

Approved:



MEMO

To: Kristopher Byrd, Well Construction and Compliance Section Manager
From: Travis Kelly, Well Construction Compliance Coordinator
Subject: Review of Water Right Application G-19045
Date: February 16, 2022

The attached application was forwarded to the Well Construction and Compliance Section by the Groundwater Section. Stacey Garrison and Travis Brown reviewed the application. Please see Stacey and Travis' Groundwater Review and the Well Reports.

Applicant's Well #1 (CLAC 56770): Based on a review of the Well Report, Applicant's Well #1 appears to protect the groundwater resource.

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

Applicant's Well #2 (Proposed Well): Applicant's Well #2 is a proposed well, therefore it cannot be reviewed for construction. Construction of this proposed well shall be completed in a manner that protects ground water resources as required under Oregon Administrative Rules 690-200 through 690-240. During construction of this well, specific attention should be paid to ensure sealing requirements are met and that the well does not commingle aquifers.

The construction of applicant's proposed Well #2 may not satisfy hydraulic connection issues.

RECEIVED

CLAC 56770

STATE OF OREGON WATER SUPPLY WELL REPORT

(as required by ORS 537.765)

MAY 22 2001

WELL I.D. # L 47852
START CARD # 136770

Instructions for completing this report are on the last part of this form.

WATER RESOURCES DEPT.
SALEM, OREGON

(1) LAND OWNER
Name STEVE BLAKE
Address 14535 S. LEABO RD
City MOLALLA State OR Zip 97038

(2) TYPE OF WORK

☒ New Well ☐ Deepening ☐ Alteration (repair/recondition) ☐ Abandonment

(3) DRILL METHOD:

☒ Rotary Air ☐ Rotary Mud ☐ Cable ☐ Auger
☐ Other _____

(4) PROPOSED USE:

☒ Domestic ☐ Community ☐ Industrial ☐ Irrigation
☐ Thermal ☐ Injection ☐ Livestock ☐ Other _____

(5) BORE HOLE CONSTRUCTION:

Special Construction approval ☐ Yes ☒ No Depth of Completed Well 118 ft.
Explosives used ☐ Yes ☒ No Type _____ Amount _____

HOLE

SEAL

Diameter	From	To	Material	From	To	Sacks or pounds
10	0	118	BENTONITE	0	30	18 sacks
6	118	157	CEMENT	118	157	6 sacks

How was seal placed: Method ☐ A ☐ B ☐ C ☐ D ☐ E

☒ Other POURED & PROBED

Backfill placed from 30 ft. to 35 ft. Material 8-12 & 10-20

Gravel placed from 35 ft. to 118 ft. Size of gravel 3/8 sand

(6) CASING/LINER:

	Diameter	From	To	Gauge	Steel	Plastic	Welded	Threaded
Casing:	6"	+1.5	118.5	2.50	☒	☐	☒	☐
					☐	☐	☐	☐
					☐	☐	☐	☐
					☐	☐	☐	☐
Liner:					☐	☐	☐	☐
					☐	☐	☐	☐

Drive Shoe used ☐ Inside ☒ Outside ☐ None

Final location of shoe(s) 118.5'

(7) PERFORATIONS/SCREENS:

☒ Perforations Method HOLTE AIR PERE/FACTORY
☐ Screens Type _____ Material _____

From	To	Slot size	Number	Diameter	Tele/pipe size	Casing	Liner
42	78	1/8 x 3				☒	☐
95	115	1/8 x 3				☒	☐
						☐	☐
						☐	☐

(8) WELL TESTS: Minimum testing time is 1 hour

	Pump	Bailer	☒ Air	Flowing
	Yield gal/min	Drawdown	Drill stem at	Artesian
	25	N/A		1 hr.

Temperature of water 55° Depth Artesian Flow Found _____

Was a water analysis done? ☐ Yes By whom _____

Did any strata contain water not suitable for intended use? ☐ Too little

☐ Salty ☐ Muddy ☐ Odor ☐ Colored ☐ Other _____

Depth of strata: _____

(9) LOCATION OF WELL by legal description:

County CLACKAMAS Latitude _____ Longitude _____
Township 5S N or S Range 2E E or W. WM.
Section 22 SW 1/4 SW 1/4
Tax Lot 1400 Lot _____ Block _____ Subdivision _____
Street Address of Well (or nearest address) 15315 S. HERMAN RD

(10) STATIC WATER LEVEL:

12.5 ft. below land surface. Date 5-2-01
Artesian pressure _____ lb. per square inch Date _____

(11) WATER BEARING ZONES:

Depth at which water was first found 42'

From	To	Estimated Flow Rate	SWL
42'	118'	25 gpm	12.5

(12) WELL LOG:

Ground Elevation _____

Material	From	To	SWL
SOIL	0	1	
CLAY BROWN	1	9	
CLAY & GRAVEL	4	30	
CLAY WHITE STICKY	30	34	
SANDSTONE BRN CRMBLY	34	40	
SANDSTONE BRN COARSE	40	45	
WOOD BLACK & BROWN	45	50	
SANDSTONE LAVNDR MED	50	59	
SANDSTONE BRN W/WOOD	59	63	
SANDSTONE GREY	63	65	
SANDSTONE BRN	65	77	
WOOD BLACK	77	81	
CLAY GREY	81	90	
CLAYSTONE W/GRAVEL	90	110	
CLAYSTONE GREY	110	120	
SANDSTONE GREY	120	123	
SANDSTONE GREEN	123	130	
SANDSTONE GREY	130	147	

cont'd next page

Date started 4-30-01 Completed 5-2-01

(unbonded) Water Well Constructor Certification:

I certify that the work I performed on the construction, 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.

Signed [Signature] WWC Number 1358
Date _____

(bonded) Water Well Constructor Certification:

I accept responsibility for the construction, 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.

Signed [Signature] WWC Number 688
Date _____

WELL ID#L47852

CITY/STATE/ZIP: MOLALLA, OR 97381

COUNTY CLACKAMAS TOWNSHIP 5S RANGE 2E
SECTION 22 SW 1/4 SW 1/4 TAX LOT 1400

[illegible]

WATER RESOURCES DEPT
SALEM, OREGON

Groundwater Application Review Summary Form

Application # G- 19045

GW Reviewer Stacey Garrison/Travis Brown Date Review Completed: 2/1/2022

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

February 1 2022

TO: Application G- 19045

FROM: GW: Stacey Garrison/Travis Brown
(Reviewer's Name)

SUBJECT: Scenic Waterway Interference Evaluation

- ☐ YES The source of appropriation is hydraulically connected to a State Scenic Waterway or its tributaries
- ☒ NO
-
- ☐ YES Use the Scenic Waterway Condition (Condition 7J)
- ☒ NO
-
- ☐ Per ORS 390.835, the Groundwater Section is **able** to calculate ground water interference with surface water that contributes to a Scenic Waterway. The calculated interference is distributed below
-
- ☐ Per ORS 390.835, the Groundwater Section is **unable** to calculate ground water interference with surface water that contributes to a scenic waterway; **therefore, the Department is unable to find that there is a preponderance of evidence that the proposed use will measurably reduce the surface water flows necessary to maintain the free-flowing character of a scenic waterway**

DISTRIBUTION OF INTERFERENCE

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

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

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

PUBLIC INTEREST REVIEW FOR GROUNDWATER APPLICATIONS

TO: Water Rights Section Date 2/1/2022
 FROM: Groundwater Section Stacey Garrison/Travis Brown
 Reviewer's Name
 SUBJECT: Application G- 19045 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: John & Cynthia Walker, Jeffrey & Jackye Doyle
 County: Clackamas^a

A1. Applicant(s) seek(s) 0.545 cfs from 2 well(s) in the Willamette River Basin,
Molalla River subbasin

A2. Proposed use Nursery-containerized (50 acres)^b Seasonality: Year round (Jan 1-Dec 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	CLAC 56770	1	Alluvium	0.545	5S/2E-22 SW-SW	545' N, 1235' E fr SW cor S22 ^d
2	Proposed	2	Alluvium ^c	0.545	5S/2E-22 SW-SW	105' N, 355' E fr SW cor S22 ^d

* 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	591 ^e	42 ^f	12.5 ^f	5/2/2001 ^f	118 ^f	0-30 ^f	0-118.5 ^f		42-78, 95-115 ^f	25 ^f	NA	Air ^f
2	583 ^e				120 ^c	0-30 ^c	0-120 ^c					

Use data from application for proposed wells.

A4. **Comments:** The requested POA/POU is located approximately 1.7 miles southeast of Molalla, Oregon.
^a The T/R-S, well and POU are located in Clackamas County; on Attachment 2: Land Use Information, the listed county is Marion; this discrepancy appears to be a mistake, and the county of the indicated T/R-S (Clackamas) is used.

^b Applicant indicates on Application Map that the POU is 50 acres, and in Section 3: Well Development that the Annual Volume will be 250 acre-feet (AF). However, applicant also indicates in Land Use Information section that water will be applied to "greenhouses and crops", and "irrigation will be done with drip irrigation system" in Section 6: Water Management. For Nursery-Containerized, the maximum annual duty is 5 acre-feet/acre. For Nursery-In Ground, the maximum annual duty is 2.5 acre-feet/acre. For Irrigation, the maximum annual duty is 2.5 acre-feet/acre. **If any of the 50 acres is developed as other than Nursery-Containerized, the lower annual duty of 2.5 acre-feet/acre would apply.**

^c Proposed well construction from applicant for Well 2.

^d 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 70 feet and 40 feet northwest of the mapped locations, respectively. The mapped locations are used for this review.

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

^f Values from Water Well Report for CLAC 56770. **The reported well yield is 10.2% of the requested allocation (244.6 gpm or 0.545 cfs), draw-down not recorded on Report.** The applicant did not provide well specific rates, indicating the intent to withdraw the maximum rate from either well.

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 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: NA
 Comments: NA

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 (Annual Water measurement condition) 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 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): NA

- B3. **Groundwater availability remarks:** Groundwater for the proposed use cannot be determined to be over-appropriated due to insufficient available data regarding the extent of the local alluvial aquifer system, local rates of recharge, and the current quantity of groundwater withdrawals from the local aquifer system.

It should be noted that the requested allocation of 244.6 gpm (0.545 cfs) is nearly ten times the reported yield (25 gpm, 0.0557 cfs) for the POA. The applicant does not provide well specific rates, indicating the intended capacity is to withdraw the maximum rate of 244.6 gpm (0.545 cfs) from either well. The ability of the wells to meet this demand is questionable.

The proposed POA/POU is on 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 adjacent section, the Troutdale Formation is likely to be up to 100 ft thick in 5S/2E-22 (Hampton 1972). Given the thickness of the water-bearing layers and the underlying blue claystone typical of the Willamette Confining Unit (153 to 157 ft bls [434 to 438 ft msl]) recorded in the POA Well Report (CLAC 56770), it is likely that the two water-bearing zones are layers of sandstone within 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). Although the POAs are near the mapped southern extent of the Molalla alluvial fan (Woodward et al 1998), the sandstone, claystone and gravel layers are more likely to be consolidated formations from discontinuous braided stream deposits (Gannet & Caldwell 1998). According to the Water Well Report for CLAC 56770 (the requested POA), the applicant's existing well appears to produce water from two layers of water-bearing sandstone and claystone in the Troutdale sandstone aquifer of the Troutdale Formation (Swanson et al 1993). The first sandstone layer is 35 ft thick from 42 and 77 ft below land surface (bls) (elevations of approximately 514 ft to 549 above mean sea level [msl]); the second layer is gravel, claystone and sandstone, and 34 ft thick from 81 to 115 ft bls (476 to 510 msl). The second POA is proposed to be sealed to 30 ft, cased to 120 ft, and access a water-bearing zone in an alluvial aquifer. It is assumed that this well would utilize a sandstone layer similar to CLAC 56770.

A review of statistics for nearby well records was completed and compared with the proposed rate of 0.545 cfs (244.6 gpm) for this application (see Well Statistics 5S/2E-22). There is some uncertainty regarding the ability of the groundwater resource to sustain the proposed use of 0.545 cfs (244.6 gpm); median reported well yield is 20 gpm, and the proposed rate is more than the maximum reported yield of 150 gpm. The proposed rate for this application is 1,223% of the median and 163% 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). Water level trends for nearby wells that utilize alluvial aquifers appear to be stable (see Water Level Measurements in Nearby Wells). CLAC 10479 is 585 ft to the southeast of the POAs, and shows a steady water level trend over the 5 year record but a steep decline of 6 feet between March 2017 and March 2018. CLAC 154, CLAC 9966, CLAC 10285, CLAC 17723, CLAC 20017, CLAC 20566, CLAC 51358, CLAC 54578, CLAC 64005, and CLAC 64205 are between 2 and 4.6 miles to the northwest of the POAs; these all show relatively stable trends, except CLAC 17723 which shows a decline but has only two datapoints. CLAC 9923, CLAC 9933, CLAC 18908, and CLAC 52063 are between 2.9 and 3.9 miles to the north of the POA; these all show stable trends. CLAC 55698 is 2.3 miles to the northeast of the POAs, and shows a stable water level trend. While the wells do not show persistent or widespread declines, the data is limited through the present day, only one of these wells (CLAC 10479) is within a mile and this well did experience a decline of 6 ft within a year in the last five years.

The nearest groundwater user (CLAC 10479, a POA on permit G17174 with priority date of 5/13/2013) is located approximately 585 ft south of Well 1, and 932 ft southeast of the proposed location for Well 2, and at an elevation of 596 ft. CLAC 10479 is completed to a depth of 125 ft bls with a perforated casing from 50 to 108 ft bls (488 to 546 ft msl). The seal of Well 1 (CLAC 56770) extends to 561 ft msl, but due to the seemingly discontinuous nature of the water-bearing sandstones and claystones, it is difficult to determine whether Well 1 is sealing through the water-bearing zone that CLAC 10479 is utilizing. It is likely the proposed use would cause some degree of well-to-well interference with CLAC 10479, however due to a lack of high quality data for this area with which to estimate hydraulic properties of the aquifer, it is difficult to anticipate how much the proposed use may interfere with nearby groundwater rights. To assess the degree of drawdown, a Theis drawdown analysis was conducted for the proposed use (see attached Theis Drawdown Analysis-Well 1, and -Well 2). Results indicate that the proposed use is not likely to cause well-to-well interference with CLAC 10479 that exceeds the threshold under the standard condition for alluvial aquifers in the Willamette Basin. There is insufficient evidence to conclude that the proposed use would likely result in injury to prior groundwater rights.

Due to the potentially limited extent of water-bearing sandstone in the subject aquifer, and based on the nearby well statistics, it is unlikely that the applicant will be able to obtain the requested maximum rate of 244.6 gpm (0.545 cfs) from the two proposed POAs. It is likely that the requested maximum rate would exceed the capacity of the groundwater 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.

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 aquifer	☒	☐
2	Alluvial aquifer	☒	☐

Basis for aquifer confinement evaluation: Well 1 (CLAC 56770) has a static water level (SWL) reported to be 12.5 feet bls (elevation of 578.5 ft msl). CLAC 56770 reports clay layers from 1 to 34 ft bls (elevation of 557 to 590 ft msl), indicating at least 33 ft of semi-confining layer reaching up to nearly the ground surface (elevation of 590 ft). The SWL is 21.5 above the bottom of the confining layer. CLAC 56770 is continuously sealed from the surface to 30 ft bls (561 ft msl). Well 2, the NEW well to be constructed, is anticipated to be of similar construction with a continuous seal to 30 ft below land surface.

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	Teasel Creek	578.5-581.5 ^a	460-563 ^b	3,054	☒	☐	☐	☐	☒
1	2	Molalla River	578.5-581.5 ^a	407-434 ^b	3,9391	☒	☐	☐	☐	☒
2	1	Teasel Creek	578.5-581.5 ^a	460-563 ^b	2,219	☒	☐	☐	☐	☒
2	2	Molalla River	578.5-581.5 ^a	407-434 ^b	4,807	☒	☐	☐	☐	☒

Basis for aquifer hydraulic connection evaluation: CLAC 56770 is continuously sealed into clay-dominated confining layer at an elevation of around 561 ft msl with water-bearing zones at 476 to 510 ft msl and 514 to 549 ft msl, and static water level of 578.5 ft msl. The local streambeds are around 401 to 563 ft msl in elevation. Groundwater elevations are above the surface water elevation in SW 1 (Teasel Creek) and SW 2 (Molalla River) indicating that the local groundwater is discharging to surface water. All of the surface water drainages have incised to some degree below the elevation of the lowest water-bearing zone (elevation of 476 ft msl) from which the POA (CLAC 56770) produces. In addition, the Molalla River in this stretch is reported to have incised into the sandstone and conglomerate bedrock with thin alluvial fill (Trimble 1963, Carpenter et al 2012).

Groundwater in the applicable water-bearing zone is presumed to discharge where exposed with little to no barrier to flow.

^a Groundwater elevation calculated from static water level reported in CLAC 56770 and latest static water level reported for CLAC 10479, 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:

SW 1: PUDDING R>MOLALLA R-AB MILL CREEK

SW 2: MOLALLA R>WILLAMETTE R-AB MILK CREEK

C3a. 690-09-040 (4): Evaluation of stream impacts for each well that has been determined or assumed to be **hydraulically connected and less than 1 mile** from a surface water (SW) source. Limit evaluation to instream rights and minimum stream flows that are pertinent to that SW source, not lower SW sources to which the stream under evaluation is tributary. Compare the requested rate against the 1% of 80% *natural* flow for the pertinent Water Availability Basin (WAB). If Q is not distributed by well, use full rate for each well. Any checked ☒ box indicates the well is assumed to have the potential to cause PSI.

Well	SW #	Well < ¼ mile?	Qw > 5 cfs?	Instream Water Right ID	Instream Water Right Q (cfs)	Qw > 1% ISWR?	80% Natural Flow (cfs)	Qw > 1% of 80% Natural Flow?	Interference @ 30 days (%)	Potential for Subst. Interfer. Assumed?
1	1	☐	☐	73532	36	☒	67.3	☐	<25%	☒

1	2	☐	☐	70747	300	☐	54.5*	☐	*	☐
2	1	☐	☐	73532	36	☒	67.3	☐	<25%	☒
2	2	☐	☐	70747	300	☐	54.5*	☐	*	☐

Comments: The total maximum rate requested 244.6 gpm (0.545 cfs) is greater than 1 percent (0.360 cfs) of the Instream Water Right (36 cfs) for SW 1 (Teasel Creek). Therefore, per OAR 690-009-0040 (4) (c), the requested POA and allocation are assumed to have the potential to cause substantial interference (PSI) with SW 1. However, if the applicant reduces the total maximum rate requested to less than 0.360 cfs (~161 gpm), PSI would no longer be assumed on this basis.

Potential depletion (interference with) SW 1 (Teasel 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.

*The total maximum rate requested is equal to the 1 percent (0.545 cfs) of the discharge that is equaled or exceeded 80 percent of the time (54.5 cfs) for SW 2 (Molalla River). Interference at 30 days could not be estimated for the Molalla River because the hydrogeologic setting (aquifer is confined at the well but not the stream and free-flowing seeps as noted in Carpenter et al 2012) does not sufficiently meet model assumptions of the available techniques for determining stream depletion (e.g. Hunt 2003 and similar).

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:** The proposed maximum rate 244.6 gpm (0.545 cfs) is greater than 1 percent (0.360 cfs) of the Instream Water Right (36 cfs) for SW 1 (Teasel Creek). The applicant may revise the proposed maximum rate to less than 0.360 cfs (~161 gpm) to avoid triggering PSI on this basis without the need for a new groundwater review.

References Used:

Application file: G-19045

Pumping Test Files: CLAC 2060, CLAC 14273, CLAC 17200, CLAC 17723, CLAC 18102, CLAC 53757, CLAC 45478, CLAC 60360, CLAC 64005, CLAC 66134

Well Reports: CLAC 56770, CLAC 10479, CLAC 10404, CLAC 10233, CLAC 10241

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United States Geological Survey, 2014, *Wilhoit 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 #: 1 Logid: CLAC 56770

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:** NA
-
- 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

Water Availability as of 1/27/2022

Watershed ID #: 151 ([Map](#))
Date: 1/27/2022

Exceedance Level: 80% 
Time: 12:46 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	115.00	1,070.00	0.00	36.00	1,030.00
MAR	1,010.00	76.60	933.00	0.00	36.00	897.00
APR	787.00	52.40	735.00	0.00	36.00	699.00
MAY	425.00	50.60	374.00	0.00	36.00	338.00
JUN	224.00	72.50	152.00	0.00	36.00	116.00
JUL	109.00	114.00	-4.89	0.00	36.00	-40.90
AUG	71.00	93.40	-22.40	0.00	36.00	-58.40
SEP	67.30	53.00	14.30	0.00	36.00	-21.70
OCT	91.60	11.50	80.10	0.00	36.00	44.10
NOV	363.00	48.60	314.00	0.00	36.00	278.00
DEC	957.00	119.00	838.00	0.00	36.00	802.00
ANN	706,000.00	56,100.00	650,000.00	0.00	26,100.00	626,000.00

Water Availability Analysis Detailed Reports

MOLALLA R > WILLAMETTE R - AB MILK CR
WILLAMETTE BASIN

Water Availability as of 1/27/2022

Watershed ID #: 70747 ([Map](#))

Date: 1/27/2022

Exceedance Level: 80% ▾

Time: 12:48 PM

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

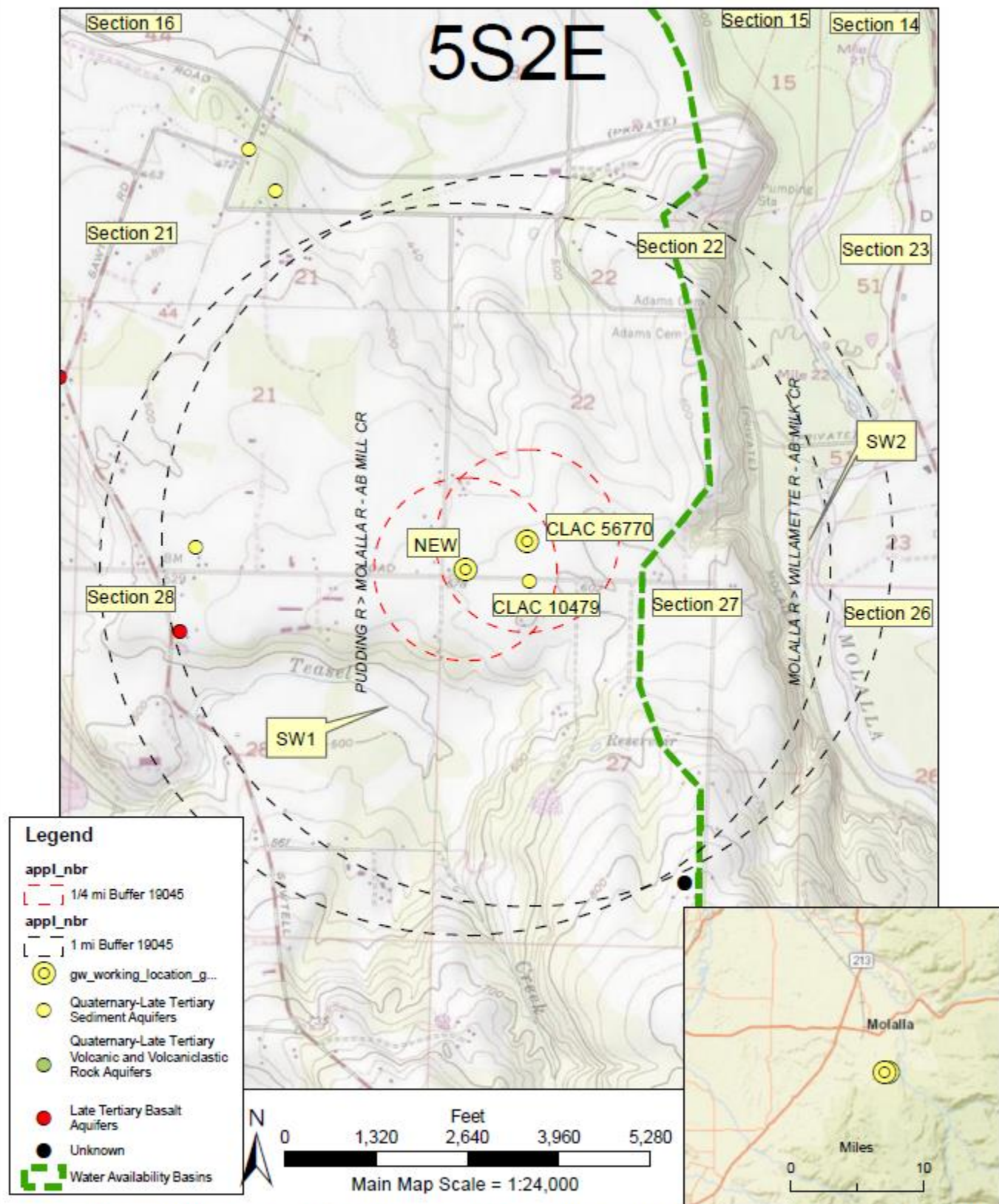
Water Availability Calculation

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	531.00	1.33	530.00	0.00	300.00	230.00
FEB	541.00	1.31	540.00	0.00	300.00	240.00
MAR	569.00	1.35	568.00	0.00	300.00	268.00
APR	591.00	1.64	589.00	0.00	300.00	289.00
MAY	466.00	5.15	461.00	0.00	300.00	161.00
JUN	207.00	7.28	200.00	0.00	200.00	-0.28
JUL	85.90	12.80	73.10	0.00	100.00	-26.90
AUG	55.70	10.40	45.30	0.00	78.70	-33.40
SEP	54.50	4.24	50.30	0.00	88.90	-38.60
OCT	90.40	1.45	89.00	0.00	166.00	-77.00
NOV	273.00	1.30	272.00	0.00	300.00	-28.30
DEC	560.00	1.34	559.00	0.00	300.00	259.00
ANN	454,000.00	3,020.00	451,000.00	0.00	165,000.00	287,000.00

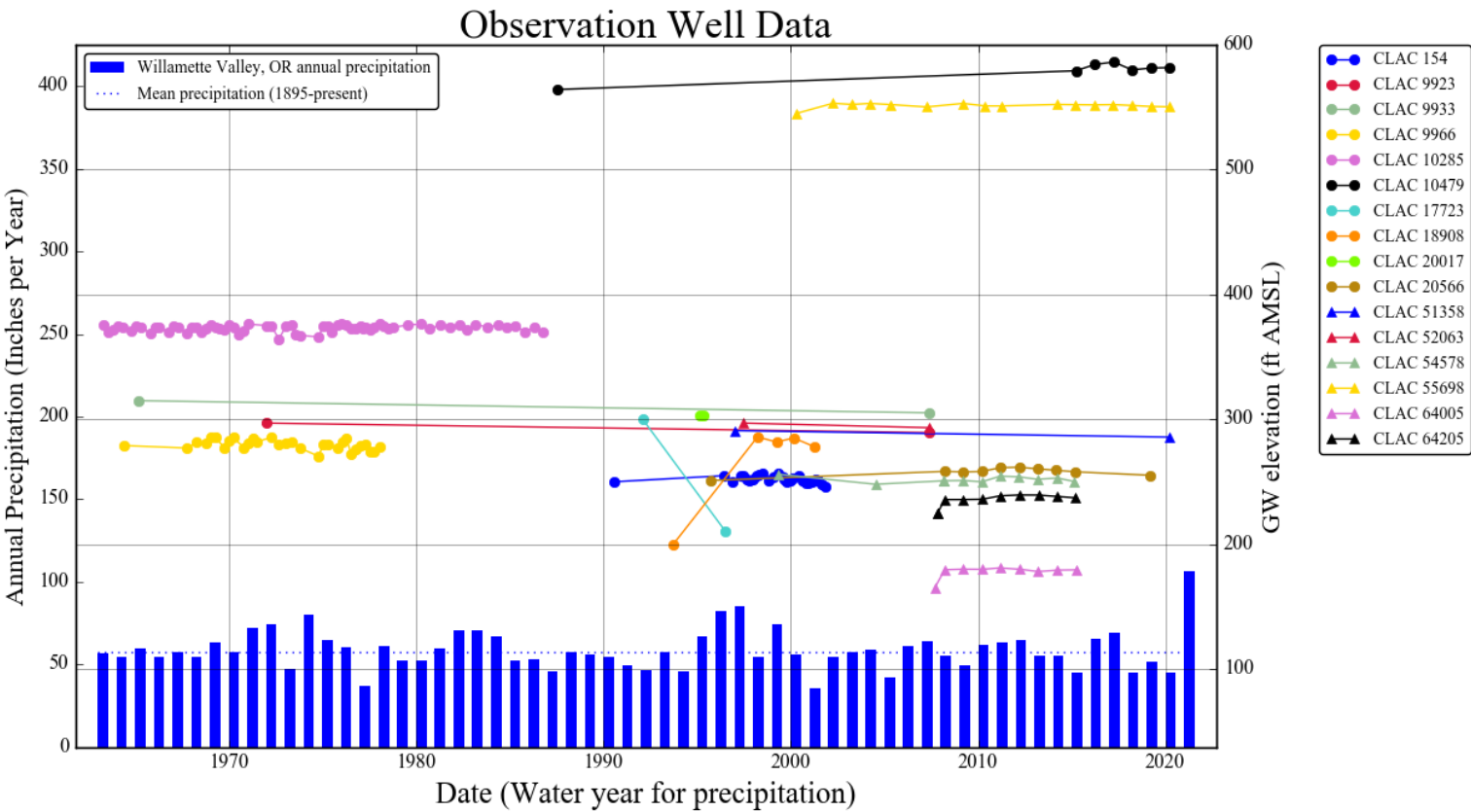
Well Location Map

G19045 Walker-Doyle

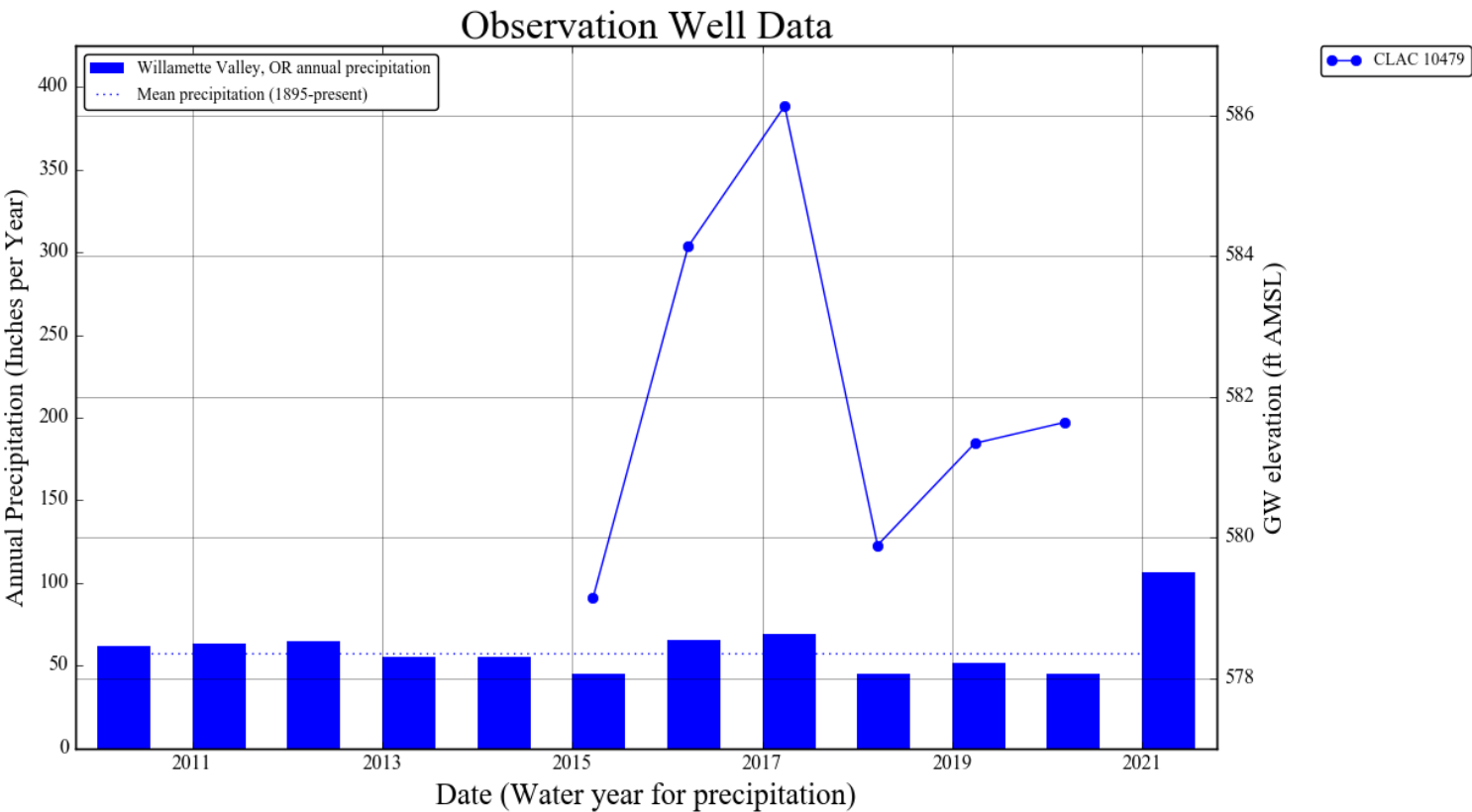


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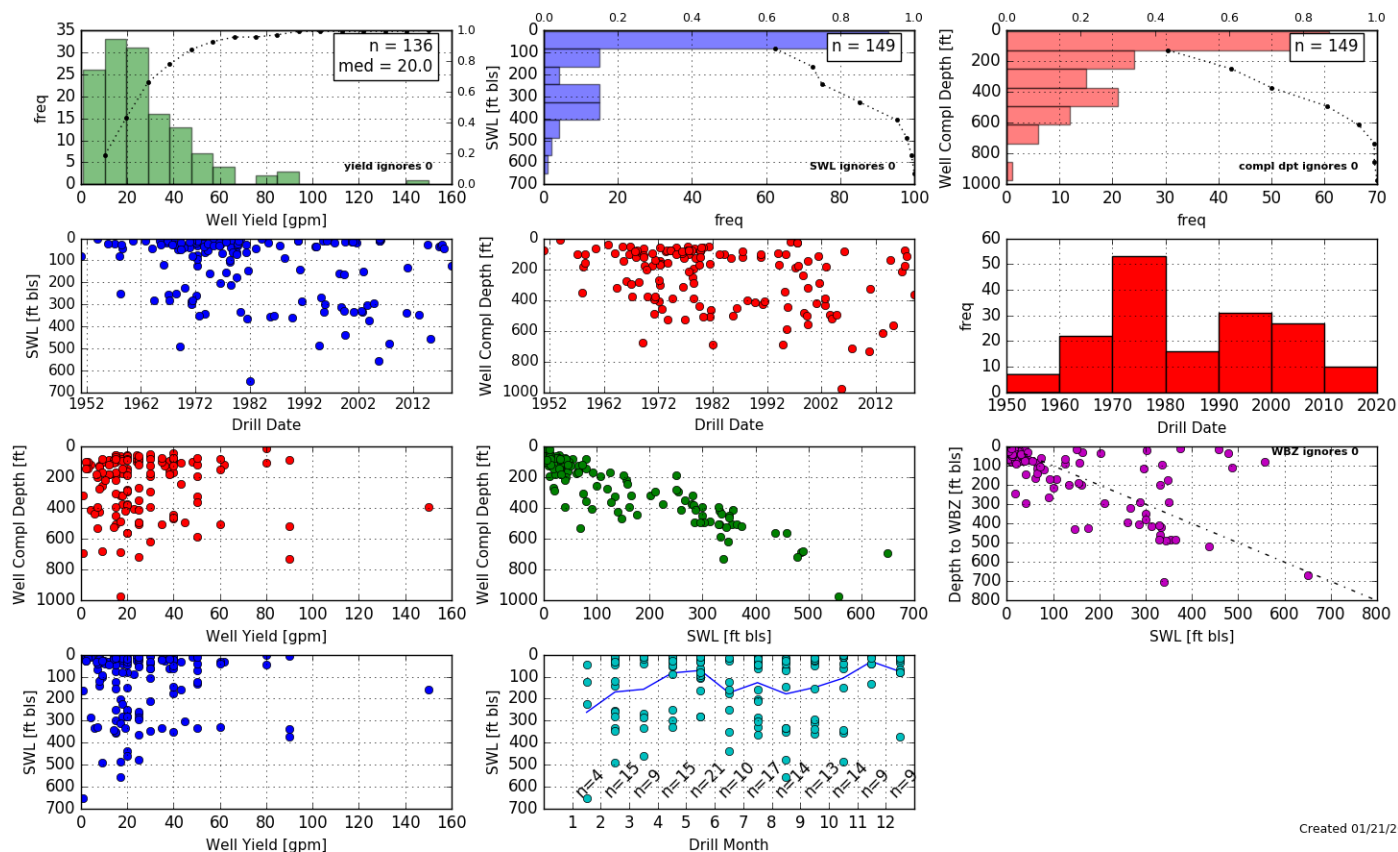
Water-Level Measurements in Nearby Wells



Water-Level Measurements-CLAC 10479

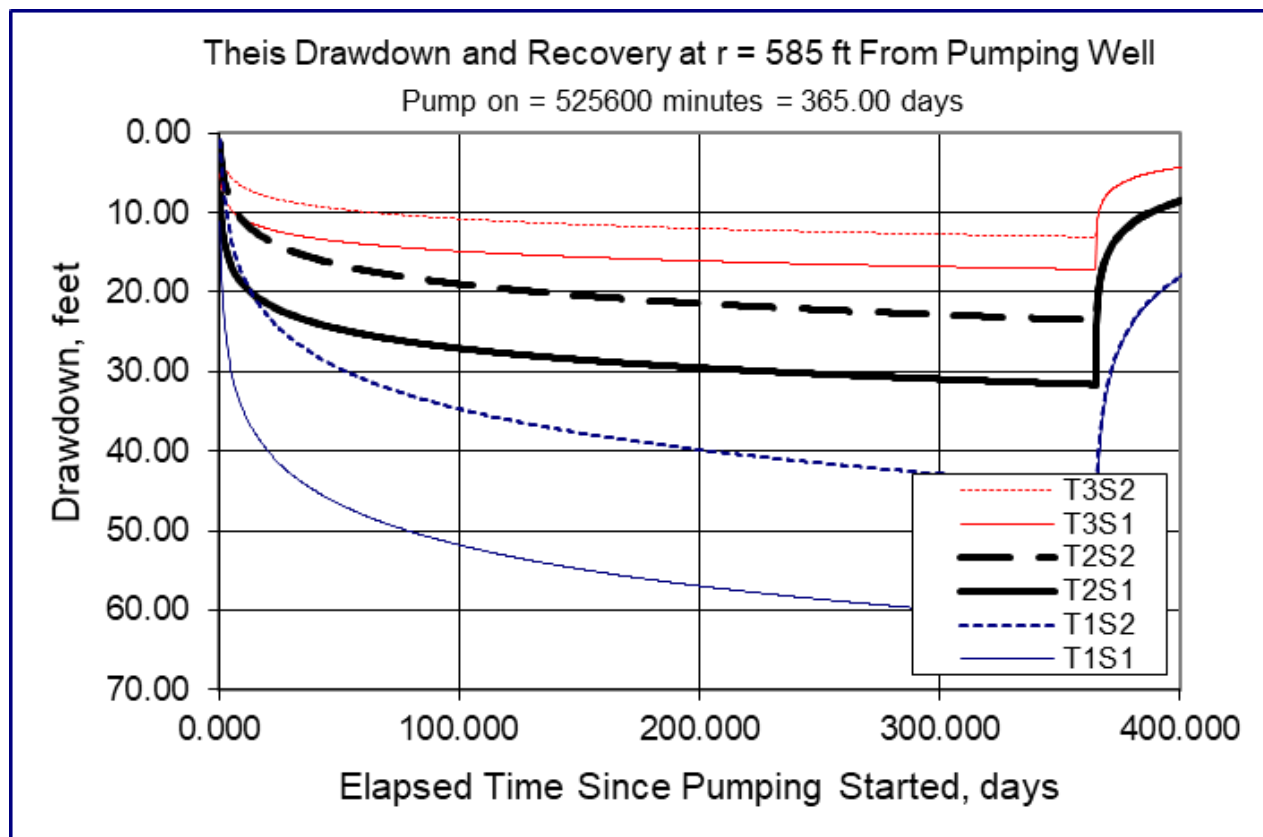


Wells Statistics



Created 01/21/2022

Theis Drawdown Analysis-Well 1



Radial distance from pumping well (r)=585 ft [estimated radial distance to nearest user, CLAC 10479]

Pumping Rate (Q)= 0.345 cfs (154.9 gpm) *

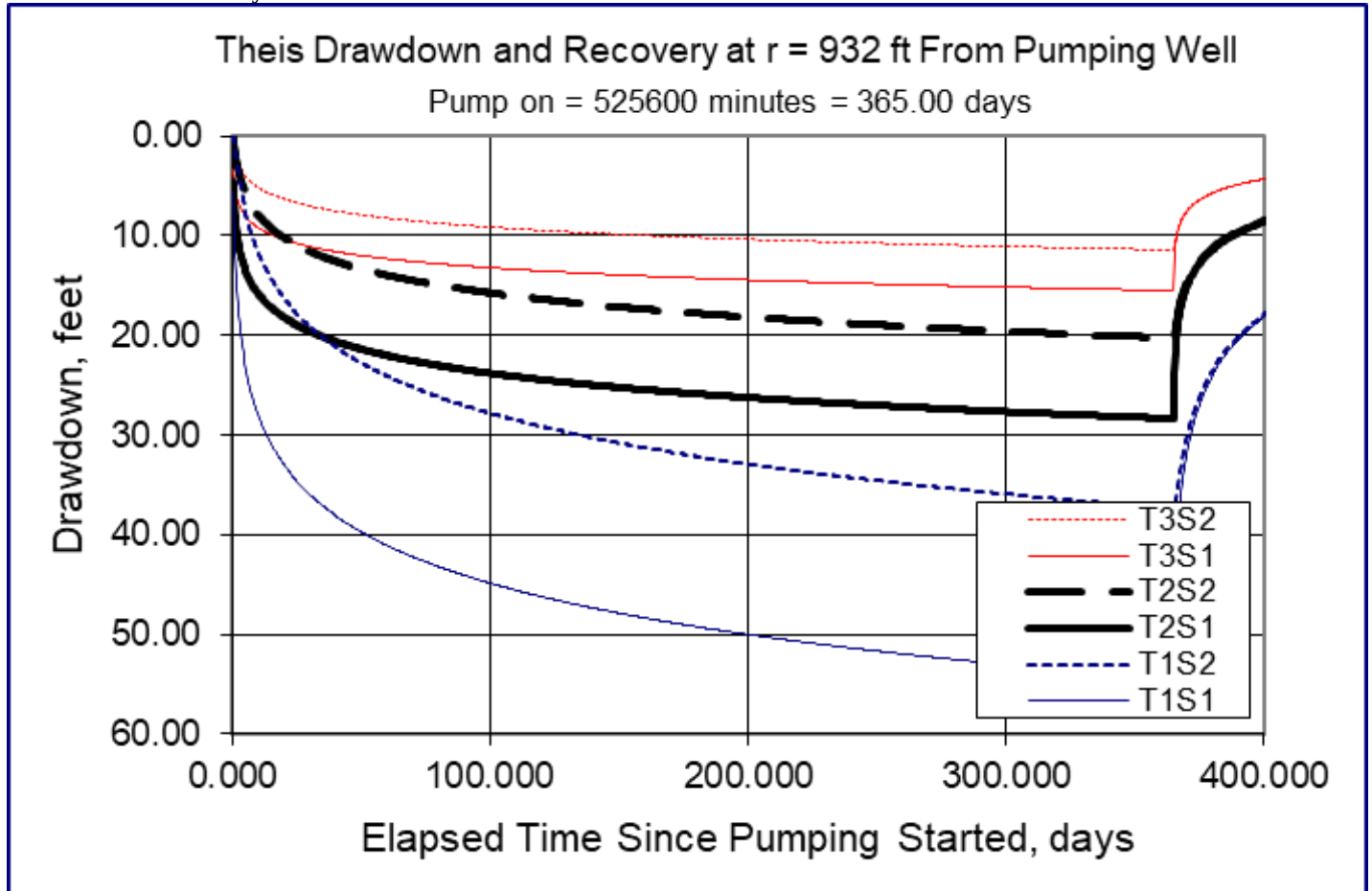
Aquifer Transmissivity (T1)= 2,383.315 gpd/ft (318.625 ft²/day), (T2)= 5,051.244 gpd/ft (675.3 ft²/day), (T3)= 10,018.71 gpd/ft (1,339.4 ft²/day)

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

Total pumping time = 365 days

*The full pumping rate could not be utilized continuously for the entire 365-day period of use without exceeding the 250 ac-ft maximum allowed duty. For the maximum allowed duty of 250 ac-ft, continuous pumping would occur for 365 days at a rate of 0.345 cfs (154.9 gpm).

Theis Drawdown Analysis-Well 2



Radial distance from pumping well (r)=932 ft [estimated radial distance to nearest user, CLAC 10479]

Pumping Rate (Q)= 0.345 cfs (154.9 gpm) *

Aquifer Transmissivity (T1)= 2,383.315 gpd/ft (318.625 ft²/day), (T2)= 5,051.244 gpd/ft (675.3 ft²/day), (T3)= 10,018.71 gpd/ft (1,339.4 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 = 365 days

*The full pumping rate could not be utilized continuously for the entire 365-day period of use without exceeding the 250 ac-ft maximum allowed duty. For the maximum allowed duty of 250 ac-ft, continuous pumping would occur for 365 days at a rate of 0.345 cfs (154.9 gpm).

Stream Depletion Analysis – SW 1

Application type:	G
Application number:	19045
Well number:	2
Stream Number:	1
Pumping rate (cfs):	0.544973
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	2219	2219	2219	ft
Aquifer transmissivity	T	318.625	675.3	1339.4	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	14	14	14	ft
Aquitard thickness below stream	babs	7	7	7	ft
Aquitard specific yield	Sya	0.2	0.2	0.2	-
Stream width	ws	30	30	30	ft

