

Groundwater Application Review Summary Form

Application # G- 19314

GW Reviewer Phillip I. Marcy Date Review Completed: 06/26/2023

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).

WATER RESOURCES DEPARTMENT

MEMO

June 26, 2023

TO: Application G- 19314

FROM: GW: Phillip I. Marcy
(Reviewer's Name)

SUBJECT: Scenic Waterway Interference Evaluation

- ☐ YES The source of appropriation is hydraulically connected to a State Scenic Waterway or its tributaries
- ☒ NO
-
- ☐ YES Use the Scenic Waterway Condition (Condition 7J)
- ☒ NO
-
- ☐ Per ORS 390.835, the Groundwater Section is **able** to calculate ground water interference with surface water that contributes to a Scenic Waterway. The calculated interference is distributed below
-
- ☐ Per ORS 390.835, the Groundwater Section is **unable** to calculate ground water interference with surface water that contributes to a scenic waterway; **therefore, the Department is unable to find that there is a preponderance of evidence that the proposed use will measurably reduce the surface water flows necessary to maintain the free-flowing character of a scenic waterway**

DISTRIBUTION OF INTERFERENCE

Calculate the percentage of consumptive use by month and fill in the table below. If interference cannot be calculated, per criteria in 390.835, do not fill in the table but check the "unable" option above, thus informing Water Rights that the Department is unable to make a Preponderance of Evidence finding.

Exercise of this permit is calculated to reduce monthly flows in [Enter] Scenic Waterway by the following amounts expressed as a proportion of the consumptive use by which surface water flow is reduced.

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

PUBLIC INTEREST REVIEW FOR GROUNDWATER APPLICATIONS

TO: Water Rights Section Date 06/26/2023
 FROM: Groundwater Section Phillip I. Marcy, Justin Iverson
 Reviewer's Name
 SUBJECT: Application G- 19314 Supersedes review of _____
 Date of Review(s)

PUBLIC INTEREST PRESUMPTION; GROUNDWATER

OAR 690-310-130 (1) *The Department shall presume that a proposed groundwater use will ensure the preservation of the public welfare, safety and health as described in ORS 537.525. Department staff review groundwater applications under OAR 690-310-140 to determine whether the presumption is established. OAR 690-310-140 allows the proposed use be modified or conditioned to meet the presumption criteria. This review is based upon available information and agency policies in place at the time of evaluation.*

A. GENERAL INFORMATION: Applicant's Name: William Tenbusch County: Linn

A1. Applicant(s) seek(s) 0.2 cfs from 2 well(s) in the Willamette Basin,
 _____ subbasin

A2. Proposed use Irrigation (95.0 acres) Seasonality: March 1st – October 31st (245 days)

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	LINN 63276	"DR-3489"	Alluvium	0.2	14S/2W-9 NW-NW	950'S, 4360'W fr NE cor S 9
2	LINN 63291	"DR-3490"	Alluvium	0.2	14S/2W-9 SW-NW	1375'S, 4460'W fr NE cor S 9
3						
4						

* 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	375	40	5.25	03/28/2022	122	0-19	0-44	NA	44-71	45	NA	Air
2	377	42	8.9	03/28/2022	82	0-19	0-45	NA	45-72	45	NA	Air

Use data from application for proposed wells.

A4. **Comments:** The applicant proposes to develop two existing wells for primary irrigation of 95.0 acres at a rate of 0.2 CFS. Both wells are authorized under permit G-18317 to pump as much as 0.2 CFS per well. Well logs for both proposed POA wells report a yield of 45 GPM, which converts to 0.10 CFS.

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: Proposed wells are not within ¼ mile of a perennial stream reach and the well will produce from a confined aquifer. Thus the pertinent 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) 7RLN, "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 nearest senior POA to any of the proposed POAs on this application is 1,200 feet. Data from nearby pump tests submitted to the department suggest fairly low values for transmissivity (15-30 ft²/day) in the sand and gravel aquifer here. This parameter, in conjunction with fairly sparse distribution of coarse-grained sediments within the alluvial sequence, results in fairly low transmissivity for the local alluvial aquifer. Considering these factors, a time-drawdown calculation based on the full requested rate of 0.2 cfs from proposed POA LINN 63291 in addition to 0.2 CFS previously authorized under permit G-18317 to LINN 13422, authorized under Certificate 43189. Resulting values for expected drawdown at this location range from less than 4 to greater than 17 feet, using storativity values typical of confined to semi-confined systems.

Available water level data in this area suggest the productive aquifer utilized by the proposed POA wells is stable. However, both proposed wells are authorized under permit G-18317 to pump as much as 0.2 CFS per well, and well logs for both proposed POA wells report a yield of 45 GPM, which converts to 0.10 CFS, application of conditions 7RLN and "large water use reporting" are appropriate to ensure use remains within the capacity of the resource for the duration of the potential right.

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	Alluvium	☒	☐
2	Alluvium	☒	☐
		☐	☐
		☐	☐

Basis for aquifer confinement evaluation: Static water levels for proposed POA wells are significantly higher than the elevation of productive water-bearing zones reported on well logs. In each case, the productive sands and gravels are overlain by lower permeability silts and clays.

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	Calapooia River	372	357	4534	☒	☐	☐	☐	☒
2	1	Calapooia River	370	357	4938	☒	☐	☐	☐	☒
1	2	Courtney Creek	372	356-392*	2025	☒	☐	☐	☐	☒
2	2	Courtney Creek	370	356-392*	1587	☒	☐	☐	☐	☒

Basis for aquifer hydraulic connection evaluation: * Range of elevations within one mile

The estimated groundwater elevation is nearly coincident with the estimated elevation range for SW 1 within approximately one mile. Also, the USGS water table map for this area shows groundwater in the alluvial aquifer system flowing towards the Calapooia River (gaining reach) (Gannett and Caldwell, 1998). These facts indicate that the alluvial aquifer system is hydraulically connected to local streams.

The depletion of local streams by the proposed well will be attenuated, but not eliminated, by the low vertical hydraulic conductivity (permeability) of silts and clays that lie between the deeper sands and gravels and the stream beds. Net impacts will be relatively small at the onset of pumping but will increase with time until a new equilibrium between local recharge and discharge is reached. After that time stream depletion is expected to be relatively constant throughout the year.

Water Availability Basin the well(s) are located within: Calapooia River > Willamette River – Above mouth (WAB #76)

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 (SW) source. Limit evaluation to instream rights and minimum stream flows that are pertinent to that SW source, 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?	Q _w > 5 cfs?	Instream Water Right ID	Instream Water Right Q (cfs)	Q _w > 1% ISWR?	80% Natural Flow (cfs)	Q _w > 1% of 80% Natural Flow?	Interference @ 30 days (%)	Potential for Subst. Interfer. Assumed?
1	1	☐	☐	MF76A	20.00	☒	22.70	☒	<<25%	☒
2	1	☐	☐	MF76A	20.00	☒	22.70	☒	<<25%	☒
1	2	☐	☐	MF76A	20.00	☒	22.70	☒	<<25%	☒
2	2	☐	☐	MF76A	20.00	☒	22.70	☒	<<25%	☒

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 #		Q _w > 5 cfs?	Instream Water Right ID	Instream Water Right Q (cfs)	Q _w > 1% ISWR?	80% Natural Flow (cfs)	Q _w > 1% of 80% Natural Flow?	Interference @ 30 days (%)	Potential for Subst. Interfer. Assumed?
			☐			☐		☐		☐
			☐			☐		☐		☐

Comments: C3a: previous analytical stream depletion modeling for similar hydrogeologic settings indicate that stream depletion at 30 days is expected to be much less than 25% due largely to relatively thick sequence of low-permeability sediments present between the stream and the deeper aquifer water-bearing zones.

PSI is triggered for the proposed use, as the total appropriation for the proposed POA wells, in addition to that already authorized under permit G-18317 is **0.4 CFS**, which is greater than 1% of the 80% exceedance (0.227 CFS) and 1% of the instream water right MF76A (0.20 CFS).

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													
(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:
- ☐ The permit should contain condition #(s) _____;
 - ☐ The permit should contain special condition(s) as indicated in "Remarks" below;

C6. **SW / GW Remarks and Conditions:** The proposed use has triggered PSI with nearby surface waters within one mile as the proposed rate, in addition to that already authorized for the proposed POA wells, is greater than 1% of the 80% exceedance for the given WAB, and greater than 1% of the instream water right.

If a permit is issued, conditions 7RLN and "Large water use reporting" are recommended.

References Used: _____

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.

Theis, C.V., 1941, The effect of a well on the flow of a nearby stream: Am. Geophys. Union Trans., v. 22, pt.3, p. 734-738.

Application review LL-1753.

Application review G-18801, permit G-18317.

D. WELL CONSTRUCTION, OAR 690-200D1. **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**

Watershed ID #: 76		CALAPOOIA R > WILLAMETTE R - AB MOUTH				Exceedance Level: 80
Time: 10:57 AM		Basin: WILLAMETTE				Date: 06/26/2023
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	592.00	3.94	588.00	0.00	20.00	568.00
FEB	650.00	3.87	646.00	0.00	20.00	626.00
MAR	575.00	2.69	572.00	0.00	20.00	552.00
APR	423.00	2.37	421.00	0.00	20.00	401.00
MAY	234.00	19.60	214.00	0.00	20.00	194.00
JUN	111.00	15.40	95.60	0.00	20.00	75.60
JUL	49.00	23.90	25.10	0.00	20.00	5.10
AUG	26.00	17.20	8.77	0.00	20.00	-11.20
SEP	22.70	8.89	13.80	0.00	20.00	-6.19
OCT	29.60	2.02	27.60	0.00	20.00	7.58
NOV	133.00	2.53	130.00	0.00	20.00	110.00
DEC	499.00	3.89	495.00	0.00	20.00	475.00
ANN	404,000	6,460	397,000	0	14,500	383,000

Legend

- Drain
- Ditch
- Lake
- Reservoir
- Sewage Effluent
- Slough
- Spring
- Stream
- Well
- Winter Runoff
- Waste Water

Map Labels:

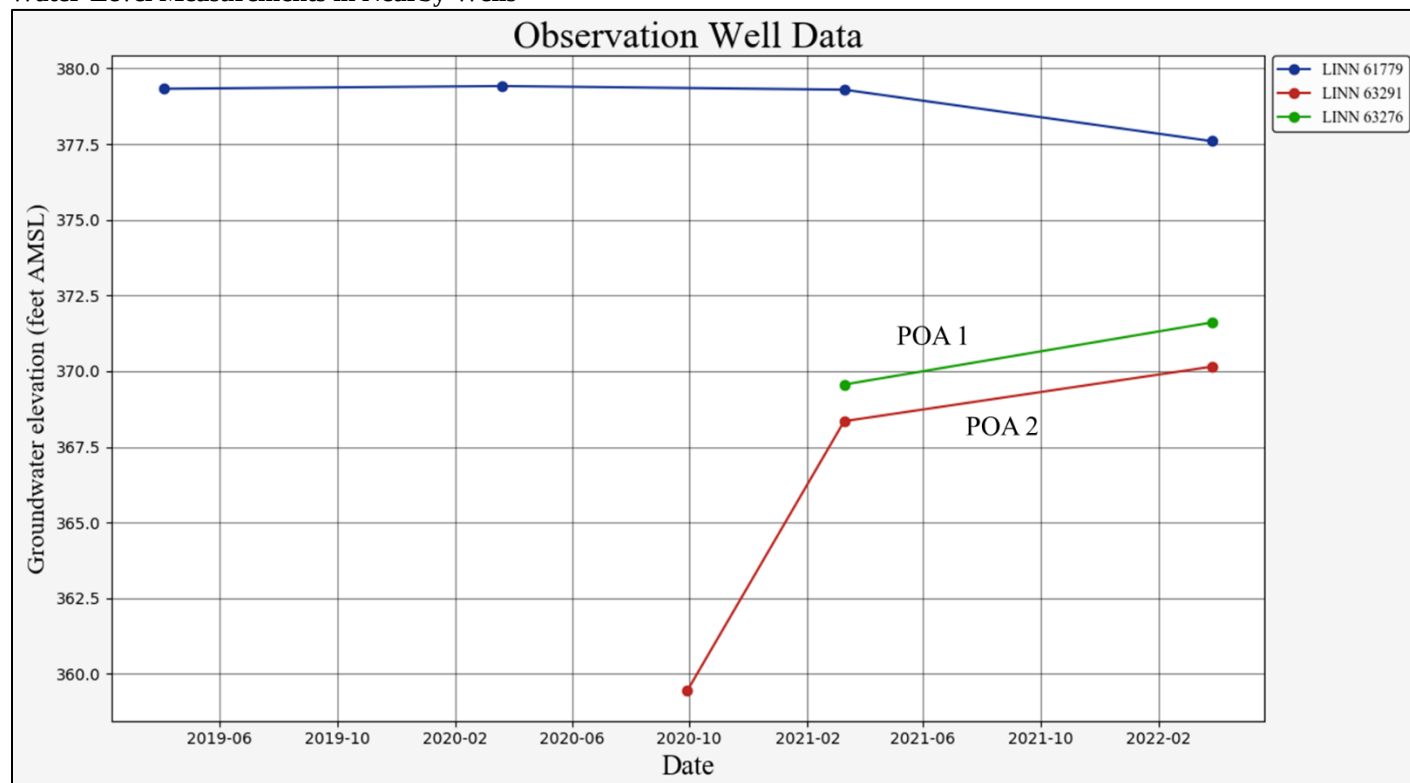
- POA 1
- POA 2
- CLINCH RIVER
- Creek
- BRONSVILLE
- Brownsville Dam
- WEIR
- MILE 3
- MILE 37
- MILE 40
- MILE 42
- MILE 44
- MILE 46
- MILE 48
- MILE 50
- MILE 52
- MILE 54
- MILE 56
- MILE 58
- MILE 60
- MILE 62
- MILE 64
- MILE 66
- MILE 68
- MILE 70
- MILE 72
- MILE 74
- MILE 76
- MILE 78
- MILE 80
- MILE 82
- MILE 84
- MILE 86
- MILE 88
- MILE 90
- MILE 92
- MILE 94
- MILE 96
- MILE 98
- MILE 100

Scale: 0 0.125 0.25 0.5 0.75 1 Miles

Scale: 1:24,000

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Water-Level Measurements in Nearby Wells



Theis Interference Analysis

Input Data:	Var Name	Scenario 1	Scenario 2	Scenario 3	Units	
Total pumping time	t		245		d	
Radial distance from pumped well:	r		1200.00		ft	Q conversions
Pumping rate	Q		0.4		cfs	179.52 gpm
Hydraulic conductivity	K	15	30	60	ft/day	0.40 cfs
Aquifer thickness	b		60		ft	24.00 cfm
Storativity	S_1		0.01000			34,560.00 cfd
	S_2		0.00100			0.79 af/d
Transmissivity Conversions	T_ft2pd	900	1,800	3,600	ft2/day	
	T_ft2pm	0.6250	1.2500	2.5000	ft2/min	
	T_gpdft	6,732	13,464	26,928	gpd/ft	

