

Groundwater Application Review Summary Form

Application # G- 19075 re-review

GW Reviewer Travis Brown Date Review Completed: 2/16/2024

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

2/16/2024

TO: Application G- 19075 re-review

FROM: GW: Travis Brown
(Reviewer's Name)

SUBJECT: Scenic Waterway Interference Evaluation

☐ YES The source of appropriation is hydraulically connected to a State Scenic
☒ NO Waterway or its tributaries

☐ YES
☒ NO Use the Scenic Waterway Condition (Condition 7J)

☐ Per ORS 390.835, the Groundwater Section is **able** to calculate ground water interference with surface water that contributes to a Scenic Waterway. The calculated interference is distributed below

☐ Per ORS 390.835, the Groundwater Section is **unable** to calculate ground water interference with surface water that contributes to a scenic waterway; **therefore, the Department is unable to find that there is a preponderance of evidence that the proposed use will measurably reduce the surface water flows necessary to maintain the free-flowing character of a scenic waterway**

DISTRIBUTION OF INTERFERENCE

Calculate the percentage of consumptive use by month and fill in the table below. If interference cannot be calculated, per criteria in 390.835, do not fill in the table but check the "unable" option above, thus informing Water Rights that the Department is unable to make a Preponderance of Evidence finding.

Exercise of this permit is calculated to reduce monthly flows in [Enter] Scenic Waterway by the following amounts expressed as a proportion of the consumptive use by which surface water flow is reduced.

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

PUBLIC INTEREST REVIEW FOR GROUNDWATER APPLICATIONS

TO: Water Rights Section Date 2/16/2024
 FROM: Groundwater Section Travis Brown
 Reviewer's Name
 SUBJECT: Application G- 19075 re-review Supersedes review of 2/23/2022
 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: Bob and Denise Jonas County: Clackamas

A1. Applicant(s) seek(s) 0.67 cfs from 2 well(s) in the Willamette Basin,
Molalla River subbasin

A2. Proposed use irrigation Seasonality: March 1-October 31

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	Alluvial ^a	0.67	4S/1E-36 SW-SE	655' N, 3015' E fr SW cor S 36 ^b
2	Proposed	2	Alluvial ^a	0.67	5S/1E-1 NE-NW	60' S, 1345' E fr NW cor S 1 ^b

* 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	272 ^c				250 ^a	0-30 ^a	0-250 ^a					
2	265 ^c				250 ^a	0-30 ^a	0-250 ^a					

Use data from application for proposed wells.

A4. **Comments:** The requested POAs/POUs are located approximately 2 miles to the northwest of Molalla, Oregon. The applicant requests to use 0.67 cfs (~300.7 gpm) to irrigate 110.6 ac for a maximum annual duty of 276.5 acre-feet (AF) from March 1-October 31.

^a Proposed well construction from applicant.

^b There appears to be a discrepancy in the Public Lands Survey System (PLSS) projection used in the application map and that used by Department. The "metes-and-bounds" location description provided in the application for POAs 1 and 2 are 111 feet southeast and 65 feet south of the mapped locations, respectively. The mapped locations are used for this review.

^c Well head elevation estimated based on LIDAR measurements at proposed/existing well locations (Watershed Sciences, 2009).

A5. ☐ Provisions of the Willamette River 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: The requested POAs are anticipated to produce groundwater from a confined aquifer, therefore, per OAR 690-502-0240, the relevant Willamette Basin Rules (OAR 690-502-0120) 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) 7RLN, Large Water Use;
 - 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 Troutdale Formation 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/POUs are in the Troutdale Formation, a late-tertiary deposit of fluvial and lacustrine origin, composed primarily of conglomerate and tuffaceous sandstone (Trimble 1963, Hampton 1972). Where hardened, the cement of Troutdale Formation layers is composed of somewhat permeable clay minerals (Trimble 1963). Inferring from the mapped thickness of the adjacent section, the Troutdale Formation is likely to be up to 300 ft thick with water-bearing zones ranging from 6 ft to 50 ft in thickness (Hampton 1972). The two nearest wells which reach a depth and pumping rate similar to the proposed POAs are CLAC 18360 and CLAC 12796, which utilize sand and sandstone water-bearing zones. The well logs for CLAC 18360 and CLAC 12796 report blue clays and blue claystone overlying the utilized water-bearing zone, indicating that the wells are likely accessing the Willamette aquifer (Gannett & Caldwell 1998, Conlon et al 2005, Swanson et al 1993). There is a wide variability in hydraulic characteristics of the Willamette aquifer, owing to the variety of compositions and degree of consolidation (O'Connor et al 2001). CLAC 18360 utilizes a single water-bearing zone that is 18 ft thick, from 297 to 315 ft bls [-39 to -57 ft msl]; CLAC 12796 utilizes two layers from 218 to 256 ft bls [6 to 44 ft msl] and 261 to 265 ft bls [-3 to 1 ft msl], which are 38 and 4 ft thick respectively. Based on the relative thinness of the water-bearing zones and intervening layers of claystone, siltstone and similar lithologies, the sand and sandstone layers are likely to be formations from discontinuous braided stream deposits (Gannett & Caldwell 1998). Given the proposed depth and ground surface elevation for the proposed location, it is assumed that the two proposed POAs will be constructed to likewise utilize sand and sandstone water-bearing zone(s).

Water level trends for nearby (0.2-3 miles from POAs) wells that utilize alluvial aquifers appear to be dynamically stable (see Water Level Measurements in Nearby Wells). Therefore, the aquifer is not over-appropriated.

A review of statistics for nearby well records was completed and compared with the proposed rate of 0.67 cfs (300.7 gpm) for this application (see Well Statistics). The proposed rate of use of 0.67 cfs (300.7 gpm) is likely within the capacity of the groundwater resource; median reported well yield is 40 gpm, and the maximum reported yield is 2,000 gpm. The proposed rate for this application is 752% of the median and 15% of the maximum reported yield. Previous studies have reported

yields for wells using the Willamette aquifer ranging from 64 to 980 gpm, however the higher reported yields are likely utilizing unconsolidated and/or gravel water-bearing zones (Woodward et al 1998).

The nearest groundwater user to Well 1 is CLAC 12818 (an exempt domestic well) is 1,938 ft northeast of the POA, at an elevation of ~263 ft msl. CLAC 12818 is completed to a depth of 51 ft. It is likely the proposed use would cause some degree of well-to-well interference with CLAC 12818. To assess the degree of drawdown, a Theis drawdown analysis was conducted for the proposed use (see attached Theis Drawdown Analysis-Well 1). Results indicate that the proposed use is not likely to cause well-to-well interference with CLAC 12818 that exceeds the threshold under the standard condition for alluvial aquifers in the Willamette Basin.

The nearest groundwater user to Well 2 is CLAC 18360 (a POD for CERT 88892 with priority date June 3 1996) is 1,891 ft northwest of the POA, at an elevation of ~258 ft msl. CLAC 18360 is completed to a depth of 315 ft. It is likely the proposed use would cause some degree of well-to-well interference with CLAC 18360. To assess the degree of drawdown, a Theis drawdown analysis was conducted for the proposed use (see attached Theis Drawdown Analysis-Well 2). Results indicate that the proposed use is not likely to cause well-to-well interference with CLAC 12818 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 will likely be within capacity of the resource. The conditions in B1(d)(i) and B2(c) are recommended to protect senior users and the groundwater resource.

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	Troutdale Formation	☒	☐
2	Troutdale Formation	☒	☐

Basis for aquifer confinement evaluation: A review of surrounding well logs identifies consistent confining layers overlying confined aquifers. CLAC 12818 (1,938 ft northeast of proposed location for Well 1 and 3,469 ft northeast of proposed location for Well 2) has a reported static water level of 13 ft bls [250 ft msl] with a confining layer from 2 to 23 ft bls [161 to 240 ft msl]. CLAC 18360 (3,146 ft northwest of Well 1, 1,891 ft northwest of Well 2) has a reported static water level of 44 ft bls [214 ft msl] and a confining layer from 237 to 261 ft bls [21 to -39 ft msl]. CLAC 12796 (4,342 ft west of Well 1, 2,780 ft northwest of Well 1) has a reported static water level of 44 ft bls [218 ft msl], and a confining layer from 276 to 218 ft bls [86 to 44 ft msl]. In all these nearby wells, the static water level is above the bottom of the confining layer, indicating a confined aquifer. The wells to be constructed will be continuously sealed from the surface to 30 ft bls, and are anticipated to be 250 ft deep.

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	Wheeler Creek	196-250 ^a	234 ^b	5,201 ^c	☒	☐	☐	☐	☒
1	2	Creamery Creek	196-250 ^a	234 ^b	5,133	☒	☐	☐	☐	☒
1	3	Bear Creek	196-250 ^a	225-265 ^b	5,217	☒	☐	☐	☐	☒
2	1	Wheeler Creek	196-250 ^a	234 ^b	3,403 ^c	☒	☐	☐	☐	☒
2	2	Creamery Creek	196-250 ^a	234 ^b	4,709	☒	☐	☐	☐	☒
2	3	Bear Creek	196-250 ^a	225-265 ^b	4,182	☒	☐	☐	☐	☒

Basis for aquifer hydraulic connection evaluation: Proposed Wells 1 and 2 are anticipated to be continuously sealed to 30 ft bls (242 ft msl and 235 ft msl). Static water levels in surrounding wells vary from 196 to 250 ft msl (CLAC 12818, CLAC 12817, CLAC 154, CLAC 18360, CLAC 12796, CLAC 70590). The local streambeds are around 225 to 265 ft msl in elevation. Some groundwater elevations are above surface water elevations in SW 1 (Wheeler Creek), SW 2 (Creamery Creek), and SW 3

(Bear Creek), indicating the that local groundwater is discharging to surface water. The surface water drainages have incised to some degree below the elevation of the water-bearing zones in the shallower wells with lower yields, but not the deeper wells with higher yields (CLAC 18360, CLAC 12796, CLAC 70590). Given the proposed depth and yield for Wells 1 and 2, it is more likely that final construction of the proposed POAs will resemble the deeper wells with higher yields. The deeper wells with higher yields have static water levels from 205 to 218 ft msl, confining layers that range from -39 to 104 ft msl, and water bearing zones from -67 to 98 ft msl. There is at least a 7 ft elevation difference between the highest static water level and the lowest surface water streambed elevations, and 127 ft elevation difference between the highest water bearing zone and the lowest surface water streambed for the deeper wells with higher yields. Assuming Wells 1 and 2 are constructed similarly to CLAC 18360, CLAC 12796, and CLAC 70590, hydraulic connection to nearby streams is likely but anticipated to be inefficient.

^a Groundwater elevation calculated from static water level reported in well logs and/or latest static water level reported for CLAC 12818, CLAC 12817, CLAC 154, CLAC 18360, CLAC 12796, CLAC 70590, 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).

^c The applicant identifies in the Section 3 of the application that Wheeler Creek is 1,030 ft and 115 ft from Wells 1 and 2, respectively. However, Wheeler Creek is not perennial within these distances. Wheeler Creek likely becomes perennial further downstream, as indicated on US Geological Survey topography maps. The distance indicated in the table above is measured from each proposed well location to the nearest point on Wheeler Creek where it is likely perennial.

Water Availability Basin the well(s) are located within:

SW 2: MOLALLA RIVER>WILLAMETTE R-AT MOUTH

SW1 and SW 3: PUDDING R>MOLALLA R-AB MILL CR

- 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?	Q _w > 5 cfs?	Instream Water Right ID	Instream Water Right Q (cfs)	Q _w > 1% ISWR?	80% Natural Flow (cfs)	Q _w > 1% of 80% Natural Flow?	Interference @ 30 days (%)	Potential for Subst. Interfer. Assumed?
1	1	☐	☐			☐	67.3	☐	<25%	☐
1	2	☐	☐			☐	134	☐		☐
1	3	☐	☐			☐	67.3	☐	<25%	☐
2	1	☐	☐			☐	67.3	☐	<25%	☐
2	2	☐	☐			☐	134	☐		☐
2	3	☐	☐			☐	67.3	☐	<25%	☐

Comments: Potential depletion (interference with) SW 1 (Wheeler Creek) was estimated using Hunt 2003 analytical model.

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; McFarland and Morgan, 1996; Woodward et al., 1998) or are within a typical range of values for the parameter within the hydrogeologic regime (Freeze and Cherry, 1979; Domenico and Mifflin, 1965). See attached "Stream Depletion Analysis – SW 1" for the specific parameters used in the analysis. The Hunt 2003 analytical model results indicate that depletion of (interference with) SW 1 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 2 and SW 1) 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 2 and SW 1. 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 #		Q _w > 5 cfs?	Instream Water Right ID	Instream Water Right Q (cfs)	Q _w > 1% ISWR?	80% Natural Flow (cfs)	Q _w > 1% of 80% Natural Flow?	Interference @ 30 days (%)	Potential for Subst. Interfer. Assumed?
			☐			☐		☐		☐

Comments: NA-the proposed rate is not distributed among wells.

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:
- ☐ The permit should contain condition #(s) _____;
 - ☐ The permit should contain special condition(s) as indicated in "Remarks" below;

C6. SW / GW Remarks and Conditions:

References Used:

Application file: G-19075

Pumping Test Files: CLAC 2049, CLAC 2060, CLAC 2240, CLAC 12539, CLAC 12546, CLAC 14273, CLAC 18102, CLAC 18360, CLAC 18557, CLAC 53757, CLAC 53992, CLAC 54578, CLAC 60032, CLAC 64205, CLAC 64836, CLAC 66134, CLAC 70809.

Well Reports: CLAC 12818, CLAC 12817, CLAC 154, CLAC 18360, CLAC 12796, CLAC 70590, CLAC 2229, CLAC 2224, CLAC 9999

- Conlon, T.D., Lee, K.K., and Risley, J.R., 2003, Heat tracing in streams in the central Willamette Basin, Oregon, in Stonestrom, D.A. and Constantz, Jim, eds., Heat as a tool for studying the movement of groundwater near streams: U.S. Geological Survey Circular 1260, chapter 5, p. 29-34.
- 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, Groundwater hydrology of the Willamette Basin, Oregon: U.S. Geological Survey Scientific Investigations Report 2005-5168.
- Domenico, P.A. and Mifflin, 1965, Water from low-permeability sediments and land subsidence: Water Resource Research, v. 1, no. 4, p. 563-576.
- Freeze, R.A. and Cherry, J.A., 1979, Groundwater, Prentice Hall, Englewood Cliffs, New Jersey, 604 p.
- 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.
- Hampton, E.R. 1972. Geology and Ground Water of the Molalla-Salem Slope Area, Northern Willamette Valley, Oregon. USGS Water Supply Paper 1997.
- Hunt, B., 2003, Unsteady stream depletion when pumping from semiconfined aquifer: Journal of Hydrologic Engineering, January/February, 2003.
- 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.
- McFarland, W.D., and Morgan, D.S., 1996, Description of the Ground-Water Flow System in the Portland Basin, Oregon and Washington: U.S. Geological Survey Water Supply Paper 2470-A, 58 p.
- O'Connor, J.E., Sarna-Wojcick, A., Wozniak, K.C., Polette, D.J., Fleck, R.J., 2001, Origin, Extent, and Thickness of Quaternary Geologic Units in the Willamette Valley, Oregon; U.S. Geological Survey, Professional Paper 1620, 51 p.
- Swanson, R.D., McFarland, W.D., Gonthier, J.B., Wilkinson, J.M. 1993. A description of hydrogeologic units in the Portland Basin, Oregon and Washington: U.S. Geological Survey Water Resources Investigations Report 90-4196, 62 p
- Trimble, D.E., 1963, Geology of Portland, Oregon, and adjacent areas: U.S. Geological Survey Bulletin 1119, 119 p.
- United States Geological Survey, 2013, National Elevation Dataset (NED) [DEM geospatial data]. 1/9th arc-second, updated 2013.
- United States Geological Survey, 2014, Yoder quadrangle, Oregon [map], 1:24,000, 7.5 minute topographic series, U.S. Department of the Interior, Reston, Virginia.
- 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.
- Watershed Sciences, 2009, LIDAR remote sensing data collection, Department of Geology and Mineral Industries, Willamette Valley Phase I, Oregon, Portland, OR, December 21.

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

Water Availability Analysis
Detailed Reports

PUDDING R > MOLALLA R - AB MILL CR
WILLAMETTE BASIN

Watershed ID #: 151 [\(Map\)](#)
Date: 2/16/2024

Water Availability as of 2/16/2024

Exceedance Level: 80%

▼

Time: 6:18 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	1,040.00	125.00	915.00	0.00	36.00	879.00
FEB	1,180.00	114.00	1,070.00	0.00	36.00	1,030.00
MAR	1,010.00	76.50	934.00	0.00	36.00	898.00
APR	787.00	52.40	735.00	0.00	36.00	699.00
MAY	425.00	50.90	374.00	0.00	36.00	338.00
JUN	224.00	73.00	151.00	0.00	36.00	115.00
JUL	109.00	115.00	-5.87	0.00	36.00	-41.90
AUG	71.00	94.10	-23.10	0.00	36.00	-59.10
SEP	67.30	53.40	13.90	0.00	36.00	-22.10
OCT	91.60	11.50	80.10	0.00	36.00	44.10
NOV	363.00	48.50	314.00	0.00	36.00	278.00
DEC	957.00	118.00	839.00	0.00	36.00	803.00
ANN	706,000.00	56,300.00	650,000.00	0.00	26,100.00	626,000.00

Water Availability Analysis

Detailed Reports

MOLALLA R > WILLAMETTE R - AT MOUTH

WILLAMETTE BASIN

Water Availability as of 2/16/2024

Watershed ID #: 69796 [\(Map\)](#)

Exceedance Level: 80% ▾

Date: 2/16/2024

Time: 6:19 PM

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

Water Availability Calculation

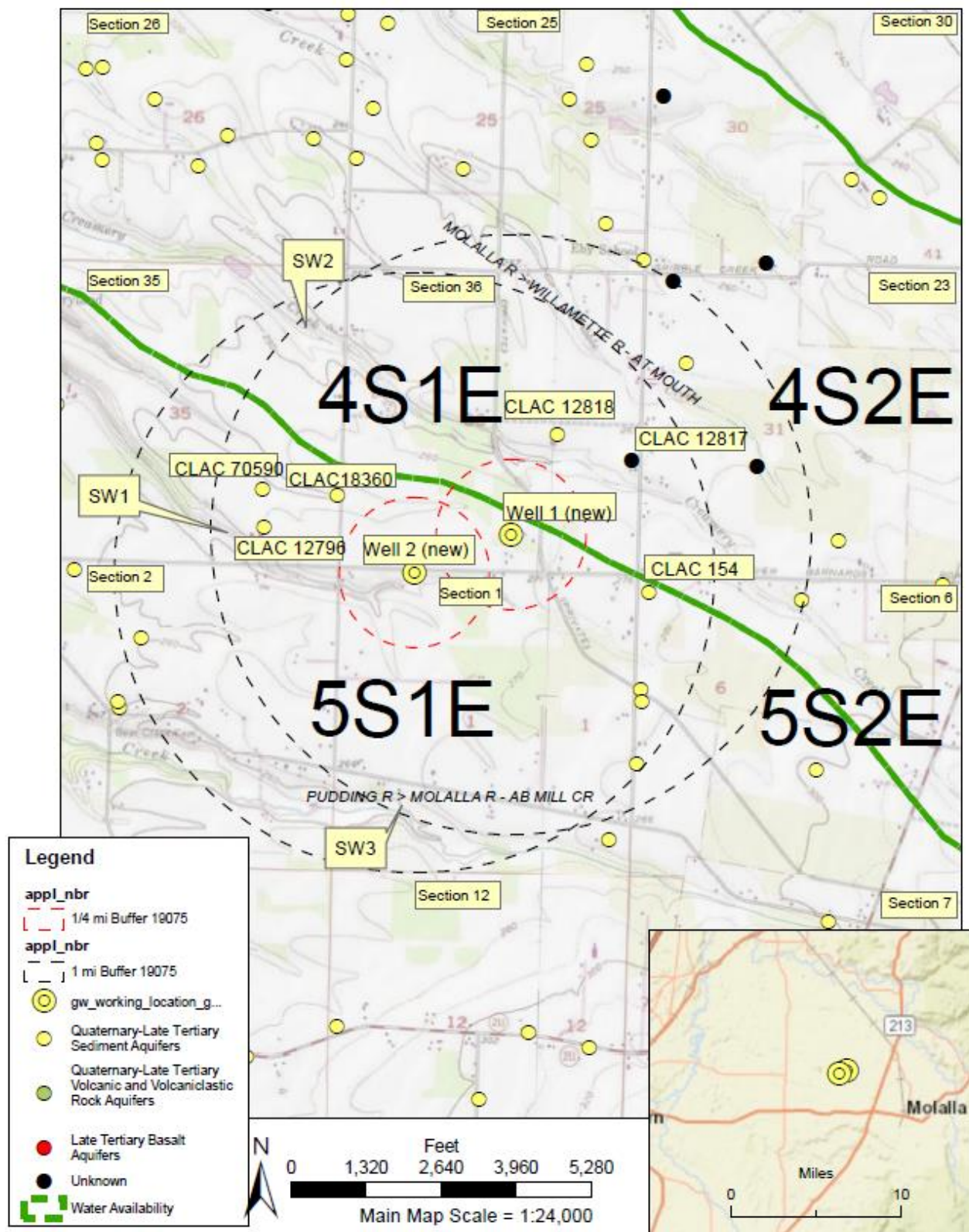
Monthly Streamflow in Cubic Feet per Second

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	1,870.00	155.00	1,720.00	0.00	500.00	1,220.00
FEB	2,010.00	145.00	1,870.00	0.00	500.00	1,370.00
MAR	1,830.00	113.00	1,720.00	0.00	500.00	1,220.00
APR	1,530.00	86.90	1,440.00	0.00	500.00	943.00
MAY	927.00	98.30	829.00	0.00	500.00	329.00
JUN	431.00	121.00	310.00	0.00	500.00	-190.00
JUL	204.00	186.00	17.60	0.00	200.00	-182.00
AUG	139.00	157.00	-17.60	0.00	100.00	-118.00
SEP	134.00	83.30	50.70	0.00	150.00	-99.30
OCT	188.00	39.90	148.00	0.00	450.00	-302.00
NOV	637.00	79.90	557.00	0.00	500.00	57.10
DEC	1,700.00	150.00	1,550.00	0.00	500.00	1,050.00
ANN	1,320,000.00	85,400.00	1,240,000.00	0.00	295,000.00	966,000.00

Well Location Map

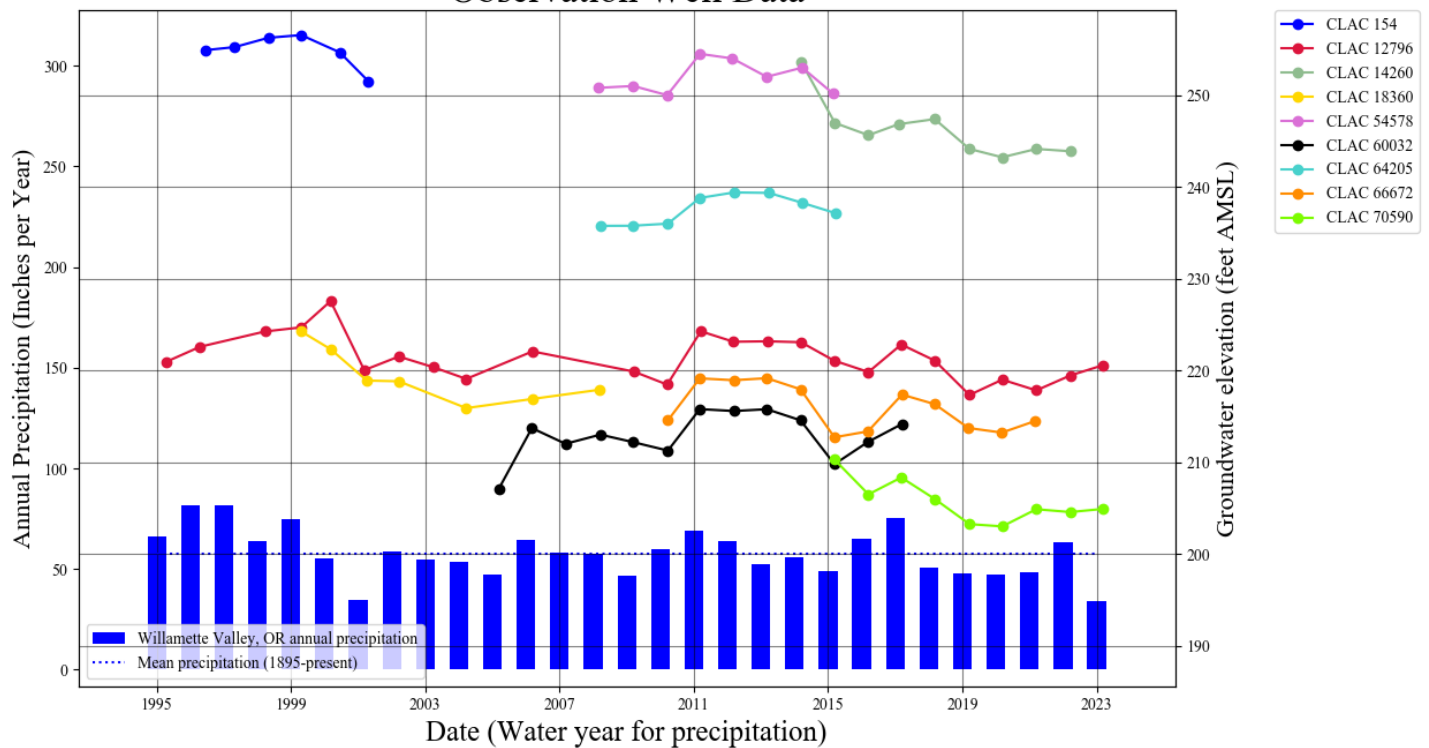
G19075 Jonas



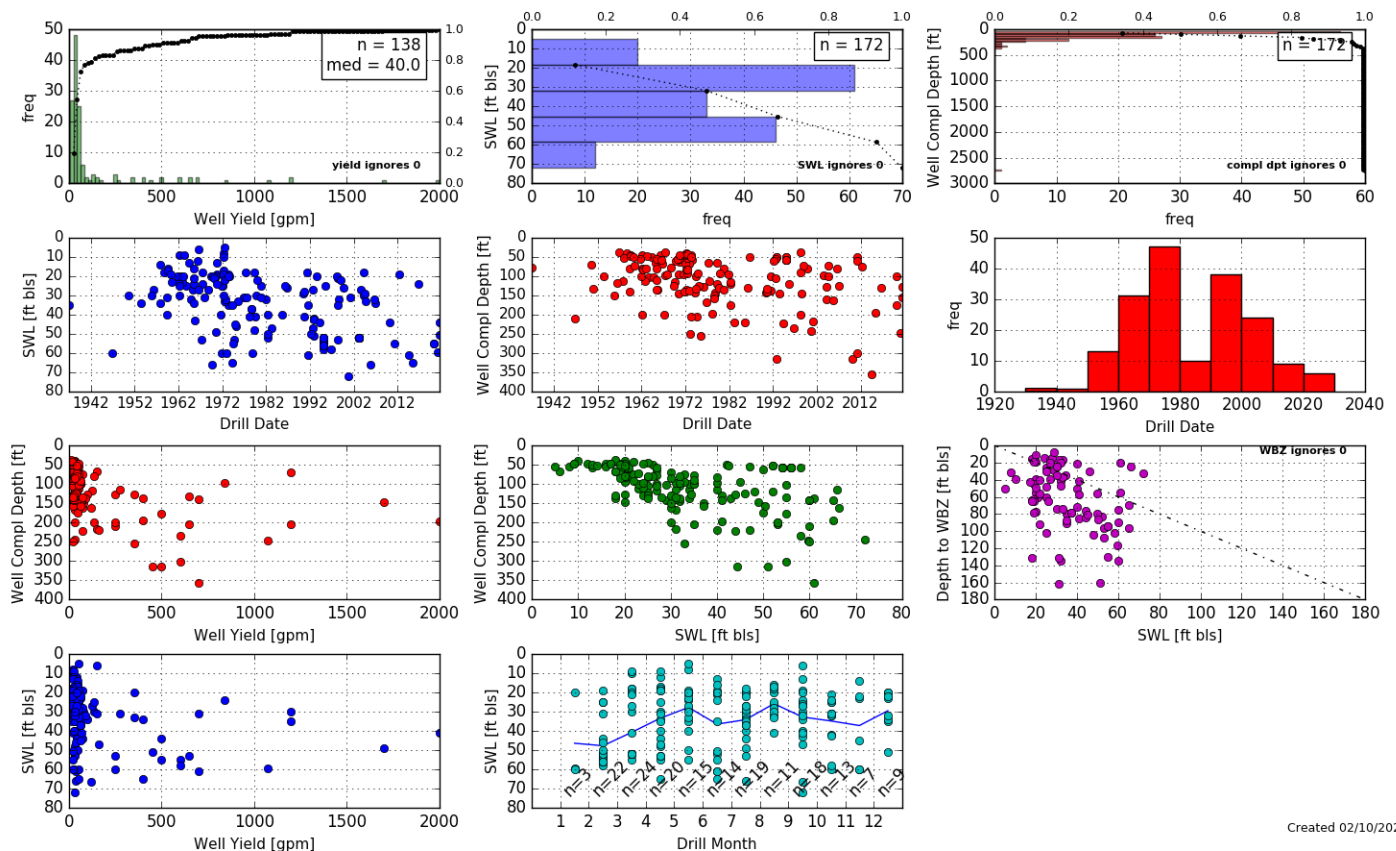
Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community
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Water-Level Measurements in Nearby Wells

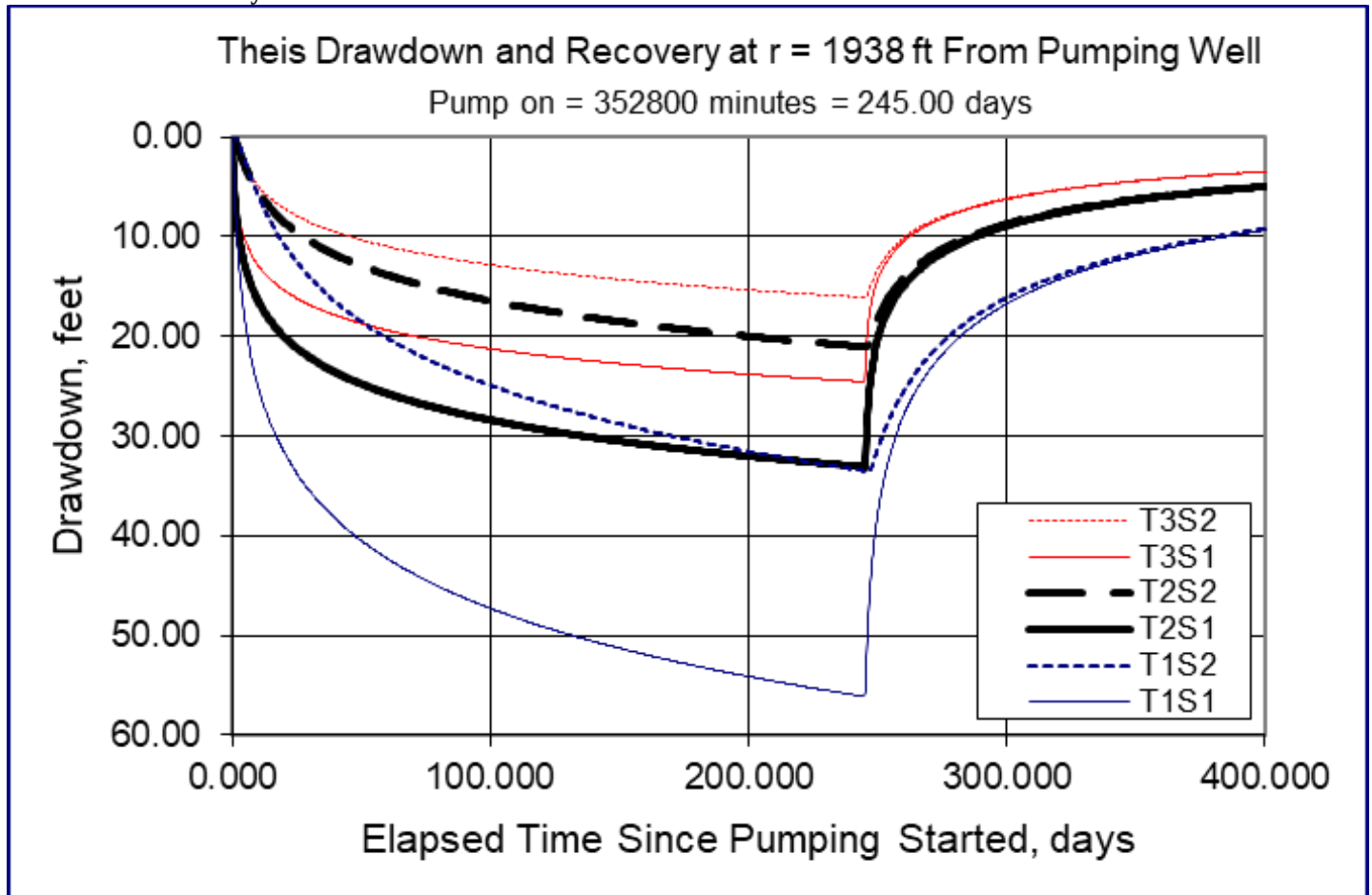
Observation Well Data



Well Statistics



Created 02/10/2022

Theis Drawdown Analysis-Well 1

Radial distance from pumping well (r)=1,938 ft [estimated radial distance to nearest user, CLAC 12818]

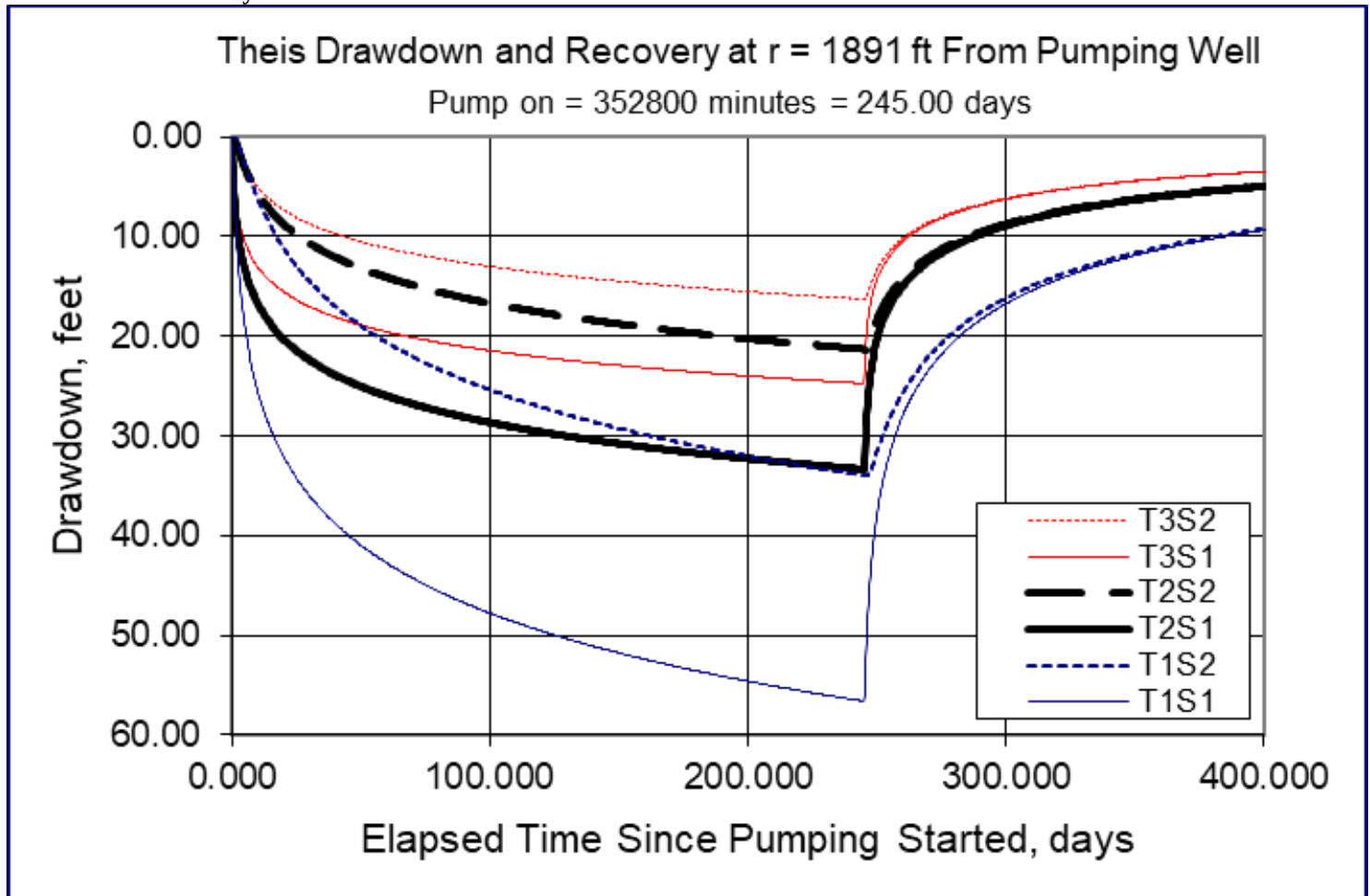
Pumping Rate (Q)= 0.56 cfs (255 gpm) *

Aquifer Transmissivity (T1)= 2,954.6 gpd/ft (395 ft²/day), (T2)= 5,572.6 gpd/ft (745 ft²/day), (T3)= 7,928.8 gpd/ft (1,060 ft²/day)

Storativity (s1) = 2 X 10⁻⁴, (s2) = 2 X 10⁻³ [Conlon et al 2005, Tables 1 and 2 values for Central MSU]

Total pumping time = 245 days

*The full pumping rate could not be utilized continuously for the entire 245-day period of use without exceeding the 276.5 ac-ft maximum allowed duty. For the maximum allowed duty of 276.5 ac-ft, continuous pumping would occur for 245 days at a rate of 0.57 cfs (255 gpm).

Theis Drawdown Analysis-Well 2

Radial distance from pumping well (r)=1,891 ft [estimated radial distance to nearest user, CLAC 18360]

Pumping Rate (Q)= 0.56 cfs (255 gpm) *

Aquifer Transmissivity ($T1$)= 2,954.6 gpd/ft (395 ft²/day), ($T2$)= 5,572.6 gpd/ft (745 ft²/day), ($T3$)= 7,928.8 gpd/ft (1,060 ft²/day)

Storativity ($s1$) = 2×10^{-4} , ($s2$) = 2×10^{-3} [Conlon et al 2005, Tables 1 and 2 values for Central MSU]

Total pumping time = 245 days

*The full pumping rate could not be utilized continuously for the entire 245-day period of use without exceeding the 276.5 ac-ft maximum allowed duty. For the maximum allowed duty of 276.5 ac-ft, continuous pumping would occur for 245 days at a rate of 0.57 cfs (255 gpm).

Stream Depletion Analysis-SW 1

Application type:	G
Application number:	19075
Well number:	2
Stream Number:	1
Pumping rate (cfs):	0.67
Pumping duration (days):	245
Pumping start month number (3=March)	3.0

Parameter	Symbol	Scenario 1	Scenario 2	Scenario 3	Units
Distance from well to stream	a	3403	3403	3403	ft
Aquifer transmissivity	T	395	745	1060	ft ² /day
Aquifer storativity	S	0.0002	0.0011	0.002	-
Aquitard vertical hydraulic conductivity	Kva	0.001	0.005	0.01	ft/day
Aquitard saturated thickness	ba	12	12	12	ft
Aquitard thickness below stream	babs	6	6	6	ft
Aquitard specific yield	Sya	0.2	0.2	0.2	-
Stream width	ws	5	5	5	ft

