

# Groundwater Application Review Summary Form

Application # G- 18946

GW Reviewer Travis Brown Date Review Completed: 8/21/2020

## 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**

August 21, 2020

**TO:** Application G- 18946

**FROM:** GW: Travis Brown  
(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 8/21/2020  
 FROM: Groundwater Section Travis Brown  
 Reviewer's Name  
 SUBJECT: Application G- 18946 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: Weyerhaeuser NR Company County: MARION

A1. Applicant(s) seek(s) 4.3 cfs from 3 well(s) in the Willamette Basin,  
Santiam-Calapooia subbasin

A2. Proposed use Temperature Control (256 af) Seasonality: Oct 1 – May 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 ID	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	Well 4	Alluvium	4.3	10S/2W-9 NE-NW	900' S, 1950' E fr NW cor S 9
2	PROPOSED	Well 5	Alluvium	4.3	10S/2W-9 NE-NW	750' S, 1950' E fr NW cor S 9
3	PROPOSED	Well 6	Alluvium	4.3	10S/2W-9 NE-NW	630' S, 1950' E fr NW cor S 9

\* 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	~280 <sup>a</sup>				50	0-18						
2	~280 <sup>a</sup>				50	0-18						
3	~281 <sup>a</sup>				50	0-18						

Use data from application for proposed wells.

A4. **Comments:** The proposed POA/POU are located ~2.5 miles east of Jefferson, Oregon.

<sup>a</sup> Ground surface elevation at well location estimated from LIDAR (Quantum Spatial, 2019).

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 proposed POA are more than ¼-mile from the nearest surface water source; per OAR 690-502-0240, the relevant basin rules do not apply.

A6.  **Well(s) #** \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, tap(s) an aquifer limited by an administrative restriction.

Name of administrative area: N/A

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) 7n (annual measurements), 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 unconfined alluvial 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:** Groundwater development is relatively low in this area. Limited groundwater data shows general stability from measurements in one nearby well, MARI 50649. The unconfined alluvial aquifer system is highly transmissive due to thick water-bearing deposits of coarse gravel (cobbles to boulders) and sand and the efficient hydraulic connection to the North Santiam River (Conlon and others, 2005; Gannett and Caldwell, 1998). Due to the strong connection to the river, much of the water pumped by the proposed POA would likely originate from the river, particularly during the wet season, which corresponds to this application's proposed period of use (October through May). These factors, particularly the period of use that would not conflict with dry season irrigation pumping, would greatly mitigate potential injury to other users. Despite the apparently low potential for injury to existing authorized groundwater users, the listed permit conditions are recommended to help manage and protect the groundwater 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	Alluvium	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2	Alluvium	<input type="checkbox"/>	<input checked="" type="checkbox"/>
3	Alluvium	<input type="checkbox"/>	<input checked="" type="checkbox"/>

**Basis for aquifer confinement evaluation:** The proposed POA are shallow (<50 ft), there are no appreciable deposits of confining material in nearby wells above this depth, and static groundwater levels are approximately coincident with the uppermost water-bearing deposits. The available evidence is indicative of an unconfined 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	North Santiam River	~260-280	~250-290	~1,400	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2	1	North Santiam River	~260-280	~250-290	~1,500	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
3	1	North Santiam River	~260-280	~250-290	~1,580	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

**Basis for aquifer hydraulic connection evaluation:** The proposed POA would be shallow (<50 ft) and completed in an unconfined alluvial aquifer with groundwater levels that are generally consistent with the elevation of SW 1 (North Santiam River) within ~1 mile of the proposed POA. The available evidence indicates the proposed POA would be hydraulically connected to SW 1.

**Water Availability Basin the well(s) are located within:** WID #141: N SANTIAM R > SANTIAM R – AT MOUTH

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?	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"/>	MF141	430	<input type="checkbox"/>	694 <sup>a</sup>	<input type="checkbox"/>	<25%	<input type="checkbox"/>
2	1	<input type="checkbox"/>	<input type="checkbox"/>	MF141	430	<input type="checkbox"/>	694 <sup>a</sup>	<input type="checkbox"/>	<25%	<input type="checkbox"/>
3	1	<input type="checkbox"/>	<input type="checkbox"/>	MF141	430	<input type="checkbox"/>	694 <sup>a</sup>	<input type="checkbox"/>	<25%	<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"/>

**Comments:** The Hunt (1999) analytical model was used to quantitatively estimate stream depletion of (interference with) SW 1. Hydraulic parameters used for the analysis were derived from regional data and studies (Pumping Test Reports; Conlon et al., 2003, 2005; Iverson, 2002; McFarland and Morgan, 1996; Woodward et al., 1998) or are within a typical range of values for the given parameter within the hydrogeologic regime (Domenico and Mifflin, 1965; Freeze and Cherry, 1979; Halford and

Kuniansky, 2002). Results of the analysis indicate that depletion of SW 1 is not anticipated to exceed 25 percent of the rate of pumping within the first 30 days of continuous pumping (see attached Stream Depletion Analysis).

<sup>a</sup> This is the 80 percent exceedance natural flow rate for October, the month with the lowest natural flow within the proposed season of use (October – May).

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.

<b>Non-Distributed Wells</b>													
Well	SW#	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
		%	%	%	%	%	%	%	%	%	%	%	%
Well Q as CFS													
Interference CFS													
<b>Distributed Wells</b>													
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:** None

**References Used:**

Application File: G-18739, G-18907, G-18946

Certificate: 49071, 49072

Pumping Test Reports: LINN 4394, MARI 16029

Conlon, T.D., Lee, K.K., and Risley, J.R., 2003, Heat tracing in streams in the central Willamette Basin, Oregon, in Stonestrom, D.A. and Constantz, Jim, eds., Heat as a tool for studying the movement of groundwater near streams: U.S. Geological Survey Circular 1260, chapter 5, p. 29-34.

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, Groundwater hydrology of the Willamette Basin, Oregon, Scientific Investigations Report 2005-5168: U. S. Geological Survey, Reston, VA.

Domenico, P.A. and Mifflin, 1965, Water from low-permeability sediments and land subsidence: Water Resource Research, v. 1, no. 4, p. 563-576.

Freeze, R.A. and Cherry, J.A., 1979, Groundwater, Prentice Hall, Englewood Cliffs, New Jersey, 604 p.

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

Hunt, B., 1999, Unsteady Stream Depletion from Ground Water Pumping: Ground Water, January-February, Vol 37, p 98-102.

Iverson, J., 2002, Investigation of the hydraulic, physical, and chemical buffering capacity of Missoula flood deposits for water quality and supply in the Willamette Valley of Oregon: Unpublished M.S. thesis, Oregon State University, 147 p.

McFarland, W.D., and Morgan, D.S., 1996, Description of the Ground-Water Flow System in the Portland Basin, Oregon and Washington, Water Supply Paper 2470-A, 58 p: U. S. Geological Survey, Reston, VA.

Quantum Spatial, 2019, 2018 OLC Santiam, Portland, OR, March 29.

United States Geological Survey, 2014, National Hydrography Dataset (NHD), 1:24,000, U. S. Department of the Interior, Reston, VA.

United States Geological Survey, 2017, Crabtree quadrangle, Oregon [map], 1:24,000, 7.5 minute topographic series, U.S. Department of the Interior, Reston, VA.

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:**

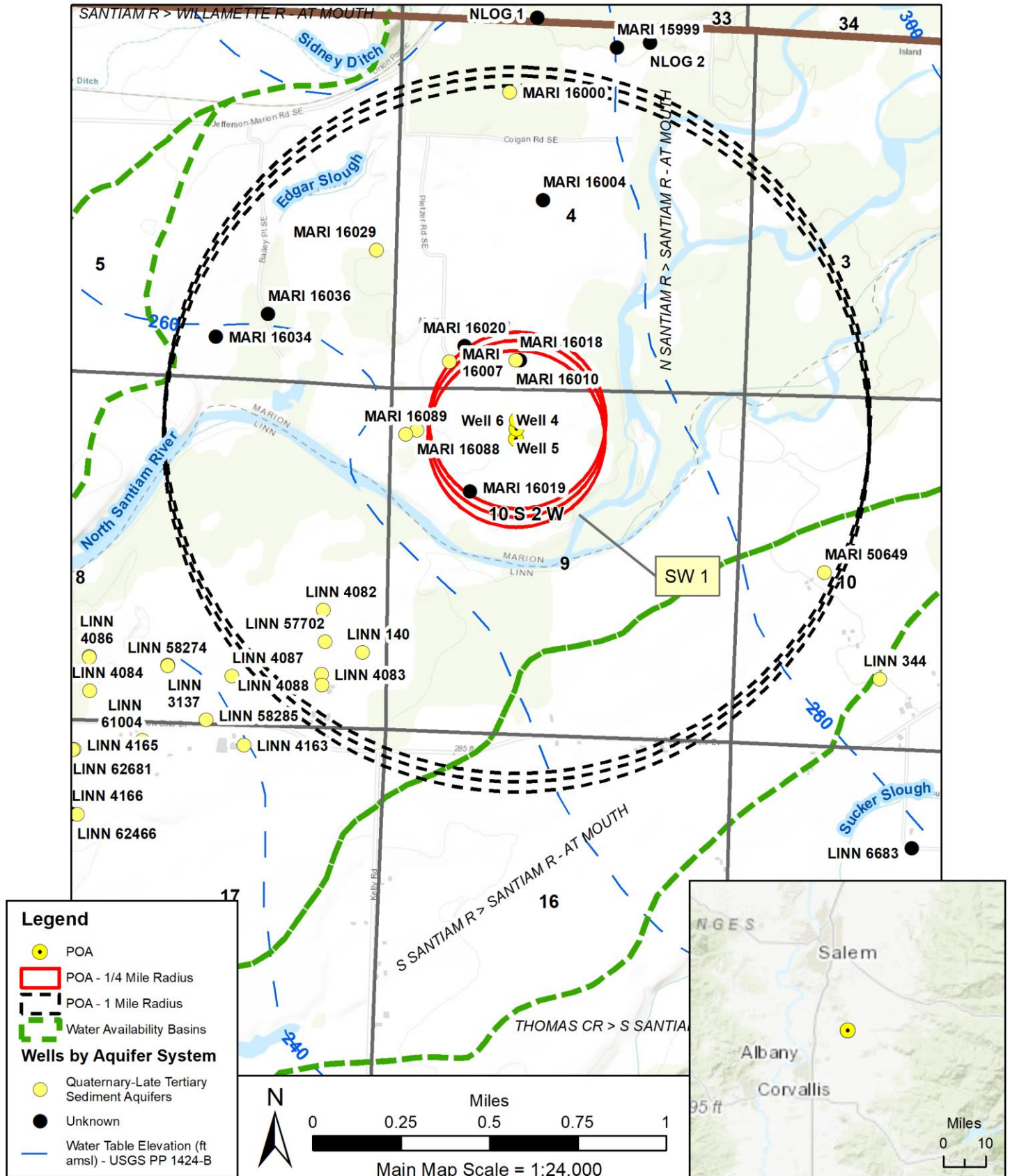
- a.  review of the well log;
- b.  field inspection by \_\_\_\_\_;
- c.  report of CWRE \_\_\_\_\_;
- d.  other: (specify) \_\_\_\_\_

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.**

Well Location Map

# G-18946 Weyerhaeuser



Service Layer Credits: Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, © OpenStreetMap contributors, and the GIS User Community



Water Availability Tables

# Water Availability Analysis

## Detailed Reports

N SANTIAM R > SANTIAM R - AT MOUTH  
WILLAMETTE BASIN

Water Availability as of 8/21/2020

Watershed ID #: 141 [\(Map\)](#)

Exceedance Level:

Date: 8/21/2020

Time: 5:15 PM

<b>Water Availability Calculation</b>	<b>Consumptive Uses and Storage</b>	<b>Instream Flow Requirements</b>	<b>Reservations</b>
Water Rights	Watershed Characteristics		

### Water Availability Calculation

Monthly Streamflow in Cubic Feet per Second  
Annual Volume at 50% Exceedance in Acre-Feet

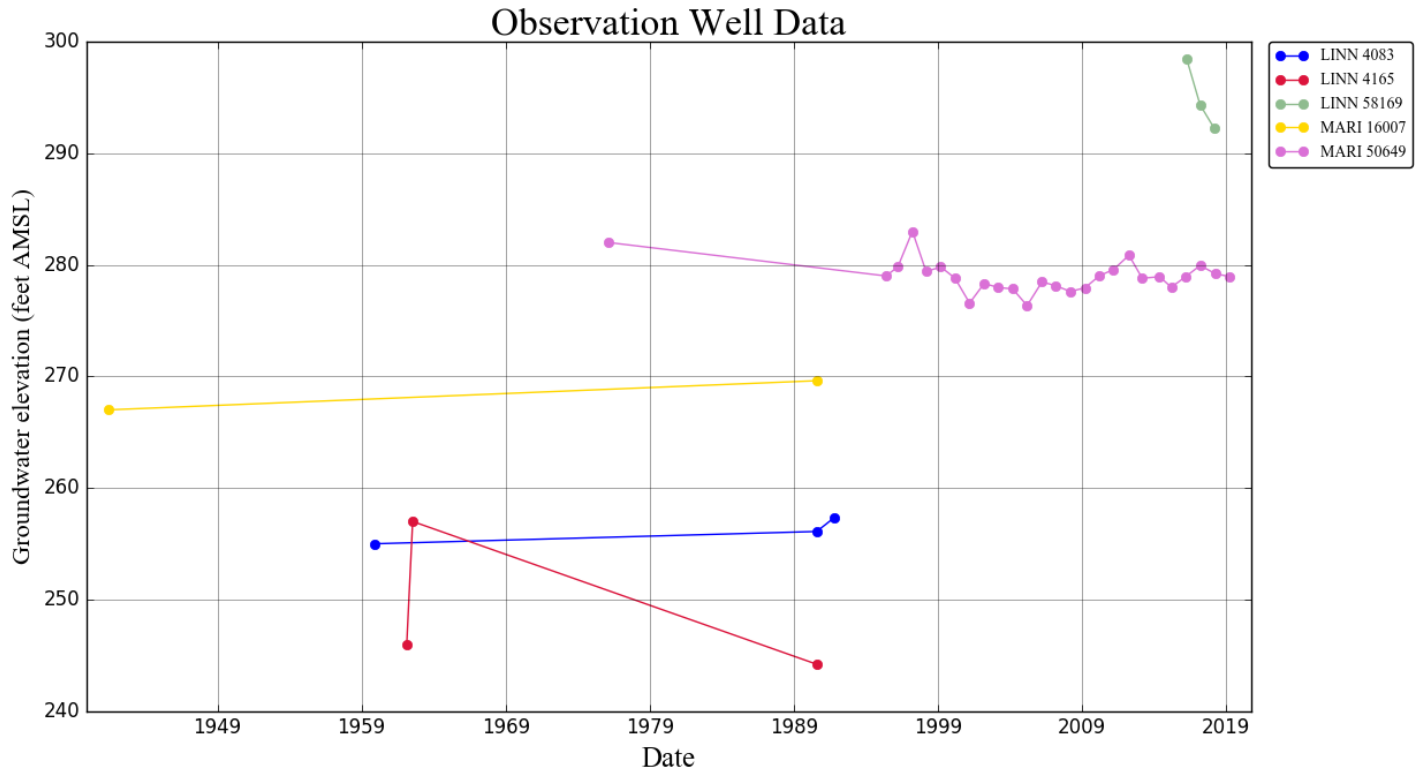
Month	Natural Stream Flow	Consumptive Uses and Storages	Expected Stream Flow	Reserved Stream Flow	Instream Flow Requirement	Net Water Available
JAN	2,330.00	485.00	1,840.00	0.00	430.00	1,410.00
FEB	2,670.00	1,490.00	1,180.00	0.00	430.00	746.00
MAR	2,540.00	1,320.00	1,220.00	0.00	430.00	787.00
APR	2,500.00	1,490.00	1,010.00	0.00	430.00	584.00
MAY	2,590.00	807.00	1,780.00	0.00	430.00	1,350.00
JUN	1,500.00	434.00	1,070.00	0.00	430.00	636.00
JUL	858.00	331.00	527.00	0.00	430.00	97.30
AUG	661.00	317.00	344.00	0.00	430.00	-85.90
SEP	627.00	294.00	333.00	0.00	430.00	-97.50
OCT	694.00	270.00	424.00	0.00	430.00	-5.62
NOV	1,380.00	272.00	1,110.00	0.00	430.00	678.00
DEC	2,540.00	272.00	2,270.00	0.00	430.00	1,840.00
ANN	1,960,000.00	466,000.00	1,500,000.00	0.00	312,000.00	1,180,000.00

### Detailed Report of Instream Flow Requirements

Instream Flow Requirements in Cubic Feet per Second

Application #	Status	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
MF141A	APPLICATION	430.00	430.00	430.00	430.00	430.00	430.00	430.00	430.00	430.00	430.00	430.00	430.00
<b>Maximum</b>		<b>430.00</b>	<b>430.00</b>	<b>430.00</b>	<b>430.00</b>	<b>430.00</b>	<b>430.00</b>	<b>430.00</b>	<b>430.00</b>	<b>430.00</b>	<b>430.00</b>	<b>430.00</b>	<b>430.00</b>

Hydrographs



**Stream Depletion Analysis**

Application type:	G
Application number:	18946
Well number:	1
Stream Number:	1
Pumping rate (cfs):	4.3
Pumping duration (days):	240
Pumping start month number (3=March)	10.0

Parameter	Symbol	Scenario 1	Scenario 2	Scenario 3	Units
Distance from well to stream	a	1400	1400	1400	ft
Aquifer transmissivity	T	5000.0	25000.0	50000.0	ft <sup>2</sup> /day
Aquifer storativity	S	0.15	0.15	0.15	-
Aquitard vertical hydraulic conductivity	Kva	0.1	0.1	0.1	ft/day
Not used		0.0	0.0	0.0	
Aquitard thickness below stream	babs	3.0	3.0	3.0	ft
Not used		0.0	0.0	0.0	
Stream width	ws	175.0	175.0	175.0	ft

Stream depletion for Scenario 2:

Days	10	120	150	180	210	240	270	300	330	360	30	60	90
Depletion (%)	5	30	34	36	39	41	29	23	20	17	13	21	26
Depletion (cfs)	0.21	1.30	1.45	1.56	1.67	1.76	1.27	1.01	0.84	0.73	0.57	0.90	1.13

