

Approved:



MEMO

To: Kristopher Byrd, Well Construction and Compliance Section Manager
From: Travis Kelly, Well Construction Compliance Coordinator
Subject: Review of Water Right Application G-19222
Date: February 9, 2022

The attached application was forwarded to the Well Construction and Compliance Section by the Groundwater Section. Phil Marcy reviewed the application. Please see Phil's Groundwater Review.

Applicant's Well #1 (Proposed Well): Applicant's Well #1 is a proposed well, therefore it cannot be reviewed for construction. Construction of this proposed well shall be completed in a manner that protects ground water resources as required under Oregon Administrative Rules 690-200 through 690-240. During construction of this well, specific attention should be paid to ensure sealing requirements are met and that the well does not commingle aquifers.

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

Groundwater Application Review Summary Form

Application # G- 19222

GW Reviewer Phillip I. Marcy Date Review Completed: 12/17/2021

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

12/17/2021

TO: Application G- 19222

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 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 12/17/2021
 FROM: Groundwater Section Phillip I. Marcy
 Reviewer's Name
 SUBJECT: Application G- 19222 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: L3 Farms, Inc. County: Linn

A1. Applicant(s) seek(s) 0.88 cfs from 1 well(s) in the Willamette Basin,
 _____ subbasin

A2. Proposed use Irrigation (70.6 acres) Seasonality: May 1st – September 30th (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	0.88	13S/3W-36 SE-SW	25'N, 1770'E fr SW cor S 36
2						
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	323	NA	NA	NA	100	>18	Unknown	Unknown	Unknown	NA	NA	NA

Use data from application for proposed wells.

A4. **Comments:** The applicant proposes to develop groundwater from sand and gravel for irrigation of 70.6 acres. The well has not been constructed yet, and no information is provided concerning the proposed open interval. Proposed POA location is the same as one of two POAs on recent application G-19061 (1.90 cfs), which triggered PSI for that proposed use.

A5. **Provisions of the** Willamette (690-502-0240) 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: Well will produce from an unconfined aquifer over 1/4-mile from a surface water body (aside from man-made gravel pits), so the pertinent rule (OAR 690-502-0240) does 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) 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:** The area around the well is underlain by less than 10 feet of low permeability sediment (Willamette Silt), which is underlain by a series of sand and gravel beds interbedded with silts and clays (Gannett and Caldwell, 1998). Well logs for nearby wells (LINN 61428 and LINN 13545) suggest that there are no continuous confining layers in the area. Based on nearby observation wells, there is no evidence to suggest declines in the local unconfined alluvial aquifer (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	Unconfined Sands and Gravels	<input type="checkbox"/>	<input checked="" type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>

Basis for aquifer confinement evaluation: Reported static water levels on nearby logs indicate only a slight difference in elevation when compared to the elevation of respective water-bearing zones. This, taken together with the lack of a continuous and laterally extensive confining unit in the area, indicate a very low level of confinement in the shallow sand and gravel 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	Calapooia River	~305	307-327	2350	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" 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"/>
						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Basis for aquifer hydraulic connection evaluation: Groundwater elevations observed in nearby wells correspond with elevations of surface water within one mile of the proposed POA wells. Groundwater in the unconfined shallow aquifer here does not encounter any significant barrier to vertical migration, and any fine-grained surficial units, such as the Willamette Silt are incised by the Calapooia River.

Water Availability Basin the well(s) are located within: CALAPOOIA R > WILLAMETTE R – AB 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"/>	MF76A	20	<input checked="" type="checkbox"/>	22.7	<input checked="" type="checkbox"/>	<<25%	<input checked="" 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"/>
		<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 #		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"/>

Comments: The stream depletion from the Calapooia River was estimated using the Hunt 1999 model. The large distance to the River, unconfined nature of the aquifer, and fine-grained sediments within the river channel results in stream depletion at 30 days likely being much less than 25% of the pumping rate (see results below).

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													
(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: _____

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 proposed use has triggered PSI, due to the pumping rate being greater than 1% of both the instream water right (20 CFS) and the minimum perennial streamflow (22.7 CFS) for the Calapooia River, to which the proposed POA wells are hydraulically connected to within one mile. The maximum rate that would be allowable under Division 9 rules given the conditions within the local aquifer would be 0.20 CFS or less.

References Used: _____

Gannett, Marshall W., and Caldwell, Rodney R., 1998, Geologic Framework of the Willamette Lowland Aquifer System, Oregon and Washington: U. S. Geological Survey Professional Paper 1424-A.

Hunt, B., 1999, Unsteady stream depletion from ground water pumping: Ground Water, v. 37, no. 1, p. 98-102.

Application file G-19061; application reviews for G-18297 and G-17596.

Conlon, T. D., Wozniak, K. C., Woodcock, D., Herrera, N.B., Fischer, B.J. Morgan, D.S., Lee, K.K., and Hinkle, S.R., 2005, Ground-Water Hydrology of the Willamette Basin, Oregon: U. S. Geological Survey Scientific Investigations Report 2005-5168.

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:** _____

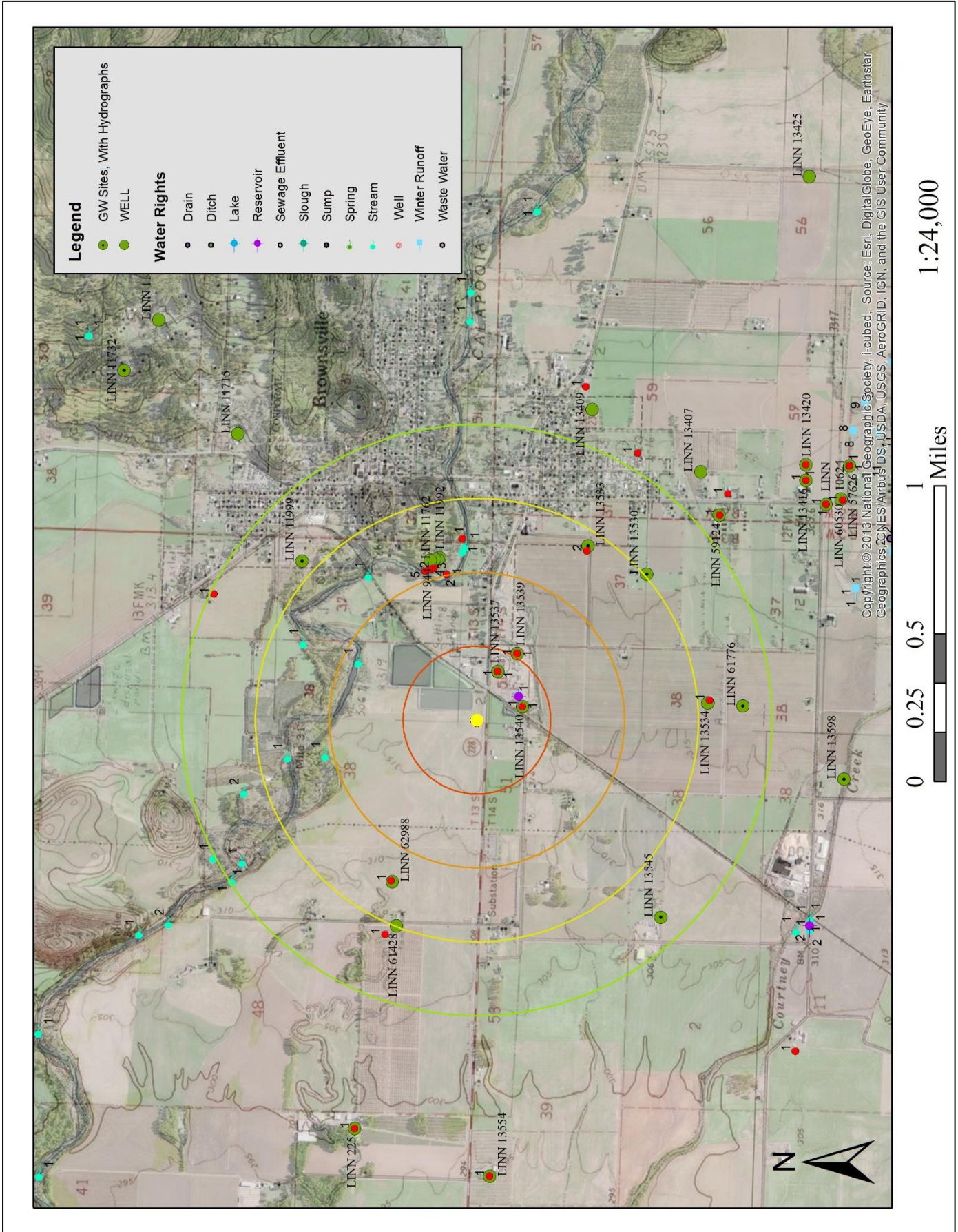
D4. **Route to the Well Construction and Compliance Section for a review of existing well construction.**

Water Availability Tables

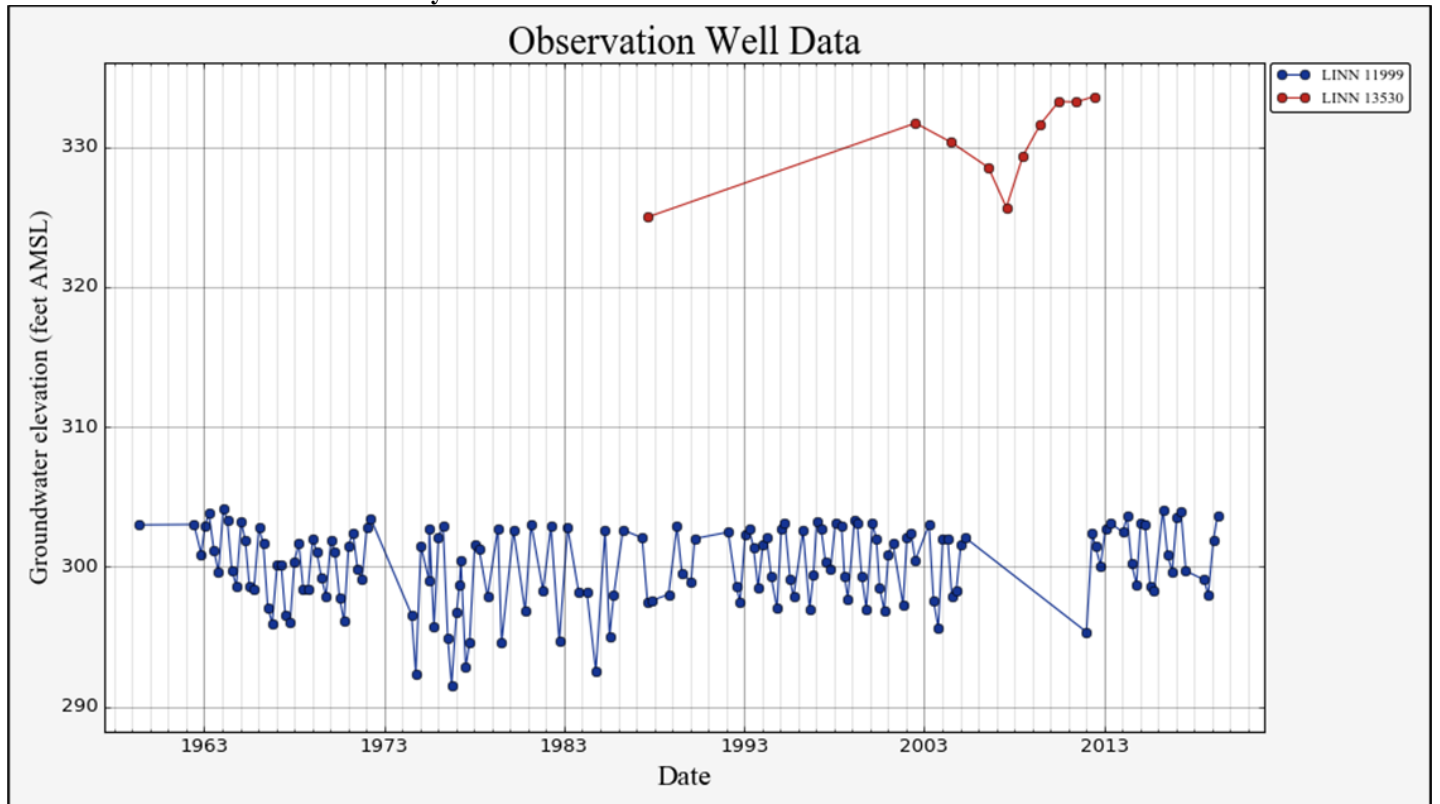
DETAILED REPORT ON THE WATER AVAILABILITY CALCULATION						
Watershed ID #: 76		CALAPOOIA R > WILLAMETTE R - AB MOUTH			Exceedance Level: 80	
Time: 1:22 PM		Basin: WILLAMETTE			Date: 08/16/2021	
Month	Natural Stream Flow	Consumptive Use and Storage	Expected Stream Flow	Reserved Stream Flow	Instream Requirements	Net Water Available
Monthly values are in cfs. Storage is the annual amount at 50% exceedance in ac-ft.						
JAN	592.00	3.72	588.00	0.00	20.00	568.00
FEB	650.00	3.66	646.00	0.00	20.00	626.00
MAR	575.00	2.53	572.00	0.00	20.00	552.00
APR	423.00	2.25	421.00	0.00	20.00	401.00
MAY	234.00	19.20	215.00	0.00	20.00	195.00
JUN	111.00	14.60	96.40	0.00	20.00	76.40
JUL	49.00	22.60	26.40	0.00	20.00	6.44
AUG	26.00	16.10	9.90	0.00	20.00	-10.10
SEP	22.70	8.35	14.40	0.00	20.00	-5.65
OCT	29.60	2.01	27.60	0.00	20.00	7.59
NOV	133.00	2.46	131.00	0.00	20.00	111.00
DEC	499.00	3.68	495.00	0.00	20.00	475.00
ANN	404,000	6,140	398,000	0	14,500	383,000

DETAILED REPORT OF INSTREAM REQUIREMENTS													
Watershed ID #: 76		CALAPOOIA R > WILLAMETTE R - AB MOUTH										Basin: WILLAMETTE	
Time: 1:52 PM												Date: 08/16/2021	
Application Number	Status	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Monthly values are in cfs.													
MF76A	CERTIFICATE	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
MAXIMUM		20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0

Well Location Map



Water-Level Measurements in Nearby Wells



Output for Hunt Stream Depletion, Scenerio 2 (s2):						Time pump on = 153 days						
Days	30	60	90	120	150	180	210	240	270	300	330	360
Qw, cfs	0.880	0.880	0.880	0.880	0.880	0.880	0.880	0.880	0.880	0.880	0.880	0.880
Jenk SD s2 %	0.67	5.50	11.72	17.49	22.49	26.37	25.61	22.63	19.63	17.06	14.93	13.18
Jen SD s2 cfs	0.006	0.048	0.103	0.154	0.198	0.232	0.225	0.199	0.173	0.150	0.131	0.116
Hunt SD s2 %	0.03	0.40	1.15	2.08	3.09	4.11	4.82	5.11	5.17	5.12	5.00	4.86
Hunt SD s2 cfs	0.000	0.004	0.010	0.018	0.027	0.036	0.042	0.045	0.046	0.045	0.044	0.043
Parameters:					Scenario 1	Scenario 2	Scenario 3	Units				
Net steady pumping rate	Qw	0.88		0.88		0.88		cfs				
Distance to stream	a	2350		2350		2350		ft				
Aquifer hydraulic conductivity	K	50		50		50		ft/day				
Aquifer thickness	b	50		50		50		ft				
Aquifer transmissivity	T	2500		2500		2500		ft*ft/day				
Aquifer storage coefficient	S	0.2		0.2		0.2						
Stream width	ws	25		25		25		ft				
Streambed hydraulic conductivity	Ks	0.1		0.1		0.1		ft/day				
Streambed thickness	bs	3		3		3		ft				
Streambed conductance	sbc	0.833333333		0.833333333		0.833333333		ft/day				
Stream depletion factor (Jenkins)	sdf	441.8		441.8		441.8		days				
Streambed factor (Hunt)	sbf	0.783333333		0.783333333		0.783333333						