

Groundwater Application Review Summary Form

Application # G- 19437

GW Reviewer Aaron Orr Date Review Completed: 12/9/2025

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

12/9/2025

TO: Application G- 19437

FROM: GW: Aaron Orr
(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

Summary of Changes

A typo was noted in the calculation of 1% of 80% of the natural flow in SW #3. This number has been updated from 0.15 cfs to 0.015 cfs. All other findings in the review remain the same.

This updated review supersedes the original review dated 9/10/2025.

PUBLIC INTEREST REVIEW FOR GROUNDWATER APPLICATIONS

TO: Water Rights Section Date 12/9/2025
 FROM: Groundwater Section Aaron Orr
 Reviewer's Name
 SUBJECT: Application G- 19437 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: Sandra Porter County: Hood

A1. Applicant(s) seek(s) 0.17 cfs from 1 well(s) in the Hood River Basin,
 _____ subbasin

A2. Proposed use Irrigation Seasonality: May 1st – October 1st

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	HOOD 51264		High Cascades volcanics/volcaniclastics	0.17	T1S/R10E-6 SESW	253' N, 279' W fr south quarter cor S 6**
2						
3						
4						

* 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	190	0 to 20	+1 to 179	N/A	N/A	75	Unk	A
2								
3								
4								

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	1,890	162	35	8/4/2023		
2						
3						
4						

Use data from application for proposed wells.

A4. **Comments:** The POA is approximately 1 mile south of Parkdale, OR. Applicant seeks to irrigate an annual volume of 27 acre-feet over 9 acres of land at a proposed rate of 0.17 cfs. Applicant seeks to irrigate to reduce dust blowing from their property and reduce fire risk.

**Metes and bounds listed in application is 253' N, 279' W fr SE cor tax lot 5502, Parcel 2, but POA 1 appears to be measured from the south quarter corner of section 6.

A5. ☒ **Provisions of the** Hood 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: _____

A6. ☐ **Well(s) #** _____ , _____ , _____ , _____ , _____ , tap(s) an aquifer limited by an administrative restriction.

Name of administrative area: _____

Comments: _____

B. GROUNDWATER AVAILABILITY CONSIDERATIONS, OAR 690-310-130, 400-010, 410-0070

B1. **Based upon available data**, I have determined that groundwater* for the proposed use:

- a. ☐ is over appropriated, ☒ is not over appropriated, or ☐ cannot be determined to be over appropriated during any period of the proposed use. * This finding is limited to the groundwater portion of the over-appropriation determination as prescribed in OAR 690-310-130;
- b. ☐ will not or ☐ will likely be available in the amounts requested without injury to prior water rights. * This finding is limited to the groundwater portion of the injury determination as prescribed in OAR 690-310-130;
- c. ☐ will not or ☐ will likely to be available within the capacity of the groundwater resource; or
- d. ☒ will, if properly conditioned, avoid injury to existing groundwater rights or to the groundwater resource:
 - i. ☒ The permit should contain condition #(s) 7RLN; 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 _____ 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:** POA 1 (HOOD 51264) collars in Late High-Cascade volcanic and volcanoclastic deposits that underly the Upper Hood River Valley and is likely completed in Dalles Formation volcanics and volcanoclastics. Surficial geology in the vicinity of the POA is mapped as Hood River lahar, which is matrix-supported, poorly sorted lahar deposit. (McClaghry et al., 2012). McClaghry et al., 2020 further classifies upriver Lahar deposits as lahar deposits of Whiskey Creek. The lahar deposit of Whiskey Creek is equivalent to Hood River lahar deposits of McClaghry et al., 2012, consisting of massive, matrix-supported, poorly sorted, boulder-cobble deposits. An extrapolated thickness of ~150 feet is estimated from cross section A-A' in McClaghry et al., 2020. Mapping by McClaghry et al., 2020 also indicates that the lahar deposit is underlain by older volcanoclastic rocks of Dalles Formation. Dalles Formation consists of debris flow boulder conglomerate and tuffaceous siltstone, tuff, fluvial conglomerate, and sandstone (McClaghry et al., 2012). While the permeability of Dalles Formation is generally low, there are lenses of higher permeability that could result in more productive aquifers (Lite and Grondin, 1988).

Low permeability of the overlying lahar deposits may contribute to localized confined aquifer conditions. Regionally, however, wells within the vicinity of the POA are likely hydraulically connected to surface water sources. Numerous faults in the area may act as barriers or conduits groundwater flow.

The nearest perennial streams are Trout Creek to the west and Emil Creek to the east. Water generally flows north towards the Columbia River. There are springs to the southwest (~3,000 feet) and northwest (~4,500 feet) that indicate natural discharge of groundwater within 1-mile of the POA.

Wells within 2 miles of the proposed POA show generally stable water level trends. See **Water-Level Measurements in Nearby Wells.**

There are 6 wells completed within approximately 1 mile of POA 1. Median reported yield for wells completed within 1 mile of the proposed POA is 28.5 gpm. Maximum reported yield for wells completed within 1 mile of the proposed POA is 100 gpm. All of these wells appear to be completed in locally confined or confined aquifers. The requested rate of 0.17 cfs (~76 gpm) is within the range of yields for wells within one mile of the POA.

Two scenarios with pumping rates of 76 gpm and 40 gpm were reviewed for potential well interference. 40 gpm is the maximum rate that can be pumped if continuously pumping over the 153-day irrigation season. The closest water well not owned by the applicant is HOOD 50637, located 700 feet west of the POA. Limited pump test data exist within 10 miles of the POA, and hydraulic properties for volcanics and volcanoclastics in the area are scarce. Transmissivity values from the pump test at HOOD 582 were used for interference modeling. Given a rate of 76 gpm, HOOD 50637 is estimated to experience between 2 and 7 feet of drawdown over the course 80 days. Given a rate of 40 gpm, HOOD 50637 is estimated to experience between 1 and 5 feet of drawdown over the course of 153 days.

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	High Cascades Volcanics	<input checked="" type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>

Basis for aquifer confinement evaluation: Existing well logs in the area show static water levels higher than depth of water-bearing zones, indicating semi-confined conditions. However, the lack of a laterally extensive confining layer (i.e. no laterally extensive fine-grained layer) and the presence of springs in the area imply effective connection between GW and SW.

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	Trout Creek	1,855	1,850	2020	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
1	2	Unnamed Tributary to Trout Creek	1,855	1,830	1700*	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
1	3	Evans Creek	1,855	1,720 to 1,960	2500	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Basis for aquifer hydraulic connection evaluation: *Distance to point where stream is perennial.

Groundwater levels are coincident with or above the elevation of SW 1, SW 2, and SW 3, and springs are present in the area above and below the POA. These factors indicate groundwater flow is toward the streams and suggest hydraulic connection between the groundwater system and nearby surface water sources.

Water Availability Basin the well(s) are located within: 189 E FK HOOD R > HOOD R – AB M FK HOOD R; 30410508 EVANS CR > E FK HOOD 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 (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	<input type="checkbox"/>	<input type="checkbox"/>	MF189A	100.00	<input type="checkbox"/>	134.00	<input type="checkbox"/>	< 25%	<input type="checkbox"/>
1	2	<input type="checkbox"/>	<input type="checkbox"/>	MF189A	100.00	<input type="checkbox"/>	134.00	<input type="checkbox"/>	< 25%	<input type="checkbox"/>
1	3	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>	1.49	<input checked="" type="checkbox"/>	< 25%	<input checked="" type="checkbox"/>

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?
			<input type="checkbox"/>			<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>
			<input type="checkbox"/>			<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>

Comments: Modeling suggests that due to the presence of fine-grained material in the channels of Trout Creek and Evans Creek and low hydraulic conductivity of the aquifer, pumping impacts will be less than 25% of the pumping rate after 30 days of pumping. **However, the requested rate of 0.17 cfs exceeds 1% of 80% of the natural flow of Evans Creek at its lowest month (October, 1% of 80% = 0.015 cfs)**

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

C6. SW / GW Remarks and Conditions: _____

References Used:

Grady, S.J., 1983, Ground-water resources in the Hood Basin, Oregon: U.S. Geological Survey, Report #81-1108

Lite, K. E. Jr., Grondin, G. H., 1988, Hydrogeology of the Basalt Aquifers near Mosier, Oregon: A Ground Water Resource Assessment, Oregon Water Resources Department Ground Water Report 33 119 p.

McClaghry, J.D. and others, 2020, Geologic Map of the Dog River and northern part of the Badger Lake 7.5' quadrangles, Hood River County, Oregon: Oregon Department of Geology and Mineral Industries, GMS-126

McClaghry, J.D and others, 2012, Digital geologic map of the Hood River Valley, Hood River and Wasco Counties, Oregon: Oregon Department of Geology and Mineral Industries Open-File Report O-12-03 142 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

Water Availability Analysis
Detailed Reports

E FK HOOD R > HOOD R - AB M FK HOOD R
HOOD BASIN

Watershed ID #: 189 [\(Map\)](#)
Date: 7/31/2025

Water Availability as of 7/31/2025

Exceedance Level: 88%
Time: 12:54 PM

Water Availability Calculation

Water Rights

Consumptive Uses and Storages

Instream Flow Requirements

Watershed Characteristics

Reservations

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	207.00	13.70	193.00	130.00	180.00	-116.00
FEB	268.00	17.50	250.00	136.00	210.00	-95.90
MAR	286.00	35.40	251.00	122.00	210.00	-81.70
APR	288.00	58.00	230.00	104.00	210.00	-83.90
MAY	308.00	105.00	203.00	111.00	210.00	-118.00
JUN	253.00	151.00	102.00	79.30	210.00	-188.00
JUL	206.00	162.00	44.00	0.00	150.00	-186.00
AUG	152.00	150.00	2.28	0.00	150.00	-148.00
SEP	146.00	110.00	36.40	0.00	175.00	-139.00
OCT	134.00	60.50	73.50	22.20	175.00	-124.00
NOV	163.00	17.80	145.00	41.60	180.00	-76.40
DEC	190.00	12.50	178.00	86.10	180.00	-88.60
ANN	206,000.00	54,100.00	152,000.00	50,000.00	135,000.00	317.00

Water Availability Calculation

Water Rights

Consumptive Uses and Storages

Instream Flow Requirements

Watershed Characteristics

Reservations

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
MF189A	CERTIFICATE	100.00	100.00	100.00	150.00	150.00	150.00	100.00	100.00	100.00	150.00	150.00	150.00
IS88322C	APPLICATION	180.00	210.00	210.00	210.00	210.00	210.00	150.00	150.00	175.00	175.00	180.00	180.00
IS88334B	APPLICATION	175.00	175.00	175.00	175.00	175.00	175.00	110.00	110.00	145.00	145.00	175.00	175.00
Maximum		180.00	210.00	210.00	210.00	210.00	210.00	150.00	150.00	175.00	175.00	180.00	180.00

Water Availability Analysis
Detailed Reports

EVANS CR > E FK HOOD R - AT MOUTH
HOOD BASIN

Watershed ID #: 30410508 [\(Map\)](#)
Date: 7/31/2025

Water Availability as of 7/31/2025

Exceedance Level: 88%
Time: 2:19 PM

Water Availability Calculation

Water Rights

Consumptive Uses and Storages

Instream Flow Requirements

Watershed Characteristics

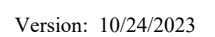
Reservations

Water Availability Calculation

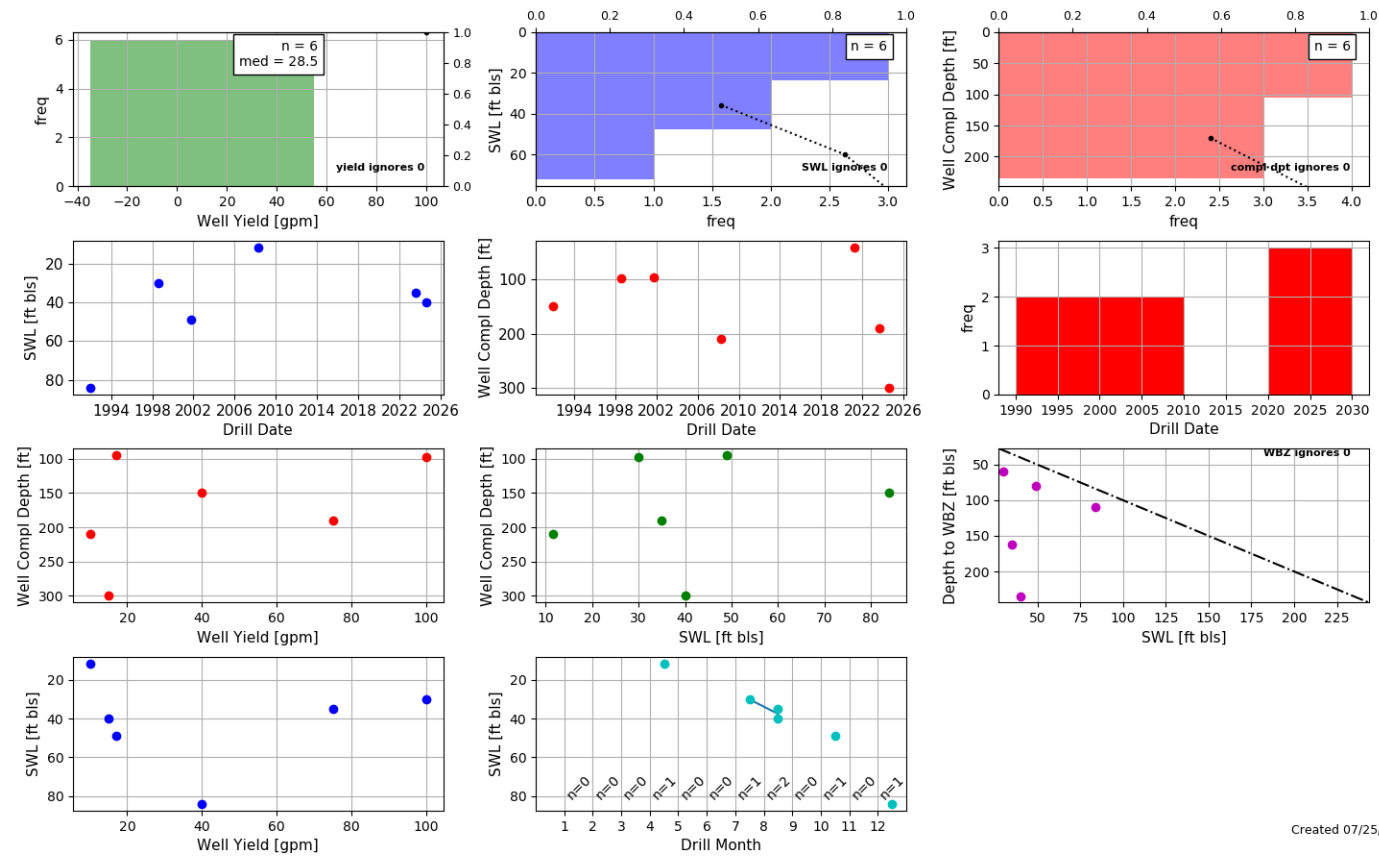
Monthly Streamflow in Cubic Feet per Second
Annual Volume at 50% Exceedance in Acre-Feet

Month	Natural Stream Flow	Consumptive Uses and Storages	Expected Stream Flow	Reserved Stream Flow	Instream Flow Requirement	Net Water Available
JAN	6.54	0.05	6.49	0.00	0.00	6.49
FEB	10.90	0.05	10.80	0.00	0.00	10.80
MAR	14.70	0.10	14.60	0.00	0.00	14.60
APR	13.90	0.85	13.00	0.00	0.00	13.00
MAY	6.75	1.57	5.18	0.00	0.00	5.18
JUN	3.12	2.05	1.07	0.00	0.00	1.07
JUL	3.04	2.67	0.37	0.00	0.00	0.37
AUG	2.28	2.15	0.13	0.00	0.00	0.13
SEP	2.03	1.35	0.68	0.00	0.00	0.68
OCT	1.49	0.28	1.21	0.00	0.00	1.21
NOV	2.22	0.05	2.17	0.00	0.00	2.17
DEC	1.64	0.05	1.59	0.00	0.00	1.59
ANN	6,610.00	682.00	5,930.00	0.00	0.00	5,930.00

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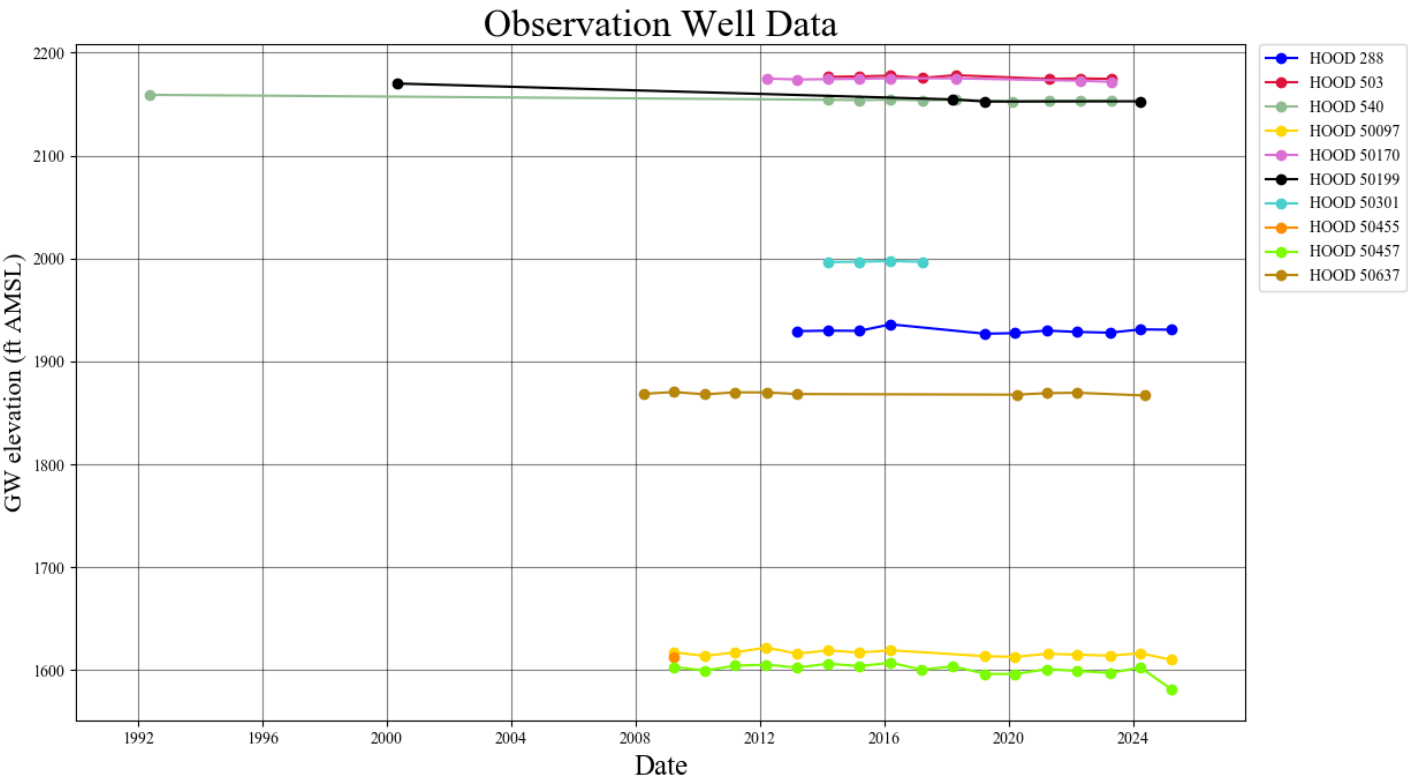


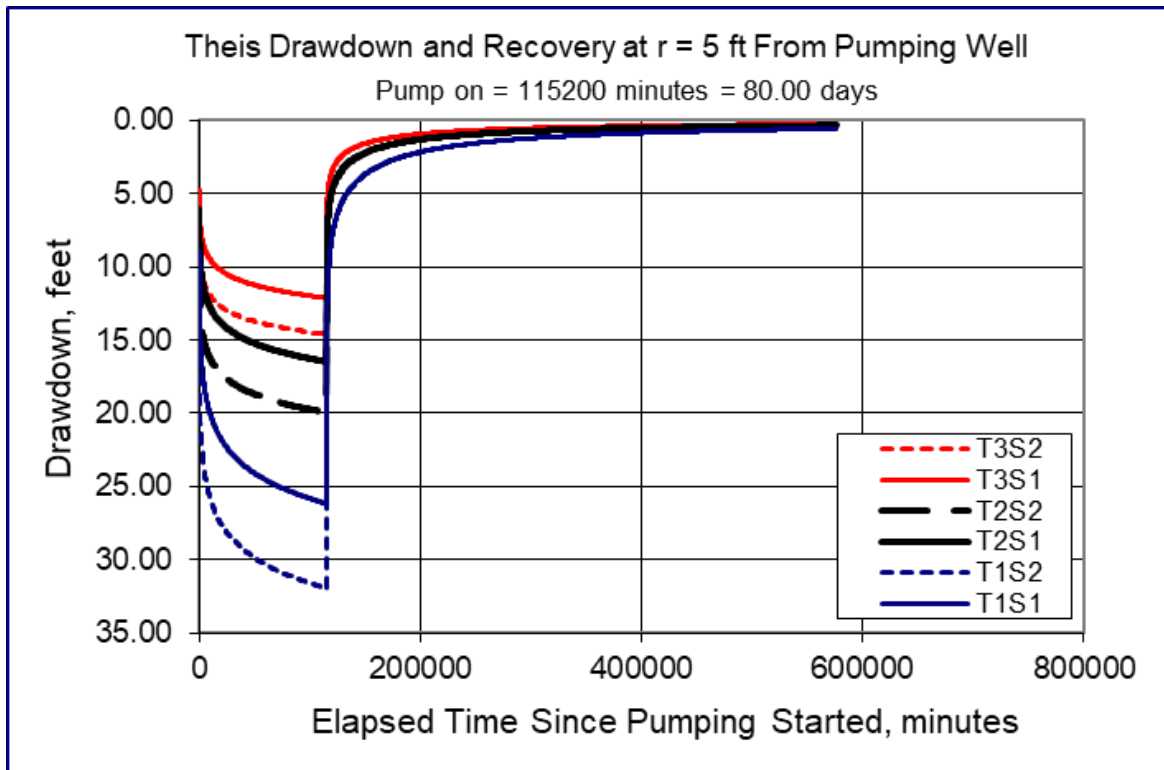
Well Statistics (Sections 1NE, 1SE, 6, 5NW, 5SW 12NE, 12SE, 7, 8NW, 8SW)



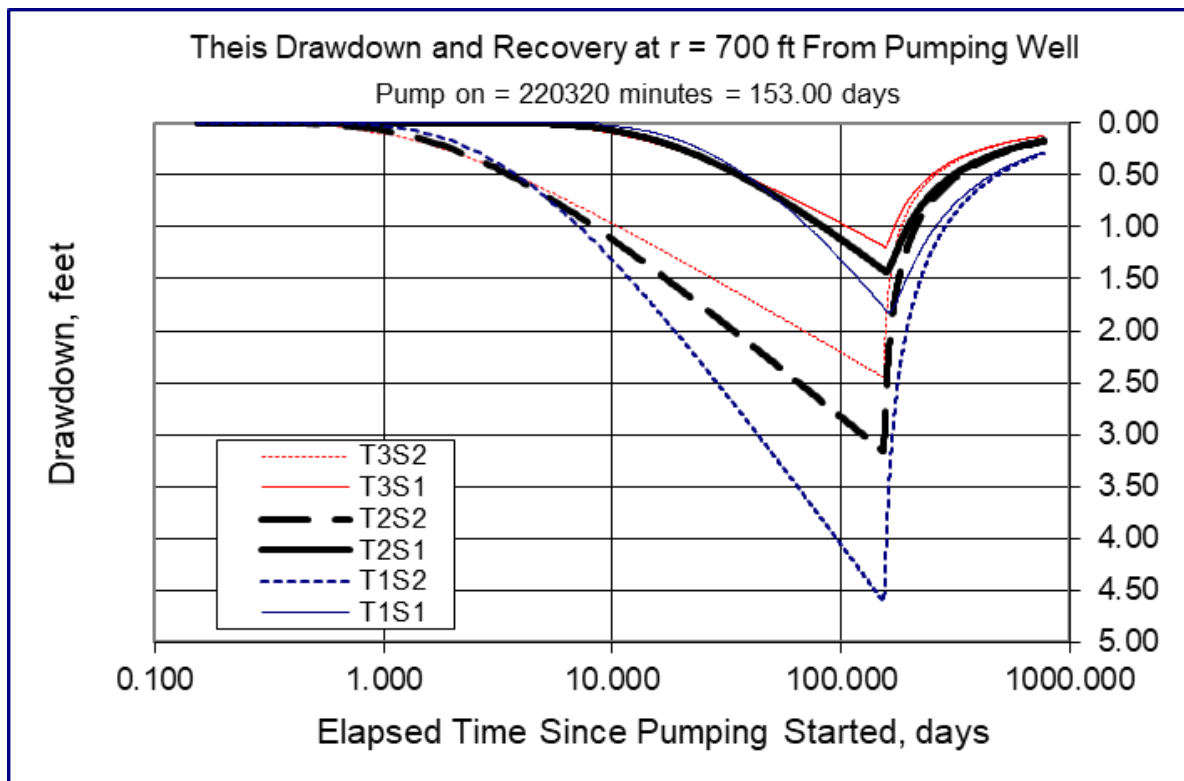
Created 07/25/2025

Water-Level Measurements in Nearby Wells (2-mile radius, spring highs)

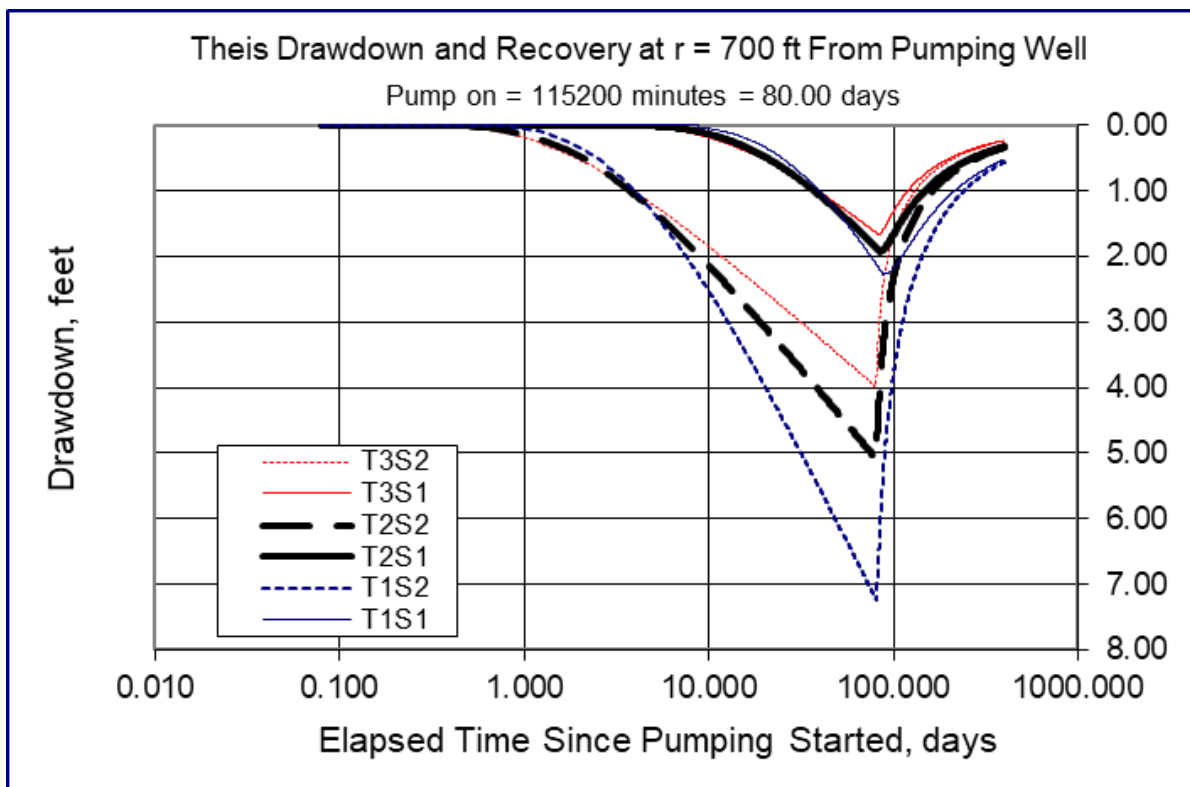


Theis Interference AnalysisStorage Coefficient: 0.1 to 0.01Transmissivity from pump test at HOOD 582: 700 (+/- 300) ft²/day.

Drawdown at 5-feet from the POA pumping at 0.17 cfs.

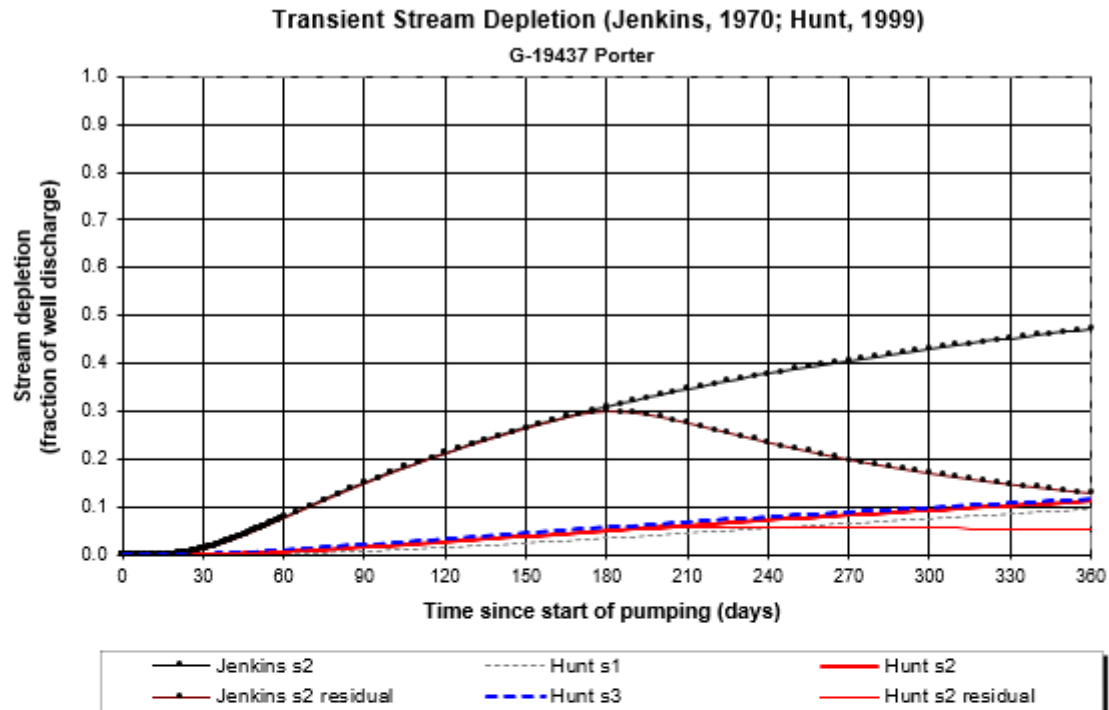


Drawdown at HOOD 50637 pumping at 0.089 cfs for 153 days.



Drawdown at HOOD 50637 pumping at 0.17 cfs for 80 days.

Stream Depletion (Hunt) Model Analysis

**Output for Hunt Stream Depletion, Scenario 2 (s2 Time pump on = 153 days)**

Days	30	60	90	120	150	180	210	240	270	300	330	360
Qw, cfs	0.170	0.170	0.170	0.170	0.170	0.170	0.170	0.170	0.170	0.170	0.170	0.170
Jenk SD s2 %	1.27	7.79	15.01	21.26	26.49	30.02	27.55	23.49	19.92	17.04	14.75	12.91
Jenk SD s2 cfs	0.002	0.013	0.026	0.036	0.045	0.051	0.047	0.040	0.034	0.029	0.025	0.022
Hunt SD s2 %	0.06	0.60	1.55	2.66	3.82	4.93	5.57	5.75	5.70	5.56	5.38	5.18
Hunt SD s2 cfs	0.000	0.001	0.003	0.005	0.006	0.008	0.009	0.010	0.010	0.009	0.009	0.009

Parameters:		Scenario 1	Scenario 2	Scenario 3	Units
Net steady pumping rate	Qw	0.17	0.17	0.17	cfs
Distance to stream	a	1700	1700	1700	ft
Aquifer hydraulic conductivity	K	3	5	7	ft/day
Aquifer thickness	b	155	155	155	ft
Aquifer transmissivity	T	465	775	1085	ft ² /day
Aquifer storage coefficient	S	0.1	0.1	0.1	
Stream width	ws	10	10	10	ft
Streambed hydraulic conductivity	Ks	0.1	0.1	0.1	ft/day
Streambed thickness	bs	3	3	3	ft
Streambed conductance	sbc	0.333333333	0.333333333	0.333333333	ft/day
Stream depletion factor (Jenkins)	sdf	621.5053763	372.9032258	266.359447	days
Streambed factor (Hunt)	sbf	1.218637993	0.731182796	0.522273425	