Groundwater Application Review Summary Form

Application # G- 18818

GW Reviewer Phil Marcy **Date Review Completed:** 5/8/2019

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.
✓ 5/10/19

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).

WATER RESOURCES DEPARTMENT

MEMO 5/8 ,20 19

TO: **Application G-** 18818

FROM: **GW:** Phil Maray
(Reviewer's Name)

SUBJECT: Scenic Waterway Interference Evaluation

☐ YES
The source of appropriation is within or above a Scenic Waterway
☒ 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 08/05/2019
FROM: Groundwater Section Phillip I. Marcy
Reviewer's Name
SUBJECT: Application G- 18818 Supersedes review of 05/08/2019
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: **Amy Doerfler/KZA Properties LLC** County: **Linn**

A1. Applicant(s) seek(s) 0.65 cfs from 2 well(s) in the Willamette Basin, subbasin

A2. Proposed use Irrigation (52 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 4221	1	Alluvium	0.65	10S/2W-20 SW-NW	1914' S, 957' E FR NW COR, S20
2	LINN 4219	2	Alluvium	0.65	10S/2W-20 NW-NW	924' S, 957' E FR NW COR, S20
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	240	Unk	15	Unknown	30	Unknown	0-30	NA	20-30	450	19	Pump
2	242	Unk	12	Unknown	30	Unknown	0-30	NA	20-30	450	15	Pump

Use data from application for proposed wells.

A4. **Comments:** The applicant proposes to pump an additional 0.65 cfs from two existing wells, authorized on claims GR-2391 (LINN 4221) and GR-2392 (LINN 4219).

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:** The nearest observation well with a significant period of record is MARI 50649, about 14,000 feet to the NE of proposed POA well 2. The hydrograph for this well displays minimal fluctuations, and no discernable decline during the period of record (see attached hydrograph).

The area beneath the proposed irrigated lands and wells is underlain by 60-70 feet of coarse-grained Holocene floodplain deposits associated with the Santiam River. The water table occurs at shallow depths and groundwater levels approximate the stage of adjacent reaches of the river. The alluvial floodplain aquifer is unconfined and highly permeable.

The nearest irrigation well to either of the proposed POA wells is greater than 1,000', and given the high transmissivity and storage capacity of the unconfined alluvium here, minimal interference is expected to nearby users resulting from issuance of this permit.

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**	☐	☒
2	**Sand and gravel**	☐	☒
		☐	☐
		☐	☐
		☐	☐

Basis for aquifer confinement evaluation: Both wells produce from shallow depths within the Holocene alluvial aquifer, which lacks any evidence of a laterally continuous confining horizon, all wells of similar depth in the area display heads nearly equivalent with the depth at which water was first encountered.

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? YES	NO	ASSUMED	Potential for Subst. Interfer. Assumed? YES	NO
1	**1**	**Thomas Creek**	**225**	**230-245**	**1720**	☒	☐	☐	☐	☒
2	**1**	**Thomas Creek**	**230**	**230-245**	**2700**	☒	☐	☐	☐	☒
1	**1**	**South Santiam River**	**225**	**242-223**	**4365**	☒	☐	☐	☐	☒
2	**1**	**South Santiam River**	**230**	**242-223**	**5200**	☒	☐	☐	☐	☒

Basis for aquifer hydraulic connection evaluation: Published water table contour maps show that groundwater flows westward toward, and discharges into, the Santiam River. The floodplain aquifer and the streambed are largely composed of permeable sands and gravels so groundwater should be able to move freely between the stream and the aquifer.

Water Availability Basin the well(s) are located within: S SANTIAM R > SANTIAM R - AT MOUTH (ID# 30200601); THOMAS CR > S SANTIAM R – AT MOUTH (ID# 171)

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**	☐	☐	**MF171A**	**25.0**	☒	**33.8**	☒	**19.88**	☒
2	**1**	☐	☐	**MF171A**	**25.0**	☒	**33.8**	☒	**14.53**	☒
1	**2**	☐	☐	**NA**	**NA**	☐	**253**	☐	**7.91**	☐
2	**2**	☐	☐	**NA**	**NA**	☐	**253**	☐	**5.63**	☐
		☐	☐			☐		☐		☐
		☐	☐			☐		☐		☐
		☐	☐			☐		☐		☐
		☐	☐			☐		☐		☐

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?
			☐			☐		☐		☐
			☐			☐		☐		☐
			☐			☐		☐		☐
			☐			☐		☐		☐

Comments: The proposed POA wells are located within the South Santiam Water Availability Basin (WAB), however are adjacent to the smaller Thomas Creek WAB, with neither POA location greater than 1 mile from Thomas Creek and no evidence of a hydrologic divide between these two WABs. On this basis, both stream reaches and their respective WAB characteristics were evaluated under Division 9 rules. The finding of PSI in the Thomas Creek WAB is due to the pumping rate being greater than the established instream right and 1% of 80% of minimum perennial streamflow.
An analytical (Hunt, 1999) model was used to estimate stream interference after 30 days of pumping. A value of 1000 ft/day was used for the hydraulic conductivity of the Holocene floodplain sediments based on the high yields and high specific capacity of nearby wells and field observations and mapped descriptions that show the unit to be unconsolidated sand and gravel. Streambed conductivity was assumed to be 1 feet per day, the equivalent of a silty sand. A sand and gravel streambed is more likely based on field observations in other areas.

Model parameters and outputs are attached to the end of this review.

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													
		%	%	%	%	%	%	%	%	%	%	%	%
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: This section does not apply.

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:** To avoid a finding of PSI in the Thomas Creek WAB, the applicant would need to lower the proposed rate of appropriation to less than 0.25 cfs.

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.

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

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

S SANTIAM R > SANTIAM R - AT MOUTH

Watershed ID #: 30200601 Basin: WILLAMETTE Exceedance Level: 80
Time: 2:47 PM Date: 05/07/2019

Monthly values are in cfs.
Storage is the annual amount at 50% exceedance in ac-ft.

Month	Natural Stream Flow	Consumptive Use and Storage	Expected Stream Flow	Reserved Stream Flow	Instream Requirements	Net Water Available
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	1,250.00	1,920.00	0.00	0.00	1,920.00
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	204.00	246.00	0.00	0.00	246.00
AUG	275.00	189.00	86.10	0.00	0.00	86.10
SEP	253.00	159.00	94.40	0.00	0.00	94.40
OCT	363.00	137.00	226.00	0.00	0.00	226.00
NOV	1,450.00	139.00	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

DETAILED REPORT ON THE WATER AVAILABILITY CALCULATION

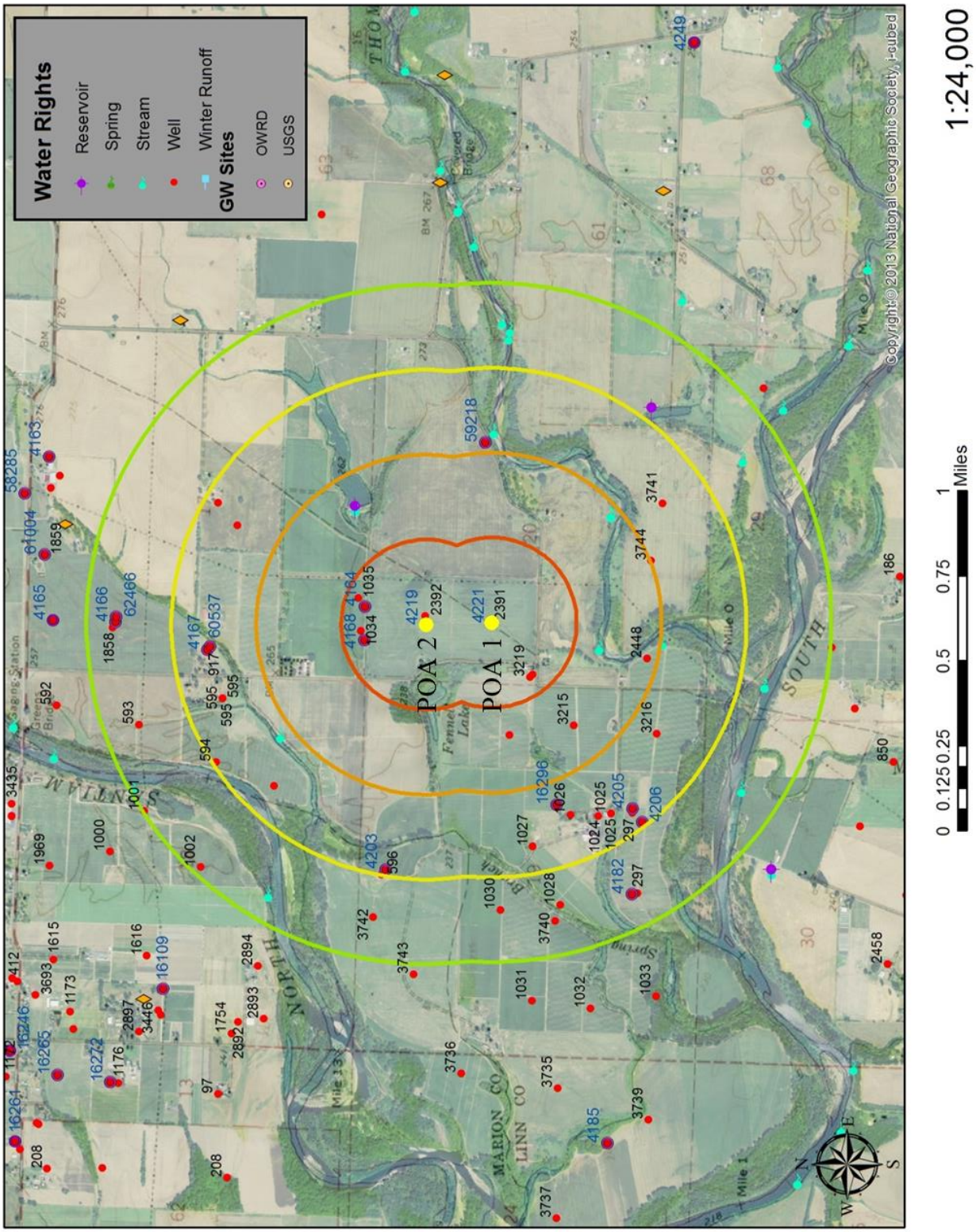
THOMAS CR > S SANTIAM R - AT MOUTH

Watershed ID #: 171 Basin: WILLAMETTE Exceedance Level: 80
Time: 11:34 AM Date: 06/24/2019

Monthly values are in cfs.
Storage is the annual amount at 50% exceedance in ac-ft.

Month	Natural Stream Flow	Consumptive Use and Storage	Expected Stream Flow	Reserved Stream Flow	Instream Requirements	Net Water Available
JAN	467.00	3.43	464.00	0.00	100.00	364.00
FEB	465.00	3.42	462.00	0.00	100.00	362.00
MAR	447.00	2.98	444.00	0.00	100.00	344.00
APR	380.00	3.74	376.00	0.00	100.00	276.00
MAY	221.00	9.67	211.00	0.00	100.00	111.00
JUN	120.00	17.20	103.00	0.00	50.00	52.80
JUL	51.50	27.00	24.50	0.00	35.00	-10.50
AUG	33.80	22.10	11.70	0.00	25.00	-13.30
SEP	35.70	12.50	23.20	0.00	100.00	-76.80
OCT	56.30	3.43	52.90	0.00	100.00	-47.10
NOV	208.00	3.17	205.00	0.00	100.00	105.00
DEC	424.00	3.44	421.00	0.00	100.00	321.00
ANN	307,000	6,800	300,000	0	60,900	244,000

Well Location Map



MEMO

To: Kristopher Byrd, Well Construction and Compliance Section Manager

From: Joel Jeffery, Well Construction Program Coordinator

Subject: Review of Water Right Application G-18818

Date: May 15, 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 Records.

Applicant's Well #1 (LINN 4221) The well record available for this well does not adequately describe the original construction of the well and therefore there is no way to determine if the well construction meets current minimum well construction standards.

My recommendation is that the Department **not issue** a permit for Applicant's Well #1 (LINN 4221) unless it is brought into compliance with current minimum well construction standards or information is provided showing that it is in compliance with current minimum well construction standards.

Bringing Applicant's Well #1 (LINN 4221) into compliance with minimum well construction standards may not satisfy hydraulic connection issues.

Applicant's Well #2 (LINN 4219) The well record available for this well does not adequately describe the original construction of the well and therefore there is no way to determine if the well construction meets current minimum well construction standards.

My recommendation is that the Department **not issue** a permit for Applicant's Well #2 (LINN 4219) unless it is brought into compliance with current minimum well construction standards or information is provided showing that it is in compliance with current minimum well construction standards.

Bringing Applicant's Well #2 (LINN 4219) into compliance with minimum well construction standards may not satisfy hydraulic connection issues.

STATE ENGINEER
Salem, Oregon

Linn 4219

Well Record

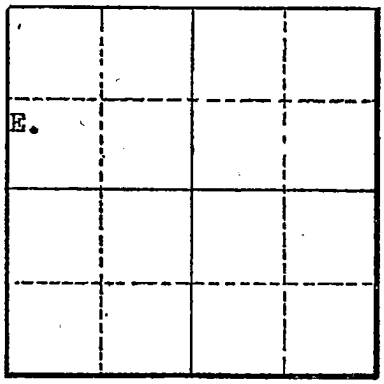
STATE WELL NO. 10/2W-20D
COUNTY LINN
~~APPLICATION NO.~~ GR-2392

OWNER: R. P. Richardson
MAILING ADDRESS: Rt. 2, Box 385
CITY AND STATE: Albany, Oregon

LOCATION OF WELL: Owner's No. #2

NW ¼ NW ¼ Sec. 20 T. 10 ~~N.~~ S., R. 2 ~~E.~~ W., W.M.

Bearing and distance from section or subdivision corner 3 miles SE of Jefferson, Oregon, 924' S. & 957' E.



Altitude at well

TYPE OF WELL: Drilled Date Constructed 1955

Depth drilled 30 Depth cased 30

Section

CASING RECORD:

12-inch

FINISH:

Slot perforations from 20 to 30

AQUIFERS:

WATER LEVEL:

12-feet

PUMPING EQUIPMENT: Type Pacific 2½" Centrifugal H.P. 20
Capacity 450 G.P.M.

WELL TESTS:

Drawdown 15 ft. after [illegible] Pumping 600 G.P.M.

Drawdown ft. after hours G.P.M.

USE OF WATER Irrigation Temp. °F. , 19

SOURCE OF INFORMATION GR-2273

DRILLER or DIGGER Bill Hamilton Drilling Co., 838 E. Third Ave., Albany, Oregon

ADDITIONAL DATA:

Log Water Level Measurements Chemical Analysis Aquifer Test

REMARKS:

State Printing 89316

STATE ENGINEER
Salem, Oregon

Linn 4221

Well Record

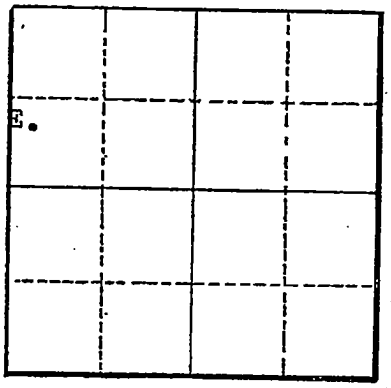
STATE WELL NO. 10/2W-20E
COUNTY LINN
~~APPLICATION NO.~~ GR-2391

OWNER: R. P. Richardson
MAILING ADDRESS: Rt. 2, Box 385

LOCATION OF WELL: Owner's No. #1
CITY AND STATE: Albany, Oregon

SW ¼ NW ¼ Sec. 20 T. 10 S., R. 2 W., W.M.

Bearing and distance from section or subdivision corner 3 miles SE of Jefferson, Oregon, 1940' S & 957' E.



Altitude at well

TYPE OF WELL: Drilled Date Constructed 1950

Depth drilled 30 Depth cased 30

Section

CASING RECORD:

12-inch

FINISH:

Slot perforations from 20 to 30

AQUIFERS:

WATER LEVEL:

15-feet

PUMPING EQUIPMENT: Type Pacific 3½" Centrifugal H.P. 20
Capacity 450 G.P.M.

WELL TESTS:
Drawdown 19 ft. after Pumping 600 G.P.M.
Drawdown ft. after hours G.P.M.

USE OF WATER Irrigation Temp. °F., 19
SOURCE OF INFORMATION GR-2272
DRILLER or DIGGER Bill Hamilton Drilling Co., 838 E. Third Ave., Albany, Oregon
ADDITIONAL DATA:
Log Water Level Measurements Chemical Analysis Aquifer Test

REMARKS:

State Printing 89316