water 52° Depth artesian flow encountered X ft.

(9) CONSTRUCTION:

Special standards: Yes No
Well seal—Material used CEMENT
Well sealed from land surface to 99' ft.
Diameter of well bore to bottom of seal 14" to 25'; 12" to 99'
Diameter of well bore below seal 10 in.
Number of sacks of cement used in well seal 29 sacks
How was cement grout placed? PUMPED TRAMMEL PIPE
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Was a drive shoe used? Yes No Plugs NO Size: location _____ ft.
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.

(10) LOCATION OF WELL:

County MARION Driller's well number 1515
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Address at well location: _____

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Depth at which water was first found 305 ft.
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BLUE UNFRACTURED BASALT	320	341	
BASALT BLOWN FRACTURES	341	395	

Work started 7-21 1980 Completed 7-28 1980
Date well drilling machine moved off of well 7-28 1980

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] Paul Jones Date 7-29 1980
(Drilling Machine Operator)
Drilling Machine Operator's License No. 158

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.
JONES DRILLING CO., INC.
Name _____ (Person, Firm or Organization) (Type or print)
Address 29400 Sarifam Hwy.
Lebanon, OR 97355
[Signed] Paul Jones
(Water Well Contractor)
Contractor's License No. 514 Date 7-29 1980

NOTICE TO WATER WELL CONTRACTOR
The original and first copy of this report
is to be filed with the

WATER RESOURCES DEPARTMENT,
SALEM, OREGON 97310
within 30 days from the date of well completion

SP*12658-690

MARI 9193



Oregon Water Resources Department
725 Summer Street NE, Suite A
Salem Oregon 97301
(503) 986-0900
www.oregon.gov/owrd

Application for Well ID Number

Do not complete if the well already has a Well Identification Number.

RECEIVED

FEB 13 2019

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OWRD

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Other Information:

SUBMITTED BY (please print): Eugene Beyer

PHONE: 503-510-9823 EMAIL &/or FAX: gbeyerfarms@gmail.com

Send application to: Oregon Water Resources Department 725 Summer St NE, Suite A, Salem, Oregon 97301; or fax to (503) 986-0902. Applications are processed in the order they are received, and Well ID Numbers are mailed within 4-5 business days.

For Official Use Only by the Oregon Water Resources Department:

Received Date:

2-13-19

Well Report Number:

MARI 9193

Well Identification #:

L-133226



June 3, 2019

Ted Koellman
14535 Spenner Road SE
Stayton, Oregon 97383

Re: Oregon Water Resource Department (OWRD) Response, Koellman Interference Complaint

Dear Mr. Koellman,

OWRD District 16 watermaster Joel Plahn has informed me of your groundwater well interference complaint. I understand that you reported that your irrigation well MARI 17131 has experienced historic water-level declines, with a particularly-notable drop in levels occurring sometime after 2007. These declines reportedly required you in 2009 to rebuild the pump and motor, and to lower the pump intake by approximately 50 feet, to allow continued pumping from your well.

Background

In October 2008, MARI 62123 was installed approximately 1900 ft due east of your well MARI 17131 (Figure 1). OWRD has been informed by the landowner that MARI 62123 was installed as a future replacement for adjacent irrigation well MARI 17126. From written correspondence provided by Malia Kupillas to OWRD on your behalf (letter to J. Plahn, dated May 29, 2018), it is our understanding that you contend that declines in your well have been caused by MARI 62123, primarily because the installation of MARI 62123 generally coincided with the period when water levels reportedly dropped sharply in your well. Specifically, it is your and/or your agent's contention that because MARI 62123 is completed 35 feet deeper than adjacent MARI 17126, that MARI 62123 is "obtaining water from the original and a deeper basalt aquifer", and that a "change in commingling in the basalt aquifers" in MARI 62123 has caused the water-level declines in your well.

To evaluate your complaint, I have reviewed hydrogeologic conditions in the area from OWRD well logs and historic groundwater level data. On May 9th, 2019 Joel Plahn and I measured static water levels in MARI 62123, MARI 17126, and in your well, MARI 17131. Using ground surface elevations at each location estimated from LIDAR data, depth-to-groundwater measurements were converted to the following static groundwater elevations:

- MARI 17131: 409.38 ft msl (feet mean sea level)
- MARI 17126: 409.76 ft msl
- MARI 62123: 409.97 ft msl

The similar groundwater elevations suggest that all three wells are hydraulically connected.

However, review of additional groundwater level data from other basalt aquifer wells in the Sublimity area indicates that *many other wells are also likely hydraulically connected to your well MARI 17131*. Most notably, these other wells include large-capacity municipal wells operated by the City of Sublimity (MARI 9147, MARI 9149, MARI 9142 and MARI 9172) and several irrigation wells located just outside of the Sublimity city limits (Figure 1).

To emphasize these similarities, Figure 3 and Figure 4 show January-May groundwater level measurements for only these five key wells: MARI 17131, MARI 17126, MARI 62123, MARI 9168, and MARI 1970 (note that groundwater level measurements for MARI 17131 after 2002 are as reported by you, whereas the first measurement shown for 1956 is as reported on the MARI 17131 well log). The most recent May 9, 2019 measurements for MARI 17131, MARI 17126 and MARI 62123 taken by OWRD are also included on both figures.

Although there are significant data gaps from the late 1970s until the mid-2000s, a congruent long-term water-level trend for these wells is apparent on Figure 3 and Figure 4, with data from your well falling along the trend in 1956 and again from 2013 through 2019. *This long-term trend, and the similarity of the most-recent 2019 elevations for all five wells, indicates a strong likelihood of consistent hydraulic connectivity between these wells for several decades* (other wells in the Sublimity area with similar water level elevations have also been hydraulically connected for similar periods, for example MARI 9135 and MARI 9167).

From Figure 3 and Figure 4 it can be seen that measurements were made in MARI 9168 and MARI 9170 in 2007 and 2008, the period when you reported a significant decline of water levels in MARI 17131. However, the data for MARI 9168 and MARI 9170 show that water levels in both of these deeper and hydraulically-connected wells were not affected by the installation of MARI 62123 in 2008.

4) We acknowledge that the 2002 and 2007 measurements you reported for MARI 17131 fall outside the general trend depicted on Figure 3 and Figure 4. Those two measurements are not implausible. However, our experience has been that measurement of water levels in MARI 17131 is challenging. During our May 9, 2019 site visit, several shallow false-positive signals were indicated by our equipment before we confidently measured the water level at 73.22 feet below top of casing.

From information you provided to Joel Plahn in a March 7, 2019 e-mail, it is our understanding that the uppermost pump impeller bowl in MARI 17131 is *“around 70 ft”* deep, and that the bowls *“are almost the same diameter of the well hole (8”).* This unusual pump configuration might explain our difficulty in obtaining valid water-level measurements in MARI 17131: there does not appear to be adequate clearance around the bowls to easily obtain reliable readings, and in fact the false-positive readings we experienced might be attributable to moisture accumulation at or near the top of the bowl assembly. For these reasons, it is also not implausible that the 2002 and 2007 measurements may have been false-positive readings above the actual static water levels.

From historic groundwater-level data, it is apparent that many basalt aquifer wells in the Sublimity area are hydraulically connected, despite differences in completion depths and other well construction details. Past and current water levels are remarkably similar in wells located more than two miles apart, and data from many wells show very similar historic water-level trends: overall water-level declines in the basalt aquifer system have been on the order of 60-75 feet since the late 1950s. Figure 5 and Figure 6 show local lithology (from well log descriptions) and construction summaries of area basalt aquifer wells, including your well MARI 17131. Also included on Figure 5 is an approximate groundwater level from the late-1950s at MARI 9168, MARI 17126 and at your well MARI 17131, and actual 2019 levels measured in late April and early May 2019 by OWRD at all three wells.

Figure 1 - Well Location Map

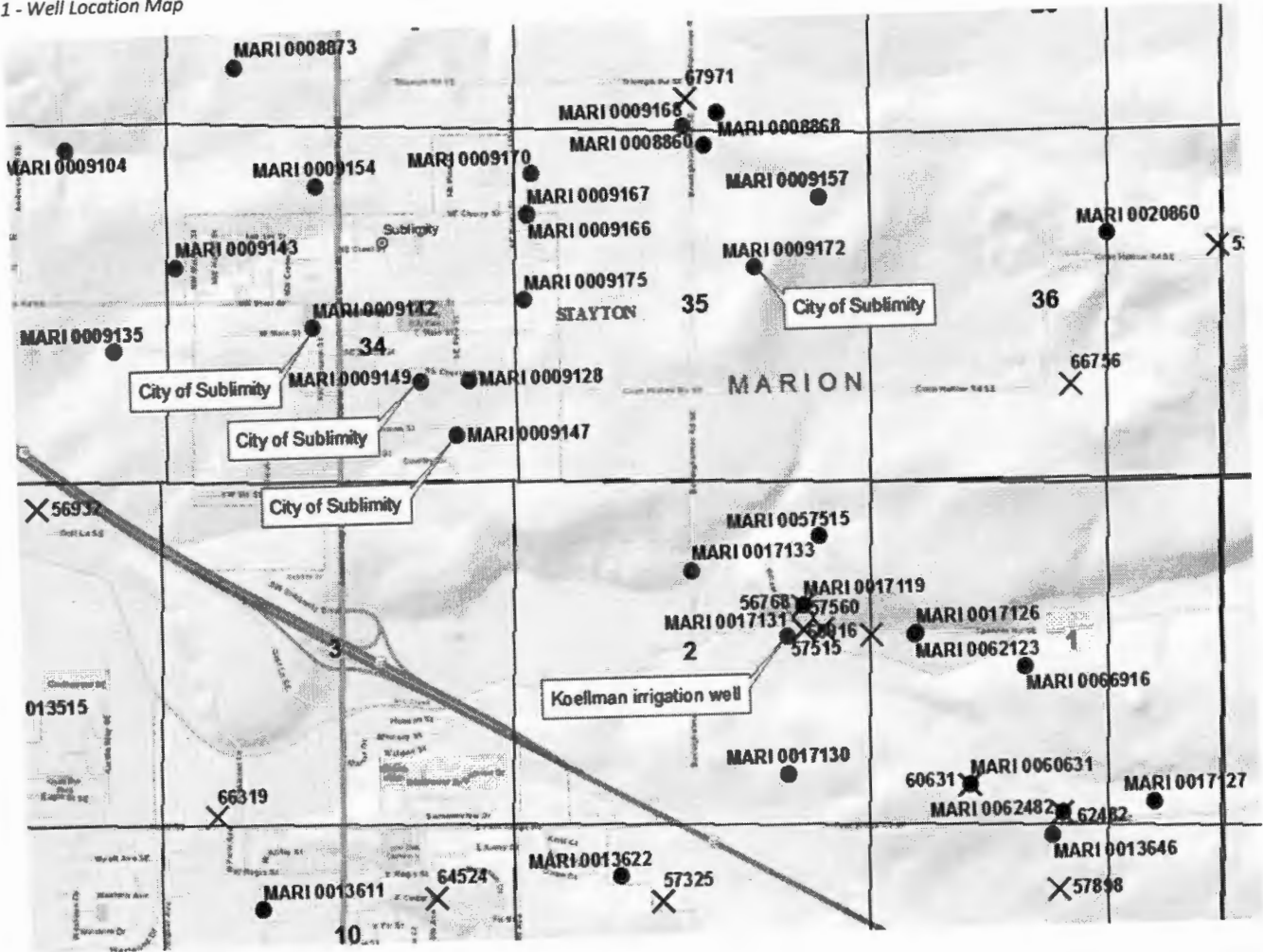


Figure 3 - Hydrograph: select wells, Jan-May only

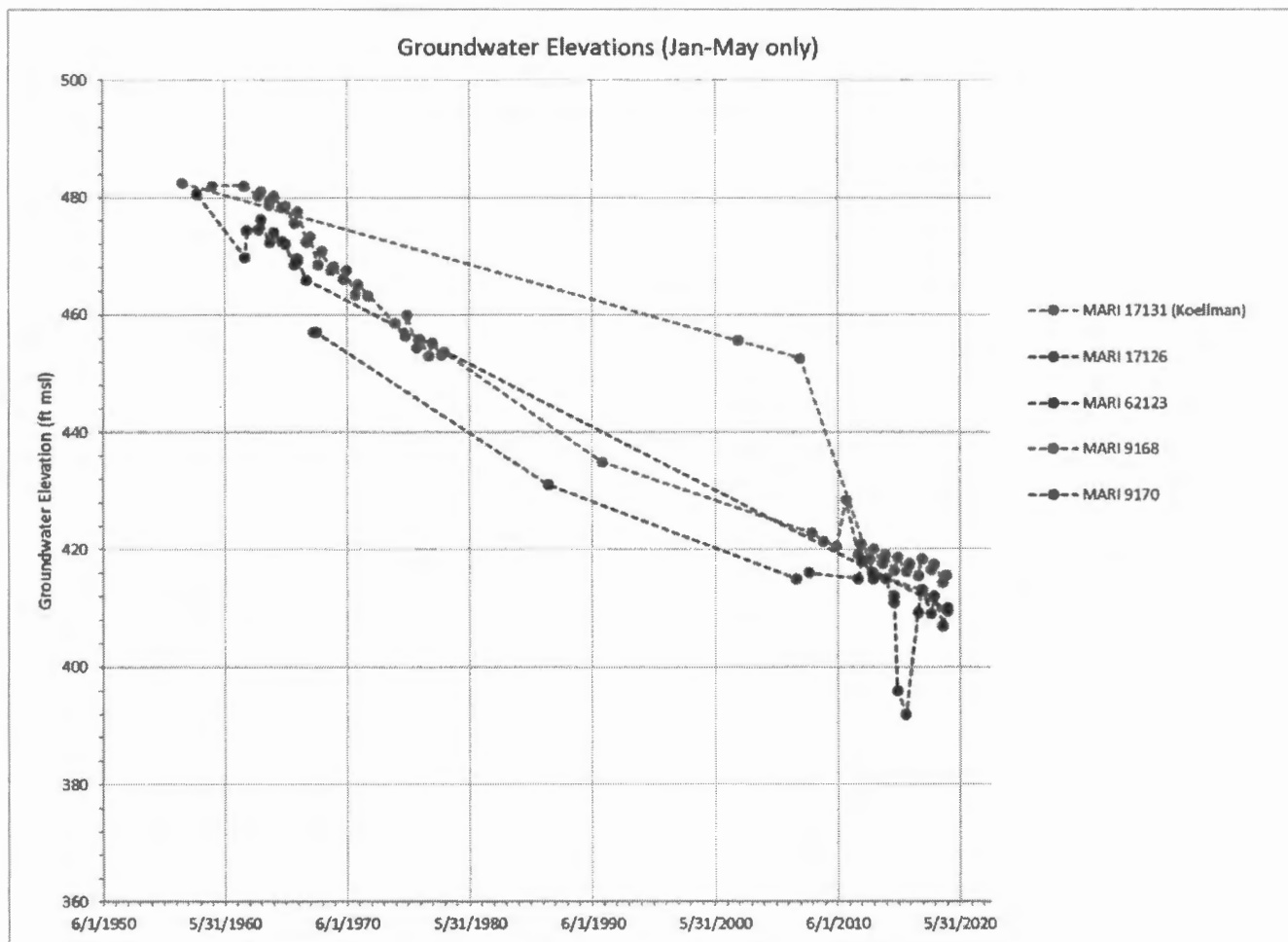
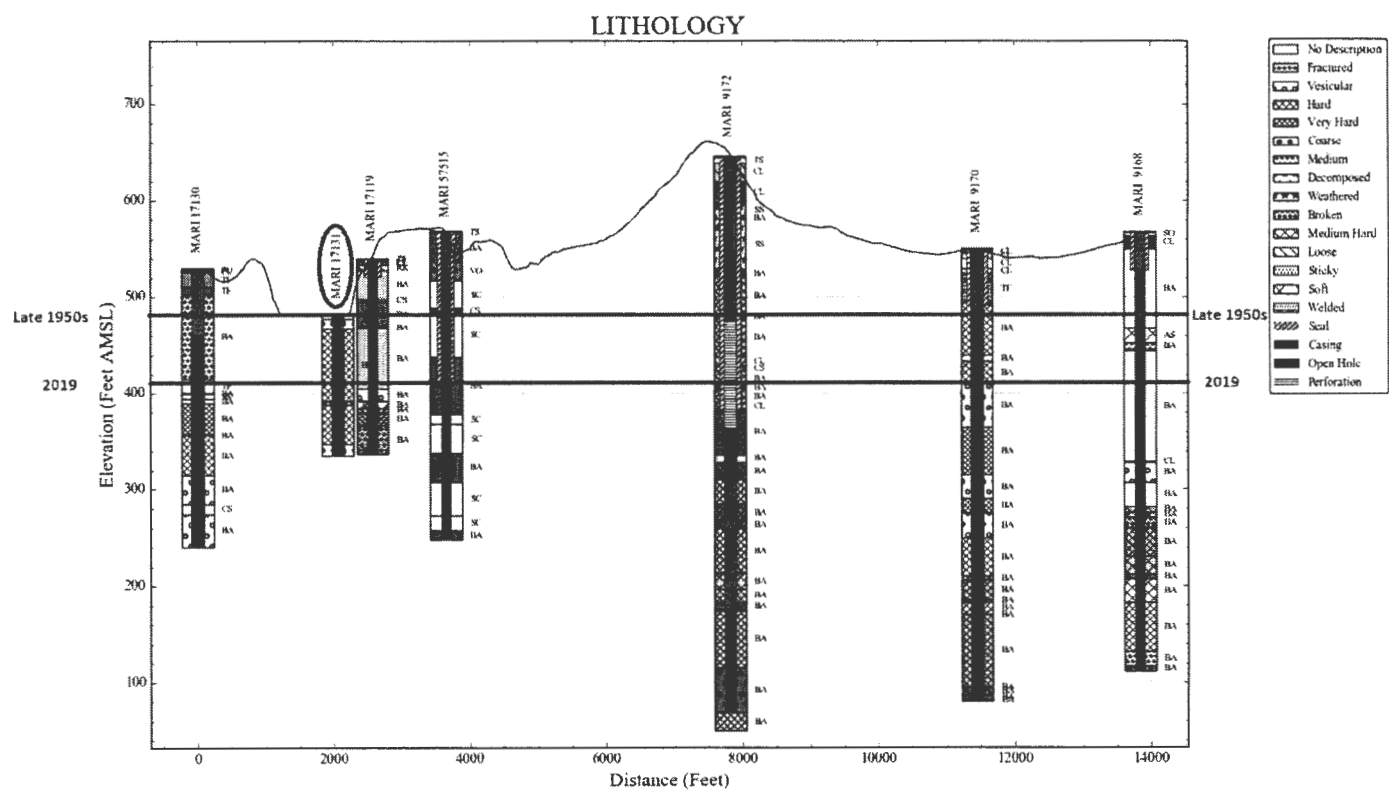


Figure 5 – North-South geologic cross-section (also shows estimated groundwater levels from late-1950s at MARI 9168, MARI 17126 and MARI 17131, and actual late-April – early-May 2019 measurements by OWRD at all three wells)



Groundwater Application Review Summary Form

Application # G- 18542

GW Reviewer Aurora Bowcher Date Review Completed: October 30, 2017

Summary of GW Availability and Injury Review:

Groundwater for the proposed use is either over appropriated, will not likely be available in the amounts requested without injury to prior water rights, OR will not likely be available within the capacity of the groundwater resource per Section B of the attached review form.

Summary of Potential for Substantial Interference Review:

There is the potential for substantial interference per Section C of the attached review form.

Summary of Well Construction Assessment:

The well does not appear to meet current well construction standards per Section D of the attached review form. Route through Well Construction and Compliance Section.

This is only a summary. Documentation is attached and should be read thoroughly to understand the basis for determinations and for conditions that may be necessary for a permit (if one is issued).

PUBLIC INTEREST REVIEW FOR GROUNDWATER APPLICATIONS

TO: Water Rights Section Date October 30, 2017
 FROM: Groundwater Section Aurora C Bouchier
 Reviewer's Name
 SUBJECT: Application G- 18542 Supersedes review of na
 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: Beyer Farms County: Marion

A1. Applicant(s) seek(s) 0.81 cfs from 1 well(s) in the Willamette Basin,
 _____ subbasin

A2. Proposed use Irrigation (65.1 acres – hazelnuts) Seasonality: March 1 – 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	MARI9193	1	CRB	0.81	8S/2W-1 NW-SE	300' S, 1,130' W fr SE cor DLC 55
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	545	305	111	7/28/1980	395	0-99	+1-99	Na	Na	300+	Na	A

Use data from application for proposed wells.

A4. **Comments:** The proposed well (MARI 9193), is authorized for 0.70 cfs under Certificate 77018. In February 2016 OWRD received a Certificate of Water Right Ownership Update to the buyers Eugene and Andrea Beyer (the applicant). This review evaluates the stacked rate of 1.51 cfs. A pump test was conducted on this well on 8/30/1996. The well was pumped at 360 gpm and reached a maximum drawdown of 150 feet at 2.5 hours into the test. The stacked rate of 1.51 cfs (676 gpm) is close to double the rate during the pump test.

A5. **Provisions of the** Willamette 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: The propose well produces from confined basalt, therefore the pertinent basin rules (OAR 690-502-0240) do not apply.

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) 7I, 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:**

The applicant's well (MARI 9193) produces from one or more water-bearing zones in the Columbia River Basalt Group (CRBG), a series of lava flows with composite thickness around 500 feet in this area (Conlon et al., 2005). Each flow is characterized by a series of internal features, including a thin rubble zone at the contact between flows and a thick, dense, low porosity and low permeability interior zone. In some cases, sedimentary layers were deposited during the time between basalt flow emplacements. A flow top, sedimentary interbed (if one exists), and flow bottom are collectively referred to as an interflow zone. Unconfined groundwater occurs near the weathered top of the basalts, but most water occurs in interflow zones at the contacts between lava flows. CRBG flow features result in a series of stacked, thin aquifers that are confined by dense flow interiors. The low permeability of the basalt flow interiors usually results in little connection between stacked aquifers, which generally results in tabular aquifers with unique water level heads (Reidel et al., 2002).

The observance of significantly different water levels in nearby wells of different depths (see Comparative Lithology / Well Construction Demonstrating Different Water Bearing Zones figure below) suggests that there is a poor natural connection between overlying aquifers in the CRBG. This is illustrated by comparing nearby wells MARI 65618 and MARI 65619, both of which were constructed in February 2015, which are located approximately 200 feet from one another, and which have initial water level elevations that differ by approximately 150 feet. These factors indicate that individual water-bearing zones in the basalts are likely to have sufficiently different pressures such that wells open to multiple zones will waste natural reservoir pressure through cross borehole flow. Wells which are open to multiple water-bearing zones with distinct water level heads can commingle multiple aquifers. When the pump is off, water migrates through the well bore from an aquifer of higher pressure to an aquifer of lower pressure. Over time, this can depressurize the aquifers and exacerbate water level declines. MARI 9193 is located approximately 400 feet from the end (A') of the cross section on the Salem East 7.5 geologic map (Tolan et. Al.,2000). Based on its location, MARI 9193 appears to be open to the Sentinel Bluffs, Winter Water, and Ortleigh members of the Grande Ronde Basalt, creating a potential pathway for cross borehole flow (see Comparative Lithology / Well Construction Demonstrating Different Water Bearing Zones figure below).

Vertical offset is mapped along both the northwest and northeast trending normal faults mapped in the vicinity of this well. The faults juxtapose the Silver Falls Basalt of the Frenchman Springs Basalt Member of the Wanapum Basalt Formation against the Sand Hollow Basalt of the Frenchman Springs Basalt Member of the Wanapum Basalt Formation and the Sentinel Bluffs Member of the Grande Ronde Basalt (Tolan and Beeson, 1999, and Tolan et. Al., 2000). Vertical offset of CRBG flows can cause juxtaposition of permeable interflows with dense flow interiors, resulting in a low flow boundary at the fault trace. At the subject site, the degree of compartmentalization by faulting is unknown. Compartmentalization could buffer or delay well-to-well impacts, while also limiting the aquifer extent.

Ground water elevations in the area suggest the water-bearing zone in the applicant's wells may be shared by other groundwater users (both permitted and exempt) in the same fault block and the fault block to the southwest (see hydrograph and second Comparative Lithology graphic below – note that MARI 53151 and MARI 9203 are in the fault block to the southwest). Long term trends indicate relatively stable water levels in the immediate area (within 1 mile), with no significant losses in head within the CRBG aquifers at the current level of use. However, it appears that some nearby permitted water rights have not yet begun production. Specifically, application G-16849 which is authorized for 5.5 cfs by permit G-16373, although all the wells on this permit are located in a different fault block than the applicant's well. It should be noted that the 2002 groundwater review for nearby application G-15880 pointed out declines of up to ~45% of the decline triggers on nearby existing water rights (presumably from wells MARI 9193, MARI 51649, and MARI 9191). The proposed final order recommended denying the permit. A protest was submitted and ultimately the application was withdrawn. Subsequent water level measurements since 2002 show stable water levels (see hydrograph below).

Because the aquifers are confined (storativity is estimated to be 0.0001), pumping impacts will propagate outward at rapid rates and are likely to reach aquifer boundaries (streams, faults, and truncated basalt flow margins) within a short amount of time. Using aquifer parameters appropriate for the basalts, it can be shown that the cone of depression from a pumped well will produce measureable impacts at a distance of 1 mile within an hour. Therefore, hydraulic interference with nearby wells, springs, and streams will occur rapidly once pumping begins if nearby streams and wells are connected to the same aquifer that is open in the well.

Generally, pumping drawdown effects can be detected at distances of a mile or greater shortly after turning on a pump in a CRBG aquifer. For these reasons, the potential for the proposed use to interfere with senior groundwater rights, both permitted and exempt, is significant. Additionally, there is uncertainty that the resource can sustain the proposed use. To protect existing users and monitor the resource, the condition 7I (Willamette Basin Basalt Groundwater Condition) is recommended. The 7I decline condition, as stipulated by OAR 690-502-0250, should provide some protection for the resource and for senior users should declines become evident in the future.

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	CRB	<input checked="" type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>

Basis for aquifer confinement evaluation: General experience in the CRBG indicates that most aquifers in the basalt are confined. The well log for MARI 9193 indicates a static water level 194 feet above the depth at which water was first found, corroborating the confined nature of the aquifer.

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	Little Pudding River	~420	350-360	4,700	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
1	2	South Fork Pudding River	~420	305-450	5,150	<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"/>

Basis for aquifer hydraulic connection evaluation: In the vicinity of the applicant's well, the Columbia River Basalts are partially eroded by local stream drainages. Aquifers above the level of incision are likely to be hydraulically connected to local streams. However, because of the very low vertical permeability of the basalt flow interiors, wells that are continuously cased and continuously sealed below the depths of local streams should be effectively isolated from those streams. The applicant's well (MARI 9193) is only cased and sealed to an elevation of 446 feet above sea level; the Little Pudding River has locally incised to an elevation of 360 feet above sea level within the same fault block as the well. Also, the water-bearing zone that the applicant's well appears to produce from is interpreted to occur at the base of the Winter Water / top of the Ortlely (from a depth of 305 to 320 or possibly the bottom of the well). According to the geologic maps, this zone is incised by the Little Pudding on the north side of the fault block (the same side as the well). MARI 9193 is located approximately 400 feet from the end (A') of the cross section on the Salem East 7.5 geologic map (Tolan et. Al.,2000). Based on its location, MARI 9193 appears to be open to the Sentinel Bluffs, Winter Water, and Ortlely members of the Grande Ronde Basalt (see screenshot below). The Sentinel Bluffs member is exposed in both the Little Pudding River and a small tributary to the South Fork of the Pudding River within the same fault block as MARI 9193. Based on well construction and that of nearby well MARI 65618, it appears that the applicant's well is open to a shallower water bearing zone (possibly only suitable for exempt uses) which may contribute to the headwater of the perennial reaches of the nearby surface water sources.

Water Availability Basin the well(s) are located within: Watershed 151 [PUDDING R > MOLALLA R – AB MILL CR], and possibly Watershed # 152

WAB 4/17/2018

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?
1	1	<input type="checkbox"/>	<input type="checkbox"/>	NA		<input type="checkbox"/>	67.30	<input checked="" type="checkbox"/>	See below	<input checked="" type="checkbox"/>
1	2	<input type="checkbox"/>	<input type="checkbox"/>	NA		<input type="checkbox"/>	22.70	<input checked="" type="checkbox"/>	See below	<input checked="" 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: An appropriate model for calculating stream interference is not readily available for the basalt aquifer system. Therefore, no estimate of stream interference as 30 days was included in table C3a.

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													
(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: _____

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:** In the vicinity of the well, the basalt aquifers are truncated by local stream drainages which are eroded through the basalt column. Both of the streams evaluated above are shown on USGS 7.5-minute topographic maps as perennial streams. The streams and the basalt aquifers are hydraulically connected. Using aquifer parameters appropriate for the basalts, it can be shown that the cone of depression from a pumped well will produce a measurable drawdown at a distance of 1 mile within several hours. Once the cone of depression reaches nearby streams, ground water discharge to the streams, whether it occurs via spring discharge or diffuse seepage, will decrease. Also, the rate of decrease in discharge to streams will increase over time. If pumping lowers the head (water level elevation) in the aquifer below the elevation of nearby springs, spring discharge will cease. The faulting may narrow the area of interaction of the aquifers within the fault block from the local streams.

References Used: _____

Application file: G-18542, and nearby G-16849, G-15880, G-13827, and LL-1211.

Conlon and others, 2005, Ground-water hydrology of the Willamette Basin, Oregon: U.S Geological Survey Scientific Investigations Report 2005-5168.

Gannett and Caldwell, 1998, Geologic framework of the Willamette lowland aquifer system, Oregon and Washington: U.S. Geological Survey Professional Paper 1424-A,

Reidel, S.P., Johnson, V.G., and Spane, F.A., 2002, Natural gas storage in basalt aquifers of the Columbia Basin, Pacific Northwest USA—A guide to site characterization: Richland, Wash., Pacific Northwest National Laboratory, 277 p.

Tolan, Terry L. and Beeson, Marvin H., 1999, Geologic Map of the Silverton and Scotts Mills 7.5 Minute Quadrangles, Northwest Oregon, USGS Open File Report 99-141.

Tolan, Terry L., Beeson, Marvin H., and DuRoss, Christopher, 2000, Geologic Map and Database of the Salem East and Turner 7.5 Minute Quadrangles, Marion County, Oregon, A Digital Database: USGS Open File Report 00-351.

Woodward and others, 1998, Hydrogeologic framework of the Willamette lowland aquifer system, Oregon and Washington: U.S. Geological Survey Professional Paper 1424-B,

D. WELL CONSTRUCTION, OAR 690-200

D1. Well #: 1 Logid: MARI 9193

D2. **THE WELL does not appear to 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 or other comment is described as follows:**

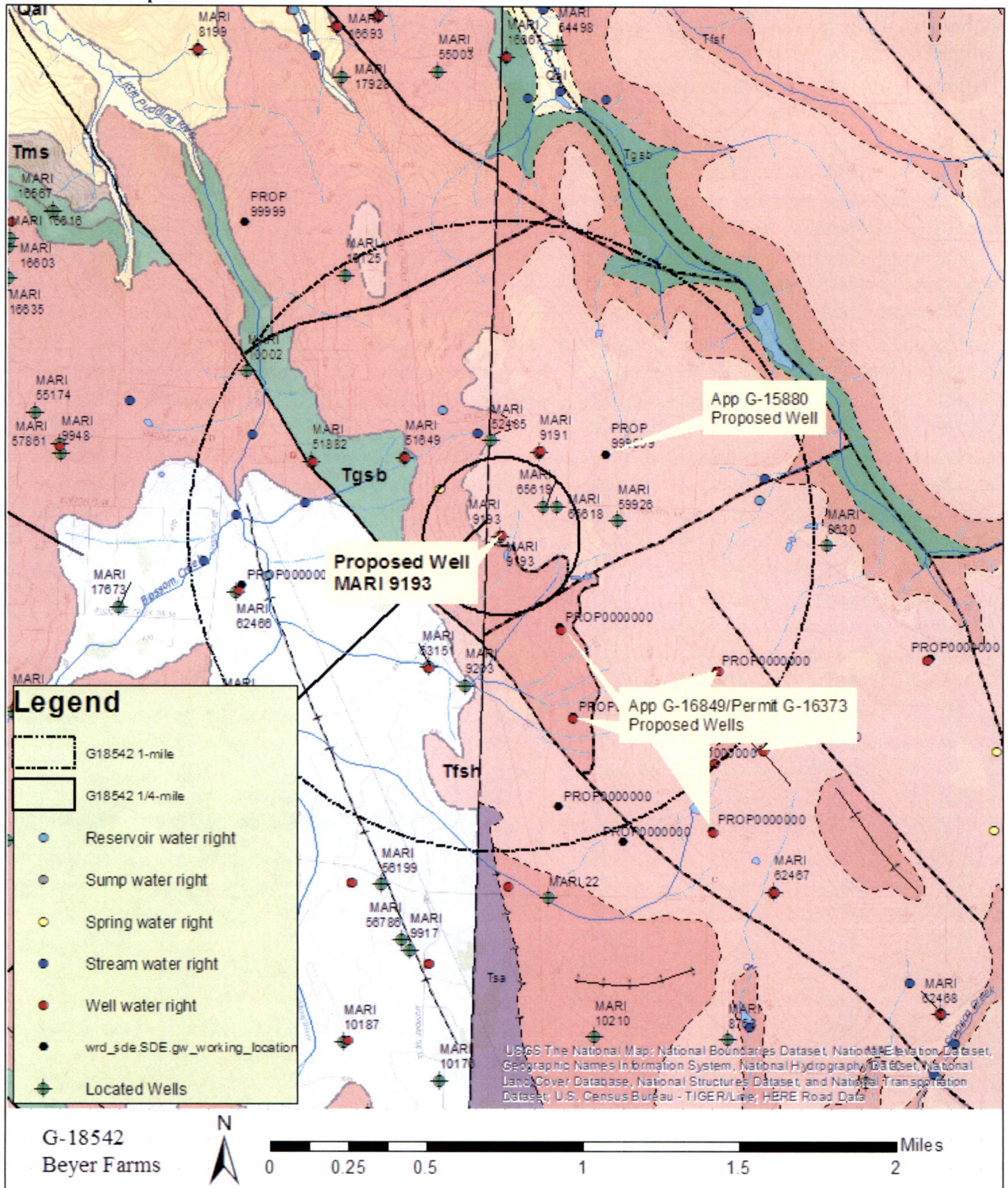
The well is cased and sealed to a depth of 99 feet in a layer described as 'basalt with clay seams' (from 15 to 130 feet). Water was first encountered at a depth of 305 feet in a layer described as 'basalt w/ brown fractures' (from 203-320 feet) and rose to a static water level of 111 feet (194 feet above the zone at which it was first encountered).

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

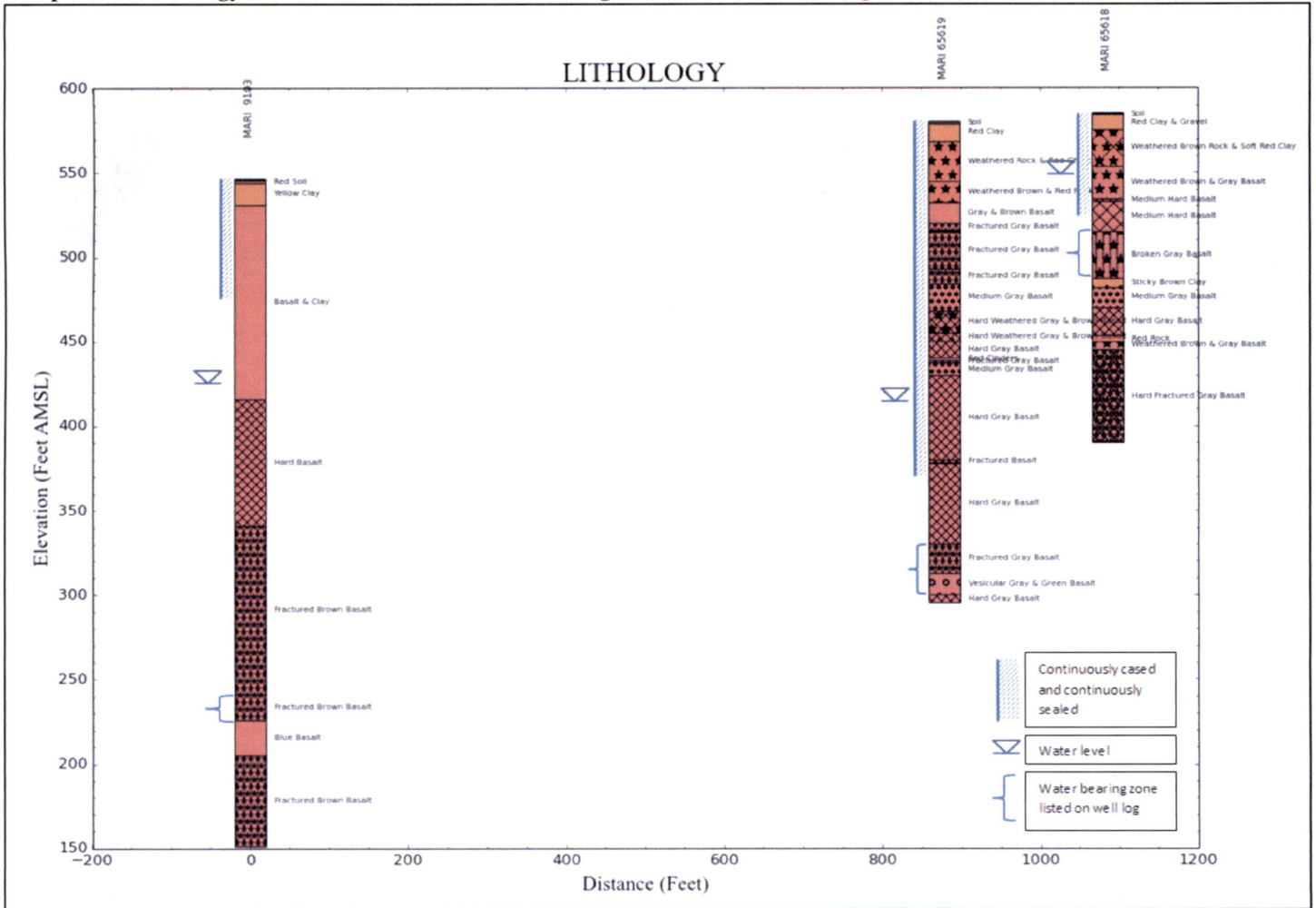
Water Availability Tables

DETAILED REPORT ON THE WATER AVAILABILITY CALCULATION						
Watershed ID #: 151		PUDDING R > MOLALLA R - AB MILL CR			Exceedance Level: 80	
Time: 2:35 PM		Basin: WILLAMETTE			Date: 10/19/2017	
Month	Natural Stream Flow	Consumptive Use and Storage	Expected Stream Flow	Reserved Stream Flow	Instream Requirements	Net water Available
Monthly values are in cfs. Storage is the annual amount at 50% exceedance in ac-ft.						
JAN	1,040.00	124.00	916.00	0.00	36.00	880.00
FEB	1,180.00	114.00	1,070.00	0.00	36.00	1,030.00
MAR	1,010.00	75.80	934.00	0.00	36.00	898.00
APR	787.00	51.60	735.00	0.00	36.00	699.00
MAY	425.00	49.00	376.00	0.00	36.00	340.00
JUN	224.00	69.90	154.00	0.00	36.00	118.00
JUL	109.00	110.00	-0.97	0.00	36.00	-37.00
AUG	71.00	90.20	-19.20	0.00	36.00	-55.20
SEP	67.30	51.40	15.90	0.00	36.00	-20.10
OCT	91.60	11.00	80.60	0.00	36.00	44.60
NOV	363.00	48.30	315.00	0.00	36.00	279.00
DEC	957.00	118.00	839.00	0.00	36.00	803.00
ANN	706,000	55,100	651,000	0	26,100	627,000

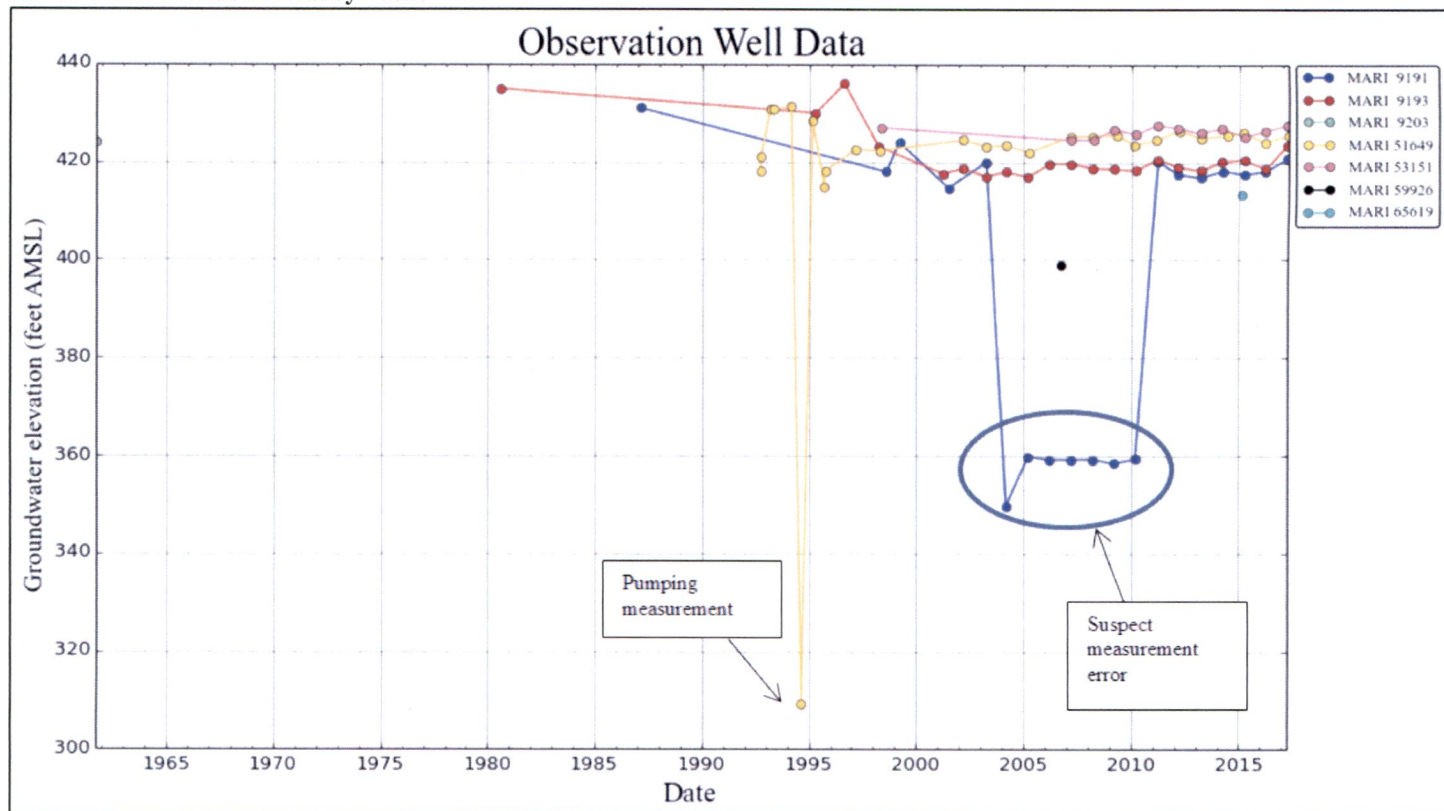
Well Location Map



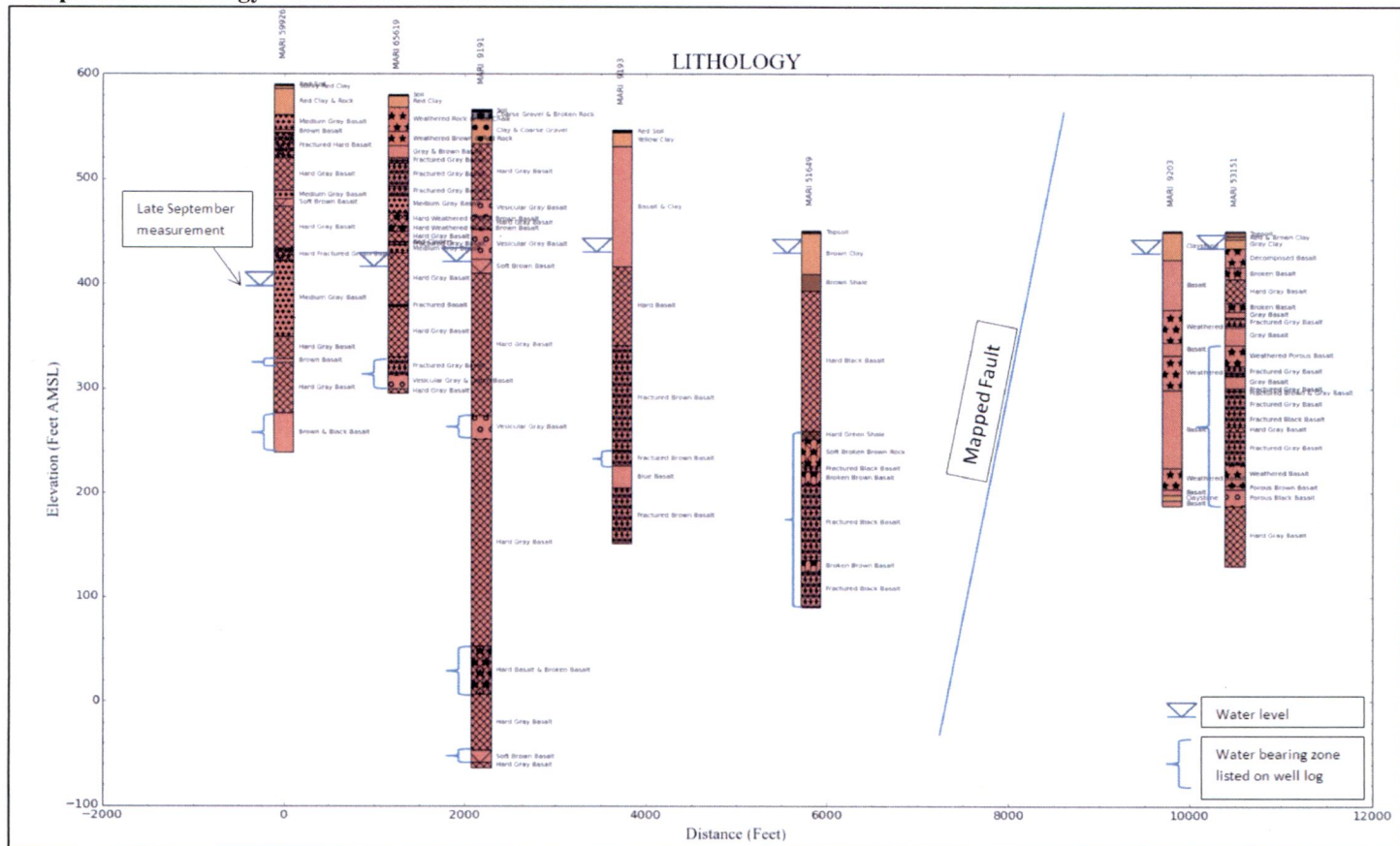
Comparative Lithology / Well Construction Demonstrating Different Water Bearing Zones



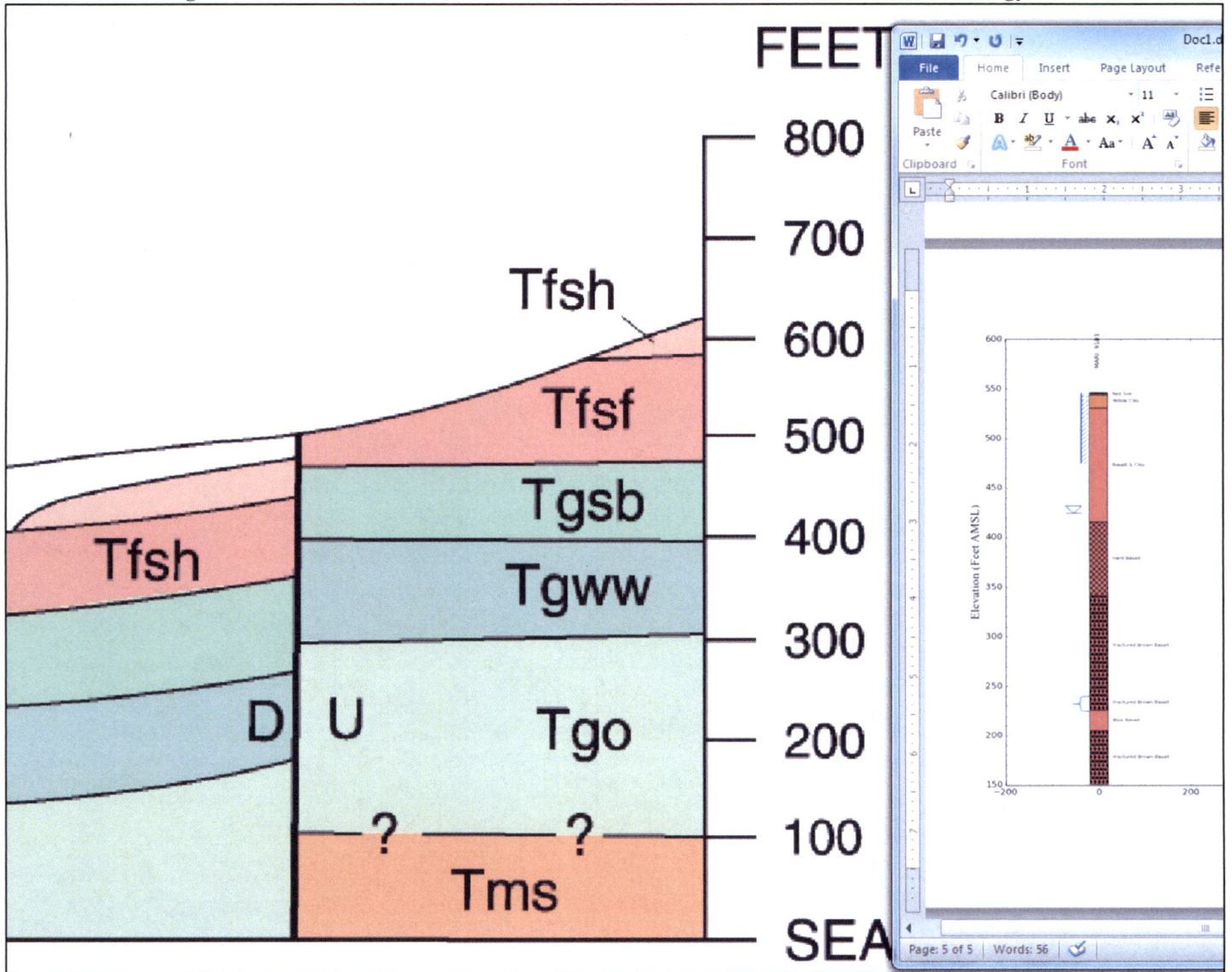
Water-Level Trends in Nearby Wells



Comparative Lithology – area wells with similar head



Screenshot Showing A' End of Cross Section (Tolan et. Al., 2000) and MARI 9193 Construction/Lithology



OK. Kyle

MEMO

To: Kristopher Byrd, Well Construction and Compliance Section Manager
From: Joel Jeffery, Well Construction Program Coordinator
Subject: Review of Water Right Application G-18542
Date: April 5, 2018

The attached application was forwarded to the Well Construction and Compliance Section by Water Rights. Aurora Bouchier reviewed the application. Please see Aurora's Groundwater Review and the Well Log.

Applicant's Well #1 (MARI 9193): 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 well report indicates that the cement grout seal was placed from 25 to 99 feet below ground surface (bgs) by tremie pipe. This portion of the seal was improperly placed. The well log indicates that the borehole diameter from 25 to 99 feet bgs is 12 inches and the casing diameter is 10 inches. In order to use a tremie pipe to place cement grout, the well's borehole diameter shall be a minimum of four inches larger in diameter than the casing. In addition, the well report indicates that the well was cased and sealed to a depth of 99 feet bgs. In order to meet minimum well construction standards, the well must be cased and sealed with an approved grout to a minimum depth of 135 feet bgs.

My recommendation is that the Department **not issue** a permit for Applicant's Well #1 (MARI 9193) unless it is brought into compliance with current minimum well construction standards or information is provided showing that it is in compliance with current minimum well construction standards.

Bringing Applicant's Well #1 into compliance with minimum well construction standards may not satisfy hydraulic connection issues.

WATER WELL REPORT
STATE OF OREGON

RECEIVED

AUGO 7 1980

WATER RESOURCES DEPT
SALEM, OREGON

MAR 21 1983

State Well No. 83/20-1

State Permit No.

(1) OWNER:

Name HENRY FU
Address 912 S.E. EMIGRANT
City PENDLETON State OR 97801

(2) TYPE OF WORK (check):

New Well Deepening Reconditioning Abandon

If abandonment, describe material and procedure in Item 12.

(3) TYPE OF WELL:

Air Driven
Rocky Mud Dug
Cable Bored

(4) PROPOSED USE (check):

Domestic Industrial Municipal
Irrigation Test Well Other
Thermal: Withdrawal ReInjection

(5) CASING INSTALLED:

Steel Plastic
Threaded Welded

" Diam. from +1 ft. to 99 ft. Gauge .250

LINER INSTALLED:

" Diam. from ft. to ft. Gauge

(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.

(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) WELL TESTS:

Drawdown is amount water level is lowered below static level

Was a pump test made? Yes No If yes, by whom?

Yield: gal./min. with ft. drawdown after hrs.
Air test 300+ gal./min. with drill stem at 385 ft. 1 hrs.
test X gal./min. with ft. drawdown after hrs.
Artesian flow X g.p.m.

Temperature of water 52° Depth artesian flow encountered X ft.

(9) CONSTRUCTION:

Special standards: Yes No

Well seal—Material used CEMENT
Well sealed from land surface to 99' ft.
Diameter of well bore to bottom of seal 14" to 25'; 12" to 99'
Diameter of well bore below seal 10 in.
Number of sacks of cement used in well seal 29 sacks
How was cement grout placed? PUMPED TRAMMEL PIPE

Was pump installed? NO Type HP Depth ft.

Was a drive shoe used? Yes No Plugs NO Size: location ft.

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: ft.

Gravel placed from ft. to ft.

(10) LOCATION OF WELL:

County MARION Driller's well number 1515
1/4 1/4 Section 1 T. 85 R. 2W W.M.
Tax Lot # Lot Blk Subdivision

Address at well location:

(11) WATER LEVEL: Completed well.

Depth at which water was first found 305 ft.

Static level III ft. below land surface. Date 7-28-80

Artesian pressure X lbs. per square inch. Date X

(12) WELL LOG:

Diameter of well below casing 10" to 310' - 8" to 395'

Depth drilled 395 ft. Depth of completed well 395 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 and indicate principal water-bearing strata.

MATERIAL	From	To	SWL
REDSOIL	0	2	
YELLOW CLAY	2	15	
BASALT W/CLAY SEAMS	15	130	
HARD BASALT	130	205	
BASALT W/BROWN FRACTURES	205	320	
BLUE UNFRACTURED BASALT	320	341	
BASALT BLOWN FRACTURES	341	395	

Work started 7-21 19 80 Completed 7-28 19 80
Date well drilling machine moved off of well 7-28 19 80

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] Bert Jones Date 7-29 19 80
(Drilling Machine Operator)

Drilling Machine Operator's License No. 158

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 JONES DRILLING CO, INC. (Type or print)

(Person, 29400 S. Ham Hwy. (Type or print)

Address Lebanon, OR 97355

[Signed] Bert Jones (Water Well Contractor)

Contractor's License No. 514 Date 7-29 19 80

NOTICE TO WATER WELL CONTRACTOR

The original and first copy of this report to be filed with the

WATER RESOURCES DEPARTMENT

SP*12658-690

E-2

6W

Standard Application Completeness Checklist

Minimum Requirements (OAR 690-310-0040)(ORS 537.400)

Yes No

This is the checklist used by WRD staff

Application G-18542 County MARION Priority Date 8.9.17

Township 85 Range 2W Section 4

Amount .81 cfs Use Irrigation WM Dist. # 16

Applicant Name Doann Hamilton for Beyer Farms

Receipt No. 124231 Caseworker Assigned: Barbe Kim Lisa

Contact info: Applicant/Organization Name and Mailing Address

Signature (in ink) of all applicants or the applicant's authorized agent (include title or authority if for an organization or corporation).

Property ownership: Does the applicant own all the land for the proposed project? Y / N

If No:

- The affected landowner's name and mailing address must be listed
- A signed statement declaring the existence of either written authorization or an easement permitting access to land crossed by the proposed ditch canal or other work must be submitted.

For a SW Application: Source of water must be indicated.

N/A

If the source is stored water, is the stored water component filled out and does the applicant own the reservoir or include a non-expired agreement for stored water? (ORS 537.400)

NOTE: A surface water application cannot be filed at the same time as a Reservoir or Alt Reservoir if it will be for the use of the stored water under the PROPOSED Reservoir application, Exp. Secondary (E2)(ORS 537.147).

If for stored water not under contract, is the source authorized under a permit, certificate, or decree? Permit or Certificate issued? Y / N Permit or Certificate # _____

For a GW Application: Well Development Tables completed and/or a well log report included (if existing)

Proposed water use

Amount of water from each source in GPM, CFS, or AF

Period of use indicated

If for supplemental irrigation, primary acreage or underlying permit or certificate number listed (Primary and Supplemental Irrigation counts as 2 uses)

Water Management Section (Estimates if the water system has not been designed)

Resource Protection Section (N/A for Groundwater)

N/A

For all standard reservoir applications: Preliminary plans and specifications including dam height, width, crest width and surface area for each reservoir.

Project schedule (If system is already completed, indicate "existing.")

N/A

- Supplemental data sheets enclosed (if needed)
 - Form M (Municipal or Quasi-Municipal)
 - Spring Description Sheet (if source is a spring)

A completed **Land-Use Form** or receipt signed and dated by the appropriate planning department officials. *Please be certain that the Land-Use form lists all lands involved and all uses proposed. Date of signature must be within the past 12 months.*

A **Legal Description** of all the properties involved where water is diverted, crossed, and used. The Legal description includes a metes and bounds or other government survey description. A copy of the deed, land sales contract or title insurance policy can provide this information, or applicant may submit a lot book report prepared by a title company. Copies of tax bills are not acceptable.

Yes

The proposed source **IS / IS NOT** (circle one) restricted or withdrawn from further appropriation. **NOTE: If it is withdrawn under ORS 538, then return application and fees. If it is withdrawn by other means, accept the application and a negative IR will be issued.**

The **map** must meet all the minimum requirements of OAR 690-310-0050.

- Township, Range, Section
- Location of main canals, ditches, pipelines or flumes (if POA/POD is outside of POU)
- Place of use, 1/4-1/4's and tax lot clearly identified
- Even map scale not less than 4" = 1 mile (1" = 1320 ft.); examples: 1" = 100 ft., 1" = 200 ft.
- Location of *each* diversion point, well or dam by reference to a recognized public land survey corner. Multiple wells shall be uniquely labeled, and identified on well logs if existing.
- Reference corner on map
- North Directional Symbol
- Number of acres per 1/4-1/4 if for irrigation, nursery, or agriculture
- For a standard reservoir application to store ≥ 9.2 acre feet AND having a dam height ≥ 10 feet, map must be prepared by a CWRE

Fees: Print out from Fee Calculator

Total Fees	\$ <u>2210</u>
Fee Paid	\$ <u>1690</u>
Amount Due	\$ <u>520.</u>

Reviewed by: TS Date: 8/9.17