

Groundwater Application Review Summary Form

Application # G- 19326

GW Reviewer Phillip I. Marcy Date Review Completed: 07/05/2023

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

July 5, 2023

TO: Application G- 19326

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 Date 07/05/2023
 FROM: Groundwater Section Phillip I. Marcy
 Reviewer's Name
 SUBJECT: Application G- 19326 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: Ivo Franz Wenz County: Linn

A1. Applicant(s) seek(s) 3.11 cfs from 4 well(s) in the Willamette Basin,
 _____ subbasin

A2. Proposed use Irrigation (340.1 acres) Seasonality: April 1st – September 30th (213 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 4404	1	Alluvium	3.11	10S/2W-34 SW-NW	440'S, 1510'W fr NW cor DLC 60
2	Proposed	2	Alluvium	3.11	10S/2W-33 SE-SE	250'N, 980'W fr SE cor S 33
3	Proposed	3	Alluvium	0.49	11S/2W-3 SW-NE	1290'S, 2210'W fr NE cor S 3
4	Proposed	4	Alluvium	0.65	11S/2W-2 SW-NW	1980'S, 950'E fr NW cor S 2

* 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	261	23	6	02/29/1984	130	0-23	+1-129.67	None	118-128			
2	261	NA	NA	NA	~135	0-18+	Unknown	Unknown	Unknown	NA	NA	NA
3	269	NA	NA	NA	~60	0-18+	Unknown	Unknown	Unknown	NA	NA	NA
4	274	NA	NA	NA	~50	0-18+	Unknown	Unknown	Unknown	NA	NA	NA

Use data from application for proposed wells.

A4. **Comments:** The applicant proposes to develop groundwater from one existing well and three wells yet to be constructed. Wells 1 and 2 are proposed to share portions of the maximum rate with each possibly pumping up to 3.11 cfs, while a dedicated rate is proposed for each Well 3 (0.49 cfs) and Well 4 (0.65 cfs). All proposed POAs are to develop from alluvium.

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: _____

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) 7N; "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:** Most wells within the area of the proposed POA wells produce from unconsolidated sediments, here divided into those above and below the Willamette Silt into "Older Alluvium" and "Younger Alluvium" (Frank, 1976). Older deposits reported in some deeper wells in the area include Little Butte Volcanics and marine siltstone, shale, and tuffaceous sandstone. Both POA wells are likely to produce from Older Alluvium, noted for sand and gravel mixtures with subordinate silt and clay. This poor sorting, in addition to the lenticular geometry of more conductive deposits limits the bulk transmissivity from this aquifer, despite the presence of gravels.

LINN 4394 is 850' from proposed POA 2, and also produces from alluvium under Groundwater Claim 897. Data from nearby pump tests submitted to the department report values for transmissivity of 4,900-45,000 ft²/day in the sand and gravel aquifer here, with median values falling near 7,600 ft²/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 4394 to range from less than 10' to greater than 37' after 213 days of continuous pumping at the proposed rate at proposed POA 2.

Available water level data indicate year over year stability (see attached hydrograph).

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"/>
3	Sand and Gravel	<input checked="" type="checkbox"/>	<input type="checkbox"/>
4	Sand and Gravel	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Basis for aquifer confinement evaluation: Well logs in the area report static water level rising well above the level at which groundwater was first encountered during well construction.

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	255	241-261	3050	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2	1	South Santiam River	~250	241-261	1985	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
3	1	South Santiam River	~260	241-261	4350	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
4	1	South Santiam River	~265	241-261	6380	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
1	2	Crabtree Creek	255	244-287	2640	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2	2	Crabtree Creek	~250	244-287	5600	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
3	2	Crabtree Creek	~260	244-287	3390	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
4	2	Crabtree Creek	~265	244-287	2080	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" 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;
CRABTREE CR> S 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"/>	NA	NA	<input type="checkbox"/>	253.0	<input checked="" type="checkbox"/>	<<25%	<input checked="" type="checkbox"/>
2	1	<input type="checkbox"/>	<input type="checkbox"/>	NA	NA	<input type="checkbox"/>	253.0	<input checked="" type="checkbox"/>	<<25%	<input checked="" type="checkbox"/>
3	1	<input type="checkbox"/>	<input type="checkbox"/>	NA	NA	<input type="checkbox"/>	253.0	<input type="checkbox"/>	<<25%	<input type="checkbox"/>
1	2	<input type="checkbox"/>	<input type="checkbox"/>	MF88A	25.0	<input checked="" type="checkbox"/>	37.3	<input checked="" type="checkbox"/>	<<25%	<input checked="" type="checkbox"/>
3	2	<input type="checkbox"/>	<input type="checkbox"/>	MF88A	25.0	<input checked="" type="checkbox"/>	37.3	<input checked="" type="checkbox"/>	<<25%	<input checked="" type="checkbox"/>
4	2	<input type="checkbox"/>	<input type="checkbox"/>	MF88A	25.0	<input checked="" type="checkbox"/>	37.3	<input checked="" type="checkbox"/>	<<25%	<input checked="" type="checkbox"/>

	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"/>
			<input type="checkbox"/>			<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>

All four proposed POA wells have triggered PSI with one or both of the surface water sources cited. In order to avoid PSI with either stream, proposed POA wells would be limited to less than 2.53 cfs within one mile of the South Santiam River, while being greater than one mile from Crabtree Creek. Those POA wells within one mile of Crabtree Creek would need to limit maximum pumping rates to less than 0.25 cfs.

[illegible]

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:
- 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:** Potential to Substantially Interfere (PSI) has been tripped for all proposed POA well locations. Rates and/or proposed locations may be amended for reconsideration of this finding considering the conditions listed above (in C3b).

References Used: _____

Gannet, 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.

D. WELL CONSTRUCTION, OAR 690-200

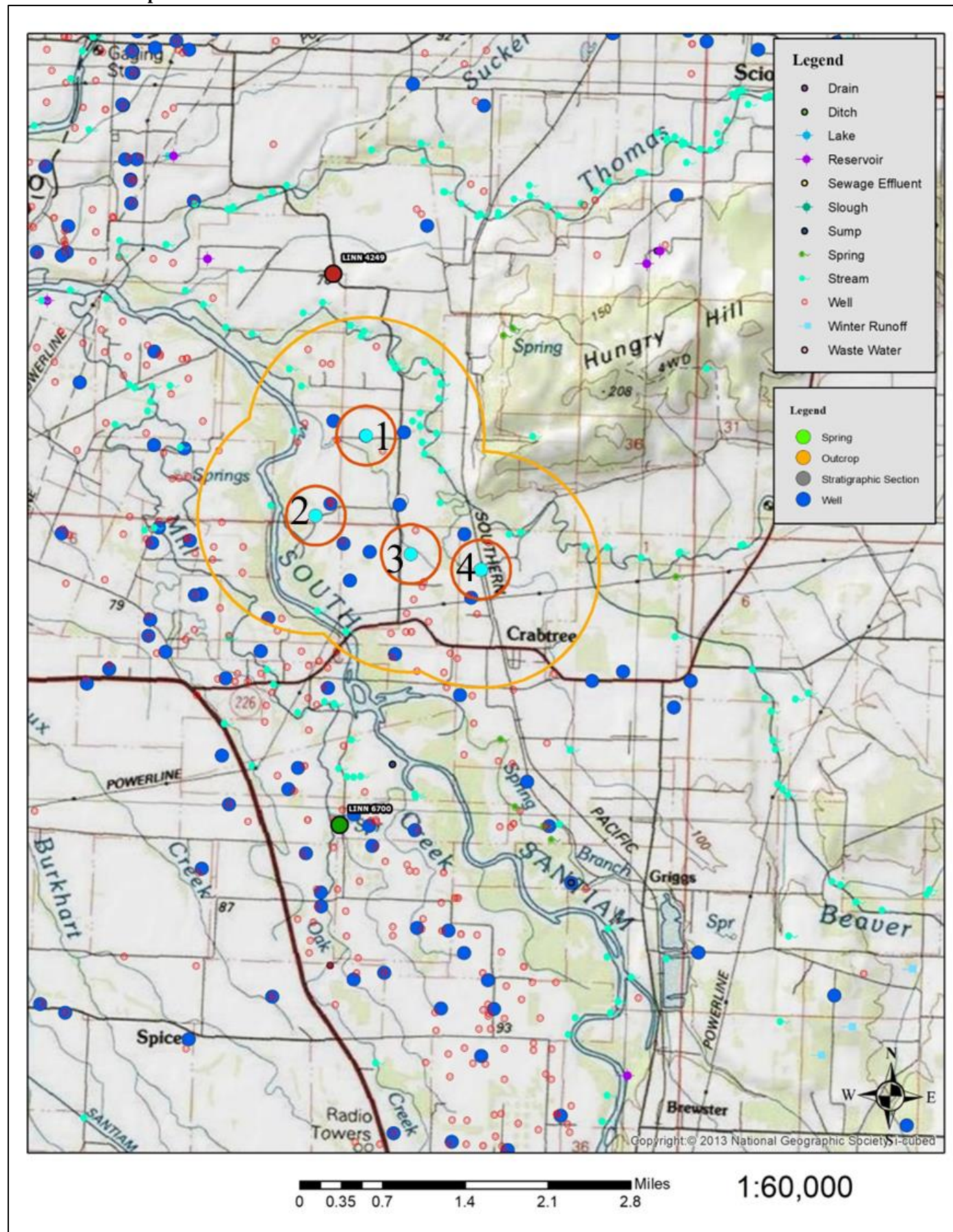
- D1. Well #: _____ Logid: _____
- D2. **THE WELL does not appear to meet current well construction standards based upon:**
- a. ☐ review of the well log;
- b. ☐ field inspection by _____;
- c. ☐ report of CWRE _____;
- d. ☐ other: (specify) _____
- D3. **THE WELL construction deficiency or other comment is described as follows:** _____
- D4. ☐ Route to the Well Construction and Compliance Section for a review of existing well construction.

Water Availability Tables

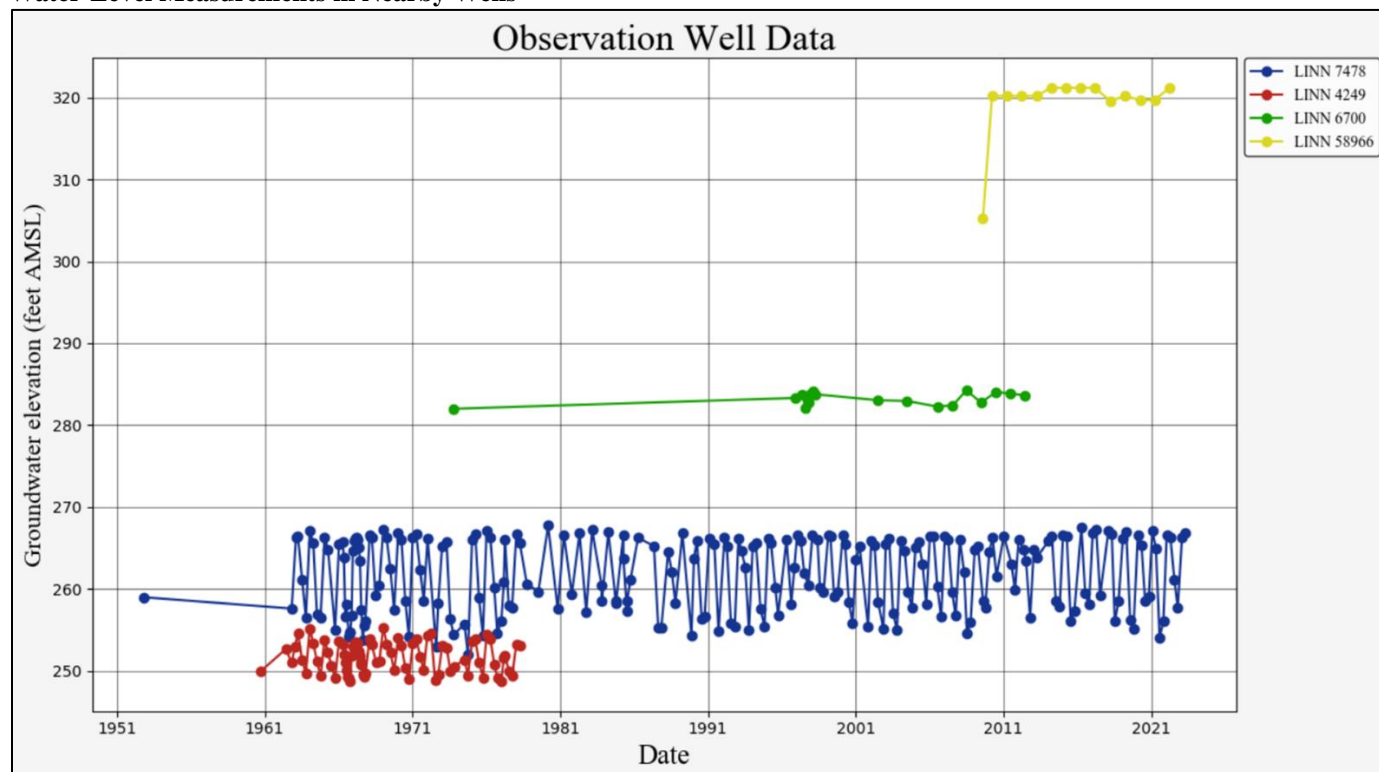
S SANTIAM R > SANTIAM R - AT MOUTH						
Watershed ID #: 30200601		Basin: WILLAMETTE			Exceedance Level: 80	
Time: 1:04 PM					Date: 07/05/2023	
Month	Natural Stream Flow	Consumptive Use and Storage	Expected Stream Flow	Reserved Stream Flow	Instream Requirements	Net Water Available
Monthly values are 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



Water-Level Measurements in Nearby Wells



Theis Interference Analysis

Input Data:		Var Name	Scenario 1	Scenario 2	Scenario 3	Units
Total pumping time	t			213		d
Radial distance from pumped well:	r			850.00		ft
Pumping rate	Q			3.1		cfs
Hydraulic conductivity	K		15	30	60	ft/day
Aquifer thickness	b			60		ft
Storativity	S 1			0.01000		
	S 2			0.01000		
Transmissivity Conversions		T f2pd	900	1,800	3,600	ft ² /day
		T ft2pm	0.6250	1.2500	2.5000	ft ² /min
		T_gpdft	6,732	13,464	26,928	gpd/ft

