

# Groundwater Application Review Summary Form

Application # G- 19335

GW Reviewer Phillip I. Marcy Date Review Completed: 09/28/2023

## 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

September 28, 2023

TO: Application G- 19335

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  
☒ NO Waterway or its tributaries

☐ YES  
☒ NO Use the Scenic Waterway Condition (Condition 7J)

☐ 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  
 FROM: Groundwater Section Phillip I. Marcy  
 Date 09/28/2023  
 SUBJECT: Application G- 19335 Supersedes review of \_\_\_\_\_  
 Reviewer's Name  
 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: S.U.E. Management County: Linn

A1. Applicant(s) seek(s) 1.17 cfs from 2 well(s) in the Willamette Basin,  
 \_\_\_\_\_ subbasin

A2. Proposed use Irrigation (93.5 acres) Seasonality: April 1<sup>st</sup> – September 30<sup>th</sup> (183 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	Proposed	1	Alluvium	1.17	11S/2W-11 NW-SE	30'S, 2580'W fr E ¼ cor S 11
2	Proposed	2	Alluvium	1.17	11S/2W-11 NE-SE	1270'S, 1200'W fr E ¼ cor S 11
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	283	NA	NA	NA	~50	18+	Unknown	Unknown	Unknown	NA	NA	NA
2	289	NA	NA	NA	~50	18+	Unknown	Unknown	Unknown	NA	NA	NA

Use data from application for proposed wells.

A4. **Comments:** The applicant proposes to construct two wells to produce groundwater from alluvium for primary irrigation of 93.5 acres.

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 well locations are not within ¼ mile of surface water, so the pertinent basin rules 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) Water use reporting; 7N;
  - 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:** There is little groundwater level data in the area surrounding the proposed POA wells but available data display trends suggesting that groundwater elevations are stable within the alluvial aquifer system.

Proposed POA 2 lies within 320 feet of authorized POA 1 on Claim GR 3444 (LINN 6620), which is 60 deep and also produces from alluvium. Data from nearby pump tests submitted to the department report values for transmissivity of 4,900-45,000 ft<sup>2</sup>/day in the sand and gravel aquifer here, with median values falling near 7,600 ft<sup>2</sup>/day. This parameter can vary greatly with uneven distribution of coarse-grained sediments within the alluvial sequence with highly variable effective aquifer thicknesses. Using the most likely range of input parameters, a time-drawdown calculation anticipates drawdown experienced at LINN 6620 to range from less than 4' to greater than 19' after 183 days of continuous pumping at the proposed rate at proposed POA 2.

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**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	Sand and Gravel	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2	Sand and Gravel	<input checked="" type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>

**Basis for aquifer confinement evaluation:** Well logs in the area report static water level rising above the level at which groundwater was first encountered during well construction, most notably wells producing from deeper portions of the alluvial sequence.

**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	South Santiam River	~275	265-298	2280	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2	1	South Santiam River	~275	265-298	3750	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
1	2	Crabtree Creek	~275	260-280	7400	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2	2	Crabtree Creek	~275	260-280	8100	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Basis for aquifer hydraulic connection evaluation:** Discharge to local surface water is part of the same regional discharge that supplies groundwater to wells in the alluvial aquifer.

**Water Availability Basin the well(s) are located within:** S Santiam R > Santiam R – At Mouth (ID # 30200601) / Crabtree Cr > S Santiam R – At Mouth (ID # 88)

**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"/>	NA	NA	<input type="checkbox"/>	253	<input type="checkbox"/>	<<25%	<input type="checkbox"/>
2	1	<input type="checkbox"/>	<input type="checkbox"/>	NA	NA	<input type="checkbox"/>	253	<input type="checkbox"/>	<<25%	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>			<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>			<input type="checkbox"/>		<input type="checkbox"/>		<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 #		Q <sub>w</sub> > 5 cfs?	Instream Water Right ID	Instream Water Right Q (cfs)	Q <sub>w</sub> > 1% ISWR?	80% Natural Flow (cfs)	Q <sub>w</sub> > 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"/>
			<input type="checkbox"/>			<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>

**Comments:** Due to considerable distances and the presence of fine-grained lithologies above the respective water-bearing zones within each well, interference at 30 days is anticipated to be much less than 25% of the volume pumped at each proposed POA well.

Both POA wells lie within the Crabtree Creek Water Availability Basin (WAB), however are not within one mile of Crabtree Creek. The two site are significantly closer to the South Santiam River and immediately adjacent to the WAB boundary for that surface water. Therefore the reviewer finds it appropriate to evaluate the proposed groundwater use against the South Santiam WAB.

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
1	2	6.76 %	7.12 %	7.46 %	.01 %	.09 %	.43 %	1.12 %	2.04 %	3.00 %	4.07 %	5.19 %	6.11 %
Well Q as CFS		0	0	0	1.17	1.17	1.17	1.17	1.17	1.17	0	0	0
Interference CFS		.079	.083	.087	0.0	.001	.005	.013	.024	.035	.048	.061	.072
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.		.079	.083	.087	0.0	.001	.005	.013	.024	.035	.048	.061	.072
(B) = 80 % Nat. Q		468	467	449	300	221	123	55	37.3	38.8	59.1	214	421
(C) = 1 % Nat. Q		4.68	4.67	4.49	3.00	2.21	1.23	0.55	.373	.388	.591	.214	.421
(D) = (A) > (C)		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
(E) = (A / B) x 100		.017 %	.018 %	.019 %	0 %	0 %	.004 %	.024 %	.064 %	.090 %	.081 %	.028 %	.017 %

(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:** Evaluation above for estimated impacts to Crabtree Creek from pumping at proposed locations, rates, and maximum durations. Crabtree Creek lies beyond one mile from both proposed POA wells, this evaluation considers the POA closest to the pertinent surface water source.

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: \_\_\_\_\_

Gannett, M. W. and R. R. Caldwell. 1998. *Geologic Framework of the Willamette Lowland Aquifer System, Oregon and Washington*. USGS Professional Paper 1424-A.

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

Frank, F.J., 1976. *Ground Water in the Harrisburg-Halsey Area, Southern Willamette Valley, Oregon*. USGS Water Supply Paper 2040.

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.

Hunt, B., 2003, Unsteady stream depletion when pumping from semiconfined aquifer: *Journal of Hydrologic Engineering*, January/February, 2003.

**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.

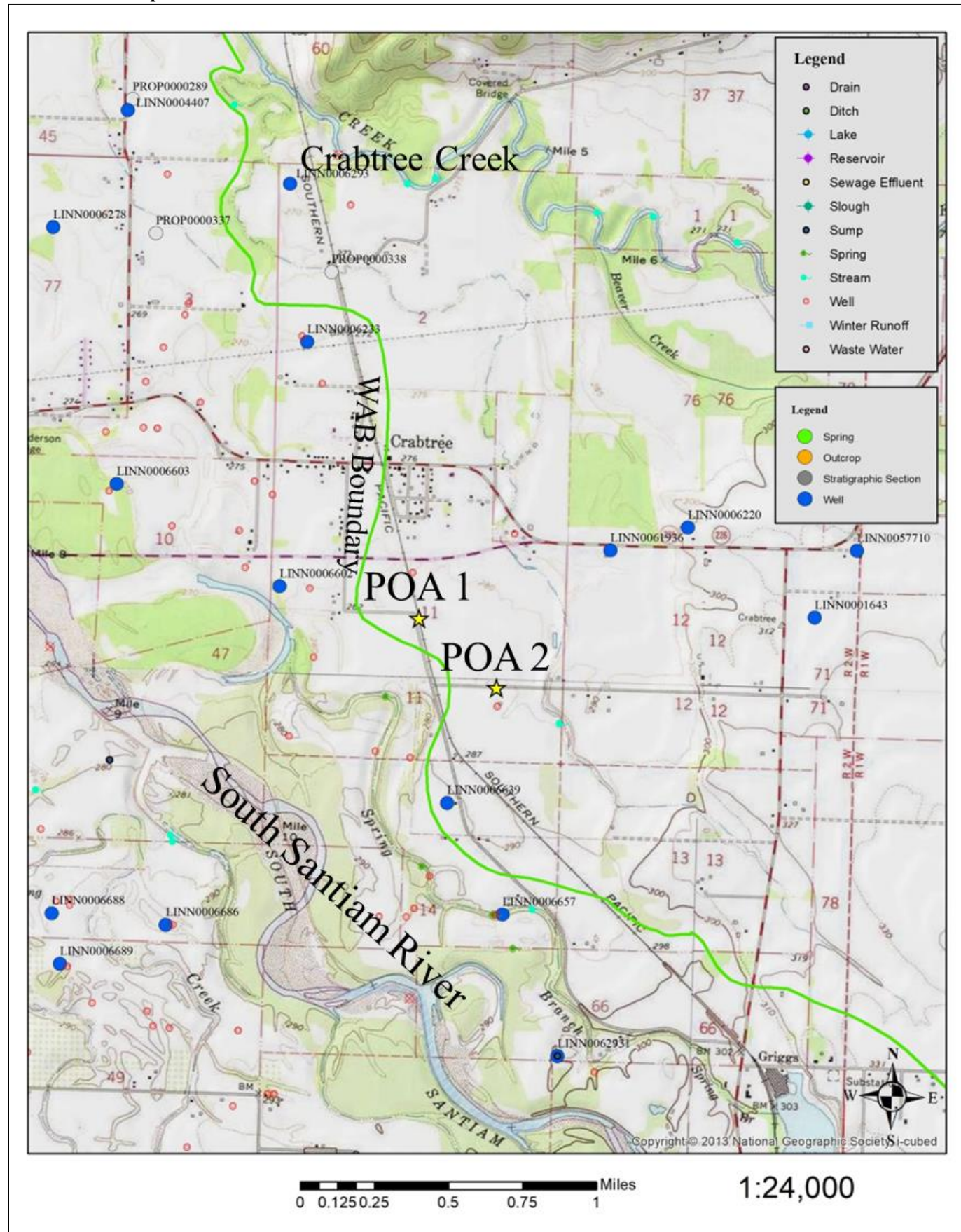
**Water Availability Tables**

S SANTIAM R > SANTIAM R - AT MOUTH						
Watershed ID #: 30200601		Basin: WILLAMETTE			Exceedance Level: 80	
Time: 1:04 PM					Date: 07/05/2023	
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	3,090.00	266.00	2,820.00	0.00	0.00	2,820.00
FEB	3,360.00	1,530.00	1,830.00	0.00	0.00	1,830.00
MAR	3,170.00	1,260.00	1,910.00	0.00	0.00	1,910.00
APR	2,950.00	1,050.00	1,900.00	0.00	0.00	1,900.00
MAY	2,050.00	711.00	1,340.00	0.00	0.00	1,340.00
JUN	968.00	182.00	786.00	0.00	0.00	786.00
JUL	450.00	205.00	245.00	0.00	0.00	245.00
AUG	275.00	189.00	85.60	0.00	0.00	85.60
SEP	253.00	159.00	94.10	0.00	0.00	94.10
OCT	363.00	138.00	225.00	0.00	0.00	225.00
NOV	1,450.00	140.00	1,310.00	0.00	0.00	1,310.00
DEC	3,040.00	143.00	2,900.00	0.00	0.00	2,900.00
ANN	2,330,000	355,000	1,980,000	0	0	1,980,000

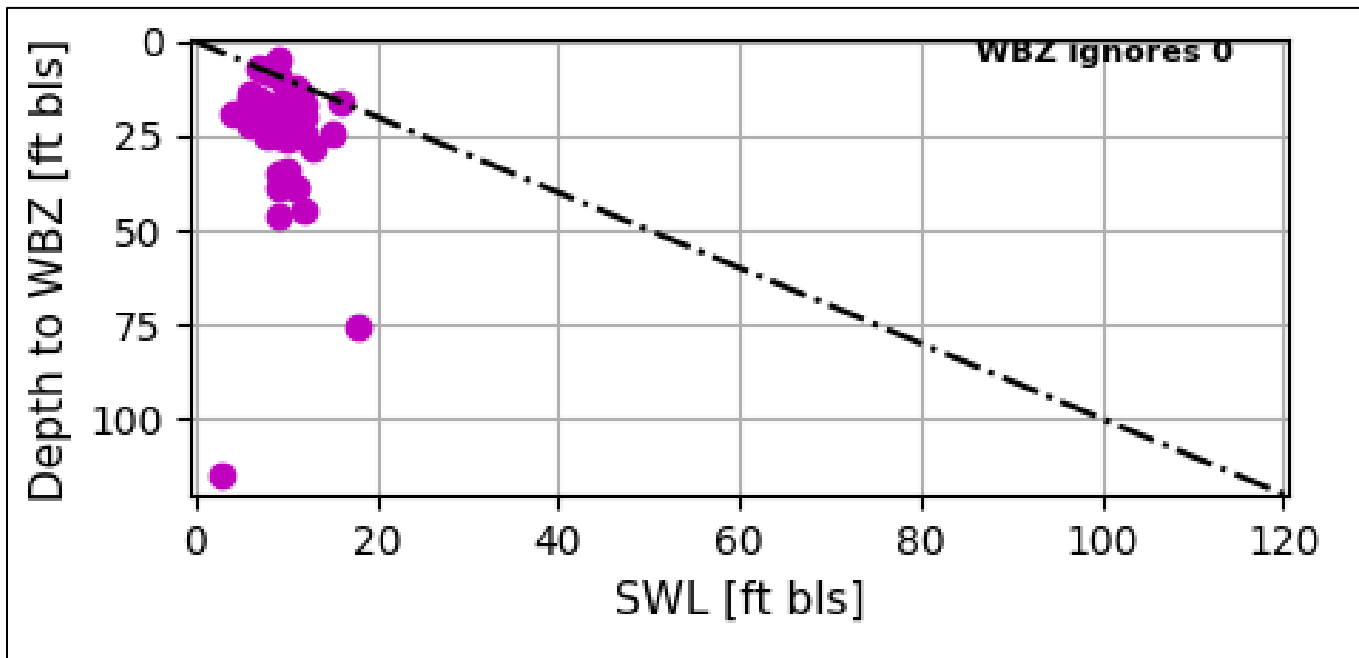
CRABTREE CR > S SANTIAM R - AT MOUTH						
Watershed ID #: 88		Basin: WILLAMETTE			Exceedance Level: 80	
Time: 1:03 PM					Date: 07/05/2023	
Month	Natural Stream Flow	Consumptive Use and Storage	Expected Stream Flow	Reserved Stream Flow	Instream Requirements	Net Water Available
Monthly values are in cfs.						
Storage is the annual amount at 50% exceedance in ac-ft.						
JAN	468.00	2.17	466.00	0.00	100.00	366.00
FEB	467.00	2.14	465.00	0.00	100.00	365.00
MAR	449.00	1.78	447.00	0.00	100.00	347.00
APR	380.00	2.48	378.00	0.00	100.00	278.00
MAY	221.00	8.14	213.00	0.00	100.00	113.00
JUN	123.00	16.10	107.00	0.00	50.00	56.90
JUL	55.00	28.00	27.00	0.00	35.00	-7.98
AUG	37.30	22.30	15.00	0.00	25.00	-9.97
SEP	38.80	11.00	27.80	0.00	100.00	-72.20
OCT	59.10	1.05	58.00	0.00	100.00	-42.00
NOV	214.00	1.35	213.00	0.00	100.00	113.00
DEC	421.00	2.20	419.00	0.00	100.00	319.00
ANN	310,000	6,000	304,000	0	60,900	246,000



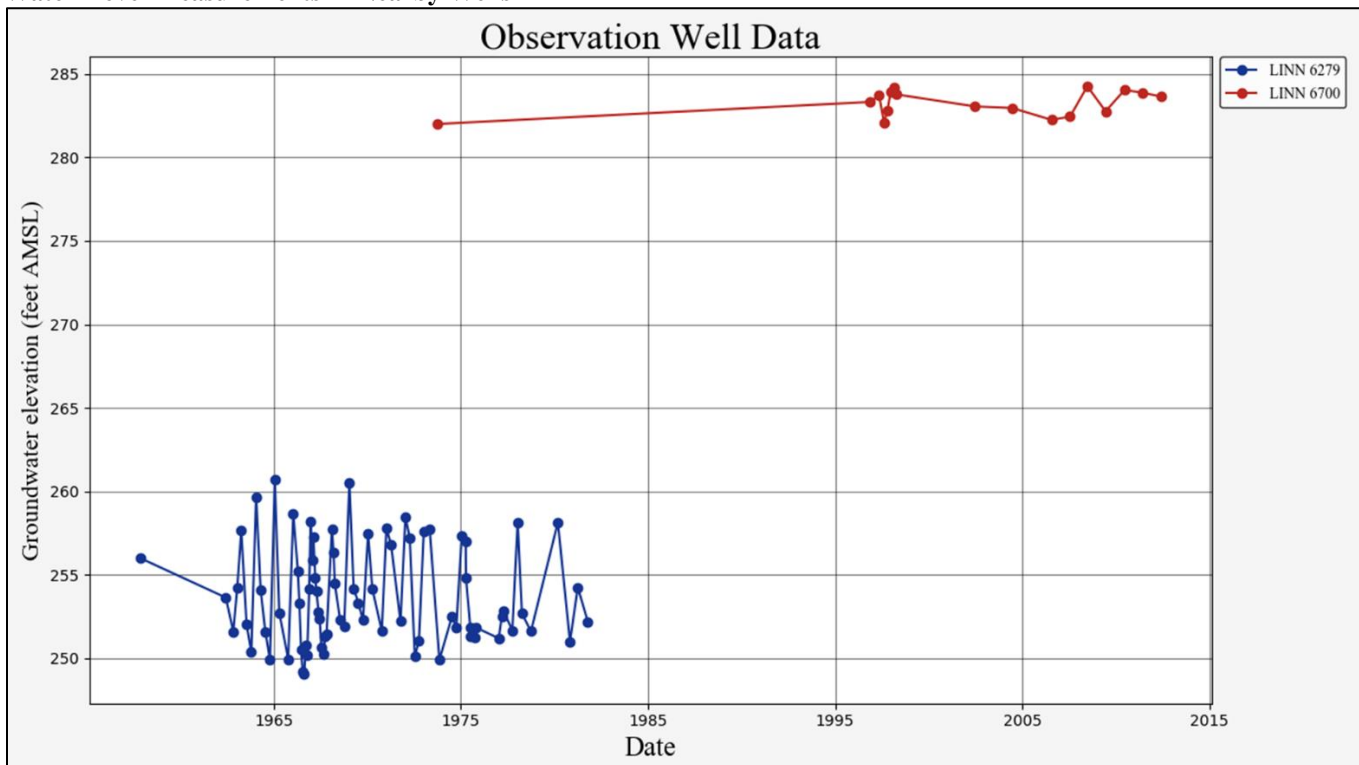
## Well Location Map



## Well Statistics

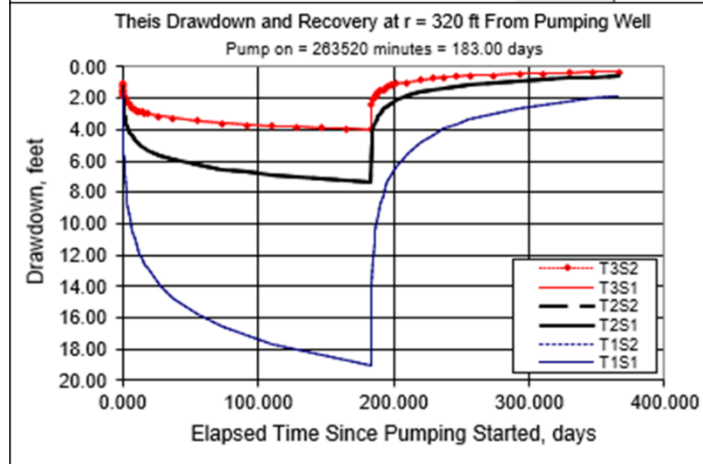
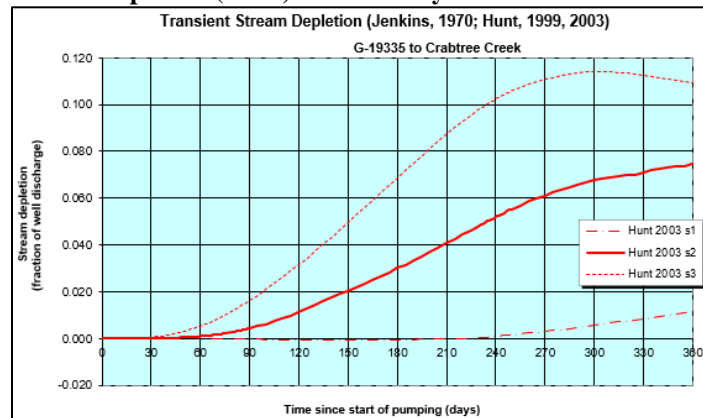


## Water-Level Measurements in Nearby Wells



**Theis Interference Analysis**

Input Data:	Var Name	Scenario 1	Scenario 2	Scenario 3	Units
Total pumping time	t		183		d
Radial distance from pumped well:	r		320.00		ft
Pumping rate	Q		1.2		cfs
Hydraulic conductivity	K	50	150	300	ft/day
Aquifer thickness	b		60		ft
Storativity	S_1		0.01000		
	S_2		0.01000		
Transmissivity Conversions	T_ft2pd	3,000	9,000	18,000	ft <sup>2</sup> /day
	T_ft2pm	2.0833	6.2500	12.5000	ft <sup>2</sup> /min
	T_gpdft	22,440	67,320	134,640	gpd/ft

**Stream Depletion (Hunt) Model Analysis**

Input data					
yellow = required			blue = recommended		
Parameter	Scenario 1	Scenario 2	Scenario 3	Unit	Description
G-19335 to Crabtree Creek					
Qw		1.17		cfs	Net steady pumping rate of well
tpon		183		days	Time pump on (pumping duration)
a	7400	7400	7400	ft	Perpendicular distance from well to stream
d		50		ft	Well depth
K	50	150	300	ft/day	Aquifer hydraulic conductivity
b	60	60	60	ft	Aquifer saturated thickness
S	0.01	0.01	0.01		Aquifer storativity or specific yield
Kva	1	1	1	ft/day	Aquitard vertical hydraulic conductivity
ba	10	10	10	ft	Aquitard saturated thickness
babs	2	2	2	ft	Aquitard thickness below stream
n	0.2	0.2	0.2		Aquitard porosity
ws	15	15	15	ft	Stream width
Recalculate					