Approved:

MEMO

To: Kristopher Byrd, Well Construction Manager

From: Tommy Laird, Well Construction Program Coordinator

Subject: Re-Review of Water Right Application G-18840

Date: May 23, 2024

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

Applicant's Well #1 (MARI 68155): Based on a review of the Well Report, Applicant's Well #1 seems to protect the groundwater resource.

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

Applicant's Well #2 through Well #5 (Proposed): Well #2 through Well #5 are proposed wells, therefore they cannot be reviewed for construction. Construction of these proposed wells 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 these wells, specific attention should be paid to ensure sealing requirements are met and that the wells do not commingle aquifers.

The construction of proposed Well #2 through Well #5 may not satisfy hydraulic connection issues.

MARI 68155

STATE OF OREGON
WATER SUPPLY WELL REPORT
(as required by ORS 537.765 & OAR 690-205-0210)

WELL I.D. LABEL# L 131612
START CARD # 1039580
ORIGINAL LOG #

MARI 68155

(1) LAND OWNER

Owner Well I.D. 5904
First Name ______ Last Name ______
Company Mayfield Farms
Address 18555 SW Teton Ave.
City Tualatin State OR Zip 97062

(2) TYPE OF WORK

[X] New Well [ ] Deepening [ ] Conversion
[ ] Alteration (complete 2a & 10) [ ] Abandonment(complete 5a)

(2a) PRE-ALTERATION

Casing: Dia + From To Gauge Stl Plstc Wld Thrd

Seal: Material From To Amt sacks/lbs

RECEIVED
SEP 26 2018
OWRD

(3) DRILL METHOD

[X] Rotary Air [ ] Rotary Mud [ ] Cable [ ] Auger [ ] Cable Mud
[ ] Reverse Rotary [ ] Other

(4) PROPOSED USE

[X] Domestic [ ] Irrigation [ ] Community
[ ] Industrial/ Commericial [ ] Livestock [ ] Dewatering
[ ] Thermal [ ] Injection [ ] Other

(5) BORE HOLE CONSTRUCTION

Special Standard [ ] (Attach copy)
Depth of Completed Well 217 ft.

BORE HOLE

Dia	From	To
16	0	217

SEAL

Material	From	To	Amt	sacks/ lbs
Cement	20	120	84	S
		Calculated	47.8	
Bentonite	0	20	16	S
		Calculated	15.8	

How was seal placed: Method [ ] A [ ] B [X] C [ ] D [ ] E
[X] Other Poured dry
Backfill placed from 167 ft. to 217 ft. Material 8/12
Filter pack from 120 ft. to 197 ft. Material Colorado Size 10/20
Explosives used: [ ] Yes Type ______ Amount ______

(5a) ABANDONMENT USING UNHYDRATED BENTONITE

Proposed Amount ______ Pounds ______ Actual Amount ______ Pounds

(6) CASING/LINER

Casing	Liner	Dia	+	From	To	Gauge	Stl	Plstc	Wld	Thrd
●	○	12	X	2	167	250	●	○	X	
●	○	12		207	217	250	●	○	X	

Shoe [ ] Inside [ ] Outside [ ] Other Location of shoe(s)
Temp casing [X] Yes Dia 16 From 0 To 217

(7) PERFORATIONS/SCREENS

Screens Type Wrap rib Material Stainless steel

Perf/Screen	Casing/ Liner	Screen Dia	From	To	Scrn/slot width	Slot length	# of slots	Tele/ pipe size
Screen		12	167	207	.02			

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

( ) Pump ( ) Bailer (●) Air ( ) Flowing Artesian

Yield gal/min	Drawdown	Drill stem/Pump depth	Duration (hr)
175		205	1

Temperature 64 °F Lab analysis [ ] Yes By
Water quality concerns? [ ] Yes (describe below) TDS amount 160

From	To	Description	Amount	Units

(9) LOCATION OF WELL (legal description)

County MARION Twp 3 S N/S Range 1 W E/W WM
Sec 32 SE 1/4 of the SE 1/4 Tax Lot 1700
Tax Map Number ______ Lot ______
Lat ° ' " or ______ DMS or DD
Long ° ' " or ______ DMS or DD
(●) Street address of well ( ) Nearest address

11303 Arndt Rd. NE - Aurora, OR 97002

(10) STATIC WATER LEVEL

	Date	SWL(psi)	+	SWL(ft)
Existing Well / Pre-Alteration				
Completed Well	08-24-2018			96

Flowing Artesian? [ ] Dry Hole? [ ]

WATER BEARING ZONES Depth water was first found 185

SWL Date	From	To	Est Flow	SWL(psi)	+	SWL(ft)
08-24-2018	185	207	350 +			96

(11) WELL LOG

Ground Elevation ______

Material	From	To
Topsoil	0	2
Brown clay	2	34
Blue clay	34	54
Blue clay sandy	54	82
Grey clay	82	112
Blue sandy clay	112	182
Cemented gravel	182	187
Black sand & gravel	187	202
Cmeneted gravel	202	207
Blue clay	207	217

JONES DRILLING CO., INC.
29400 SANTIAM HWY.
LEBANON, OR 97355
541-367-2560 541-451-2686
1-800-915-8388

Date Started 08-13-2018 Completed 08-24-2018

(unbonded) Water Well Constructor Certification

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

License Number 1411 Date 09-19-2018

Signed

(bonded) Water Well Constructor Certification

I accept responsibility for the construction, deepening, 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.

License Number 1684 Date 09-19-2018

Signed

Contact Info (optional) jonesdrilling@hotmail.com

ORIGINAL - WATER RESOURCES DEPARTMENT
THIS REPORT MUST BE SUBMITTED TO THE WATER RESOURCES DEPARTMENT WITHIN 30 DAYS OF COMPLETION OF WORK Form Version: 0.95

Groundwater Application Review Summary Form

Application # G- 18840 re-review

GW Reviewer Travis Brown Date Review Completed: 6/20/2023

Summary of GW Availability and Injury Review:

☐ Groundwater for the proposed use is either over appropriated, will not likely be available in the amounts requested without injury to prior water rights, OR will not likely be available within the capacity of the groundwater resource per Section B of the attached review form.

Summary of Potential for Substantial Interference Review:

☒ There is the potential for substantial interference per Section C of the attached review form.

Summary of Well Construction Assessment:

☐ The well does not appear to meet current well construction standards per Section D of the attached review form. Route through Well Construction and Compliance Section.

This is only a summary. Documentation is attached and should be read thoroughly to understand the basis for determinations and for conditions that may be necessary for a permit (if one is issued).

WATER RESOURCES DEPARTMENT

MEMO **_June 20, 2023_**

TO: **Application** G-**_18840 re-review_**

FROM: **GW: _Travis Brown_**
(Reviewer's Name)

SUBJECT: Scenic Waterway Interference Evaluation

☐ **YES**
☒ **NO**

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

☐ **YES**
☒ **NO**

Use the Scenic Waterway Condition (Condition 7J)

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

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

DISTRIBUTION OF INTERFERENCE

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

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

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

PUBLIC INTEREST REVIEW FOR GROUNDWATER APPLICATIONS

TO: Water Rights Section Date 6/20/2023
FROM: Groundwater Section Travis Brown
Reviewer's Name
SUBJECT: Application G- 18840 re-review Supersedes review of 8/28/2019
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: **Mayfield Farms, LLC** County: **MARION**

A1. Applicant(s) seek(s) 0.45 cfs from 5 well(s) in the Willamette Basin, Mainstem Willamette subbasin

A2. Proposed use Commercial Seasonality: Year-round

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	MARI 68155	1	Alluvium	0.45	3S/1W-32 SE-SE	335' N, 1165' W fr SE cor S 32
2	Proposed	2	Alluvium	0.45	3S/1W-32 SE-SE	20' N, 930' W fr SE cor S 32
3	Proposed	3	Alluvium	0.45	3S/1W-32 SE-SE	25' N, 765' W fr SE cor S 32
4	Proposed	4	Alluvium	0.45	3S/1W-32 SE-SE	45' N, 565' W fr SE cor S 32
5	Proposed	5	Alluvium	0.45	3S/1W-32 SE-SE	960' N, 580' W fr SE cor S 32

* 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	~196[a]	185	96	8/24/2018	217	0-120	+2-167 207-217		167-207 (Screen)	175		Air
2	~192[a]				220[b]	0-120[b]	0-220[b]		TBD[b]			
3	~193[a]				220[b]	0-120[b]	0-220[b]		TBD[b]			
4	~193[a]				220[b]	0-120[b]	0-220[b]		TBD[b]			
5	~189				220[b]	0-120[b]	0-220[b]		TBD[b]			

Use data from application for proposed wells.

A4. **Comments:** The proposed POA/POU are approximately 0.5 miles east of the unincorporated community of Butteville, Oregon. No volumetric limit on the proposed use has been specified.

[a] LIDAR elevation at existing/proposed well location (Watershed Sciences, 2009)

[b] Proposed construction from application

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 POA are greater than ¼ mile from the nearest surface water source; therefore, per OAR 690-502-0240 the relevant Willamette Basin rules (OAR 690-502-0050) do not apply.

A6. ☐ **Well(s) #** ____ , ____ , ____ , ____ , ____ , tap(s) an aquifer limited by an administrative restriction.
Name of administrative area: **N/A**
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) **7n (annual measurement condition), medium water use reporting**;
   ii. ☒ The permit should be conditioned as indicated in item 2 below.
   iii. ☐ The permit should contain special condition(s) as indicated in item 3 below;

B2. a. ☐ **Condition** to allow groundwater production from no deeper than ________ ft. below land surface;

b. ☐ **Condition** to allow groundwater production from no shallower than ________ ft. below land surface;

c. ☒ **Condition** to allow groundwater production only from the **alluvial** groundwater reservoir ~~between approximately~~________ ~~ft. and~~________ ~~ft. below land surface~~;

d. ☐ **Well reconstruction** is necessary to accomplish one or more of the above conditions. The problems that are likely to occur with this use and without reconstructing are cited below. Without reconstruction, I recommend withholding issuance of the permit until evidence of well reconstruction is filed with the Department and approved by the Groundwater Section.

Describe injury –as related to water availability– that is likely to occur without well reconstruction (interference w/ senior water rights, not within the capacity of the resource, etc): ________________

B3. **Groundwater availability remarks:** The proposed POA are or would be completed in sand and gravel of the Willamette Aquifer (Gannett and Caldwell, 1998). Proposed POA 1 (MARI 68155) produces from ~25 ft of black sand and gravel (some cemented) between ~185-207 ft below land surface (bls), which is overlain by fine-grained sediments to land surface (per the well log), generally classified as the Willamette Silt (Gannett and Caldwell, 1998). The other proposed POA, which have similar proposed construction to MARI 68155, are anticipated to produce water from the same or equivalent water-bearing zones. Some nearby wells (MARI 134 and MARI 304, for example) do produce relatively small quantities of water (<35 gpm) from thin (<10 ft thick) layers of sand within the Willamette Silt.

The nearest senior groundwater right producing from similar water-bearing zones as the proposed POA is MARI 143, authorized POA for Certificate 42114. MARI 143 is ~860 ft east of proposed POA 5. To assess the potential for injury to Certificate 42114 due to the proposed use, an analysis was conducted using the Theis (1935) equation for drawdown in a confined aquifer. Hydraulic parameters used for the analysis were derived from regional data and studies (Pumping Test Reports, 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 given parameter within the hydrogeologic regime (Freeze and Cherry, 1979; Domenico and Mifflin, 1965). The applicant has noted in the Application that they have also submitted a Groundwater Registration Modification application (GR-MOD T-13221) which proposes to change the POA for Groundwater Registration GR-3351 to POA 1-5 as identified in this application. Per proposed GR-MOD T-13221, POA 1-5 would pump up to 0.25 cfs under GR-3351, in addition to the 0.45 cfs requested in this application. Therefore, the analysis used a combined rate of 0.7 cfs (~314 gpm) to assess potential injury to nearby senior users. **Results indicate that the proposed use is not likely to interfere with MARI 143 such that a senior groundwater user would be prevented from receiving water to which they are legally entitled (see Theis Drawdown Analysis, attached).**

Hydrographs of water levels in the nearby alluvial aquifer system over the past two decades do not indicate widespread or persistent declines (see Hydrograph - Spring, attached). However, there do appear to be substantial (~30 ft or more) seasonal fluctuations in water level based on observations from a nearby State Observation Well (see Hydrograph – MARI 308, attached). Additionally, well completion statistics from the area indicate slight trends of deeper well completions and lower initial reported static water levels over time (see Well Completion Statistics, attached). **While there is not sufficient evidence**

to conclude that the proposed use would exceed the capacity of the resource, the Conditions specified in B1(d) and B2(c) are recommended to protect the resource and nearby senior users.

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 – 5	**Alluvium**	☒	☐

Basis for aquifer confinement evaluation: Reported static water level in MARI 68155 was greater than 80 ft above the noted water-bearing zone, indicating confined conditions. Well completion statistics from this area indicate that most completed wells have initial reported static water levels above the first noted water-bearing zone, also indicating confined conditions (see Well Completion Statistics, attached). Based on the available evidence, the aquifer appears to be confined in this area.

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 – 5	**1**	**Willamette River**	**~100-150**	**~63**	**~3,250 – 3,880**	☒	☐	☐	☐	☒
1 – 5	**2**	**Deer Creek**	**~100-150**	**~169-157**	**~2,840 – 3,510**	☒	☐	☐	☐	☒

Basis for aquifer hydraulic connection evaluation: Water table maps of this area indicate that groundwater in the alluvial aquifer system is flowing toward and discharging into the Willamette River (SW 1) to the northwest of the proposed POA/POU (Woodward et al, 1998), an interpretation which is supported by the higher measured static groundwater elevations relative to the estimated surface water elevation for SW 1. SW 1 near this location may have incised into the water-bearing zone tapped by proposed POA 1 (MARI 68155) and which would be tapped by proposed POA 2-5. Based on the available evidence, the alluvial aquifer system in this area is hydraulically connected to SW 1 (Willamette River).

The proposed POA are also within 1 mile of Deer Creek (SW 2). Water table maps of this area indicate that static groundwater elevations in the alluvial aquifer system near SW 2 are within ~10 ft of the surface water elevations estimated for SW 2 (Woodward et al, 1998). Alluvial groundwater near SW 2 flows down-gradient to the northwest, through the area of the proposed POA, and into the Willamette River (SW 1). Although the reported static water elevation for proposed POA 1 (MARI 68155) is greater than 40 ft below the surface water elevations estimated for SW 2, the measurement reported for MARI 68155 was collected in August, when groundwater levels are anticipated to be temporarily depressed due to increased pumping and decreased recharge (see Hydrograph – MARI 308, attached). The preponderance of evidence indicates that SW 2 (Deer Creek) is hydraulically connected to the alluvial aquifer system.

Water Availability Basin the well(s) are located within: SW 1: WILLAMETTE R > COLUMBIA R - AB MOLALLA R
SW 2: MILL CR > PUDDING R - AT MOUTH

C3a. **690-09-040 (4):** Evaluation of stream impacts for each well that has been determined or assumed to be **hydraulically connected and less than 1 mile** from a surface water source. Limit evaluation to instream rights and minimum stream flows that are pertinent to that surface water source, and 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 – 5	**1**	☐	☐	**MF182**	**1,500**	☐	**3,830**	☐	**>25%**	☒
1 – 5	**2**	☐	☐			☐	**1.88**	☒	**<<25%**	☒

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: **3a**: To assess the potential interference with surface water due to the proposed use, a stream depletion analysis was conducted using the Hunt (2003) analytical model. Hydraulic parameters used for the analysis were derived from regional data and studies (Pumping Test Reports, 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 given parameter within the hydrogeologic regime (Freeze and Cherry, 1979; Domenico and Mifflin, 1965). Results of the analysis indicate that the proposed use will primarily impact SW 1 (Willamette River), with depletions of SW 1 most likely exceeding 25 percent of the rate of well discharge within 30 days of continuous use (see Stream Depletion Analysis, attached). The high relative rate of stream depletion is attributed primarily to the small intervening thickness of fine-grained sediments between the alluvial aquifer system and SW 1 (Willamette River) (i.e. a highly efficient hydraulic connection) and the confined nature of the alluvial aquifer. **Per OAR 690-009-0040(4)(d), the proposed use is assumed to have the potential to cause substantial interference (PSI) with SW 1 (Willamette River).**

Additionally, the maximum rate of withdrawal under the proposed use (0.45 cfs) is greater than 1 percent (0.0188 cfs) of the natural streamflow that is equaled or exceeded 80 percent of time (1.88 cfs) for SW 2 (Deer Creek). **Per OAR 690-009-0040(4)(c), the proposed use is assumed to have PSI with SW 2 (Deer Creek).**

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													
(A) = Total Interf.													
(B) = 80 % Nat. Q													
(C) = 1 % Nat. Q													
(D) = (A) > (C)		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
(E) = (A / B) x 100		%	%	%	%	%	%	%	%	%	%	%	%

(A) = total interference as CFS; (B) = WAB calculated natural flow at 80% exceed. as CFS; (C) = 1% of calculated natural flow at 80% exceed. as CFS; (D) = highlight the checkmark for each month where (A) is greater than (C); (E) = total interference divided by 80% flow as percentage.

Basis for impact evaluation: N/A

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-18840

Transfer File: T-13029

Certificate: 42114, 93743

Groundwater Claim: GR-3351

Groundwater Registration Modification File: T-13221

Pumping Test Reports: MARI 154, 160, 163, 172, 250, 348, 350, 358, 363, 53183, 53448, 54523

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

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McFarland, W.D., and Morgan, D.S., 1996, Description of the Ground-Water Flow System in the Portland Basin, Oregon and Washington, Water Supply Paper 2470-A, 58 p: U. S. Geological Survey, Reston, VA.

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D. WELL CONSTRUCTION, OAR 690-200

D1. **Well #**: ________________ **Logid:** ________________________________

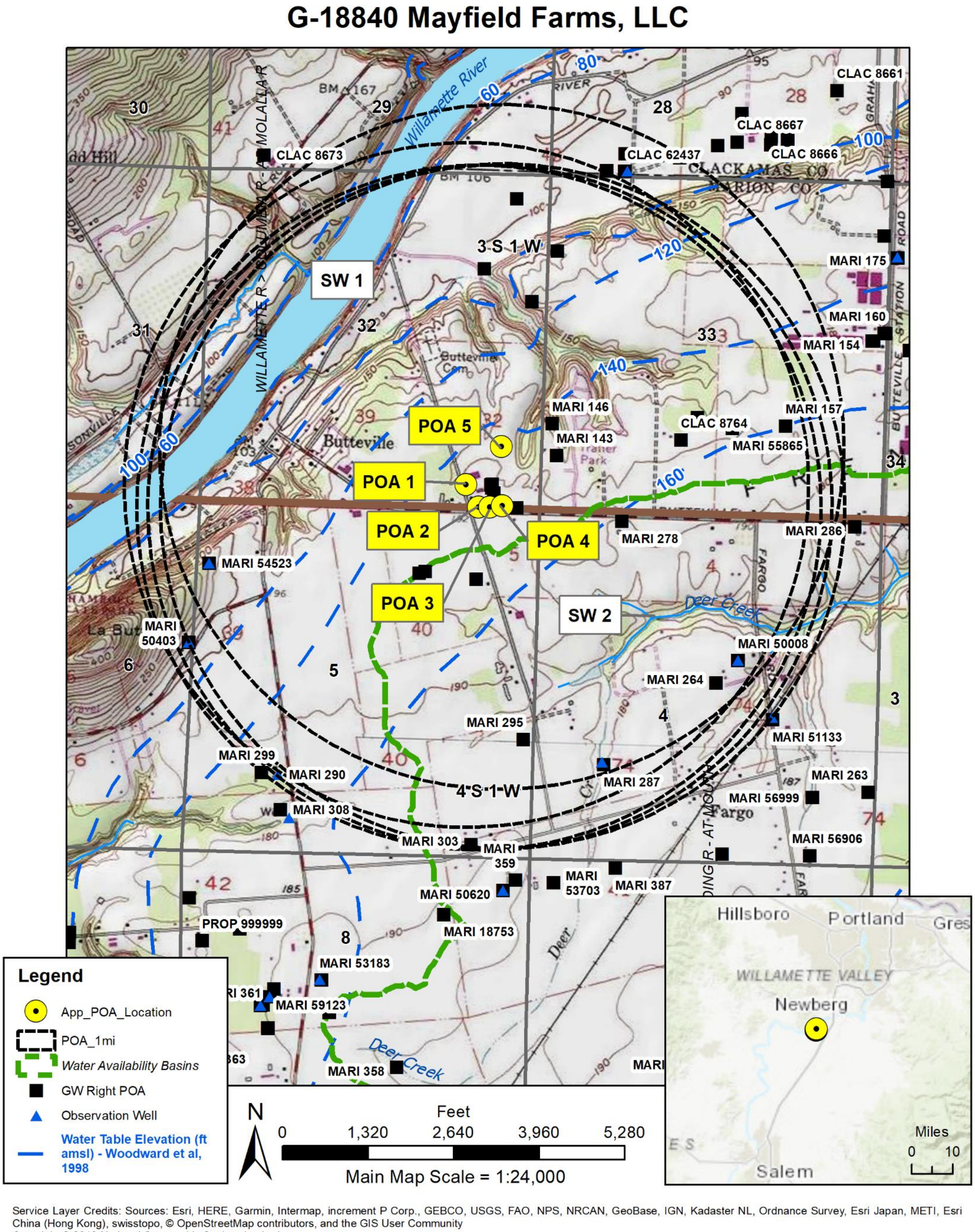
D2. **THE WELL does not appear to meet current well construction standards based upon:**

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.**

Well Location Map



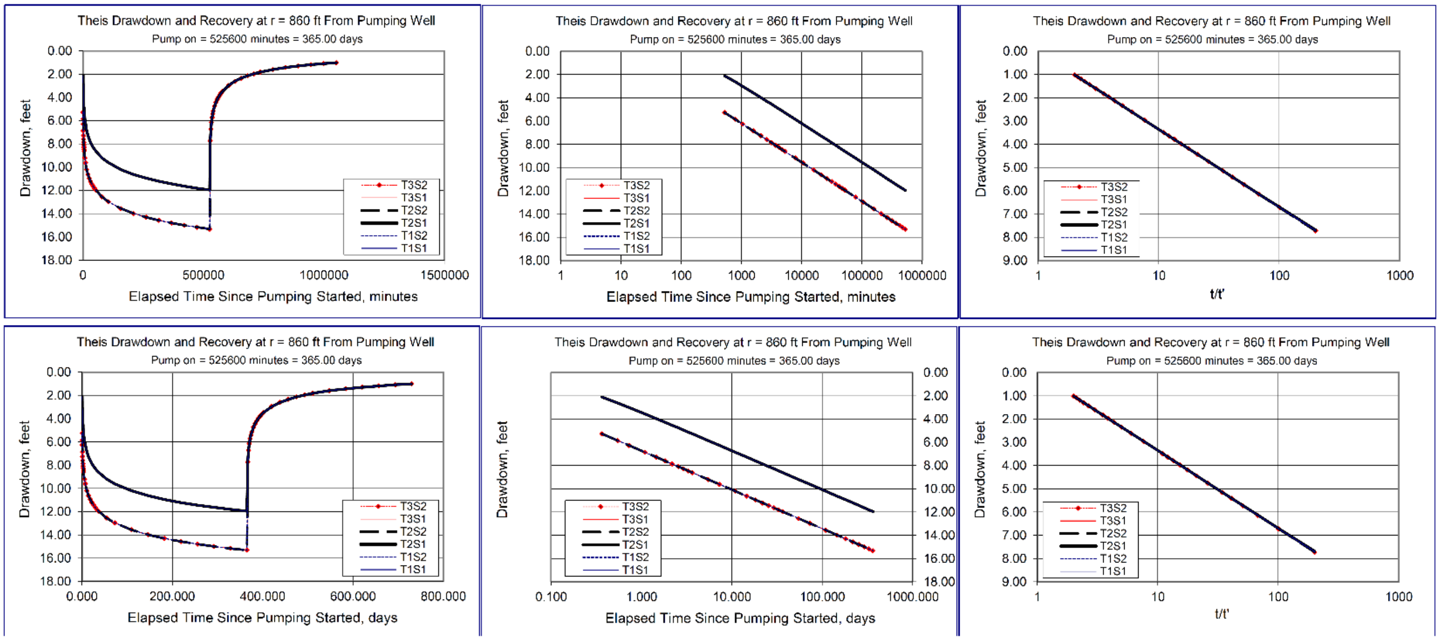
Service Layer Credits: Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, © OpenStreetMap contributors, and the GIS User Community

Theis Drawdown Analysis

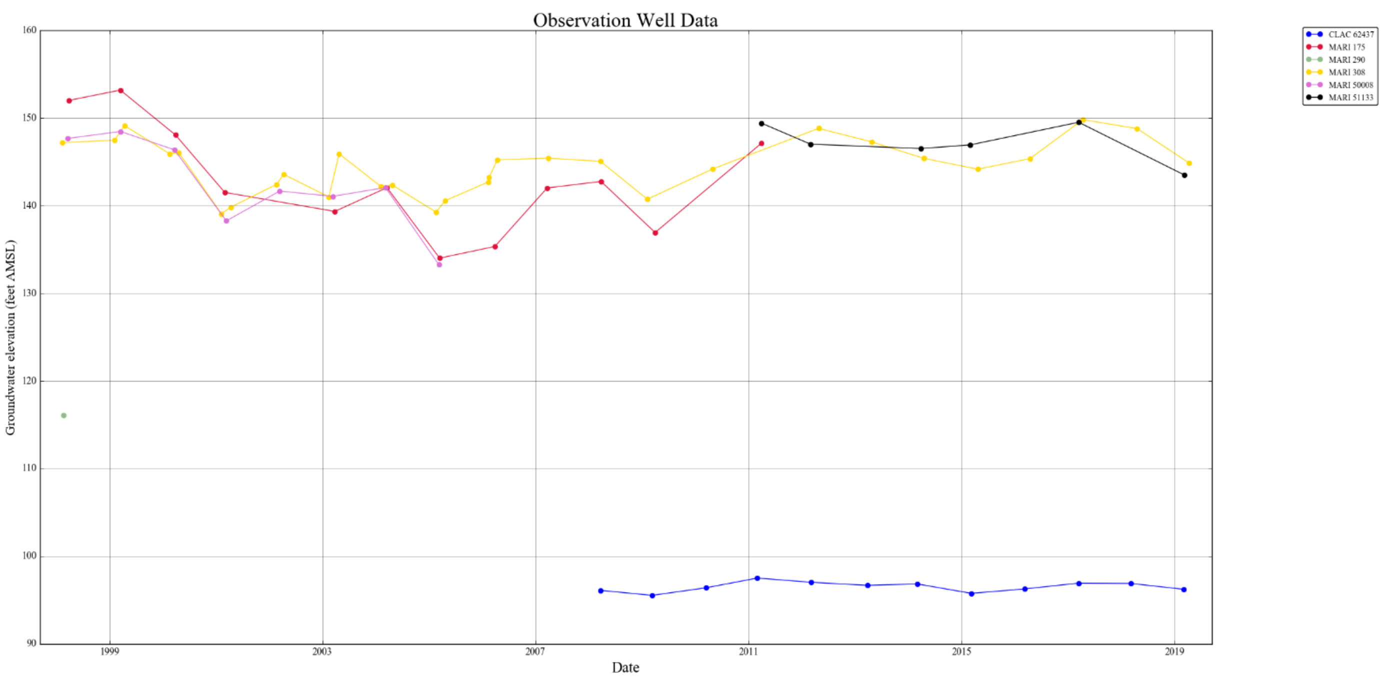
Theis Time-Drawdown Worksheet v.3.00
Calculates Theis nonequilibrium drawdown and recovery at any arbitrary radial distance, r, from a pumping well for 3 different T values and radial distance, r, from a pumping well for 3 different T values and 2 different S values.
Written by Karl C. Wozniak September 1992. Last modified December 30, 2014

Input Data:	Var Name	**Scenario 1**	**Scenario 2**	**Scenario 3**	**Units**	
Total pumping time	t		**365**		d	
Radial distance from pumped well:	r		**860.00**		ft	**Q conversions**
Pumping rate	Q		**314.0**		gpm	314.00 gpm
Hydraulic conductivity	K	**66.000**	**66.000**	**66.000**	ft/day	0.70 cfs
Aquifer thickness	b		**50**		ft	41.98 cfm
Storativity	S_1		**0.00100**			60,449.20 cfd
	S_2		**0.00010**			1.39 af/d
Transmissivity Conversions	T_f2pd	3,300	3,300	3,300	ft2/day	
	T_ft2pm	2.2917	2.2917	2.2917	ft2/min	
	T_gpdpft	24,684	24,684	24,684	gpd/ft	

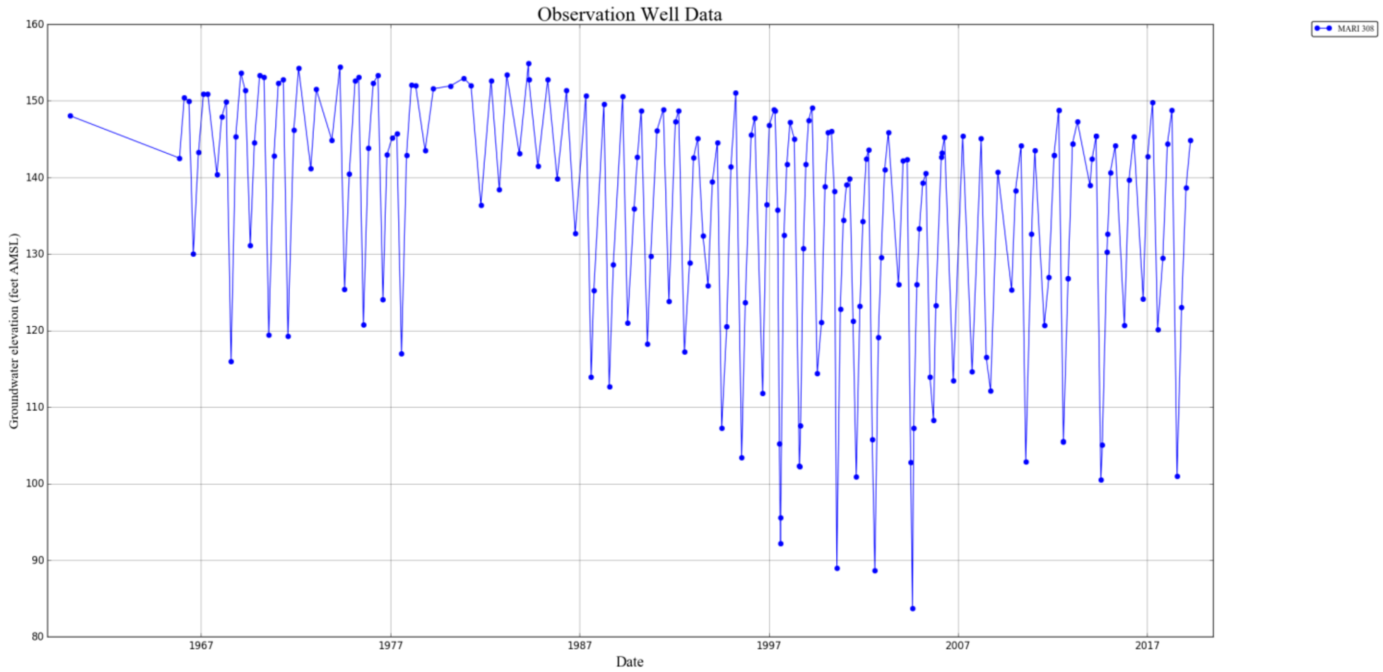
Use the Recalculate button if recalculation is set to manual



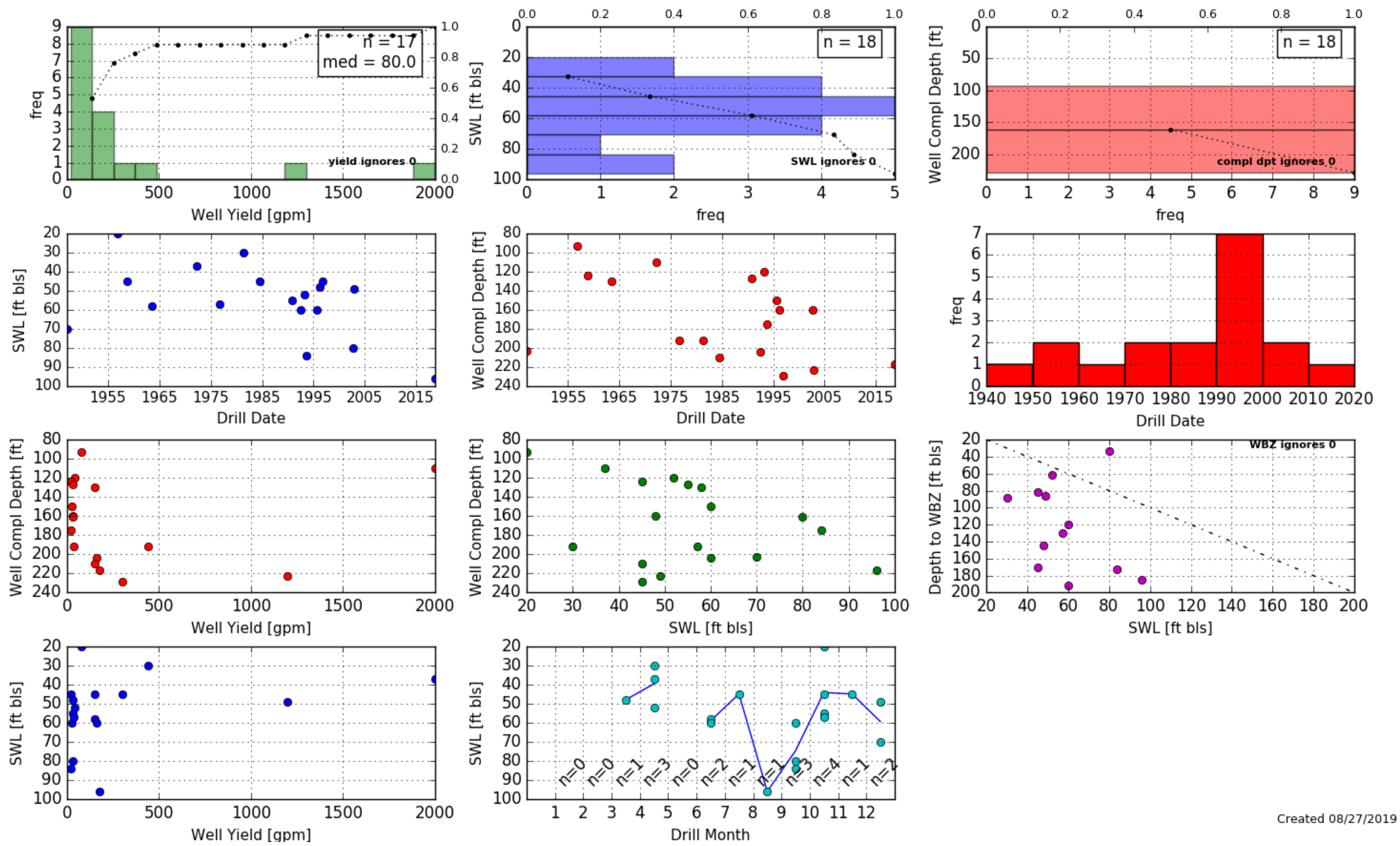
Hydrograph - Spring



Hydrograph – MARI 308



Well Completion Statistics – 3S/1W-32 & 33, 4S/1W-3 & 4



Water Availability Tables

Water Availability Analysis

Detailed Reports

WILLAMETTE R > COLUMBIA R - AB MOLALLA R
WILLAMETTE BASIN

Water Availability as of 8/27/2019

Watershed ID #: 182 (Map) Exceedance Level: 80%
Date: 8/27/2019 Time: 1:36 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	6,920.00	13,000.00	0.00	1,500.00	11,500.00
MAY	16,600.00	4,260.00	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	677.00
SEP	3,890.00	1,400.00	2,490.00	0.00	1,500.00	992.00
OCT	4,850.00	758.00	4,090.00	0.00	1,500.00	2,590.00
NOV	10,200.00	891.00	9,310.00	0.00	1,500.00	7,810.00
DEC	19,300.00	973.00	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

Water Availability Analysis

Detailed Reports

MILL CR > PUDDING R - AT MOUTH
WILLAMETTE BASIN

Water Availability as of 8/27/2019

Watershed ID #: 30200901 (Map) Exceedance Level: 80%
Date: 8/27/2019 Time: 1:36 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	39.20	9.74	29.50	0.00	0.00	29.50
FEB	53.90	9.89	44.00	0.00	0.00	44.00
MAR	38.40	9.47	28.90	0.00	0.00	28.90
APR	27.60	7.09	20.50	0.00	0.00	20.50
MAY	13.70	5.70	8.00	0.00	0.00	8.00
JUN	8.72	7.01	1.71	0.00	0.00	1.71
JUL	3.79	10.80	-6.96	0.00	0.00	-6.96
AUG	2.09	8.74	-6.65	0.00	0.00	-6.65
SEP	1.88	4.78	-2.90	0.00	0.00	-2.90
OCT	2.39	1.25	1.14	0.00	0.00	1.14
NOV	6.05	7.23	-1.18	0.00	0.00	-1.18
DEC	25.90	9.57	16.30	0.00	0.00	16.30
ANN	30,000.00	5,500.00	25,300.00	0.00	0.00	25,300.00

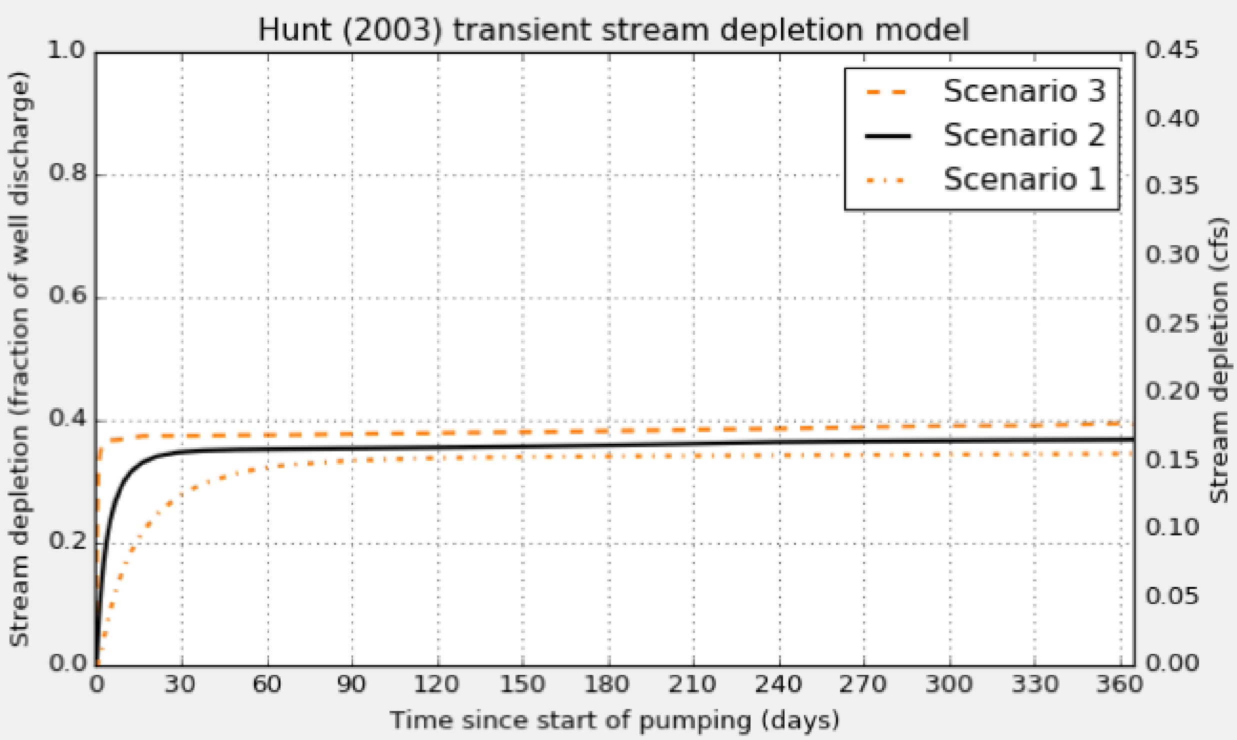
Stream Depletion Analysis – SW 1 (Willamette River)

Application type:	G
Application number:	18840
Well number:	1
Stream Number:	1
Pumping rate (cfs):	0.45
Pumping duration (days):	365.0
Pumping start month number (3=March)	1.0

Parameter	Symbol	Scenario 1	Scenario 2	Scenario 3	Units
Distance from well to stream	a	3880.0	3565	3250	ft
Aquifer transmissivity	T	2000	3300.0	4300.0	ft2/day
Aquifer storativity	S	0.001	0.0005	0.0001	-
Aquitard vertical hydraulic conductivity	Kva	0.003	0.005	0.01	ft/day
Aquitard saturated thickness	ba	120.0	120.0	120.0	ft
Aquitard thickness below stream	babs	4.0	4.0	4.0	ft
Aquitard specific yield	Sya	0.2	0.2	0.2	-
Stream width	ws	650.0	650.0	650.0	ft

Stream depletion for Scenario 2:

Days	10	30	60	90	120	150	180	210	240	270	300	330	360
Depletion (%)	30	35	35	35	35	36	36	36	36	36	37	37	37
Depletion (cfs)	0.13	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.17



Stream Depletion Analysis – SW 2 (Deer Creek)

Application type:	G
Application number:	18840
Well number:	1
Stream Number:	2
Pumping rate (cfs):	0.45
Pumping duration (days):	365.0
Pumping start month number (3=March)	1.0

Parameter	Symbol	Scenario 1	Scenario 2	Scenario 3	Units
Distance from well to stream	a	2840	2840	2840	ft
Aquifer transmissivity	T	500.0	3300.0	4300.0	ft2/day
Aquifer storativity	S	0.001	0.0003	0.0001	-
Aquitard vertical hydraulic conductivity	Kva	0.01	0.005	0.001	ft/day
Aquitard saturated thickness	ba	140.0	140.0	140.0	ft
Aquitard thickness below stream	babs	140.0	140.0	140.0	ft
Aquitard specific yield	Sya	0.2	0.2	0.2	-
Stream width	ws	10.0	10.0	10.0	ft

Stream depletion for Scenario 2:

Days	10	30	60	90	120	150	180	210	240	270	300	330	360
Depletion (%)	0	0	0	0	0	0	0	0	0	0	0	0	0
Depletion (cfs)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00