

Groundwater Application Review Summary Form

Application # G- 18561

GW Reviewer Phil Marcy

Date Review Completed: 4/26/2018

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).

MEMO

April 26, 2018

FROM: GW: Plin Marcy
(Reviewer's Name)

SUBJECT: Scenic Waterway Interference Evaluation

☒ YES

The source of appropriation is within or above a Scenic Waterway

☐ 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.**

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 Sandy River Scenic Waterway by the following amounts expressed as a proportion of the consumptive use by which surface water flow is reduced.

[illegible]

PUBLIC INTEREST REVIEW FOR GROUNDWATER APPLICATIONS

TO: Water Rights Section Date 04/26/2018
 FROM: Groundwater Section Phillip I. Marcy
 Reviewer's Name
 SUBJECT: Application G- 18561 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: Twin Springs LLC / Lili Tova County: Clackamas

A1. Applicant(s) seek(s) 0.46 cfs from 2 well(s) in the Sandy Basin,
 _____ subbasin

A2. Proposed use Nursery Seasonality: Year-round (92.5 AF/year)

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	Proposed	1	Bedrock	0.46	2S/5E-7 SE-SW	630'N, 1440'E fr SW cor S 7
2	Proposed	2	Bedrock	0.46	2S/5E-7 SE-SW	575'N, 1425'E fr SW cor S 7
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	665	NA	NA	NA	350	0-150	0-150	Unknown	Unknown	NA	NA	NA
2	664	NA	NA	NA	350	0-150	0-150	Unknown	Unknown	NA	NA	NA

Use data from application for proposed wells.

A4. **Comments:** The applicant proposes to construct two wells, cased and sealed into volcanic rock underlying sediments. No well-specific rates are given.

A5. ☒ **Provisions of the** Sandy 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: _____

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) 7C – Seven year minimum measurement condition;
 - 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 200 ft. and 300 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 proposes to produce groundwater from volcanic rocks underlying fine sediments, in the hopes of avoiding hydraulic connection with surface water. The only volcanic rocks mapped nearby are andesitic rocks of the Rhododendron Formation, which appear to be quite variable in terms of hydraulic properties. Rocks such as these, belonging to the Western Cascades Volcanics, have been classified as part of the “Basement Confining Unit” in the Willamette Lowland Aquifer System (Woodward and others, 1998)

Some nearby logs report high confined pressure, with head elevations rising considerably above the water-bearing zone, while others report static elevations nearly commiserate with the elevation of the water-bearing zones.

Water level data for the deeper volcanic aquifer system here is very limited, if a permit is issued, condition 7N is recommended to track any potential changes owing to development of this proposed use.

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	Volcanics of the Rhododendron Fmn.	☒	☐
2	Volcanics of the Rhododendron Fmn.	☒	☐
		☐	☐
		☐	☐
		☐	☐

Basis for aquifer confinement evaluation: The nearest well with similar construction as proposed for the two POA wells is CLAC 6835 (see attached cross-section), in which the static groundwater elevation rose roughly 250' above the water-bearing zone.

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	Cedar Creek	676*	581	1500	☐	☒	☐	☐	☒
2	1	Cedar Creek	676*	581	1520	☐	☒	☐	☐	☒
1	2	Sandy River	676*	429	2250	☒	☐	☐	☐	☒
2	2	Sandy River	676*	429	2240	☒	☐	☐	☐	☒
						☐	☐	☐	☐	☐
						☐	☐	☐	☐	☐

Basis for aquifer hydraulic connection evaluation: The productive volcanic aquifer at this location is incised to the east/northeast by the Sandy River (Madin, 2004) within one mile of the proposed POA locations, therefore groundwater is likely to discharge along this stream reach. There are no mapped exposures of Rhododendron Formation rocks to the west along Cedar Creek, thus rendering the connection to surface water diffuse and inefficient within one mile of the proposed POA locations.

Water Availability Basin the well(s) are located within: CEDAR CR > SANDY R - AT MOUTH;
SANDY R > COLUMBIA R - AB BULL RUN R

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	2	☐	☐	SR389A	406	☐	331	☐	<<25%	☐
2	2	☐	☐	SR389A	406	☐	331	☐	<<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 #		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: _____

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: This section does not apply.

C4b. **690-09-040 (5) (b)** The potential to impair or detrimentally affect the public interest is to be determined by the Water Rights Section.

- C5. ☐ **If properly conditioned**, the surface water source(s) can be adequately protected from interference, and/or groundwater use under this permit can be regulated if it is found to substantially interfere with surface water:
- ☐ The permit should contain condition #(s) _____;
 - ☐ The permit should contain special condition(s) as indicated in "Remarks" below;

C6. **SW / GW Remarks and Conditions:**

Stream depletion after 30 days was calculated using the model of Hunt (2003), including the presence of fine-grained sediments in the streambed. A range of transmissivity values appropriate for fractured volcanic rock were used in these calculations, in addition to physical attributes, such as aquifer thickness, stream width, and distance to the probable discharge zone.

The proposed POA locations are hydraulically connected to the Sandy River above the reach designated a Scenic Waterway, therefore Condition 7J shall be applied if a permit is issued.

References Used: Application file G-18561, local well logs, OWRD water level database.

Madin, I.P., 2004, Geologic Mapping & Database for Portland area fault studies: Final report, Clackamas, Multnomah & Washington Counties, OR, Open File Report O-04-02, Oregon Department of Geology and Mineral Industries, Portland, OR., map scale 1:24,000

Woodward, D.G., Gannett, M.W., and Vaccaro, J.J., 1998, Hydrogeologic Framework of the Willamette Lowland Aquifer System, Oregon and Washington, USGS Professional Paper 1424-B, US Geological Survey.

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						
Watershed ID #: 71548		CEDAR CR > SANDY R - AT MOUTH			Exceedance Level: 80	
Time: 11:30 AM		Basin: SANDY			Date: 04/26/2018	
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	43.00	1.41	41.60	0.00	60.00	-18.40
FEB	48.10	1.35	46.70	0.00	60.00	-13.30
MAR	48.70	1.25	47.40	0.00	60.00	-12.60
APR	45.10	1.25	43.80	0.00	60.00	-16.20
MAY	36.00	1.30	34.70	0.00	50.80	-16.10
JUN	19.10	1.33	17.80	0.00	28.90	-11.10
JUL	10.70	1.39	9.31	0.00	10.00	-0.69
AUG	7.83	1.36	6.47	0.00	8.96	-2.49
SEP	7.22	1.29	5.93	0.00	10.00	-4.07
OCT	9.13	1.25	7.88	0.00	15.20	-7.32
NOV	21.50	1.25	20.20	0.00	44.20	-24.00
DEC	43.70	1.43	42.30	0.00	60.00	-17.70
ANN	32,900	959	32,000	0	28,200	4,260

DETAILED REPORT ON THE WATER AVAILABILITY CALCULATION						
Watershed ID #: 30300104		SANDY R > COLUMBIA R - AB BULL RUN R			Exceedance Level: 80	
Time: 3:28 PM		Basin: SANDY			Date: 04/26/2018	
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	989.00	35.80	953.00	0.00	600.00	353.00
FEB	1,120.00	35.70	1,080.00	0.00	600.00	484.00
MAR	1,110.00	35.10	1,070.00	0.00	600.00	475.00
APR	1,240.00	35.10	1,200.00	0.00	600.00	605.00
MAY	1,230.00	35.30	1,190.00	0.00	600.00	595.00
JUN	772.00	35.50	737.00	0.00	600.00	137.00
JUL	490.00	35.90	454.00	0.00	600.00	-146.00
AUG	364.00	36.00	328.00	0.00	424.00	-96.00
SEP	331.00	35.40	296.00	0.00	406.00	-110.00
OCT	339.00	35.10	304.00	0.00	449.00	-145.00
NOV	609.00	35.50	574.00	0.00	600.00	-26.50
DEC	1,010.00	35.90	974.00	0.00	600.00	374.00
ANN	855,000	25,800	829,000	0	403,000	434,000

Well Location Map



