

Approved:



# MEMO

**To:** Kristopher Byrd, Well Construction and Compliance Section Manager  
**From:** Travis Kelly, Well Construction Program Coordinator  
**Subject:** Re-Review of Water Right Application G-18907  
**Date:** July 19, 2021

The attached application was forwarded to the Well Construction and Compliance Section by the Ground Water Section. Travis Brown reviewed the application. Please see Travis's Groundwater Review and the Well Report.

Applicant's Well #1 (MARI 16010): Based on the original review of the Well Report, Applicant's Well #1 did not appear to comply with current minimum well construction standards (See OAR 690 Division 210). The problem was that the Well Report indicates that the well head is flush with land surface. In order to meet minimum well construction standards, the well construction and compliance section (WCC) provided that the well head must be extended so that it is at least one foot above land surface. Because of this deficiency, WCC previously found that the well would need to be reconstructed in order to meet minimum construction standards.

Since WCC's previous review, the applicant has reconstructed the floor of the pump house surrounding the well, lowering it one foot below the top of the well head. Based on photos of the reconstructed pump house floor showing the well head extending at least one foot above the floor, WCC re-reviewed the construction of Applicant's Well #1 and has determined that the construction of Applicant's Well #1 seems to protect the groundwater resource.

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



# Groundwater Application Review Summary Form

Application # G- 18907

GW Reviewer Travis Brown Date Review Completed: 5/19/2020

## 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**

May 19, 2020

**TO:** Application G- 18907

**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 \_\_\_\_\_ 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 5/19/2020  
 FROM: Groundwater Section Travis Brown  
Reviewer's Name  
 SUBJECT: Application G- 18907 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<sup>a</sup> cfs from 1 well(s) in the Willamette Basin,  
Santiam River – Calapooia River subbasin

A2. Proposed use Temperature Control Seasonality: October – May

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	MARI 16010	1	Alluvium	4.3 <sup>a</sup>	10S/2W-4 SE-SW	250' N, 1940' E fr SW cor S 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	286 <sup>b</sup>		7.67'	11/17/1967	30	0-18	0-18		18-30	2,975	3.5	Pump (1 hr)

Use data from application for proposed wells.

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

**<sup>a</sup> The proposed POA (MARI 16010) is already an authorized POA under Certificate 49071\* for 0.55 cfs of Irrigation and under Certificate 49072\* for 0.57 cfs of Irrigation from March 1 – October 31. For the months during which the period of use authorized under Certificates 49071\* and 49072\* overlaps with the requested period of use under this application (March, April, May, and October), the combined rate of withdrawal could total 5.42 cfs.**

<sup>b</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: Although the proposed POA produces from an unconfined alluvial aquifer, it is more than ¼-mile from the nearest surface water source. Therefore, per OAR 690-009-0240, 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"/>

**Basis for aquifer confinement evaluation:** The well is shallow (<50 ft), there are no appreciable deposits of confining material, and static groundwater levels are approximately coincident with the uppermost water-bearing deposits. All of these factors indicate unconfined aquifer 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?			Potential for Subst. Interfer. Assumed?	
						YES	NO	ASSUMED	YES	NO
1	1	North Santiam River	260-280	250-290	1560	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

**Basis for aquifer hydraulic connection evaluation:** The well is shallow (<50 ft deep) and completed in an unconfined alluvial aquifer with groundwater levels that are generally consistent with the elevation of SW#1 within approximately one mile.

**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 checked="" type="checkbox"/>	MF141	430	<input checked="" type="checkbox"/>	694 <sup>a</sup>	<input type="checkbox"/>	<25%	<input checked="" 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:** For at least 4 months (March, April, May, and October) of the proposed period of use, the combined authorized rate of withdrawal would be 5.42 cfs based on this application (4.3 cfs) and existing Certificates 49071\* (0.55 cfs) and 49072\* (0.57 cfs). **Because the combined rate of withdrawal would be in excess of 5 cfs, the Potential for Substantial Interference (PSI) is assumed per OAR 690-009-0040(b). Additionally, because the combined rate of withdrawal is in excess of 1 percent (4.3 cfs) of the pertinent instream water right (MF141, 430 cfs), PSI is assumed per OAR 690-009-0040(c).**

To estimate the quantity of interference with SW 1 due to the proposed use, a stream depletion analysis was conducted using the Hunt (1999) analytical model. 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:** **The Potential for Substantial Interference (PSI) was found because the combined potential rate of appropriation (5.42) for the proposed POA under all applicable rights (this application [4.3 cfs] plus Certificate 49071\* [0.55 cfs] and Certificate 49072\* [0.57 cfs]) exceed both 5 cfs (OAR 690-009-0040(b)) and the applicable instream flow limitation (4.3 cfs per Application MF141; OAR 690-009-0040(c)). The applicant could avoid the assumption of PSI by reducing the rate requested under this application to 3.18 cfs or less to bring the combined potential rate of appropriation down to 4.3 cfs or less. Alternatively, the applicant could remove the period of use which overlaps with Certificates 49071\* and 49072\* (March, April, May, and October) and also avoid the assumption of PSI.**

**References Used:**

Application File: G-18907, G-18739

Certificate: 49071, 49072

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:**

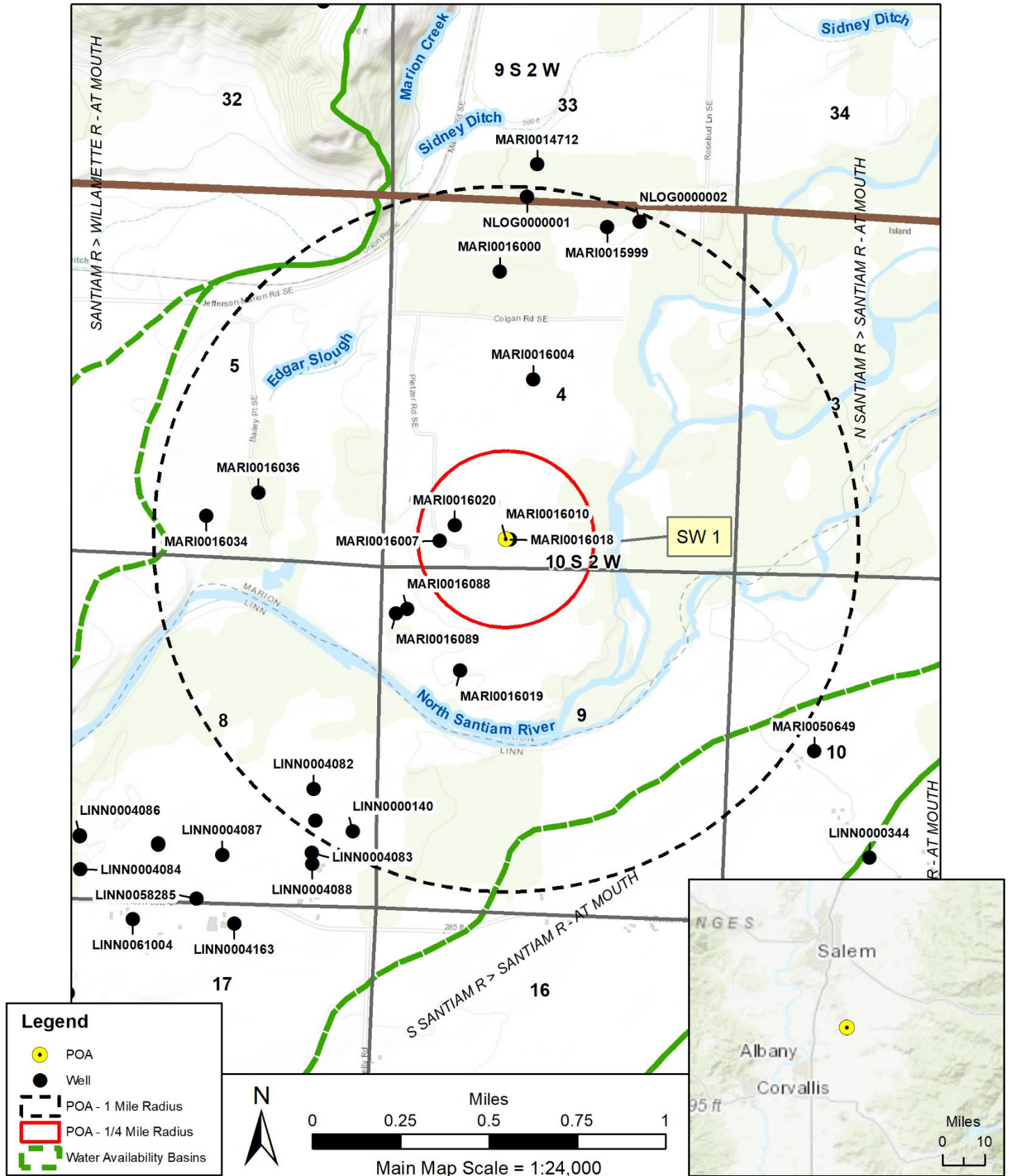
- a.  review of the well log;
- b.  field inspection by \_\_\_\_\_;
- c.  report of CWRE \_\_\_\_\_;
- d.  other: (specify) \_\_\_\_\_

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-18907 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 5/19/2020

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

Exceedance Level:

Date: 5/19/2020

Time: 12:01 PM

Water Availability Calculation	Consumptive Uses and Storages	Instream Flow Requirements	Reservations
Water Rights	Watershed Characteristics		

### Water Availability Calculation

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

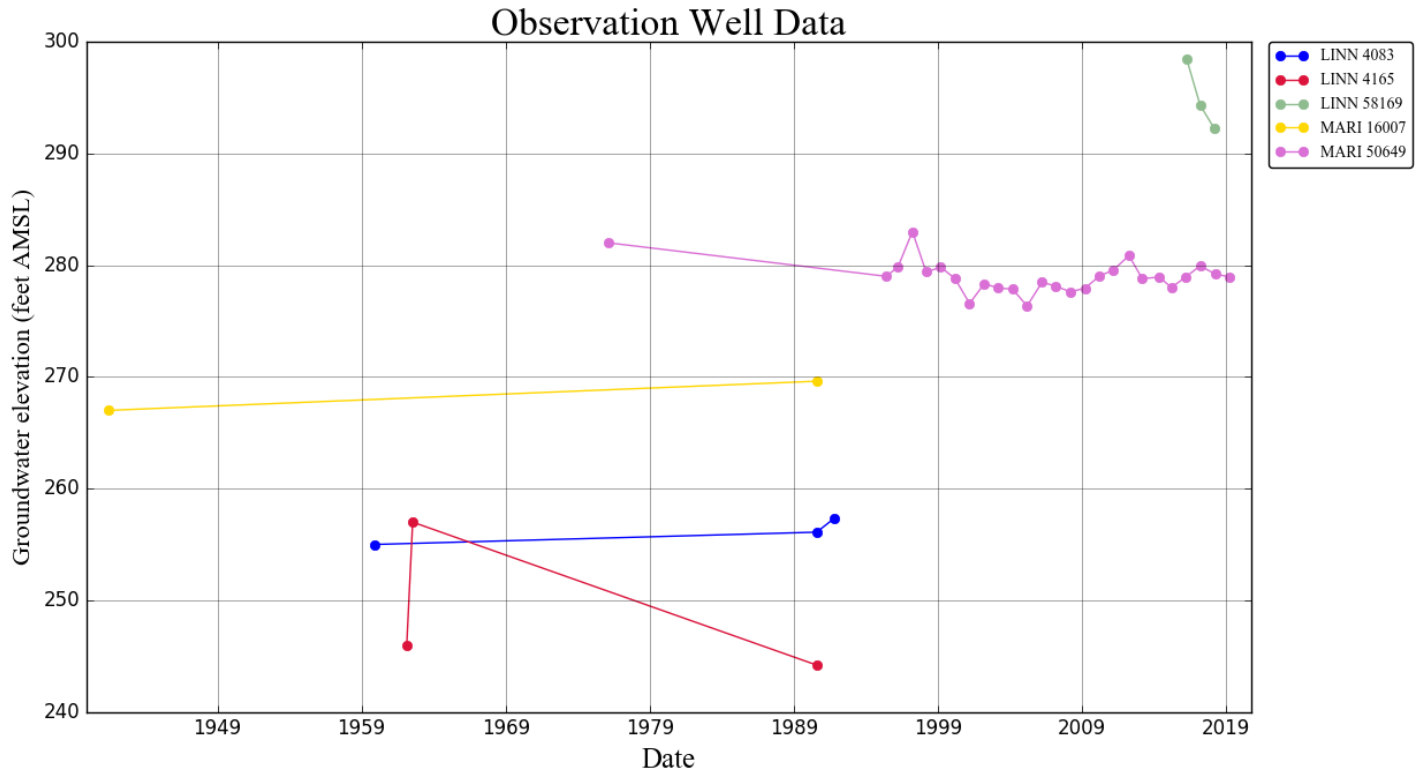
Month	Natural Stream Flow	Consumptive Uses and Storages	Expected Stream Flow	Reserved Stream Flow	Instream Flow Requirement	Net Water Available
JAN	2,330.00	485.00	1,840.00	0.00	430.00	1,410.00
FEB	2,670.00	1,490.00	1,180.00	0.00	430.00	746.00
MAR	2,540.00	1,320.00	1,220.00	0.00	430.00	787.00
APR	2,500.00	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
Maximum		430.00	430.00	430.00	430.00	430.00	430.00	430.00	430.00	430.00	430.00	430.00	430.00

Hydrograph



**Stream Depletion Analysis**

Application type:	G
Application number:	18907
Well number:	1
Stream Number:	1
Pumping rate (cfs):	4.3
Pumping duration (days):	240.0

Parameter	Symbol	Scenario 1	Scenario 2	Scenario 3	Units
Distance from well to stream	a	1560	1560	1560	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 depletion for Scenario 2:

Days	10	120	150	180	210	240	270	300	330	360	30	60
Depletion (%)	4	29	33	35	38	40	30	24	20	17	12	20

