

Groundwater Application Review Summary Form

Application # G- 18848

GW Reviewer Phil Marcy

Date Review Completed: 9/11/2019

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.

at 9/11/19

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).

ok.
KHO

MEMO

To: Kristopher Byrd, Well Construction and Compliance Section Manager
From: Joel Jeffery, Well Construction Program Coordinator
Subject: Review of Water Right Application G-18848
Date: September 18, 2019

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

Applicant's Well #1 (LINN 61779): Based on a review of the Well Report, Applicant's Well #1 seems to protect the groundwater resource.

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

Applicant's Well #2 is a proposed well and has not been constructed, therefore a review could not be completed.

LINN 61779

(1) LAND OWNER
 First Name William Owner Well I.D. DR-3214
 Last Name TENBUSCH
 Company _____
 Address 110 Fields Court
 City Brownsville State ORE Zip 97327

(2) TYPE OF WORK New Well Deepening Conversion
 Alteration (complete 2a & 10) Abandonment (complete 5a)

(2a) PRE-ALTERATION
 Casing: Dia + From To Gauge Stl Plstc Wld Thrd
 Material From To Amt sacks/lbs
 Seal: _____

(3) DRILL METHOD
 Rotary Air Rotary Mud Auger Cable Mud
 Reverse Rotary Other

(4) PROPOSED USE Domestic Irrigation Community
 Industrial/ Commercial Livestock Dewatering
 Thermal Injection Other

(5) BORE HOLE CONSTRUCTION Special Standard (Attach copy)
 Depth of Completed Well 200 ft.
 BORE HOLE SEAL

Dia	From	To	Material	From	To	Amt	sacks/lbs
10"	0	19	BENTONITE	0	19	23	20
6"	19	200				Calculated	9

How was seal placed: Method A B C D E
 Other Poured & Probed
 Backfill placed from _____ ft. to _____ ft. Material _____
 Filter pack from _____ ft. to _____ ft. Material _____ Size _____
 Explosives used: Yes Type _____ Amount _____

(5a) ABANDONMENT USING UNHYDRATED BENTONITE
 Proposed Amount _____ Pounds Actual Amount _____ Pounds

(6) CASING/LINER

Casing	Liner	Dia	+	From	To	Gauge	Stl	Plstc	Wld	Thrd
<input checked="" type="checkbox"/>	<input type="checkbox"/>	6"	+	1	119	.250	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	

 Shoe Inside Outside Other Location of shoe(s) 119'
 Temp casing Yes Dia 10" From 0 To 19'

(7) PERFORATIONS/SCREENS
 Perforations Method HOLTE
 Screens Type SLIT Material STEEL

Perf/S	Casing	Screen	Dia	From	To	Sern/slot	Slot	# of	Tele/
creen	Liner	Dia	From	To	width	length	slots	pipe size	
	<input checked="" type="checkbox"/>	<input type="checkbox"/>	6"	90	112	1/4"	1"	528	

(8) WELL TESTS: Minimum testing time is 1 hour
 Pump Bailer Air Flowing Artesian
 Yield gal/min _____ Drawdown _____ Drill stem/Pump depth _____ Duration (hr) _____

60		110'	2 HRS
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 Temperature 54 °F Lab analysis Yes By _____
 Water quality concerns? Yes (describe below) TDS amount 258

From	To	Description	Amount	Units

(9) LOCATION OF WELL (legal description)
 County LINN Twp 14 Range 2
 Sec 4 NE 1/4 of the SW 1/4 Tax Lot 1400
 Tax Map Number _____ Lot _____
 Lat _____ " or _____ DMS or DD
 Long _____ " or _____ DMS or DD
 Street address of well Nearest address

36420 Hwy 228 Brownsville, Ore.

(10) STATIC WATER LEVEL

Existing Well / Pre-Alteration	Date	SWL(psi)	+ SWL(ft)
Completed Well	<u>8-22-16</u>		<u>-20</u>

 Flowing Artesian? Dry Hole?
 WATER BEARING ZONES Depth water was first found 95'

SWL Date	From	To	Est Flow	SWL(psi)	+ SWL(ft)
<u>8-19-16</u>	<u>95</u>	<u>107</u>	<u>60 GPM</u>		<u>-20'</u>

(11) WELL LOG
 Ground Elevation _____

Material	From	To
TOP SOIL	0	1
CLAY - DK BROWN	1	5
CLAY - DK BROWN w/ GRAVEL	5	15
SAND & GRAVEL w/ CLAY - HARD	15	34
CLAY - GRAY w/ GRAVEL	34	36
CLAY - GRAY - HARD	36	41
CLAY - BLUE/GRAY	41	50
CONCRETE - CLAY	50	88
CLAY - GRAY - SANDY	88	91
GRAVEL w/ CLAY - GRAY	91	95
SAND & GRAVEL - BLACK	95	107
CLAY - BROWN/GRAY	107	112
CLAY - GRAY	112	121
CLAY - BROWN/GRAY	121	127
CLAY - GRAY w/ GRIT	127	136
CLAY - BROWN w/ GRIT	136	157
CLAY - GRAY w/ GRIT	157	202
CONCRETE CLAY	202	205

 Date Started 8-18-16 Completed 8-22-16
HOLE CAVED BACK 200'

(unbonded) Water Well Constructor Certification
 I certify that the work I performed on the construction, deepening, alteration, or abandonment of this well is in compliance with Oregon water supply well construction standards. Materials used and information reported above are true to the best of my knowledge and belief.
 License Number 1974 Date 8-22-16
 Signed C.J. Nutent

(bonded) Water Well Constructor Certification
 I accept responsibility for the construction, deepening, alteration, or abandonment work performed on this well during the construction dates reported above. All work performed during this time is in compliance with Oregon water supply well construction standards. This report is true to the best of my knowledge and belief.
 License Number 10664 Date 8-22-16
 Signed Chad D. Lupton
 Contact Info (optional) _____

PUBLIC INTEREST REVIEW FOR GROUNDWATER APPLICATIONS

TO: Water Rights Section Date 09/11/2019
 FROM: Groundwater Section Phillip I. Marcy
 SUBJECT: Application G- 18848 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: William Tenbusch County: Linn

A1. Applicant(s) seek(s) 0.2 cfs from 2 well(s) in the Willamette Basin, _____ subbasin

A2. Proposed use Irrigation (117.7 acres) Seasonality: March 1st – October 31st (245 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 61779	1	Alluvium	0.2	14S/2W-4 SW-SE	15'N, 2140'W fr NE cor S 9
2	Proposed	2	Alluvium	0.2	14S/2W-9 NW-NE	160'S, 2540'W fr NE cor S 9
3						
4						
5						

* 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	384	95	20	08/22/2016	200	0-19	-1-90	NA	90-112	60	NA	Air
2	382	NA	NA	NA	~200	TBD	TBD	TBD	TBD	NA	NA	NA

Use data from application for proposed wells.

A4. **Comments:** Proposed POA 1 (LINN 61779) was recently constructed to produce from sands and gravels underlying Willamette Silt. No construction details except proposed total depth were provided for POA well 2. LINN 61779 is also a POA on limited license LL-1753, authorized to pump 0.2005 cfs. This diminished rate was proposed after a finding of Potential to Substantially Interfere (PSI) with surface water was triggered on the initial proposed rate of 0.5 cfs. LINN 61779 also was initially listed as a POA on application G-18801, but was subsequently removed via an application amendment.

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: Proposed wells are not within 1/4 mile of a perennial stream reach and the well will produce from a confined aquifer. Thus the pertinent rules (OAR 690-502-0240) 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) 7N; "Medium 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 nearest senior POA to any of the proposed POAs on this application (LINN 13422, authorized under certificate 43189) is 3,500 feet to the SW of proposed POA 2. Data from nearby pump tests submitted to the department suggest fairly low values for transmissivity (15-30 ft²/day) in the sand and gravel aquifer here. This parameter, in conjunction with fairly sparse distribution of coarse-grained sediments within the alluvial sequence, results in fairly low transmissivity for the local alluvial aquifer. Considering these factors, a time-drawdown calculation based on the full requested rate of 0.2 cfs from proposed POA well 2 to LINN 13422, authorized under Certificate 43189. Resulting values for expected drawdown at the senior water right location after 245 days at the proposed POA 2 location are calculated to be less than one foot. using storativity values typical of confined to semi-confined systems.

Groundwater level data are limited in this area, but three wells with at least four consecutive annual measurements exist roughly two miles west of the proposed POA well locations. These wells suggest that groundwater levels within the past 5-6 years have been stable (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	Alluvium	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2	Alluvium	<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"/>

Basis for aquifer confinement evaluation: The static water level in well 1 (LINN 61779) is far above the first reported water-bearing zone at 95-107 ft bls, a sand and gravel deposit overlain by primarily low-permeability silts and clays. This indicates confined conditions in the alluvial aquifer tapped by Well 1.

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	370	350-380	3050	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2	1	Calapooia River	~370*	350-380	3550	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1	2	Courtney Creek	370	365-395	2750	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2	2	Courtney Creek	~370*	365-395	2620	<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"/>

Basis for aquifer hydraulic connection evaluation: The groundwater elevation displayed in LINN 61779 (and assumed for proposed POA well 2) is coincident with the estimated elevation range for surface waters within one mile. USGS water table map for this area shows groundwater in the alluvial aquifer system flowing towards the Calapooia River (gaining reach) (Gannett and Caldwell, 1998). These factors strongly suggest that the alluvial aquifer system is hydraulically connected to local surface waters.

The depletion of local streams by the proposed well will be attenuated, but not eliminated, by the low vertical hydraulic conductivity (permeability) of silts and clays that lie between the deeper sands and gravels and the stream beds. Net impacts will be relatively small at the onset of pumping, but will increase with time until a new equilibrium between local recharge and discharge is reached. After that time stream depletion is expected to be relatively constant throughout the year.

Water Availability Basin the well(s) are located within: Calapooia River > Willamette River – Above mouth (WAB #76)

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 source. Limit evaluation to instream rights and minimum stream flows that are pertinent to that surface water source, and 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	20.0	<input type="checkbox"/>	22.7	<input type="checkbox"/>	<<25%	<input type="checkbox"/>
2	1	<input type="checkbox"/>	<input type="checkbox"/>	MF76A	20.0	<input type="checkbox"/>	22.7	<input type="checkbox"/>	<<25%	<input type="checkbox"/>
1	2	<input type="checkbox"/>	<input type="checkbox"/>	MF76A	20.0	<input type="checkbox"/>	22.7	<input type="checkbox"/>	<<25%	<input type="checkbox"/>
2	2	<input type="checkbox"/>	<input type="checkbox"/>	MF76A	20.0	<input type="checkbox"/>	22.7	<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"/>
		<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"/>

Comments: C3a: previous analytical stream depletion modeling for similar hydrogeologic settings indicate that stream depletion at 30 days is expected to be much less than 25% due largely to relatively-thick sequence of low-permeability sediments present between the stream and the deeper aquifer water-bearing zones.

C3b: not applicable.

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													
		%	%	%	%	%	%	%	%	%	%	%	%
Well Q as CFS													
Interference CFS													
		%	%	%	%	%	%	%	%	%	%	%	%
Well Q as CFS													
Interference CFS													
		%	%	%	%	%	%	%	%	%	%	%	%
Well Q as CFS													
Interference CFS													
		%	%	%	%	%	%	%	%	%	%	%	%
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 applicant recently filed a prior application (G-18801) that included LINN 61779 in addition to 2 proposed wells, only to remove LINN 61779 and lower the applied for rate from 2.68 cfs to 0.20 cfs. This amendment to the original application was done to avoid PSI and injury with nearby senior groundwater rights. In considering this application, the cumulative impacts must be considered, but cannot be used to evaluate for PSI with nearby surface waters since the applicant is filing on separate POA wells and POU lands on each application. Due to the inability to evaluate against the cumulative impacts of these separate rights, concerns of impacts to local surface waters and senior users will be addressed via permit condition to provide annual March measurements (7N).

References Used:

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, Ground-water hydrology of the Willamette Basin, Oregon: U.S. Geological Survey Scientific Investigations Report 2005-5168.

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

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.

Application reviews for LL-1753, G-18801.

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) _____

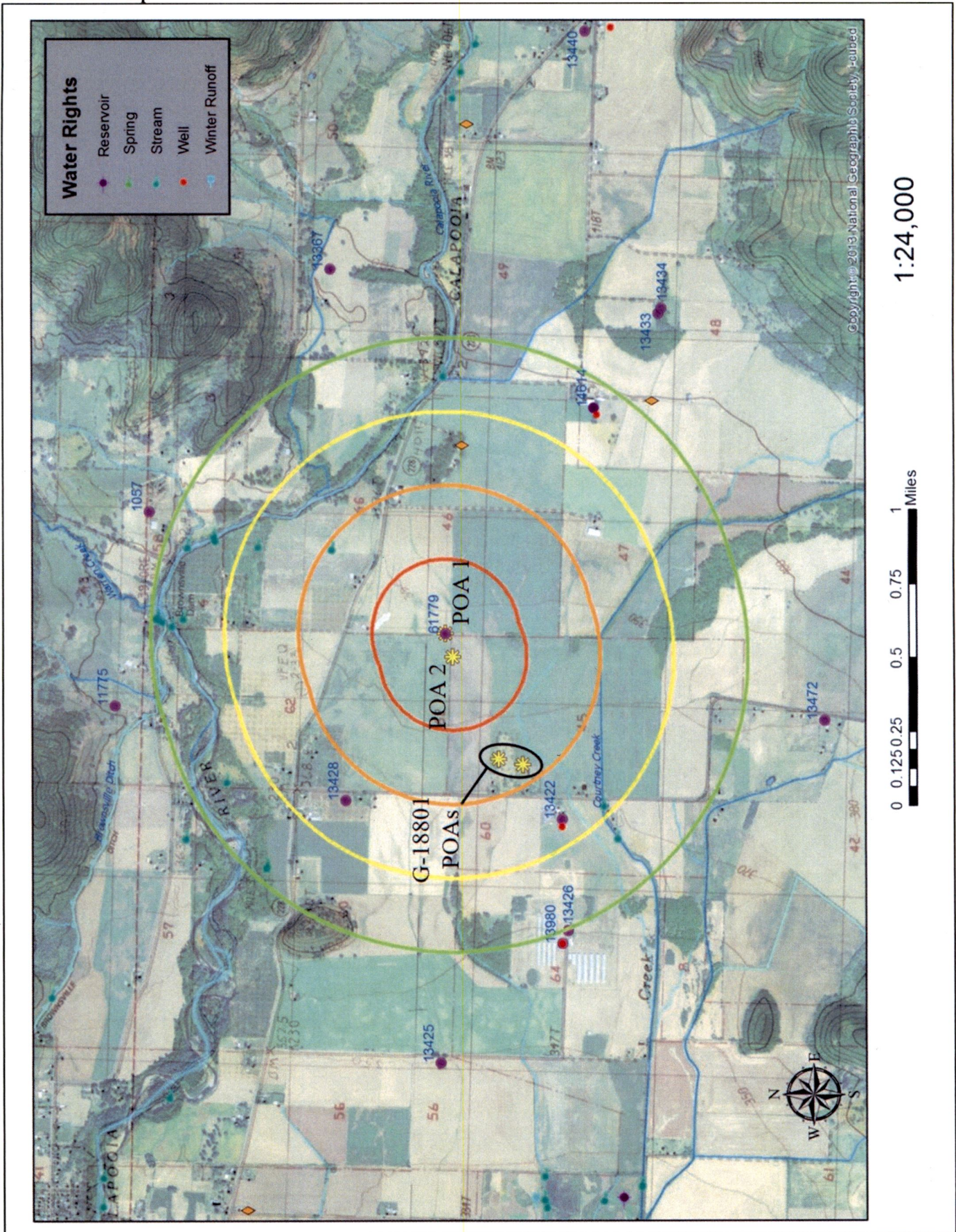
D3. **THE WELL construction deficiency or other comment is described as follows:** _____

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: 2:32 PM		Basin: WILLAMETTE			Date: 04/22/2019	
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	3.37	589.00	0.00	20.00	569.00
FEB	650.00	3.32	647.00	0.00	20.00	627.00
MAR	575.00	2.25	573.00	0.00	20.00	553.00
APR	423.00	2.03	421.00	0.00	20.00	401.00
MAY	234.00	18.80	215.00	0.00	20.00	195.00
JUN	111.00	14.00	97.00	0.00	20.00	77.00
JUL	49.00	21.70	27.30	0.00	20.00	7.33
AUG	26.00	15.70	10.30	0.00	20.00	-9.75
SEP	22.70	8.17	14.50	0.00	20.00	-5.47
OCT	29.60	1.98	27.60	0.00	20.00	7.62
NOV	133.00	2.39	131.00	0.00	20.00	111.00
DEC	499.00	3.33	496.00	0.00	20.00	476.00
ANN	404,000	5,900	398,000	0	14,500	384,000

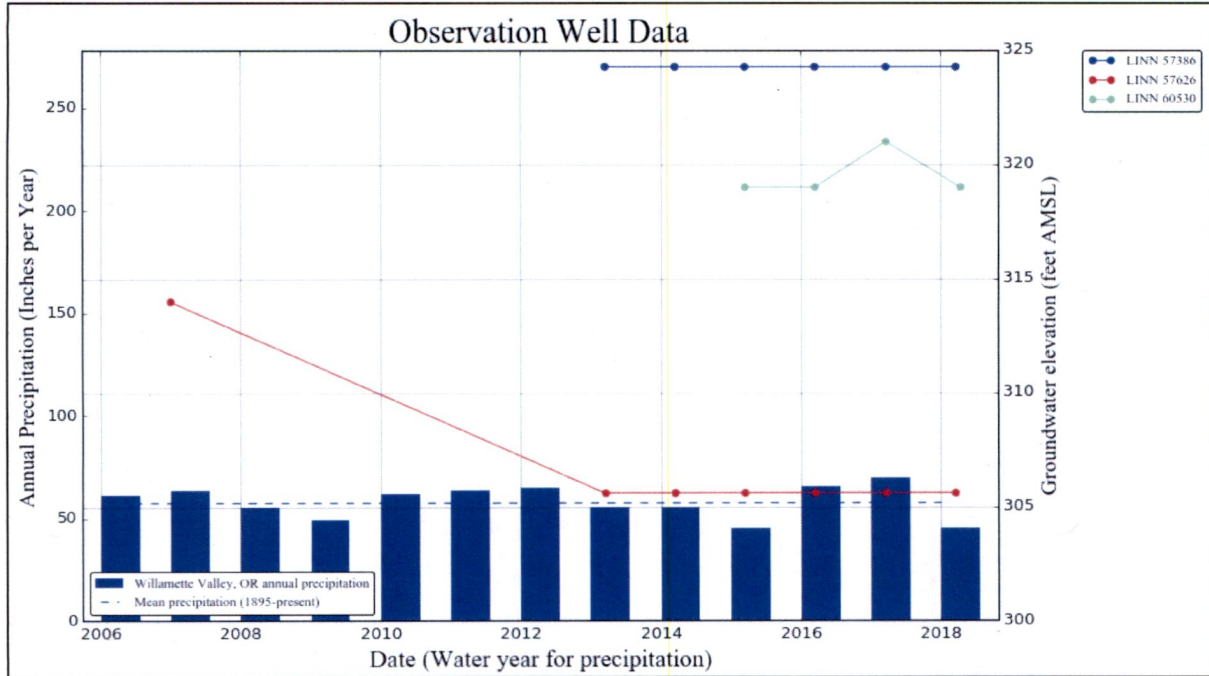
Well Location Map



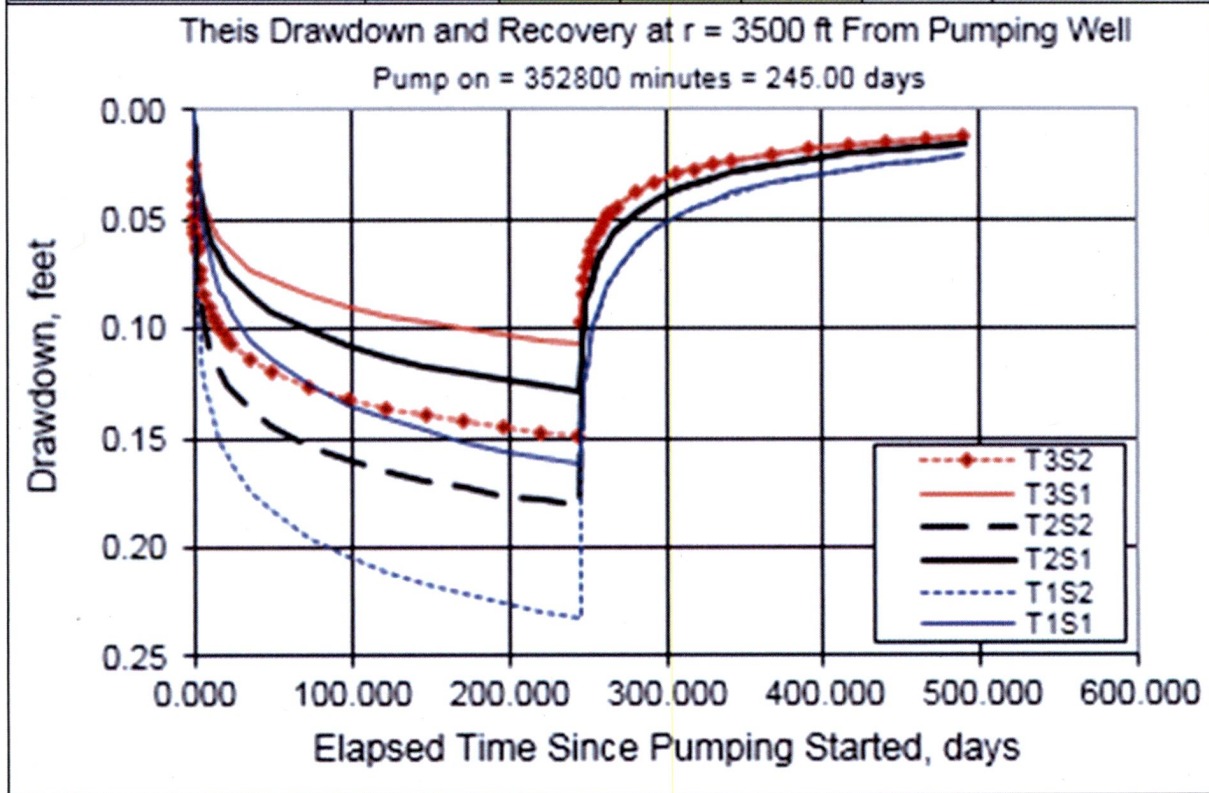
1:24,000

0 0.125 0.25 0.5 0.75 1 Miles

Water-Level Trends in Nearby Wells



Input Data:	Var Name	Scenario 1	Scenario 2	Scenario 3	Units	
Total pumping time	t		245		d	
Radial distance from pumped well:	r		3500.00		ft	Q conversions
Pumping rate	Q		0.2		cfs	89.76 gpm
Hydraulic conductivity	K	750	1,000	1,250	ft/day	0.20 cfs
Aquifer thickness	b		60		ft	12.00 cfm
Storativity	S_1		0.01000			17,280.00 cfd
	S_2		0.00100			0.40 af/d



Top: Group hydrograph for nearest observation wells to proposed POA locations, compared with yearly precipitation data.

Bottom: Input parameters and resulting model output for time-drawdown prediction of impacts of pumping on nearby senior groundwater users.