Groundwater Application Review Summary Form

Application # G- _19397_

GW Reviewer _Stacey Garrison_ Date Review Completed: _5/23/2024_

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 **_May 25 2024_**

TO: **Application** G-**_19397_**

FROM: **GW:** **_Stacey Garrison_**
(Reviewer's Name)

SUBJECT: Scenic Waterway Interference Evaluation

☐ **YES**
☒ **NO**

The source of appropriation is hydraulically connected to a State Scenic Waterway or its tributaries

☐ **YES**
☒ **NO**

Use the Scenic Waterway Condition (Condition 7J)

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

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

DISTRIBUTION OF INTERFERENCE

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

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

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

PUBLIC INTEREST REVIEW FOR GROUNDWATER APPLICATIONS

TO: Water Rights Section Date 5/23/2024
FROM: Groundwater Section Stacey Garrison
Reviewer's Name
SUBJECT: Application G- **19397** 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: **Westwood Farms, Inc (John Coleman)** County: **Marion**

A1. Applicant(s) seek(s) 0.61 cfs from 2 well(s) in the Willamette Basin, Mainstem Willamette River subbasin

A2. Proposed use Supplemental Irrigation Seasonality: March 1 to October 31

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

POA Well	Logid	Applicant's Well #	Proposed Aquifer*	Proposed Rate(cfs)	Location (T/R-S QQ-Q)	Location, metes and bounds, e.g. 2250' N, 1200' E fr NW cor S 36
1	MARI 4850	1	Alluvial	0.61	6S/3W-11 NE-NW	462' S, 2574' E fr NW cor S 11
2	PROP 473	2	Alluvial	0.61	6S/3W-2 SE-SW	285' N, 285' W fr N ¼ cor S 11

* Alluvium, CRB, Bedrock

POA Well	Well Depth (ft)	Seal Interval (ft)	Casing Intervals (ft)	Liner Intervals (ft)	Perforations Or Screens (ft)	Well Yield (gpm)	Drawdown (ft)	Test Type
1	44	UNK	0 to 44			600*	10	UNK
2	50 (est)	0 to 20 (est)	0 to 50 (est)		30 to 50 (est)			

*Well log MARI 4850 reports a yield of 600 gpm, but the pump capacity reported is 300 gpm. It's not clear how the yield of 600 gpm was obtained.

POA Well	Land Surface Elevation at Well (ft amsl)	Depth of First Water (ft bls)	SWL (ft bls)	SWL Date	Reference Level (ft bls)	Reference Level Date
1	114[c]				12.2[b]	3/23/2002[b]
2	115[c]				13.2[b]	3/23/2002[b]

Use data from application for proposed wells.

A4. **Comments:** The proposed POA/POU is ~5 miles north of Keizer, Oregon.
[a] There is a discrepancy between the mapped location of the POA as indicated on the applicant's map and the metes-and-bounds description using the Department's PLSS projection. The mapped location is coincident with the Department's existing location for POA 1 (MARI 4850), the metes-and-bounds location is 263 ft southeast; the mapped location is used. The metes-and-bounds location for POA 2 (PROP 473) is 350 ft east of the mapped location; the mapped location is used.
[b] Reference level extrapolated from nearby well MARI 4781.
[c] Well head elevation estimated based on LIDAR measurements at proposed well location (Watershed Sciences, 2009).

A5. ☐ **Provisions of the** Willamette Basin rules relative to the development, classification and/or management of groundwater hydraulically connected to surface water ☐ **are**, *or* ☒ **are not**, activated by this application. (Not all basin rules contain such provisions.)
Comments: The proposed aquifer is unconfined, however there are no streams or surface water sources within a ¼ mile. Per OAR 690-502-0240, the relevant basin rules 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) **7RLA, 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): _____

B3. **Groundwater availability remarks:** The proposed POAs/POU are located on Holocene floodplain deposits of the Willamette River, characterized by discontinuous sand and loose gravel (O'Connor et al., 2001; Piper, 1942). These deposits are part of the Upper Sedimentary Unit with high porosity and well yields (Conlon et al., 2005). This hydrogeologic unit is the top of the Willamette Aquifer in this area and up to 50 ft thick (O'Connor et al., 2001). Underlying and interfingering with the Holocene flood deposits are Quaternary surficial deposits known as the Willamette Silt; the Willamette Silt is primarily associated with rhythmically layered clay, silt, sand and gravel from the Missoula Floods (Price, 1967; Gannett and Caldwell, 1998; O'Connor et al., 2001; Wells et al., 2020). The Willamette Silt is reported in drillers logs as sand or silty clay, in tones of blue and yellow (Hampton, 1972; Swanson et al., 1993; Gannett and Caldwell, 1998; Conlon et al., 2005). The Willamette silt is approximately 60 ft thick in this area (Gannet and Caldwell, 1998). Given that the Willamette River has re-worked some portions of the Holocene floodplain deposits since the deposition of the Willamette Silt, any confining layers are likely to be discontinuous due to lateral and vertical accretion action by the river (O'Connor et al 2001). All the well logs within one mile of the POAs with a recorded static water level (SWL) have a SWL within ten feet of the annual low water table elevation (Gannett and Caldwell, 1998; Woodward et al., 1998). The Holocene floodplain gravel deposits have a strong hydraulic connection to the Willamette River (Conlon et al., 2005; Gannet and Caldwell, 1998).
A review of statistics for nearby well records was completed and compared with the proposed rate of 0.61 cfs (273.8 gpm) for this application (see Well Statistics). The proposed rate of use of 0.61 cfs (273.8 gpm) is likely within the capacity of the groundwater resource; median reported well yield is 75 gpm, and the maximum reported yield is 1,200 gpm. The proposed rate for this application is 365% of the median and 23% of the maximum reported yield. Not all of these wells are likely completed in the Holocene floodplain deposits, but the loose, gravel-dominated deposits of the Holocene floodplain deposits are anticipated to have the higher reported yields for the Willamette aquifer (Woodward et al., 1998). In addition, the pumping rates of the surrounding wells within one mile range from 22 to 900 gpm.

Water level trends for nearby (within 2 miles of POAs) wells that utilize alluvial aquifers appear to be stable (see Water Levels Measurements in Nearby Wells). All the selected wells are located on Holocene floodplain deposits, with nearly all water levels within 10 feet of the elevation of the Willamette River levels (Gannett and Caldwell, 1998; Woodward et al., 1998). Wells completed in the Holocene floodplain deposits are closely tied to the stream stage of the Willamette River (Conlon et al., 2005). As a result, groundwater levels in the Holocene floodplains deposits are anticipated to be stable in the long-term, but seasonal fluctuations may be pronounced, particularly in late summer (see Gage Height for USGS 14191000). It appears that the proposed use is within the capacity of the resource.

The nearest groundwater user to POA 1 (**MARI 4850**) and POA 2 (**PROP 473**) that is not on a taxlot with the same owner is **MARI 4801/4800** (POA on Claim GR 3327), with an estimated location 937 ft northeast of POA 1 (**MARI 4850**) and 487 ft northeast of POA 2 (**PROP 473**), at an elevation of ~119 ft msl. **MARI 4801/4800** is completed to a depth of 55 ft bls (64 ft amsl). It is likely the proposed use would cause some degree of well-to-well interference with **MARI 4801/4800**. To assess the degree of drawdown, a Theis drawdown analysis was conducted for the proposed use (see Theis Drawdown Analysis). Because only the distance is expected to vary between the two POAs (**MARI 4850** and **PROP 473**) and the nearest groundwater user (**MARI 4801/4800**), only the POA-nearest user pair with the shortest distance (in this case, POA 2/**PROP 473** and **MARI 4801/4800**) was analyzed quantitatively for well-to-well interference. All other POA-nearest user pairs would presumably result in less interference due to their greater separation. Results indicate that the proposed use is not likely to cause well-to-well interference with **MARI 4801/4800** 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 available in the amounts requested and within capacity of the resource. The conditions specified in B1(d)(i) and B2(c) are recommended to protect senior users and the groundwater resource.

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

C. GROUNDWATER/SURFACE WATER CONSIDERATIONS, OAR 690-09-040

C1. **690-09-040 (1):** Evaluation of aquifer confinement:

Well	Aquifer or Proposed Aquifer	Confined	Unconfined
1	**Alluvial**	☐	☒
2	**Alluvial**	☐	☒

Basis for aquifer confinement evaluation: POA 1 (**MARI 4850**) is 44 ft deep and POA 2 (**PROP 473**) is anticipated to be 50 ft deep. Given these depths and the thickness of the Holocene deposits, the existing and proposed well are both likely to utilize the unconsolidated gravel and/or sand water-bearing zone of the Holocene floodplain deposits, which are mapped at the surface. Some wells in the area appear to exhibit localized confining layers, however, a continuous confining layer is not likely given the geomorphology of the Willamette River (Wallick et al., 2013). Most wells within one mile of the POAs[a] report a SWL that is near the elevation of the water table (Gannett and Caldwell, 1998; Woodward et al., 1998) and the Willamette River. The POAs are anticipated to develop an unconfined aquifer.

[a] MARI 4799, MARI 4852, MARI 4854, MARI 4809, MARI 4840, MARI 4815, MARI 4788, MARI 4801, MARI 4814, MARI 4851, MARI 64375, MARI 64903, MARI 4848, WASH 81694, MARI 59119

C2. **690-09-040 (2) (3):** Evaluation of distance to, and hydraulic connection with, surface water sources. All wells located a horizontal distance less than ¼ mile from a surface water source that produce water from an unconfined aquifer shall be assumed to be hydraulically connected to the surface water source. Include in this table any streams located beyond one mile that are evaluated for PSI.

Well	SW #	Surface Water Name	GW Elev ft msl	SW Elev ft msl	Distance (ft)	Hydraulically Connected? YES	NO	ASSUMED	Potential for Subst. Interfer. Assumed? YES	NO
1	**1**	**Willamette River**	**95 to 109 [a]**	**80 to 96 [b]**	**9,040**	☒	☐	☐	☐	☒
2	**1**	**Willamette River**	**95 to 109 [a]**	**80 to 96 [b]**	**8,370**	☒	☐	☐	☐	☒

Basis for aquifer hydraulic connection evaluation: Groundwater SWL in nearby wells ranges from 95 to 109 ft msl[a], and the reported regional water table elevation in the vicinity is 100 ft msl (Gannett and Caldwell, 1998; Woodward et al., 1998). The streambed of SW 1 (Willamette River) is 81 to 96 ft amsl[b]. The local groundwater is hydraulically connected to SW 1 (Conlon et al., 2005).

[a] Groundwater elevation calculated from static water level reported in well logs and/or latest static water level reported for MARI 4799, MARI 4852, MARI 4854, MARI 4809, MARI 4840, MARI 4815, MARI 4788, MARI 4801, MARI 4814, MARI 4851, MARI 64375, MARI 64903, MARI 4848, WASH 81694, MARI 59119 and well head elevations estimated based on LIDAR measurements at existing well locations (Watershed Sciences, 2009).

[b] Willamette River bed elevation from Willamette River Bathymetric Survey (USGS 2002).

Water Availability Basin the well(s) are located within: WILLAMETTE R>COLUMBIA R-AB MOLALLA R

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?
		☐	☐			☐		☐		☐

Comments: N/A-surface water source is greater than 1 mile away.

C3b. **690-09-040 (4):** Evaluation of stream impacts by total appropriation for all wells determined or assumed to be **hydraulically connected and less than 1 mile** from a surface water source. **Complete only if Q is distributed among wells**. Otherwise same evaluation and limitations apply as in C3a above.

	SW #		Qw > 5 cfs?	Instream Water Right ID	Instream Water Right Q (cfs)	Qw > 1% ISWR?	80% Natural Flow (cfs)	Qw > 1% of 80% Natural Flow?	Interference @ 30 days (%)	Potential for Subst. Interfer. Assumed?
			☐			☐		☐		☐
			☐			☐		☐		☐

Comments: N/A-Q 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
1,2	**1**	**%**	**%**	**%**	**%**	**%**	**%**	**%**	**%**	**%**	**%**	**%**	**%**
Well Q as CFS				**0.61**	**0.61**	**0.61**	**0.61**	**0.61**	**0.61**	**0.61**	**0.61**		
Interference CFS				**<0.7**	**<0.7**	**<0.7**	**<0.7**	**<0.7**	**<0.7**	**<0.7**	**<0.7**		
(A) = Total Interf.		**<0.7**	**<0.7**	**<0.7**	**<0.7**	**<0.7**	**<0.7**	**<0.7**	**<0.7**	**<0.7**	**<0.7**	**<0.7**	**<0.7**
(B) = 80 % Nat. Q		**21,400**	**23,200**	**22,400**	**19,900**	**16,600**	**8,740**	**4,980**	**3,830**	**3,890**	**4,850**	**10,200**	**19,300**
(C) = 1 % Nat. Q		**214**	**232**	**224**	**199**	**166**	**87.4**	**49.8**	**38.3**	**38.9**	**48.5**	**102**	**193**
(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: 1% of the 80%-exceedance natural flows for the WAB are much greater than the maximum proposed rate, so PSI is not assumed and stream-depletion modeling was not necessary.

C4b. **690-09-040 (5) (b) The potential to impair or detrimentally affect the public interest is to be determined by the Water Rights Section.**

C5. ☐ **If properly conditioned**, the surface water source(s) can be adequately protected from interference, and/or groundwater use under this permit can be regulated if it is found to substantially interfere with surface water:

i. ☐ The permit should contain condition #(s)_____;

ii. ☐ The permit should contain special condition(s) as indicated in "Remarks" below;

C6. **SW / GW Remarks and Conditions:** _____

References Used:

Application file: G-19397

Pumping Test Files: MARI 5336, POLK 100, POLK 1116, POLK 1127

Well Reports: MARI 4799, MARI 4852, MARI 4854, MARI 4809, MARI 4840, MARI 4815, MARI 4788, MARI 4801, MARI 4814, MARI 4851, MARI 64375, MARI 64903, MARI 4848, WASH 81694, MARI 59119, MARI 4850, MARI 4793, MARI 4792

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Conlon, T.D., Wozniak, K.C., Woodcock, D., Herrera, N.B., Fisher, B.J., Morgan, D.S., Lee, K.K., and Hinkle, S.R., 2005, Ground-water hydrology of the Willamette Basin, Oregon: U.S. Geological Survey Scientific Investigations Report 2005-5168.

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

Hampton, E.R. 1972. Geology and Ground Water of the Molalla-Salem Slope Area, Northern Willamette Valley, Oregon. USGS Water Supply Paper 1997.

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

Morris, D.A. and A.I. Johnson, 1967. Summary of hydrologic and physical properties of rock and soil materials as analyzed by the Hydrologic Laboratory of the U.S. Geological Survey, U.S. Geological Survey Water-Supply Paper 1839-D, 42p

O'Connor, J.E., Sarna-Wojcick, A., Woznikak, 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.

Piper, A.M. 1942. Ground-water resources of the Willamette Valley, Oregon. USGS Water Supply Paper 890.

United States Geological Survey, 2002, Willamette River Bathymetric Survey-Willamette River Water Temperature Investigation: Willamette River, elevation data. Obtained from <https://or.water.usgs.gov/projs_dir/will_tmdl/main_stem_bth.html> on March 23 2022.

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

United States Geological Survey, 2014, Mission Bottom quadrangle, Oregon [map], 1:24,000, 7.5 minute topographic series, U.S. Department of the Interior, Reston, Virginia.

Wallick, J.R., Jones, K.L. O'Connor, J.E., Keith, M.K., Hulse, David, and Gregory, S.V., 2013, Geomorphic and vegetation processes of the Willamette River floodplain, Oregon—Current understanding and unanswered questions: U.S. Geological Survey Open-File Report 2013-1246., 70 p.

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

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

D. WELL CONSTRUCTION, OAR 690-200

D1. **Well #:** _____ **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

Oregon Water Resources Department
Water Availability Analysis

Main Help Return Contact Us

Water Availability Analysis
Detailed Reports

WILLAMETTE R > COLUMBIA R - AB MOLALLA R
WILLAMETTE BASIN
Water Availability as of 5/20/2024

Watershed ID #: 182 (Map)
Date: 5/20/2024

Exceedance Level: 80%
Time: 3:43 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	21,400.00	2,300.00	19,100.00	0.00	1,500.00	17,600.00
FEB	23,200.00	7,490.00	15,700.00	0.00	1,500.00	14,200.00
MAR	22,400.00	7,260.00	15,100.00	0.00	1,500.00	13,600.00
APR	19,900.00	6,910.00	13,000.00	0.00	1,500.00	11,500.00
MAY	16,600.00	4,250.00	12,300.00	0.00	1,500.00	10,800.00
JUN	8,740.00	1,980.00	6,760.00	0.00	1,500.00	5,260.00
JUL	4,980.00	1,810.00	3,170.00	0.00	1,500.00	1,670.00
AUG	3,830.00	1,650.00	2,180.00	0.00	1,500.00	681.00
SEP	3,890.00	1,390.00	2,500.00	0.00	1,500.00	997.00
OCT	4,850.00	754.00	4,100.00	0.00	1,500.00	2,600.00
NOV	10,200.00	888.00	9,310.00	0.00	1,500.00	7,810.00
DEC	19,300.00	975.00	18,300.00	0.00	1,500.00	16,800.00
ANN	15,200,000.00	2,250,000.00	13,000,000.00	0.00	1,090,000.00	11,900,000.00

Oregon Water Resources Department
Water Availability Analysis

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Water Availability Analysis
Detailed Reports

WILLAMETTE R > COLUMBIA R - AB MOLALLA R
WILLAMETTE BASIN
Water Availability as of 5/20/2024

Watershed ID #: 182 (Map)
Date: 5/20/2024

Exceedance Level: 80%
Time: 3:53 PM

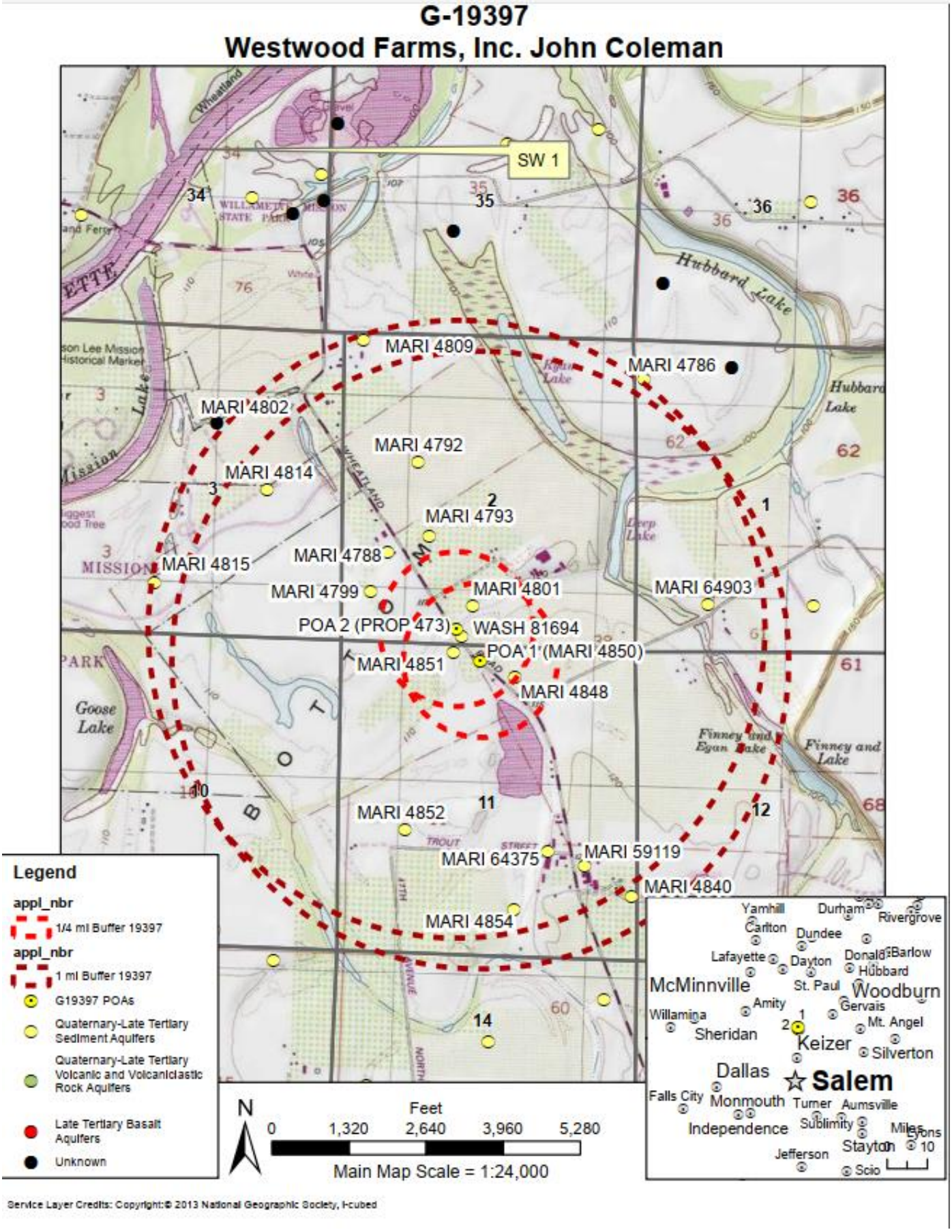
Water Availability Calculation | Consumptive Uses and Storages | Instream Flow Requirements | Reservations
Water Rights | Watershed Characteristics

Detailed Report of Instream Flow Requirements

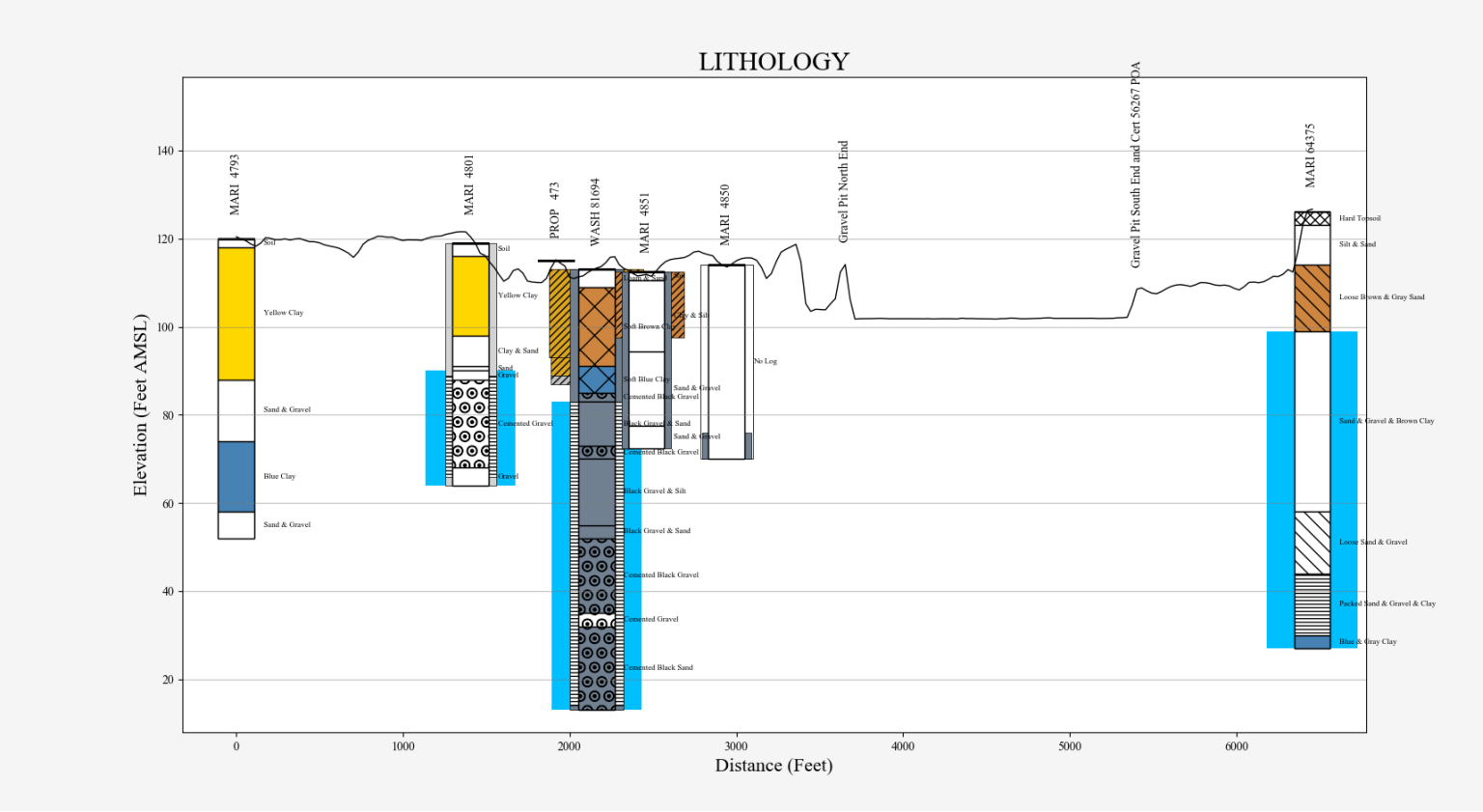
Instream Flow Requirements in Cubic Feet per Second

Application #	Status	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
MF182A	APPLICATION	1,500.00	1,500.00	1,500.00	1,500.00	1,500.00	1,500.00	1,500.00	1,500.00	1,500.00	1,500.00	1,500.00	1,500.00
Maximum		1,500.00	1,500.00	1,500.00	1,500.00	1,500.00	1,500.00	1,500.00	1,500.00	1,500.00	1,500.00	1,500.00	1,500.00

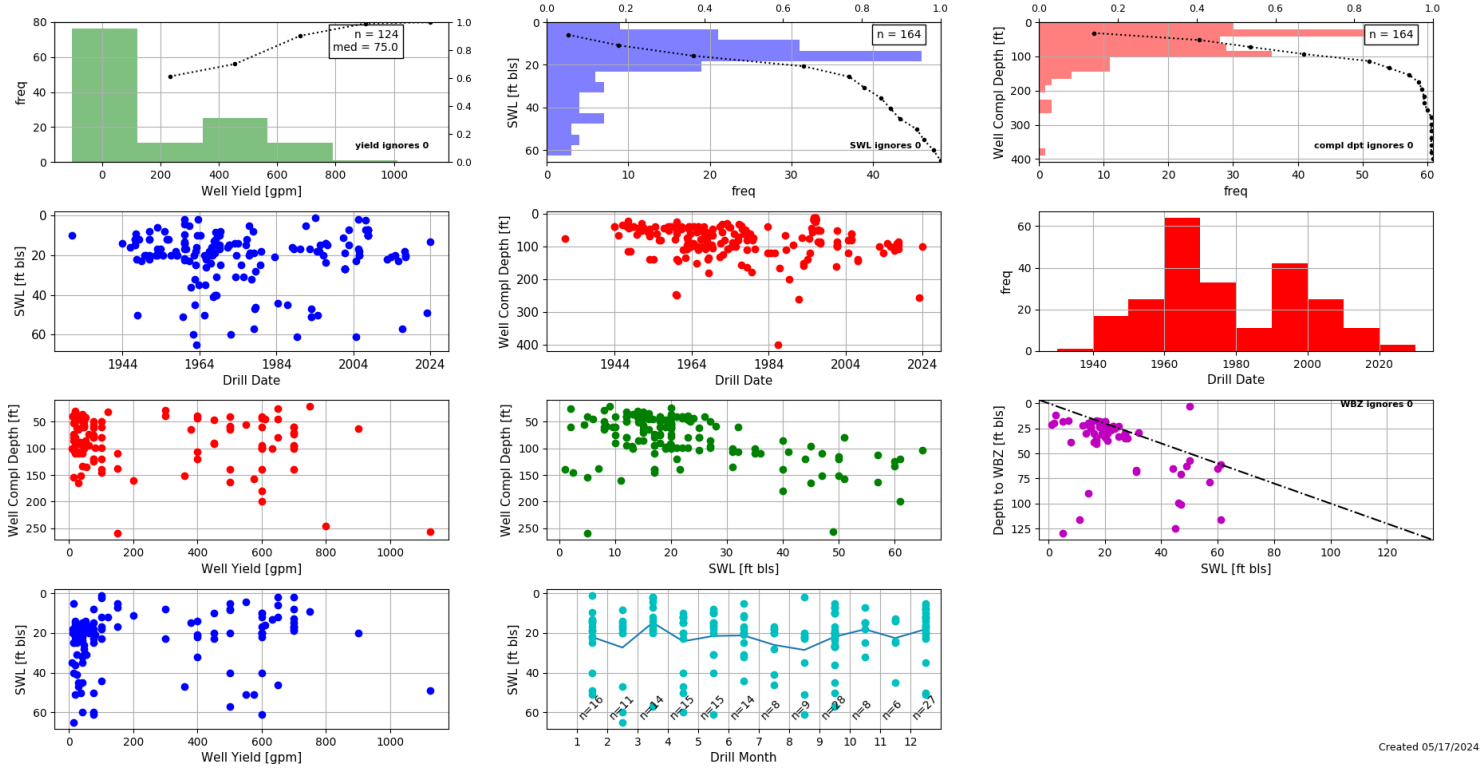
Well Location Map



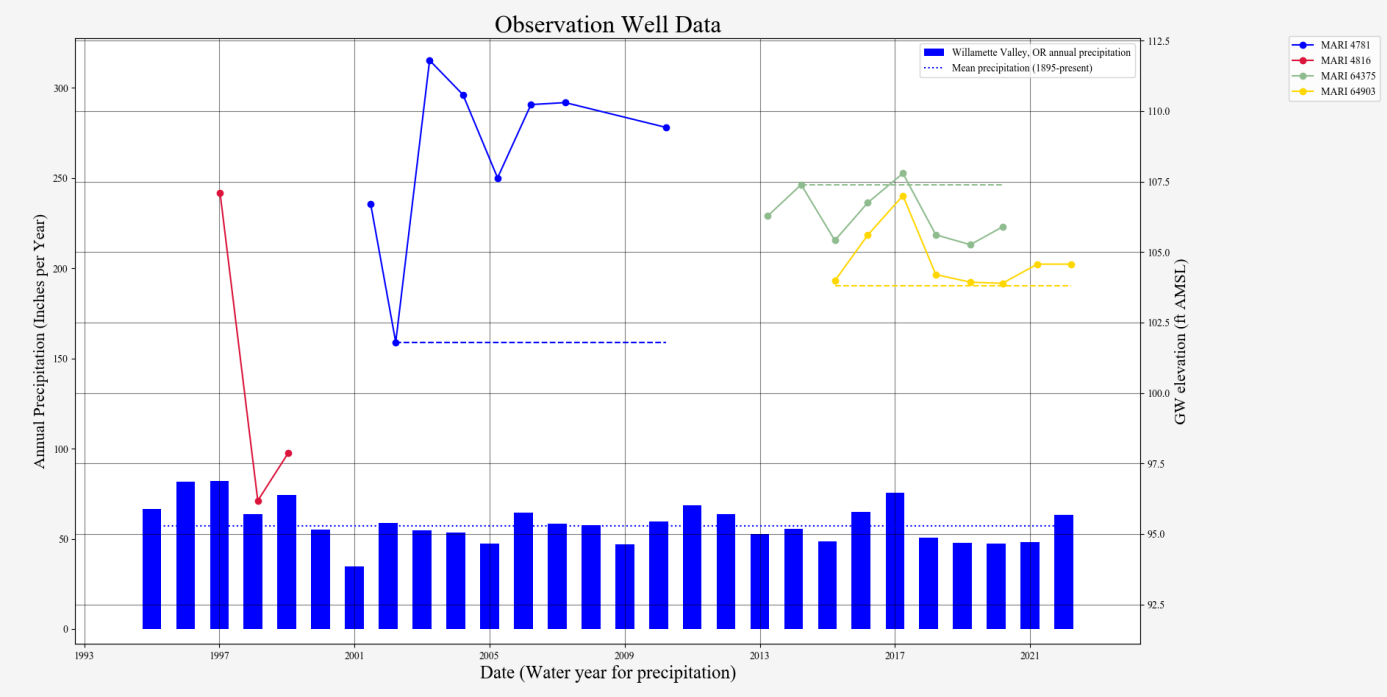
Cross-Section



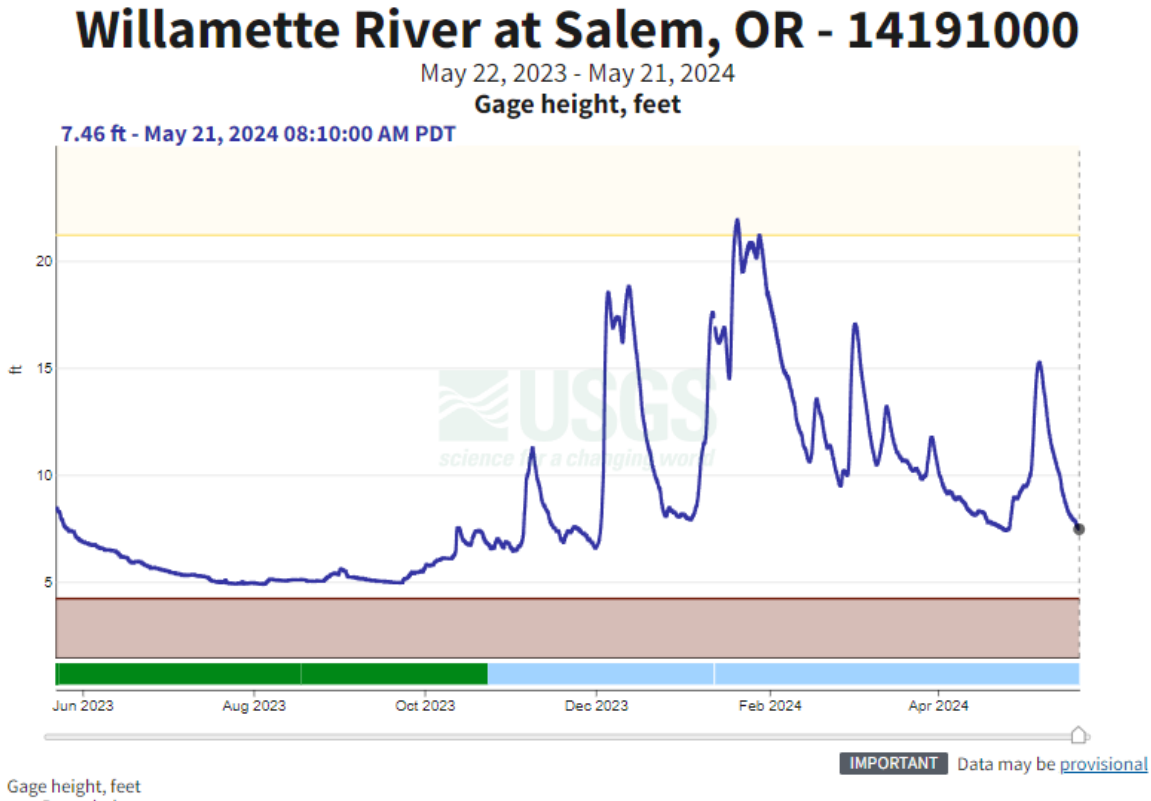
Well Statistics



Water-Level Measurements in Nearby Wells



Gage Height for USGS 14191000



IMPORTANT Data may be provisional

Gage height, feet
Recorded

Data approval period
Approved
Provisional

Flood stages in ft

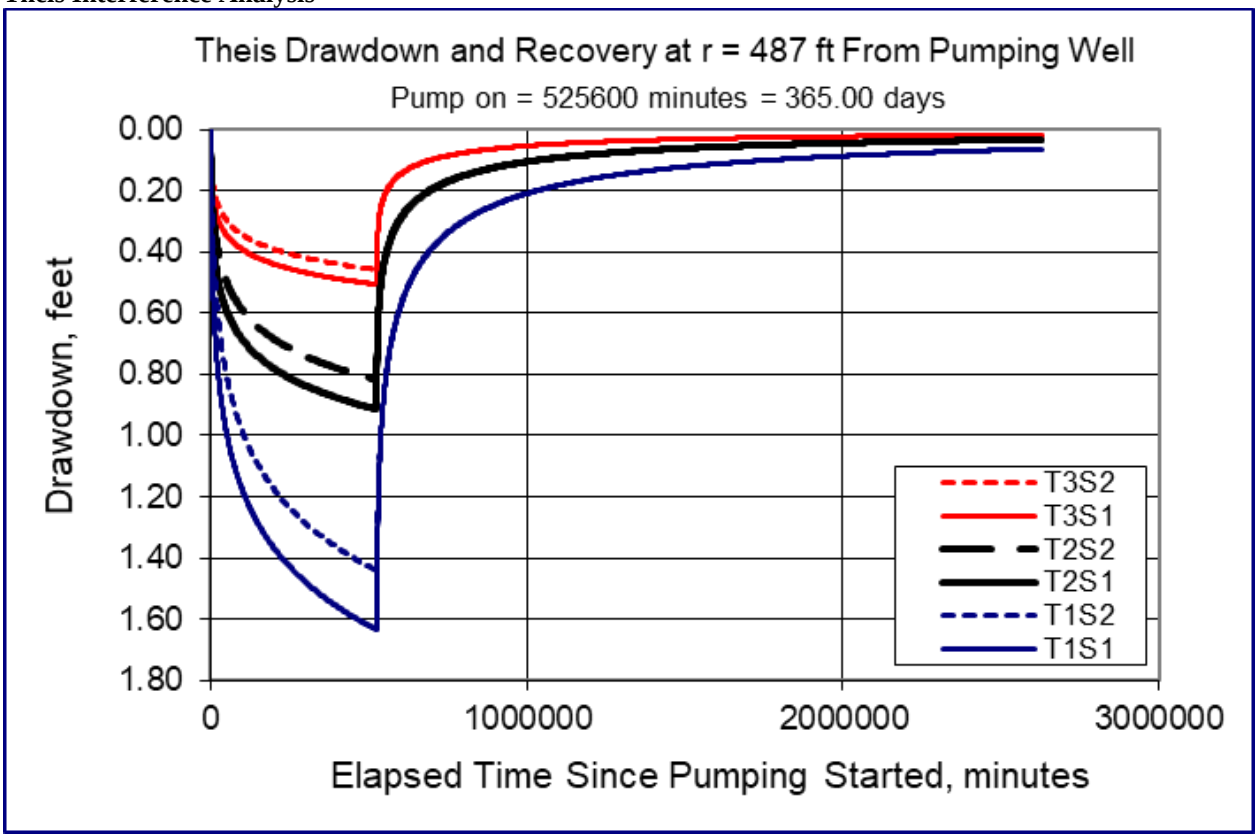
21.2	28	32
Action stage	Minor flood stage	Major flood stage

Learn about flood stages

Operational limits in ft

4.22	49.7
Operational limit (minimum) Orifice elevation	Operational limit (maximum) Instrument shelf elevation

Theis Interference Analysis



Radial distance from pumping well (r)=487 ft [estimated radial distance to nearest user, MARI 4801]

Pumping Rate (Q)= 0.61 cfs (273.8 gpm)

Aquifer Transmissivity (T1)= 112,200 gpd/ft (15,000 ft^2/day), (T2)= 224,400 gpd/ft (30,000 ft^2/day), (T3)= 448,800 gpd/ft (60,000 ft^2/day)

Storativity (s1) = 0.15, (s2) = 0.30 [Heath 1983 and Morris & Johnson 1967, values for specific yield in gravel and sand]

Total pumping time = 245 days