

This Groundwater Technical Review and the included analysis help inform the Water Rights Section's review of whether the proposed groundwater use will ensure the preservation of the public welfare, safety and health as described in ORS 537.525 and ORS 537.621. The Water Rights Section also considers other information sources when making its public interest determination, including watermaster input, any comments received, input from other agencies, other Commission rules not evaluated as part of the Groundwater Review, and other information.

PUBLIC INTEREST TECHNICAL REVIEW FOR GROUNDWATER APPLICATIONS

TO: Water Rights Section Date: 8/29/2025
FROM: Groundwater Section James Hootsmans
Reviewer's Name
SUBJECT: Application LL - 2014 Supersedes review of _____

Date Reviewed by GW Mgr. and Returned to WRSD: JTI 10/21/25

PUBLIC INTEREST PRESUMPTION: GROUNDWATER

OAR 690-310-0130 (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 if

(a) The proposed use is allowed in the applicable basin program established pursuant to ORS 536.300 and 536.340 or given a preference under ORS 536.310(12);

(b) Water is available;

(c) The proposed use will not injure other water rights; and

(d) The proposed use complies with the rules of the Commission.

Department staff review groundwater applications under OAR 690-310-0140 to determine whether the presumption is established and may modify or condition the proposed use 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:

A1. Application

Applicant's Name: TA Operating LLC County: Marion
Applicant(s) seek(s) 0.178 cfs from 1 well(s) in the Willamette Basin,
_____ subbasin
Proposed use Commercial - Truckstop Seasonality: year-round

A2. Well and aquifer data:

A2 a: Well identifiers, aquifer, rate, and location

POA Well	Well Log ID	Applicant's Well #	Proposed Aquifer	Proposed Rate (cfs)	Location (T/R-S QQ-Q)	Latitude	Longitude
1	MARI 63260	1	Columbia River Basalt	0.178	4S/1W-9 NE-SE	45.23680826	-122.8071785
2							

A2 b: Well construction information by depth below land surface. All units in feet.

POA Well	Seal		Casing		Filter Pack		Open / Perforation / Screen		Well Bottom
	Min	Max	Min	Max	Min	Max	Min	Max	
1	0	170	-1	170	0	N/A	170	221	221
2									

A2 c: Well construction information by elevation above mean sea level. All units in feet.

POA Well	Land Surface Elevation	Seal		Casing		Filter Pack		Open / Perforation / Screen		Well Bottom
		Min	Max	Min	Max	Min	Max	Min	Max	
1	196	196	26	197	26	196	N/A	26	-25	-25
2										
3										
4										

A2 d: Information relevant to water levels, including land surface elevation, depth of first water, recent annual high level, and reference levels for permit conditions

POA Well	Depth of First Water from Well Log (ft bls)	Shallowest Static Water Level (ft bls)	Most Recent Annual High WL		Reference Levels for:				Well Tests			
					RSGL	Permit Conditions			(max yield on well log)			
			Depth (ft bls)	WL Date	Depth (ft bls)	Depth (ft bls)	Date	Pro-visional?	Yield (gpm)	Draw-down (ft)	Test Type	Duration (hours)
1	28	N/A	N/A	N/A	N/A	N/A	N/A	N/A	125	N/A	A	3
2												
3												
4												

Use data from application for proposed wells.

“SWL” = static water level (most recent or representative SWL). “amsl” = above mean sea level. “bls” = below land surface

Comments: This proposed use and proposed point of appropriation (POA) were already approved as part of application G-17267. However, Permit G-16863 was canceled on December 6, 2024 as the water right permit was not perfected. No proof of completion was submitted in the 3 months thereafter. This Limited License application is proposing the same use in the same location.

A3. Description of hydrogeologic setting / conceptual model:

The applicant has proposed a well produces from water-bearing zones in the Columbia River Basalt Group (CRBG). The CRBG consists of a series of lava flows that range up to 800 feet thick in the vicinity of the proposed well. Although unconfined ground water occurs near the surface of the basalts, most water occurs in confined aquifers that occupy thin rubble zones (interflow zones) that occur at the contacts between lava flows. The interiors of the basalt flows generally have low porosity and permeability and act as confining beds. This physical geometry generally produces a stack of thin aquifers (interflow zones) separated by thick confining beds (flow interiors). This indicates a need to restrict the length of the open interval to prevent completion in multiple aquifers which would waste natural reservoir pressure through cross borehole flow.

The applicant's proposed POA is located in an area that has been experiencing rising water levels in the basalt aquifer system since April of 2002 when the City of Wilsonville switched from groundwater to surface water as their primary drinking water source (Conlon and others, 2005). Prior to the changeover, groundwater levels in the basalts were declining over a broad area. Since the changeover, water levels have been rising throughout the same area. Levels have risen at least 10 feet in nearby basalt wells, CLAC 1952 and MARI 53023 (see attached hydrograph). This suggests that basalt groundwater supplies should be adequate for the new use as long as the City of Wilsonville does not fully exercise its basalt water rights in the future. Our understanding is the city plans to maintain its current basalt water rights as an emergency backup supply and as an alternative supply to meet peak summer demands. If the city begins using their basalt wells regularly in the future, groundwater levels are likely to decline in the vicinity of the applicants proposed well.

The proposed POA is located about 2.5 miles outside of the Sherwood-Damascus-Wilsonville Ground Water Limited Area. The southern boundary of the limited area was established as the middle of the channel of the Willamette River, probably based on an assumption that the Willamette River was a flow boundary in the basalt groundwater system. However, this is clearly not the case since pumping from the City of Wilsonville's basalt wells has been shown to cause impacts on both sides of the river. This indicates that pumping from the well will likely affect the basalt aquifer system on both sides of the river, including portions within the limited area.

B. BASIN PROGRAM:

OAR 690-310-0130 (1)(a)

B1. ☐ **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: The applicant's proposed well will produce from a confined aquifer, so the pertinent basin rules do not apply.

B2. ☐ **Well(s) #** _____, _____, _____, _____, _____, are limited by an administrative restriction under the applicable basin program.

Comments: NA

C. WATER AVAILABILITY:

OAR 690-310-0130 (1)(b)

OAR 690-300-0010(57): "Water is Available" [...] means: [...]

- (d) The proposed groundwater source exhibits Reasonably Stable Groundwater Levels, as defined in OAR 690-008-0001; and
- (e) The total requested rate of groundwater allocation is obtainable by the expected yield of the well(s) proposed in the application given best available information; and
- (f) The proposed groundwater use does not have the Potential for Substantial Interference (OAR 690-009-0020(5)) with a surface water source [that does not have water available]

C1. Reasonably Stable Groundwater Levels

OAR 690-008-0001 (9): "Reasonably Stable Groundwater Levels" means that Annual High Water Levels, based on observed trends over time, remain within a range consistent with sustaining the function and character of a groundwater reservoir indefinitely, and:

- (a) The Annual High Water Levels as measured at one or more representative wells in a groundwater reservoir or part thereof:
- (A) indicate no decline or an average rate of decline of less than 0.6 feet per year over any immediately preceding averaging period with duration between 5 and 20 years. Four Annual High Water Levels are required to calculate the rate of change; one must have been measured in the year to which the evaluation of reasonably stable applies, and at least one must have been measured between 5 and 20 years prior; and
 - (B) have not declined by more than 25 feet from a reference level to the level in the year to which the evaluation of reasonably stable applies. The reference level shall be the highest known water level unless Annual High Water Levels have been measurably increased by human activity, in which case the Department may set a different reference level using best available information.
- (b) If water level data are insufficient to perform either test in (a) for a given year, then the Department will presume that groundwater levels are not reasonably stable unless:
- (A) the most recent evaluation of reasonably stable applies to a year within 5 years of the given year, in which case the Department may presume that the recent evaluation still applies; or
 - (B) groundwater has not yet been extracted or authorized for extraction from the groundwater reservoir, in which case the Department may presume that groundwater levels are reasonably stable.
- (c) The Department may evaluate Reasonably Stable Groundwater Levels for the year of the priority date of a groundwater right application or for a later year if more recent data are available.

- C1a. If part (a) of 690-008-0001(9) has been superseded by a basin program rule as per 690-008-0001(9)(B)(d) proceed to C1c. List one or more representative wells in the proposed groundwater reservoir or part thereof that have sufficient data to evaluate part (a) of 690-008-0001(9). Both the Rate (OAR 690-008-0001(9)(a)(A)) and Magnitude (OAR 690-008-0001(9)(a)(B)) tests for a given well must be passed in order to find that the water levels are Reasonably Stable. It is not necessary to include all POAs proposed on this application into this table, as long as they all access the same part of the groundwater reservoir and have the same reasonable stability status indicated in C1b below. If some POAs are found to be reasonably stable while others are not, then all the POAs on the application should be included in the table below, with their POA number indicated in the second column. In that situation, the reviewer does not need to indicate in this table which wells are considered representative for determining reasonable stability status for different POAs, but they should describe those relationships in the comments below.

Well Log ID	POA Well #	Reference Level for Evaluation of Reasonable Stability (ft bls)	Rate Test	Magnitude Test	Water Levels Reasonably Stable
MARI 67752	N/A	84.5	Pass	Pass	Reasonably Stable
CLAC 1952	N/A	50.0	Pass	Pass	Reasonably Stable
MARI 53023	N/A	71.3	Pass	Pass	Reasonably Stable

Comments: MARI 63260, the proposed POA on this application, did not have sufficient data to determine reasonable stability. The wells above are nearby basalt wells that are representative of the proposed POA.

C1b. Summary finding for this application. Check only one primary finding. It is possible that different proposed POAs could access different parts of the GW reservoir, and for some of those parts to be Reasonably Stable while others are not. In that case, summary finding for the application should be “Not Reasonably Stable,” and the reviewer should indicate which POAs access part(s) of the groundwater reservoir that are Reasonably Stable. OAR 690-008-0001(9)(a): *Annual High Water Levels as measured at one or more representative wells in a groundwater reservoir or part thereof*:

☒ **Are Reasonably Stable**

☐ Groundwater has not yet been extracted or authorized for extraction from the groundwater reservoir

☐ **Are Not Reasonably Stable**

☐ If some Proposed POAs are Reasonably Stable, list the Reasonably Stable POAs here: _____

☐ **Sufficient data are not available to evaluate reasonable stability**

List representative wells identified during review that could be measured in order to overcome a finding of Insufficient Data: _____

Comments: Water levels in the basalt aquifer have been recovering since the City of Wilsonville stopped using their full groundwater rights in 2002. Water levels may drop again if the City ever executes their full rights. For the purpose of this limited license, the water levels are reasonably stable.

C1c. OAR 690-008-0001(d): Evaluation for reasonably stable water levels per superseding basin program rules OAR 690-_____ for the _____ administrative basin.

Comments: N/A

C2. Well Yield

C2a. OAR 690-300-0010(57)(e): Is the total requested rate of groundwater allocation obtainable by the expected yield of the well(s) proposed in the application given best available information?

☒ **Yes** ☐ **No**

Comments: The median well yields for regional wells deeper than 150 feet below land surface, 160 gallons per minute (gpm), is double the rate of the proposed use of 80 gpm. Well yields ranged from less than 20 gpm to 1000 gpm (See Well Statistics below).

C3. Groundwater Interference with Surface Water

OAR 690-300-0010(57): “Water is Available”, when used in OAR 690-310-0080, 690-310-0010 and 690-310-0130, means [...]:
(f) *The proposed groundwater use does not have the Potential for Substantial Interference (OAR 690-009-0020(5)) with a surface water source [that is not available for further appropriation]*

OAR 690-009-0040: (1) *When evaluating a Proposed Groundwater Use, Hydraulic Connection and the Potential for Substantial Interference with a surface water source shall be determined by the Department according to these rules. These determinations shall be based upon the application of generally accepted hydrogeologic principles using best available information concerning the hydrologic system of interest and the well(s) under consideration.*

(a) *Appropriate information that is provided in the application or in the public comment period for the application shall be considered in the process of making these determinations.*

(b) *Best available information may include, but is not limited to, pertinent water well reports, aquifer test analyses, hydrologic and geologic studies and reports, groundwater and surface water elevation data, available numerical and analytical groundwater flow models, and any other information that is used in applying generally accepted hydrogeologic principals and methodologies.*

(2) *A determination of Hydraulic Connection is a prerequisite for a determination of the Potential for Substantial Interference.*

(3) *A determination of the Potential for Substantial Interference with a surface water source shall at a minimum include application of the generally accepted hydrogeological principles described in “Streamflow Depletion by Wells – Understanding and Managing the Effects of Groundwater Pumping on Streamflow” by P. M. Barlow and S. A. Leake, 2012.*

(4) *The Potential for Substantial Interference with a surface water source exists if the well(s) under consideration will, over the full term of the proposed or authorized groundwater use, obtain water from Streamflow Depletion.*

OAR 690-009-0020(4): “Hydraulic Connection” means saturated conditions exist allowing water to move between two or more sources of water, either between groundwater and surface water or between groundwater sources.

OAR 690-009-0020 (7) “Streamflow Depletion” means a reduction in the flow of a surface water source due to pumping a hydraulically connected groundwater source. Streamflow Depletion encompasses:

- (a) captured groundwater that would otherwise discharge to a surface water source; or
 (b) induced infiltration from a surface water source to the hydraulically connected groundwater source.

C3a. OAR 690-009-0020(5): *Potential for Substantial Interference*", or "PSI", means that a groundwater use will cause streamflow depletion based on the assessments described in OAR 690-009-0040, and therefore may cause or has caused substantial interference with or undue interference with a surface water source, based on the definitions in OAR 690-008-0001.

Summary of surface water sources evaluated for hydraulic connection and Potential for Substantial Interference. For hydraulic connection and potential for substantial interference, a value of 1 means yes, and blank means no.

POA Well	WRD Streamcode	Streamcode Surface Water Name	Water Availability Basin (WAB)	WAB Watershed ID	Hydraulically Connected	Potential for Substantial Interference
1	02114004100020040020	SENECAL CR	MILL CR	30200901	No	No
1	02114004100020040020020	DEER CR	MILL CR	30200901	No	No

Comments: In the vicinity of the proposed well, the basalt aquifer system is found below the lowest elevation of surface water sources. If the well is continuously cased and sealed at least 20 feet into hard, dense basalt, it will not be in hydraulic connection with local surface water sources.

List all surface water sources identified to have PSI and their associated Water Availability Basin:

WRD Streamcode	Streamcode Surface Water Name	Water Availability Basin (WAB)	WAB Watershed ID

Comments: The construction of the proposed POA will limit hydraulic connection and therefore no PSI.

D. INJURY:

OAR 690-310-0130 (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 if...(c) The proposed use will not injure other water rights.

To make a finding of injury to an existing water right, the Department must make a finding of “Substantial Interference” as defined in OAR 690-008-0001(10). The finding of “Substantial Interference” with a surface water right is made by the Water Rights Services Division based on the evaluation in section C3. Sections D1 and D2, below, address the finding of “Substantial Interference” with a groundwater right.

OAR 690-008-0001(10): “Substantial or Undue interference”, means the spreading of the cone of depression of a well to intersect a surface water source or another well, or the reduction of the groundwater levels as a result of pumping or otherwise extracting groundwater from an aquifer, which contributes to:

- (b) The groundwater level being drawn down to the Economic Pumping Level of the senior appropriator(s); or*
- (c) One or more of the senior groundwater appropriators being unable to obtain either the permitted or customary quantity of groundwater, whichever is less, from a reasonably efficient well that fully penetrates the aquifer where the aquifer is relatively uniformly permeable. However, in aquifers where flow is predominantly through fractures, full penetration may not be required as a condition of substantial or undue interference.*

D1a. OAR 690-008-0001(10): Will the proposed groundwater use result in substantial or undue interference with an existing groundwater user?

☐ Yes ☐ No ☒ **No, as long as the permit is conditioned as indicated in item F below.**

Comments: The proposed use was already approved in the previous application and Permit G16863. Since that time, a few nearby wells have been drilled, including nearby basalt well MARI 67752. Mari 67752 is approximately 1200 feet away. Modeling indicates drawdown at the proposed rate would be less than 11 feet. Therefore Mari 67752 should be able to get its full allocated right (See Theis Time-Drawdown below).

E. OTHER RULES OF THE COMMISSION:

OAR 690-310-0130 (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 if...(d) The proposed use complies with the rules of the Commission.

E1. OAR 690-200, 690-210 and 690-215: Well Construction

Identify any notable well construction deficiencies or hydrogeologic considerations to support review by Well Construction & Compliance.

E1a. Well #: 1 Logid: MARI 63260

E1b. Well construction deficiency or other comment is described as follows: N/A

E2. OAR 690-310-0260: Water Rights Within or Above State Scenic Waterways

E2a. Are any of the proposed sources of appropriation hydraulically connected to a State Scenic Waterway or its tributaries?
☐ Yes ☒ No

Hydraulically connected State Scenic Waterway: _____
 Comments: _____

E2b. Per ORS 390.835, is the Groundwater Section able to calculate ground water interference with surface water that contributes to a Scenic Waterway?

☐ **Yes. The calculated interference is distributed below:**

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 "No" option below, 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

☐ **No. 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.**

Comments: _____

E3. Other Relevant Rules of the Commission:

Comments: _____

F. RECOMMENDED MODIFICATIONS OR CONDITIONS:

OAR 690-310-0140(2): *If the Department determines that the presumption is not established, the Department shall determine whether the proposed use will impair or adversely affect the public welfare, safety and health under ORS 537.525 and may either:*

- (a) *Propose denial of the application upon a finding that the use will impair or adversely affect the public welfare, safety and health;*
 or
 (b) *Make specific findings to demonstrate that even though the presumption is not established, the proposed use will not impair or adversely affect the public welfare, safety and health and propose approval of the application with appropriate modifications or conditions.*

Based on the findings in sections A-D above, the following conditions are recommended if the permit is approved:

To protect senior users and the groundwater resource, the following Special Conditions are recommended:

1. **Any well authorized as a Point of Appropriation (POA) under this or subsequent permits shall be open to a single aquifer of the Columbia River Basalt Group and shall meet the applicable well construction standards (OAR 690-200 and OAR 690-210). In addition, the open interval in each well shall be no greater than 100 feet. An open interval of greater than 100 feet may be allowed if substantial evidence of a single aquifer completion can be demonstrated to the satisfaction of the Department Hydrogeologists, using information from a video log, downhole flowmeter, water chemistry and temperature, or other downhole geophysical methods. These methods shall characterize the nature of the basalt rock and assess whether water is moving in the borehole. Any discernable movement of water within the well bore when the well is not being pumped shall be assumed as evidence of the presence of multiple aquifers in the open interval. Single aquifer completion for any well with an open interval greater than 100 ft should be demonstrated to the satisfaction of the Department Hydrogeologists prior to authorization as a POA under this or subsequent permits.**

If, during well construction or repair, it becomes apparent that the well can be constructed to eliminate aquifer commingling or interference with hydraulically connected streams in a manner other than specified in this permit, the permittee can contact the Department Hydrogeologist for this permit or the Ground Water/Hydrology Section Manager to request approval of such construction. The request shall be in writing and shall include a rough well log and a proposed construction design for approval by the Department. The request can be approved only if it is received and reviewed prior to placement of any new permanent casing and sealing material. If the request is made after casing and seal are placed, the requested modification will not be approved. If approved, the new well depth and construction specifications will be incorporated into any certificate issued for this permit.

2. **For any well constructed under this or subsequent permits, a dedicated water-level measuring tube shall be installed in each well. The measuring tube shall meet the standards described in OAR 690-215-0060. When requested, access to the wells shall be provided to Department staff in order to make water-level measurements.**
3. **For any wells constructed or deepened under this or subsequent permits, the applicant shall coordinate with the driller to ensure that drill cuttings are collected at 10 ft intervals and at changes in formation in each well. A split of each sampled interval shall be provided to the Department.**
4. **If any geologic and hydrogeologic reports are completed for the permittee during the development of permitted wells, including geophysical well logs and borehole video logs, then copies of the reports shall be provided to the Department. Except for borehole video logs, two paper copies or a single electronic copy shall be provided of each report. Digital tables of any data shall be provided upon request.**

These conditions should be applied in addition to standard conditions for basalt wells in the Willamette Basin: (7RLN) Willamette CRB condition 7RLN with XX = 15 and YY = 15, Large water use reporting.

REFERENCES:

Application Files: G-17267, LL-2014

Gannett, Marshall W., and Caldwell, Rodney R., 1998, Geologic Framework of the Willamette Lowland Aquifer System, Oregon and Washington: U. S. Geological Survey Professional Paper 1424-A, 32p, 8 plates.

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

Woodward and others, 1998, Hydrogeologic framework of the Willamette lowland aquifer system, Oregon and Washington: U.S. Geological Survey Professional Paper 1424-B,

Well Location Map

Legend

- appl_nbr
POA Location
- appl_nbr
1/4 mi Buffer 2014
- appl_nbr
1 mi Buffer 2014
- gw_working_location_h...
Quaternary-Late Tertiary Sediment Aquifers
- Quaternary-Late Tertiary Volcanic and Volcaniclastic Rock Aquifers
- Late Tertiary/Basalt Aquifers
- Unknown

Map Labels: MARI 302, MARI 295, MARI 50008, MARI 264, MARI 69848, MARI 51133, MARI 287, MARI 56999, MARI 288, MARI 56906, MARI 259, MARI 53448, MARI 58604, MARI 359, MARI 53703, MARI 50620, MARI 392, MARI 390, MARI 391, MARI 63260, MARI 67752, MARI 65249, MARI 51663, MARI 365, MARI 393, MARI 366, MARI 400, MARI 70, MARI 401, MARI 405, MARI 420, MARI 72, MARI 539, MARI 552, MARI 543, MARI 551, MARI 55447, MARI 700, MARI 719, CLAC 1952, Reservoir, Baldock, Mill Creek, Roanoke, North marsh, Gies Mineral Spring, Deer Creek, Weir Creek, Fargo, Yergen, E, 17, 16, 15, 14, 13, 12, 11, 10, 9, 8, 7, 6, 5, 4, 3, 2, 1, 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100.

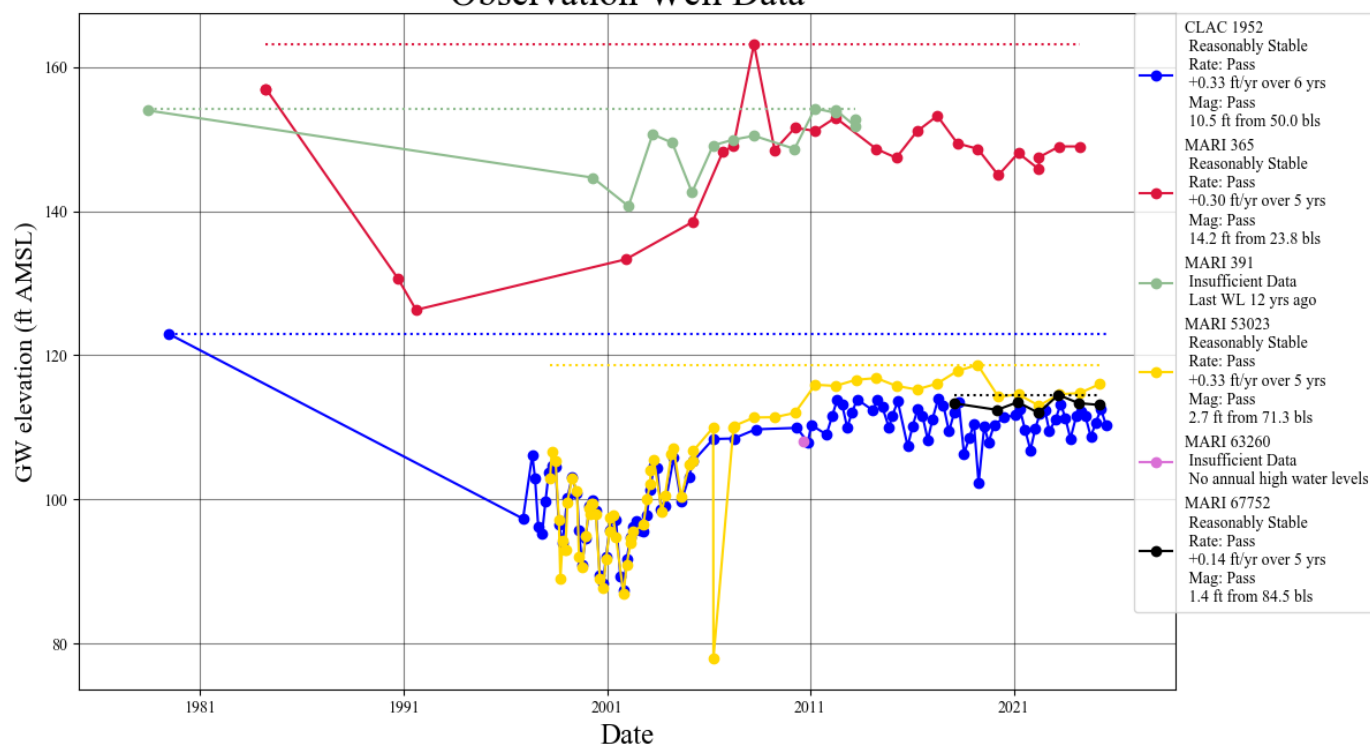
Scale: 0, 1,320, 2,640, 3,960, 5,280 Feet

Inset Map: WILLAMETTE VALLEY, Newberg, Salem, Miles 0, 10

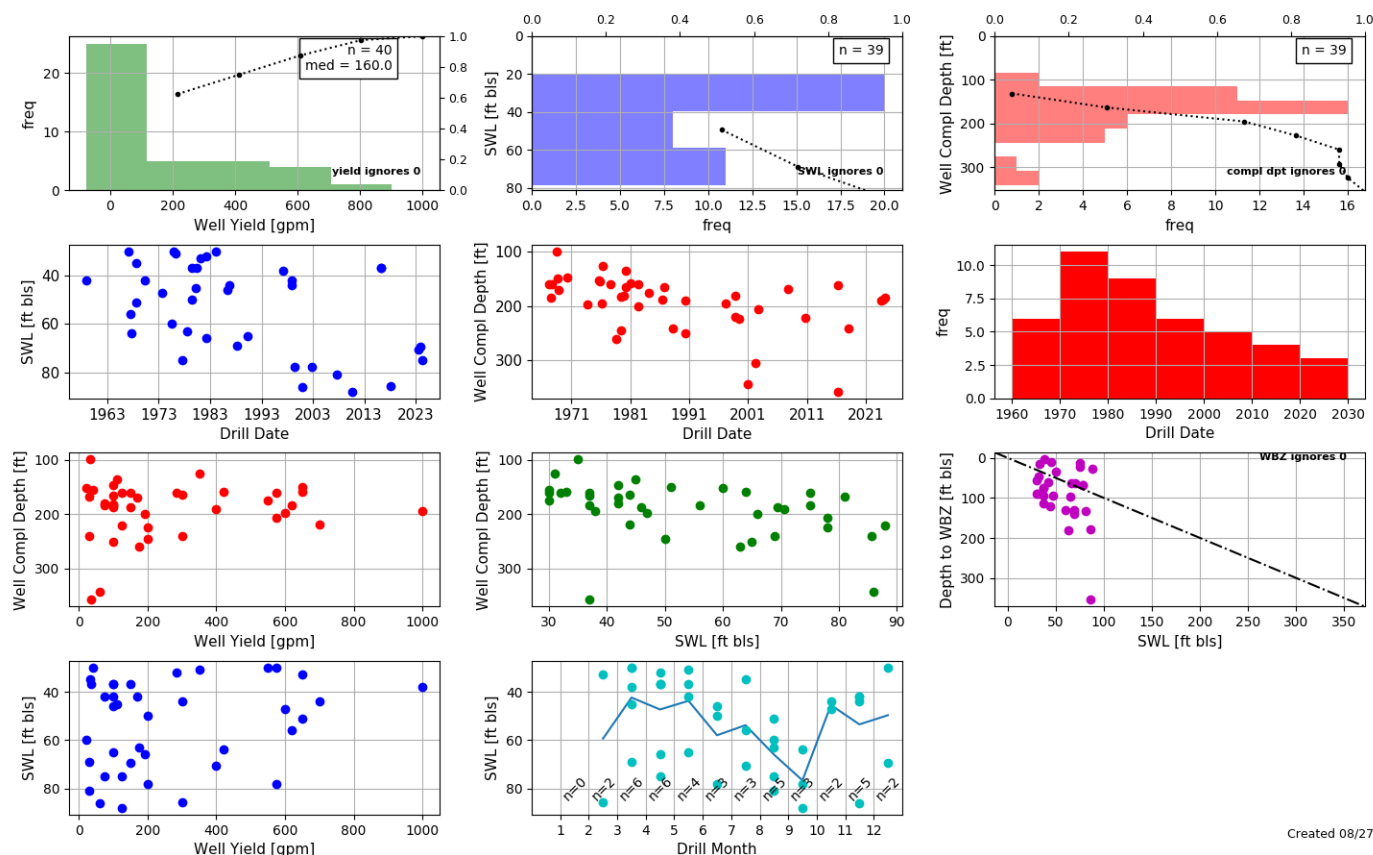
Service Layer Credits: Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

Water-Level Measurements in Nearby Wells and Reasonably Stable Evaluations

Observation Well Data



Well Statistics (for nearby wells greater than 150 feet below mean sea level)



Created 08/27/2025

Theis Time-Drawdown

Theis Time-Drawdown Worksheet v.3.00

Calculates Theis nonequilibrium drawdown and recovery at any arbitrary radial distance, r , from a pumping well for 3 different T values and radial distance, r , from a pumping well for 3 different T values and 2 different S values.
Written by Karl C. Wozniak September 1992. Last modified December 17, 2019

Input Data:	Var Name	Scenario 1	Scenario 2	Scenario 3	Units	
Total pumping time	t		365		d	
Radial distance from pumped well:	r		1200		ft	Q conversions
Pumping rate	Q		0.178		cfs	79.89 gpm
Hydraulic conductivity	K	5	50	100	ft/day	0.18 cfs
Aquifer thickness	b		100		ft	10.68 cfm
Storativity	S ₁		0.003			15,379.20 cfd
	S ₂		0.0002			0.35 a/d
Transmissivity Conversions	T _{r2pd}	500	5000	10000	ft ² /day	
	T _{ft2pm}	0.347222	3.472222	6.944444	ft ² /min	
	T _{gpdft}	3740	37400	74800	gpd/ft	
						Recalculate

Use the Recalculate button if recalculation is set to manual

