Groundwater Application Review Summary Form

Application # g- LL-1777

GW Reviewer Ben Scandella, Jen Woody **Date Review Completed:** 5/9/19

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.

✓ JS 5/9/19

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).

MEMO

To: Kristopher Byrd, Well Construction and Compliance Section Manager

From: Joel Jeffery, Well Construction Program Coordinator

Subject: Review of Limited License Application LL-1777

Date: May 28, 2019

The attached application was forwarded to the Well Construction and Compliance Section by Water Rights. Jen Woody and Ben Scandella reviewed the application. Please see Jen's and Ben's Groundwater Review and the Well Logs.

Applicant's Well #1 (POLK 52191): 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). According to the Well Report, the number of sacks of cement used to fill the upper annular seal is inadequate. Only 20.0 sacks of cement was reported to have been used to fill the void for the annular seal, by calculation, at least 33 sacks of cement should have been used within the seal interval. In order to meet minimum well construction standards, the well must be properly resealed with an approved grout.

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

Applicant's Well #2 (POLK 52073): Based on a review of the Well Report, Applicant's Well #2 appears to protect the groundwater resource.

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

POLK 52191

OWRD

STATE OF OREGON
WATER SUPPLY WELL REPORT
(as required by ORS 537.765)

Instructions for completing this report are on the last page of this form.

(WELL I.D.)# L 78551

(START CARD) # 176347

(1) OWNER: Well Number 1

Name Patricia Beach

Address 4198 Beach Lane NW

City Salem State OR Zip 97304

(2) TYPE OF WORK

☑ New Well ☐ Deepening ☐ Alteration (repair/recondition) ☐ Abandonment

(3) DRILL METHOD:

☑ Rotary Air ☐ Rotary Mud ☐ Cable ☐ Auger

☐ Other

(4) PROPOSED USE:

☑ Domestic ☐ Community ☐ Industrial ☐ Irrigation

☐ Thermal ☐ Injection ☐ Livestock ☐ Other

(5) BORE HOLE CONSTRUCTION:

Special Construction approval ☐ Yes ☑ No Depth of Completed Well 320' ft.

Explosives used ☐ Yes ☑ No Type Amount

HOLE			SEAL			
Diameter	From	To	Material	From	To	Sacks or pounds
10"	0'	139'	Cement	2'	139'	20 bags
6'	139'	360'	bentonite	0'	2'	1 bag

How was seal placed: Method ☐ A ☐ B ☑ C ☐ D ☐ E

☐ Other Filled to top with dry bentonite

Backfill placed from ft. to ft. Material

Gravel placed from ft. to ft. Size of gravel

(6) CASING/LINER:

	Diameter	From	To	Gauge	Steel	Plastic	Welded	Threaded
Casing:	6"	+1'	139'	250	☑	☐	☑	☐
					☐	☐	☐	☐
					☐	☐	☐	☐
					☐	☐	☐	☐
Liner:	4"	0'	300'	160	☐	☑	☑	☐
	4"	300'	320'	200	☐	☑	☑	☐

Final location of shoe(s)

(7) PERFORATIONS/SCREENS:

☑ Perforations Method Saw cut

☐ Screens Type Material

From	To	Slot size	Number	Diameter	Tele/pipe size	Casing	Liner
200'	320'	1/8"	78	6" long	4"	☐	☑
						☐	☐
						☐	☐
						☐	☐
						☐	☐

(8) WELL TESTS: Minimum testing time is 1 hour

☐ Pump ☐ Bailer ☑ Air ☐ Flowing Artesian

Yield gal/min	Drawdown	Drill stem at	Time
20 GPM		360'	1 hr.
13 GPM	pump test		4 Hour

Temperature of water 54° Depth Artesian Flow Found

Was a water analysis done? ☐ Yes By whom

Did any strata contain water not suitable for intended use? ☐ Too little

☐ Salty ☐ Muddy ☐ Odor ☐ Colored ☐ Other

Depth of strata:

(9) LOCATION OF WELL by legal description:

County Polk Latitude Longitude

Township 6 S Range 4 W WM.

Section 13 1/4 1/4

Tax Lot 700 Lot Block Subdivision

Street Address of Well (or nearest address) Same

(10) STATIC WATER LEVEL:

206' ft. below land surface. Date 8/10/2005

Artesian pressure lb. per square inch. Date

(11) WATER BEARING ZONES:

Depth at which water was first found 268'

From	To	Estimated Flow Rate	SWL
206'	360'	20 GPM	206'

(12) WELL LOG:

Ground Elevation

Material	From	To	SWL
Brown claystone with boulders	0	10	
Brown clay	10	21	
Red brown clay with boulders	21	61	
Tan brown clay with boulders	61	72	
Red purple clay	72	75	
Rock broken brown	75	108	
Rock black brown hard	108	161	
Brown weathered rock	161	318	206'
Rock brown weathered hard	318	321	
Rock brown weathered broken	321	360	
Rock tipped in at 320' deep			
Ron Robinson Well Drilling			
4520 Salem Dallas Hwy NW			
Salem OR 97304			
503.371.1844			

RECEIVED
AUG 16 2005
WATER RESOURCES DEPT
SALEM, OREGON

Date started 7/23/2005 Completed 8/10/2005

(unbonded) Water Well Constructor Certification:

I certify that the work I performed on the construction, 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.

WWC Number

Signed Date

(bonded) Water Well Constructor Certification:

I accept responsibility for the construction, 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.

WWC Number 1585

Signed Date 8/15/2005

ORIGINAL & FIRST COPY-WATER RESOURCES DEPARTMENT SECOND COPY-CONSTRUCTOR THIRD COPY-CUSTOMER

RECEIVED
OVER THE COUNTER

POLK 52073

STATE OF OREGON
WATER SUPPLY WELL REPORT
(as required by ORS 537.765)
Instructions for completing this report are on the last page of this form.

(WELL I.D.)# L 71004
(START CARD) # 166058

(1) OWNER: Well Number 1
Name Patricia Beach
Address 7783 Spring Valley Rd. NW
City Salem State OR Zip 97304

(2) TYPE OF WORK
☑ New Well ☐ Deepening ☐ Alteration (repair/recondition) ☐ Abandonment

(3) DRILL METHOD:
☑ Rotary Air ☐ Rotary Mud ☐ Cable ☐ Auger
☐ Other

(4) PROPOSED USE:
☑ Domestic ☐ Community ☐ Industrial ☐ Irrigation
☐ Thermal ☐ Injection ☐ Livestock ☐ Other

(5) BORE HOLE CONSTRUCTION:
Special Construction approval ☐ Yes ☑ No Depth of Completed Well 220' ft.
Explosives used ☐ Yes ☑ No Type Amount

HOLE — SEAL

Diameter	From	To	Material	From	To	Sacks or pounds
10"	0'	120'	Cement	6'	120'	43 bags
6"	120'	220'	Bentonite	0'	6'	3 bags

How was seal placed: Method ☐ A ☐ B ☑ C ☐ D ☐ E
☐ Other Filled to top with dry bentonite
Backfill placed from ft. to ft. Material
Gravel placed from ft. to ft. Size of gravel

(6) CASING/LINER:

	Diameter	From	To	Gauge	Steel	Plastic	Welded	Threaded
Casing:	6"	+2'	120'	250	☑	☐	☑	☐
					☐	☐	☐	☐
					☐	☐	☐	☐
					☐	☐	☐	☐
Liner:	4"	10'	220'	160	☐	☑	☑	☐
					☐	☐	☐	☐

Final location of shoe(s)

(7) PERFORATIONS/SCREENS:
☑ Perforations Method Saw cut
☐ Screens Type Material

From	To	Slot size	Number	Diameter	Tele/pipe size	Casing	Liner
160'	220'	1/8	54	6" long	4"	☐	☑
						☐	☐
						☐	☐
						☐	☐
						☐	☐

(8) WELL TESTS: Minimum testing time is 1 hour
☐ Pump ☐ Bailer ☑ Air ☐ Flowing Artesian

Yield gal/min	Drawdown	Drill stem at	Time
20 GPM		220'	1 hr.

Temperature of water 54° Depth Artesian Flow Found
Was a water analysis done? ☐ Yes By whom
Did any strata contain water not suitable for intended use? ☐ Too little
☐ Salty ☐ Muddy ☐ Odor ☐ Colored ☐ Other
Depth of strata:

(9) LOCATION OF WELL by legal description:
County Polk Latitude Longitude
Township 6 S Range 4 W WM.
Section 13 NE 1/4 SE 1/4
Tax Lot 00700 Lot Block Subdivision
Street Address of Well (or nearest address) 7783 Spring Valley Rd. NW Salem, OR 97304

(10) STATIC WATER LEVEL:
163' ft. below land surface. Date 11/04/2004
Artesian pressure lb. per square inch. Date

(11) WATER BEARING ZONES:
Depth at which water was first found 190'

From	To	Estimated Flow Rate	SWL
190'	200'	5 GPM	163
200'	220'	15 GPM	

(12) WELL LOG:
Ground Elevation

Material	From	To	SWL
Soil	0	1	
Brown clay with boulders	1	10	
Brown red claystone	10	21	
Brown red clay with boulders	21	61	
Tan brown clay with boulders	61	72	
Red / purple claystone	72	75	
Rock basalt broken brown	75	108	
Rock black brown basalt hard	108	151	
Weathered rock brown with hard seams	151	220	163'

RECEIVED
NOV 09 2004
WATER RESOURCES DEPT
SALEM, OREGON

Ron Robinson Well Drilling, Inc.
4520 Salem Dallas Hwy NW
Salem, OR 97304
503.371.1844 office
503.371.4829

Date started 10/26/2004 Completed 11/04/2004

(unbonded) Water Well Constructor Certification:
I certify that the work I performed on the construction, 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.
WWC Number
Signed Date

(bonded) Water Well Constructor Certification:
I accept responsibility for the construction, 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.
WWC Number 1585
Signed Date 11/4/2004

ORIGINAL & FIRST COPY-WATER RESOURCES DEPARTMENT SECOND COPY-CONSTRUCTOR THIRD COPY-CUSTOMER

PUBLIC INTEREST REVIEW FOR GROUNDWATER APPLICATIONS

TO: Water Rights Section Date 5/9/2019

FROM: Groundwater Section Benjamin Scandella, Jen Woody
Reviewer's Name

SUBJECT: Application LL-1777 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 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: JOHN BURNHAM County: POLK

A1. Applicant(s) seek(s) 0.0914 cfs from 2 well(s) in the Willamette Basin,
Middle Willamette subbasin

A2. Proposed use: IRRIGATION TO ESTABLISH GRAPES. Seasonality: JANUARY 1 THROUGH DECEMBER 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	**POLK 52191**	**1**	**CRB**	**0.0914**	**6S/4W-13 NW-SE**	**910'S, 1550'W fr E cor S 13**
2	**POLK 52073**	**2**	**CRB**	**0.0914**	**6S/4W-13 NE-SE**	**220' S, 1215' W fr E cor S 13**

* 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	**660**	**268**	**206**	**8/10/2005**	**360**	**2-139**	**+1-139**	**0-320**	**200-320**	**20**		**Air (1 hr)**
2	**630**	**190**	**163**	**11/4/2004**	**220**	**0-120**	**+2-120**	**10-220**	**160-220**	**20**		**Air (1 hr)**

Use data from application for proposed wells.

A4. **Comments:** The proposed POAs are located on the margins of Spring Valley, about 2.5 miles NW of Lincoln.

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: Both wells produce groundwater from a confined aquifer, and thus the pertinent rules (OAR 690-502-0240) do not apply.

A6. ☒ **Well(s) #** **POLK 52191** and **POLK 52073**, tap(s) an aquifer limited by an administrative restriction.
Name of administrative area: **Eola Hills Ground Water Limited Area (690-502-0200)**
Comments: "Groundwater in the basalt aquifers in the Eola Hills Groundwater Limited Area is classified for exempt uses, irrigation and rural residential fire protection systems only. Permits may be issued, for a period not to exceed five years, for fire protection and for drip or equally efficient irrigation provided the Director finds the proposed use and amount do not pose a threat to the groundwater resource or existing permit holders" (OAR 690-502-0200).

This proposed limited license application appears to be consistent with the provisions of OAR 690-502-0200.

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 (Willamette CRB conditions); 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 a single aquifer in the Columbia River Basalt Group 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 proposed POAs, POLK 52191 and POLK 52703, are located the southeastern foothills of the Eola Hills, which are comprised of Columbia River Basalt Group (CRBG) flows overlying older marine sedimentary rocks. In this area the Miocene CRB overlies Eocene marine sedimentary rocks. Extensive surficial contacts between the CRB and marine sedimentary rocks are mapped near the wells' location, which implies that the CRB pinches out at those locations (Woodward and others, 1998; Conlon and others, 2005; Gannett and others, 1998). However, closer review of area well logs (e.g., POLK 52787, POLK 1232, and POLK 50276) suggests that the areal extent and thickness of the CRB at and near the subject wells are somewhat greater than indicated on regional USGS geologic maps (Conlon and others, 2005). On this basis, it is concluded that the water-bearing "brown weathered rock rock" shown from 161-318 ft bgs on the POLK 52191 well log, as well as the water-bearing "weathered rock brown with hard seams" from 151-220 ft bgs on the POLK 52073 well log, are both accessing aquifers in the CRB and not the underlying marine sedimentary rock units.

Groundwater data for the CRB in this area is sparse, with wells completed in the CRB showing low to moderate yields from ~5-50 gpm. The two nearby long-term datasets for wells potentially accessing the same CRB aquifer (POLK 323 and POLK 1225) show relatively stable levels, with a decline from 1986 to 2006 followed by recovery through 2018. The l-mile distance and 20-30 ft head separation between POLK 1225 and the applicant's wells makes it difficult to establish whether they access the same aquifer within the CRBG and conclude whether groundwater will be available within the capacity of the resource.

There is a permitted spring with multiple associated rights (Certificates 43863 and 93138) within 900-1,000 ft of the subject wells and at an elevation consistent with their water levels. Analytic modeling using the Theis (1941) drawdown model with relevant parameters (Conlon and others, 2005) suggests that pumping at the proposed rate for 100 days would likely cause over 10 ft of drawdown at the spring (see figures below). Furthermore, the stream that originates at this spring is mapped as intermittent (USGS, 2018; dashed line on map below), suggesting that any reduction in water pressure in the aquifer would decrease the duration of spring flow each year. Therefore, the proposed use is likely interfere with the spring and cause a senior user not to receive their entitled water. Other permitted spring rights exist within ~2,000 ft of the subject wells (Certificates 30528, 31628, 60891, and 60892) and may also be injured by the proposed use. In case a permit is issued, the conditions noted in B1(d) are required by the Willamette Basin rules for CRB wells and will enable monitoring for use above the capacity of the resource.

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**	☒	☐
2	**CRB**	☒	☐
		☐	☐
		☐	☐
		☐	☐

Basis for aquifer confinement evaluation: Water-bearing zones within the CRB typically display high degrees of confinement. The well log for POLK 52073 shows the water level 27' above the top of the water-bearing zone, indicating confined conditions. The well log for POLK 52191 shows the water level at the top of the water-bearing zone, which does not indicate confined conditions. However, the proximity, similar lithology, and similar water level elevations suggest that both wells tap the same aquifer, such that both should exist under confined conditions.

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	**King Creek**	**455**	**360-730**	**2100**	☒	☐	☐	☐	☒
2	1	**King Creek**	**465**	**360-730**	**1500**	☒	☐	☐	☐	☒
1	2	**Unnamed trib. To King Creek**	**455**	**400-520**	**4900**	☒	☐	☐	☐	☒
2	2	**Unnamed trib. To King Creek**	**465**	**400-520**	**5600**	☒	☐	☐	☐	☒

Basis for aquifer hydraulic connection evaluation: SW elevation ranges encompass elevations within 1 mile of the well. Both SW #1 and SW #2 incise through the CRB in the vicinity of the subject wells, and the coincidence of head values with SW elevations supports a finding of hydraulic connection.

Water Availability Basin the well(s) are located within: WID 182: Willamette R > Columbia R – above Molalla River

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	☐	☐			☐	**3830**	☐	*	☐
2	1	☐	☐			☐	**3830**	☐	*	☐
1	2	☐	☐			☐	**3830**	☐	*	☐
2	2	☐	☐			☐	**3830**	☐	*	☐

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: C3a note: *There is no appropriate model to estimate streamflow depletion from pumping in CRB interflow zones that are incised by streams or discharge to point sources such as springs. Therefore, the percentage of interference at 30 days was not calculated.

C3b: not applicable.

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													
(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: N/A

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:** _____

References Used: Application LL-1777 file

Conlon, T.D., Wozniak, K.C., Woodcock, D., Herrera, N.B., Fisher, B.J., Morgan, D.S., Lee, K.K., and Hinkle, S.R., 2005, Ground-water hydrology of the Willamette Basin, Oregon: U.S. Geological Survey Scientific Investigations Report 2005-5168.

Gannett, M.W. and Caldwell, R., 1998, Geologic framework of the Willamette Lowland aquifer system, Oregon and Washington: U.S. Geological Survey Professional Paper 1424-A, 32 p.

U.S. Geological Survey. National Hydrography Dataset. Reston, VA: U.S. Dept. of the Interior, U.S. Geological Survey, 2018.

Woodward, D.G., Gannett, M.W., and Vaccaro, J.J., 1998, Hydrogeologic framework of the Willamette Lowland aquifer system, Oregon and Washington: U.S. Geological Survey Professional Paper 1424-B, 82 p.

D. WELL CONSTRUCTION, OAR 690-200

D1. **Well #:** _____ **Logid:** _____

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:** _____

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

Water Availability Tables

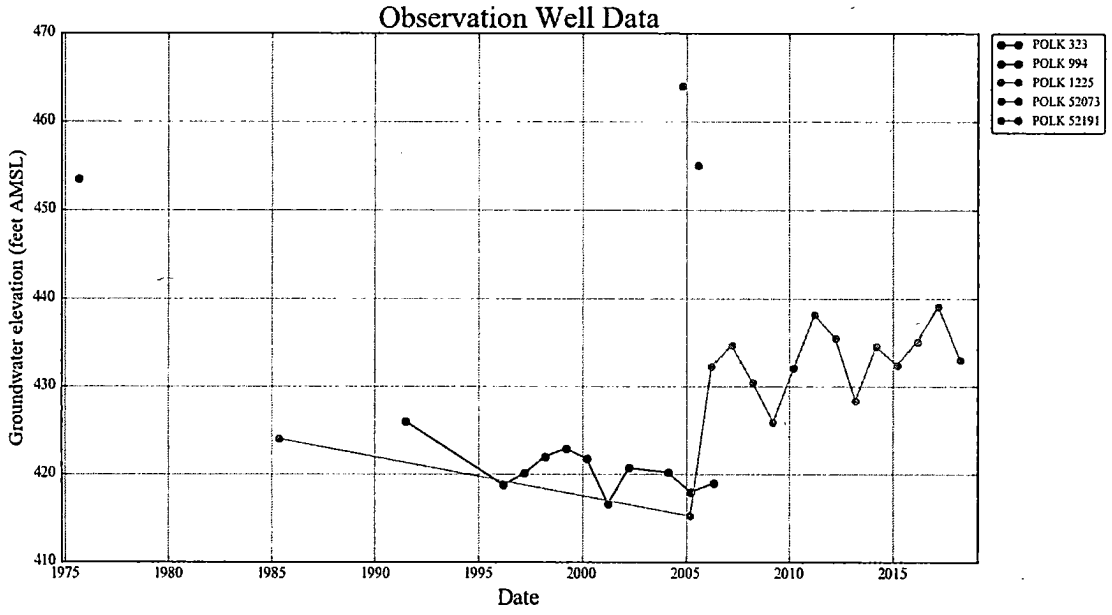
DETAILED REPORT ON THE WATER AVAILABILITY CALCULATION

WILLAMETTE R > COLUMBIA R - AB MOLALLA R

Watershed ID #: 182 Basin: WILLAMETTE Exceedance Level: 80
Time: 11:51 AM Date: 04/12/2019

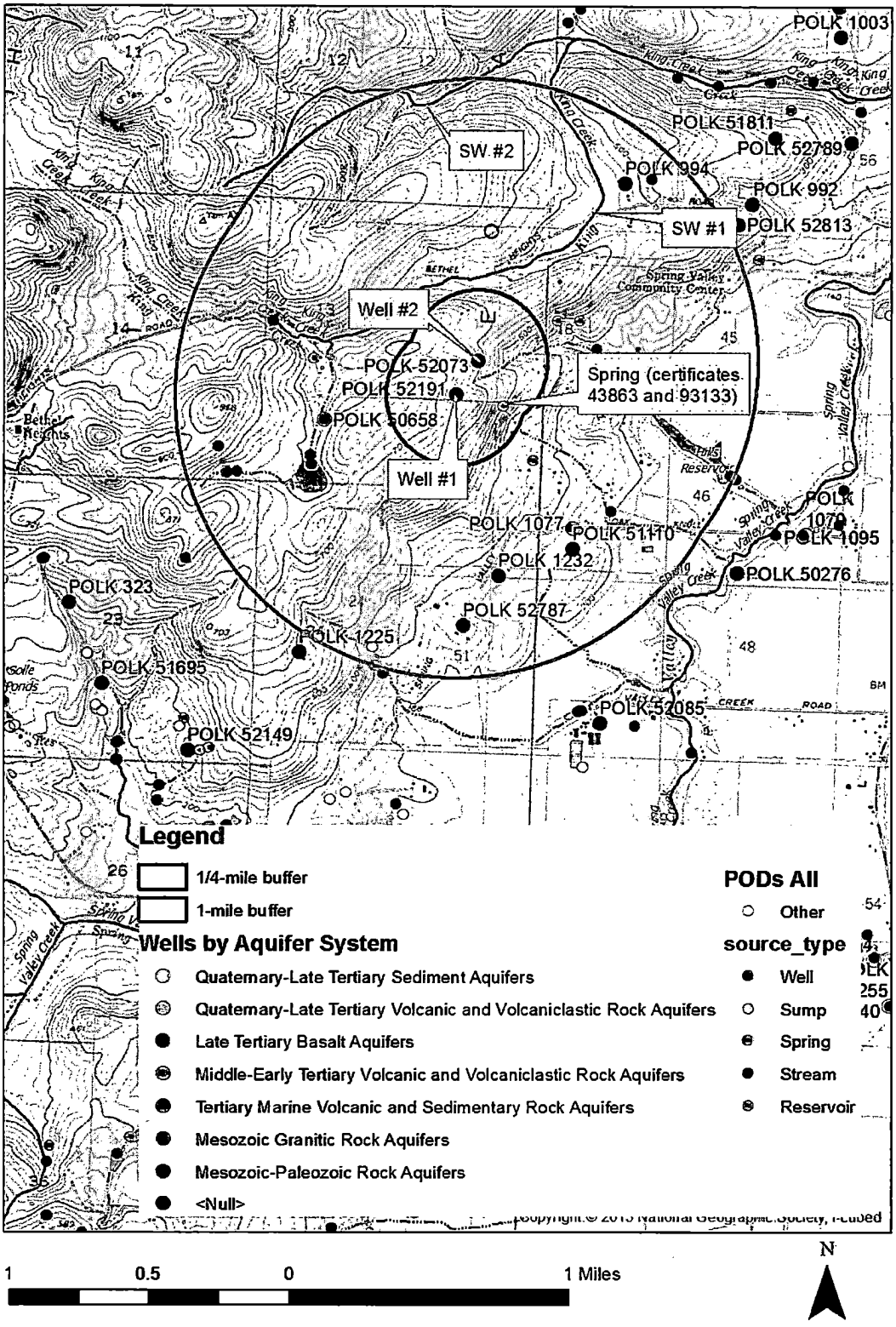
Month	Natural Stream Flow	Consumptive Use and Storage	Expected Stream Flow	Reserved Stream Flow	Instream Requirements	Net Water Available
	Monthly values are in cfs. Storage is the annual amount at 50% exceedance in ac-ft.					
JAN	21,400.00	2,290.00	19,100.00	0.00	1,500.00	17,600.00
FEB	23,200.00	7,470.00	15,700.00	0.00	1,500.00	14,200.00
MAR	22,400.00	7,250.00	15,200.00	0.00	1,500.00	13,700.00
APR	19,900.00	6,900.00	13,000.00	0.00	1,500.00	11,500.00
MAY	16,600.00	4,240.00	12,400.00	0.00	1,500.00	10,900.00
JUN	8,740.00	1,980.00	6,760.00	0.00	1,500.00	5,260.00
JUL	4,980.00	1,810.00	3,170.00	0.00	1,500.00	1,670.00
AUG	3,830.00	1,650.00	2,180.00	0.00	1,500.00	681.00
SEP	3,890.00	1,390.00	2,500.00	0.00	1,500.00	996.00
OCT	4,850.00	747.00	4,100.00	0.00	1,500.00	2,600.00
NOV	10,200.00	879.00	9,320.00	0.00	1,500.00	7,820.00
DEC	19,300.00	961.00	18,300.00	0.00	1,500.00	16,800.00
ANN	15,200,000	2,250,000	13,000,000	0	1,090,000	11,900,000

Water-level measurements in nearby wells that access the Columbia River Basalt Group:



Well Location Map

LL-1777 (Burnham): 6S/4W-13



Model parameters and results
(Pumping in POLK 52191 and drawdown observed at the spring on Certificates 43863 and 93133)

Input Data:	Var Name	Scenario 1	Scenario 2	Scenario 3	Units	
Total pumping time	t		105		d	
Radial distance from pumped well:	r		900.00		ft	Q conversions
Pumping rate	Q		41.0		gpm	41.00 gpm
Hydraulic conductivity	K	2	5	20	ft/day	0.09 cfs
Aquifer thickness	b		50		ft	5.48 cfm
Storativity	S_1		0.00010			7,893.05 cfd
	S_2		0.00100			0.18 af/d
Transmissivity Conversions	T_f2pd	100	250	1,000	ft2/day	
	T_ft2pm	0.0694	0.1736	0.6944	ft2/min	
	T_gpdpft	748	1,870	7,480	gpd/ft