Groundwater Application Review Summary Form

Application # G- 19240

GW Reviewer Stacey Garrison/Travis Brown Date Review Completed: 12/18/2023

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 **_December 18 2023_**

TO: **Application** G-**_19240_**

FROM: **GW:** **_Stacey Garrison/Travis Brown_**
(Reviewer's Name)

SUBJECT: Scenic Waterway Interference Evaluation

☐ **YES**
☒ **NO** The source of appropriation is hydraulically connected to a State Scenic 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 12/18/2023
FROM: Groundwater Section Stacey Garrison/Travis Brown
Reviewer's Name
SUBJECT: Application G- **19240** 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: **FD7 Real Properties, LLC** County: **Lane**

A1. Applicant(s) seek(s) 0.2 cfs from 4 well(s) in the Willamette Basin, Long-Tom subbasin

A2. Proposed use Nursery Seasonality: Year-round

A3. Well and aquifer data **(attach and number logs for existing wells; mark proposed wells as such under logid)**:

POA 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	LANE 12773	1	Alluvial	0.2	17S/5W-2 NW-NW	810' S, 110' E fr NW Cor S 2
2	LANE 52059/12757	2	Alluvial	0.2	17S/5W-2 NW-NW	1090' S, 40' E fr NW Cor S 2
3	PROP 376	3	Alluvial	0.2	17S/5W-2 NW-NW	1090' S, 10' E fr NW Cor S 2
4	PROP 377	4	Alluvial	0.2	17S/5W-2 NW-NW	870'S, 440' E fr NW Cor S 2

* Alluvium, CRB, Bedrock

POA Well	Well Depth (ft)	Seal Interval (ft)	Casing Intervals (ft)	Liner Intervals (ft)	Perforations Or Screens (ft)	Well Yield (gpm)	Drawdown (ft)	Test Type
1	77	N/A	0 to 77		60 to 70	20	48	Bailer
2	160	N/A	0 to 114		30 to 114	110	85	Not reported
3	160	0 to 18	0 to 114		30 to 114			
4	160	0 to 18	0 to 114		30 to 114			

Use data from application for proposed wells.

A4. **Comments:** The proposed POAs/POU are ~6 miles northeast of Veneta, Oregon.

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: There are no surface water sources within 0.25 miles. Per OAR 690-502-0240, the relevant basin rules (OAR 690-502-0090) 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) **7c (7-yrs measurement), 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 **alluvial** 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 proposed POAs are on unmapped Missoula flood deposits underlain by the weathered terrace deposits utilized by the POAs and consisting of unconsolidated to semi-consolidated clays, silts, sands, and gravels with an overall thickness of approximately 130 to 230 feet (McClaughry et al 2010). This unit is assigned to the Upper Sedimentary Unit, USU, of the Willamette Aquifer (Herrera et al., 2014, Woodward et al., 1998). The water-bearing zones, WBZs, of the terrace deposits may be of limited areal extent and likely interfinger with adjacent units, resulting in semi-confined conditions.

A review of statistics for nearby well records was completed and compared with the proposed rate of 0.2 cfs (~90 gpm) for this application (see Well Statistics). The median reported well yield is 30 gpm and the maximum reported well yield is 1500 gpm. The proposed rate for this application is 300% of the median and 6% of the maximum reported yield. For wells that are approximately within 0.25 miles of the POAs, only three report yields that exceed the proposed rate of 0.2 cfs (90 gpm). The proposed rate of use of 0.2 cfs (90 gpm) is likely within the capacity of the groundwater resource.

Water levels are stable (see Water Level Measurements in Nearby Wells). Within five miles, there were seven Quaternary-to-Late-Tertiary Sedimentary (QLTS)-source observation wells. Of these seven wells, five do not have records within the last 15 years (LANE 8733, LANE 3203, LANE 12884, LANE 12676, LANE 8725). The two remaining observation wells with recent data (LANE 13051 and LANE 72874) show steady water levels. There are 29 POAs for 21 groundwater rights within 1 mile of the POA, however, the overall steady water levels described above and the semi-confined nature of the aquifer indicate that there is a low likelihood of interference with other groundwater users. The groundwater resource is not likely over-appropriated.

The nearest groundwater user to POAs 1, 2, and 3 is LANE 12708 (exempt domestic well serving tax lot 5000/5100 at approximately 90808 B St Junction City), at an elevation of 391 ft msl. It is likely the proposed use would cause some degree

of well-to-well interference with LANE 12708. To assess the degree of drawdown, a Theis drawdown analysis was conducted for the proposed use (see attached Theis Drawdown Analysis-POAs 1, 2, and 3). Results indicate that the proposed use is not likely to cause well-to-well interference with LANE 12708 that exceeds the threshold under the standard condition for alluvial aquifers in the Willamette Basin. Because only the distance is expected to vary between the POA and LANE 12708, only the shortest distance (in this case, POA 2 and LANE 12708) was analyzed quantitatively for drawdown. All other distances would presumably result in less drawdown due to their greater separation relative to POA 2 and LANE 12708.

The nearest groundwater user to POA 4 is the exempt domestic well serving tax lot 3700 at 27390 8th St Junction City, at an approximate elevation of 384 ft. It is likely the proposed use would cause some degree of well-to-well interference with the well serving tax lot 3700. To assess the degree of drawdown, a Theis drawdown analysis was conducted for the proposed use (see attached Theis Drawdown Analysis-POA 1). Results indicate that the proposed use is not likely to cause well-to-well interference with the well that serves tax lot 3700 that exceeds the threshold under the standard condition for alluvial aquifers in the Willamette Basin.

Based on this analysis of the available data and under the assumptions previously identified, groundwater for the proposed use is likely within the capacity of the resource; if a permit is issued for this application, the conditions in B1(d)(i) and B2(c) are recommended to protect senior users and the groundwater resource.

NOTE: This evaluation considers a conservative scenario for the nearest authorized POA not owned by the applicant. Other authorized POAs in the area may also experience an increase in interference as a result of this application, although to a lesser extent than the scenario evaluated here.

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	**Alluvial**	☒	☐
2	**Alluvial**	☒	☐
3	**Alluvial**	☒	☐
4	**Alluvial**	☒	☐

Basis for aquifer confinement evaluation: The WBZs and confining layers of the weathered terrace deposits are likely of limited areal extent, and the Willamette aquifer in this area is semi-confined. Level of confinement increases with depth. Although the recorded SWL is above the top of the reported water-bearing zone in LANE 12773, there is no apparent confining layer. LANE 52059/12757 records confining clay from the surface to 56 ft bls, with perforations in the casing starting at 30 ft bls and a SWL above the WBZ. It is anticipated that POAs 3 and 4 will closely resemble POA 2 (LANE 52059/12757) based on the proposed construction and location.

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[b]	Distance (ft)	Hydraulically Connected? YES	NO	ASSUMED	Potential for Subst. Interfer. Assumed? YES	NO
1	**1**	**Coyote Creek**	**354-385**	**337-345**	**4,399**	☒	☐	☐	☐	☒
2	**1**	**Coyote Creek**	**354-385**	**337-345**	**4,383**	☒	☐	☐	☐	☒
3	**1**	**Coyote Creek**	**354-385**	**337-345**	**4,345**	☒	☐	☐	☐	☒
4	**1**	**Coyote Creek**	**354-385**	**337-345**	**4,382**	☒	☐	☐	☐	☒
1	**2**	**Unnamed trib to Amazon Ck**	**354-385**	**348-370**	**3,164**	☒	☐	☐	☐	☒
2	**2**	**Unnamed trib to Amazon Ck**	**354-385**	**348-370**	**3,551**	☒	☐	☐	☐	☒
3	**2**	**Unnamed trib to Amazon Ck**	**354-385**	**348-370**	**3,640**	☒	☐	☐	☐	☒
4	**2**	**Unnamed trib to Amazon Ck**	**354-385**	**348-370**	**2,933**	☒	☐	☐	☐	☒

Basis for aquifer hydraulic connection evaluation: SWLs in surrounding wells utilizing the QLTS aquifer vary from 354 to 385 ft msl[a]. Within a mile of the POAs, the local streambed of SW 1 (Coyote Creek) is 337 to 345 ft msl and of SW 2 (Unnamed tributary to Amazon Creek) is 348 to 370 ft msl, indicating the local groundwater is likely discharging to surface water. Both SW 1 (Coyote Creek) and SW 2 (Unnamed tributary to Amazon Creek) are flowing on the Missoula Flood deposits and have not completely incised through the overlying and confining clay. However, the confining clay is not likely laterally extensive, resulting in semi-confined conditions for the aquifer overall, although individual wells may produce from a confined WBZ. Hydraulic connection to nearby streams is likely but expected to be limited by the confining clay.

[a] Groundwater elevation calculated from static water level reported in well logs and/or latest static water level reported for LANE 8892, LANE 3993, LANE 75483, LANE 12773, LANE 52059/LANE 12757, LANE 12708, LANE 73787, LANE 12676, LANE 78547, LANE 3203 and well head elevations estimated based on LIDAR measurements at existing well locations (Watershed Sciences, 2009).

[b] Surface water elevations were estimated from land surface elevations along stream reaches (Watershed Sciences, 2009; USGS, 2013).

Water Availability Basin the well(s) are located within: LONG TOM>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	Instream Water	Qw > 1%	80% Natural	Qw > 1% of 80%	Interference @ 30 days	Potential for Subst.

				Right ID	Right Q (cfs)	ISWR?	Flow (cfs)	Natural Flow?	(%)	Interfer. Assumed?
1	**1**	☐	☐	**NA**	**NA**	☐	**32.1**	☐	**<25%**	☐
2	**1**	☐	☐	**NA**	**NA**	☐	**32.1**	☐	**<25%**	☐
3	**1**	☐	☐	**NA**	**NA**	☐	**32.1**	☐	**<25%**	☐
4	**1**	☐	☐	**NA**	**NA**	☐	**32.1**	☐	**<25%**	☐
1	**2**	☐	☐	**NA**	**NA**	☐	**32.1**	☐	**<25%**	☐
2	**2**	☐	☐	**NA**	**NA**	☐	**32.1**	☐	**<25%**	☐
3	**2**	☐	☐	**NA**	**NA**	☐	**32.1**	☐	**<25%**	☐
4	**2**	☐	☐	**NA**	**NA**	☐	**32.1**	☐	**<25%**	☐

Comments: Potential depletion (interference with) SW 2 Unnamed tributary to Amazon Creek) by proposed pumping at proposed POA 4 was estimated using Hunt 1999 analytical model. Despite the finding that POAs 1, 2, 3, and 4 produce from a confined aquifer in Section C1, the Hunt 1999 analytical model was used because there is not likely a continuous, thick confining layer within the sediments and the Hunt 1999 model is a better representation of the aquifer as a thick sequence of layer strata with bulk hydrologic properties. Hydraulic parameters used for the model were derived from regional data or studies of the hydrogeologic regime (OWRD Well Log Query Report; Conlon et al., 2003, 2005; Iverson 2002) or are within a typical range of values for the parameter within the hydrogeologic regime (Freeze and Cherry, 1979; Morris and Johnson 1967; Heath 1983). See attached "Stream Depletion Analysis – SW 2" for the specific parameters used in the analysis. The Hunt 1999 analytical model results indicate that depletion of (interference with) SW 2 due to pumping of the proposed POA is anticipated to be much less than 25 percent of the well discharge at 30 days of continuous pumping.
Because only the distance is expected to vary between the POA and surface water sources, only the POA-SW pair with the shortest distance (in this case, POA 4 and SW 2) was analyzed quantitatively for interference (stream depletion). All other POA-SW pairs would presumably result in less interference due to their greater separation relative to POA 4 and SW 2. Therefore, the interference of both proposed POA with all surface water sources within 1 mile are anticipated to result in much less than 25 percent of the well discharge at 30 days of continuous pumping.

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: N/A-Q is not distributed

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: N/A-streams within 1 mile evaluated above.

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:

Application File: G-19240

Pumping Test Files: LANE 12884, LANE 8537, LANE 8061, LANE 63753, LANE 72693

Well Reports: LANE 8892, LANE 3993, LANE 75483, LANE 12773, LANE 52059/LANE 12757, LANE 12708, LANE 73787, LANE 12676, LANE 78547, LANE 3203

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*, Scientific Investigations Report 2005-5168: U. S. Geological Survey, Reston, VA.

Freeze, R.A. and J.A. Cherry, 1979. Groundwater, Prentice Hall, Englewood Cliffs, New Jersey, 604p

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

Heath, R.C., 1983. Basic ground-water hydrology, U.S. Geological Survey Water-Supply Paper 2220, 86p.

Hunt, B. 1999. Unsteady Stream Depletion from Ground Water Pumping. Journal of Hydrologic Engineering, Vol 8(1), pp 12-19

Iverson, J., 2002, Investigation of the hydraulic, physical, and chemical buffering capacity of Missoula flood deposits for water quality and supply in the Willamette Valley of Oregon: Unpublished M.S. thesis, Oregon State University, 147 p.

McClaughry, J. D., T. J. Wiley, M. L. Ferns, and I. P Madin. 2010. Digital Geologic Map of the Southern Willamette Valley, Benton, Lane, Linn, Marion, and Polk Counties, Oregon. Oregon Dept. of Geology and Mineral Industries. Open File Report O-10-13.

Theis, C.V., 1935, The relation between the lowering of the piezometric surface and the rate and duration of discharge of a well using ground-water storage: American Geophysical Union transactions, v. 16, p. 519-524.

United States Geological Survey, 2013, National Elevation Dataset (NED) [DEM geospatial data]. 1/9th arc-second, updated 2013.

Watershed Sciences, 2009, LIDAR remote sensing data collection, Department of Geology and Mineral Industries, Willamette Valley Phase I, Oregon: Portland, OR, December 21.

Woodward, D.G., Gannett, M.W., and Vaccaro, J.J., 1998, Hydrogeologic framework of the Willamette Lowland aquifer system, Oregon and Washington: U.S. Geological Survey Professional Paper 1424-B, 82 p.

D. WELL CONSTRUCTION, OAR 690-200

D1. **Well #:** 1, 2 **Logid:** LANE 12773, LANE 52059/LANE 12757

D2. **THE WELL does not appear to meet current well construction standards based upon:**

a. ☒ review of the well log;

b. ☐ field inspection by _____;

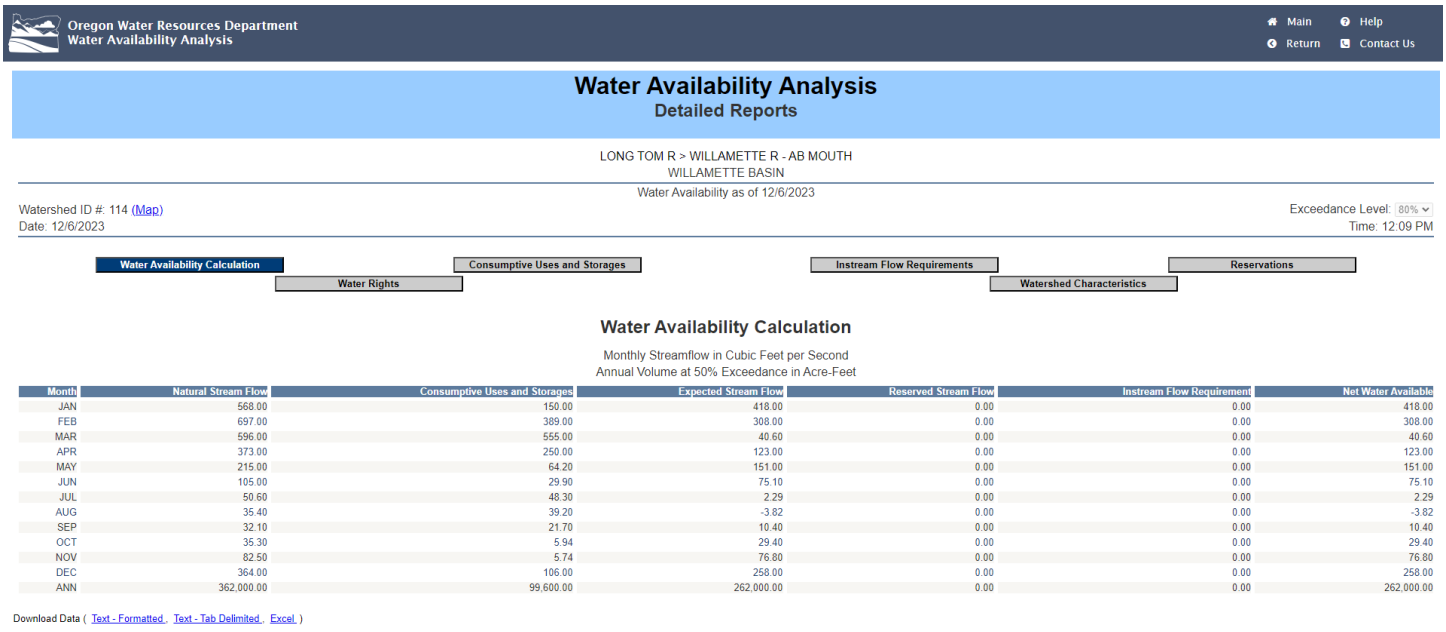
c. ☐ report of CWRE _____;

d. ☐ other: (specify) _____

D3. **THE WELL construction deficiency or other comment is described as follows:** Well 1 (LANE 12773) does not record a surface seal; per OAR 690-210-0130 for wells in unconsolidated formations without significant clay beds and OAR 690-210-0140 for wells in unconsolidated formations with significant [interbeds of] clay, the annular seal space shall extend to a minimum of 18 ft below land surface.
Well 2 (LANE 52059/LANE 12757) does not record a surface seal; per OAR 690-210-0150 for wells in consolidated formations, the surface seal shall extend continuously from the surface to at least five feet into a clay interval below a depth of 13 feet.

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

Water Availability Tables



Oregon Water Resources Department
Water Availability Analysis

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Water Availability Analysis
Detailed Reports

LONG TOM R > WILLAMETTE R - AB MOUTH
WILLAMETTE BASIN
Water Availability as of 12/6/2023

Watershed ID #: 114 (Map)
Date: 12/6/2023

Exceedance Level: 80%
Time: 12:09 PM

Water Availability Calculation | Consumptive Uses and Storages | Instream Flow Requirements | Reservations
Water Rights | Watershed Characteristics

Water Availability Calculation

Monthly Streamflow in Cubic Feet per Second
Annual Volume at 50% Exceedance in Acre-Feet

Month	Natural Stream Flow	Consumptive Uses and Storages	Expected Stream Flow	Reserved Stream Flow	Instream Flow Requirement	Net Water Available
JAN	568.00	150.00	418.00	0.00	0.00	418.00
FEB	697.00	389.00	308.00	0.00	0.00	308.00
MAR	596.00	555.00	40.60	0.00	0.00	40.60
APR	373.00	250.00	123.00	0.00	0.00	123.00
MAY	215.00	64.20	151.00	0.00	0.00	151.00
JUN	105.00	29.90	75.10	0.00	0.00	75.10
JUL	50.60	48.30	2.29	0.00	0.00	2.29
AUG	35.40	39.20	-3.82	0.00	0.00	-3.82
SEP	32.10	21.70	10.40	0.00	0.00	10.40
OCT	35.30	5.94	29.40	0.00	0.00	29.40
NOV	82.50	5.74	76.80	0.00	0.00	76.80
DEC	364.00	106.00	258.00	0.00	0.00	258.00
ANN	362,000.00	99,600.00	262,000.00	0.00	0.00	262,000.00

Download Data (Text - Formatted , Text - Tab Delimited , Excel)

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Water Availability Analysis

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Water Availability Analysis
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LONG TOM R > WILLAMETTE R - AB MOUTH
WILLAMETTE BASIN
Water Availability as of 12/6/2023

Watershed ID #: 114 (Map)
Date: 12/6/2023

Exceedance Level: 80%
Time: 12:10 PM

Water Availability Calculation | Consumptive Uses and Storages | Instream Flow Requirements | Reservations
Water Rights | Watershed Characteristics

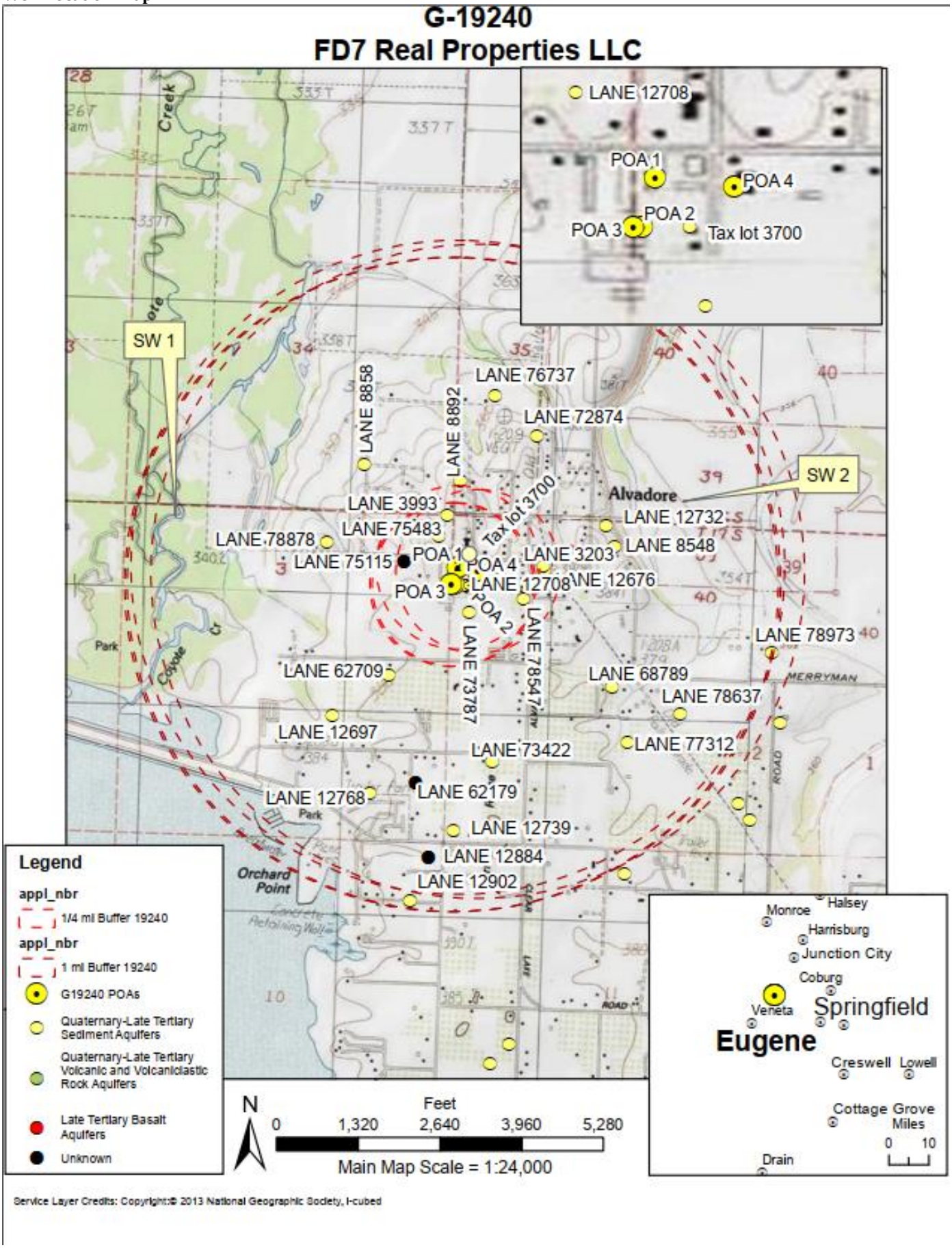
Detailed Report of Instream Flow Requirements

Instream Flow Requirements in Cubic Feet per Second

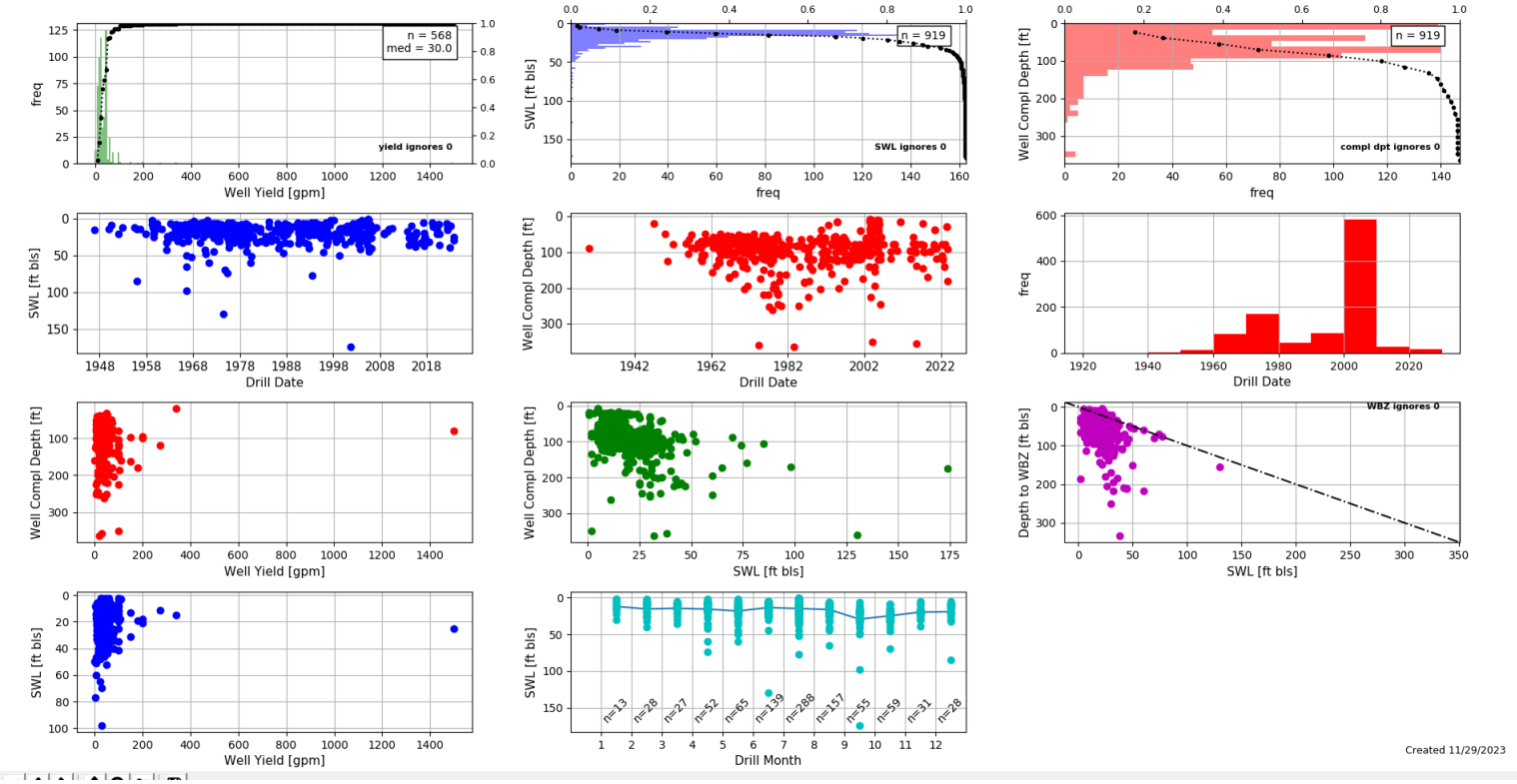
No instream flow requirements were found for this watershed.

Download Data (Text - Formatted , Text - Tab Delimited , Excel)

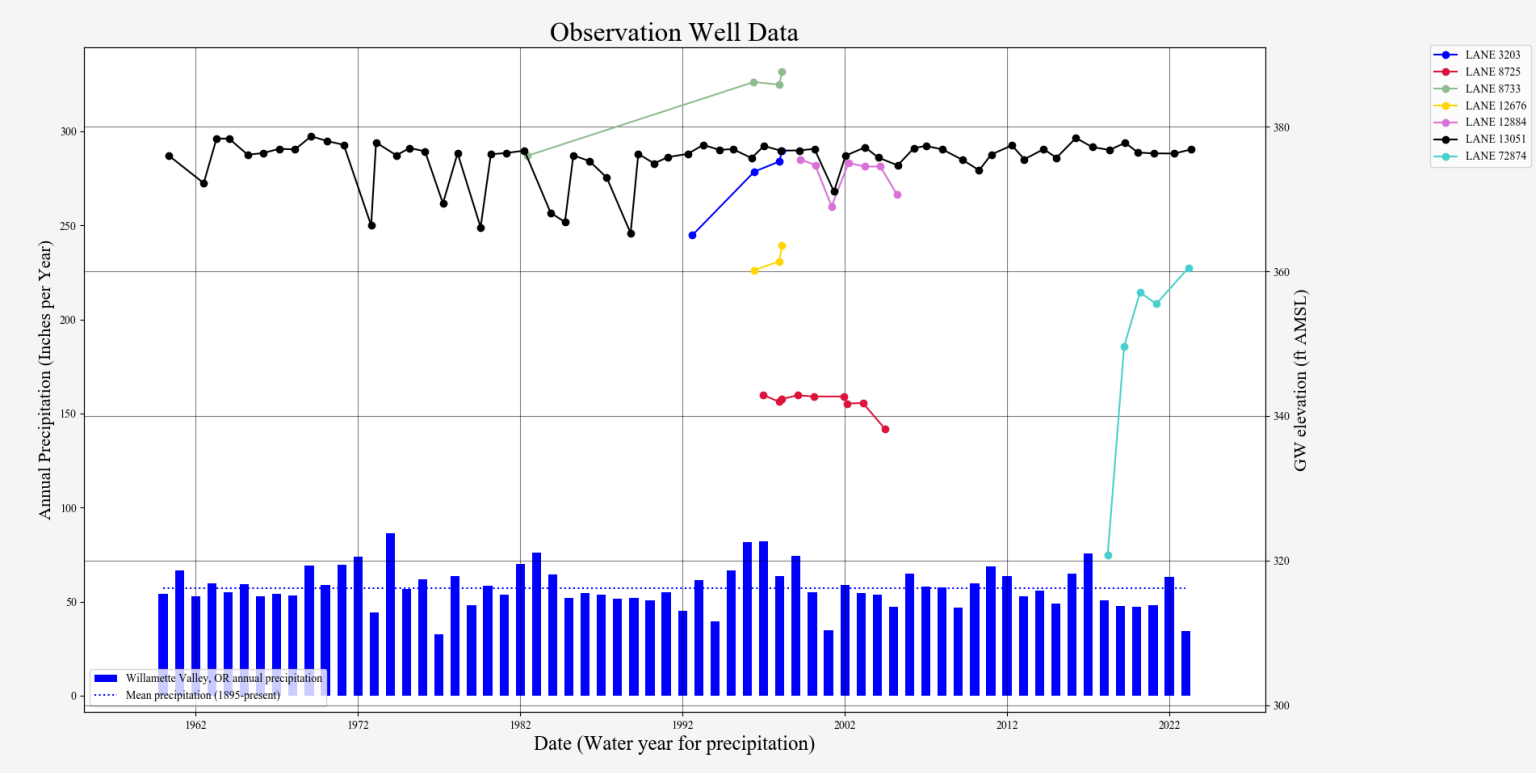
Well Location Map



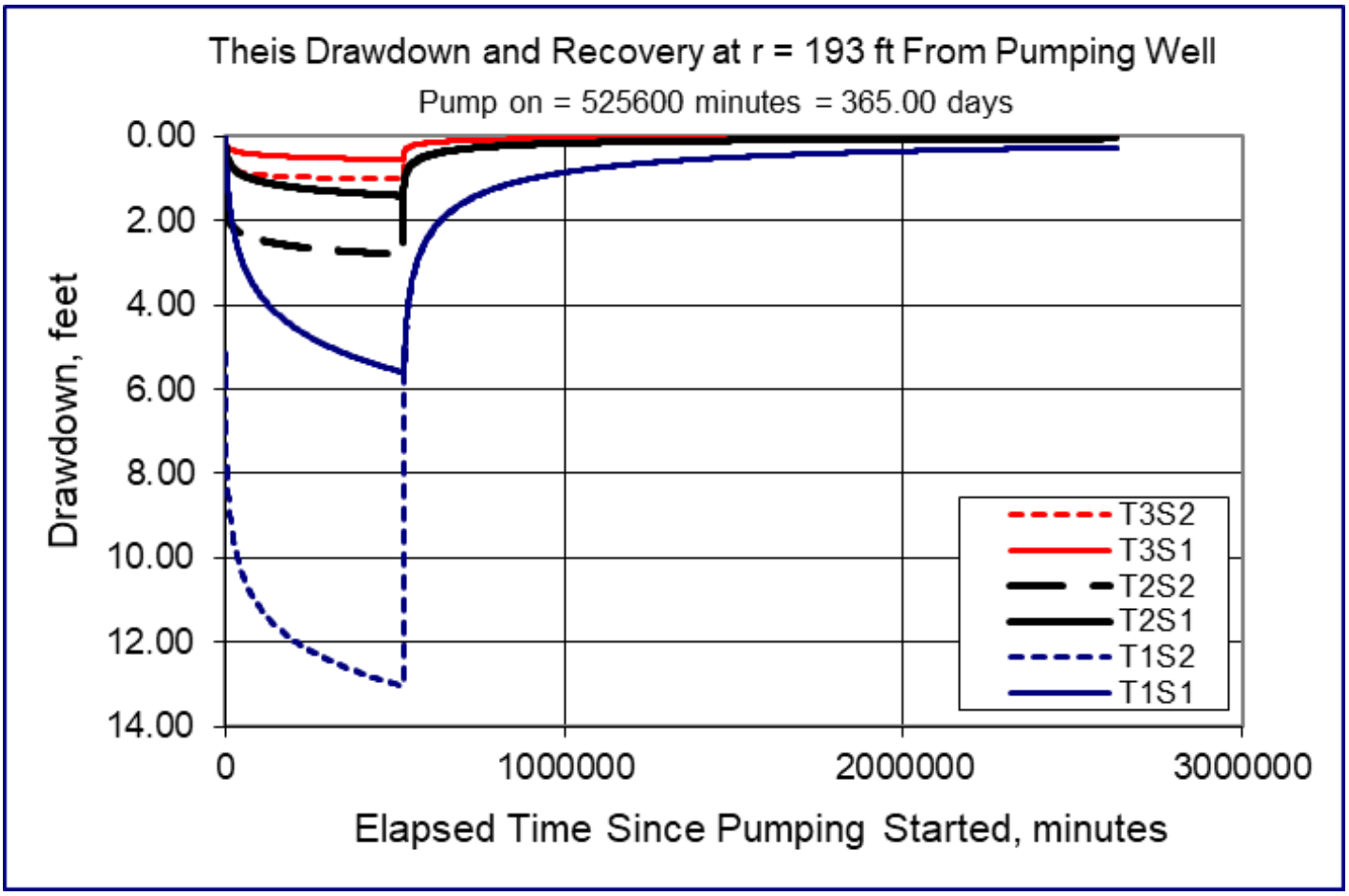
Well Statistics



Water-Level Measurements in Nearby Wells

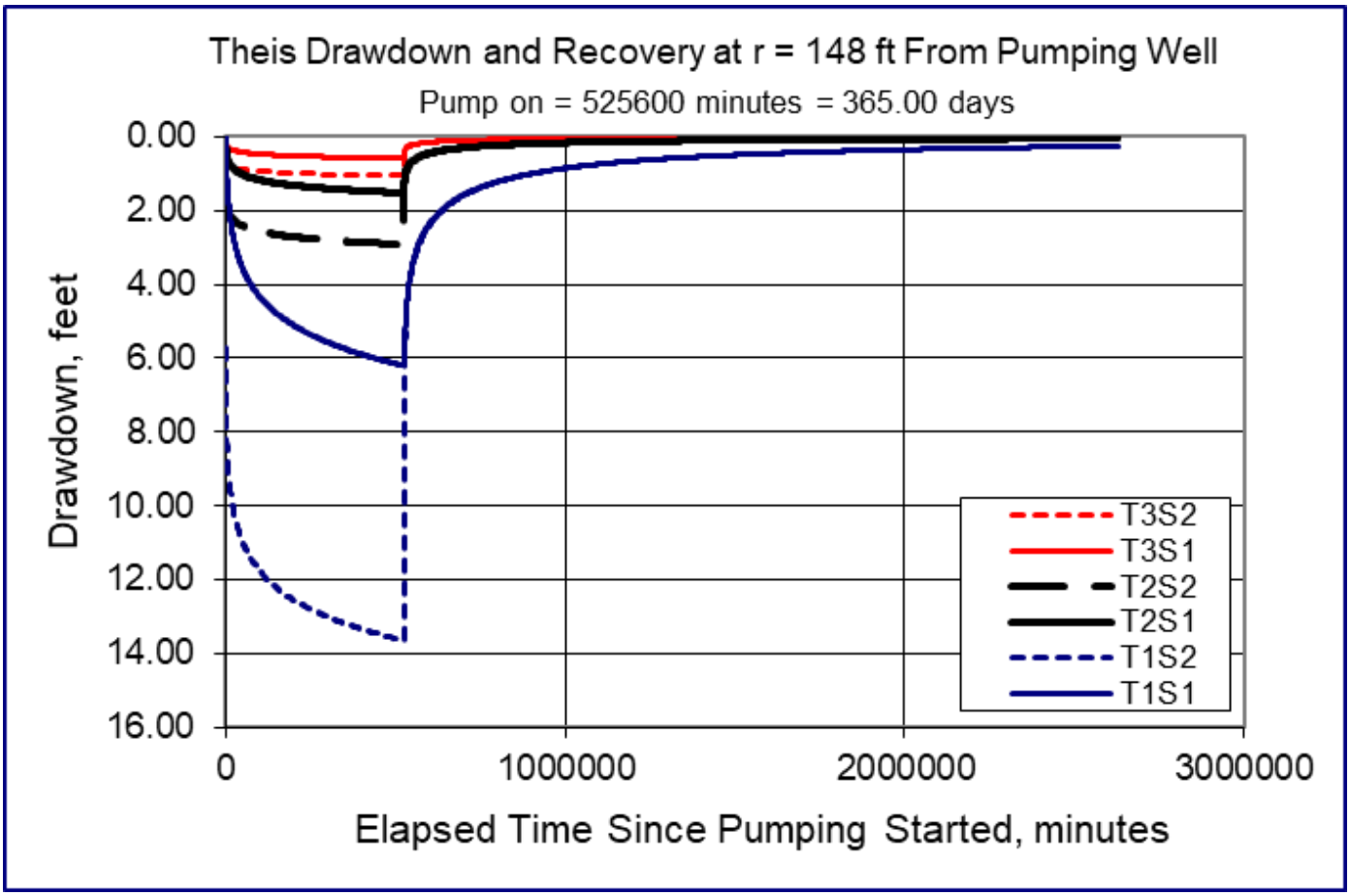


Theis Interference Analysis-POAs 1, 2, and 3



Radial distance from pumping well (r)=193 ft [estimated radial distance from POA 2 to nearest user, LANE 12708]
Pumping Rate (Q)= 0.2 cfs (~90 gpm)
Aquifer Transmissivity (T1)= 8,976 gpd/ft (1,200 ft^2/day), (T2)= 47,872 gpd/ft (6,400 ft^2/day), (T3)= 142,868 gpd/ft (19,100 ft^2/day)
Storativity (s1) = 0.0003, (s2) = 0.2 [Conlon et al 2005, Table 1 values for Upper Sedimentary Unit, USU]
Total pumping time=365

Theis Interference Analysis-POA 4



Radial distance from pumping well (r)=148 ft [estimated radial distance to nearest user, well at tax lot 3700
Pumping Rate (Q)= 0.2 cfs (~90 gpm)
Aquifer Transmissivity (T1)= 8,976 gpd/ft (1,200 ft^2/day), (T2)= 47,872 gpd/ft (6,400 ft^2/day), (T3)= 142,868 gpd/ft (19,100 ft^2/day)
Storativity (s1) = 0.0003, (s2) = 0.2 [Conlon et al 2005, Table 1 values for Upper Sedimentary Unit, USU]
Total pumping time=365

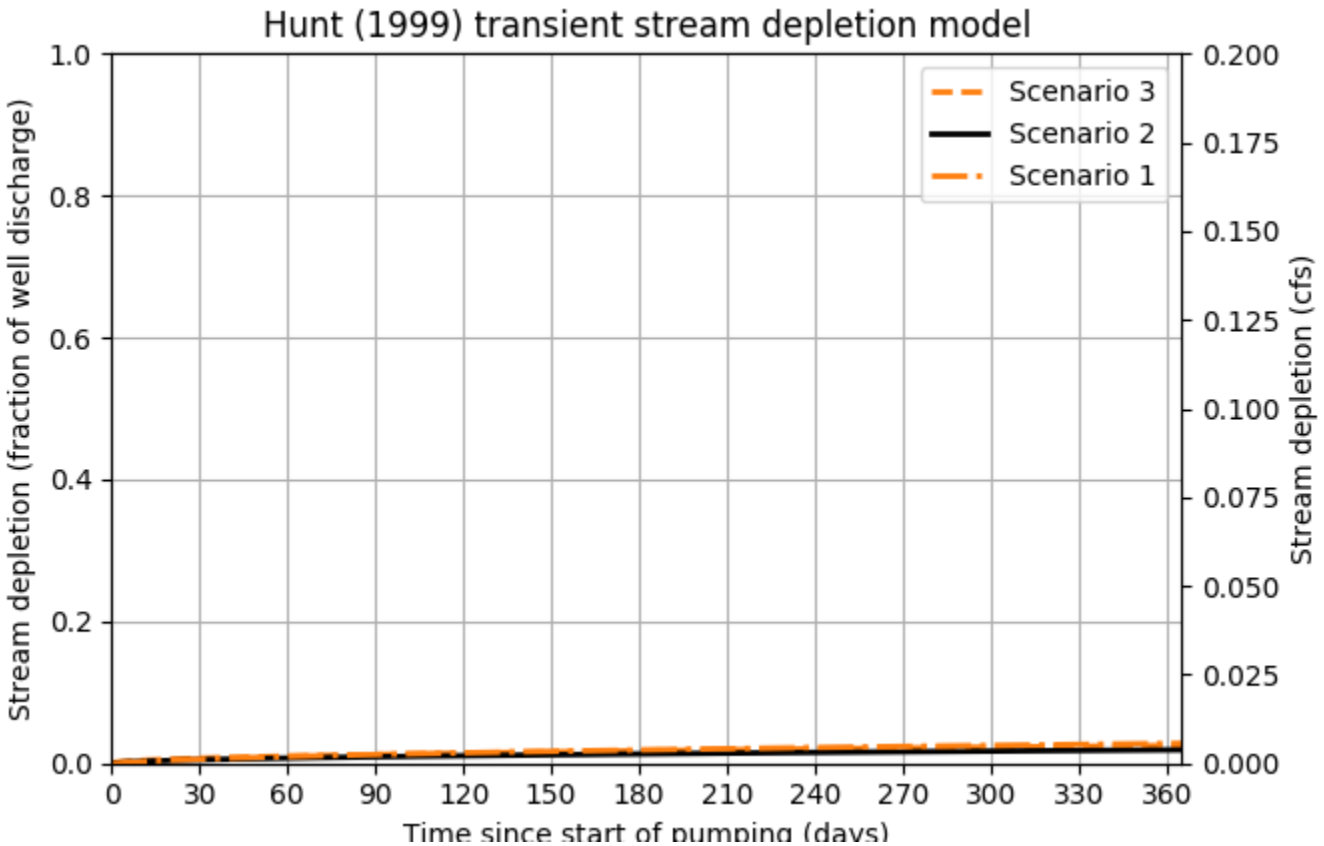
Stream Depletion (Hunt) Model Analysis

Application type:	G
Application number:	19240
Well number:	4
Stream Number:	2
Pumping rate (cfs):	0.2
Pumping duration (days):	365
Pumping start month number (3=March)	1

Parameter	Symbol	Scenario 1	Scenario 2	Scenario 3	Units
Distance from well to stream	a	2933	2933	2933	ft
Aquifer transmissivity	T	1200	6400	19100	ft2/day
Aquifer storativity	S	0.001	0.0005	0.0001	-
Aquitard vertical hydraulic conductivity	Kva	0.001	0.001	0.001	ft/day
Not used		10.0	20.0	30.0	
Aquitard thickness below stream	babs	3	3	3	ft
Not used		0.2	0.2	0.2	
Stream width	ws	10	10	10	ft

Stream depletion for Scenario 2:

Days	1	31	62	92	122	153	183	213	244	274	304	335	365
Depletion (%)	0	1	1	1	1	1	1	1	2	2	2	2	2
Depletion (cfs)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00


Hunt (1999) transient stream depletion model
Stream depletion (fraction of well discharge)
Stream depletion (cfs)
Time since start of pumping (days)
Scenario 3
Scenario 2
Scenario 1
1.0
0.8
0.6
0.4
0.2
0.0
0.200
0.175
0.150
0.125
0.100
0.075
0.050
0.025
0.000
0
30
60
90
120
150
180
210
240
270
300
330
360